2R - 370

CLOSURE WORKPLAN

05/11/2010

Basin Environmental Consulting, LLC

RECEIVED MAY 11 2010 NMOCD ARTESIA

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REMEDIATION SUMMARY

AND SITE

CLOSURE PROPOSAL

BOPCO, L.P.

Josephine Rodke Federal #1 Eddy County, New Mexico BOPCO Job # 24510 UNIT LTR "C" (NE ¼ /NW ¼), Section 27, Township 20 South, Range 31 East Latitude 32° 32' 45.132" North, Longitude 103° 51' 15.048" NMOCD Reference # 2RP-370

Prepared For:

BOPCO, L.P. 522 W. Mermod Suite 704 Carlsbad, New Mexico 88220

Prepared By:

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May 2010

Camille J. Bryant Project Manager

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1.0 INTRODUCTION AND BACKGROUND INFORMATION

Basin Environmental Consulting, LLC (Basin), on behalf of BOPCO, L.P. (BOPCO), has prepared this Remediation Summary and Site Closure Proposal for the release site known as Josephine Rodke Federal #1 (BOPCO Job #24510). The legal description of the release site is Unit Letter "C" (NE ¼ NW ¼), Section 27, Township 20 South, Range 31 East, in Eddy County, New Mexico. The property affected by the release is owned and administered by the United States Department of the Interior, Bureau of Land Management (BLM). The release site GPS coordinates are 32° 32' 45.132" North and 103° 51' 15.048" West. Please reference Figure 1 for a Site Location Map and Figure 2 for a Site and Sample Location Map. General site photographs are provided as Appendix C.

On June 15, 2009, BOPCO submitted notification to the New Mexico Oil Conservation Division (NMOCD) and the BLM, of BOPCO's intention to conduct closure activities at the permanent pit located at the Josephine Rodke Federal #1 well site. The pit was to be excavated to approximately ten (10) feet below ground surface (bgs). All excavated soil was transported to Controlled Recovery Incorporated (CRI) (NM Permit R-9166). The final dimensions of the excavation were approximately one-hundred fifty five (155) feet in width and one-hundred sixty one (161) feet in length and approximately thirty five (35) feet in depth. The soil beneath the permanent pit was analyzed to determine if a release had occurred. On July 1, 2009, BOPCO submitted a Pit, Closed-Loop System, Below-Grade Tank, or Proposed Alternative Method Permit of Closure Plan Application (Form C-144) to the New Mexico Oil Conservation Division (NMOCD) for the permanent pit closure. On December 7, 2009, BOPCO submitted a Release Notification and Corrective Action (Form C-141) to the NMOCD. The Forms C-144 and C-141 are provided as Appendix D.

On November 13, 2009, BOPCO requested Basin assume remediation oversight at the Josephine Rodke Federal #1 site.

On November 20, 2009, BOPCO and Basin representatives met with NMOCD Artesia District Office representatives to discuss remediation activities to be conducted at the site. Due to safety issues associated with the depth of the excavation, it was agreed a six (6) inch PVC conduit would be cemented in the floor of the excavation and extended to approximately eighteen (18) feet bgs and the excavation would be backfilled around the conduit. These activities allowed drilling activities to be conducted in the floor of the excavation.

2.0 NMOCD SITE CLASSIFICATION

According to data obtained from the New Mexico Office of the State Engineer (NMOSE), no water wells are registered in Section 27, Township 20 S, Range 31 E. A depth to groundwater reference map utilized by the NMOCD indicates groundwater should be encountered at approximately one hundred (100) feet below ground surface (bgs). The inferred depth to groundwater in this area results in a score of ten (10) being assigned to the site based on the NMOCD depth to groundwater criteria.

The water well database, maintained by the NMOSE, indicated there are no water wells less than 1,000 feet from the release, resulting in zero (0) points being assigned to this site as a result of this criteria.

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There are no surface water bodies located within 1,000 feet of the site. Based on the NMOCD ranking system zero (0) points will be assigned to the site as a result of the criteria.

The NMOCD guidelines indicate the Josephine Rodke Federal #1 release site has an initial ranking score of ten (10). Based on this score, the soil remediation levels for a site with a ranking score of ten (10) points are as follows:

- Benzene 10 mg/Kg (ppm)
- BTEX 50 mg/Kg (ppm)
- TPH 1,000 mg/Kg (ppm)

NMOCD chloride clean-up level concentrations are site specific and are set by the NMOCD.

3.0 DISTRIBUTION OF CONTAMINANTS IN THE UNSATURATED ZONE

On November 23, 2009, the installation of the conduit and backfilling of the excavation commenced. The excavation was backfilled and compacted to approximately eighteen (18) feet bgs.

On December 11 through 21, 2009, nine (9) soil borings (SB-1 through SB-9) were advanced to vertically and horizontally investigate the extent of impact at the site. Soil boring logs are provided as Appendix A. Soil samples were collected at five (5) foot drilling intervals and field screened using a Photo-Ionization Detector (PID) and chloride field screening kit. Selected soil samples were submitted to the laboratory for determination of concentrations of benzene, toluene, ethyl-benzene and total xylene (BTEX), total petroleum hydrocarbons (TPH) and chlorides using EPA Method SW 846-8021B, EPA Method SW 848-8015M and EPA Method 4500 Cl-B, respectively. A Summary of Concentrations of TPH, BTEX and Chlorides in Soil is provided as Table 1. Laboratory analytical reports are provided as Appendix B.

Soil Boring SB-1, was advanced through the conduit in the floor of the excavation at approximately thirty five (35) feet bgs. The soil boring was advanced to a total depth of approximately one hundred fifteen (115) feet bgs. Soil samples collected at thirty five (35) feet bgs, forty (40) feet bgs, fifty (50) feet bgs, fifty five (55) feet bgs, sixty (60) feet bgs, seventy (70) feet bgs, seventy five (75) feet bgs, eighty five (85) feet bgs, ninety (90) feet bgs, ninety five (95) feet bgs, one hundred (100) feet bgs, one hundred five (105) feet bgs, one hundred ten (110) feet bgs and one hundred fifteen (115) feet bgs were submitted to the laboratory for chloride analysis, the soil samples collected at thirty five (35) and forty (40) feet bgs were also analyzed for BTEX and TPH constituent concentrations. Laboratory analytical results indicated chloride concentrations ranged from 320 mg/Kg in the soil sample collected at one hundred (100) feet bgs to 16,000 mg/Kg for the soil sample collected at ninety (90) feet bgs. The soil samples collected at thirty five (35) and forty (40) feet bgs exhibited benzene and BTEX concentrations of less than the appropriate laboratory method detection limit (MDL). TPH concentrations were less than the laboratory MDL in the soil sample collected at forty (40) feet bgs and 18.5 mg/Kg in the soil sample collected at thirty five (35) feet bgs. Soil boring SB-1 was converted to a two (2) inch monitor well (MW-4).

Soil boring SB-2 was advanced approximately fifty (50) feet west of the excavation to a total depth of approximately seventy five (75) feet bgs. Soil samples collected at five (5) feet bgs, fifteen (15) feet bgs, twenty five (25) feet bgs, thirty five (35) feet bgs, forty five (45) feet bgs, fifty five (55) feet bgs, sixty (60) feet bgs, sixty five (65) feet bgs, seventy (70) feet bgs and seventy five (75) feet bgs were submitted to the laboratory for analysis of chloride concentrations, the soil sample collected at five (5) feet bgs was also analyzed for BTEX and TPH constituent concentrations. Laboratory analytical results indicated chloride concentrations ranged from 32 mg/Kg in the soil sample collected at sixty five (65) feet bgs to 7,300 mg/Kg in the soil sample collected at fifty five (55) feet bgs. The soil sample collected at five (5) feet bgs than the appropriate laboratory MDL.

Soil boring SB-3 was advanced inside the excavation on the south side at approximately eight (8) feet bgs. The soil boring was advanced to a total depth of approximately seventy eight (78) feet bgs. Soil samples collected at thirteen (13) feet bgs, twenty three (23) feet bgs, thirty three (33) feet bgs, forty three (43) feet bgs, forty eight (48) feet bgs, fifty three (53) feet bgs, sixty three (63) feet bgs, seventy three (73) feet bgs and seventy eight (78) feet bgs were submitted to the laboratory for analysis of chloride concentrations, the soil sample collected at thirteen (13) feet bgs was also analyzed for BTEX and TPH constituent concentrations. Laboratory analytical results indicated chloride concentrations ranged from 16 mg/Kg in the soil sample collected at seventy three (73) feet bgs to 1,630 mg/Kg in the soil sample collected at forty eight (48) feet bgs. The soil sample collected at thirteen (13) feet bgs. The soil sample collected at thirteen (13) feet bgs. The soil sample collected at thirteen (13) feet bgs. The soil sample collected at thirteen (13) feet bgs. The soil sample collected at thirteen (13) feet bgs. The soil sample collected at thirteen (13) feet bgs. The soil sample collected at thirteen (13) feet bgs. The soil sample collected at thirteen (13) feet bgs exhibited benzene, BTEX and TPH constituent concentrations less than the appropriate laboratory MDL.

Soil boring SB-4 was advanced approximately sixty seven (67) feet south of the excavation. The soil boring was advanced to a total depth of approximately one hundred forty (140) feet bgs. Soil samples collected at five (5) feet bgs, fifteen (15) feet bgs, twenty five (25) feet bgs, thirty five (35) feet bgs, forty five (45) feet bgs, fifty five (55) feet bgs, sixty five (65) feet bgs, seventy five (75) feet bgs, eighty five (85) feet bgs, ninety five (95) feet bgs, one hundred five (105) feet bgs, one hundred fifteen (115) feet bgs, one hundred twenty five (125) feet bgs, one hundred thirty five (135) feet bgs and one hundred forty (140) feet bgs were submitted to the laboratory for analysis of chloride concentrations, the soil sample collected at five (5) feet bgs was also analyzed for BTEX and TPH constituent concentrations. Laboratory analytical results indicated chloride concentrations ranged from less than the laboratory MDL in the soil sample collected at sixty five (65) feet bgs to 1,020 mg/Kg in the soil sample collected at fifteen (15) feet bgs. The soil sample collected at five (5) feet bgs. The soil sample

Soil boring SB-5 was advanced inside the excavation on the east side at approximately seven (7) feet bgs. The soil boring was advanced to a total depth of approximately seventy seven (77) feet bgs. Soil samples collected at twelve (12) feet bgs, twenty two (22) feet bgs, thirty two (32) feet bgs, forty two (42) feet bgs, fifty two (52) feet bgs, fifty seven (57) feet bgs, sixty two (62) feet bgs, seventy two (72) feet bgs and seventy seven (77) feet bgs were submitted to the laboratory for analysis of chloride concentrations, the soil sample collected at twelve (12) feet bgs was also analyzed for BTEX and TPH constituent concentrations. The laboratory analytical results indicated chloride concentrations ranged from 80 mg/Kg in the soil sample collected at forty two (42) feet bgs to 3,040 mg/Kg in the soil sample collected at fifty two (52) feet bgs. The soil

sample collected at twelve (12) feet bgs exhibited benzene, BTEX and TPH constituent concentrations less than the appropriate laboratory MDL.

Soil boring SB-6 was advanced approximately twenty five (25) feet north of the excavation. The soil boring was advanced to a total depth of approximately eighty five (85) feet bgs. Soil samples collected at five (5) feet bgs, fifteen (15) feet bgs, twenty five (25) feet bgs, thirty five (35) feet bgs, forty (40) feet bgs, forty five (45) feet bgs, fifty five (55) feet bgs, sixty (60) feet bgs, sixty five (65) feet bgs, seventy five (75) feet bgs, eighty (80) feet bgs and eighty five (85) feet bgs were submitted to the laboratory for analysis of chloride concentrations, the soil sample collected at five (5) feet bgs was also analyzed for BTEX and TPH constituent concentrations. Laboratory analytical results indicated chloride concentrations ranged from 144 mg/Kg in the soil sample collected at twenty five (25) feet bgs to 9,600 mg/Kg in the soil sample collected at fifty five (55) feet bgs. The soil sample collected at five (5) feet bgs. The soil sample collected at five (5) feet bgs. The soil sample collected at five (5) feet bgs. The soil sample collected at five (5) feet bgs. The soil sample collected at five (5) feet bgs. The soil sample collected at five (5) feet bgs. The soil sample collected at five (5) feet bgs. The soil sample collected at five (5) feet bgs. The soil sample collected at five (5) feet bgs. The soil sample collected at five (5) feet bgs.

Soil boring SB-7 was advanced approximately seventy five (75) feet north of the excavation. The soil boring was advanced to a total depth of approximately one hundred fifteen (115) feet bgs. Soil samples collected at five (5) feet bgs, fifteen (15) feet bgs, twenty five (25) feet bgs, thirty five (35) feet bgs, forty five (45) feet bgs, fifty five (55) feet bgs, sixty (60) feet bgs, sixty five (65) feet bgs, seventy five (75) feet bgs, eighty five (85) feet bgs, ninety five (95) feet bgs and one hundred (100) feet bgs were submitted to the laboratory for analysis of chloride concentrations, the soil sample collected at five (5) feet bgs was also analyzed for BTEX and TPH constituent concentrations. Laboratory analytical results indicated chloride concentrations ranged from 16 mg/Kg in the soil sample collected at seventy five (75) feet bgs to 4,480 mg/Kg in the soil sample collected at sixty (60) feet bgs. The soil sample collected at five (5) feet bgs and BTEX concentrations less than the appropriate laboratory MDL and a TPH concentration of 77.1 mg/Kg. Soil boring SB-7 was converted to a two (2) inch monitor well (MW-2).

Soil boring SB-8 was advanced approximately eighty seven (87) feet north of the excavation. The soil boring was advanced to a total depth of approximately seventy five (75) feet bgs. Soil samples collected at five (5) feet bgs, fifteen (15) feet bgs, twenty five (25) feet bgs, thirty five (35) feet bgs, forty (40) feet bgs, forty five (45) feet bgs, fifty five (55) feet bgs, sixty (60) feet bgs, sixty five (65) feet bgs, seventy (70) feet bgs and seventy five (75) feet bgs were submitted to the laboratory for analysis of chloride concentrations, the soil sample collected at five (5) feet bgs to 3,080 mg/Kg in the soil sample collected at twenty five (25) feet bgs. The soil sample collected at five (5) feet bgs exhibited benzene and BTEX concentrations less than the appropriate laboratory MDL and a TPH concentration of 192 mg/Kg.

Soil boring SB-9 was advanced approximately nineteen (19) feet to the west of the excavation. The soil boring was advanced to a total depth of approximately one hundred fifteen (115) feet bgs. Soil samples collected at five (5) feet bgs, fifteen (15) feet bgs, twenty five (25) feet bgs, thirty five (35) feet bgs, forty five (45) feet bgs, fifty (50) feet bgs, fifty five (55) feet bgs, sixty (60) feet bgs, sixty five (65) feet bgs, seventy five (75) feet bgs, eighty (80) feet bgs, eighty five (85) feet bgs, ninety five (95) feet bgs, one hundred five (105) feet bgs and one hundred ten (110) feet bgs were submitted to the laboratory for analysis of chloride concentrations, the soil

sample collected at five (5) feet bgs was also analyzed for BTEX and TPH constituent concentrations. Laboratory analytical results indicated chloride concentrations ranged from 80 mg/Kg in the soil samples collected at five (5) and fifteen (15) feet bgs to 2,440 mg/Kg in the soil sample collected at sixty (60) feet bgs. The soil sample collected at five (5) feet bgs exhibited benzene and BTEX concentrations less than the appropriate laboratory MDL and a TPH concentration of 67.5 mg/Kg. Soil boring SB-9 was converted to a two (2) inch monitor well (MW-3).

On December 17, 2009, eight (8) soil samples (East S/W @ 10', North S/W @ 10', South S/W @ 10', West S/W @ 10', Northeast Corner @ 10', Northwest Corner @ 10', Southeast Corner @ 10' and Southwest Corner @ 10') were collected from the sidewalls of the excavation and submitted to the laboratory for analysis of BTEX, TPH and chloride concentrations. Laboratory analytical results indicated benzene and BTEX concentrations were less than the appropriate laboratory MDL for all the submitted soil samples. TPH concentrations ranged from 26.2 mg/Kg in soil sample Southwest Corner @ 10' to 55.4 mg/Kg in the soil sample West S/W @ 10'. Chloride concentrations ranged from 48 mg/Kg in the soil sample Southeast Corner @ 10' to 3,200 mg/Kg in the soil sample West S/W @ 10'. A review of the analytical results indicated benzene, BTEX and TPH concentrations were less than the NMOCD regulatory guidelines for all the selected soil samples.

Chloride concentrations were less than the NMOCD approved level of 1,000 mg/Kg in all the submitted soil samples, with the exception of soil samples West S/W @ 10', Northwest Corner @ 10' and Southwest Corner @ 10' which exhibited chloride concentrations of 3,200 mg/kg, 1,490 mg/Kg and 1,810 mg/Kg, respectively. Based on the analytical results additional excavation was conducted along the west sidewall and the northwest and southwest corners of the excavation.

On January 18, 2010, Basin resumed excavation activities on the west sidewall and the northwest and southwest corners of the excavation. Excavated soil was placed in the excavation and leveled.

On February 1, 2010, three (3) soil samples (West S/W A @ 10', Southwest Corner A @ 10' and Northwest Corner A @ 10') were collected and submitted to the laboratory for analysis of chloride concentrations. Laboratory analytical results indicated chloride concentrations ranged from 112 mg/Kg in soil sample West S/W A @ 10' to 496 mg/Kg in soil sample Southwest Corner A @ 10'. Review of the analytical results indicated chloride concentrations were less than 1,000 mg/Kg in all the submitted soil samples.

4.0 DISTRIBUTION OF CONTAMINANTS IN THE SATURATED ZONE

Groundwater was observed at depths ranging from eighty two (82) to one hundred two (102) feet bgs in the on-site monitor wells. Groundwater elevation data collected during the February 23, 2010 sampling event, indicated an inferred groundwater gradient of generally 0.0037 feet/foot to the southeast. Locations of the groundwater monitor wells are depicted on Figure 2. Groundwater Elevation Data is provided as Table 2.

The four (4) groundwater monitor wells (MW-1, MW-2, MW-3 and MW-4) were gauged, purged and sampled on January 12 and January 19, 2010. Pursuant to NMOCD request groundwater monitor well MW-3 was sampled on March 24, 2010 for chloride concentrations.

Groundwater samples were collected from the monitor wells and delivered to Cardinal Laboratory, for determination of chloride concentrations using EPA Method 4500 Cl-B and total dissolved solids (TDS) using EPA Method 160.1. A summary of Concentrations of Chlorides and TDS in Groundwater is presented in Table 3.

Monitor well MW-1 was sampled on January 12 and January 19, 2010. Laboratory analytical results indicated chloride concentrations ranged from 108 mg/L during the January 19th sampling event to 112 mg/L during the January 12th sampling event. TDS concentrations ranged from 639 mg/L during the January 19th sampling event to 708 mg/L during the January 12th sampling event. Chloride concentrations were less than the NMOCD regulatory standard during both sampling events.

Monitor well MW-2 was sampled on January 12 and January 19, 2010. Laboratory analytical results indicated chloride concentrations ranged from 128 mg/L during the January 19th sampling event to 136 mg/L during the January 12th sampling event. TDS concentrations ranged from 541 mg/L during the January 19th sampling event to 598 mg/L during the January 12th sampling event. Chloride concentrations were less than the NMOCD regulatory standard during both sampling events.

Monitor well MW-3 was sampled on January 12, January 19 and March 24, 2010. Laboratory analytical results indicated chloride concentrations were 24,500 mg/L during the January 12th sampling event, 46,000 mg/L during the January 19th sampling event and 61,000 mg/L during the March 24th sampling event. Monitor well MW-3 was sampled on January 12 and 19, 2010 for TDS concentrations. Laboratory analytical results indicated TDS concentrations ranged from 39,300 mg/L during the January 12th sampling event to 72,800 mg/L during the January 19th sampling event. Chloride concentrations exceeded the NMOCD regulatory standard during all three (3) sampling events.

Monitor well MW-4 was sampled on January 12 and January 19, 2010. Laboratory analytical results indicated chloride concentrations ranged from 136 mg/L during the January 19th sampling event to 196 mg/L during the January 12th sampling event. TDS concentrations ranged from 603 mg/L during the January 19th sampling event to 687 mg/L during the January 12th sampling event. Chloride concentrations were less than the NMOCD regulatory standard during both sampling events.

5.0 SITE CLOSURE PROPOSAL

5.1 Soil Closure Proposal

Based on analytical results of the soil samples collected during excavation activities and advancement of the soil borings, BOPCO proposes to conduct a risk-based closure at the site. Due to the depth of impact below and adjacent to the release point, excavation of the impacted soil would be cost prohibitive and impractical given the production facilities located to the west and north of the site.

With NMOCD approval, BOPCO proposes to install a 20 mil polyurethane liner at approximately ten (10) to twelve (12) feet bgs in the existing excavation. Approximately one (1) foot of non-impacted cushion sand will be installed above and below the liner to protect the liner

from damage during installation and backfilling activities. The excavation will be backfilled with locally purchased non-impacted soil and compacted in twelve (12) inch lifts. Following backfilling activities the site will be contoured to fit the surrounding topography and seeded a BLM approved seed mixture.

5.2 Groundwater Closure Proposal

There are currently four (4) groundwater monitor wells (MW-1, MW-2, MW-3 and MW-4) onsite. The monitor wells are sampled on a quarterly schedule. Groundwater elevation data collected during the February 23, 2010 sampling event indicated an inferred groundwater gradient of 0.0037 feet/foot to the southeast.

Analytical results from the two (2) groundwater sampling events indicate chloride concentrations are less than NMOCD regulatory guidelines in three (3) of the on-site monitor wells (MW-1, MW-2 and MW-4). Analytical results indicate chloride concentrations in monitor well MW-3 exceed NMOCD regulatory guidelines. BOPCO proposes to conduct quarterly groundwater sampling and monitoring of the on-site monitor wells.

6.0 **REPORTING**

On approval and completion of the proposed closure activities, BOPCO will submit a Remediation Summary and Site Closure Request for NMOCD and BLM approval.

7.0 LIMITATIONS

Basin Environmental Consulting, LLC has prepared this Remediation Summary and Soil Closure Proposal to the best of its ability. No other warranty, expressed or implied, is made or intended.

Basin Environmental Consulting, LLC has examined and relied upon documents referenced in the report and has relied on oral statements made by certain individuals. Basin Environmental Consulting, LLC has not conducted an independent examination of the facts contained in referenced materials and statements. We have presumed the genuineness of the documents and that the information provided in documents or statements is true and accurate. Basin Environmental Consulting, LLC has prepared this report, in a professional manner, using the degree of skill and care exercised by similar environmental consultants. Basin Environmental Consulting, LLC also notes that the facts and conditions referenced in this report may change over time and the conclusions and recommendations set forth herein are applicable only to the facts and conditions as described at the time of this report.

This report has been prepared for the benefit of BOPCO. The information contained in this report, including all exhibits and attachments, may not be used by any other party without the express consent of Basin Environmental Consulting, LLC and/or BOPCO.

6.0 **DISTRIBUTION**

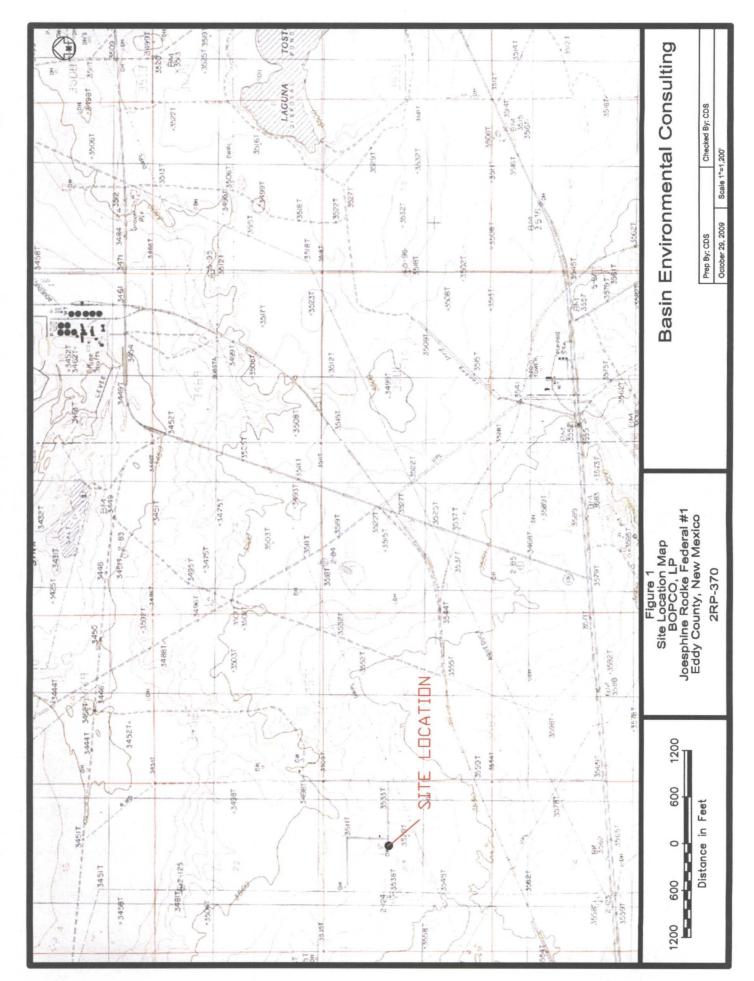
Copy 1: Sherry Bonham New Mexico Oil Conservation Division District 2 1301 W. Grand Avenue Artesia, New Mexico 88210

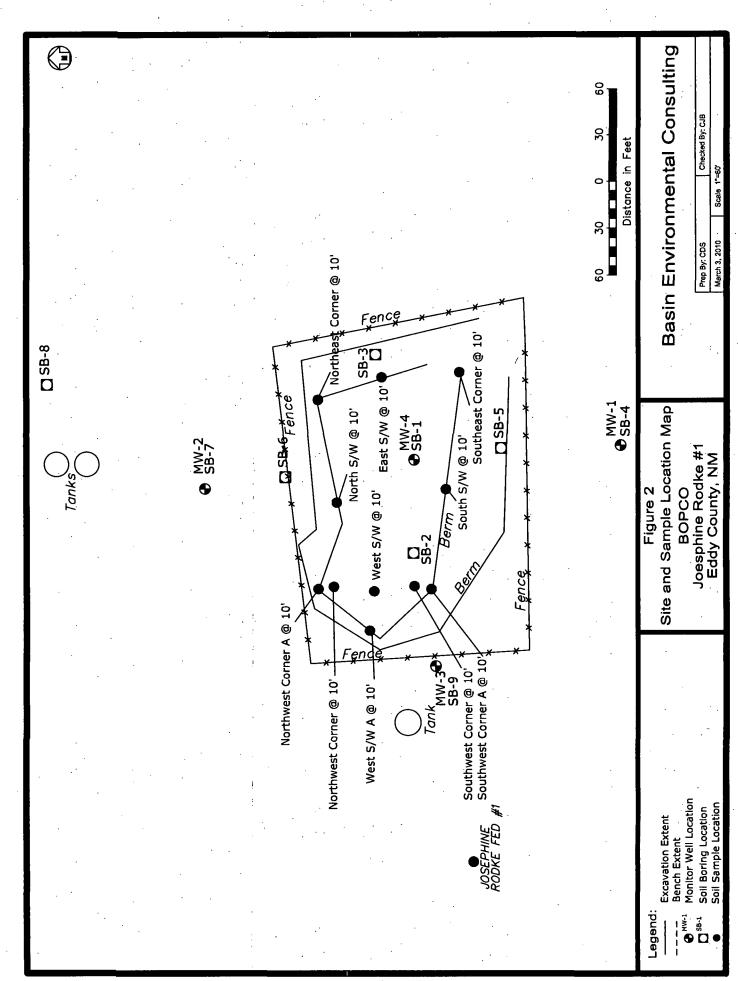
Copy 2: James Amos United States Department of the Interior Bureau of Land Management 620 East Greene Street P.O. Box 1778 Carlsbad, New Mexico 87220

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Figures





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Tables

CONCENTRATIONS OF TPH, BTEX AND CHLORIDES IN SOIL

BOPCO, LP JOSEPHINE RODKE FEDERAL #1 EDDY COUNTY, NEW MEXICO NMOCD REFERENCE # 2RP-370

				METH	METHOD: EPA SW 846-8021B, 5030	V 846-8021B	5030			SW 848	SW 848-8015M		4500
SAMPLE LOCATION	SAMPLE DEPTH (Below Grade Surface)	SAMPLE DATE	SOIL	BENZENE TOLUENE (mg/Kg)		ETHYL- BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)	BTEX (mg/Kg)	GRO C ₆ C ₁₀ (mg/Kg)	DRO C ₁₀ -C ₂₈ (mg/Kg)	DRO Ext. C ₂₈ -C ₃₅ (mg/Kg)	TOTAL TPH C ₆ -C ₃₅ (mg/Kg)	CHLORIDE (mg/Kg)
SB-1 Surface	35 Feet	12/11/09	In-Situ	<0.050	<0.100	<0.050	<0.300	<0.100	<10.0	18.5	<10.0	18.5	3,640
SB-1 @ 5'	40 Feet	12/11/09	In-Situ	<0.050	<0.100	<0.050	<0.300	<0.100	<10.0	<10.0	<10.0	<10.0	7,200
SB-1 @ 15'	50 Feet	12/11/09	In-Situ		,	•	1		1	•		1	8,160
SB-1 @ 20'	55 Feet	12/11/09	In-Situ		-		•		•	•		•	8,000
SB-1 @ 25'	60 Feet	12/11/09	In-Situ		-			- -	•	••			2,960
SB-1 @ 35'	70 Feet	12/11/09	lh-Situ			-			•		-		1,380
SB-1 @ 40'	75 Feet	12/11/09	In-Situ		-				1	· •	-	•	848
SB-1 @ 50'	85 Feet	12/11/09	In-Situ	-	-	ł	1	I	•	-	-		1,280
SB-1 @ 55'	90 Feet	12/28/09	In-Situ		-	-	1	1	1	•		1	16,000
SB-1 @ 60	95 Feet	12/28/09	In-Situ	- -	-	•	1		-	-	-	1.	11,600
SB-1 @ 65'	100 Feet	12/28/09	In-Situ	-	-	1.	1	۲	1	-	-		320
SB-1 @ 70'	105 Feet	12/28/09	In-Situ	-	1	.	1		1	-	-		1,870
SB-1 @ 75'	110 Feet	12/28/09	In-Situ	-	-	•	•	1	1	-	-	,	1,100
SB-1 @ 80'	115 Feet	12/28/09	In-Situ		1	1	-	1	1	•		1	1,230
	States.		SPECIAL STREET				1. A.			1. 1. 1. N.S.	1.2.200		a state -
SB-2 @ 5'	5 Feet	12/14/09	In-Situ	<0.050	<0.100	<0.050	<0.300	<0.100	<10.0	<10.0	<10.0	<10.0	1,630
SB-2 @ 15'	15 Feet	12/14/09	In-Situ	1	1	-	1	ļ	1	•	•	I	480
SB-2 @ 25'	25 Feet	12/14/09	In-Situ			-	•	•		•	· 1	1	576
SB-2 @ 35'	35 Feet	12/14/09	In-Situ	-	1	-	1	1	•	-	1	-	160
SB-2 @ 45'	45 Feet	12/14/09	In-Situ	8		-	•	1		•	-	-	224
SB-2 @ 55'	55 Feet	12/14/09	In-Situ	1	-	-	-	-	-	-	-	1	7,300
SB-2 @ 60'	60 Feet	12/14/09	In-Situ	•	-	•	١.	-	-	-	•	1	384
SB-2 @ 65'	65 Feet	12/14/09	In-Situ		•	-	1	-	1	•	1	1	32
SB-2 @ 70'	70 Feet	12/14/09	In-Situ	1	•	1	-	-	-		•	1	272
SB-2 @ 75'	75 Feet	12/14/09	In-Situ	1	J	I	1	-	T	•	-	1	832
	2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						1 Same		Store .		and the second second	1	
SB-3 @ 5'	13 Feet	12/14/09	In-Situ	<0.050	<0.100 0.100	<0.050	<0.300	<0.100	<10.0	<10.0	<10.0	<10.0	160

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CONCENTRATIONS OF TPH, BTEX AND CHLORIDES IN SOIL

BOPCO, LP JOSEPHINE RODKE FEDERAL #1 EDDY COUNTY, NEW MEXICO NMOCD REFERENCE # 2RP-370

	1 2 3										_																	
4500	CHLORIDE (mg/Kg)	224	80	- <u>4</u> 8	1,630	144	416	16	96		-16	1,020	144	08	64	32	<16	48	32	48	32	32	16	32	48 .	AN STREET	224	400
	TOTAL TPH C ₆ -C ₃₅ (mg/Kg)	,			-		•		1		<10.0	•	•	•	1	•	-	1	•	1	-	1	1	,		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	<10.0	1
SW 848-8015M	DRO Ext. C ₂₈ -C ₃₅ (mg/Kg)	•	•	,	•	•	•				<10.0	•	-	-	•	•	. i	•	•	-	•	•	•	•	•		<10.0	••
SW 84	DRO C ₁₀ -C ₂₈ (mg/Kg)	•		•	•		!	. 1	1		<10.0			*	-	•	-	-	-	1	-	-		•	1		<10.0	
	GRO C _E C ₁₀ (mg/Kg)	ı	•	,	•	-	٦	•			<10.0	ı	•	•	1	1	-	-	•	١	•	•	1	1	ı	A OF SHALL AND A	<10.0	
	BTEX (mg/Kg)	ì	.1	•	•	-		.•	,		<0.100	1	-		•	1		•	•	1	•	1		1		7	<0.100	1
5030	TOTAL XYLENES (mg/Kg)	•			•				,	19 19 19 19 19 19 19 19 19 19 19 19 19 1	<0.300			ı	1	1	. 1	1		1	1	1		ļ	1		<0.300	
METHOD: EPA SW 846-8021B, 5030	ETHYL- BENZENE (mg/Kg)	•	. 1	•	•			• 1			<0.050	1	•	ı	1	ı		ı	1	•	1	•	1	•	•		<0.050	•
HOD: EPA SV	BENZENE TOLUENE (mg/Kg)	•		,	•	-		•	1	and the second	<0.100	-				•	1	1	1	1	1		-		•		<0.100	,
METI	BENZENE (mg/Kg)	1	.1	1	1	-	- • •	. •			<0.050	-		-	-	· -	-	-	-	-	-	-	-	-	-		<0.050	•
	SOIL STATUS	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ		In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ		In-Situ	In-Situ
	SAMPLE DATE	12/14/09	12/14/09	12/14/09	12/15/09	12/15/09	12/15/09	12/15/09	12/15/09		12/15/09	12/15/09	12/15/09	12/15/09	12/15/09	12/15/09	12/15/09	12/15/09	12/15/09	12/15/09	12/16/09	12/16/09	12/16/09	12/16/09	12/16/09		12/16/09	12/16/09
	SAMPLE DEPTH (Below Grade Surface)	23 Feet	33 Feet	43 Feet	48 Feet	53 Feet	63 Feet	73 Feet	78 Feet		5 Feet	15 Feet	25 Feet	35 Feet	45 Feet	55 Feet	65 Feet	75 Feet	85 Feet	95 Feet	105 Feet	115 Feet	125 Feet	135 Feet	140 Feet		12 Feet	22 Feet
	SAMPLE LOCATION	<u> 3</u> 15'	ୟ 25'	ୟ 35'	<u> 3</u> 40'	J 45'	J 55'	<u> 3</u> 65'	<u>3</u> 70'		2 35 '		J 25'	J 35'	J 45'	J 55'	J 65'	15 75'	J 85'	J 95'	3 105'	2) 115' 2) 115'	୬ 125'	ୟୁ 135'	@ 140'		25' 25'	<u> 3</u> 15'
	SAN	SB-3 @	SB-3 @ 25	SB-3 @	SB-3 @ 40'	SB-3 @ 45'	SB-3 @ 22	SB-3 @ 65	SB-3 @ 70		SB-4 @ 5'	SB-4 @ 15	SB-4 @ 25'	SB-4 @ 35'	SB-4 @ 45'	SB-4 @ 55'	SB-4 @ 65'	SB-4 @ 75'	SB-4 @	SB-4 @ 95'	SB-4 @	SB-4 @ 115'	SB-4 @ 125'	SB-4 @ 135	SB-4 @		SB-5 @ 5'	SB-5 @ 15

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CONCENTRATIONS OF TPH, BTEX AND CHLORIDES IN SOIL

BOPCO, LP JOSEPHINE RODKE FEDERAL #1 EDDY COUNTY, NEW MEXICO NMOCD REFERENCE # 2RP-370

\mathbb{I}	(g)			0	6		0	6	r 97			_		0	<u> </u>			0	0	0	0		<u> </u>		<u> </u>	6]
4500	CHLORIDE (mg/Kg)	176	80	3,040	1,710	464	1,820	496		160	224	144	1,140	2,080	272	9,600	656	2,200	4,360	6,480	1,360		192	480	672	336	752	-
	TOTAL TPH C ₆ -C ₃₅ (mg/Kg)		•	•	•		1	•		<10.0	1	•	-	-	•	•	•	•	,	•			77.1	,	-	•		
SW 848-8015M	DRO Ext. C ₂₈ -C ₃₅ (mg/Kg)	-	•	•	•		•	•		<10.0		ŀ		-	•	•	-	•	•	•	1	STATES -	<10.0	ı	-	•		
SW 84	DRO C ₁₀ -C ₂₈ (mg/Kg)	ï	•	•	•	,	•	•		<10.0	-	-			•	•		•		-			77.1	1	•	•	-	
	GRO C ₆ C ₁₀ (mg/Kg)	1		•	1	•	- 16 -			<10.0	•			1	•	•	-	1	•	•		14 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<10.0	•	•	1	1	
	BTEX (mg/Kg)	-	•	1	•	1	•	1	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	<0.100	•	1	•	-	1		-			•			<0.050		1	•	•	
5030	TOTAL XYLENES (mg/Kg)						1	1		<0.300			•	ı	1			1	-	•	ı		<0.300	•	-	-		
N 846-8021B,	ETHYL- BENZENE (mg/Kg)		-	•	-			1		<0.050	-	1			ļ		-		1	-	- 1	ACCESSION A	<0.050	•	-	-		
METHOD: EPA SW 846-8021B, 5030	BENZENE TOLUENE (mg/Kg)			•	1			1	· ·	<0.100	1			-	1			1	1	1	,		<0.050	1	1	,		
METI	BENZENE (mg/Kg)		-	- 1	-	-	•	•		<0.050	•	•	•	•	,		-		•	•	1	1. 13 (DAR)	<0.050	•	1	•	1	
	SOIL STATUS	In-Situ	In-Situ	In-Situ	In-Situ	In∸Situ	In-Situ	In-Situ		In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ		In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	
	SAMPLE DATE	12/16/09	12/16/09	12/16/09	12/16/09	12/16/09	12/16/09	12/16/09		12/17/09	12/17/09	12/17/09	12/17/09	12/17/09	12/17/09	12/17/09	12/17/09	12/17/09	12/17/09	12/17/09	12/17/09		12/17/09	12/17/09	12/17/09	12/17/09	12/17/09	1
	SAMPLE DEPTH (Below Grade Surface)	32 Feet	42 Feet	52 Feet	57 Feet	62 Feet	72 Feet	77 Feet	1. 1. 1. M. W. W.	5 Feet	15 Feet	25 Feet	35 Feet	40 Feet	45 Feet	55 Feet	60 Feet	65 Feet	75 Feet	80 Feet	85 Feet		5 Feet	15 Feet	25 Feet	35 Feet	45 Feet	
	SAMPLE LOCATION	SB-5 @ 25'	SB-5 @ 35'	SB-5 @ 45'	SB-5 @ 50'	SB-5 @ 55'	SB-5 @ 65'	SB-5 @ 70'		SB-6 @ 5'	SB-6 @ 15'	SB-6 @ 25'	SB-6 @ 35'	SB-6 @ 40'	SB-6 @ 45'	SB-6 @ 55'	SB-6 @ 60'	SB-6 @ 65'	B-6 @ 75'	SB-6 @ 80'	B-6 @ 85'		SB-7 @ 5'	SB-7 @ 15'	SB-7 @ 25'	SB-7 @ 35'	SB-7 @ 45 [.]	

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CONCENTRATIONS OF TPH, BTEX AND CHLORIDES IN SOIL

BOPCO, LP JOSEPHINE RODKE FEDERAL #1 EDDY COUNTY, NEW MEXICO NMOCD REFERENCE # 2RP-370

				METH	METHOD: EPA SW 846-8021B, 5030	V 846-8021B	, 5030			SW 848	SW 848-8015M		4500
SAMPLE LOCATION	SAMPLE DEPTH (Below Grade Surface)	SAMPLE DATE	SOIL	BENZENE TOLUENE (mg/Kg)		ETHYL- BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)	BTEX (mg/Kg)	GRO C ₆ C ₁₀ (mg/Kg)	DRO C ₁₀ -C ₂₈ (mg/Kg)	DRO Ext. C ₂₈ -C ₃₅ (mg/Kg)	TOTAL TPH C ₆ -C ₃₅ (mg/Kg)	CHLORIDE (mg/Kg)
SB-7 @ 60'	60 Feet	12/18/09	In-Situ					1	,	,	,		4,480
SB-7 @ 65'	65 Feet	12/18/09	In-Situ		,	. 1	•	•	•		,		208
SB-7 @ 75'	75 Feet	12/18/09	In-Situ	-	•	1	-	1			<u>ا</u>	,	16
SB-7 @ 85'	85 Feet	12/18/09	In-Situ	-	-	,			-	•			160
SB-7 @ 95'	95 Feet	12/18/09	In-Situ	·-	-	·	-	• 1			•		176
SB-7 @ 100'	100 Feet	12/18/09	In-Situ	. !		1	,	-		:		•	240
											A State State	1	
SB-8 @ 5'	5 Feet	12/18/09	In-Situ	<0.050	<0.050	<0.050	<0.300	<0:050	<10.0	192	<10.0	192	96
SB-8 @ 15'	15 Feet	12/18/09	In-Situ	-	ı	-	•			•	•	-	640
SB-8 @ 25	25 Feet	12/18/09	In-Situ	-	1	-	-	+	-		•		3,080
SB-8 @ 35'	35 Feet	12/18/09	In-Situ	-		· ·	-		•	•	•	,	1,310
SB-8 @ 40'	40 Feet	12/18/09	In-Situ	-	1	· · ·	•		-	-	-		. 640
SB-8 @ 45'	45 Feet	12/18/09	In-Situ	1	ı	1	1	•	-	-	-	•.	544
SB-8 @ 55'	55 Feet	12/18/09	In-Situ	•	I	1	1	•	•	•	,	-	1,730
SB-8 @ 60'	60 Feet	12/18/09	In-Situ	1	1	1	,	•	•	•		-	2,120
SB-8 @ 65'	65 Feet	12/21/09	In-Situ	1	1	1	1	-	•	'		-	336
SB-8 @ 70'	70 Feet	12/21/09	In-Situ	. 1	1	1	ł	-	•	ı	ł	-	176
SB-8 @ 75'	75 Feet	12/21/09	In-Situ	1		1		1	•	•	-		592
「「「「「」」、「」、「」、「」、「」、「」、「」、「」、「」、「」、「」、「」	1.8.8.9.9			Service Se		-14. C. C.		10200 C		1	N. C.	1	
SB-9 @ 5'	5 Feet	12/21/09	In-Situ	<0.050	<0.050	<0.050	<0.300	<0.050	<10.0	67.5	<10.0	67.5	80
SB-9 @ 15'	15 Feet	12/21/09	In-Situ	1	1	-	•	-	•	•	•	-	80
SB-9 @ 25'	25 Feet	12/21/09	In-Situ	ı	1	1	1	į	•	-	•	-	144
SB-9 @ 35'	35 Feet	12/21/09	In-Situ	-	-	-	-	1	1	-	-	-	624
SB-9 @ 45'	45 Feet	12/21/09	In-Situ	1	I	1	1		,	,	-	-	736
SB-9 @ 50'	50 Feet	12/21/09	In-Situ	I		ı	ı	ı		,	•	1	1,070
SB-9 @ 55'	55 Feet	12/21/09	In-Situ	1	•				•	'	•	-	- 480
SB-9 @ 60'	60 Feet	12/21/09	In-Situ	•	•		-	'	•	•	-	1	2,440

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CONCENTRATIONS OF TPH, BTEX AND CHLORIDES IN SOIL

BOPCO, LP JOSEPHINE RODKE FEDERAL #1 EDDY COUNTY, NEW MEXICO NMOCD REFERENCE # 2RP-370

SAMPLE DEPTH SAMPLE LOCATION (Below Grade Surface)	ľ		METH	IOD: EPA SV	METHOD: EPA SW 846-8021B, 5030	5030			SW 848	SW 848-8015M	_	4500
	SAMPLE DATE	SOIL	BENZENE TOLUENE (mg/Kg)		ETHYL- BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)	BTEX (mg/Kg)	GRO C ₆ C ₁₀ (mg/Kg)	DRO C ₁₀ -C ₂₈ (mg/Kg)	DRO Ext. C ₂₈ -C ₃₅ (mg/Kg)	TOTAL TPH C ₆ -C ₃₅ (mg/Kg)	CHLORIDE (mg/Kg)
SB-9 @ 65' 65 Feet	t 12/21/09	In-Situ						•	 	 		448
SB-9 @ 75 Feet	t 12/21/09	In-Situ		ŀ		•			,	 	•	1,300
SB-9 @ 80' 80 Feet	t 12/21/09	In-Situ	1	1	•				 ,	 '		240
SB-9 @ 85' 85 Feet	t 12/21/09	in-Situ			-						1	240
SB-9 @ 95' 95 Feet	95 Feet 12/21/09	In-Situ	•	-					1	1	•	512
SB-9 @ 105' 105 Feet	et 12/2:1/09	In-Situ	i	,	,	•		•	•		1	144
	110 Feet 12/21/09	In-Situ			-	•	,					. 112
	영종 승규는 영말			Start Start							YUSK MELT	
East S/W @ 10' 10 Feet	t 12/17/09	In-Situ	<0.050	<0.050	<0.050	<0.300	<0.050	<10.0	44.7	<10.0	44.7	160
North S/W @ 10' 10 Feet		In-Situ	<0.050	<0.050	<0.050	<0.300	<0.050	<10.0	42.2	<10.0	42.2	352
South S/W @ 10' 10 Feet	t 12/17/09	In-Situ	<0.050	<0.050	<0.050	<0.300	<0.050	<10.0	51.4	<10.0	51.4	. 288
West S/W @ 10' 10 Feet	12/17/09	Excavated	<0.050	<0.050	<0.050 ·	<0.300	<0.050	<10.0	55.4	· <10.0	55.4	3,200
Northeast Corner @ 10' 10 Feet	t 12/17/09	In-Situ	<0.050	<0.050	<0.050	<0.300	<0.050	<10.0	29.7	<10.0	29.7	144
Northwest Corner @ 10' 10 Feet	t 12/17/09	Excavated	<0.050	<0.050	<0.050	<0.300	<0.050	<10.0	30.8	<10.0	30.8	1,490 ,
Southeast Corner @ 10' 10 Feet	t 12/17/09	In-Situ	<0.050	<0.050	<0.050	<0.300	<0.050	<10.0	27.6	<10.0	27.6	48
Southwest Corner @ 10' 10 Feet	12/17/09	Excavated	<0.050	<0.050	<0.050	<0.300	<0.050	<10.0	26.2	<10.0	26.2	1,810
	C RAPPE			Deresta :							S. K.S. S.	
West S/W A @ 10' 10 Feet	t 02/01/10	In-Situ		1	•				1	•	-	112
Southwest Corner A @ 10' 10 Feet	10 Feet 02/01/10	In-Situ	-	1	1	•	1	1	•	•	1	496
Northwest Corner A @ 10' 10 Feet	t 02/01/10	In-Situ	1	ı	1	1	ı	. 1	,	•		224
				S. M. Carlos			State of the second	Start and a second			NA BOY	
NMOCD REGULATORY STANDARD	0		10				50				100	1,000

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GROUNDWATER ELEVATION DATA

BOPCO, LP JOSEPHINE RODKE FEDERAL #1 EDDY COUNTY, NEW MEXICO

WELL NUMBER	DATE MEASURED	TOTAL WELL DEPTH	CASING WELL ELEVATION	DEPTH TO WATER	CORRECTED GROUNDWATER ELEVATION	VOLUME RECOVERED (gallons)
MW -1	01/04/10	128.31	3,523.34	97.54	3,425.80	12.00
MW-1	01/07/10	128.31	3,523.34	102.75	3,420.59	
MW-1	01/12/10		3,523.34	98:11	3,425.23	
MW-1	01/18/10		3,523.34	98.44	3,424.90	10.00
MW-1	01/19/10		3,523.34	112.18	3,411.16	
MW-1	02/08/10		3,523.34	97.07	3,426.27	
MW-1	02/15/10		3,523.34	97.23	3,426.11	
MW-1	02/23/10		3,523.34	97.11	3,426.23	· .
MW-1	03/02/10		3,523.34	97.18	3,426.16	
MW-1	03/09/10	· ·	3,523.34	97.04	3,426.30	
MW-1	03/16/10		3,523.34	97.16	3,426.18	
MW-1	03/24/10		3,523.34	97.11	3,426.23	
				an a		
MW-2	01/04/10	118.30	3,527.08	100.36 .	3,426.72	12.00
MW-2	01/07/10	118.30	3,527.08	100.40	3,426.68	
MW-2	01/12/10		3,527.08	100.35	3,426.73	· · · · · · · · · · · · · · · · · · ·
MW-2	01/18/10		3,527.08	99.94	3,427.14	15.00
MW-2	01/19/10		3,527.08	99.90	3,427.18	
MW-2	02/08/10		3,527.08	99.82	3,427.26	
MW-2	02/15/10		3,527.08	100.21	3,426.87	
MW-2	02/23/10		3,527.08	100.07	3,427.01	
MW-2	03/02/10	_	3,527.08	100.19	.3,426.89	· · · · · · · ·
MW-2	03/09/10		3,527.08	99.81	3,427.27	•
MW-2	03/16/10		3,527.08	100.44	3,426.64	
MW-2	03/24/10		3,527.08	99.93	3,427.15	
•						
MW-3	01/04/10	119.10	3,528.86	102.08	3,426.78	13.00
MW-3	01/07/10	119.10	3,528.86	102.13	3,426.73	
MW-3	01/12/10	a.1	3,528.86	102.50	3,426.36	•
MW-3	01/18/10		3,528.86	101.67	3,427.19	8.00
MW-3	01/19/10		3,528.86	101.57	3,427.29	
MW-3	02/08/10		3,528.86	101.51	3,427.35	
MW-3	02/15/10		3,528.86	102.04	3,426.82	
MW-3	02/23/10		3,528.86	101.94	3,426.92	
MW-3	03/02/10		3,528.86	102.00	3,426.86	
MW-3	03/09/10		3,528.86	101.51	3,427.35	
MW-3	03/16/10		3,528.86	102.26	3,426.60	
MW-3	03/24/10	118.76	. 3,528.86	101.48	3,427.38	6.00
MW-3	03/24/10		3,528.86	102.15	3,426.71	
MW-3	03/25/10		3,528.86	101.48	3,427.38	
						وسر پ شروب
MW-4	01/04/10	100.58	3,510.60	82.78	3,427.82	8.00
MW-4	01/07/10	100.58	3,510.60	82.97	3,427.63	

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GROUNDWATER ELEVATION DATA

BOPCO, LP	
JOSEPHINE RODKE FEDERAL #1	
EDDY COUNTY, NEW MEXICO	

WELL NUMBER	DATE MEASURED	TOTAL WELL DEPTH	CASING WELL ELEVATION	DEPTH TO WATER	CORRECTED GROUNDWATER ELEVATION	VOLUME RECOVERED (gallons)
MW-4	01/12/10		3,510.60	82.87	3,427.73	
MW-4	01/18/10		3,510.60	82.95	3,427.65	6.00
MW-4	01/19/10		3,510.60	82.48	3,428.12	
MW-4	02/08/10		3,510.60	82.48	3,428.12	
MW-4	02/15/10		3,510.60	82.91	3,427.69	
MW-4	02/23/10		3,510.60	82.70	3,427.90	
MW-4	03/02/10		3,510.60	82.85	3,427.75	
MW-4	03/09/10		3,510.60	82.46	3,428.14	
MW-4	03/16/10		3,510.60	83.12	3,427.48	
MW-4	03/24/10		3,510.60	82.47	3,428.13	

Yellow Highlight indicates results from gauging 5hrs 36min after bailing MW-3 dry Note MW-3 had fully recovered within 24 hrs as seen on MW-3 03/25/10 data

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CONCENTRATIONS OF CHLORIDES AND TOTAL DISSOLVED SOLIDS IN GROUNDWATER BOPCO, LP JOESPHINE RODKE FEDERAL #1 EDDY COUNTY, NEW MEXICO

SAMPLE LOCATION	SAMPLE DATE	CHLORIDES (mg/L)	TDS (mg/L)
MW-1	01/12/10	112	802
MW-2	01/12/10	136	598
MW-3	01/12/10	24,500	39,300
MW-4	01/12/10	196	687
	N. W. W. W. W.	1 4 Mar 1 4 1 3 1 4 1 4	188 T. 1
MW-1	01/19/10	108	629
MW-2	01/19/10	128	143
MW-3	01/19/10	46,000	72,800
MW-4	01/19/10	136	603
	1		
MW-3	03/24/10	61,000	-
NMOCD CRITERIA	۲.	250	10,000

Appendices

Appendix A Soil Boring Logs

					• .			· · ·
					•			
Depth				•	Mo	nitor Well MW-1		
below ground	Soil	Chloride	PID	Petroleum		· · · · · ·	-	Monitor Well MW-1
surface	Columns	s Field Test ND	Reading 10.6	<u>Odor</u> None	Stain None	Soil Description	╶╻╢╏┙	Date DrilledDecember 16, 2009 Thickness of Bentonite Seat72 Et
Ē,		ND	2.8	None	None	Surface - 5' - Sand, reddish brown, some organ dry	nics,	Depth of Exploratory Boring <u>140 Ft bgs</u> Depth to Groundwater
Ē			2.0	None	None	5 - 10' - Sand, reddish brown, dry		Ground Water Elevation
- 10 -	X	180	32.6	None	None	10 - 15' - Sand, brown to tan with caliche nodu	tes,	Indicates the PSH level measured
- 15 -		924	5.6	Naaa	blass	dry		 Indicates the groundwater level measured on
-20		180	2.1	None	None	15 - 25' - Sand, brown with sandstone, dry		Laboratory Analysis. PID Heed-space reading in ppm obtained with a photo-ionization detector.
		ND	2.6	None	None			
		\bigcirc		None	None	25 - 30' - Clay, reddish brown, sandy with sandstone, dry		
-30		ND	2.1	None	None	30 - 35' - Sand, brown with limited clay, dry		
- 36		ND	3.8	None	None	35 - 40' - Sand, brown with sandstone nodules	and	
-40 C		ND	2.4			limited clay, dry		
45		ND	2.1	None	None			· ·
50		ND	2.7	None	None	40 - 55' - Sand, brown with sandstone nodules	s, dry	, ,
Ē				None	. None			Grout Surface Seal
- 53 C		ND	7.5	None	None	55 - 60' - Sand, reddish brown with sandstone		
- 60 -		ND	2.6	Nees	Alaaa	nodules, dry		
- 65 - 65		ND	2.9	None	None	60 - 65' - Clay, dark reddish brown, silty, dry		Sand Pack
- n	مريد. 1777 - 1777	ND	3.1	None	None	65 - 70' - Sand, dark brown, dry		Screen
				None	None			
- 75			3.3	None	None	70 051 Cand barrier day band at 74 facts		
- 80		ND	3.1	None	None	70 - 85' - Sand, brown, dry, hard at 74 feet		
- 85		ND	1.9		None			
- 90		ND	3.2	None	None	85 - 95' - Clay, dark red, silty with sandstone nodules, dry		· · · ·
		ND	4.0	None	None			
Ē		\bigcirc		None	None	95 - 100' - Sand, dark red with sandstone nodu and cemented sandstone	ules	
- 100 -		ND	3.0	None	None	100 - 110' - Sand, reddish brown, fine grained	with	
- 105 -			· 4.2	Nono	Nono	sandstone nodules, some tan, fine grained sar 112 feet		
- 110		ND	3.4	None	None	110 - 115' - Sand, brownish tan, fine grained w	rith	Completion Notes
- 115		ND	3.8	None	None	sandstone nodules, dry		 The monitor well was advanced on date using air rotary drilling techniques.
E 170		ND	5.7	None	None			 The well was constructed with 2" ID, 0.010 Inch factory stotted, threaded joint, schedule 40 PVC pipe.
				None	None	115 - 130' - Sand, brown, fine grained with sandstone nodules, dry		 The well is protected with a locked stick up steel cover and compression cap.
- 125			4.4	None	None	· - · ·		 The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.
L-130		ND	5.2		None			George
- 135		ND	4.0	None	NOTE	130 - 140' - Sand, tannish brown, fine grained v sandstone nodules, dry	with	
E 140			4.2	None	None			
		\bigcirc				 		
Mo	nitor V	Vell De	tails	٠	D O		F	
· ·	M١	N -1		Joes		Rodka Fad #1 -		mental Consulting
S	oil Bor	ring SB	-4				Prep By: CDS April 5, 2010	Greaked by: CJB

nd ce	Soil <u>Columns</u>	Chloride s Field Test I		Petroleum Odor	Stain	Soil Description		5-7	Monitor Well Date Drilled December	<u>MIV9-2</u> n 17, 2009
	23	ND	29.7	Slight Slight	Slight	Surface - Sand, dark brown w	ith caliche, dry		Thickness of Bentonite Seat	79 F1 115 F1 bgs
	2	152	29.9	Slight	None	0 - 10' - Caliche, tan, dry	· . ⁻	88	Depth to Groundwater	
		520	30.0	Slight	None			88		¢.
	K	,	30.0	None	None	10 - 15' - Sand, tan, fine grain nodules	ed with caliche		Indicates the PSH level m	
		468	30.7	None	None	15 - 20' - Sand, tannish red wi	th caliche norwlar		 Indicates the groundwate measured on Indicates samples selects 	
		644	31.9			dry 20 - 25' - Sand, rad, very fine			Laboratory Analysis. PID Head-space reading in pr with a photo-ionization da	
		644	33.7	None	None	sandstone nodules, dry	-			·
		\smile		None	None	25 - 30' - Sand, red with sand gypsum stringars, dry	stone nodules and			
		924	32.7	None	None	30 - 35' - Sand, red with sand	stone nodules, dry		·	
		280	34.8	None	Nore	35 - 40' - Sand, red with sand	stone nodules and	88		
		416	34.0	None	None	limited clay, dry				
		708	34.2	None	None					
		\smile		None	None	40 - 60' -Sand, red with sands	tone nodules day			
		2,196	35,9	None	None				Grout Surface Seal	
		1,556			:		•			
		4,092	35.5	None	None				Bentonite Pellet Seal	
		(324)	36.7	None	None				Sand Pack	
		\smile		None	None	60 - 75' - Sand, red with sand clay matrix, dry	stone nodules in a			
		368	35.8	None	None				Screen	
		212	38,4			75 001 0				
		180	39.8	None	None	75 - 80' - Sand and Sandston	e, red, diy			
		ND	38,2	None	None				·	
	Ħ		30 <u>x</u>	None	None	90, 100 ⁰ 0				
		128		None	None	80 - 100' - Sandstone, red, wh with some red clay, all soils a		CI NA	• .	
	Щ	128								
		180		None	None				÷	
		\sim		None	None	100 - 105' - Clay, dark red, sill stringers	y with gypsum	3826		
				None	None					
	्यत्रमा हास्रह			None	None	105 - 115' - Sand and sandsto	ne, dark red, silly		Completion Notes	
		σ		NUIC	NUNE	with limited day, dry			 The monitor well was advan using air rolary drilling techn The well was constructed with the second se	iques.
									inch factory stotted, threader 40 PVC pipe.	d joint, schedule
									 3.) The well is protected with a steel cover and compression 4.) The lines between material (n cap.
					1		,		 I ne unes between material on the profile log represent a boundaries. Actual transitio gradual. 	approximate
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						•				
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0	aitor V	Vell Det	aile							
UI		W-2	aiis	Joes		OPCO Rodke Fed #1			mental Con	sulting
Sc	oil Boi	ring SB	-7			y, New Mexico		y: CDS	Checked By: CJB	

				-	Luuy v	Journ	y, itow mexico		April 5, 2010		
Market Solid Chabridis PUID Periodecan Protections Solid Columns Protections Market Market <thmarket< th=""> <thmarket< th=""> <thmarket< th=""><th>S</th><th></th><th></th><th>-9</th><th></th><th>bhine</th><th>Rodke Fed #1</th><th>_</th><th></th><th></th><th></th></thmarket<></thmarket<></thmarket<>	S			-9		bhine	Rodke Fed #1	_			
More Base Soil Choids Ploteenem Pachesian Oddr Soil Description Month Month <t< th=""><th>Mo</th><th></th><th></th><th>tails</th><th></th><th>BC</th><th>)PCO</th><th>Rasin</th><th>Environ</th><th>me</th><th>ntal Consult</th></t<>	Mo			tails		BC)PCO	Rasin	Environ	me	ntal Consult
More Base Soil Choids Producting Columns Field Test Rooting Moderns Soil Description Soil Description Moderns Soil Description 1 0 0.00 Sight None Soil Description Soil Description 1 1 0 0.00 Sight None Soil Description Soil Description 1 1 0 0.00 Soil Description Soil Description Soil Description 1 1 0 0.00 Soil Description Soil Description Soil Description 1 1 0 0.00 10 0 Soil Description Soil Description 1 10 2.5 None None Soil Description Soil Description 1 10 5.7 None None Soil Description Soil Description Soil Description 1 10 5.7 None None Soil Description											
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Marce Data Soil Choids Providence (Columns Field Test Rooting) Performant Oddr Soil Soil Description Moderna Soil Description 1 No 62.0 Soil Test Rooting (No Moderna Soil Description Soil Description Moderna Soil Description 1 No 62.0 Soil To Catche, tax, candy, dy 9.5 - Catche, tax, candy, dy Description Description 1 No 20.2 Soil To Catche, tax, candy, dy Description Description Description 1 No 20.2 27 - Catche, tax, candy, dy Description Description Description 1 1 No No No Description Description Description Description 1 No 20.2 Sand, toroin with sandstone and interd Description Descrintion Description <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>•</td><td></td><td></td></t<>									•		
More Base Soli Choices Pilo Perbolence Pilon Soli Description Montre Viel MW33 0 0 derms Sign Soli Description Soli Description Soli Description 1 0 derms Sign Soli Description Soli Description Soli Description 1 0 derms Sign Soli Description Soli Description Soli Description 1 0 derms Sign None Soli Description Soli Description 1 10 derms Soli Description Soli Description Soli Description Soli Description 1 10 derms Soli Description Soli Description Soli Description Soli Description 1 10 derms Soli Description Soli Description Soli Description Soli Description 1 20 derms None None None Soli Description Soli Description 1 20 derms None None None Soli Description Soli Description 1 10 derms Soli Description Soli Description Soli Description Soli Description 10 derms									•		gradual.
Marce Data Description Soli Choids PID Perbelowin Pstraum Odar Soli Description Solid Description Monthly Monthly Monthly Solid Description Monthly Monthly Monthly Solid Description No 0.2 a No 2.3 bight None Solid Description Monthly Monthly Solid Description Interface Solid Description No 0.2 a None Sight None Solid Description Interface Solid Description No 0.2 a None Sight None Solid Description Interface Solid Description No 2.3 bight None None None Solid Description Interface Solid Description No 2.3 bight None None None Solid Description Interface Solid Description No 2.3 bight None None None None Interface Solid Description 122 7.4 None None None None Solid Chown with sandstone and groun strange with sandstone and groun sandswith sandstone and		•				•	, -			4.)	The lines between material types show on the profile log represent approximat
More Base Soil Choids Plob Perbolarm Soil Description Monitor Well MW-3 0 More Signal No 62.8 Soil Description The solution of the solutio		-								3.)	The well is protected with a locked stic
Market Description Soil Cholds P(D) Performant Performant Odds Soil Description Performant State Month Month Month 0 Output No 62.8 Slight Moderate Slight Norme Slight Norme </td <td>- 115</td> <td></td> <td>U</td> <td></td> <td></td> <td>÷</td> <td></td> <td></td> <td>مينينين <u>مناطقة من</u>ا</td> <td>2.)</td> <td>The well was constructed with 2" ID, 0 inch factory stotted, threaded joint, sch</td>	- 115		U			÷			مينينين <u>مناطقة من</u> ا	2.)	The well was constructed with 2" ID, 0 inch factory stotted, threaded joint, sch
Mark Soil Choolds Plot Performant Soil Columns Soil Choolds Month 000 000 8.8 Oddar Statistics Soil Description The Oddar				•	None	None		ly with clay and		- 1.)	The monitor well was edvanced on dat
Mark BaseSoil ChiorideChioride FIDPetroleum Potroleum ModernalSoil Stan Durbach-Sard Hoorn will calche nodules and or Durbach-Sard Hoorn will calche nodules and or 0.5° - Calche, tan, sandy with organics, dryMonthlor Well MV-3N 0.2 No 0.2 Signt NoneSignt Signt NoneSignt $0.5°$ - Calche, tan, sandy with organics, dryNo $0.5°$ - Calche, tan, sandy with organics, dryNo $0.5°$ - Calche, tan, sandy with organics, dryN $0.28.2$ NoneNo $0.28.2$ None $0.2°$ - Sand, toroish ned, five grained with calche notationN 0.27 Signt 0.27 NoneNone $0.2°$ - Sand, toroish ned, five grained with calche notationN 0.27 Signt $0.2°$ - Sand, toroish ned, five grained with calche and angenes ned to talkes notationNoneN 0.27 Sand, toroish ned, five grained with calche and angenesNoneN 0.27 Sand, toroish ned, five grained with calche and angenesNoneN 0.27 Sand, toroish ned, five grained and grassN 0.27 Sand, toroin with sandstone and day, dryN 0.27 Sand, toroin with sandstone and day, dryN 0.26 Sand, brown with sandstone, dryN 0.26 NoneNoneNSandNoneNoneNNoneNoneSand, brown, sith with sandstone roddkis, dryNSandNoneNoneNSandNoneNoneNSand <td>110</td> <td>516</td> <td>ND</td> <td>2.7</td> <td>None</td> <td>None</td> <td>• •</td> <td></td> <td></td> <td>. · (</td> <td>Completion Notes</td>	110	516	ND	2.7	None	None	• •			. · (Completion Notes
Mark Soil Chloride PID Petroleum Pottoleum Soil Description No 5.2 Sight None Soil Description Surface Stant, forom with calche nodules and or stant, dry Description Description Description Description Surface Stant, forom with calche nodules and or stant, dry Description Des	105		128	6.5	None	None		,,			
Market Soil Cholde Plo Petroleum Soil Description Monitor Well MV-3 202 Columns Field Test Reading Outor Stain Sta	100		ND	3.7		:		lv, with limited of			
Mark Soil Chorde Plo Petroleum Petroleum Soil Description Monitor Well MW-3 202 Columns Field Test Reading Odor Stain	96		212	6.5			95 - 100' - Sand, reddish brow	n, with limited cla	ay.		
Monte Soil Chloride PID Petroleum Petroleum Petroleum Petroleum Addres Stating Soil Description Monte Stating Monte Stating Monte Stating Monte Stating 200 Columns Field Test Reading Odor Stight Stight Stight Stight Stight Stight Stight None Stight None Stight Stight Stight Stight None Stight None Stight Stight None None Stight None None Stight Stight None	90		ND	5.2	None	None	90 - 95' - Clay, reddish brown,	sandy, with			
Mark and accSoilChoindePitoleum Petroleum OddrSoil Description Surface - Sand, brown with calche nodules and organics, dyMontionMontionMontion TELL Description Surface - Sand, brown with calche nodules and organics, dyDet Clink TELL Description Description Surface - Sand, brown with calche nodules and organics, dyDet Clink TELL Description Description TELL Description Description Surface - Sand, transith red, fine grainod with calche nodulesDet Clink TELL Description TELL Description Court Water ElectionND28.2NoneNone5 - 10 - Calche, tan, sandy with organics, dryTell Tell Tell Court Water ElectionTell Tell Tell Court Water ElectionND28.2NoneNoneNone0 - 20'- Sand, tannish red, fine grainod with calche nodulesTell Tell Tell Court Water ElectionND28.2NoneNone20 - 25' - Sand, trown with sandstone and singers, dryTell Tell Tell Solid Car, dry, a grysum layer at 42 bgsTell Tell Solid Car, dry, a grysum layer at 42 bgsTell T	ň		212	3.7	None	None		, fine grained wit	h ANNA		· ·
Market Soil Chloride PID Petroleum Soil Description Monitor Well MW-3 acc Columns Field Test Reading Octor Stain Soil Description Suiface - Sand, brown with calche nodules and organics, dry Det Oiled D					None	None	80 - 85' - Sand, brown, silly wit	th sandstone, dr			
And acc Soil Chloride PID Petroleum Soil Description Acc Columns Field Test Reading Oddr Stight Soil Description Surface-Sand, brown will caliche nodules and organics, dry Die Deiter	80				None	None		, silty with sands	tone		~
Mark Soil Chloride PID Petroleum Stain Soil Description soil Columns N0 62.8 Moderate Slight Surface-Sand, brown with caliche nodules and organics, dry 0.5' - Caliche, tan, sandy with organics, dry Dete Dilex Dete Dilex <td>3</td> <td></td> <td>1,452</td> <td>2.5</td> <td>None</td> <td>None</td> <td>nodules and gypsum layering,</td> <td>dry .</td> <td></td> <td></td> <td></td>	3		1,452	2.5	None	None	nodules and gypsum layering,	dry .			
And aceSoilChloridePitD Petroleum OddrSairlase - Sand, brown with calche nodules and organics, dryMonitor Well MW-3 $aceND62.8SightSuightSuight organics, drySurface - Sand, brown with calche nodules andorganics, dryDescriptionaceND35.7SightNone0 - 5 \cdot Calche, tan, sandy with organics, dryDescriptionaceND28.2None0 - 5 \cdot Calche, tan, sandy with organics, dryDescriptionND28.2NoneNone10 - 20^\circ - Sand, tamish red, fine grained withcalche nodulesIndicate the PSH lovel messaredindicate samples selected toLaborator Analysis.ND5.7NoneNone20 - 25 - Sand, tamish red, fine grained withcalche nodulesIndicate samples selected toLaborator Analysis.1223.6NoneNone20 - 25 - Sand, tamish red, fine grained withcalche nodulesIndicate samples selected toLaborator Analysis.1527.4NoneNone20 - 25 - Sand, torown with sandstoneargents, drySi - 30 - Sand, brown with sandstone and gypsumsandstone, dry1527.4NoneNone35 - 40 - 5and, brown with sandstone andday, dry, a gypsum layer at 42' bgs1588.4NoneNone45 - 55 - Sand, brown, salty with sandstone, dry1595.2NoneNone15055.2NoneNone15065.2NoneNone15075.2Sight None15085.2Sight None<$	10		ND	3.1	None	None	dry			Ε	Screen
And acc Soil Columns Field Test Reading Columns Field Test Reading ND Petroleum Petroleum Suiface - Sand, brown with caliche nodules and organics, dry 0 - 5' - Caliche, tan, sandy with organics, dry 0 - 5' - Caliche, tan, sandy with organics, dry Deta bilic Desember 18, 2009 Therease of Bennets 50.0	5		368	5.2			65 - 71)' - Clav nort eithrwith er	andstone nodulo		3	Sand Pack
Monte Soil Choride PID Petroleum Soil Description Monitor Well MW-3 ace Columns Field Test Reading Odor Stain Stain Soil Description	50		2,356	5.7			55 - 65' - Sand, brown, silty wit	th sandstone, dr			Demonite F8981 3889
Mark Soil Chloride PID Petroleum Petroleum Soil Description Monitor Well MW-3 ace Columns Field Test Reading Odor Stain Surface - Sand, brown with caliche nodules and organics, dry 0, -5' - Caliche, tan, sandy with organics, dry 0, -5' - Caliche, tan, sandy with organics, dry 0, -5' - Caliche, tan, sandy, dry Date Deficit December 16, 2009 ND 35.7 Slight None 5 - 10' - Caliche, tan, sandy, dry 0, -5' - Caliche, tan, sandy, dry Indicates the PSH lowd measured on on organics, dry no ND 28.2 None None 10 - 20' - Sand, tannish red, fine grained with caliche nodules Indicates the PSH lowd measured on on organics dry no ND 5.7 None None Indicates the PSH lowd measured on on organics dry no ND 5.7 None None Indicates the PSH lowd measured on on organics dry no 128 3.6 None None 20 - 25' - Sand, trown with sandstone lay grysum stringers, dry Indicates angles selected for Laborative drew measured on on caliche draw, dry 152 7.4 None None 30 - 35' - Sand, brown with sandstone and gypsum stringers, dry 35 - 40' - Sand, reddish brown wit	55		1,556	5.2	None	None					Bautocita Dallat Saai
Monte Soil Chloride PID Petroleum Petroleum Soil Description Monitor Well MW-3 ace Columns Field Test Reading Odor Stain Surface - Sand, brown with caliche nodules and organics, dry Surface - Sand, brown with caliche nodules and organics, dry Dete Diffed Deteometre 16, 2009 ace ND 55.7 Slight None 5 - 10' - Caliche, tan, sandy with organics, dry Deteometre 16, 2009 ace ND 28.2 None None None Test field	50		924	6.8	None	None				2	Grout Surface Seal
Monte Soil Chloride PID Petroleum Stight Soil Description ace Columns Field Test Reading Odor Stain Suiface-Sand, brown with caliche nodules and organics, dry Date Dilled December 16, 2009 0 ND 62.8 Moderate Slight None Suiface-Sand, brown with caliche nodules and organics, dry Date Dilled December 16, 2009 0 ND 35.7 Slight None 5 - 10' - Caliche, tan, sandy, dry Inclustes the PSH level measured 0 ND 28.2 None None None Inclustes the PSH level measured 10 20' - Sand, tannish red, fine grained with caliche nodules Inclustes the PSH level measured Inclustes the PSH level measured 128 3.6 None None None 20 - 25' - Sand, tannish red, fine grained with caliche notules Inclustes the PSH level measured on the point of coundwater tore! 128 3.6 None None 20 - 25' - Sand, brown with sandstone the point of coundwater tore! 129 2.4 None None Sight 30 - 35' - Sand, brown with sandstone and gypsum stringers, dry Sight diay, dry 35 -	15	276)			None	None	45 - 55' - Sand, brown with lim	ited clay and			• .
Und ace Soil Chloride PID Plote Petroleum Petroleum Stain Soil Description Monitor Well MW-3 0 ND 62.8 Moderate Slight Surface-Sand, brown with caliche nodulas and organics, dry Detroleum Petroleum Surface-Sand, brown with organics, dry Detroleum Petroleum Surface-Sand, brown with organics, dry 0 ND 62.8 Moderate Slight None Stain O'- S' - Caliche, tan, sandy with organics, dry Detroleum Petroleum Surface-Sand, brown with organics, dry 10 28.2 None None None 10 - 20' - Sand, tannish red, fine grained with caliche nodules Indicates the PSH level measured on 1128 3.6 None None 20 - 25' - Sand, reddish brown with sandstone layers, dry 20 - 25' - Sand, brown with sandstone layers, dry PiD Head-space reading in ppm obtained with e photo-ionization detodor. 128 3.6 None None 25 - 30' - Sand, brown with sandstone and gypsum stringers, dry 25 - 30' - Sand, brown with sandstone and gypsum PiD 152 7.4 None None 35 - 40' - Sand, prown with sandstone and day, dry, a gypsum layer at 42' bgs A'- 5' - Sand, reddish brown with sandstone and day, dry, a gypsum layer at 42' bgs <td></td> <td></td> <td></td> <td></td> <td>None</td> <td>None</td> <td>40 - 45' - Clay, brown, sandy w</td> <td>rith sandstone, c</td> <td>ry III</td> <td></td> <td></td>					None	None	40 - 45' - Clay, brown, sandy w	rith sandstone, c	ry III		
United Soil Chloride PID Petroleum Soil Description Monitor Well MW-3 acc Columns Field Test Reading Odor Stain Suight	10		1 084	58	None	None			and		
Jund Soil Chloride PID Petroleum Petroleum Monitor Well MW-3 ace Columns Field Test Reading Odor Stain Surface - Sand, brown with caliche nodules and organics, dry Detro Diled December 18, 2009 ace ND 62.8 Slight None Surface - Sand, brown with caliche nodules and organics, dry Detro Diled December 18, 2009 ace ND 35.7 Slight None 5 - 10' - Caliche, tan, sandy, dry Detro Diled December 18, 2009 ace ND 28.2 None None 5 - 10' - Caliche, tan, sandy, dry Detro Diled December 18, 2009 as ND 28.2 None None 10 - 20' - Sand, tannish red, fine grained with caliche nodules Indicates the PSH level measured on measu	16		520	4.9	None	None	clay, dry				,
Jund acce Soil Chloride Columns PID Field Test Reading Columns Petroleum Petroleum Moderate Soil Description Strace - Sand, brown with caliche nodules and organics, dry Monitor Well MW-3 0 ND 62.8 Moderate Slight Slight Soil Description Surface - Sand, brown with caliche nodules and organics, dry Date Difled December 16, 2009 ND 35.7 Slight None 5 - 10' - Caliche, tan, sandy with organics, dry Dete Difled Depth of Exploratory Boring 115 Piber. ND 28.2 None None 5 - 10' - Caliche, tan, sandy, dry Indicates the PSH level measured on On ND 5.7 None None 10 - 20' - Sand, tannish red, fine grained with caliche nodules Indicates the pSH level measured on Indicates the pSH level measured on ND 5.7 None None None 20 - 25' - Sand, reddish brown with sandstone layers, dry Indicates the proutowater level measured on 128 3.6 None None 20 - 25' - Sand, reddish brown with sandstone layers, dry Pib Albertonication dotodor. 152 2.5 2.5 2.5 - 30' - Sand, brown with sandstone and oxosum Pib Albertonication dotodor.	80		152	7.4	None	None	stringers, dry				
Orw Soil Chloride PID Petroleum Petroleum Monitor Well MW-3 ace Columns Field Test Reading Odor Stain Surface - Sand, brown with caliché nodules and organics, dry Date Drilled December 16, 2009 ace ND 62.8 Moderate Slight Surface - Sand, brown with caliché nodules and organics, dry Det Drilled December 16, 2009 as ND 35.7 Slight None 5 - 10' - Caliche, tan, sandy, dry Det Drilled Depth to GroundwaterGround waterGround waterGround waterGround waterGround water Heveling as ND 28.2 None None 10 - 20' - Sand, tannish red, fine grained with caliche nodules Indicates the PSH level measured or	25		152	2.5	•		layers, dry		sum 88		• .
Monitor Well MW-3 Monitor Well MW-3 And Soil Columns Field Test Reading Odor Stain ND 62.8 Moderate Slight Soil Description Surface - Sand, brown with caliche nodules and organics, dry Date Drilled Determit 8,209 ND 35.7 Slight None 5 - 10' - Caliche, tan, sandy with organics, dry Determit 9, 200 Determit 9, 200 ND 28.2 None None 5 - 10' - Caliche, tan, sandy, dry Indicates the PSH level measured on organics and organ	10		128	3.6		,	20 - 25' - Sand, reddish brown	with sandstone		_	Head-space reading in ppm obtaine
Jund Soil Chloride PID Petroleum Monitor Well MW-3 ace Columns Field Test Reading Odor Stain Soil Description ace ND 62.8 Moderate Slight Surface - Sand, brown with caliche nodules and organics, dry Deter Dilled December 18, 2009 ace ND 35.7 Slight None 0 - 5' - Caliche, tan, sandy with organics, dry Deter Dilled December 18, 2009 ace ND 35.7 Slight None 5 - 10' - Caliche, tan, sandy, dry If S - 10' - Caliche, tan, sandy, dry If indicates the PSH level measured on	5	Ŕ	ND	5.7				e grained with			measured on Indicates samples selected for
Own Soil Chloride PID Petroleum Monitor Well MW-3 ace Columns Field Test Reading Odor Stain Soil Description Deterolutes and organics, dry Deterolutes of Bentontes Seet. Deterolutes of Bentontes Seet. 79 Fl ND 62.8 Moderate Slight None 0 - 5' - Caliche, tan, sandy with organics, dry Deterolutes of Bentontes Seet. 79 Fl ND 35.7 Stight None 5' - Caliche, tan, sandy with organics, dry The organices of Bentontes Seet. The organices of Bentontes Seet.	10	Ż	ND	28.2	None	None					
Downsolution Monitor Well MW-3 ace Columns Columns Field Test Reading Odor Stain Stain Soil Description ND 62.8 Moderate Slight Slight Surface - Sand, brown with caliche nodules and organics, dry Deter Defined Description Slight None 0 - 5' - Caliche, tan, sandy with organics, dry Description Description	5	Ń		35.7	Slight	None	5 - 10' - Caliche, tan, sandy, dr	у .			
und Soil Chloride PID Petroleum Petroleum <u>Monitor Well MW-3</u> <u>ace Columns Field Test Reading Odor Stain Soil Description</u> <u>Surface Sed brown with callebe actuates act</u> <u>Dete Drited December 18, 2009</u>	U	X	\frown			1	organics, dry			Dept	h of Exploratory Boring115 F1 bg
Monitor Woll MW-3			<u>s Field Test</u>	Reading	Odor	Stain	Soil Description	iché nodules an			
		Soil	Chloride	PID	Petroleum		n .		<u> </u>		Monitor Well MW-3

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epth Now					· N	loni	tor Well	MW-4	·		
bund	Drilling Depth (Soil Columns	Chloride Field Test F	PID Reading	Petroleum I Odor	Petroleum Stain	Soil Description	on .			Monitor Well MW-4
-0	<u>Bopbi s</u>	Joidining	1010 1001	touding	<u></u>	<u>oun</u>	<u>.</u>	<u></u>	╶╗╢╗╴		of Bentonite Seat 76 Ft
-5				•	•				88	Depth to G	
					Excava	tion				Ground Wa	ter Bevation
- 10					LACAVA					L Indi	aries the PSH level measured
15					•					L India	cates the groundwater level sured on cates samples selected for
20		[· · ·		· .			Lab PID Hea	ates samples selected of protory Analysis. d-space reading in ppm obtained a photo-ionization detector.
		uit				•••					
		Conduit			Backf	111					
30		Ŭ			· .	•		· ·			
35	F° ¹		3,640	100	Slight	Heavy					1
40	E,	ž	(7,200)	34.6	None	None	Surface - 6' - Clay, dark damp	red, sandy with gravel,			
,	Ē		\smile	•	None	None	6 - 10' - Sand, grey, fin	e grained, dry	88		
15	Ē	en anter 190 gert 140 gert 141 gert 141 gert	5,232	32.6	None	None		h grey, very fine grained	199		
50	Ē	ter witte hit Witt Saud St	7,224	28.4	·		with some thin sandstol	ne and gypsum layering, o	"88	-	
55	E_20	127 201 2010 0 2010 0 2010 0 2010 0 10 0 10	7,832	31.3	None	None	15 - 26' - Sand, brown, v and sandstone, dry	very fine grained with clay		Grou	n Sunface Seal
	Ē_	COLLEGA Plan Ge I Pella D Al Dalle Sa pres	6902	20.9	None	None	and sandsidne, dry			Bent	conite Pellet Seal
50	Ē	93075 0. 1 00076 9 10 07007 931 9701	(,892)	30.8	None	None				_	1 Pack
5	- 30 -	i Biate B 18 m 110 Ray Rige	1,960	27.7	Nama	Nama	26 - 35' - Sand, dark reg grained with clay and sa			San	J Fack
ro	-∞	CONTRACTOR DE BRIDE DE BRIDE	1,392	32.0	None	None			88	E Son	en .
75	Ē.	1 01040 0 22 0114 01140 011	924	30.3	None	None					-
	Ē	and Bine		00.0	None	None	35 - 50' - Clay, dark red	, silty with sandstone, dry			
90	-45		1,592	31.4	None	None					
15	- - 50		1,256	27.2		110110					
80	-38	011-1 011 +4 0131-5	(7,224)		None	None	50 - 55' - Clay, red, silty	with sandstone, damp			
	Ē.		(F 2000)		None	None	55 - 60' - Clay, red, silty	with sandstone, dry		·	· •
	Ē		(5,232)		None	None	60 - 65' - Sandstone, da	ark red, wet			
00	E es	vel Bier	1,256		None	None	65 - 70' - Sand, dark red	d, silly with sandstone, dr			
105	Ę≂	TANK 2	\bigcirc		None	None	· .	-			•
112	Ē		\bigcirc		None	None	70 - 80' - Sand, red, silt sandstone, dry	y with some clay and		Com	pletion Notes
113	E 78				None	None	•			1.) The m	unitor well was advanced on date
115	⊷ 50	T have a second s								2.) The winch fa	air rotary drilling techniques. All was constructed with 2° ID, 0.0 Intory statted, threaded joint, sche
,										• 3.) The w	C pipe. Ill is protected with a locked slick over and compression cap.
										4.) The lin on the	es between material types shown profile log represent approximate aries. Actual transitions may be
							,			gradua	
								¢			
Mo		Well //W-4	Details			BOPO		Basin En	viron	ment	al Consult
S			SB-1				dke Fed #1 New Mexico	Prep By:		Che	cked By: CJB
						-71		April 5, 20	nu .		

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epth elow					S	oil Boring	SB-2		
ound	Soil	Chloride	PID	Petroleum	Petroleum				Soil Boring SB-2
rface	Column	s Field Test		Odor Slight	<u>Stain</u>	Soil Description Surface - Sand, reddish brow	vn with caliche and		Date Drilled December 14, 2009
	R	ND	0.3	Slight Slight	None None	organics, dry			Thickness of Bentonite Seat. <u>75 Ft</u> Depth of Exploratory Boring <u>75 Ft bgs</u>
5	ЬН	(1,630)	1.0	ongin	NUNE	0 - 10' - Caliche, tan, soft, dry	y .		Depth to Groundwater
-	БН	\sim		Slight	None				Ground Water Elevation
10 	क्तिन	1,000	1.3	-					Indicates the PSH level measured
	ų,			None	None	10 - 15' - Sand, tan to reddist	h with sandstone, dry		Indicates the groundwater level
- 15		(416)	1.6	None	Nono	15 - 20' - Sand, red with sand	detone day		measured on
- 20		212	8.1	NOTE	None	· · · · · · · · · · · · · · · · · · ·			Laboratory Analysis. PID Head-space reading in ppm obtained
				None	None	20 - 25' - Sand, reddish brow	n, with sandstone, dry	,	with a photo-ionization detector.
- 25		580	7.7			25 - 30' - Clay, dark reddish l	hown candy with		
	3121			None	None	sandstone, dry	brown, sandy with		
- 30		180	6.8	Nees	Nasa	30 - 35' - Sand, dark reddish	brown with sandstone		
- 35		128	6.9	None	None	dry			
				None	None	35 - 40' - Sand, brown with s clay, dry	andstone and limited	•	
40		180	4.9						
		\frown		None	None	40 - 50' - Sandstone, brown	with intorhaddad		
45		(152)	5.5	· ·		gypsum layering	with Interpedued		
- 50		368	3.0	None	None		•		
			5.0	None	None				
- 55		5,232	3.3			50 - 60' - Sand, dark reddish clay and sandstone, dry	brown with limited		
	11211			None	None	and an an an an and any			
~60		520	3,1			, ,			
		(152)	2.0	None	None	60 - 70' - Sand, red with clay	and some sandstone		
-65	2312	(152)	2.8	None	None	(silty clay), dry	•		
- 70		152	2.1			70 751 0 "			
	$\not\equiv$	\sim		None	None	70 - 75' - Sand, grey with gyp dry	psum and some clay,		
- 75	i i i i i i i i i i i i i i i i i i i	_D (924)	2.4						
						•			
								,	
			•						•
				•					
								·	
								• •	· .
									Completion Notes
				•					1.) The monitor well was advanced on date
•									using eir rotary drilling techniques. 2.) The lines between material types shown
									on the profile log represent approximate boundaries. Actual transitions may be
									gradual.
								1	
									· .
							. *		
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						PCO	Basin E	Invironn	nental Consulti
S	oil Bo	ring SB	-2			Rodke Fed #1		By: CDS	Checked By: CJB
				Eddy	Count	y, New Mexico	· · · ·	5, 2010	1

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Depth below					Sc	oil Boring SB-3
ground Drilling surface Depth C	Soil Columns	Chloride Field Test	PID Reading	Petroleum <u>Odor</u>		Soil Description
ǰ				Exc	avation	Г.,
	63-3	128	2.8	Slight	None	Surface - Callche, tan, dry
	S	(128)	1.4	None	None	0 - 5' - Sand, tan with caliche nodules, dry
		\bigcirc	•	None	None	5 - 10' - Sand, light red with caliche nodules, dry
		128	1.4	None	None	10 - 15' - Sand, red with sandstone nodules, dry
		152	1.6	Nono	Nono	15 - 20' - Sand, reddish brown and gypsum, grey,
		128 -	1.9	None	None	layered, dry
		ND	1.9	None	None	20 - 25' - Sand, reddish brown, with sandstone, dry
		\bigcirc		None	None	25 - 30' - Sand, dark reddish brown, with gypsum, dry
		ND ·	1.9	None	None	30 - 35' - Sand, brown with sandstone, dry
		ND	0.9	None	None	35 - 40' - Sand, brown with sandstone and clay
		1,556	1.9			with gypsum, dry
		(217)	1.9	None	None	40 - 45' - Sand, brown with sandstone and clay, dry
-55		180	2.1	None	None	45 - 50' - Clay, dark red, sandy with sandstone, dry
΄ – 50 – 60 – Ε		100	2.1	None	None	50 - 55' - Clay, dark reddish brown with clay, sandstone and gypsum stringers, dry
		244	1.8	None	None	55 - 60' - Sandstone, brown with clay, dry
	鬪	ND	2.5			60 - 65' - Clay, dark red, silly with limited
	躙	ND	1.9	None	None	sandstone, dry
-75 E		ND	2.9	None	None	65 - 70' - Clay, reddish brown, silty with limited sandstone, dry
E _n E _n	μ		2.5	•		
	•		•	,		
					•	

Soil Boring SB-3

December 15, 2009 Date Driffed Thickness of Bentonite Seal____70 Ft Depth of Exploratory Boring 70 Ft bgs Depth to Groundwater Ground Water Elevation

- Indicates the PSH level me
- T

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PID

Soil Boring SB-3

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BOPCO Joesphine Rodke Fed #1 Eddy County, New Mexico

Basin Environmental Consulting

Prep By: CDS Checked By: CJB April 5, 2010

Completion Notes

The monitor well was advanced on da using all rotary drilling techniques.
 The lines between material types sho on the profile log represent approxim boundaries. Actual transitions may b gradual.

below pround Drillin	ng Soil	Chloride	PID	Petroleum		oil Boring SB-5	•	Soil Boring SB-5
urface Dept	•	Field Test		Odor	<u>Stain</u>	Soil Description	Date	Drilled December 16, 2009
			· ·	Exc	avation		Dept	uness of Bentonite Seat <u>70 F1</u> h of Exploratory Boring <u>70 Ft bgs</u> h to Groundwater
Ēr	1000	128	2.9	None	None	Surface - Sand, red, dry	Grou	nd Water Elevation
	× X			None	None	1' - 5 - Caliche, tan, dry	I	Indicates the PSH level measured
- 10 - 5 - 15 - 10		212	3.5	None	None	5 - 10' - Sand, tannish brown with caliche nodules, dry	L L	on Indicates the groundwater level measured on
-20		212	3.4	None	None	10 - 15' - Sand, (sandstone), reddish brown with sandstone nodules, dry, gypsum layer at 19'	O PID	Indicates samples selected for Laboratory Analysis. Head-space reading in ppm obtains with a photo-ionization detector.
-15		238	2.4	None	None	15 - 20' - Gypsum, grey, sandy, dry		• .
•		ND	13.2	None	None	20 - 25' - Clay, reddish brown, sandy with sandstone, dry	•	
*		180	4.3	None	None	25 - 30' - Sand, brown, silty with sandstone, dry		
₀ – ∞		152	1.4	None	None	30 - 35' - Sand, reddish brown, fine grained with sandstone, dry		
- 35		ND	11.2	None	None	35 - 40' - Clay, reddish brown, sandy with sandstone, dry		
Ē		ND	5.7	None	None	40 - 45' - Clay, dark reddish brown, sandy, with		•
50 E	5151	2,892	3.7	None	None	sandstone, damp 45 - 50' - Clay, dank red, sandy, with sandstone, damp		
-33 L -30 L		1,168	3.9	None	None	50 - 55' - Clay, dark red, sandy, dry		
-50		520	4.2 ·	None	None	55 - 60' - Clay, dark red, sandy with gypsum		
-85 - -70 - -70 - -70 - -66		416	5.0	None	None	stringer, dry		
70 E		(416)	7.2	None	None	60 - 65' - Clay, red, sandy with gypsum		
-75 E				None	None	65 - 70' - Sand, brown with sandstone, dry		
		212	7.5					
						· .		

Completion Notes

The monitor well was advanced on date using air rolary drilling tochniques.
 The lines between material types shown on the profile top represent approximate houndaries. Actual transitions may be

Soil Boring SB-5

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BOPCO Jóesphine Rodke Fed #1 Eddy County, New Mexico

Basin Environmental Consulting Checked By: CJB

Prep By: CDS April 5, 2010

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								brundarias. Actual bansitons may be gradual.
								 The monitor well was advanced on date using air rotary drilling techniques. The lines between material types shown on the profile log represent approximate
								Completion Notes
-					4 8		• •	
								· · ·
É.s		1,084				and the second sec		
		1,256		None None	None	75 - 80' - Clay, dark red, with gypsum, damp 85 - 85' - Sand, brown with sandstone, dry	· .	
		2,636	16.1 14.6	None	. None	70 - 75' - Clay, red, silty with sandstone, dry		
		2,636	11.1	None	None	65 - 70' - Clay, dark red, silly with sandstone,	dry .	
60		416	5.0	None None	None None	60 - 65' - Clay, dark red, silty with sandstone,	, dry	· · · ·
- ³⁰ - 55		8,500	45.6 21.7	None	None	50 - 60' - Clay, dark brown, sandy with sandst damp	bne,	
- - - - - -		280	20.6 45.8	None	None	45 - 50' - Sand, dark red with sandstone and I clay, dry	imited .	
		2,196	16.6	None None	None None	 40 - 45' - Sand, brown with sandstone, dry 		
- 35		1,084	16.9	None	None	30 - 35' - Sand, dark red with sandstone and gypsum stringer, dry 35 - 40' - Sand, red with sandstone and limiter	d	
- 25 - 25 - 31 - 31		ND 152	13.4 1.4	None	None	20 - 30' - Sand, reddish brown with sandstone	e, dry	
- 20 - 20		152	11.8	None None	None None	dry, sandstone at 22'	-	Indicates samples selected for Laboratory Analysis. PID Head-space reading in ppm obtained with a photo-tonization detector.
- 15		238	2.4	None	None	15 - 20' - Sand, tannish red with callche nodul	P C	 Indicates the PSH level measured on
- 5 		152	10.5 10.8	None	None	1' - 15 - Caliche, tan, dry	·	Depth to Groundwater Ground Water Elevation
Ē		ND	8.2	Slight None	None None	Surface - Sand, reddish brown with catiche no and organics dry	dutes	Date Drilled <u>December 17, 2009</u> Thickness of Bentantie Seat <u>85F1</u> Depth of Exploratory Boring <u>85 F1 bas</u>
ground surface	Soil	Chloride Field Test F		Petroleum Odor	Petroleum Stain	Soil Description		Soil Boring SB-6

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				-	· ·			
Depth				S	oil Boring S	SR-8		
round	Soil Chloride	PID	Petroleum			0-0		Soil Boring SB-8
urface	Columns Field Tes		<u>Odor</u>	Stain	Soil Description			Date Drilled December 18, 2009_
F	ND ND	32.4	None	None	Surface - Sand, brown with so	me organics		Thickness of Bentonite Seat 75 Ft
ŧ.		26.0	None	None	1 - 5' - Caliche, white, soft, dry			Depth of Exploratory Boring <u>75 Ft bgs</u> Depth to Groundwater
E_s E		26.8	None	: None	5 -12 - Caliche, white, soft with	h some brown sand		Ground Water Elevation
- 10	468	31.1						. Indicates the PSH level measured
Ē			None	None	12 - 15' - Sand, light brown, ve some caliche	ry fine grained with	·	on Indicates the groundwater level
– ¹⁵	580	30.0	None	None	15 - 17' - Caliche, white, with b harder at 16'	orown sand, soft, dry.		measured on Indicates samples selected for
- 20	1,256	33.7	1 tonic	None	17 - 20' - Sand, brown to red w caliche, clayey	vith some white		Laboratory Analysis. PID Head-space reading in ppm obtained with a photo-ionization detector.
Ē			None	None	20 - 27' - Sand, dark red with v clayey	white sandstone,		
-25	\$ <u>2,532</u>	29.0	None	None	27 - 30' - Sand, dark red with v			
Ē.s	2,892	33.4	None	None	sandstone, increasing clay cor	ntent		
Ē			None	None	30 - 31' - Sandstone, dark red 31 - 35' - Sandstone, dark red	to grey, hard to grey, clayey		
Ē™		35.0		;	25 42' Condebase mas to d			
E 	520	34.4	None	None	35 - 42' - Sandstone, rose to d to grey with some harder inter			
E 45	580	36.3	None	None	42 - 45' - Clay, dark red, dry			
-50	212	34.6	None	None	45 - 50' - Sandstone, light brow layered intervals, clayey at 48'			
Ē			None	None	50 - 60' - Sandstone, light brow	wa to brown with		
	2,052	35.2	None	None	some harder intervals and son			
- - -	2,196	27.6	None	None	60 - 65' - Clay, dark red, silly v	vith sandstone. drv		
- - -	280	36.2	None	None	65 - 70' - Sand, reddish brown and gypsum stringers	-		
En .		36.0		·	70 - 75' - Clay, dark red, silty v	with sandstane day		
E.,		35.0	None	None	ru - ru - olay, daik ieu, sily v			
			•				• •	•
			·					
					. ,			•
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				1				
								Completion Notes
						•		1.) The monitor well was advanced on date using air rotary drilling techniques,
							•	 The lines between material types shown on the profile log represent approximate
								boundaries. Actual transitions may be gradual.
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			-		•			
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	·····				PCO			antal Canault
S	oil Boring Sl	B-8	Joesi		Rodke Fed #1			
=					y, New Mexico	Prep By April 5,		Checked By: CJB
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Dep					Sc	oil Boring SB-9	_	
belo grou		Chloride	PID	Petroleum I				Soil Boring SB-9
surfa		Field Test		Odor	Stain	Soil Description		Date Drilled
۰ ۲°	10.00	ND	17.3	Moderate	Slight	Surface - Sand, brown with caliche nodules and organics, red sand at 1' and caliche at 3'		Thickness of Bentonite Seat115.Ft
i E				Slight	None	1 - 5' - Caliche and sand, tan with organics, dry		Depth of Exploratory Boring <u>115 Ft bos</u> Depth to Groundwater
F₽	6	ND	10.5		•			Ground Water Elevation
Ē				None	None	5 -10' - Caliche and sand, tan, dry		
E 10		ND	9.2	· ·		10 - 15' - Sand, red, fine grained with caliche, dry	,	Indicates the PSH level measured
Ē.,	20	ND	8.3	None	None	TO - 10 - Sano, reu, sne granieu wiur caliche, ury		Indicates the groundwater level
F	12.1	NO	0.5	None	None	15 - 20' - Sand, tannish red with caliche and		indicates samples selected for
E 20		128	7.2	NONE	: A	sandstone		Laboratory Analysis. PID Hood-space reading in ppm obtained
Ē				None	None	20 - 25' - Sand, reddish brown with sandstone		with a photo-ionization detector.
- 25		152	4.5			layering, dry	•	× ×
Ē				None	None	25 - 30' - Sand and sandstone, brown with a gypsum stringer, dry		
Ę∞		152	7.6					
E				None	None	30 - 35' - Sand and sandstone, brown with limited clay and sandstone		
F≈	717	520	7.2			35 - 40' - Sand, reddish brown with sandstone and		•
Ē				None	None	clay, dry with a gypsum layer at 42'		
- ~		1,084	7.1			40 - 45' - Clay, brown, sandy with sandstone and		
Ē		4 555	6.2	None .	None	clay, dry		
E**		1,556	6.3		•			· .
E.	2583	024	63	None	None	45 - 55' - Sand and sandstone, brown with limited		
Ē		924	6.2	Nana	; None	clay		·
E.		416	5.6	None	None	•		
Ē		410	5.5	None	None			
E.		2,356	5.1	NUTIO	NONG	55 - 65' - Sand, brown, silly with sandstone, dry		
Ē	193 J 11 J			None	None			
E_65		368	4.8					
Ē				None	None	65 - 70' - Clay, red, silty with sandstone, dry		
<u>–</u> 70		ND	4.5					
Ē	単目			None	None	70 - 75' - Clay, dark red, with sandstone and gypsum layer, dry		
E - rs		1,452	4.1			75 - 80' - Sand, reddish brown, silty with limited		
				None	None	clay and sandstone		
∎ F∞	2012	212	3.5					
Ē				None	None	80 - 85' - Sand, brown, silty with sandstone, dry		
		212	3.9					
F.	254	ND		None	None	85 - 90' - Sand, tannish brown with sandstone, dry		
		ND	3.7	Nees	Mana	90 - 95' - Clay, reddish brown, sandy with		
Ē.		212	3,9	None	None	sandstone, dry		
F Ĩ		~ **	3,0	None	None	95 - 100' - Sand, reddish brown with limited		•
E.		ND	3.6			sandstone and clay, dry		
Ē				None	None			
– 10	s 1	128	2.7		-	100 - 110' - Sand, dark red, silty with cemented sandstone and limited clay, dry		
Ē				None	None			
Ē,		ND	3.1			110 - 115' - Sand, dark red, silty with clay and		Completion Notes
Ē	翅			None	None	some gypsum, dry		1.) The monitor well was advanced on data
C,,	ہ انگنا 7	D	3.3					using air rotary drilling techniques. 2.) The lines between material types shown
						· .		on the profile tog represent approximate boundaries. Actual transitions may be
								gradual.
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						PCO Basin F	nuironn	antal Canaulting
		ing CD	2 0	loco-		Rodke Fed #1		nental Consulting
	Soil Bo	my se	-3 -3				IY: CDS	Checked By: CJB
1					Jount	y, New Mexico	. 2010	

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Appendix B Analytical Reports

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PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS; NM 88240

December 23, 2009

Camille Bryant Basin Environmental Consulting, LLC. P.O. Box 381 Lovington, NM 88260

Re: BOPCO (Josephine Rodke Federal #1)

Enclosed are the results of analyses for sample number H18910, received by the laboratory on 12/18/09 at 11:07 am.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021 Method SW-846 8260 Method TX 1005 Benzene, Toluene, Ethyl Benzene, and Total Xylenes Benzene, Toluene, Ethyl Benzene, and Total Xylenes Total Petroleum Hydrocarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

Cardinal Laboratories is accredited though the State of Colorado Department of Public Health and Environment for:

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

Accreditation applies to public drinking water matrices.

Total Number of Pages of Report: 14 (includes Chain of Custody)

Sincerely, OOM

Celey D. Keene Laboratory Director

This report conforms with NELAP requirements.



ANALYTICAL RESULTS FOR BASIN ENVIRONMENTAL CONSULTING, LLC ATTN: CAMILLE BRYANT P.O. BOX 381 LOVINGTON, NM 88260 FAX TO: (575) 396-1429

Receiving Date: 12/18/09 Reporting Date: 12/22/09 Project Owner: 24 510 (BOPCO) Project Name: JOSEPHINE RODKE FEDERAL #1 Project Location: EDDY CO., NM Analysis Date: 12/22/09 Sampling Date: 12/11/09 & 12/14/09 Sample Type: SOIL Sample Condition: COOL & INTACT @ 1°C Sample Received By: NF Analyzed By: HM

	1	C
LAB NUMBER	R SAMPLE ID	(mg/kg)
H18910-1	SB-1 SURFACE	3,640
H18910-2	SB-1 @ 5'	7,200
H18910-3	SB-1 @ 15'	8,160
H18910-4	SB1 @ 20'	8,000
H18910-5	SB-1 @ 25'	2,960
H18910-6	SB-1 @ 35'	1,380
H18910-7	SB-2 @ 5'	1,630
H18910-8	SB-2 @ 15'	480
H18910-9	SB-2 @ 25'	576
H18910-10	SB-2 @ 35'	160
H18910-11	SB-2 @ 45'	224
H18910-12	SB-2 @ 55'	7,300
Quality Contr	ol	500
True Value Q	C	500
% Recovery		100
Relative Perc	ent Difference	< 0.1

METHOD: Standard Methods 4500-CIB Note: Analyses performed on 1:4 w:v aqueous extracts.

Chemist

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H18910 Basin Environmental

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyse. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiarier affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise. Result rolate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



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	CI
LAB NUMBER SAMPLE ID	(mg/kg)
H18910-13 SB-2 @ 65'	32
H18910-14 SB-2 @ 70	272
H18910-15 SB-2 @ 75'	832
H18910-16 SB-3 @ 5'	160
H18910-17 SB-3 @ 15'	224
H18910-18 SB-3 @ 25'	80
H18910-19 SB-3 @ 35'	48
H18910-20 SB-3 @ 40'	1,630
H18910-21 SB-3 @ 45'	144
H18910-22 SB-3 @ 55'	416
H18910-23 SB-3 @ 65'	16
H18910-24 SB-3 @ 70'	96
Quality Control	500
True Value QC	500
% Recovery	100
Relative Percent Difference	< 0.1

METHOD: Standard Methods 4500-CI'B Note: Analyses performed on 1:4 w:v aqueous extracts.

Chemist

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Date

H18910 Basin Environmental

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	CI
LAB NUMBER SAMPLE ID	(mg/kg)
H18910-25 SB-4 @ 5'	16
H18910-26 SB-4 @ 15'	1,020
H18910-27 SB-4 @ 25'	144
H18910-28 SB-4 @ 35'	80
H18910-29 SB-4 @ 45'	64
H18910-30 SB-4 @ 55'	32
H18910-31 SB-4 @ 65'	< 16
H18910-32 SB-4 @ 75'	48
H18910-33 SB-4 @ 85'	32
H1810-34 SB-4 @ 95'	48
H18910-35 SB-4 @ 105'	32
H18910-36 SB-4 @ 115'	32
Quality Control	500
True Value QC	500
% Recovery	100
Relative Percent Difference	< 0.1

METHOD: Standard Methods4500-CI'BNote: Analyses performed on 1:4 w:v aqueous extracts.

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Date

H18010 Basin Environmental

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	CI
LAB NUMBER SAMPLE ID	(mg/kg)
H18910-37 SB-4 @ 125'	16
H18910-38 SB-4 @ 135'	32
H18910-39 SB-4 @ 140'	48
H18910-40 SB-5 @ 5'	224
H18910-41 SB-5 @ 15'	400
H18910-42 SB-5 @ 25'	176
H18910-43 SB-5 @ 35'	. 80
H18910-44 SB-5 @ 45'	3,040
H18910-45 SB-5 @ 50'	1,710
H18910-46 SB-5 @ 55'	464
H18910-47 SB-5 @ 65'	1,820
H18910-48 SB-5 @ 70'	496
H18910-49 SB-6 @ 5'	160
Quality Control	500
True Value QC	500
% Recovery	100
Relative Percent Difference	< 0.1

METHOD: Standard Methods 4500-CI'B Note: Analyses performed on 1:4 w:v aqueous extracts.

Chemist

Date

H18910 Basin Environmental

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	CI
LAB NUMBER SAMPLE ID	(mg/kg)
H18910-50 SB-6 @ 15'	224
H18910-51 SB-6 @ 25	144
H18910-52 SB-6 @ 35'	1,140
H18910-53 SB-6 @ 45'	272
H18910-54 SB-6 @ 55'	9,600
H18910-55 SB-6 @ 65'	2,200
H18910-56 SB-6 @ 75'	4,360
H18910-57 SB-6 @ 80'	6,480
H18910-58 SB-6 @ 85'	1,360
Quality Control	500
True Value QC	500
% Recovery	100
Relative Percent Difference	< 0.1

METHOD: Standard Methods4500-Cl'BNote: Analyses performed on 1:4 w:v aqueous extracts.

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Date

H18910 Basin Environmental

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Receiving Date: 12/18/09 Reporting Date: 12/23/09 Project Owner: BOPCO (24510) Project Name: JOSEPHINE RODKE FEDERAL #1 Project Location: EDDY COUNTY, NM Sampling Date: 12/11/09 - 12/17/09 Sample Type: SOIL Sample Condition: COOL & INTACT @ 1°C Sample Received By: NF Analyzed By: AB/CK

	GRO	DRO	DRO ext.
	(C ₆ -C ₁₀)	(>C10-C28)	(>C ₂₈ -C ₃₅)
LAB NUMBER SAMPLE ID	(mg/kg)	(mg/kg)	(mg/kg)
ANALYSIS DATE	12/20/09	12/20/09	12/20/09
H18910-1 SB-1 SURFACE	<10.0	18.5	<10.0
H18910-2 SB-1 @ 5'	<10.0	<10.0	<10.0
H18910-7 SB-2 @ 5'	<10.0	<10.0	<10.0
H18910-16 SB-3 @ 5'	<10.0	<10.0	<10.0
H18910-25 SB-4 @ 5'	<10.0	<10.0	<10.0
H18910-40 SB-5 @ 5'	<10.0	<10.0	<10.0
H18910-49 SB-6 @ 5'	<10.0	<10.0	<10.0
Quality Control	574	583	-
True Value QC	500	500	-
% Recovery	115	117	-
Relative Percent Difference	37	81	-

METHODS: TPH GRO & DRO: EPA SW-846 8015 M extended. Reported on wet weight. Not accredited for GRO/DRO/EXT. DRO.

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H18910 TPHEXT BASIN

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LAB NO.	SAMPLE ID	BENZENE	TOLUENE	BENZENE	XYLENES
		(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
ANALYSIS DA	TE:	12/21/09	12/21/09	12/21/09	12/21/09
H18910-1	SB-1 SURFACE	<0.050	<0.100	<0.050	<0.300
H18910-2	SB-1 @ 5'	<0.050	<0.100	<0.050	<0.300
H18910-7	SB-2 @ 5'	<0.050	<0.100	<0.050	<0.300
H18910-16	SB-3 @ 5'	<0.050	<0.100	<0.050	<0.300
H18910-25	SB-4 @ 5'	<0.050	<0.100	<0.050	<0.300
H18910-40	SB-5 @ 5'	<0.050	<0.100	<0.050	<0.300
H18910-49	SB-6 @ 5'	<0.050	. <0.100	<0.050	<0.300
Quality Control		0.050	0.050	0.049	0.137
True Value QC		0.050	0.050	0.050	0.150
% Recovery		100	100	98.0	91.3
Relative Percer	nt Difference	3.9	2.0	4.2	3.6

METHODS: BTEX - SW-846 8021B

Reported on wet weight.

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TEXAS NELAP ACCREDITATION T104704398-08-TX FOR BENZENE, TOLUENE, ETHYL BENZENE, AND TOTAL XYLENES.

Lab Director

23/09

H18910 BTEX BASIN .

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deamed waived unless made in writing and received by Cardinal within thirty (30) days after competion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business Interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

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† Cardinal cannot accept verbal ch	† Cardinal cannot accept verbal changes. Please fax written changes to 575-393-2476.	575-393-2476.				
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ARDINAL LABORATORIES 101 East Marland, Hobbs, NM 88240 (575) 393-2326 Fax (575) 393-2476	Project Manager	D Mains Hugh	#575 205 7240 Fax# 3916	me. Josephine Rodle &	Sampler Name: (number Brund	FOR LUB USE GALY	Lab I.D. Sample I.D.		H18710-11 58-20 45'	-13 516-20 661	-15 515-2 @ 40'	-16 58-30 5'	-19 53-30 351	L () Sin and therifs exclusive remeay for any	Mentana Caro Li Li Chinese a 1600 Mer Relinoui	Bernet The Off	Time:	Delivered Bv: (Circle One) Sampler - UPS - Bus - Other:	t Cardinal cannot accept verbal changes. Please fax written changes to 575-393-2476.

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ARDINAL LABORATORIES 101 East Marland, Hobbs, NM 88240 (575) 393-2326 Fax (575) 393-2476	S 240 2476					Page	of (0	
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affuncts or successors ariang out of or related to the performance of services hereunder b Sampler Relinquished:	Cardinal, regardness of whether such cleim	sybused upon any of the above stated reasons	Phone Result:		No Add'I Phone #:	3#:		
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Project Manager: Carmille Dilucial Address: 3500 Plaims Hull City: Lovi Witton State: NW Zip: 85 Phone #:575 612 -7210 Fax #: 575 396 Project #: 245 510 Project Owner: 1309 Project Location: 500 Mar Kock & Federal Project Location: 500 Mar Wolf of Mar		BILL TO		AN	ANALYSIS REQUESI	ST
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December 30, 2009

Camille Bryant Basin Environmental Consulting, LLC. P.O. Box 381 Lovington, NM 88260

Re: BOPCO 24 510 (Josephine Rodke Federal #1)

Enclosed are the results of analyses for sample number H18938, received by the laboratory on 12/22/09 at 4:50 pm.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021 Method SW-846 8260 Method TX 1005 Benzene, Toluene, Ethyl Benzene, and Total Xylenes Benzene, Toluene, Ethyl Benzene, and Total Xylenes Total Petroleum Hydrocarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

Cardinal Laboratories is accredited though the State of Colorado Department of Public Health and Environment for:

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

Accreditation applies to public drinking water matrices.

Total Number of Pages of Report: 12 (includes Chain of Custody)

Sincerely,

Celey D. Keene Laboratory Director

This report conforms with NELAP requirements.



ANALYTICAL RESULTS FOR BASIN ENVIRONMENTAL CONSULTING, LLC ATTN: CAMILLE BRYANT P.O. BOX 381 LOVINGTON, NM 88260 FAX TO: (575) 396-1429

Receiving Date: 12/22/09 Reporting Date: 12/29/09 Project Owner: 24 510 (BOPCO) Project Name: JOSEPHINE RODKE FEDERAL #1 Project Location: EDDY CO., NM Analysis Date: 12/28/09 Sampling Date: 12/14/09, 12/17/09 & 12/18/09 Sample Type: SOIL Sample Condition: COOL & INTACT @ 6°C Sample Received By: HM Analyzed By: HM

	CI
LAB NUMBER SAMPLE ID	(mg/kg)
H18938-1 SB-2@60'	384
H18938-2 SB-6 @ 40'	2,080
H18938-3 SB-6 @ 60'	656
H18938-4 SB-7 @ 5'	192 .
H18938-5 SB-7 @ 15'	480
H18938-6 SB-7 @ 25'	672
H18938-7 SB-7 @ 35'	336
H18938-8 SB-7 @ 45'	752
H18938-9 SB-7 @ 55'	1,760
H18938-10 SB-7 @ 60'	4,480
H18938-11 SB-7 @ 65'	208
H18938-12 SB-7 @ 75'	16
Quality Control	500
True Value QC	500
% Recovery	100
Relative Percent Difference	< 0.1

METHOD: Standard Methods Note: Analyses performed on 1:4 w:v aqueous extracts. Not accredited for Chloride.

Chemist'

12/30/19

4500-CI'B

Date

H18938 Basin Environmental

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profils incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services herounder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



ANALYTICAL RESULTS FOR BASIN ENVIRONMENTAL CONSULTING, LLC ATTN: CAMILLE BRYANT P.O. BOX 381 LOVINGTON, NM 88260 FAX TO: (575) 396-1429

Receiving Date: 12/22/09 Reporting Date: 12/29/09 Project Owner: 24 510 (BOPCO) Project Name: JOSEPHINE RODKE FEDERAL #1 Project Location: EDDY CO., NM Analysis Date: 12/28/09 Sampling Date: 12/18/09 & 12/21/09 Sample Type: SOIL Sample Condition: COOL & INTACT @ 6°C Sample Received By: HM Analyzed By: HM

· · · ·	CI
LAB NUMBER SAMPLE ID	(mg/kg)
H18938-13 SB-7 @ 85'	160
H18938-14 SB-7 @ 95'	176
H18938-15 SB-7 @ 100'	240
H18938-16 SB-8 @ 5'	96
H18938-17 SB-8 @ 15'	640
H18938-18 SB-8 @ 25'	3,080
H18938-19 SB-8 @ 35'	1,310
H18938-20 SB-8 @ 40'	640
H18938-21 SB-8 @ 45'	544
H18938-22 SB-8 @ 55'	1,730
H18938-23 SB-8 @ 60'	2,120
H18938-24 SB-3 @ 65'	336
Quality Control	500
True Value QC	500
% Recovery	100
Relative Percent Difference	< 0.1

METHOD: Standard Methods Note: Analyses performed on 1:4 w:v aqueous extracts.

Not accredited for Chloride.

Chemis

4500-CI'B

Date

H18938 Basin Environmental

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cauco whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be flable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiariea, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



ANALYTICAL RESULTS FOR BASIN ENVIRONMENTAL CONSULTING, LLC ATTN: CAMILLE BRYANT P.O. BOX 381 LOVINGTON, NM 88260 FAX TO: (575) 396-1429

Receiving Date: 12/22/09 Reporting Date: 12/29/09 Project Owner: 24 510 (BOPCO) Project Name: JOSEPHINE RODKE FEDERAL #1 Project Location: EDDY CO., NM Analysis Date: 12/28/09 & 12/29/09 Sampling Date: 12/21/09 Sample Type: SOIL Sample Condition: COOL & INTACT @ 6°C Sample Received By: HM Analyzed By: HM

•	CI
LAB NUMBER SAMPLE ID	(mg/kg)
H18938-25 SB-8 @ 70'	176
H18938-26 SB-8 @ 75'	592
H18938-27 SB-9 @ 5'	80
H18938-28 SB-9 @ 15'	80
H18938-29 SB-9 @ 25'	144
H18938-30 SB-9 @ 35'	624
H18938-31 SB-9 @ 45'	736
H18938-32 SB-9 @ 50'	1,070
H18938-33 SB-9 @ 55'	480
H18938-34 SB-9 @ 60'	2,440
H18938-35 SB-9 @ 65'	448
H18938-36 SB-9 @ 75'	1,300
Quality Control	. 500
True Value QC	500
% Recovery	100
Relative Percent Difference	< 0.1

METHOD: Standard Methods Note: Analyses performed on 1:4 w:v aqueous extracts. Not accredited for Chloride.

10 1 Chemist

4500-CI'B

Date

H18938 Basin Environmental

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whother based in contract or tort, shall be limited to the amount paid by client for enalyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service, in no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising cut of or related to the porformance of services horounder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



ANALYTICAL RESULTS FOR BASIN ENVIRONMENTAL CONSULTING, LLC ATTN: CAMILLE BRYANT P.O. BOX 381 LOVINGTON, NM 88260 FAX TO: (575) 396-1429

Receiving Date: 12/22/09 Reporting Date: 12/29/09 Project Owner: 24 510 (BOPCO) Project Name: JOSEPHINE RODKE FEDERAL #1 Project Location: EDDY CO., NM Analysis Date: 12/28/09 & 12/29/09 Sampling Date: 12/21/09 Sample Type: SOIL Sample Condition: COOL & INTACT @ 6°C Sample Received By: HM Analyzed By: HM

	CI
LAB NUMBER SAMPLE ID	(mg/kg)
H18938-37 SB-9 @ 80'	240
H18938-38 SB-9 @ 85'	240
H18938-39 SB-9 @ 95'	512
H18938-40 SB-9 @ 105'	144
H18938-41 SB-9@110'	112
· · ·	
· · · · · · · · · · · · · · · · · · ·	
Quality Control	500
True Value QC	500
% Recovery	100
Relative Percent Difference	< 0.1

METHOD: Standard Methods Note: Analyses performed on 1:4 w:v aqueous extracts. Not accredited for Chloride.

hemist

12/30/09

4500-CI'B

Date

H18938 Basin Environmental

PLEASE NOTE: Llability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyzes. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



ANALYTICAL RESULTS FOR BASIN ENVIRONMENTAL CONSULTING, LLC ATTN: CAMILLE BRYANT P.O. BOX 381 LOVINGTON, NM 88260 FAX TO: (575) 396-1429

Receiving Date: 12/22/09 Reporting Date: 12/28/09 Project Owner: BOPCO (24510) Project Name: JOSEPHINE RODKE FEDERAL #1 Project Location: EDDY COUNTY, NM Sampling Date: 12/17/09, 12/18/09, & 12/21/09 Sample Type: SOIL Sample Condition: COOL & INTACT @ 6°C Sample Received By: HM Analyzed By: AB/CK

	GRO	DRO	DRO ext.
·	(C ₆ -C ₁₀)	(>C10-C28)	(>C ₂₈ -C ₃₅)
LAB NUMBER SAMPLE ID	(mg/kg)	(mg/kg)	(mg/kg)
ANALYSIS DATE	12/24/09	12/24/09	12/24/09
H18938-4 SB-7 @ 5'	<10.0	77.1	<10.0
H18938-16 SB-8 @ 5'	<10.0	192	<10.0
H18938-27 SB-9 @ 5'	<10.0	67.5	<10.0
		•	
Quality Control	474	.441	
True Value QC	500	500	-
% Recovery	94.8	88.2	•
Relative Percent Difference	0.5	0.2	. –

METHODS: TPH GRO & DRO: EPA SW-846 8015 M extended. Reported on wet weight. Not accredited for GRO/DRO/EXT. DRO.

Lab Directo

Date

H18938 TPHEXT BASIN

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thiny (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiarios, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Sample Received By: HM

ANALYTICAL RESULTS FOR BASIN ENVIRONMENTAL CONSULTING, LLC ATTN: CAMILLE BRYANT P.O. BOX 381 LOVINGTON, NM 88260 FAX TO: (575) 396-1429

Receiving Date: 12/22/09 Reporting Date: 12/30/09 Project Owner: BOPCO (24510) Project Name: JOSEPHINE RODKE FEDERAL #1 Project Location: EDDY CO., NM

Sampling Date: 12/17/09, 12/18/09 & 12/21/09 Sample Type: SOIL Sample Condition: COOL & INTACT @ 6 °C

Analyzed By: ZL ETHYL TOTAL LAB NO. SAMPLE ID BENZENE TOLUENE BENZENE **XYLENES** (mg/kg) (mg/kg) (mg/kg) (mg/kg) ANALYSIS DATE: 12/28/09 12/28/09 12/28/09 12/28/09 H18938-4 SB-7 @ 5' < 0.050 <0.050 <0.050 < 0.300 H18938-16 SB-8 @ 5' <0.050 <0.050 <0.050 < 0.300 H18938-27 SB-9 @ 5' < 0.050 <0.050 < 0.050 < 0.300 **Quality Control** 0.047 0:047 0.047 0.148 0.050 True Value QC 0:050 0.050 0.150 % Recovery 94.0 94.0 94.0 98.7 Relative Percent Difference 1.2 <1.0 <1.0 1.2

METHODS: BTEX - SW-846 8021B

Reported on wet weight.

TEXAS NELAP ACCREDITATION T104704398-08-TX FOR BENZENE, TOLUENE, ETHYL BENZENE, AND TOTAL XYLENES.

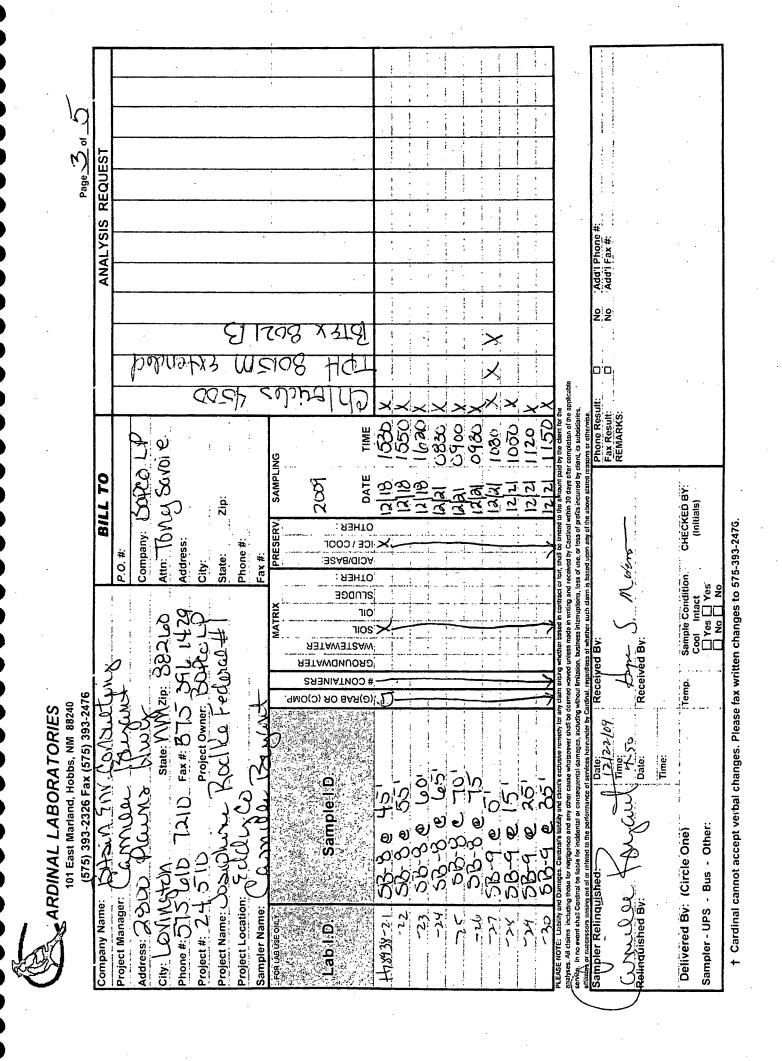
Lab Director

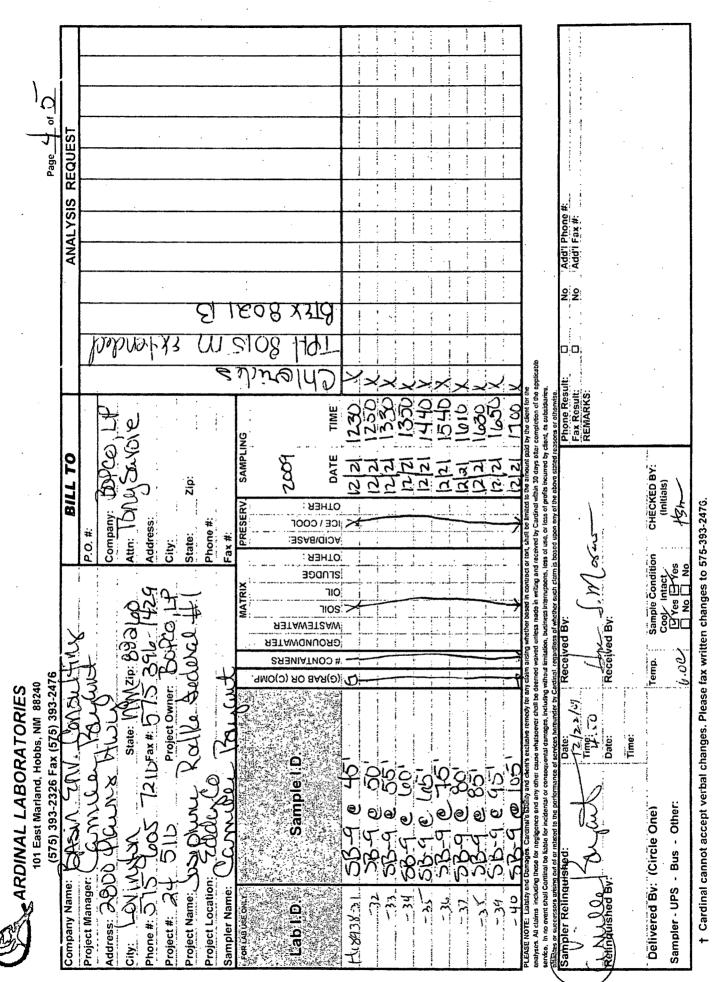
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H18938 BTEX BASIN

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DINAL LABORATORIES 101 East Marland, Hobbs, NM 88240 (575) 393-2326 Fax (575) 393-2476 (575) 393-2326 Fax (575) 393-2476 (575) 393-2326 Fax (575) 393-2476	BILL TO P.0. #.			ANALYSIS REQUEST	ر الحديد المراجع	
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 t_{vc}



January 5, 2010

Camille Bryant Basin Environmental Consulting, LLC. P.O. Box 381 Lovington, NM 88260

Re: BOPCO 24 510 (Josephine Rodke Federal #1)

Enclosed are the results of analyses for sample number H18967, received by the laboratory on 12/31/09 at 9:50 am.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021 Method SW-846 8260 Method TX 1005 Benzene, Toluene, Ethyl Benzene, and Total Xylenes Benzene, Toluene, Ethyl Benzene, and Total Xylenes Total Petroleum Hydrocarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

Cardinal Laboratories is accredited though 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 524.2	Regulated VOCs (V2, V3)

Accreditation applies to public drinking water matrices.

Total Number of Pages of Report: 3 (includes Chain of Custody)

Sincerely, Celev D. I eene

Laboratory Director

This report conforms with NELAP requirements.



ANALYTICAL RESULTS FOR BASIN ENVIRONMENTAL CONSULTING, LLC ATTN: CAMILLE BRYANT P.O. BOX 381 LOVINGTON, NM 88260 FAX TO: (575) 396-1429

Receiving Date: 12/31/09 Reporting Date: 01/04/10 Project Number: 24 510 (BOPCO, LP) Project Name: JOSEPHINE RODKE FEDERAL #1 Project Location: EDDY CO., NM Analysis Date: 01/04/10 Sampling Date: 12/28/09 Sample Type: SOIL Sample Condition: COOL & INTACT @ 4°C Sample Received By: HM Analyzed By: HM

	· ·	CI
LAB NO.	SAMPLE ID	(mg/kg)
H18967-1	SB-1.@ 55'	16,000
H18967-2	SB-1 @ 60'	11,600
H18967-3	SB-1 @ 65'	320
H18967-4	SB-1 @ 70'	1,870
H18967-5	SB-1 @ 75'	1,100
H18967-6	SB-1 @ 80'	1,230
•		
Quality Con	trol	500
True Value		500
% Recovery	1 .	100
Relative Pe	rcent Difference	<0.1

METHOD: Standard Methods Note: Analyses performed on 1:4 w:v aqueous extracts.

Chemist

105/10

4500-CI'B

Date

H18967 Basin Environmental

PLEASE NOTE: Llability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be doemed waived unless made in writing and received by Cardinal within thiny (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiantes, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

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February 4, 2010

Camille Bryant Basin Environmental Consulting, LLC. P.O. Box 381 Lovington, NM 88260

Re: Josephine Rodke Federal #1 (BOPCO 24510)

Enclosed are the results of analyses for sample number H19203, received by the laboratory on 02/02/10 at 4:50 pm.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021 Method SW-846 8260 Method TX 1005 Benzene, Toluene, Ethyl Benzene, and Total Xylenes Benzene, Toluene, Ethyl Benzene, and Total Xylenes Total Petroleum Hydrocarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

Cardinal Laboratories is accredited though the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2 Method EPA 524.2 Method EPA 524.2

Haloacetic Acids (HAA-5) Total Trihalomethanes (TTHM) Regulated VOCs (V2, V3)

Accreditation applies to public drinking water matrices.

Total Number of Pages of Report: 3 (includes Chain of Custody)

Sincerely Celev D/ Keene

Laboratory Director

This report conforms with NELAP requirements.



ANALYTICAL RESULTS FOR BASIN ENVIRONMENTAL CONSULTING, LLC ATTN: CAMILLE BRYANT P.O. BOX 381 LOVINGTON, NM 88260 FAX TO: (575) 396-1429

Receiving Date: 02/02/10 Reporting Date: 02/03/10 Project Number: 24-510 (BOPCO, LP) Project Name: JOSEPHINE RODKE FEDERAL #1 Project Location: EDDY CO., NM Analysis Date: 02/03/10 Sampling Date: 02/01/10 Sample Type: SOIL Sample Condition: COOL & INTACT @ 3.5°C Sample Received By: JH Analyzed By: HM

	•	CI
LAB NO.	SAMPLE ID	(mg/kg)
H19203-1	WEST S/WA @ 10'	112
H19203-2	SOUTHWEST CORNER A @ 10'	496
H19203-3	NORTHWEST CORNER A @ 10'	224
		·
Quality Con	· · ·	500
Instanting the second second second second		
True Value		500
% Recover		100
Relative Pe	rcent Difference	< 0.1

METHOD: Standard Methods4500-CI BNote: Analyses performed on 1:4 w:v aqueous extracts.

Ozbylio Date

H19203 Basin Environmental

PLEASE NOTE: Llability and Damages. Cardinal's liability and client's exclusive remedy for any daim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed varvod unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidential or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performence of services hereunder by Cardinal, togardless of whether such claim is based upon any of the above-stated reacons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approvel of Cardinal Laboratories.

ARDINAL LABORATORIES 101 East Marland, Hobbs, NM 88240 (575) 393-2326 Fax (575) 393-2476		Pagaof	
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January 15, 2010

Camille Bryant Basin Environmental Consulting, LLC. P.O. Box 381 Lovington, NM 88260

Re: BOPCO 24 510 (Josephine Federal Rodke #1)

Enclosed are the results of analyses for sample number H19040, received by the laboratory on 01/12/10 at 4:50 pm.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021 Method SW-846 8260 Method TX 1005 Benzene, Toluene, Ethyl Benzene, and Total Xylenes Benzene, Toluene, Ethyl Benzene, and Total Xylenes Total Petroleum Hydrocarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

Cardinal Laboratories is accredited though the State of Colorado Department of Public Health and Environment for:

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

Accreditation applies to public drinking water matrices.

Total Number of Pages of Report: 3 (includes Chain of Custody)

Sincerely,

Celey D. Keene

Laboratory Director

This report conforms with NELAP requirements.



LAB NO.

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

ANALYTICAL RESULTS FOR BASIN ENVIRONMENTAL CONSULTING, LLC ATTN: CAMILLE BRYANT P.O. BOX 381 LOVINGTON, NM 88260 FAX TO: (575) 396-1429

Receiving Date: 01/12/10 Reporting Date: 01/14/10 Project Number: 24 510 Project Name: JOSHEPHINE RODKE FEDERAL #1 Project Location: EDDY CO., N.M.

SAMPLE ID

Sampling Date: 01/12/10 Sample Type: GROUNDWATER Sample Condition: INTACT @ 15°C Sample Received By: JH Analyzed By: HM

> CI TDS (mg/L) (mg/L)

Analysis Date:		01/14/10	01/13/10
H19040-1	MVV-1	112	708
H19040-2	MW-2	136	598
H19040-3	MW-3	24,500	39,300
H19040-4	MVV-4	196	687
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Quality Control	1	500	NR
True Value QC		500	NR
% Recovery	***************************************	100	NR
Relative Percen	t Difference	< 0.1	3.0
ETHOD: Standa	rd Methods, EPA	4500-CI'B	160.1

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Date

H19040 Basin Environmental

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January 27, 2010

Camille Bryant Basin Environmental Consulting, LLC. P.O. Box 381 Lovington, NM 88260

Re: Josephine Rodke Fed #1 (BOPCO)

Enclosed are the results of analyses for sample number H19134, received by the laboratory on 01/22/10 at 4:40 pm.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021 Method SW-846 8260 Method TX 1005 Benzene, Toluene, Ethyl Benzene, and Total Xylenes Benzene, Toluene, Ethyl Benzene, and Total Xylenes Total Petroleum Hydrocarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

Cardinal Laboratories is accredited though the State of Colorado Department of Public Health and Environment for:

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

Accreditation applies to public drinking water matrices.

Total Number of Pages of Report: 3 (includes Chain of Custody)

Sincerely, Yeley D éene

Laboratory Director

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This report conforms with NELAP requirements.



ANALYTICAL RESULTS FOR BASIN ENVIRONMENTAL CONSULTING, LLC ATTN: CAMILLE BRYANT P.O. BOX 381 LOVINGTON, NM 88260 FAX TO: (575) 396-1429

Receiving Date: 01/22/10 Reporting Date: 01/25/10 Project Number: AFE # (BOPCO) Project Name: JOSEPHINE RODKE FED #1 Project Location: EDDY, N.M. Sampling Date: 01/19/10 Sample Type: WATER Sample Condition: COOL & INTACT @ 5.5°C Sample Received By: AB Analyzed By: HM

LAB NO.

SAMPLE ID

CI (mg/L) TDS (mg/L)

Analysis Date:		01/25/10	01/23/10
H19134-1	MW-1	108	639
H19134-2	MW-2	128	541
H19134-3	MW-3	46,000	72,800
H19134-4	MW-4	136	. 603
Quality Control		500	NF
True Value QC		500	NF
% Recovery		100	NF
Relative Percer	t Difference	< 0.1	2.4

METHOD: Standard Methods, EPA

4500-CI'B

160.1

Chemist

Date

H19134 Bsin Environmental

PLEASE NOTE: Llability and Damages. Cardinal's liability and client's exclusive remedy for any claim ansing, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consoquential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Page 1 of 1 REQUEST ANALYSIS Add'I Phone #: Add'I Fax #: 2 g LEASE NOTE: Usability and Damages. Cardinars (abolity and citenc's exclusive remecify for any claim arising whether based in Contract or fort, shall be limited to the amount paid by the client for the Ъ oo QOSH 234,364 Phone Result: Fax Result: REMARKS: radyses. Ail chaims focusoficy forces for negligences and any other cause whatdower shall be deemed whats mode in willing and received by Cardinal willin 30 deps after completion of the applicable arrice. In no event shall Cardinal be labbe for incidented canages, including without mitation, bust of use, or hose of porfis froured by clant, its substitutions, 10:30 TIME 9:30 12:00 21:11 SAMPLING 14/10 BILL TO DATE ECKED BY: Zip: Initials) : яанто PRESERV. ICE / COOL Company Address: der by Cerdinal, recardioss of whether much claim is based upon any of the Phone #: P.O.#: State: † Cardinal cannot accept verbal changes. Please fax written changes to 575-393-2476. Fax #: ACID/BASE Attn: ž **ЯЗНТО** Cool Intact N Yes V Yes No D No Sample Condition BOONTS MATRIX **NO** Pc41-292 UNC SS :diz NOS RETAWETSAW ved By: **Received By** Ro405 **RECUNDWATER** 4 #765:52 * # CONTAINERS Č .9MO(D) RO 8AR(D) (575) 393-2326 Fax (575) 393-2476 **N** 8 Project Owner: 01/00 State: N'M Fax #: S 7S 101 East Marland, Hobbs, NM 88240 REYNOLDS ARDINAL LABORATORIES Ume: 20 1 ine; 4 : 4/2 o//cc// Project Manager: CAMILLE REURNT ROOKE Date; Address: 2900 PLAINS AWY BASin Sample I.D. 22 Phone #: 575 396-2378 Project Name: JOSEP MiNE Sampler - UPS - Bus - Other: C-MW mw-4 Delivered By: (Circle One) mw-3 Company Name: Burton ANCE Project Location: 2004 City: LOUINOL TON MM Project #: AFE # Sampler Relinquished 5 Relinquished By: 3 Sampler Name: 191341 FOR LAB USE ONLY \$ ł Lab I.D.



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

March 30, 2010

Camille Bryant Basin Environmental Consulting, LLC. P.O. Box 381 Lovington, NM 88260

Re: Josephine Rodke Federal #1 (BOPCO)

Enclosed are the results of analyses for sample number H19551, received by the laboratory on 03/26/10 at 1:32 pm.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021 Method SW-846 8260 Method TX 1005 Benzene, Toluene, Ethyl Benzene, and Total Xylenes Benzene, Toluene, Ethyl Benzene, and Total Xylenes Total Petroleum Hydrocarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

Cardinal Laboratories is accredited though the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2 Method EPA 524.2 Method EPA 524.2

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Haloacetic Acids (HAA-5) Total Trihalomethanes (TTHM) Regulated VOCs (V2, V3)

Accreditation applies to public drinking water matrices.

Total Number of Pages of Report: 3 (includes Chain of Custody)

Sincerely, Celey D/Keene

Laboratory Director

This report conforms with NELAP requirements.



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

ANALYTICAL RESULTS FOR BASIN ENVIRONMENTAL CONSULTING, LLC ATTN: CAMILLE BRYANT P.O. BOX 381 LOVINGTON, NM 88260 FAX TO: (575) 396-1429

Receiving Date: 03/26/10 Reporting Date: 03/26/10 Project Number: 24510 (BOPCO) Project Name: JOSEPHINE RODKE FEDERAL #1 Project Location: EDDY CO., NM

Analysis Date: 03/26/10 Sampling Date: 03/24/10 Sample Type: GROUNDWATER Sample Condition: COOL & INTACT @ 3.5°C Sample Received By: JH Analyzed By: HM

		CI
LAB NO.	SAMPLE ID	(mg/
H19551-1	MW-3	61,00
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Quality Contr	ol	5
True Value Q		5
% Recovery		1
Relative Perc	ent Difference	< 0

METHOD: Standard Methods

4500-CI'B

Chemist

Date

H19551 Basin Environmental

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be decreed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damoges, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

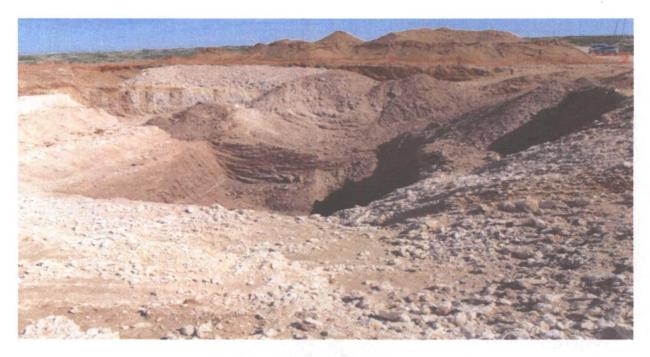
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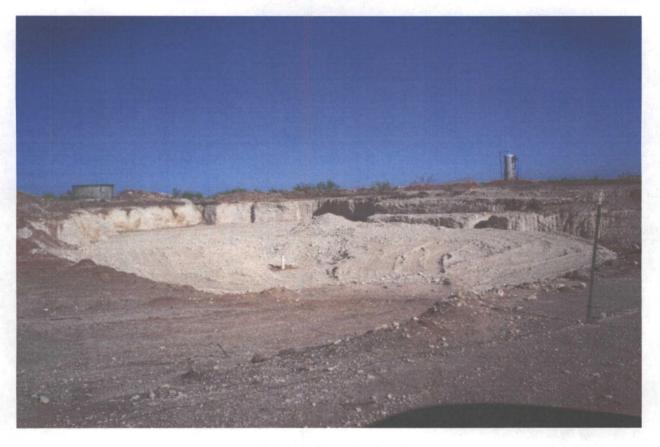
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Appendix C Photographs



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Josephine Rodke Federal #1 Site Prior to Backfilling



Josephine Rodke Federal #1 Site

Appendix D

Release Notification and Corrective Action (Form C-141) and Pit, Closed-Loop System, Below-Grade Tank, or Proposed Alternative Method Permit or Closure Plan Application (Form C-144)

					·
525 N. French Dr., Hobbs, NM 88240 istrict II 601 W. Grand Avenue, Artesia, NM 88210	nerals a		Resources		Form C-14 Revised October 10, 20 Submit 2 Copies to appropria
1220 Rio Brazos Road, Aziec, NM 87410	South	vation Div St. Franc NM 875	is Dr.		District Office in accordance with Rule 116 on bac side of for
2-015-05833 Release Notific				ction	
		OPERAT			tial Report 🔲 Final Rep
Name of Company BOPCO, L.P. 260737	(Contact Ton	y Savoie		
Address 522 W. Mermod, Suite 704 Carlsbad, N.M. 88220			10. 432-556-87	30	
Pacility Name: Josephine Rodke Federal #1		Facility Typ	e nær		
Surface Owner Federal Mineral O)wner F	ederal		Lease	No. API 30-015-058
	TION	OF REL	JEASE		
Just Letter Section Township Range Feet from the C 27 20S 31E Feet from the	North	South Line	Fect from the	East/West Line	FERSEIVED
Latitude_N 32.32'45	5.132	Longitude	2 W 103.51'15.	.048	DEC -7 2009 NMOCD ARTESIA
NAT	URE	OF RELI	EASE		
Type of Release: Produced water, and crude oil sediment Source of Release: Un-lined evaporation pit		Date and H Pre 2009	Release: Un-knc our of Occurrent		Recovered: 0 d Hour of Discovery
Was Immediate Notice Given? □ Yes ☑ No □ Not Ru		If YES, To	Whom?		
		Date and H			
Was a Watercourse Reached?				the Watercourse.	
🗌 Yes 🖾 No					,
f a Watercourse was Impacted, Describe Fully.*					
Describe Cause of Problem and Remedial Action Taken.* Operati emoved	ion of th	e pit ceased p	rior to 7/1/09, ap	proximately 500) cubic yards of soil has been
Describe Area Affected and Cleanup Action Taken, *Pasture land A remediation closure plan was submitted to the NMOCD on 11/2 vertical and horizontal extent of the pit area. A complete The pit will be closed under the guidance of the NMOCD pit close	20/09. Tl e remedi	he area will b ation and clos	e partially backfi	illed, an air rotary	
hereby certify that the information given above is true and comp regulations all operators are required to report and/or file certain r- public health or the environment. The acceptance of a C-141 repo- should their operations have failed to adequately investigate and ra- or the environment. In addition, NMOCD acceptance of a C-141 ederal, state, or local laws and/or regulations.	release no ort by the remediate	otifications and NMOCD m 2 contaminate	nd perform corre arked as "Final F on that pose a the e the operator of	ctive actions for r Report" does not r reat to ground wa responsibility for	eleases which may endanger elieve the operator of hability ter, surface water, human health compliance with any other
		,	<u>OIL CON</u>	SERVATIO	N DIVISION
Signature: 1 any Danie		Approved by Si	District Supervisigned By	1/4 Bran	LOR
Printed Name: Tony Savoie Fitle: Waste Mgmt.& Remediation Specialist		Approval Dat	MAR 242	2010 Expiratio	n Date:
E-mail Address: TASavoie@BassPet.com	(Conditions of	• •		Attached
		KEIMED	IATION per O	CD KUIES and	1
Date: 12/7/09 Phone:432-556-87 Attach Additional Sheets If Necessary	$\frac{730}{6}$		SUBMIT REM		

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Dranet 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
Destrict IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

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State of New Mexico Energy Minerals and Natural Resources Department Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505

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Closure project from feed to Dist Office Prova Stee 2/09

Form C-144 July 21, 2008

For temporary pits, closed-loop systems, and below-grade tanks, submit to the appropriate NMOCD District Office. For permanent pits and exceptions submit to the Santa Fe Environmental Buegau office and provide a copy to the appropriate NMOCD District Office.

Pit, Closed-Loop System, Below-Grade Tank, or Proposed Alternative Method Permit or Closure Plan Application
Type of action: Permit of a pit, closed-loop system, below-grade tank, or proposed alternative method Closure of a pit, closed-loop system, below-grade tank, or proposed alternative method Modification to an existing permit Closure plan only submitted for an existing permitted or non-permitted pit, closed-loop system, below-grade tank, or proposed alternative method
Instructions: Please submit one application (Form C-144) per individual pit, closed-loop system, below-grade tank or alternative request
Please be advised that approval of this request does not relieve the operator of hability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances.
Derator: BOPCO, L.P. OGRID #:001801 Address: P.O. Box 2760, Midland, Texas 79702
Facility or well name: Josephine Rodke Federal Battery #1
API Number: 30-015-05833 OCD Permit Number;
U/L or Qtr/Qtr C Section 27 Township 20S Range 31E County: Eddy Center of Proposed Design. Latitude N32°32'45.132 Longitude W103°51'15.048 NAD. []1927 [] 1983
Surface Owner: 🛛 Federal 🗌 State 🗋 Private 🗍 iTribal Trust or Indian Allotment
Image: Subsection F or G of 19.15.17.11 NMAC Temporary: Drilling Workover Image: Subsection F or G of 19.15.17.11 NMAC Temporary: Drilling Image: Subsection F or G of 19.15.17.11 NMAC Temporary: Drilling Image: Subsection F or G of 19.15.17.11 NMAC Image: Subsection F or G of
Closed-loop System: Subsection H of 19.15.17.11 NMAC
Type of Operation: P&A Drilling a new well Workover or Drilling (Applies to activities which require prior approval of a permit or notice of intent)
Drying Pad D Above Ground Steel Tanks D Haul-off Bins D Other
Lined Unlined Liner type: Thicknessmil LLDPE I HDPE PVC Other
Liner Seams: 🗌 Welded 🗌 Factory 🗍 Other
Below-grade tank: Subsection I of 19 15.17 11 NMAC
Volumebbl Type of fluid:
Tank Construction material:
Secondary containment with leak detection 🔲 Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off
Visible sidewalls and liner Visible sidewalls only Other
Liner type: Thickness mil 🔲 HDPE 🗍 PVC 🗍 Other
 <u>Alternative Method</u>: Submittal of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bareau office for consideration of approval.
Form (1944) Observation Devision Page For a

6 Fencing: Subsection D of 19.15.17.11 NMAC (Applies to permanent pits, temporary pits, and below-grade tanks) Chain link, six feet in height, two strands of harbed wire at top (Required if located within 1000 feet of a permanent residence, school, institution or church) Four foot height, four strands of barbed wire evenly spaced between one and four feet Alternate. Please specify	hospital,
7. <u>Netting</u> : Subsection E of 19.15.17.11 NMAC (Applies to permanent pits and permanent open top tanks) Screen Netting Other Monthly inspections (If netting or screening is not physically feasible).	
 8. <u>Signs</u>: Subsection C of 19.15.17.11 NMAC [X] 12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers [X] Signed in compliance with 19.15.3.103 NMAC 	
 <u>Administrative Approvals and Exceptions</u>: Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17 NMAC for guidance. <i>Please check a box if one or more of the following is requested, if not leave blank:</i> Administrative approval(s): Requests must be submitted to the appropriate division district or the Santa Fe Environmental Bureau consideration of approval. Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. 	office for
10. <u>Siting Criteria (regarding permitting)</u> : 19.15.17.10 NMAC Instructions: The applicant must demonstrate compliance for each siting criteria below in the application. Recommendations of accept material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appro office or may be considered an exception which must be submitted to the Sonta Fe Environmental Bureau office for consideration of a Applicant must attach justification for request. Please refer to 19.15.17.10 NMAC for guidance. Siting criteria does not apply to dry above-grade tanks associated with a closed-loop system.	priate district pproval.
Ground water is less than 50 feet below the bottom of the temporary pit, permanent pit, or below-grade tank. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	🗌 Yes 🗌 No
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). - Topographic map; Visual inspection (certification) of the proposed site	🗆 Yes 🗌 No
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application (Applies to temporary, emergency, or cavitation pits and below-grade tanks) - Visual inspection (certification) of the proposed site: Aerial photo; Satellite image	□ Yes □ No □ NA
Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. (Applies to permanent pits) - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	□ Yes □ No □ NA
Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application. - NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site	🗋 Yes 🗌 No
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended. - Written confirmation or verification from the municipality; Written approval obtained from the municipality	🗌 Yes 🗌 No
Within 500 feet of a wetland. - US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site	Yes 🗋 No
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division	🗌 Yes 🗌 No
Within an unstable area. - Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map	🗌 Yes 🗌 No
Within a 100-year floodplain. - FEMA map	🗌 Yes 🗋 No

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n. <u>Temporary Pits, Emergency Pits, and Below-grade Tanks Permit Application Attachment Checklist</u> : Subsection B of 19 15 17.9 NMAC Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are
attriched. Hydrogeologic Report (Below-grade Tanks) - based upon the requirements of Paragraph (4) of Subsection B of 19.15 17.9 NMAC Hydrogeologic Data (Temporary and Emergency Pits) - based upon the requirements of Paragraph (2) of Subsection B of 19.15.17.9 NMAC Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC Design Plan - based upon the appropriate requirements of 19.15.17.10 NMAC Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC
Previously Approved Design (attach copy of design) API Number or Permit Number:
12. <u>Closed-loop Systems Permit Application Attachment Checklist</u> : Subsection B of 19,15,17.9 NMAC Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are
attriched. Geologic and Hydrogeologic Data (only for on-site closure) - based upon the requirements of Paragraph (3) of Subsection B of 19 15.17.9 Siting Criteria Compliance Demonstrations (only for on-site closure) - based upon the appropriate requirements of 19.15.17.10 NMAC Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC
Previously Approved Design (attach copy of design) API Number
Previously Approved Operating and Maintenance Plan API Number: (Applies only to closed-loop system that use
above ground steel tanks or haul-off bins and propose to implement waste removal for closure)
Permanent Pits Permit Application Checklist: Subsection B of 19.15.17.9 NMAC Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached. Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19.15.17.9 NMAC Sning Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC Climatological Factors Assessment
Certified Engineering Design Plans - based upon the appropriate requirements of 19.15.17.11 NMAC Dike Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 NMAC Leak Detection Design - based upon the appropriate requirements of 19.15.17.11 NMAC Liner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19.15.17.11 NMAC Quality Control/Quality Assurance Construction and Instellation Plan Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.11 NMAC Freeboard and Overtopping Prevention Plan - based upon the appropriate requirements of 19.15.17.11 NMAC Kuisance or Hazardous Odors, including H ₂ S, Prevention Plan Emergency Response Plan
OII Field Waste Stream Characterization
Monitoring and Inspection Plan Erosion Control Plan
Closure Plan - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC
14. <u>Proposed Closure</u> : 19.15.17.13 NMAC Instructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the proposed closure plan.
Type: 🗋 Drilling 🗋 Workover 🗋 Emergency 🗋 Cavitation 🗋 P&A 🖾 Permanent Pit 🗋 Below-grade Tank 🗋 Closed-loop System
Alternative Proposed Closure Method: Waste Excavation and Removal
 Waste Removal (Closed-loop systems only) On-site Closure Method (Only for temporary pits and closed-loop systems)
 In-place Burial On-site Trench Burial Alternative Closure Method (Exceptions must be submitted to the Santa Fe Environmental Bureau for consideration)
Themative Closine Memou (Exceptions must be sublinited to the Santa Pe Environmental Kureau to: consideration)
<u>Waste Excavation and Removal Closure Plan Checklist</u> : (19.15.17.13 NMAC) Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached. Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC
 Contirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings)
Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC
Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

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Form C-144

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Oil Conservation Division

¹⁶ . <u>Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only</u> : (19 15.17.13. Instructions: Please indentify the facility or facilities for the disposal of liquids, drilling fluids and drill cuttings. Use attachment if facilities are required.	
Disposal Facility Name: Disposal Facility Permit Number:	
Disposal Facility Name: Disposal Facility Permit Number.	
Will any of the proposed closed-loop system operations and associated activities occur on or in areas that will not be used for future set Yes (If yes, please provide the information below) No	vice and operations ⁹
Required for impacted areas which will not be used for future service and operations Soil Backfill and Cover Design Specifications based upon the appropriate requirements of Subsection 11 of 19.15.17.13 NMAC Re-vegetation Plan - based upon the appropriate requirements of Subsection 1 of 19.15.17.13 NMAC Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC	с `
^{17.} Siting Criteria (regarding on-site closure methods only): 19.15.17.10 NMAC Instructions: Each siting criteria requires a demonstration of compliance in the closure plan. Recommendations of acceptable som provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate dis cansidered an exception which must be submitted to the Santa Fe Environmental Bureau affice for consideration of approval. Just demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC for guidance.	trict office or may be
Ground water is less than 50 feet below the bottom of the buried waste. - NM Office of the State Engineer - (WATERS database search; USGS, Data obtained from nearby wells	Yes No
Ground water is between 50 and 100 feet below the bottom of the buried waste - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	U Yes No
Ground water is more than 100 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☐ No ☐ NA
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). - Topographic map; Visual inspection (certification) of the proposed site	[] Yes [] No
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. - Visual inspection (certification) of the proposed site; Aerial photo; Sateilite image	Yes No
Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application. - NM Office of the State Engineer - iWATERS database; Visual inspection (certification) of the proposed site	Yes 🗌 No
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended. Written confirmation or verification from the municipality; Written approval obtained from the municipality	Yes 🗌 No
Within 500 feet of a wetland, - US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site	🗌 Yes 🗌 No
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division	TYes No
Within an unstable area. - Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map	I Yes No
Within a 100-year floodplain. - FEMA map	Yes No
18. On-Site Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of the following items must be attached to the closure plan check mark in the box, that the documents are attached. Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC Proof of Surface Owner Notice - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements of 19.15.17.13 NMAC Construction/Design Plan of Temporary Pit (for in-place burial of a drying pad) - based upon the appropriate requirements of 19.15.17.13 NMAC Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC Waste Material Sampling Plan - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings or in case on-site closure standards cantra Soil Cover Design - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC Re-vegetation Plan - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC Stic Reclamation Plan - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC Sil Cover Design - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC Re-vegetation Plan - based upon the appropriate requirement	15.17.11 NMAC
Form C-144 Off Conservation Division Page 4 c	f 5

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Operator Application Certification:	
	lication is true, accurate and complete to the best of my knowledge and belief
Name (Print): Steve Johnson	Tale SR. Perchatron Foreman
Signature	Date. 7///04
e-mail address:	Telephone: (432) 683-2277
20.	nlan) 🔽 Closure Plan (only) - 🗍 DCD Conditions (see attachment)
OCD Representative Signature:Signed By	MAR 2 4 2010
Title: Enu Spa.	OCD Permit Number: N/p
21 Closure Report (required within 60 days of closure compl Instructions: Operators are required to obtain an approved	<u>detion)</u> : Subsection K of 19.15.17.13 NMAC d closure plan prior to implementing any closure activities and submitting the closure report n within 60 days of the completion of the closure activities. Please do not complete this
	Closure Completion Date:
 22. <u>Closure Method:</u> Waste Excavation and Removal On-Site Closure M If different from approved plan, please explain. 	Alternative Closure Method 📋 Waste Removal (Closed-loop systems only)
	Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only: there the liquids, drilling fluids and drill cuttings were disposed. Use attachment if more the Disposal Facility Permit Number:
Disposal Facility Name:	
Were the closed-loop system operations and associated activi Yes (If yes, please demonstrate compliance to the item	ities performed on or in areas that will not be used for future service and operations? is below) [] No
Required for impacted areas which will not be used for future Site Reclamation (Photo Documentation) Soil Backfilling and Cover Installation Re-vegetation Application Rates and Seeding Techniqu	
mark in the box, that the documents are attached. Proof of Closure Notice (surface owner and division)	h of the following items must be attached to the closure report. Please indicate, by a check
 Proof of Deed Notice (required for on-site closure) Plot Plan (for on-site closures and temporary pits) Confirmation Sampling Analytical Results (if applicable Waste Material Sampling Analytical Results (required Disposal Facility Name and Permit Number Soil Backtilling and Cover Installation Re-vegetation Application Rates and Seeding Techniqu Site Reelamation (Photo Documentation) 	for on-site closure)
 Plot Plan (for on-site closures and temporary pits) Confirmation Sampling Analytical Results (if applicable) Waste Material Sampling Analytical Results (required) Disposal Facility Name and Permit Number Soil Backfilling and Cover Installation Re-vegetation Application Rates and Seeding Techniqu Site Reelamation (Photo Documentation) On-site Closure Location: Latitude 	for on-site closure)
Plot Plan (for on-site closures and temporary pits) Confirmation Sampling Analytical Results (if applicable Waste Material Sampling Analytical Results (required Disposal Facility Name and Permit Number Soil Backfilling and Cover Installation Re-vegetation Application Rates and Seeding Techniqu Site Reclamation (Photo Documentation) On-site Closure Location: Latitude	for on-site closure)
Plot Plan (for on-site closures and temporary pits) Confirmation Sampling Analytical Results (if applicable Waste Material Sampling Analytical Results (required Disposal Facility Name and Permit Number Soil Backfilling and Cover Installation Re-vegetation Application Rates and Seeding Techniqu Site Reelamation (Photo Documentation) On-site Closure Location: Latitude Deperator Closure Certification: hereby certify that the information and attachments submitted clief. Talso certify that the closure complies with all application	tor on-site closure) ue Longitude I.ongitude
 Plot Plan (for on-site closures and temporary pits) Confirmation Sampling Analytical Results (if applicable) Waste Material Sampling Analytical Results (required) Disposal Facility Name and Permit Number Soil Backtilling and Cover Installation Re-vegetation Application Rates and Seeding Technique Site Reelamation (Photo Documentation) On-site Closure Location: Latitude 	tor on-site closure) ue Longitude NAD: 1927 1983 ed with this closure report is true, accurate and complete to the best of my knowledge and the closure requirements and conditions specified in the approved closure plan. Title: Regulatory Clerk

Form C-144

Off Contervation Division

BOPCO, L.P. Josephine Rodke Federal #1 Section 27, T-20-S, R-31-E Eddy County, NM

API# 30-015-05833

CLOSURE PLAN

The New Mexico OCD and Bureau of Land Management were both sent notification of closure on June 15, 2009. BOPCO, L.P. will excavate to ten feet below ground surface to the bottom of the nit removing any dried sludge. The pit was unlined so no liner will need to be removed. No free liquids are presently in the pit and there is not any associated equipment in or around the pit that will need to be removed. All excavated dried sludge will be hauled and disposed of at CRI (Controlled Recovery Incorporated - Permit R-9166). BOPCO, L.P. will test the soils beneath the permanent pit to determine whether a release has occurred. BOPCO, L.P. will collect, at a minimum, a five point, composite sample; collect individual grab samples from any area that is wet, discolored or showing other evidence of a release; and analyze for BTEX, TPH and chlorides to demonstrate that the benzene concentration, as determined by EPA SW-846 methods 8021B or 8260B or other EPA method that the division approves, does not exceed 0.2 mg/kg; total BTEX concentration, as determined by EPA SW-846 methods 8021B or 8260B or other EPA method that the division approves, does not exceed 50 mg/kg; the TPH concentration, as determined by EPA method 418.1 or other EPA method that the division approves, does not exceed 100 mg/kg; and the chloride concentration, as determined by EPA method 300.1 or other EPA method that the division approves, does not exceed 250 mg/kg, or the background concentration, whichever is greater. BOPCO, L.P. will notify the division of its results on form C-141 in accordance with NMAC 19.15.17.13(c) Closure method for permanent pits. If the BOPCO or the division determines that a release has occurred, then the BOPCO shall comply with 19.15.29 NMAC and 19.15.30 NMAC, as appropriate. If the sampling program demonstrates that a release has not occurred or that any release does not exceed the concentrations specified in Paragraph (3) of Subsection C of 19.15.17.13 NMAC, then the BOPCO, L.P. will backfill the excavation with compacted, non-waste containing, earthen material; construct a divisionprescribed soil cover; recontour and re-vegetate the site. The division-prescribed soil cover, recontouring and re-vegetation requirements will comply with Subsections G, H and I of 19.15.17.13 NMAC per our Site Reclamation Plan. BOPCO, L.P. will commence closure of the site within one week of approval from the NMOCD. It will take BOPCO, L.P. approximately 2 days to excavate to ten feet and one day to sample the excavation. It will take five days to receive the results from the lab. Approximately three days to backfill the excavation and recontour the site with the existing topography. It will take one day to reseed the area. Within 60 days of closure completion, BOPCO, L.P. will submit a closure report on form C-144, with necessary attachments to document all closure activities including sampling results; information required by 19,15,17 NMAC; a plot plan; and details on back-filling, capping and covering, where applicable. In the closure report, BOPCO, L.P. will certify that all information in the report and attachments is correct and that BOPCO, L.P. has complied with all applicable closure requirements and conditions specified in the approved closure pian.