ENSOLUM

CLOSURE REPORT

Property:

Huerfano #188 (11/13/23)
Unit Letter M, S6 T25N R9W
San Juan County, New Mexico

New Mexico EMNRD OCD Incident ID No. NAPP2331745754

January 4, 2024

Ensolum Project No. 05A1226295

Prepared for:

Enterprise Field Services, LLC
614 Reilly Avenue
Farmington, NM 87401
Attn: Mr. Thomas Long

Prepared by:

Ranee Deechilly
Project Manager

Kyle Summers
Senior Managing Geologist

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LIST OF APPENDICES

1.0 INTRODUCTION

1.1 Site Description & Background

Operator:	Enterprise Field Services, LLC / Enterprise Products Operating LLC (Enterprise)
Site Name:	Huerfano #188 (11/13/23) (Site)
NM EMNRD OCD Incident ID No.	NAPP2331745754
Location:	36.425127° North, 107.835661° West Unit Letter M, Section 6, Township 25 North, Range 9 West San Juan County, New Mexico
Property:	Navajo Nation
Regulatory:	Navajo Nation Environmental Protection Agency (NNEPA) and New Mexico (NM) Energy, Minerals and Natural Resources Department (EMNRD) Oil Conservation Division (OCD)

On November 6, 2023, Enterprise personnel identified a release of natural gas from the Huerfano #188 pipeline. Enterprise subsequently isolated and locked the pipeline out of service. On November 13, 2023, Enterprise initiated activities to repair the pipeline and remediate petroleum hydrocarbon impact. In addition, Enterprise determined the release was "reportable" due to the potential volume of impacted soil. The NM EMNRD OCD was subsequently notified.

A **Topographic Map** depicting the location of the Site is included as **Figure 1**, and a **Site Vicinity Map** is included as **Figure 2** in **Appendix A**.

1.2 Project Objective

The primary objective of the closure activities was to reduce constituent of concern (COC) concentrations in the on-site soils to below the applicable NM EMNRD OCD closure criteria.

2.0 CLOSURE CRITERIA

The Site is subject to regulatory oversight by the NNEPA and the NM EMNRD OCD. During the evaluation and remediation of the Site, Ensolum, LLC (Ensolum) referenced New Mexico Administrative Code (NMAC) 19.15.29 *Releases,* which establishes investigation and abatement action requirements for oil and gas release sites that are subject to reporting and/or corrective action. The appropriate closure criteria for sites are determined using the siting requirements outlined in Paragraph (4) of Subsection C of 19.15.29.12 NMAC. Ensolum utilized the general site characteristics and information available from NM state agency databases and federal agency geospatial databases to determine the appropriate closure criteria for the Site. Supporting figures and documentation associated with the following Siting bullets are provided in **Appendix B**.

- The NM Office of the State Engineer (OSE) tracks the usage and assignment of water rights and water well installations and records this information in the Water Rights Reporting System (WRRS) database. Water wells and other points of diversion (PODs) are each assigned POD numbers in the database (which is searchable and includes an interactive map). No PODs were identified in the same Public Land Survey System (PLSS) section as the Site, and no PODs were identified in the adjacent PLSS sections (**Figure A**, **Appendix B**).

- Numerous cathodic protection wells (CPWs) were identified in the NM EMNRD OCD imaging database in the same PLSS section as the Site and in the adjacent PLSS sections. These CPWs are depicted on **Figure B** (**Appendix B**). The closet CPWs (Huerfano Unit #188, Huerfano Unit #142, and Huerfano Unit #188E) are located less than 0.75 miles from the Site. Documentation for the cathodic protection well located near the Huerfano Unit #188 production pad indicates a depth to water of 40 feet bgs and 100 feet bgs. This cathodic protection well is located approximately 140 feet west of the Site and is approximately 19 feet lower in elevation than the Site. Documentation for the cathodic protection well located near the Huerfano Unit #142 production pad indicates a depth to water of 138 feet bgs. This cathodic protection well is located approximately 0.71 miles southeast of the Site and is approximately 90 feet lower in elevation than the Site. Documentation for the cathodic protection well located near the Huerfano Unit #188E production pad indicates a depth to water of 140 feet bgs. This cathodic protection well is located approximately 0.69 miles north of the Site and is approximately 281 feet lower in elevation than the Site.

- The Site is located within 300 feet of a NM EMNRD OCD-defined significant watercourse (**Figure C**, **Appendix B**).

- The Site is not located within 200 feet of a lakebed, sinkhole, or playa lake.

- The Site is not located within 300 feet of a permanent residence, school, hospital, institution, or church (**Figure D**, **Appendix B**).

- No springs, or private domestic freshwater wells used by less than five households for domestic or stock watering purposes were identified within 500 feet of the Site (**Figure E**, **Appendix B**).

- No freshwater wells or springs were identified within 1,000 feet of the Site (**Figure E**, **Appendix B**).

- The Site is not located within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to New Mexico Statutes Annotated (NMSA) 1978, Section 3-27-3.

- Based on information identified in the U.S. Fish & Wildlife Service National Wetlands Inventory Wetlands Mapper, the Site is not within 300 feet of a wetland (**Figure F**, **Appendix B**).

- Based on information identified in the NM Mining and Minerals Division's Geographic Information System (GIS) Maps and Mine Data database, the Site is not within an area overlying a subsurface mine (**Figure G**, **Appendix B**).

- The Site is not located within an unstable area per Paragraph (6) of Subsection U of 19.15.2.7 NMAC.

- Based on information provided by the Federal Emergency Management Agency (FEMA) National Flood Hazard Layer (NFHL) geospatial database, the Site is not within a 100-year floodplain (**Figure H**, **Appendix B**).

Based on available information Enterprise estimates the depth to water at the Site to potentially be less than 50 feet bgs, resulting in a Tier I ranking. The closure criteria for soils remaining in place at the Site include:

Tier I Closure Criteria for Soils Impacted by a Release		
Constituent[1]	**Method**	**Limit**
Chloride	EPA 300.0 or SM4500 Cl B	600 mg/kg
TPH (GRO+DRO+MRO)[2]	EPA SW-846 Method 8015	100 mg/kg
BTEX[3]	EPA SW-846 Method 8021 or 8260	50 mg/kg
Benzene	EPA SW-846 Method 8021 or 8260	10 mg/kg

[1] – Constituent concentrations are in milligrams per kilogram (mg/kg).
[2] – Total Petroleum Hydrocarbons (TPH). Gasoline Range Organics (GRO). Diesel Range Organics (DRO). Motor Oil/Lube Oil Range Organics (MRO).
[3] – Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX).

3.0 SOIL REMEDIATION ACTIVITIES

On November 13, 2023, Enterprise initiated activities to repair the pipeline and remediate petroleum hydrocarbon impact resulting from the release. During the remediation and corrective action activities, OFT Construction, Inc., provided heavy equipment and labor support, while Ensolum provided environmental consulting support.

The excavation measured approximately 25 feet long and 12.5 feet wide at the maximum extents. The maximum depth of the excavation measured approximately 16 feet bgs. The lithology encountered during the completion of remediation activities consisted primarily of sandstone and shale.

Approximately 366 cubic yards (yd^3) of petroleum hydrocarbon-affected soils were transported to the Envirotech, Inc., (Envirotech) landfarm in San Juan County, NM for disposal/remediation. The executed C-138 solid waste acceptance form is provided in **Appendix C**. The excavation was backfilled with imported fill and then contoured to the surrounding grade.

Figure 3 is a map that identifies approximate soil sample locations and depicts the approximate dimensions of the excavation with respect to the pipeline (**Appendix A**). Photographic documentation of the field activities is included in **Appendix D**.

4.0 SOIL SAMPLING PROGRAM

Ensolum field screened the soil samples from the excavation utilizing a calibrated Dexsil PetroFLAG® hydrocarbon analyzer system and a photoionization detector (PID) fitted with a 10.6 eV lamp to guide excavation extents.

Ensolum's soil sampling program included the collection of 10 composite soil samples (S-1 through S-10) from the excavation for laboratory analysis. The composite samples were comprised of five aliquots each and represent an estimated 200 square foot (ft^2) or less sample area per guidelines outlined in Section D of 19.15.29.12 NMAC. The excavator bucket was utilized to obtain fresh aliquots from each area of the excavations. Regulatory correspondence is provided in **Appendix E**.

Sampling Event

On November 17, 2023, sampling was performed at the Site. The NNEPA and NM EMNRD OCD were notified of the sampling event although no representative was present during sampling activities. Composite soil samples S-1 (16') and S-2 (16') were collected from the floor of the excavation. Composite soil samples, S-3 (0' to 16'), S-4 (0' to 16'), S-5 (0' to 16'), S-6 (0' to 16'), S-7 (0' to 16'), S-8 (0' to 16'), S-9 (0' to 16'), and S-10 (0' to 16') were collected from the walls of the excavation.

All soil samples were collected and placed in laboratory-prepared glassware. The containers were labeled and sealed using the laboratory-supplied labels and custody seals and were stored on ice in a cooler. The samples were relinquished to the courier for Eurofins Environment Testing South Central LLC (Eurofins) of Albuquerque, NM, under proper chain-of-custody procedures.

5.0 SOIL LABORATORY ANALYTICAL METHODS

The composite soil samples were analyzed for BTEX using Environmental Protection Agency (EPA) SW-846 Method 8021; TPH GRO/DRO/MRO using EPA SW-846 Method 8015; and chlorides using EPA Method 300.0.

The laboratory analytical results are summarized in **Table 1** (**Appendix F**). The laboratory data sheets and executed chain-of-custody forms are provided in **Appendix G**.

6.0 SOIL DATA EVALUATION

Ensolum compared the benzene, BTEX, TPH, and chloride laboratory analytical results or laboratory practical quantitation limits (PQLs) / reporting limits (RLs) associated with the composite soil samples (S-1 through S-10) to the applicable NM EMNRD OCD closure criteria. The laboratory analytical results are summarized in **Table 1** (**Appendix F**).

- The laboratory analytical results for composite soil samples S-3, S-4, S-8, and S-9 indicate benzene concentrations of 0.038 mg/kg, 0.044 mg/kg, 0.040 mg/kg, and 0.037 mg/kg, respectively, which are less than the NM EMNRD OCD closure criteria of 10 mg/kg. The laboratory analytical results for the other composite soil samples indicate benzene is not present at concentrations greater than the laboratory PQLs/RLs, which are less than the NM EMNRD OCD closure criteria of 10 mg/kg.

- The laboratory analytical results for composite soil samples S-3, S-4, S-6, S-8, and S-9 indicate total BTEX concentrations of 0.46 mg/kg, 0.59 mg/kg, 0.077 mg/kg, 0.45 mg/kg, and 0.47 mg/kg, respectively, which are less than the NM EMNRD OCD closure criteria of 50 mg/kg. The laboratory analytical results for the other composite soil samples indicate total BTEX is not present at concentrations greater than the laboratory PQLs/RLs, which are less than the NM EMNRD OCD closure criteria of 50 mg/kg.

- The laboratory analytical results for the composite soil samples indicate total combined TPH GRO/DRO/MRO is not present at concentrations greater than the laboratory PQLs/RLs, which are less than the NM EMNRD OCD closure criteria of 100 mg/kg.

- The laboratory analytical results for the composite soil samples indicate chloride is not present at concentrations greater than the laboratory PQLs/RLs, which is less than the NM EMNRD OCD closure criteria of 600 mg/kg.

7.0 RECLAMATION

The excavation was backfilled with imported fill and then contoured to the surrounding grade.

8.0 FINDINGS AND RECOMMENDATION

- Ten composite soil samples were collected from the Site. Based on laboratory analytical results, no benzene, BTEX, chloride, or total combined TPH GRO/DRO/MRO exceedances were identified in the soils remaining at the Site.

- Approximately 366 yd^3 of petroleum hydrocarbon-affected soils were transported to the Envirotech landfarm for disposal/remediation.

Based on field observations and laboratory analytical results, no additional investigation or corrective action appears warranted at this time.

9.0 STANDARDS OF CARE, LIMITATIONS, AND RELIANCE

9.1 Standard of Care

Ensolum's services were performed in accordance with standards customarily provided by a firm rendering the same or similar services in the area during the same time period. Ensolum makes no warranties, express or implied, as to the services performed hereunder. Additionally, Ensolum does not warrant the work of third parties supplying information used in the report (e.g., laboratories, regulatory agencies, or other third parties).

9.2 Limitations

Findings, conclusions, and recommendations resulting from these services are based upon information derived from the on-Site activities and other services performed under this scope of work, and it should be noted that this information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, or not present during these services, and Ensolum cannot represent that the Site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during the investigation. Environmental conditions at other areas or portions of the Site may vary from those encountered at actual sample locations. Ensolum's findings and recommendation are based solely upon data available to Ensolum at the time of these services.

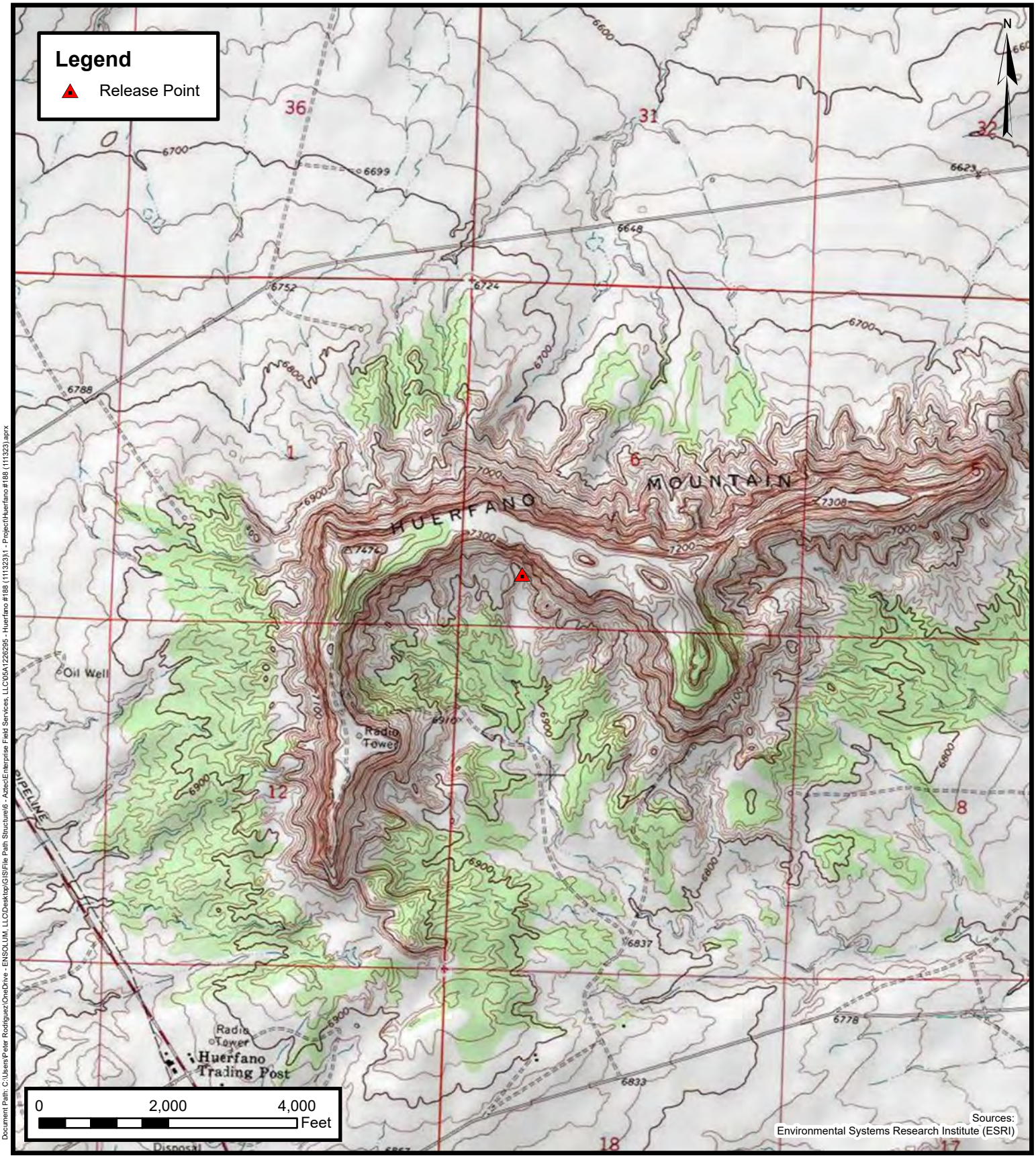
9.3 Reliance

This report has been prepared for the exclusive use of Enterprise, and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the Site) is prohibited without the express written authorization of Enterprise and Ensolum. Any unauthorized distribution or reuse is at the client's sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions, and limitations stated in the Closure Report and Ensolum's Master Services Agreement. The limitation of liability defined in the agreement is the aggregate limit of Ensolum's liability to the client.

ENSOLUM

APPENDIX A

Figures



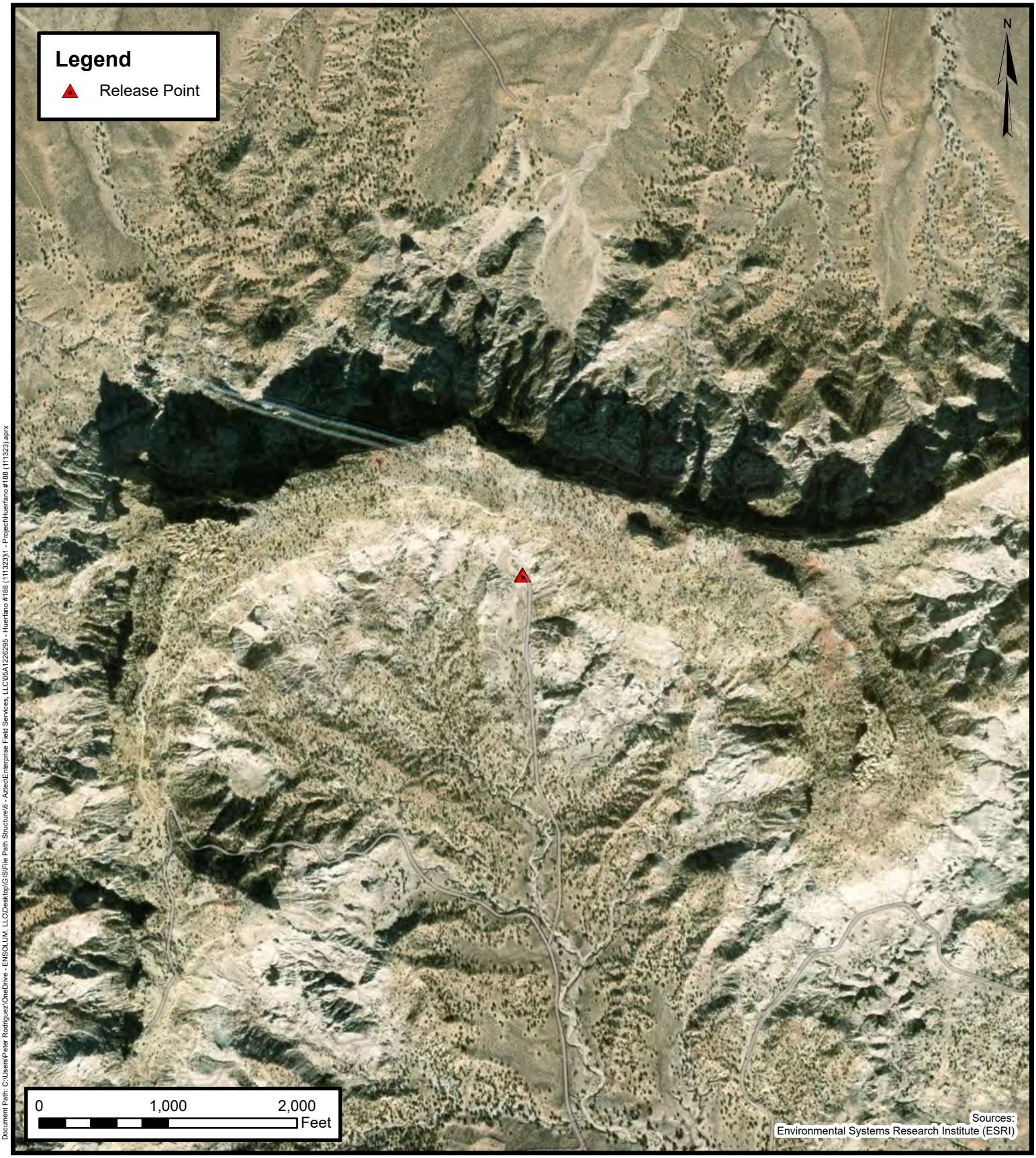
Document Path: C:\Users\Peter Rodriguez\OneDrive - ENSOLUM, LLC\Desktop\GIS\File Path Structure\6 - Aztec\Enterprise Field Services, LLC\05A1226295 - Huerfano #188 (11\13\23)\1 - Project\Huerfano #188 (111323).aprx

ENSOLUM
Environmental, Engineering and Hydrogeologic Consultants

Topographic Map

Enterprise Field Services, LLC
Huerfano #188 (11/13/23)
Project Number: 05A1226295
Unit Letter M, S06 T25N R09W, San Juan County, New Mexico
36.425127, -107.835661

FIGURE
1



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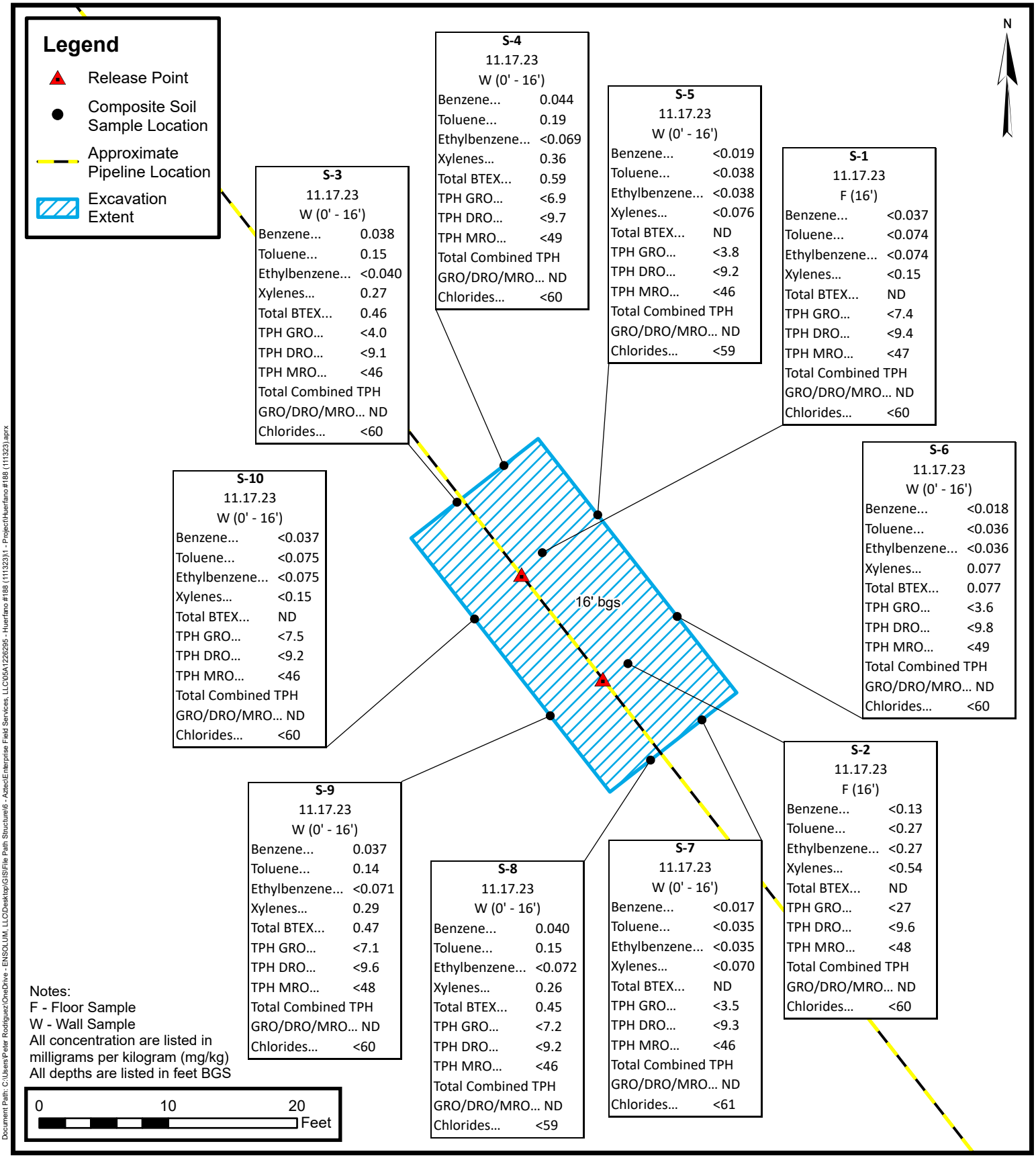
Environmental, Engineering and Hydrogeologic Consultants

Site Vicinity Map

Enterprise Field Services, LLC
Huerfano #188 (11/13/23)
Project Number: 05A1226295
Unit Letter M, S06 T25N R09W, San Juan County, New Mexico
36.425127, -107.835661

FIGURE
2



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Environmental, Engineering and Hydrogeologic Consultants

Site Map with Soil Analytical Results

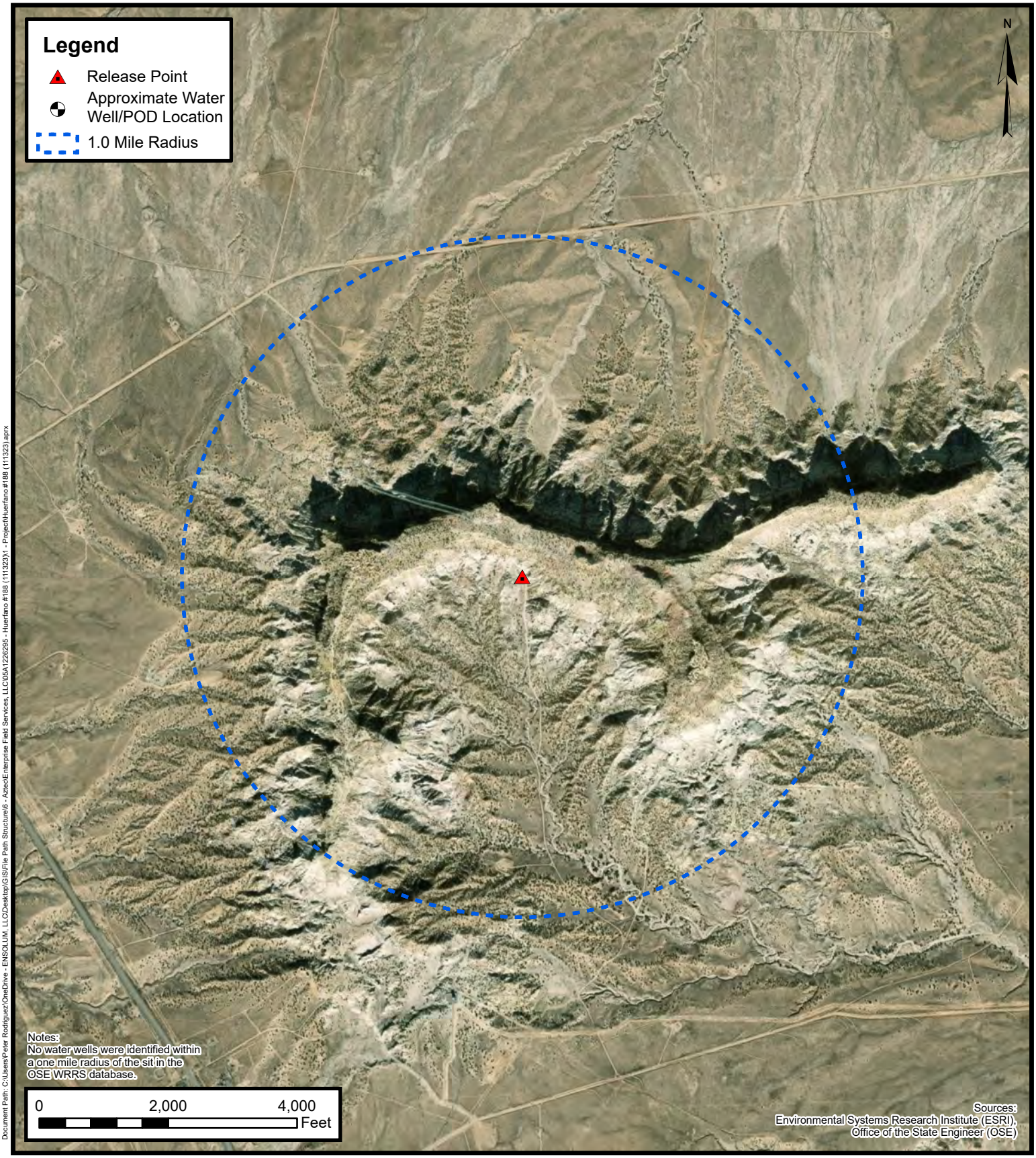
Enterprise Field Services, LLC
Huerfano #188 (11/13/23)
Project Number: 05A1226295
Unit Letter M, S06 T25N R09W, San Juan County, New Mexico
36.425127, -107.835661

FIGURE
3

ENSOLUM

APPENDIX B

Siting Figures and Documentation



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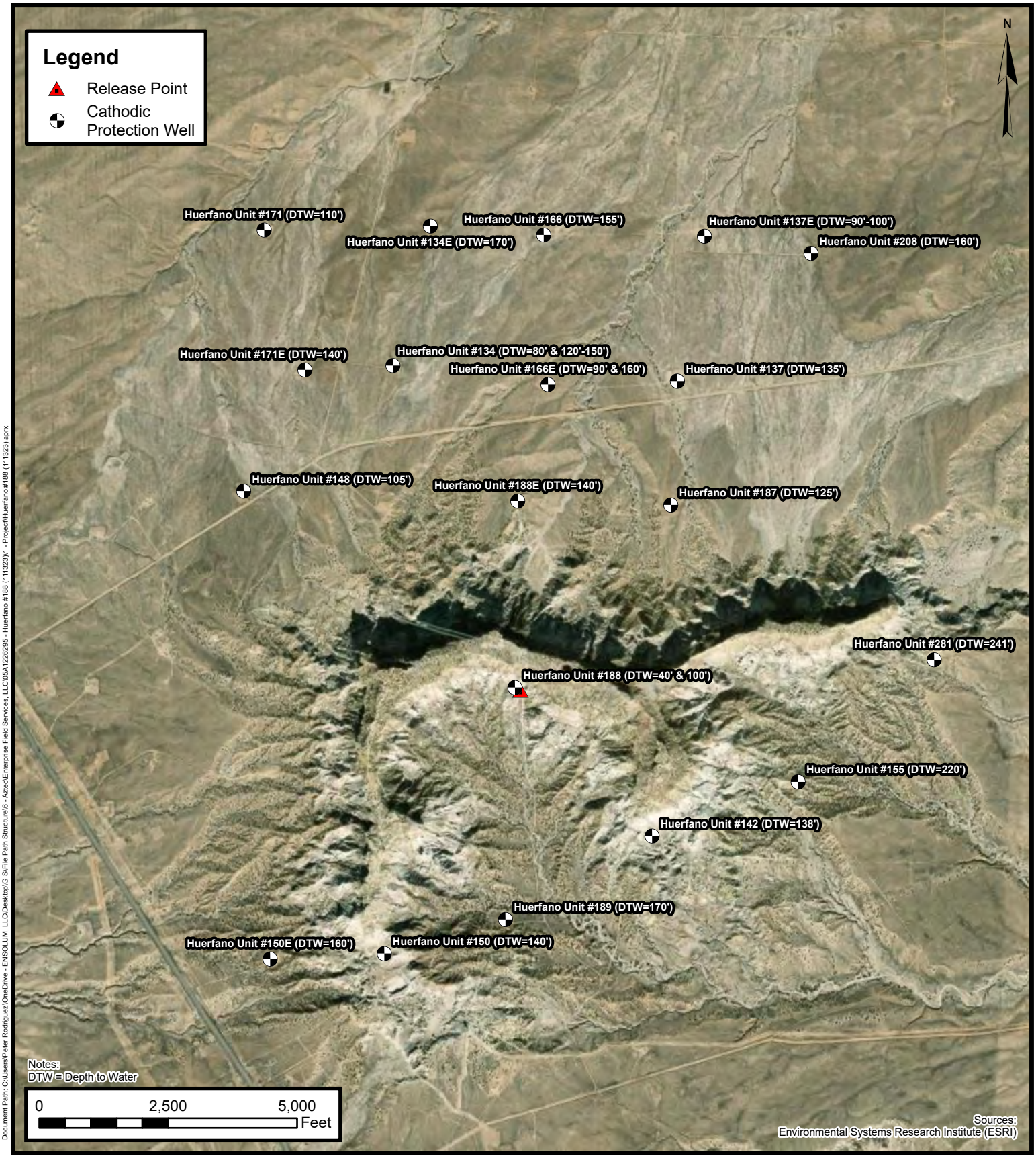
1.0 Mile Radius Water Well / POD Location Map

Enterprise Field Services, LLC
Huerfano #188 (11/13/23)
Project Number: 05A1226295
Unit Letter M, S06 T25N R09W, San Juan County, New Mexico
36.425127, -107.835661

FIGURE
A



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Environmental, Engineering and Hydrogeologic Consultants

Cathodic Protection Well Recorded Depth to Water

Enterprise Field Services, LLC
Huerfano #188 (11/13/23)
Project Number: 05A1226295
Unit Letter M, S06 T25N R09W, San Juan County, New Mexico
36.425127, -107.835661

FIGURE

B

Document Path: C:\Users\Peter Rodriguez\OneDrive - ENSOLUM, LLC\Desktop\GIS\File Path Structure\6 - Aztec\Enterprise Field Services, LLC\05A1226295 - Huerfano #188 (111323)\1 - Project\Huerfano #188 (111323).aprx

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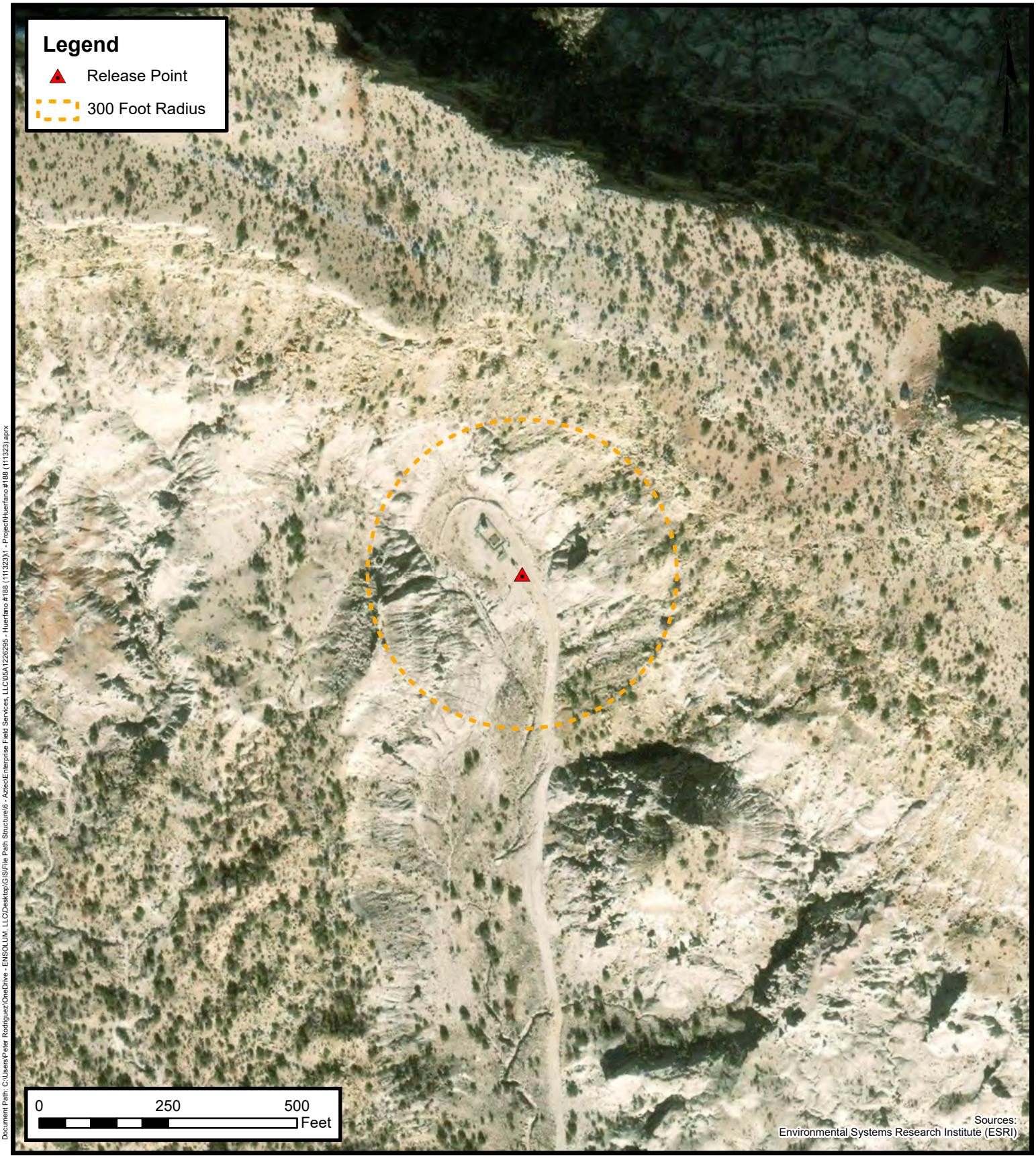
300 Foot Radius Watercourse and Drainage Identification

Enterprise Field Services, LLC
Huerfano #188 (11/13/23)
Project Number: 05A1226295
Unit Letter M, S06 T25N R09W, San Juan County, New Mexico
36.425127, -107.835661

FIGURE

C



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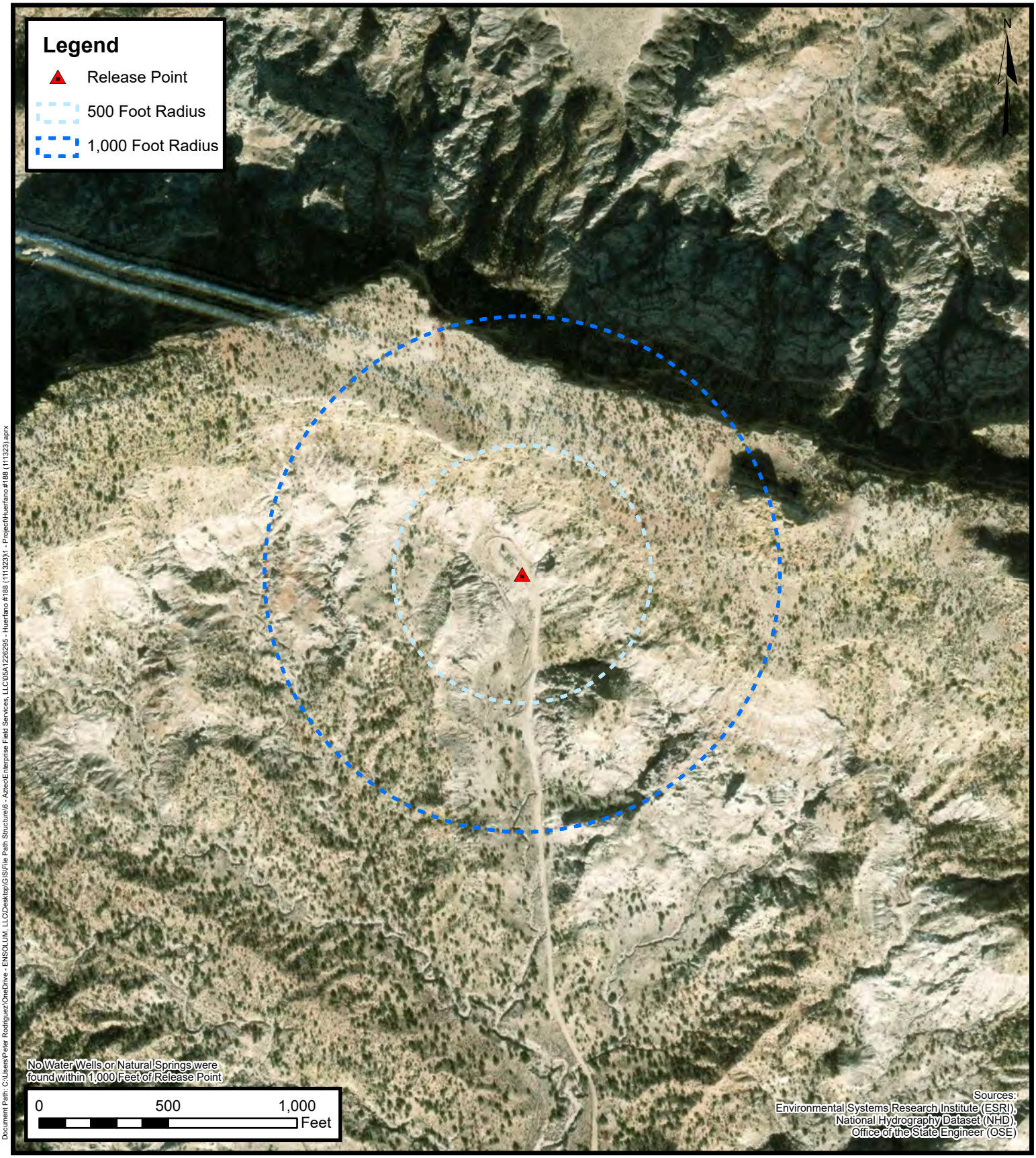
300 Foot Radius Occupied Structure Identification

Enterprise Field Services, LLC
Huerfano #188 (11/13/23)
Project Number: 05A1226295
Unit Letter M, S06 T25N R09W, San Juan County, New Mexico
36.425127, -107.835661

FIGURE

D



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Water Well and Natural Spring Location
Enterprise Field Services, LLC
Huerfano #188 (11/13/23)
Project Number: 05A1226295
Unit Letter M, S06 T25N R09W, San Juan County, New Mexico
36.425127, -107.835661

FIGURE
E

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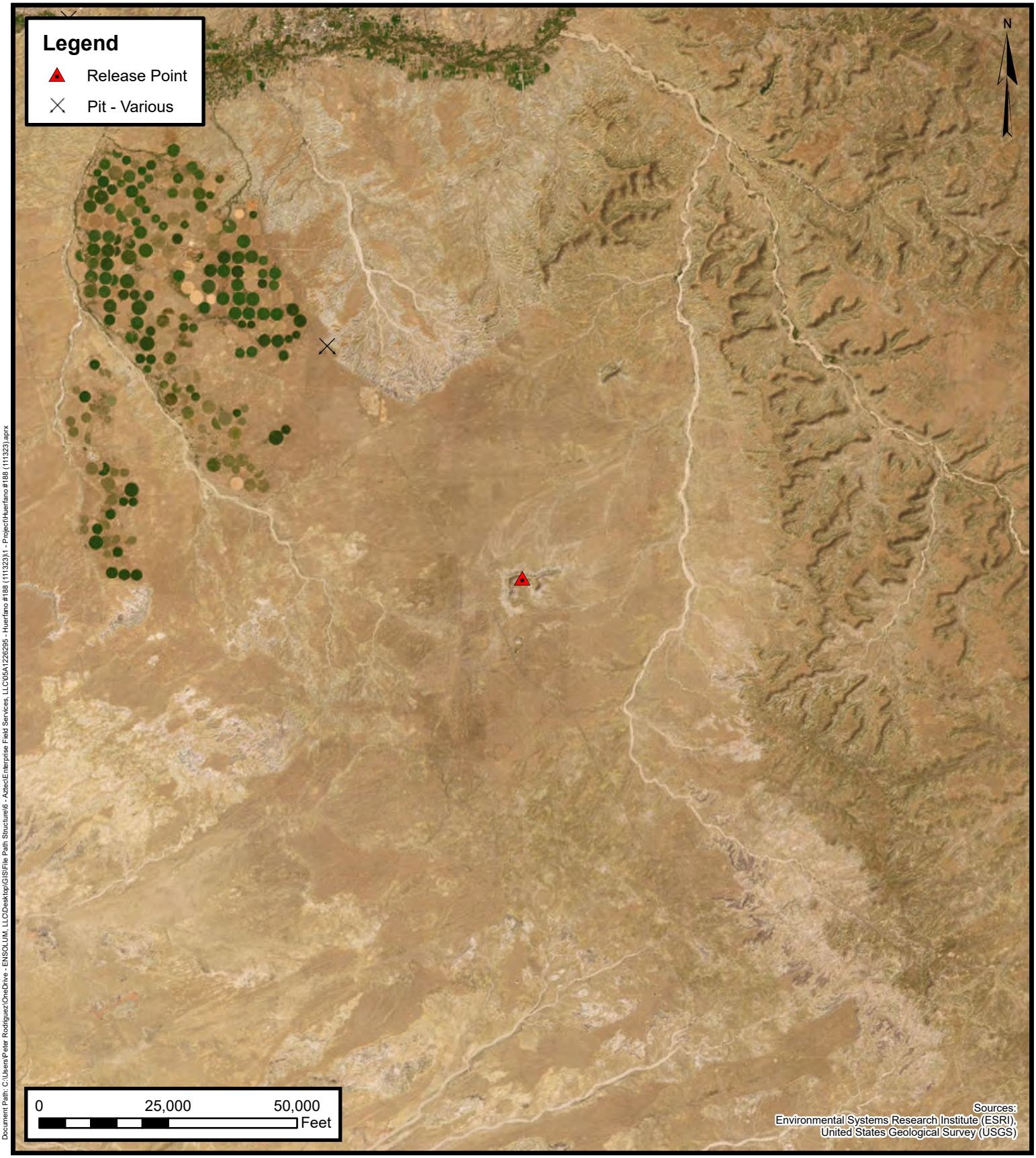
Wetlands

Enterprise Field Services, LLC
Huerfano #188 (11/13/23)
Project Number: 05A1226295
Unit Letter M, S06 T25N R09W, San Juan County, New Mexico
36.425127, -107.835661

FIGURE
F



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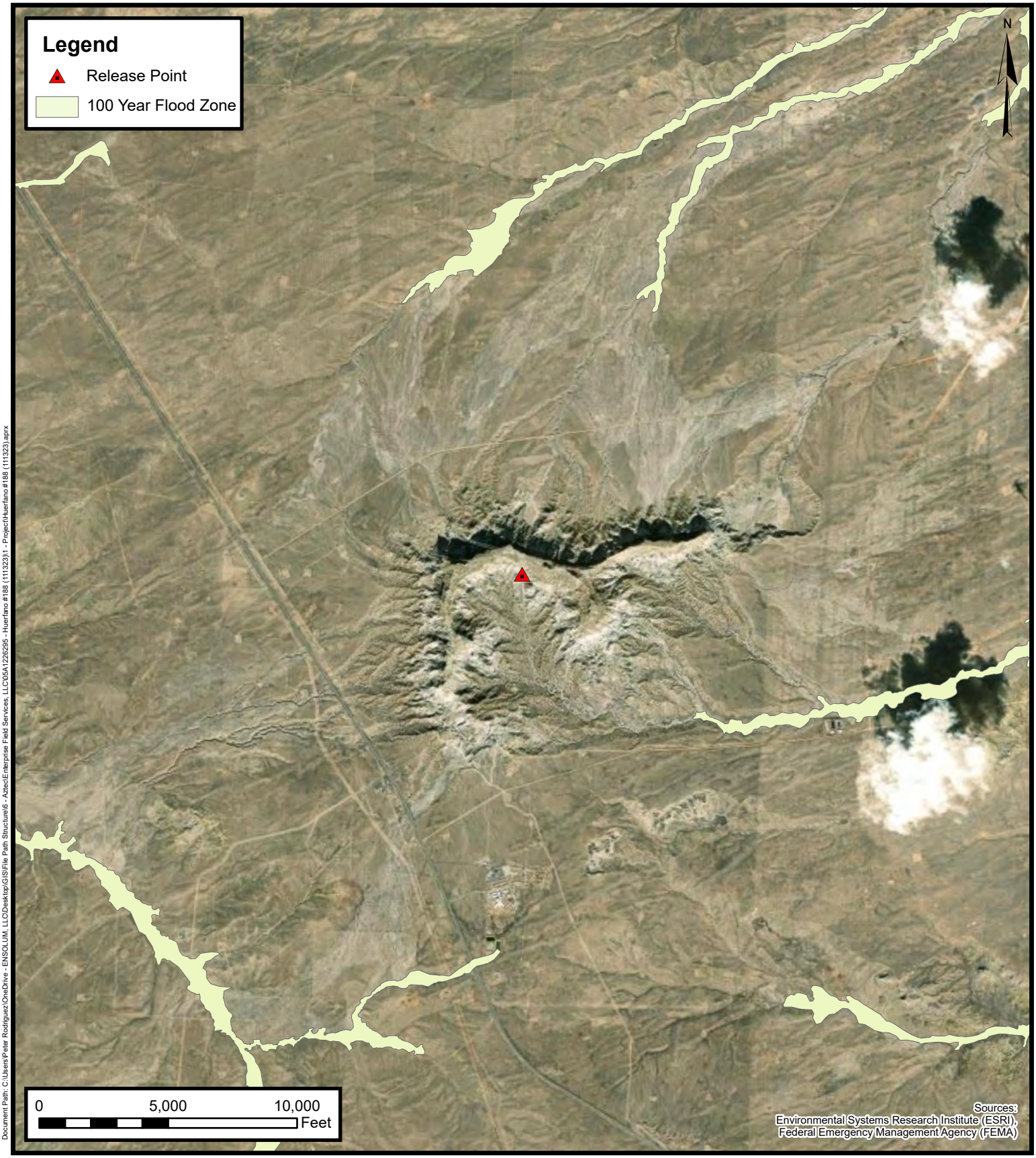
Mines, Mills, and Quarries

Enterprise Field Services, LLC
Huerfano #188 (11/13/23)
Project Number: 05A1226295
Unit Letter M, S06 T25N R09W, San Juan County, New Mexico
36.425127, -107.835661

FIGURE
G



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100-Year Flood Plain Map

Enterprise Field Services, LLC
Huerfano #188 (11/13/23)
Project Number: 05A1226295
Unit Letter M, S06 T25N R09W, San Juan County, New Mexico
36.425127, -107.835661

FIGURE
H

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

No records found.

PLSS Search:

Section(s): 6, 5, 7, 8 **Township:** 25N **Range:** 09W

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

No records found.

PLSS Search:

Section(s): 31, 32 **Township:** 26N **Range:** 09W

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

No records found.

PLSS Search:

Section(s): 36 **Township:** 26N **Range:** 10W

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

No records found.

PLSS Search:

Section(s): 1, 12 **Township:** 25N **Range:** 10W

30-045-20417

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO
(Submit 3 copies to OCD Aztec Office)

Operator HUERFANO UNIT #187 Location: Unit NE Sec. 6 Twp 25 Rng 9

Name of Well/Wells or Pipeline Serviced HUERFANO UNIT #187

cps 896w

Elevation 6723' Completion Date 7/3/75 Total Depth 375' Land Type* N/A

Casing, Sizes, Types & Depths N/A

If Casing is cemented, show amounts & types used N/A

If Cement or Bentonite Plugs have been placed, show depths & amounts used

N/A

Depths & thickness of water zones with description of water when possible:

Fresh, Clear, Salty, Sulphur, Etc. 125'

Depths gas encountered: N/A

Type & amount of coke breeze used: 14000 lbs.

Depths anodes placed: 320', 310', 300', 290', 280', 270', 260', 250', 240', 230'

Depths vent pipes placed: N/A

Vent pipe perforations: 235'

Remarks: Gb #1 FIRST HOLE CAVED.

RECEIVED
MAY 31 1991
Oil Con. Div.

If any of the above data is unavailable, please indicate so. Copies of all logs, including Drillers Log, Water Analyses & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included.

*Land Type may be shown: F-Federal; I-Indian; S-State; P-Fee.
If Federal or Indian, add Lease Number.

El Paso Natural Gas Company
Form 7-238 (Rev. 1-69)

WELL CASING
CATHODIC PROTECTION CONSTRUCTION REPORT
DAILY LOG

Logged

Drilling Log (Attach Hereto). ☐

Completion Date 7/3/75

Well Name	Location	CPS No.
Huerfano #187	NE 6 - 25N - 9W	896 W

Type & Size Bit Used	Work Order No.
6 3/4" edge 3600	184 - 54643.19-50-2

Anode Hole Depth	Total Drilling Rig Time	Total Lbs. Coke Used	Lost Circulation Mat'l Used	No. Sacks Mud Used
375 375		14,000		

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Anode Depth	320	310	300	290	280	270	260	250	240	230
Anode Output (Amps)	3.8	7.6	5.3	5.0	5.0	6.0	3.4	3.8	6.2	6.0

	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Anode Depth										
Anode Output (Amps)										

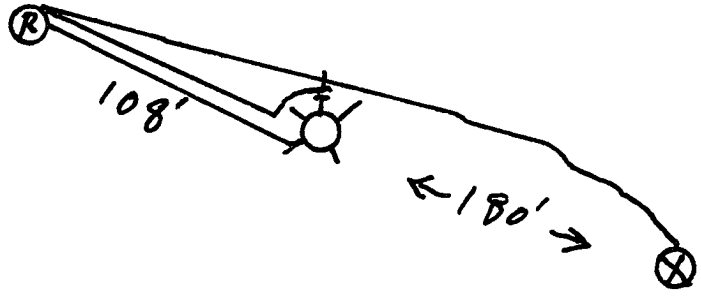
Total Circuit Resistance			No. 8 C.P. Cable Used	No. 2 C.P. Cable Used
Volts	Amps	Ohms	3050	

Remarks: Driller said water at 125'
Vent Perforated 235'
Drilled Hole #1, Hole caved unable to use
Drilled Hole #2 Ran Anodes Hole caved
But Anodes finally Responded To Coke
Next Day

All Construction Completed

Edward R. Pauley
(Signature)

GROUND BED LAYOUT SKETCH



Drilling - 1076.40
[illegible] - 256.34
[illegible] - 64.02
[illegible] - 283.65
[illegible] - 216.[illegible]
[illegible] 264.60
[illegible] - 83.-
[illegible] - 50.00
Rent - 195.00
2489.03

1035

EL PASO NATURAL GAS COMPANY
ENGINEERING DEPARTMENT

910W

Sheet Page 27 of 133
Date:
By:

896 W

	1.6	1.8		1.0		Driller said water @ 125
130	1.6	1.6	10	2.0		Well Penetrated 235'
	1.0	1.2		2.0		Hole #1 Tight Spot
40	.8	.8	20	2.0		@ 168 on #1 Anode
	.8	1.0		1.8		Worked Through Rock
90	1.2	1.5	30	1.4		Two other Anodes
	1.6	1.8		1.6		All Free Load Hole
80	1.6	1.6	40	1.6		With water truck
	1.4	1.5		1.4		To Run #4 Anode
70	1.2	1.3	50	1.2		Pulled Anodes out
	1.0	1.2		80 Total		Hole #2 Drilled
80	1.6	2.0	60			At Location 7:40
	1.2	1.2				@ 8:00 Driller Left
90	.6	.8				25' To go, @ 8:30
	.6	1.0				Coming out of Hole
200	1.0	1.0				Water Truck left
	1.4	1.6				Location 9:00 AM
10	1.6	2.0				
	1.6	1.8				1/2/20
20	1.6	2.0	1,1 1	4 320	2.4 1/4/20	2.0 — 5.8
	1.6	2.0	2.3 2	310	1.6	4.0 — 7.6
30	1.6	2.0 — 1.6	2.3 3	300	2.6	3.0 — 5.3
	2.0		1.7 4	190	2.4	2.4 5.0
40	2.0		1.6 5	240	2.6	2.6 5.0
	2.0		1.8 6	270	2.6	3.0 — 5.0
90	2.0		1.0 7	150	2.6	2.0 Loose 5.4
	2.0		1.1 8	150	2.6	2.0 5.8
60	2.0		1.2 9	240	2.6	2.2 Loose 6.2
	2.0		1.2 10	230	2.6	2.2 Loose 6.0
70	2.0					
	2.0			2750		
80	2.0			300		
	2.0			3050		
90	2.0					
	2.0					14 Sacks
300	2.0					

MW		gals/mol
16	C_1	6 4
30	C_2	10 12
44	C_3	10 42
58	IC_4	12 38
"	NC_4	11 93
72	IC_5	13 85
"	NC_5	13 71
86	IC_6	15 50
"	C_6	15 57
100	IC_7	17 2
"	C_7	17 46
114	C_8	19 9+
28	CO	9 64
42	C_3	9 67

MW	MISC	gals/mol
44	CO_2	6 38
34	H_2S	5 17
28	N_2	4 16
2	H_2	3 38

White - Water Resources Board
Canary - Drillers Copy
Pink - Drillers Copy

8960

STATE OF OKLAHOMA
WATER RESOURCES BOARD
5th Floor, Jim Thorpe Building
Oklahoma City, Oklahoma 73105

Application No. _____
Aquifer _____
Stream System Code _____
Use Code _____
County _____
(Office Use Only)

WELL DRILLERS REPORT

1. OWNER _____ ADDRESS _____

2. LOCATION ____ 1/4 ____ 1/4 ____ 1/4 Sec. ____ Twp. ____ N/S Rge. ____ E / W ____ County
PERMIT NO. _____

3. TYPE OF WORK	4. PROPOSED USE	5. TYPE WELL
☐ New Well ☐ Recondition	☐ Domestic ☐ Irrigation ☐ Test	☐ Cable ☐ Rotary
☐ Deepen ☐ Other	☐ Municipal ☐ Industrial ☐ Stock	☐ Other ☒ Rev. Rot.

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
sand stone		0	125	
yellow sandy shale		125	130	
blue sandy shale		130	154	
yellow sandstone		154	162	
sandy shale		162	170	
gray sandy shale		170	250	
brown sandy shale		250	300	
red shale		300	375	
Water 125				

Date started _____ , 19__
Date completed _____ , 19__

7. WELL TEST DATA

Pump R.P.M.	G.P.M.	Draw Down	After Hours Pump

8. WELL CONSTRUCTION

Diameter hole _____ inches Total depth _____ feet
Casing record _____
Weight per foot _____ Thickness _____

Diameter	From	To
_____ inches	_____ feet	_____ feet
_____ inches	_____ feet	_____ feet
_____ inches	_____ feet	_____ feet

Surface seal: ☐ Yes ☐ No Type _____
Depth of seal _____ feet
Gravel packed: ☐ Yes ☐ No
Gravel packed from _____ feet to _____ feet
Perforations:
Type perforation _____
Size perforation _____
From _____ feet to _____ feet
From _____ feet to _____ feet
From _____ feet to _____ feet

9. WATER LEVEL

Static water level _____ Feet below land surface _____
Flow _____ G.P.M. _____
Water temperature _____ F. Quality _____

10. DRILLERS CERTIFICATION

This well was drilled under my supervision and the report is true to the best of my knowledge.

Name _____
Address _____
Well driller's license number _____
Signed _____
Date _____

USE ADDITIONAL SHEETS IF NECESSARY

Form 407 1974

30-045-20448

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO
(Submit 3 copies to OCD Aztec Office)

Operator MERIDIAN OIL Location: Unit M Sec. 6 Twp 25 Rng 9

Name of Well/Wells or Pipeline Serviced HUERFANO UNIT #188

cps 897w

Elevation 6981' Completion Date 7/15/88 Total Depth 260' Land Type* N/A

Casing, Sizes, Types & Depths N/A

If Casing is cemented, show amounts & types used N/A

If Cement or Bentonite Plugs have been placed, show depths & amounts used

N/A

Depths & thickness of water zones with description of water when possible:

Fresh, Clear, Salty, Sulphur, Etc. 40', 100'

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OIL CON.

Depths gas encountered: N/A

Type & amount of coke breeze used: N/A

Depths anodes placed: 240', 230', 220', 210', 200'

Depths vent pipes placed: 260' OF 1" PVC VENT PIPE

Vent pipe perforations: BOTTOM 240'

Remarks: gb #2

If any of the above data is unavailable, please indicate so. Copies of all logs, including Drillers Log, Water Analyses & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included.

*Land Type may be shown: F-Federal; I-Indian; S-State; P-Fee.
If Federal or Indian, add Lease Number.

FM-07-0238 (Rev. 10-82)

WELL CASING

CATHODIC PROTECTION CONSTRUCTION REPORT

DAILY LOG

OK 9-5 comp 7-22-88

Drilling Log (Attach Hereto) ☒ **Completion Date** 7-15-88

CPS #	Well Name, Line or Plant:	Work Order #	Static:	Ins. Union Check
897W	Huerfano unit 168-DK	52310A		☐ Good ☐ Bad

Location	Anode Size:	Anode Type:	Size Bit:
M06-25-09	½" x 20"	Lida	6"

Depth Drilled	Depth Logged	Drilling Rig Time	Total Lbs. Coke Used	Lost Circulation Mat'l Used	No. Sacks Mud Used
260'	255'				

	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10
Anode Depth	240' to	200'								
Anode Output (Amps)										

	# 11	# 12	# 13	# 14	# 15	# 16	# 17	# 18	# 19	# 20
Anode Depth										
Anode Output (Amps)										

Total Circuit Resistance			No. 8 C.P. Cable Used	No. 2 C.P. Cable Used
Volts 11.9	Amps 17.8	Ohms .66		

Remarks: Driller said water to at 40' and 100'. No surface casing. Installed 260' of 1" PVC vent pipe, bottom 240 perforated. 1 five anode string, 10' center to center, total length 40'. Hole logged with 2½" x 2' durion anode Carbo 60 coke with anodes (75') from bottom to 170'; Metalurgical Cope to surface

QB 4073.00 (including junction box)

Rectifier Size: 40 V 16 A

Addn'l Depth

Depth Credit: 240' @ 3.50 −840.00 ✓

Extra Cable: 10' @ .24 2.40 ✓

Ditch & 1 Cable: 170' @ .70 119.00 ✓

25' Meter Pole:

20' Meter Pole:

10' Stub Pole:

All Construction Completed

(Signature)

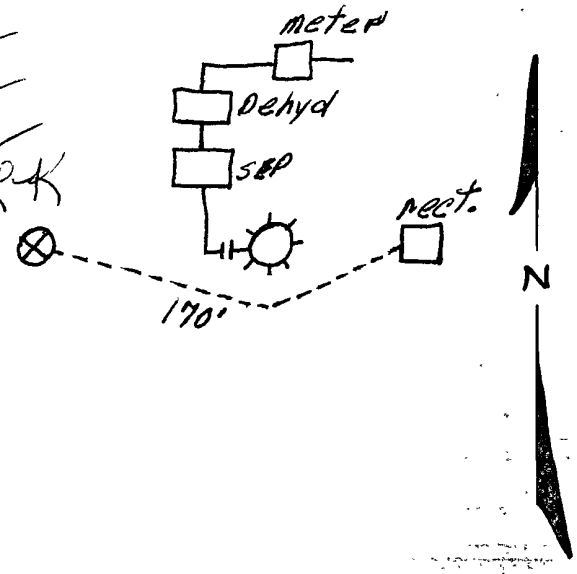
GROUND BED LAYOUT SKETCH

~~3355.40~~ 3354.40 ✓

~~164.77~~ 167.72 ✓

~~3523.17~~ 3522.12 ✓

LK



D. CRASS DRILLING CO.

Drill No. 3

DRILLER'S WELL LOG

S. P. No. HuerFano #188 Date 7-15-88

Client Meridian Oil Co. Prospect

County SAN JUAN State New Mex

If hole is a redrill or if moved from original staked position show distance and direction moved:

FROM	TO	FORMATION — COLOR — HARDNESS
0	40	Shale
40	50	Sand ~
50	90	Shale
90	105	Sand ~
105	145	Shale
145	155	Sandy Shale
155	260	Shale

Mud Bran Lime

Rock Bit Number Make

Remarks: Water @ 40' & 100'

Driller Ronnie Brown

WELL TYPE GROUNDBED DATA

DATA SHEET NO. _____

COMPANY Merrion Oil JOB No. 13128 DATE: 7-15-88

WELL: Hubbard #188 PIPELINE: _____

LOCATION: SEC. 6 TWP. 25 RGE. [redacted] CO. San Juan STATE N. Mex.

ELEV. _____ FT: ROTARY 260 FT: CABLE TOOL -0- FT: CASING -0- FT.

GROUNDBED: DEPTH _____ FT. DIA. 6 IN. GAS _____ LBS. ANODES 5 LIDA Stan

DEPTH, FT.	DRILLER'S LOG	EXPLORING ANODE TO STRUCTURE E	I	R	NO COKE I	WITH COKE I	ANODE NO.	DEPTH, TOP OF ANODES
	FIRST WATER 40							
50			1.5					
55			1.3					
60			1.2					
65			1.4					
70			1.4					
75			1.4					
80			1.5					
85			1.1					
90			1.7					
95			1.2					
100			0.8					
5			1.2					
10			1.3					
15			1.1					
20			1.4					
25			1.2					
30			1.2					
35			1.3					
40			1.4					
45			1.3					
50			1.2					
55			1.2					
60			1.4					
65			1.3					
70			1.2					
75			1.1					
80			1.2					
85			1.4					
90			1.1					
95			1.3					
200			1.3					
5			1.5					
10			1.5					
15			1.6		4.8	17.8		
20	5 LIDA STRING		1.5					
25			1.3					
30			1.5					
35			1.4					
40			0.9					
45			1.5					
50			1.4					
55	T.D 260							

GROUNDBED RESISTANCE: (I) VOLTS 11.9 - AMPS 17.8 - .666 OHMS

(2) VIBROGROUND _____ OHMS

GENERAL CATHODIC PROTECTION SERVICES CO.

A LUKENS COMPANY

3933

30-045-26237

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO
(Submit 3 copies to OCD Aztec Office)

Operator MERIDIAN OIL INC. Location: Unit D Sec. 6 Twp 25 Rng 9

Name of Well/Wells or Pipeline Serviced HUERFANO UNIT #188E

cps 1851w

Elevation 6719' Completion Date 9/1/87 Total Depth 400' Land Type* N/A

Casing, Sizes, Types & Depths N/A

If Casing is cemented, show amounts & types used N/A

If Cement or Bentonite Plugs have been placed, show depths & amounts used

N/A

Depths & thickness of water zones with description of water when possible:

Fresh, Clear, Salty, Sulphur, Etc. 140' NO SAMPLE

Depths gas encountered: N/A

Type & amount of coke breeze used: N/A

Depths anodes placed: 315', 290', 280', 270', 260', 240', 230', 220', 210', 200'

Depths vent pipes placed: 365'

Vent pipe perforations: 280'

Remarks: gb #1

RECEIVED
MAY 31 1991
OIL CON. DIV
DIST. 3

If any of the above data is unavailable, please indicate so. Copies of all logs, including Drillers Log, Water Analyses & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included.

*Land Type may be shown: F-Federal; I-Indian; S-State; P-Fee.
If Federal or Indian, add Lease Number.

FM-07-0238 (Rev. 10-82)

WELL CASING

CATHODIC PROTECTION CONSTRUCTION REPORT

DAILY LOG

Drilling Log (Attach Hereto) ☒

Completion Date: 9-1-87

CPS #	Well Name, Line or Plant:	Work Order #	Static:	Ins. Union Check
1851-W	HUERFANO # 188-E		600 SW = .82	☒ Good ☐ Bad

Location:	Anode Size:	Anode Type:	Size Bit:
D6-25-9	2" x 60"	DURIRON	6 3/4"

Depth Drilled	Depth Logged	Drilling Rig Time	Total Lbs. Coke Used	Last Circulation Med Used	No. Sacks Mud Used
400'	360'				

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Anode Depth	315'	290'	320'	270'	260'	240'	230'	220'	210'	200'
Anode Output (Amps)	4.2	5.3	6.2	5.8	6.6	4.7	7.8	7.6	6.6	5.9
Anode Depth	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Anode Output (Amps)	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20

Total Circuit Resistance				No. 8 C.P. Cable Used	No. 2 C.P. Cable Used
Volts 12.1	Amps 57.4	Ohms .44		NO EQUATION	

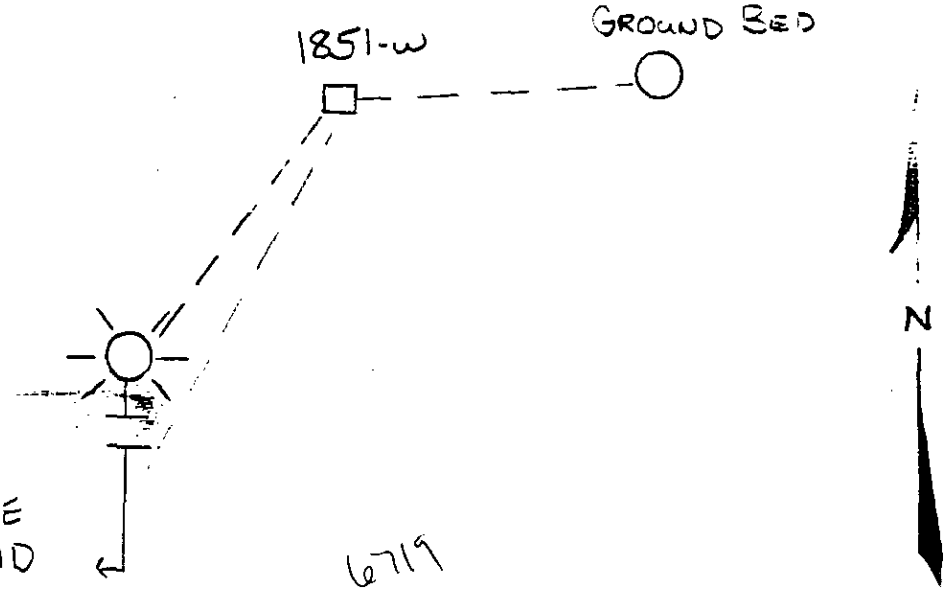
Remarks: DRILLED TO 400'; LOGGED 360'. DRILLER SAID WATER AT 140'. NO SAMPLE. INSTALLED 365' of 1" P.V.C VENT; PERFORATED BOTTOM 280'

Rectifier Size: 40 V 16 A
Addn'l Depth
Depth Credit: 140' ✓
Extra Cable: 30 ✓
Ditch & 1 Cable: 65' ✓
Ditch & 2 Cable: 120
25' Meter Pole:
[illegible] Meter Pole:
[illegible]: 1
[illegible]: 1

4300.00 ✓
-500.00 ✓
17.50 ✓
25.35 ✓
62.40 ✓
40.00 ✓
150.00 ✓
4225.25
201.26
4426.51

All Construction Completed

M. L. R. Williams
(Signature)



MERIDIAN OIL

P. O. BOX 4289-Phone 327-0251
FARMINGTON, NM

Date 9-1-87

DEEP WELL GROUNDBED LOG

Company Meridian Oil

Well No. #188-E Location D6-25-9 Volts Applied 12.1 A4 Amperes 27.4

Depth	Reading	Depth	Reading	Depth	Reading	Depth	Reading	
0								
5		230	2.3	455		680	① 315-2.8	4.2
10		235	2.7	460		685	② 290-3.0	5.3
15		240	2.5	465		690	③ 280-3.4	6.2
20		245	2.0	470		695	④ 270-3.2	5.8
25		250	1.2	475		700	⑤ 260-3.1	6.6
30		255	2.4	480		705	⑥ 240-3.1	4.7
35		260	2.6	485		710	⑦ 230-3.5	7.8
40		265	2.6	490		715	⑧ 220-3.5	7.6
45		270	2.7	495		720	⑨ 210-3.1	6.6
50		275	2.8	500		725	⑩ 200-3.1	5.9
55		280	2.9	505		730		
60		285	2.9	510		735		
65		290	2.5	515		740		
70		295	1.6	520		745	D1 65	
75		300	1.3	525		750	D2 120	
80		305	1.1	530		755		
85		310	1.6	535		760		
90		315	2.3	540		765		
95		320	1.8	545		770		
100		325	.9	550		775		
105		330	.7	555		780		
110		335	.7	560		785		
115		340	1.7	565		790		
120		345	2.7	570		795		
125		350	2.8	575		800		
130		355	2.9	580		805		
135		360	2.9 TD 360	585		810		
140		365		590		815		
145		370		595		820		
150	.9	375		600		825		
155	.7	380		605		830		
160	.7	385		610		835		
165	.[illegible]	390		615		840		
170	.8	395		620		845		
175	.6	400		625		850		
180	1.2	405		630		855		
185	.6	410		635		860		
190	.7	415		640		865		
195	1.8	420		645		870		
200	2.5	425		650		875		
205	2.7	430		655		880		
210	2.5	435		660		885		
215	2.7	440		665		890		
220	2.9	445		670		895		
225	[illegible].0	450		675		900		

BURGE
CORROSION SYSTEMS
301 Ash St.
Aztec, New Mexico 87410

CPS 185 W

Formations

Well Name Huerfano 188E S 6 T 25 R 9
Company Name

FOOTAGES			WATER	SHALE	SAND	SAND STONE	SOFT CUTTS	CLAY	GRAVEL	ROCK	CASED
0	120	SAND									
120	130	SHALE SAND									
130	140	SAND SHALE									
140	150	SAND									
150	160	SHALE									
160	200	SAND									
200	210	SHALE SAND									
210	220	SAND SHALE									
220	230	SAND SHALE Bentonite									
230	300	SHALE TR SAND									
300	320	SAND STONE SHALE									
320	340	SHALE SAND									
340	370	SAND STONE SHALE									
370	380	SHALE									
380	400	SAND STONE SHALE									

Anode Depth										
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	
Anode Output (Amps)										
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	
Anode Depth										
#11	#12	#13	#14	#15	#16	#17	#18	#19	#20	
Anode Output (Amps)										
#11	#12	#13	#14	#15	#16	#17	#18	#19	#20	
Total Circuit Resistance						No. 8 C.P. Cable Used		No. 2 C.P. Cable Used		
Volts	Amps	Ohms	Coke Breeze							

All Construction Complies

Signature

GROUND BED LAYOUT SKETCH

Date

N

Remarks:

30-045-05501

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO
(Submit 3 copies to OCD Aztec Office)

Operator MERIDIAN OIL Location: Unit NE Sec. 7 Twp 25 Rng 9

Name of Well/Wells or Pipeline Serviced HUERFANO UNIT #142

cps 898w

Elevation 6910' Completion Date 6/25/75 Total Depth 350' Land Type* N/A

Casing, Sizes, Types & Depths 8' OF 8 5/8 surface casing

If Casing is cemented, show amounts & types used N/A

If Cement or Bentonite Plugs have been placed, show depths & amounts used

N/A

Depths & thickness of water zones with description of water when possible:

Fresh, Clear, Salty, Sulphur, Etc. 138'

Depths gas encountered: N/A

Type & amount of coke breeze used: 3500 lbs.

Depths anodes placed: 285', 275', 265', 225', 215', 205', 195', 185', 175', 165'

Depths vent pipes placed: N/A

Vent pipe perforations: N/A

Remarks: gb #1

RECEIVED
MAY 31 1991
OIL CON. DIV.

If any of the above data is unavailable, please indicate so. Copies of all logs, including Drillers Log, Water Analyses & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included.

*Land Type may be shown: F-Federal; I-Indian; S-State; P-Fee.
If Federal or Indian, add Lease Number.

Form 7-238 (Rev. 1-69)

WELL CASING

CATHODIC PROTECTION CONSTRUCTION REPORT

DAILY LOG

Logged

Drilling Log (Attach Hereto) ☐

Completion Date 6-25-75

Well Name	Location	CPS No.
Huerfano #142	NE 7-26N-9W	898W

Type & Size Bit Used	Work Order No.
6 3/4	184-54361.19-50-20

Anode Hole Depth	Total Drilling Rig Time	Total Lbs. Coke Used	Lost Circulation Mat'l Used	No. Sacks Mud Used
350'		3500		

Anode Depth	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
	285	275	265	225	215	205	195	185	175	165
Anode Output (Amps)	3.8	4.8	5.0	3.6	4.4	6.4	5.4	4.8	4.2	3.6

Anode Depth	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Anode Output (Amps)										

Total Circuit Resistance				No. 8 C.P. Cable Used	No. 2 C.P. Cable Used
Volts	Amps	Ohms	.78	2490	

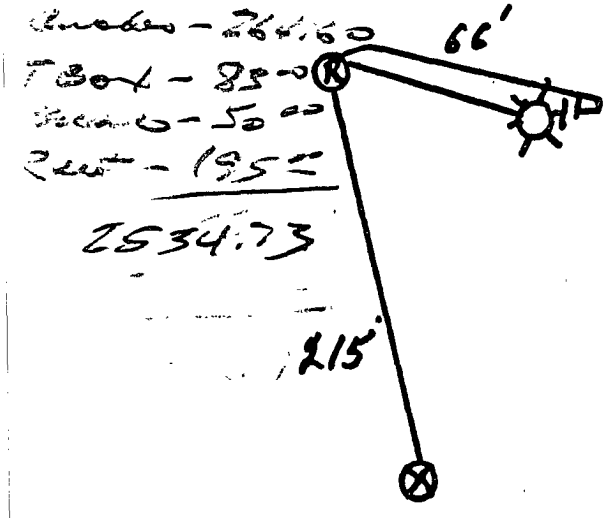
Remarks: Drill with Air Driller said water @ 138' Vent Hose 200' set 8' of 8 5/8 pipe for surface casing. Hole used water fast AT 15' 2 hours water truck time. Logging Anode stopped @ 330'

Driller - 992.16
Moto - 401.20
Sump - 106.70
Wire - 231.57
Coke - 210.00
Anodes - 264.60
Tool - 85.00
Pickup - 50.00
Rent - 195.00
2534.73

All Construction Completed

Edward R. Pankh
(Signature)

GROUND BED LAYOUT SKETCH



nal & 1 Copy All Reports

Form 7-1 (Rev. 11-74)

EL PASO NATURAL GAS COMPANY
ENGINEERING DEPARTMENT

Date:

By:

898 W

MW		gals/mol
16	C_1	6 4
30	C_2	10.12
44	C_3	10 42
58	IC_4	12 38
"	NC_4	11 93
72	IC_5	13 85
"	NC_5	13 71
86	IC_6	15 50
"	C_6	15 57
100	IC_7	17.2
"	C_7	17.46
114	C_8	19 99
28	$C_2^=$	9 64
42	$C_3^=$	9 67

MISC.

MW		gals/mol
44	CO_2	6 38
34	H_2S	5 17
28	N_2	4 16
2	H_2	3 38

	140	2.4
		2.4
	50	2.4
		1.6
	60	1.2
		1.4
	70	2.0
(9)		2.4
	80	2.2
(4)		2.4
	90	2.2
(7)		2.2
	200	2.4
(6)		2.5
	10	2.5
(3)		2.4
	20	2.2
(0)		2.0
	30	1.8
		1.8
	40	1.4
		1.6
	50	1.8
		1.6
	60	2.0
(5)		2.1
	70	2.6
(2)		2.4
	80	2.1
(1)		2.1
	90	1.6
		1.0
	300	1.0
		.8
	10	.6
		1.6

20	.8
	.6
30	.6 Bottom

Driller said water @ 138'

	SS	Water	Coke
1	285	2.4	3.8
2	275	2.4	4.8
3	265	2.4	5.0
4	225	2.0	3.6
5	215	2.2	4.4
6	205	2.5	5.4
7	195	2.4	5.4
8	185	2.4	4.8
9	175	2.4	4.2
10	165	2.2	3.6

2190
300
2490

11.8V 15A 0.78

White - Water Resources Board
Canary - Drillers Copy
Pink - Drillers Copy

STATE OF OKLAHOMA
WATER RESOURCES BOARD
5th Floor, Jim Thorpe Building
Oklahoma City, Oklahoma 73105

Application No. _____
Aquifer _____
Stream System Code _____
Use Code _____
County _____
(Office Use Only)

8 98 W

WELL DRILLERS REPORT

1. OWNER _____ ADDRESS _____

2. LOCATION _____ 1/4 _____ 1/4 _____ 1/4 Sec. SW 6 Twp. 25 N ■ Rge. 9 ● W _____ County
PERMIT NO. _____

3. TYPE OF WORK	4. PROPOSED USE	5. TYPE WELL
☐ New Well ☐ Recondition	☐ Domestic ☐ Irrigation ☐ Test	☐ Cable ☐ Rotary
☐ Deepen ☐ Other	☐ Municipal ☐ Industrial ☐ Stock	☐ Other ☐ Rev. Rot.

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
Water at		138		
blue shale		138	173	
sand stone		173	184	
blue shale		184	231	
grey sand stone		231	276	
blue shale		276	310	
white sand		310	321	
hard sand stone blue		321	328	
[illegible]				
blue sandy shale		328	350	

310'

Date started _____ , 19__
Date completed _____ , 19__

7. WELL TEST DATA

Pump R.P.M.	G.P.M.	Draw Down	After Hours Pump

8. WELL CONSTRUCTION

Diameter hole 6 3/4 inches Total depth 350 feet
Casing record _____
Weight per foot _____ Thickness _____

Diameter	From	To
_____ inches	_____ feet	_____ feet
_____ inches	_____ feet	_____ feet
_____ inches	_____ feet	_____ feet

Surface seal: ☐ Yes ☐ No Type _____
Depth of seal _____ feet
Gravel packed: ☐ Yes ☐ No
Gravel packed from _____ feet to _____ feet
Perforations:
Type perforation _____
Size perforation _____
From _____ feet to _____ feet
From _____ feet to _____ feet
From _____ feet to _____ feet

9. WATER LEVEL

Static water level _____ Feet below land surface _____
Flow _____ G.P.M. _____
Water temperature _____ F. Quality _____

10. DRILLERS CERTIFICATION

This well was drilled under my supervision and the report is true to the best of my knowledge.

Name _____
Address _____
Well driller's license number _____
Signed Billy R Morgan
Date _____

Form 407 - 1074 USE ADDITIONAL SHEETS IF NECESSARY

30-045-20437

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO
(Submit 3 copies to OCD Aztec Office)

Operator MERIDIAN OIL Location: Unit SW Sec. 7 Twp 25 Rng 9

Name of Well/Wells or Pipeline Serviced HUERFANO UNIT #189

cps 899w

Elevation 6879' Completion Date 6/23/75 Total Depth 425' Land Type* N/A

Casing, Sizes, Types & Depths N/A

If Casing is cemented, show amounts & types used N/A

If Cement or Bentonite Plugs have been placed, show depths & amounts used

N/A

Depths & thickness of water zones with description of water when possible:

Fresh, Clear, Salty, Sulphur, Etc. WET AT 170'

Depths gas encountered: N/A

Type & amount of coke breeze used: 3900 lbs.

Depths anodes placed: 380', 370', 360', 350', 340', 320', 305', 295', 280', 230'

Depths vent pipes placed: N/A

Vent pipe perforations: 230'

Remarks: gb #1

RECEIVED
MAY 31 1991
MAY 31 1991
OIL CON. DIV.
DIST. 3

If any of the above data is unavailable, please indicate so. Copies of all logs, including Drillers Log, Water Analyses & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included.

*Land Type may be shown: F-Federal; I-Indian; S-State; P-Fee.
If Federal or Indian, add Lease Number.

El Paso Natural Gas Company

Form 7-238 (Rev. 1-69)

WELL CASING CATHODIC PROTECTION CONSTRUCTION REPORT

DAILY LOG

Drilling Log (Attach Hereto). ☐

Completion Date 6-13-75

Well Name	Location	CPS No.
Huerfano # 189	SW 7- 25N-9W	899W

Type & Size Bit Used	Work Order No.
6 3/4"	184-54645.19-50-20

Anode Hole Depth	Total Drilling Rig Time	Total Lbs. Coke Used	Lost Circulation Mat'l Used	No. Sacks Mud Used
425		3,900		

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Anode Depth	380	370	360	350	340	320	305	295	280	230
Anode Output (Amps)	2.8	3.8	4.6	4.2	4.0	2.6	4.2	4.4	2.6	5.2

	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Anode Depth										
Anode Output (Amps)										

Total Circuit Resistance			No. 8 C.P. Cable Used	No. 2 C.P. Cable Used
Volts 11.8	Amps 16.0	Ohms 0.73Ω	3620'	120'

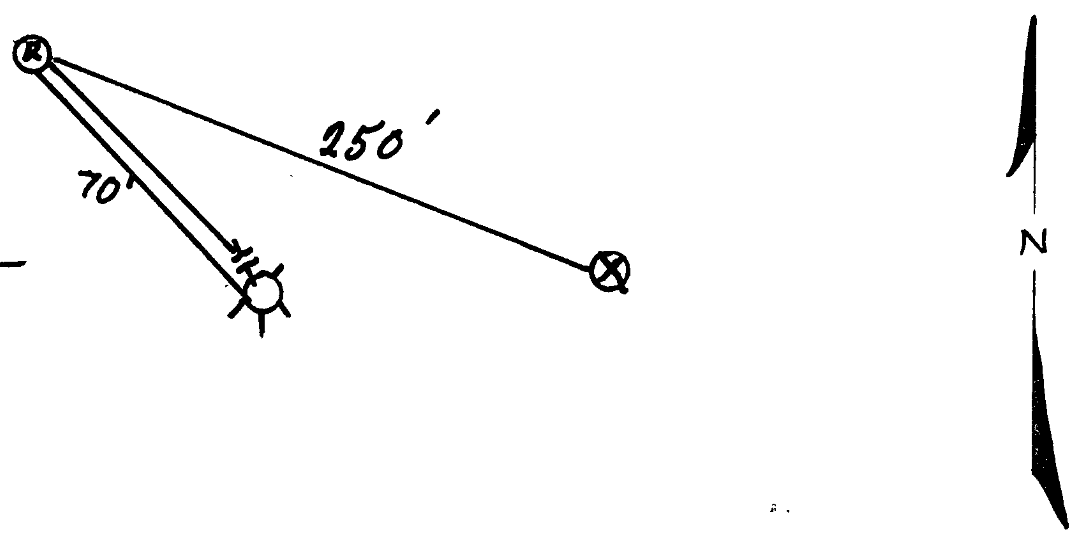
Remarks: Driller said weT @ 170' Increasing To 3 gal Min @ 224' VenT Hose Very Small Response To Coke on #1 Anode NoT Much Coke Around iT. Logging Anode STopped AT 400'

Coke - 234 —
Wire - 336.66
Anodes - 264.60
J Box - 83.00
Rect. - 195.00
Misc - 50.00
Driller 1263.60
mate - 426.40
Insp - 107.70
2960.96

All Construction Completed

Edward R. Parks
(Signature)

GROUND BED LAYOUT SKETCH



899W

MW		gals/mol
16	C_1	6 1
30	C_2	10 19
44	C_3	10 42
58	IC_4	12 38
"	NC_4	11 93
72	IC_5	13 85
"	NC_5	13 71
86	IC_6	15 50
"	C_6	15 57
100	IC_7	17 2
"	C_7	17 46
114	C_8	19 99
28	$C_2^=$	9 64
42	$C_3^=$	9 67

MW	MISC	gals/mol
44	CO_2	9 38
34	H_2S	5 17
28	N_2	4 16
2	H_2	3 38

170	2.0	(4)	50	2.0	Driller said wet @ 170	
	2.0			1.0	Increasing 8gal/min	
80	1.8	(3)	60	2.0	@ 224'	
	1.2			2.0	vent hose perforate	
90	1.4	(2)	70	1.0	230'	
	1.2			2.0		
200	1.4	(1)	80	2.0		
	1.2			1.8		
10	1.2		90	1.6		
	2.0			1.2		
20	2.2		400	BOTTOM		
	2.2					
(10) 30	2.2					
	1.8					
40	1.6					
	1.6					
50	1.4					
	1.0					
60	.8					
	1.0					
70	1.2					
	1.5					
(9) 80	1.6					
	.6					
90	.5					
(8)	1.6					
300	2.2					
(7)	2.2					
10	1.4					
	1.2					
(6) 20	1.6					
	1.2					
30	1.2					
	1.4					
(5) 40	1.8					
	2.0					

	S	water	Coke
1	380	2.2	2.8
2	370	2.2	3.8
3	360	2.2	4.6
4	350	2.2	4.2
5	340	2.0	4.0
6	320	1.8	2.6
7	305	2.2	4.2
8	295	2.2	4.4
9	280	1.6	2.6
10	230	2.2	5.2
	3320	11.9#	16.0# .732
	300		
	3620		

White - Water Resources Board
Canary - Drillers Copy
Pink - Drillers Copy

899-W

STATE OF OKLAHOMA
WATER RESOURCES BOARD
5th Floor, Jim Thorpe Building
Oklahoma City, Oklahoma 73105

Application No. _____
Aquifer _____
Stream System Code _____
Use Code _____
County _____
(Office Use Only)

WELL DRILLERS REPORT

1. OWNER _____ ADDRESS _____

2. LOCATION _____ 1/4 _____ 1/4 _____ 1/4 Sec. _____ Twp. _____ N/S Rge. _____ E/W _____ County
PERMIT NO. _____

3. TYPE OF WORK	4. PROPOSED USE	5. TYPE WELL
☐ New Well ☐ Recondition	☐ Domestic ☐ Irrigation ☐ Test	☐ Cable ☑ Rotary Rev
☐ Deepen ☑ Other	☐ Municipal ☐ Industrial ☒ Stock	☐ Other ☒ Rev. Rot.

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
blue shale		150	175	
lt gray sandy shale		175	224	
blue shale		224	248	
sandy shale		248	266	
gray sandstone		266	274	
blue shale		274	275	
gray sandy shale		275	280	
sandy shale w/ sandstone		280	310	
blue shale		310	336	
sandy shale		336	367	
blue shale		367	381	
red shale		381	388	
gray sandy shale		388	412	
white sandy bent.		412	425	
injected water at 190'				
increase in water appears 3 gpm				

Date started _____, 19__
Date completed _____, 19__

7. WELL TEST DATA

Pump R.P.M.	G.P.M.	Draw Down	After Hours Pump

8. WELL CONSTRUCTION

Diameter hole 6 3/4 inches Total depth 425 feet
Casing record _____
Weight per foot _____ Thickness _____

Diameter	From	To
_____ inches	_____ feet	_____ feet
_____ inches	_____ feet	_____ feet
_____ inches	_____ feet	_____ feet

Surface seal: ☐ Yes ☐ No Type _____
Depth of seal _____ feet
Gravel packed: ☐ Yes ☐ No
Gravel packed from _____ feet to _____ feet
Perforations:
Type perforation _____
Size perforation _____
From _____ feet to _____ feet
From _____ feet to _____ feet
From _____ feet to _____ feet

9. WATER LEVEL

Static water level _____ Feet below land surface _____
Flow _____ G.P.M. 3
Water temperature _____ F. Quality _____

10. DRILLERS CERTIFICATION

This well was drilled under my supervision and the report is true to the best of my knowledge.

Name _____
Address _____
Well driller's license number _____
Signed Billy R Morgan
Date _____

Form 407 - 1074 USE ADDITIONAL SHEETS IF NECESSARY

30-045-60020

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO
(Submit 3 copies to OCD Aztec Office)

Operator MERIDIAN OIL Location: Unit NW Sec. 8 Twp 25 Rng 9

Name of Well/Wells or Pipeline Serviced HUERFANO UNIT #155

cps 900w

Elevation 6862' Completion Date 6/26/75 Total Depth 400' Land Type* N/A

Casing, Sizes, Types & Depths N/A

If Casing is cemented, show amounts & types used N/A

If Cement or Bentonite Plugs have been placed, show depths & amounts used

N/A

Depths & thickness of water zones with description of Fresh, Clear, Salty, Sulphur, Etc. 220'

RECEIVED
MAY 31 1991
OIL CON. DIV.
DIST. 3

Depths gas encountered: N/A

Type & amount of coke breeze used: 3600 lbs.

Depths anodes placed: 360', 350', 340', 310', 290', 260', 250', 240', 230', 220'

Depths vent pipes placed: N/A

Vent pipe perforations: 200'

Remarks: cgb #1

If any of the above data is unavailable, please indicate so. Copies of all logs, including Drillers Log, Water Analyses & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included.

*Land Type may be shown: F-Federal; I-Indian; S-State; P-Fee.
If Federal or Indian, add Lease Number.

El Paso Natural Gas Company
Form 7-238 (Rev. 1-69)

WELL CASING
CATHODIC PROTECTION CONSTRUCTION REPORT
DAILY LOG

Drilling Log (Attach Hereto). ☐

Completion Date 6-26-75

Well Name	Location	CPS No.
Huerfano #155	NW 8-25N-9W	900W

Type & Size Bit Used	Work Order No.
6 3/4"	184-54401.19-50-20

Anode Hole Depth	Total Drilling Rig Time	Total Lbs. Coke Used	Lost Circulation Mat'l Used	No. Sacks Mud Used
400'		3600		

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Anode Depth	360	350	340	310	290	260	250	240	230	220
Anode Output (Amps)	2.8	2.4	2.2	1.8	2.4	2.4	3.0	4.2	4.4	3.8

	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Anode Depth										
Anode Output (Amps)										

Total Circuit Resistance Volts	Amps	Ohms	No. 8 C.P. Cable Used	No. 2 C.P. Cable Used
11.8	12.5	0.94	3140	

Remarks: Drill with Air. Driller said water at 220
Vent Hose Perforated 200' Logging Anode stop
at 380'

385

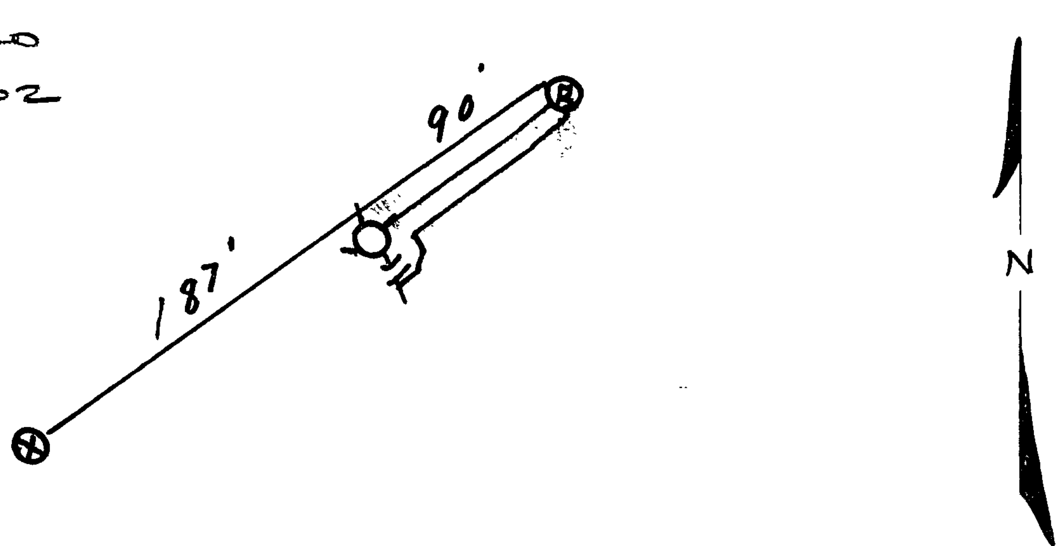
Charged Mat. Signed Driller Ticket

All Construction Completed

Edward R. Paulek
(Signature)

GROUND BED LAYOUT SKETCH

Coke = ~~$234.00~~ 216.00
Wire = ~~$336.66~~ 242.02
Anodes = $264.60
Junct. Box = $83.00
Rect. = $195.00
Misc. = $50.00
Driller 1201.20
~~[illegible]~~ 383.24
Supv. 106.70
2791.76



White - Water Resources Board
Canary - Drillers Copy
Pink - Drillers Copy

STATE OF OKLAHOMA
WATER RESOURCES BOARD
5th Floor, Jim Thorpe Building
Oklahoma City, Oklahoma 73105

Application No. _____
Aquifer _____
Stream System Code _____
Use Code _____
County _____
(Office Use Only)

700W

WELL DRILLERS REPORT

1. OWNER _____ ADDRESS _____

2. LOCATION _____ 1/4 _____ 1/4 _____ 1/4 Sec. NW 8 Twp. 25 N Rge. 9 E/W _____ County

PERMIT NO. Hugoton Unit #1883

3. TYPE OF WORK	4. PROPOSED USE	5. TYPE WELL
☐ New Well ☐ Recondition	☐ Domestic ☐ Irrigation ☐ Test	☐ Cable ☐ Rotary
☐ Deepen ☐ Other	☐ Municipal ☐ Industrial ☐ Stock	☐ Other ☐ Rev. Rot.

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
red shale		150	173	
gray sand		173	190	
Blue shale sandy		190	213	
Blue shale		213	220	Water 220
gray sand stone		220	238	
gray shale		238	260	
gray sandy shale		260	395	
red sandy shale		395	400	

Date started _____ , 19__
Date completed _____ , 19__

7. WELL TEST DATA

Pump R.P.M.	G.P.M.	Draw Down	After Hours Pump

8. WELL CONSTRUCTION

Diameter hole 6 3/4 inches Total depth _____ feet
Casing record _____
Weight per foot _____ Thickness _____

Diameter	From	To
_____ inches	_____ feet	_____ feet
_____ inches	_____ feet	_____ feet
_____ inches	_____ feet	_____ feet

Surface seal: ☐ Yes ☐ No Type _____
Depth of seal _____ feet
Gravel packed: ☐ Yes ☐ No
Gravel packed from _____ feet to _____ feet
Perforations:
Type perforation _____
Size perforation _____
From _____ feet to _____ feet
From _____ feet to _____ feet
From _____ feet to _____ feet

9. WATER LEVEL

Static water level _____ Feet below land surface _____
Flow _____ G.P.M. _____
Water temperature _____ F. Quality _____

10. DRILLERS CERTIFICATION

This well was drilled under my supervision and the report is true to the best of my knowledge.

Name Billy H Morgan
Address _____
Well driller's license number _____
Signed _____
Date _____

Form 407 - 1074

USE ADDITIONAL SHEETS IF NECESSARY

EL PASO NATURAL GAS COMPANY
ENGINEERING DEPARTMENT

Date:
By:

900 W

(10) 220	1.6					Driller said water @ 220
	1.8					vent Perforated 200'
9 30	2.0					
	2.0					
(8) 40	1.8					
	1.8					
(7) 50	1.6					
	1.4					
(6) 60	1.2					
	1.0				water	
70	.6	1	360	1.8	2.8	
	.5	2	350	1.4	2.4	
80	.5	3	340	1.2	2.2	
	1.2	4	310	1.0	1.8	
(5) 90	1.2	5	290	1.4	2.4	
	.8	6	260	1.4	2.4	
300	.8	7	250	1.6	3.0	
	.6	8	240	2.2	4.2	
(4) 10	1.0	9	230	2.4	4.4	
	.8	10	220	2.0	3.8	
20	.8					
	.6		2840		11.8V	12.6A 0.94
30	.6		300			
	.8		3140			
(3) 40	1.0					
	1.6					
(2) 50	1.0					
	.7					
(1) 60	1.2					
	1.7					
70	1.8					
	1.8					
80	1.8 BOTTOM					
90						

845 281-30-045-22494

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO
(Submit 3 copies to OCD Aztec Office)

Operator MERIDIAN OIL Location: Unit SE Sec. 5 Twp 25 Rng 9

Name of Well/Wells or Pipeline Serviced HUERFANO UNIT #281

cps 1232w

Elevation 6812' Completion Date 11/1/78 Total Depth 500' Land Type* N/A

Casing, Sizes, Types & Depths N/A

If Casing is cemented, show amounts & types used N/A

If Cement or Bentonite Plugs have been placed, show depths & amounts used

N/A

Depths & thickness of water zones with description of water when possible:

Fresh, Clear, Salty, Sulphur, Etc. 241'

Depths gas encountered: N/A

Type & amount of coke breeze used: 40 SACKS

Depths anodes placed: 465', 455', 445', 435', 425', 415', 405', 395', 385', 370'

Depths vent pipes placed: 480'

Vent pipe perforations: 300'

Remarks: gb #1

RECEIVED
MAY 31 1991
OIL CON. DIV
DIST. 3

If any of the above data is unavailable, please indicate so. Copies of all logs, including Drillers Log, Water Analyses & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included.

*Land Type may be shown: F-Federal; I-Indian; S-State; P-Fee.
If Federal or Indian, add Lease Number.

El Paso Natural Gas Company
Form 7-238 (Rev. 11-71)

WELL CASING
CATHODIC PROTECTION CONSTRUCTION REPORT
DAILY LOG

Drilling Log (Attach Hereto). ☐ Completion Date 11-1-78

Well Name	Location	CPS No.
Huerfano Unit #281	SE 5-25-9	1232 W

Type & Size Bit Used		Work Order No.
6 3/4	CONTRACT #3	57233.21

Anode Hole Depth	Total Drilling Rig Time	Total Lbs. Coke Used	Lost Circulation Mat'l Used	No. Sacks Mud Used
500-493		40 SACKS		

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Anode Depth	465	455	445	435	425	415	405	395	385	370
Anode Output (Amps)	4.9	5.1	5.5	5.6	6.0	5.0	4.5	5.1	4.8	2.5

	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Anode Depth										
Anode Output (Amps)										

Total Circuit Resistance			No. 8 C.P. Cable Used	No. 2 C.P. Cable Used
Volts 11.5	Amps 20.4	Ohms .56		

Remarks: STATIC C/S 600' E = .75 2" X 60" DURIRON
DRILLER SAID WATER AT 241 FT APPROX 1 GPM
INSTALLED 480' VENT PIPE PERFORATED 300 FT
SLURRIED 40 SACKS OF COKE

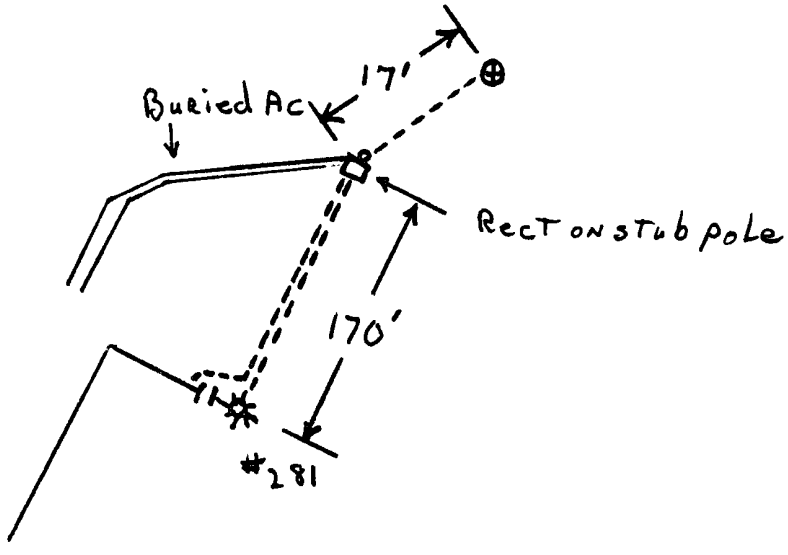
HOLE DEPTH = -7
CABLE + DITCH = 187'
EXTRA CABLE = 170'

40 V 16 A RECT
STUB POLE

All Construction Completed

Robert J Balnick
(Signature)

GROUND BED LAYOUT SKETCH



DISTRIBUTION
WHITE – Division Corrosion Office
YELLOW – Area Corrosion Office
PINK – Originator File

6812

Form 7-1 (Rev 9-77)

El Paso Natural Gas Company

ENGINEERING CALCULATION

Sheet: ____ of ____
Date: 11-1-78
By: ______
File: ______

1232W SE 5-25-9
Huerfano Unit #281 57233.21 ST /S 600'E = .75

MW		gals/mol
16.04	C_1	6.4
30.07	C_2	10.12
44.10	C_3	10.42
58.12	iC_4	12.38
58.12	nC_4	11.93
72.15	iC_5	13.85
72.15	nC_5	13.71
86.18	iC_6	15.50
86.18	C_6	15.57
100.21	iC_7	17.2
100.21	C_7	17.46
114.23	C_8	19.39
28.05	$C_2^=$	9.64
42.08	$C_3^=$	9.67

MISC

MW		gals/mol
32.00	O_2	3.37
28.01	CO	4.19
44.01	CO_2	6.38
64.06	SO_2	5.50
34.08	H_2S	5.17
28.01	N_2	4.16
2.02	H_2	3.38

DRILLER SAID WATER AT 241 FT APPROX 16PM
DRILLED 500 LOGGED 493
SLURRIED 40 SACKS OF COKE

Depth	Reading	Depth	Reading
240	2.7	440	2.7
	2.3		2.7 – 3
250	2.6	450	2.7
	2.6		2.8 – 2
260	2.3	460	2.9
	2.5		2.5 – 1
270	2.6	470	2.4
	2.4		2.1
280	1.1	480	2.0
	.5		
290	.2	490	493 TD
	.2		
300	.3	500	
	.5		
310	.6		
	.7		
320	.8		
	.5		
330	.4		
	.5		
340	1.2		
	.8		
350	[illegible]		
	[illegible]		
360	[illegible]		
	.8		
370	1.5 – 10		
	1.4		
380	2.5		
	2.7 – 9		
390	2.[illegible]		
	2.4 – 8		
400	2.5		
	2.[illegible] – 7		
410	2.7		
	3.0 – 6		
420	2.6		
	2.3 – 5		
430	2.8		
	2.9 – 4		

80' VENT 300 PERF.

YOU 16 A RECT
STUB POLE
HOLE DEPTH = 7
CABLE + DITCH = 187'
EXTRA CABLE = 170'
40 SACKS COKE

① 465 –	3.1 –	4.9
② 455 –	3.1 –	5.1
③ 445 –	3.2 –	5.5
④ 435 –	3.3 –	5.6
⑤ 425 –	[illegible] –	6.0
⑥ 415 –	2.8 –	[illegible]
⑦ 405 –	2.7 –	[illegible]
⑧ 395 –	[illegible] –	[illegible]
⑨ 385 –	2.8 –	[illegible]
⑩ 370 –	1.2 –	2.5

11.5 ÷ 20.4 A = .56 ohms

Form 22-2 (Rev. 1-61)

EL PASO NATURAL GAS COMPANY

DRILLING DEPARTMENT

DAILY DRILLING REPORT

1232 W

LEASE WELL NO. 1232W CONTRACTOR O'Briant RIG NO. 1 REPORT NO. DATE Nov 1 19 78

MORNING

Driller Total Men In Crew

FROM	TO	FORMATION	WT-BIT	R.P.M.

NO. DC ____ SIZE ____ LENG. ____

BIT NO. DC ____ SIZE ____ LENG. ____

SERIAL NO. STANDS

SIZE SINGLES

TYPE DOWN ON KELLY

MAKE TOTAL DEPTH

MUD RECORD

Time	Wt.	Vis.

MUD, ADDITIVES USED AND RECEIVED

FROM	TO	TIME BREAKDOWN
0	35	Sand
35	75	Shale
75	97	Sand
97	175	Shale
175	205	Sand
205	215	Shale

REMARKS –

DAYLIGHT

Driller Total Men In Crew

FROM	TO	FORMATION	WT-BIT	R.P.M.

NO DC ____ SIZE ____ LENG ____

BIT NO. NO. DC ____ SIZE ____ LENG ____

SERIAL NO. STANDS

SIZE SINGLES

TYPE DOWN ON KELLY

MAKE TOTAL DEPTH

MUD RECORD

Time	Wt.	Vis.

MUD, ADDITIVES USED AND RECEIVED

FROM	TO	TIME BREAKDOWN
215	235	Sandy Shale
235	241	Shaly Coal - water
241	242	Coal - water
242	245	Sandstone
245	288	Shale
288	405	Sand

REMARKS –

EVENING

Driller Total Men In Crew

FROM	TO	FORMATION	WT-BIT	R.P.M.

NO. DC ____ SIZE ____ LENG. ____

BIT NO. NO DC ____ SIZE ____ LENG. ____

SERIAL NO. STANDS

SIZE SINGLES

TYPE DOWN ON KELLY

MAKE TOTAL DEPTH

MUD RECORD

Time	Wt.	Vis.

MUD, ADDITIVES USED AND RECEIVED

FROM	TO	TIME BREAKDOWN
405	480	Sandy Shale
430	500	Shale

REMARKS – Drilled 500 ft w/ 6 3/4
Logged 493
1gpm est. water @ 241

SIGNED: Toolpusher Tom O'Brient Company Supervisor

30-045-20660 5202

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO
(Submit 3 copies to OCD Aztec Office)

Operator MERIDIAN OIL Location: Unit NW Sec. 32 Twp 26 Rng 9

Name of Well/Wells or Pipeline Serviced HUERFANO UNIT #208

cps 936w

Elevation 6589' Completion Date 7/25/75 Total Depth 320' Land Type* N/A

Casing, Sizes, Types & Depths N/A

If Casing is cemented, show amounts & types used N/A

If Cement or Bentonite Plugs have been placed, show depths & amounts used

N/a

Depths & thickness of water zones with description of water when possible:

Fresh, Clear, Salty, Sulphur, Etc. DAMP AT 50'-70', 135'-140', 147'-160'

WET 160'

Depths gas encountered: N/A

Type & amount of coke breeze used: 3200 lbs.

Depths anodes placed: 260', 250', 240', 230', 220', 210', 200', 190', 180', 170'

Depths vent pipes placed: N/A

Vent pipe perforations: 140'

Remarks: gb #1

RECEIVED
MAY 31 1991
OIL CO.
DIST.

If any of the above data is unavailable, please indicate so. Copies of all logs, including Drillers Log, Water Analyses & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included.

*Land Type may be shown: F-Federal; I-Indian; S-State; P-Fee.
If Federal or Indian, add Lease Number.

El Paso Natural Gas Company
Form 7-238 (Rev. 1-69)

WELL CASING
CATHODIC PROTECTION CONSTRUCTION REPORT
DAILY LOG

Drilling Log (Attach Hereto). ☐

Completion Date 7-25-75

Well Name: Huerfano Unit #208	Location: NW 32-26-9				CPS No.: 936 W
Type & Size Bit Used: 6 3/4					Work Order No.: 54747.19-50-20
Anode Hole Depth: 320	Total Drilling Rig Time:	Total Lbs. Coke Used: 3200	Lost Circulation Mat'l Used:		No. Sacks Mud Used:

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Anode Depth	260	250	240	230	220	210	200	190	180	170
Anode Output (Amps)	5.4	5.3	4.9	5.0	4.9	5.4	5.3	5.0	5.5	4.8

	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Anode Depth										
Anode Output (Amps)										

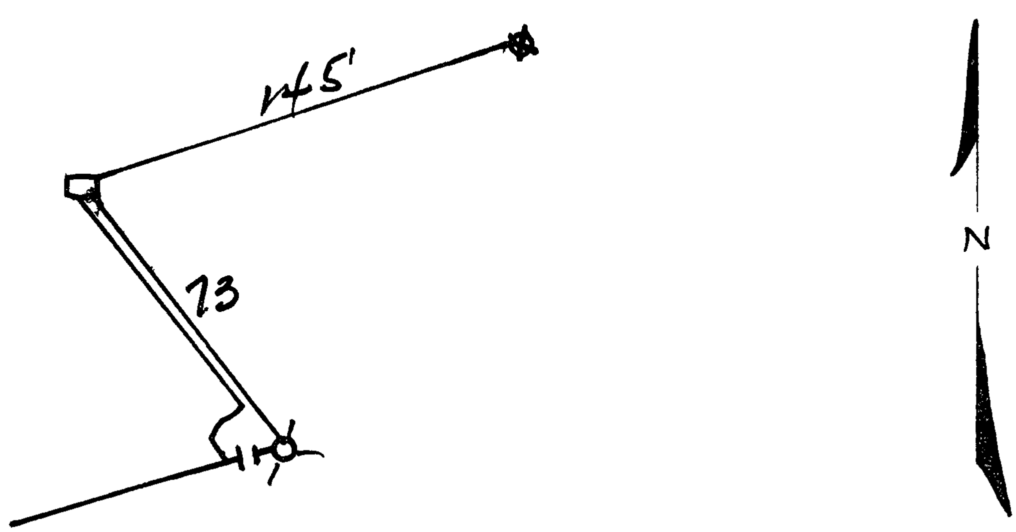
Total Circuit Resistance				
Volts 9.5	Amps 19.5	Ohms 0.49	No. 8 C.P. Cable Used: 2450	No. 2 C.P. Cable Used:

Remarks: Driller Said Damp at 50 To 70, 135 To 140, 147 To 160 - Start Water injection at 160' Fill with Water to log. Water Next A.M. at 6[illegible]
Vent Perforated 140'
32 Sax Coke

Driller 726.08
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
2069.27

All Construction Completed
Daniels
(Signature)

GROUND BED LAYOUT SKETCH



Original & 1 Copy All Reports

Form 22-2 (Rev. 1-61)

EL PASO NATURAL GAS COMPANY

DRILLING DEPARTMENT

7-24-75 DAILY DRILLING REPORT

LEASE ____ WELL NO. 936-W CONTRACTOR ____ RIG NO. 3991 REPORT NO. ____ DATE ____ 19__

MORNING

Driller ____ Total Men In Crew ____

FROM	TO	FORMATION	WT-BIT	R.P.M.
0.0	1.0	Sand		
1.0	45.0	Sandstone		
45.0	50.0	Shale		
50.0	70.0	Sandstone		

BIT NO. ____ NO. DC ____ SIZE ____ LENG. ____
NO. DC ____ SIZE ____ LENG. ____
SERIAL NO. ____ STANDS ____
SIZE 6 3/4 SINGLES ____
TYPE ____ DOWN ON KELLY ____
MAKE ____ TOTAL DEPTH ____

MUD RECORD: Time ____ Wt. ____ Vis. ____

MUD, ADDITIVES USED AND RECEIVED ____

FROM	TO	TIME BREAKDOWN
210	235.0	Shale gray
235.0	237.0	Sandstone
237.0	245.0	Shale gray
245.0	248.0	Sandstone
248.0	274.0	Shale
274	284.0	Sandstone

REMARKS – Damp at 50 to 70'
135 to 140'
147 to 160'
Wet at 160'

DAYLIGHT

Driller ____ Total Men In Crew ____

FROM	TO	FORMATION	WT-BIT	R.P.M.
70.0	110.0	Shale gray		
110.0	130.0	Sandstone		
130.0	135.0	Shale		
135.0	140.0	Sandstone		

BIT NO. ____ NO. DC ____ SIZE ____ LENG. ____
NO. DC ____ SIZE ____ LENG. ____
SERIAL NO. ____ STANDS ____
SIZE ____ SINGLES ____
TYPE ____ DOWN ON KELLY ____
MAKE ____ TOTAL DEPTH ____

MUD RECORD: Time ____ Wt. ____ Vis. ____

MUD, ADDITIVES USED AND RECEIVED ____

FROM	TO	TIME BREAKDOWN
284.0	286.0	Shale gray
286.0	295.0	Sandstone
295.0	310.0	Shale gray
310.0	320.0	Sandstone
320.0	—	TD

REMARKS – Wet at 160' to 320'

EVENING

Driller ____ Total Men In Crew ____

FROM	TO	FORMATION	WT-BIT	R.P.M.
140.0	147.0	Shale		
147.0	182.0	Sandstone		
182.0	205.0	Shale		
205.0	210.0	Sandstone		

BIT NO. ____ NO. DC ____ SIZE ____ LENG. ____
NO. DC ____ SIZE ____ LENG. ____
SERIAL NO. ____ STANDS ____
SIZE ____ SINGLES ____
TYPE ____ DOWN ON KELLY ____
MAKE ____ TOTAL DEPTH ____

MUD RECORD: Time ____ Wt. ____ Vis. ____

MUD, ADDITIVES USED AND RECEIVED ____

FROM	TO	TIME BREAKDOWN

REMARKS –

SIGNED: Toolpusher Jimmy Jones ____ Company Supervisor ____

EL PASO NATURAL GAS COMPANY
ENGINEERING DEPARTMENT

Date:
By:

936w

160	1.8	150	Driller said Dampat
	1.6		50 To 70
70	1.8	60	135 To 140
	1.8		147 To 160
80	2.2	70	Wetat 160 - starting
	2.4		
90	2.4	80	Fill to Log -
	2.4		Water Next AM at 60'
200	2.4	90	
	2.4		Vent Perf 140'
10	2.4	←200	
	2.4		
20	2.2	10	
	2.3		
30	2.2	20	
	2.4		
40	2.4	30	
	2.3		
50	2.4	40	
	2.5		
60	2.6	50	
	2.6		
70	2.4	60	
	2.4		
80	2.2	70	
	2.4		
90	2.4	60	
	2.6	288 T.D.	
300		90	
10		300	
20		10	
		20	

1	260		5.4
2	250		5.3
3	240		4.9
4	230		5.0
5	220		4.9
6	210		5.4
7	200		5.3
8	190		5.0
9	180		5.5
10	170		4.8

9.5 Volts 19.5 Amps = 0.495

MW		gals/mol
16	C_1	6 4
30	C_2	10 12
44	C_3	10 42
58	IC_4	12 38
"	NC_4	11 93
72	IC_5	13 85
"	NC_5	13 71
86	IC_6	15 50
"	C_6	15 57
100	IC_7	17 2
"	C_7	17 46
114	C_8	19 39
28	$C_2^=$	9 64
42	$C_3^=$	9 67

MISC		
MW		gals/mol
44	CO_2	6 36
34	H_2S	5 17
28	N_2	4 16
2	H_2	3 38

30-045-13030 5203

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO
(Submit 3 copies to OCD Aztec Office)

Operator MERIDIAN OIL Location: Unit SE Sec. 31 Twp 26 Rng 9

Name of Well/Wells or Pipeline Serviced HUERFANO UNIT #137

cps 935w

Elevation 6643' Completion Date 8/5/75 Total Depth 325' Land Type* N/A

Casing, Sizes, Types & Depths N/A

If Casing is cemented, show amounts & types used N/A

If Cement or Bentonite Plugs have been placed, show depths & amounts used

N/A

Depths & thickness of water zones with description of water when possible:

Fresh, Clear, Salty, Sulphur, Etc. 135', 172'

Depths gas encountered: N/A

Type & amount of coke breeze used: 3900 lbs.

Depths anodes placed: 250', 240', 230', 220', 195', 185', 175', 165', 155', 145'

Depths vent pipes placed: N/A

Vent pipe perforations: 200'

Remarks: gb #1

RECEIVED
MAY 31 1991
OIL CON. DIV.
DIST. 3

If any of the above data is unavailable, please indicate so. Copies of all logs, including Drillers Log, Water Analyses & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included.

*Land Type may be shown: F-Federal; I-Indian; S-State; P-Fee.
If Federal or Indian, add Lease Number.

El Paso Natural Gas Company
Form 7-238 (Rev. 1-69)

WELL CASING
CATHODIC PROTECTION CONSTRUCTION REPORT
DAILY LOG

Drilling Log (Attach Hereto) ☐

Completion Date 8-5-75

Well Name		Location		CPS No.
Huerfano #137		SE31-26N-9W		935W
Type & Size Bit Used: 6 3/4"				Work Order No. 64317.19-50-…
Anode Hole Depth: 325'	Total Drilling Rig Time	Total Lbs. Coke Used: 3,900	Lost Circulation Mat'l Used	No. Sacks Mud Used

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Anode Depth	250	240	230	220	195	185	175	165	155	14…
Anode Output (Amps)	5.0	4.8	4.6	4.4	3.4	4.4	5.0	4.2	4.8	4.…

	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Anode Depth										
Anode Output (Amps)										

Total Circuit Resistance			No. 8 C.P. Cable Used	No. 2 C.P. Cable Used
Volts 11.8	Amps 18.0	Ohms 0.65	2160'	

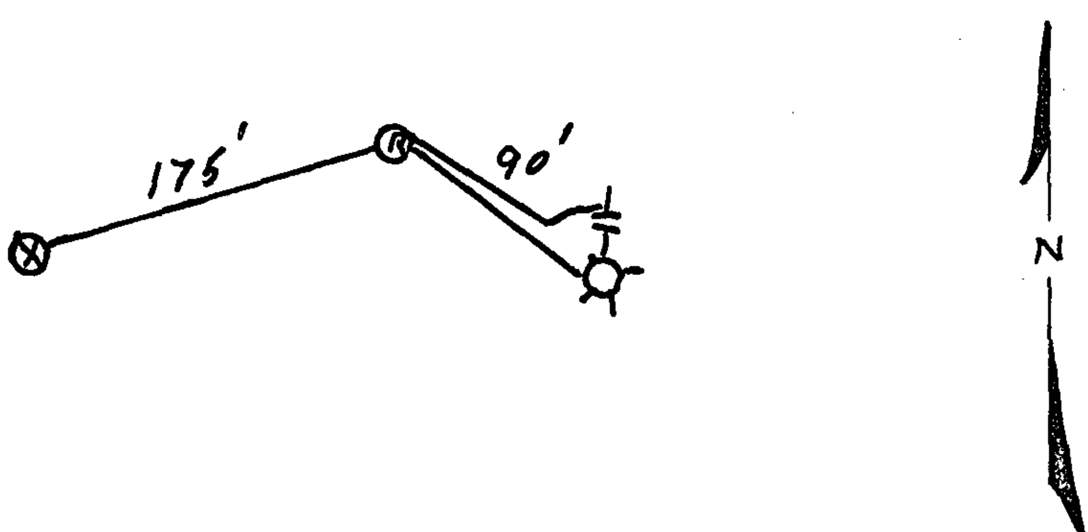
Remarks: Drill with Driller said water at 135 more water at 172' started placing anodes loose rock falling in hole pulled anodes out driller came back and circulated with mud. Logging anode stopped first time at 299'. Logging anode stopped after mud at 265'. Vent hose perforated 200'

All Construction Completed

Edward R. Paulek
(Signature)

Driller 952.88
Mate [illegible]
Insp [illegible]
Wire 200.87
Coke 231.00
[illegible] 144.60
T Box 83.00
[illegible] [illegible]
[illegible] [illegible]
2484.22

GROUND BED LAYOUT SKETCH



MORGAN DRILLING COMPANY

P.O. Box 326 • Broken Bow, Oklahoma 74728

Ph. Office 405/584-6000
Mobile 584-6860
Night 420-3248

DATE 8-4-75

Work Order No. 54317-19-50-2

CUSTOMER El Paso Gas co.	SERVICE ADDRESS	CITY

SER. NO. OS 9356'	REQ. NO.	SERVICEMAN	VEHICLE NO. T. 4	DATE COMPLETED 8-4-7

LITHOLOGIC LOG

Material	From	To	Water Strata	Time
~~[illegible]~~	0		~~[illegible]~~	~~[illegible]~~
Red sandy shale	0	35	135	9:55
Red sand stone	35	40	0	10:04
✓ ✓ ✓	40	100	172	11:05
✓ ✓ ✓	100	110		11:10
sandy shale	110	130		11:20
Gray sand stone	130	135		11:25
Blue shale	135	150		11 30
Blue shale	150	160		11 40
Gray sandy shale	160	168		11:43
Blue shale	168	215		12:05
Gray sand stone	215	226		12:09
Blue shale	226	325		12:55

Date started 8-4-75, 1975
Date completed , 1975

INSTRUCTIONS:

SERVICE PERFORMED:

TOTAL DEPTH 299'

RIG TIME

WATER TRUCK

DRILLERS CERTIFICATION

This well was drilled under my supervision and the report is true to th[e best] of my knowledge.

Name Al Gibson

Address

Well driller's license number

Signed

Date

Customer's Signature
By Edward R. Paal[illegible]

EL PASO NATURAL GAS COMPANY
ENGINEERING DEPARTMENT

Date:
By:

935W

140	2.4					Driller said water
(10)	2.0					at 135 more at 172
30	2.0					
(9)	2.4					
60	2.2					
(8)	2.4					
70	2.4					
(7)	2.6					
(M) 80	2.6					
(6)	2.4					
(F) 90	2.4					
(5)	2.0					
200	1.2					
	1.2					
10	1.6					
	2.2					
(4) 20	2.4		1.250	2.8	5.0	
	2.4		2.240	2.8	4.8	
(3) 30	2.4		3.230	2.8	4.6	
	2.4		4.220	2.6	4.4	
(2) 40	2.6		5.195	2.4	3.4	
	2.6		6.180	2.8	4.4	
(1) 50	2.6		7.175	3.0	5.0	
	2.4		8.160	2.6	4.2	
60	2.4		9.155	2.8	4.8	
	2.4	Bottom Alt. Mkr	10.145	2.4	4.0	
(A) 70	2.2					
	2.4		1860	11.8	18.0	0.65
(J) 80	2.4		300			
	1.2		2160			
90	1.6					
299	BOTTOM					
300						
10						

MW		gals/mol
16	C_1	6.4
30	C_2	[illegible]
44	C_3	10.42
58	IC_4	12.38
"	NC_4	11.93
72	IC_5	13.85
"	NC_5	13.71
86	IC_6	15.50
"	C_6	15.57
100	IC_7	17.2
"	C_7	17.46
114	C_8	[illegible]
28	C_1	9.64
42	C_3	9.62

MW	MISC.	gals/mol
44	CO_2	6.38
34	H_2S	5.53
28	N_2	4.16
2	H_2	1.38

30-045-20038 5204

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO
(Submit 3 copies to OCD Aztec Office)

Operator MERIDIAN OIL Location: Unit NW Sec. 31 Twp 26 Rng 9

Name of Well/Wells or Pipeline Serviced HUERFANO UNIT #166

cps 934w

Elevation 6611' Completion Date 8/4/75 Total Depth 325' Land Type* N/A

Casing, Sizes, Types & Depths 33' OF 8" STEEL PIPE, 23' OF 8' PLASTIC CASING.

If Casing is cemented, show amounts & types used N/A

If Cement or Bentonite Plugs have been placed, show depths & amounts used

N/A

Depths & thickness of water zones with description of water when possible:

Fresh, Clear, Salty, Sulphur, Etc. 155'

Depths gas encountered: N/A

Type & amount of coke breeze used: 3000 lbs.

Depths anodes placed: 285', 275', 245', 235', 225', 215', 205', 195', 185', 175'

Depths vent pipes placed: N/A

Vent pipe perforations: 200'

Remarks: cgb #1

If any of the above data is unavailable, please indicate so. Copies of all logs, including Drillers Log, Water Analyses & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included.

*Land Type may be shown: F-Federal; I-Indian; S-State; P-Fee.
If Federal or Indian, add Lease Number.

El Paso Natural Gas Company
Form 7-238 (Rev. 1-69)

WELL CASING
CATHODIC PROTECTION CONSTRUCTION REPORT
DAILY LOG

Drilling Log (Attach Hereto). ☐

Completion Date 8/4/75

Well Name	Location	CPS No.
Huerfano # 166	NW 31-26N-9W	934W

Type & Size Bit Used	Work Order No.
6 3/4"	54480.19-50-26

Anode Hole Depth	Total Drilling Rig Time	Total Lbs. Coke Used	Lost Circulation Mat'l Used	No. Sacks Mud Used
325		3,000		

	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10
Anode Depth	285	275	245	235	225	215	205	195	185	175
Anode Output (Amps)	5.0	4.0	3.6	3.8	5.2	6.2	4.6	4.2	4.2	4.2

	# 11	# 12	# 13	# 14	# 15	# 16	# 17	# 18	# 19	# 20
Anode Depth										
Anode Output (Amps)										

Total Circuit Resistance Volts	Amps	Ohms	No. 8 C.P. Cable Used	No. 2 C.P. Cable Used
		.68	2540	

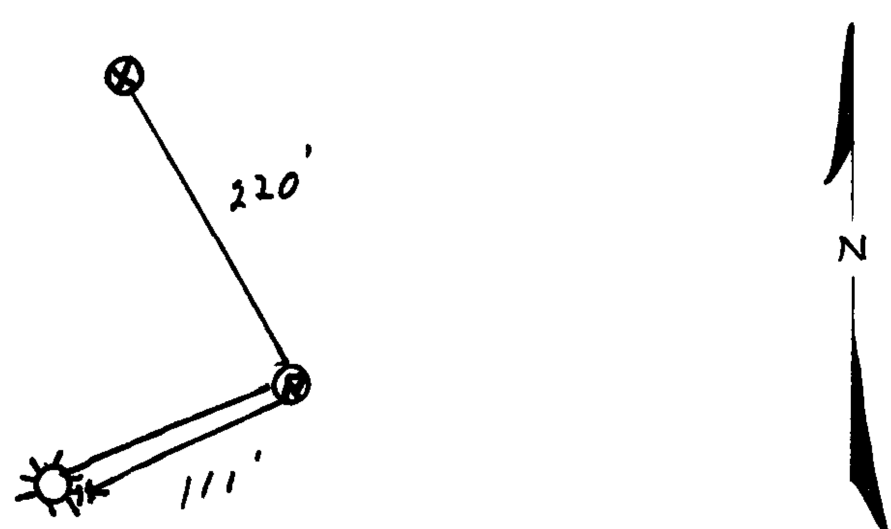
Remarks: Drill with Air. Driller said water AT 155' Driller set 33' 8" steel pipe 23' of 8" Plastic casing logging Anode stopped AT 309' Vent Hose Perforated 200'

Driller 964.08
Mate. 466.96
Insp. 213.40
Wire [illegible]
Coke . 180.[illegible]
Anodes [illegible]
J Box [illegible]
Rect. [illegible]
[illegible] [illegible]
2652.76

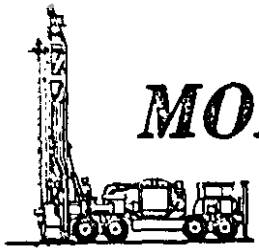
All Construction Completed

Edward R. Paulek
(Signature)

GROUND BED LAYOUT SKETCH



927



MORGAN DRILLING COMPANY

P.O. Box 326 • Broken Bow, Oklahoma 74728

Ph. Office 405/584-6000
Mobile 584-6860
Night 420-3248

DATE 8-14-75

Work Order No. 5 4420-19-50-2
CRS-934-W-166

CUSTOMER	SERVICE ADDRESS	CITY	
El Paso Nat Gas Co.			
TEL. NO. / REQ. NO.	SERVICEMAN	VEHICLE NO.	DATE COMPLETED
		T-4	

LITHOLOGIC LOG

Material	From	To	Water Strata	Time
Tan sandy shale	150	165	155	7:19
Red shale	165	205		7:31
Tan sandy shale	205	295		8:17
Red shale	295	325		8:35
	325			8:46

Date started 8-1-75, 1975
Date completed , 1975

INSTRUCTIONS:

SERVICE PERFORMED:

TOTAL DEPTH ~~325~~ - 307 ft

RIG TIME

WATER TRUCK

DRILLERS CERTIFICATION

This well was drilled under my supervision and the report is true to the of my knowledge.

Name Alb Gibson

Address

Well driller's license number

Signed

Date

Customer's Signature
By Edward R. Pouch

EL PASO NATURAL GAS COMPANY
ENGINEERING DEPARTMENT

Sheet
Date:
By:

934W

160	2.4	Oxiliex Said Water
	2.4	AT 155'
70	2.2	Vent Hose Perforated
	2.4	200'
80	2.4	
	2.2	
90	2.2	
	2.4	
200	2.3	
	2.4	
10	2.4	
	2.6	
20	2.4	
	2.4	
30	2.4	
	2.0	
40	2.0	
	2.0	
50	1.8	
	1.6	
60	1.6	
	1.4	
70	1.6	
	2.2	
80	2.2	
	2.4	
90	2.2	
	2.0	
300	1.8	
	BOT 309	
10		
20		

	S	S	
1.285	2.6	5.0	
2.275	2.4	4.0	
3.245	2.0	3.6	
4.235	2.0	3.8	
5.225	2.6	5.2	
6.215	2.8	5.2	
7.205	2.6	4.6	
8.195	2.6	4.2	
9.185	2.4	4.2	
10.175	2.6	5.2	
1240	11.8V	17.5	0.68-2
300			
1540			

1320

137E 30-045-26242

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO
(Submit 3 copies to OCD Aztec Office)

Operator MERIDIAN OIL INC. Location: Unit A Sec. 31 Twp 26 Rng 9

Name of Well/Wells or Pipeline Serviced HUERFANO UNIT #137E

cps 1837w

Elevation 6575' Completion Date 9/8/87 Total Depth 400' Land Type* N/A

Casing, Sizes, Types & Depths N/A

If Casing is cemented, show amounts & types used N/A

If Cement or Bentonite Plugs have been placed, show depths & amounts used

N/A

Depths & thickness of water zones with description of water when possible:

Fresh, Clear, Salty, Sulphur, Etc. 90' - 100' NO SAMPLE

Depths gas encountered: N/A

Type & amount of coke breeze used: N/A

Depths anodes placed: 285', 270', 260', 250', 235', 225', 215', 205', 195', 180'

Depths vent pipes placed: 385'

Vent pipe perforations: 300'

Remarks: gb #1

RECEIVED
MAY 31 1991
OIL CON. DIV.
DIST. 3

If any of the above data is unavailable, please indicate so. Copies of all logs, including Drillers Log, Water Analyses & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included.

*Land Type may be shown: F-Federal; I-Indian; S-State; P-Fee.
If Federal or Indian, add Lease Number.

FM-07-0238 (Rev 10-82)

9-9-87 in computer

WELL CASING
CATHODIC PROTECTION CONSTRUCTION REPORT
DAILY LOG

Drilling Log (Attach Hereto) ☐ 95-430 01 Completion Date 9-8-87

CPS #	Well Name, Line or Plant:	Work Order #	State:	Ins. Union Check
1837-w	HUERFANO # 137-E		83 - 600' East	☒ Good ☒ Bad

Location	Anode Size:	Anode Type:	Size Bit:
A 31-26-9	2" x 60"	Duriron	6 3/4"

Depth Drilled	Depth Logged	Drilling Rig Time	Total Lbs Coke Used	Lost Circulation Mat'l Used	No. Sacks Mud Used
400'	383'				

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Anode Depth	285'	270'	260'	250'	235'	225'	215'	205'	195'	180'
Anode Output (Amps)	6.2	7.8	7.8	6.1	7.4	7.0	7.9	7.8	6.4	7.2
Anode Depth	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Anode Output (Amps)	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20

Total Circuit Resistance				No. 8 C.P. Cable Used	No. 2 C.P. Cable Used
Volts 12.1	Amps 31.4	Ohms .39			

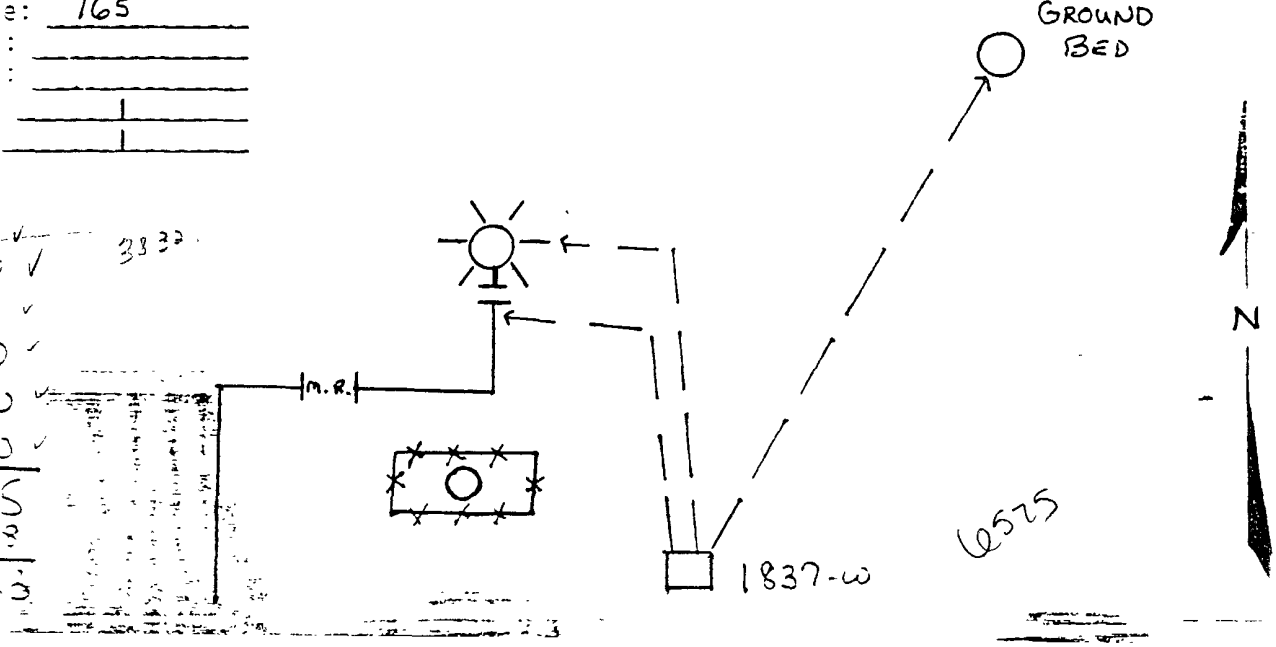
Remarks: DRILLED TO 400', LOGGED 383'. DRILLER SAID WATER AT 90' – 100' NOT ENOUGH for sample. INSTALLED 385' of 1" PVC VENT PIPE; PERFORATED BOTTOM 300'

Rectifier Size: 40 V 16 A
Addn'l Depth
Depth Credit: 117' ✓
Extra Cable: 30' ✓
Ditch & 1 Cable: 165' ✓
Ditch & 2 Cable: 165'
25' Meter Pole:
20' Meter Pole:
10' Stub Pole: 1
Junction Box: 1

All Construction Completed

(Signature)

4300.00
-468.00 ✓
7.50 ✓
64.35 ✓
85.80 ✓
150.00
40.00 ✓
4179.65
208.98
4388.63



MERIDIAN OIL

P. O. BOX 4289-Phone 327-0251
FARMINGTON, NM

Date 9-8-87

DEEP WELL GROUNDBED LOG

Company Meridian Oil

Well No. #137-E Location A 31-26-9 Volts Applied 12.1 .39 Amperes 31.4

Depth	Reading	Depth	Reading	Depth	Reading	Depth	Reading
0							
5		230	3.6	455		680	① 285' 4.2 - 6.2
10		235	3.5	460		685	② 270' 4.0 - 7.8
15		240	3.3	465		690	③ 260' 3.9 - 7.8
20		245	3.3	470		695	④ 250' 3.9 - 6.1
25		250	3.4	475		700	⑤ 235' 3.8 - 7.4
30		255	3.3	480		705	⑥ 225' 3.8 - 7.0
35		260	3.4	485		710	⑦ 215' 4.0 - 7.9
40		265	3.5	490		715	⑧ 205' 4.0 - 7.8
45		270	3.5	495		720	⑨ 195' 4.0 6.4
50		275	3.3	500		725	⑩ 180' 3.7 7.2
55		280	3.4	505		730	
60		285	3.6	510		735	D1 - 165
65		290	3.3	515		740	D2 - 165'
70		295	3.2	520		745	
75		300	3.2	525		750	
80		305	3.1	530		755	
85		310	2.8	535		760	
90		315	2.2	540		765	
95		320	1.9	545		770	
100		325	1.6	550		775	
105		330	2.6	555		780	
110		335	2.9	560		785	
115		340	2.9	565		790	
120	3.6	345	2.9	670		795	
125	3.8	350	2.4	575		800	
130	3.6	355	1.9	580		805	
135	3.5	360	1.3	585		810	
140	2.9	365	.9	590		815	
145	2.6	370	.8	595		820	
150	3.3	375	.9	600		825	
155	3.5	380	.9 TD 383	605		830	
160	3.3	385		610		835	
165	3.3	390		615		840	
170	3.3	395		620		845	
175	3.4	400		625		850	
180	3.4	405		630		855	
185	3.3	410		635		860	
190	3.6	415		640		865	
195	3.6	420		645		870	
200	3.5	425		650		875	
205	3.8	430		655		880	
210	3.7	435		660		885	
215	3.7	440		665		890	
220	3.6	445		670		895	
225	3.5	450		675		900	

BURGE
CORROSION SYSTEMS
301 Ash St.
Aztec, New Mexico 87410

GPS 1837W

Formations

Well Name HUERFANO 137 E Q S 31 T 26 R 9
Company Name MERIDIAN OIL

FOOTAGES			WATER	SHALE	SAND	SAND STONE	BENT ONITE	CLAY	GRAVEL	ROCK	CASED
0	100	SAND									
100	110	CLAY SAND SHALE									
110	120	SHALE SANDSTONE									
120	310	RED SHALE									
310	360	GREY SHALE									
360	400	SAND SHALE									

Anode Depth	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Anode Output (Amps)	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Anode Depth	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Anode Output (Amps)	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20

Total Circuit Resistance				No. 8 C.P. Cable Used	No. 2 C.P. Cable Used
Volts	Amps	Ohms	Coke Breeze		

All Construction Completed
Brad Howle
Signature
9-8-87
Date

GROUND BED LAYOUT SKETCH

N

Remarks:

3925

30-045-26260

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO
(Submit 3 copies to OCD Aztec Office)

Operator MERIDIAN OIL INC. Location: Unit M Sec. 31 Twp 26 Rng 9

Name of Well/Wells or Pipeline Serviced HUERFANO UNIT #166E

cps 1843w

Elevation 6664' Completion Date 9/3/87 Total Depth 400' Land Type* N/A

Casing, Sizes, Types & Depths N/A

If Casing is cemented, show amounts & types used N/A

If Cement or Bentonite Plugs have been placed, show depths & amounts used

N/A

Depths & thickness of water zones with description of water when possible:

Fresh, Clear, Salty, Sulphur, Etc. 90' & 160' NO SAMPLE

Depths gas encountered: N/A

Type & amount of coke breeze used: N/A

Depths anodes placed: 320', 310', 300', 265', 255', 245', 235', 210', [illegible]

Depths vent pipes placed: 350'

Vent pipe perforations: 300'

Remarks: gb #1

RECEIVED
MAY 31 1991
OIL CON. DIV.
DIST. 3

If any of the above data is unavailable, please indicate so. Copies of all logs, including Drillers Log, Water Analyses & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included.

*Land Type may be shown: F-Federal; I-Indian; S-State; P-Fee.
If Federal or Indian, add Lease Number.

FM-07-0238 (Rev. 10-82)

WELL CASING

CATHODIC PROTECTION CONSTRUCTION REPORT

DAILY LOG

Comp 9-4-87

Drilling Log (Attach Hereto) ☒

95-38101

Completion Date 9-3-87

CPS #	Well Name, Line or Plant:	Work Order #	Static:	Ins. Union Check
1843.w	HUERFANO #166-E		600' N = .84	☒ Good ☐ Bad

Location	Anode Size:	Anode Type:	Size Bit:
M31-26-9	2" x 60"	Duriron	6 3/4"

Depth Drilled	Depth Logged	Drilling Rig Time	Total Lbs. Coke Used	Lost Circulation Mat'l Used	No. Sacks Mud Used
400'	345'				

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Anode Depth	320'	310'	300'	265'	255'	245'	235'	210'	200'	175'
Anode Output (Amps)	6.2	7.7	7.7	7.2	7.4	7.0	6.8	6.5	6.2	6.0
Anode Depth	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Anode Output (Amps)	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20

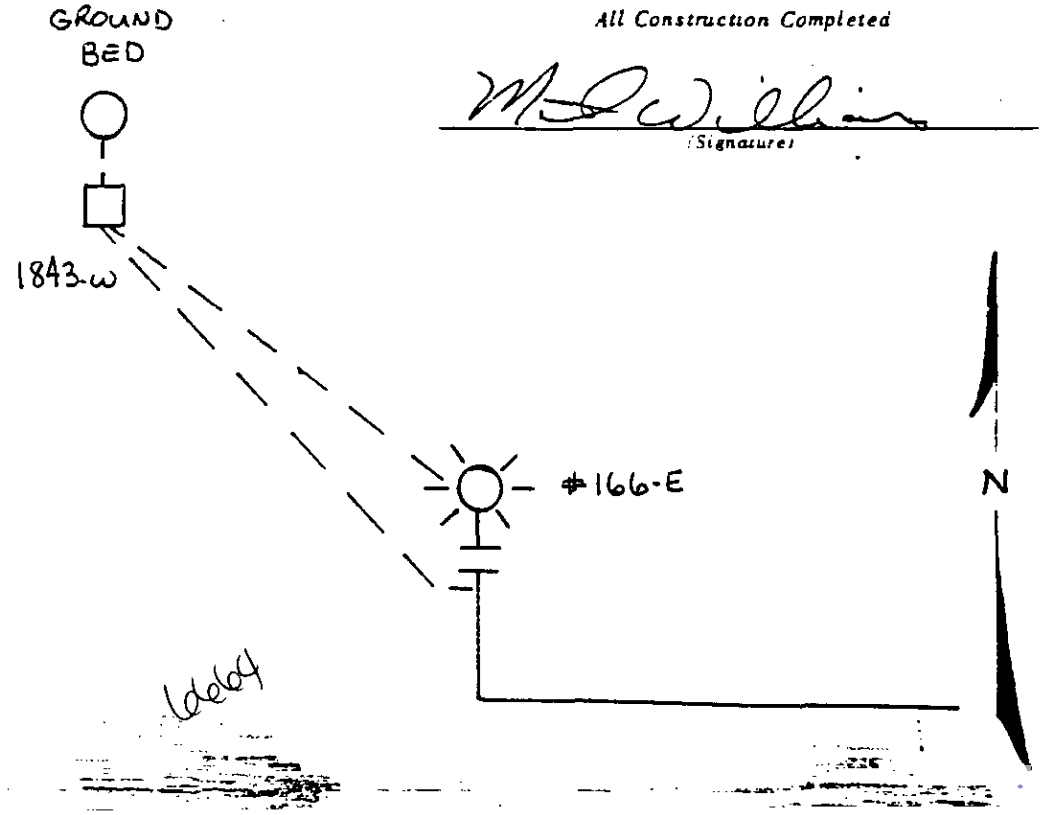
Total Circuit Resistance				No. 8 C.P. Cable Used	No. 2 C.P. Cable Used
Volts 12.1	Amps 30.6	Ohms .395		ELEVATION = 6664'	

Remarks: DRILLED TO 400'; LOGGED 345'. DRILLER SAID WATER AT 90' & 160'; NOT ENOUGH for SAMPLE. INSTALLED 350' of 1" PVC VENT PIPE; PERFORATED BOTTOM 300'

Rectifier Size: 40 V 16 A
Addn'l Depth
Depth Credit: 155' ✓
Extra Cable: 30 ✓
Ditch & 1 Cable: 10' ✓
Ditch & 2 Cable: 120' ✓
25' Meter Pole:
20' Meter Pole:
10' Stub Pole: 1 ✓
Junction Box: 1 ✓

All Construction Completed

M. L. Williams
(Signature)



4300.00
- 620.00 ✓
7.50 ✓
3.90 ✓
62.40 ✓
150.00 ✓
40.00
3943.80
197.19
4140.99 ✓

BURGER CORROSION SYSTEMS, INC.

P.O. BOX 1359 - PHONE 334-6141
AZTEC, NEW MEXICO 87410

DEEP WELL GROUNDBED LOG

Date 9-3-87

Company MERIDIAN OIL

Well No. 166-E Location M 31-26-9 Volts Applied 12.1 .395 Amperes 30.6

0		230	1.0		455			680	①	3.20	- 3.7 - 6.2
5		235	2.6		460			685	②	3.10	- 3.5 - 7.2
10		240	2.9		465			690	③	3.00	- 3.5 - 7.7
15		245	2.9		470			695	④	2.65	- 3.3 - 7.2
20		250	2.8		475			700	⑤	2.55	- 3.5 - 7.4
25		255	3.1		480			705	⑥	2.45	- 3.5 - 7.0
30		260	3.1		485			710	⑦	2.35	- 3.2 - 6.8
35		265	2.9		490			715	⑧	2.10	- 3.2 - 6.5
40		270	2.5		495			720	⑨	2.00	- 3.2 - 6.2
45		275	1.4		500			725	⑩	1.75	- 3.1 - 6.0
50		280	.7		505			730			
55		285	.5		510			735			
60		290	1.8		515			740			
65		295	2.8		520			745			
70		300	3.0		525			750			
75		305	2.9		530			755			
80		310	3.1		535			760			
85		315	2.9		540			765			
90		320	2.9		545			770			
95		325	2.9		550			775			
100		330	2.5		555			780			
105		335	2.4		560			785			
110		340	2.6		565			790			
115		345	2.6	TO 345	670			795			
120		350			575			800			
125		355			580			805			
130		360			585			810			
135		365			590			815			
140		370			595			820			
145		375			600			825			
150		380			605			830			
155	1.1	385			610			835			
160	1.4	390			615			840			
165	2.2	395			620			845			
170	2.6	400			625			850			
175	2.7	405			630			855			
180	2.6	410			635			860			
185	2.4	415			640			865			
190	1.8	420			645			870			
195	2.4	425			650			875			
200	2.8	430			655			880			
205	3.0	435			660			885			
210	2.8	440			665			890			
215	2.5	445			670			895			
220	2.3	450			675			900			
225	1.4										

BURGE
CORROSION SYSTEMS
301 Ash St.
Aztec, New Mexico 87410

Huerfano 166 E   CPS ~~Blw~~   CPS 1843W

Formations   Well Name ~~[illegible]~~   S 31 T 26 R 9

Company Name

FOOTAGES			WATER	SHALE	SAND	SAND STONE	BENT ONITE	CLAY	GRAVEL	ROCK	CASED
0	110	SAND									
110	120	~~[illegible]~~ SHALE SAND									
120	130	SANDSTONE									
130	150	SAND SHALE									
150	170	SAND									
170	180	SHALE SAND									
180	280	SHALE SAND CLAY									
280	290	SAND									
290	300	SHALE SAND									
300	340	SHALE SAND									
340	350	SAND SHALE									
350	380	SHALE SAND									
380	400	SAND									

Anode Depth									
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Anode Output (Amps)									
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Anode Depth									
#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Anode Output (Amps)									
#11	#12	#13	#14	#15	#16	#17	#18	#19	#20

Total Circuit Resistance				No. 8 C.P. Cable Used	No. 2 C.P. Cable Used
Volts	Amps	Ohms	Coke Breeze		

All Construction Completed

[signature]
Signature

GROUND BED LAYOUT SKETCH

Date

N

Remarks:

E

427

30-045-05613

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO
(Submit 3 copies to OCD Aztec Office)

Operator MERIDIAN OIL Location: Unit SE Sec. 36 Twp 26 Rng 10

Name of Well/Wells or Pipeline Serviced HUERFANO UNIT #134

cps 1004w

Elevation 6699' Completion Date 11/11/85 Total Depth 360' Land Type* N/A

Casing, Sizes, Types & Depths N/A

If Casing is cemented, show amounts & types used N/A

If Cement or Bentonite Plugs have been placed, show depths & amounts used

N/A

Depths & thickness of water zones with description of water when possible:

Fresh, Clear, Salty, Sulphur, Etc. 80', 120'-150'

Depths gas encountered: N/A

Type & amount of coke breeze used: N/A

Depths anodes placed: 330',315', 300', 285', 270', 255', 240', 225', 210', 195'

Depths vent pipes placed: N/A

Vent pipe perforations: N/A

Remarks: gb #2

RECEIVED
MAY 31 1991
OIL CON. DIV.
DIST. 3

If any of the above data is unavailable, please indicate so. Copies of all logs, including Drillers Log, Water Analyses & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included.

*Land Type may be shown: F-Federal; I-Indian; S-State; P-Fee.
If Federal or Indian, add Lease Number.

WELL CASING

CATHODIC PROTECTION CONSTRUCTION REPORT

DAILY LOG

Log (Attach Hereto) ☐ REDRILL Completion Date 11/11/85

CPS # 1004/W Well Name, Line or Plant: HUERFANO #134 Work Order # 54298 Static: Ins. Union Check: ☒ Good ☐ Bad

Location	Anode Size	Anode Type	Size Bit
SE 36-26-10	2" x 60"	DURIRON	6 3/4"

Depth Drilled	Depth Logged	Drilling Rig Time	Total Lbs. Coke Used	Lost Circulation Mat'l Used	No. Sacks Mud Used
360'	355'				

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Anode Depth	330	315	300	285	270	255	240	225	210	195
Anode Output (Amps)	8.1	6.3	7.8	5.1	7.5	7.4	6.0	5.9	5.2	6.8
Anode Depth	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Anode Output (Amps)	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20

Total Circuit Resistance			No. 8 C.P. Cable Used	No. 2 C.P. Cable Used
Volts 12.9	Amps 22.5	Ohms .57		

Remarks: Water at 80' & 120-150'. Lost circulation at 260'. drill bleed for 100'.

Rectifier Size: V A
Addn'l Depth
Depth Credit: 145' x 3.00 = 435.00
Extra Cable: 10' x .37 = 3.70
Ditch & 1 Cable: 60' x 1.35 = 81.00
25' Meter Pole:
20' Meter Pole:
10' Stub Pole:

All Construction Completed

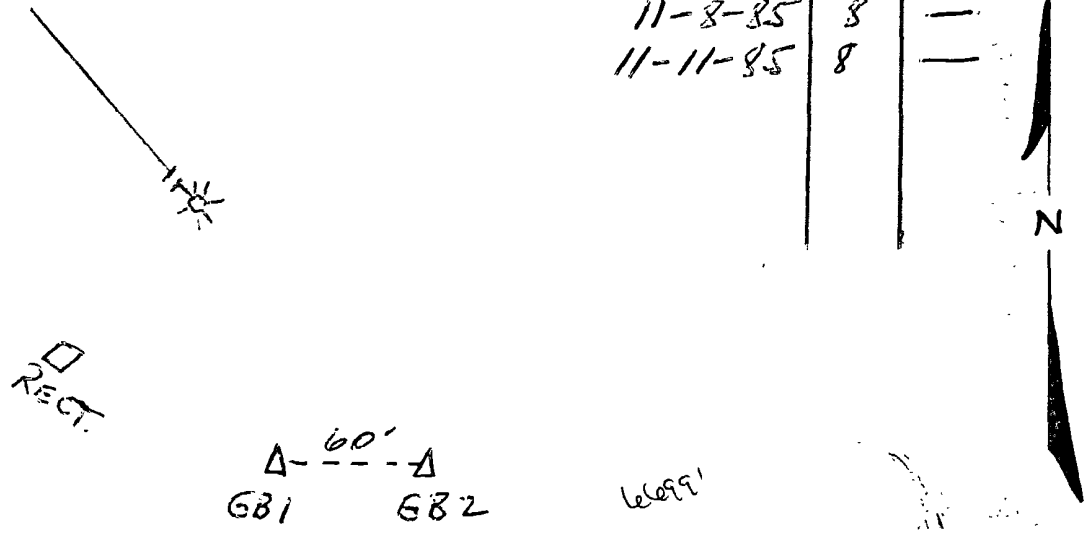
BT
(Signature)

TIME

DATE	REG	O.T.
11-8-85	8	—
11-11-85	8	—

GROUND BED LAYOUT SKETCH

4740.00
- 435.00
3.70
81.00
4389.70
300.00 jt. box
4689.70



EL PASO NATURAL GAS COMPANY

CONSTRUCTION LOGGING READINGS

REDRILL

CPS #: 1004W WELL NAME: HUERFANO #134 LOCATION: DATE: 11/11/85

TOTAL VOLTS: 12.9 TOTAL AMPS: 22.5 OHMS RESISTANCE: 57

DEEP	LOG ANODE	ANODE NO.	DEEP	LOG ANODE	ANODE NO.	DEEP	LOG ANODE	ANODE No.	DEEP	LOG ANODE	ANODE No.
5			185	2.0		365			545		
10			190	2.7		370			550		
15			195	3.0	10	375			555		
20			200	2.9		380			560		
25			205	2.9		385			565		
30			210	2.8	9	390			570		
35			215	2.7		395			575		
40			220	2.9		400			580		
45			225	2.7	8	405			585		
50			230	2.6		410			590		
55			235	2.3		415			595		
60			240	2.3	7	420			600		
65			245	1.3		425			605		
70			250	2.5		430			610		
75	Water		255	3.0	6	435			615		
80	5		260	2.8		440			620		
85			265	3.0		445			625		
90			270	3.2	5	450			630		
95			275	2.9		455			635		
100	[illegible]		280	2.8		460			640		
105	[illegible]		285	2.8	4	465			645		
110	[illegible]		290	2.8		470			650		
115	[illegible]		295	2.6		475			655		
120	[illegible]		300	[illegible]	3	480			660		
125	[illegible]		305	[illegible]		485			665		
130	[illegible]		310	[illegible]		490			670		
135	[illegible]		315	[illegible]		495			675		
140	[illegible]		320	[illegible]		500			680		
145	[illegible]		325	[illegible]		505			685		
150	[illegible]		330	[illegible]		510			690		
155	[illegible]		335	[illegible]		515			695		
160	[illegible]		340	2.8		520			700		
165	[illegible]		345	[illegible]		525			705		
170	[illegible]		350			530			710		
175	[illegible]		355	TD		535			715		
180	[illegible]		360			540			720		

ANODE READINGS

NO.	DEPTH	NO COKE	WITH COKE
1	330	3.2	8.1
2	315	2.8	6.3
3	300	5.3	7.8
4	285	2.6	5.1
5	270	3.2	7.5
6	255	3.1	7.4
7	240	2.7	6.0
8	225	4.0	5.9
9	210	4.0	5.2
10	195	4.6	6.8

REMARKS:

C.P.S. 1004-W

EL PASO NATURAL GAS COMPANY

DRILLING DEPARTMENT

DAILY DRILLING REPORT

LEASE HUERSANO WELL NO. #134 CONTRACTOR RIG NO. REPORT NO. DATE 11/12/65 19

MORNING					DAYLIGHT					EVENING				
Driller Tim C Riffee Total Men In Crew 4					Driller Total Men In Crew					Driller Total Men In Crew				
FROM	TO	FORMATION	WT-BIT	R.P.M.	FROM	TO	FORMATION	WT-BIT	R.P.M.	FROM	TO	FORMATION	WT-BIT	R.P.M.

	NO. DC SIZE LENG		NO. DC SIZE LENG	NO. DC SIZE LENG.
BIT NO.	NO. DC SIZE LENG.	BIT NO.	NO. DC SIZE LENG.	BIT NO. NO. DC SIZE LENG.
SERIAL NO.	STANDS	SERIAL NO.	STANDS	SERIAL NO. STANDS
SIZE	SINGLES	SIZE	SINGLES	SIZE SINGLES
TYPE	DOWN ON KELLY	TYPE	DOWN ON KELLY	TYPE DOWN ON KELLY
MAKE	TOTAL DEPTH	MAKE	TOTAL DEPTH	MAKE TOTAL DEPTH

MUD RECORD			MUD, ADDITIVES USED AND RECEIVED	MUD RECORD			MUD, ADDITIVES USED AND RECEIVED	MUD RECORD			MUD, ADDITIVES USED AND RECEIVED
Time	Wt.	Vis.		Time	Wt.	Vis.		Time	Wt.	Vis.	

FROM	TO	TIME BREAKDOWN	FROM	TO	TIME BREAKDOWN	FROM	TO	TIME BREAKDOWN

REMARKS –

0 - 100 SAND
100 - 140 BROWN SHALE
140 - 160 WATER SAND (CWATER))
160 - 240 BLUE SHALE
240 - 360 LOST CIRCULATION

LOST CIRCULATION AT 240 FT
DRILLED 360 FT

T.D. 351

REMARKS –

REMARKS –

SIGNED: Toolpusher Tim C Riffee Company Supervisor

829

30-045-20025

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO
(Submit 3 copies to OCD Aztec Office)

Operator MERIDIAN OIL Location: Unit NE Sec. 36 Twp 26 Rng 10

Name of Well/Wells or Pipeline Serviced HUERFANO UNIT #171

cps 1003w

Elevation 6652' Completion Date 10/1/75 Total Depth 325' Land Type* N/A

Casing, Sizes, Types & Depths 24' SURFACE CASING

If Casing is cemented, show amounts & types used N/A

If Cement or Bentonite Plugs have been placed, show depths & amounts used

N/A

Depths & thickness of water zones with description of water when possible:

Fresh, Clear, Salty, Sulphur, Etc. 110'

Depths gas encountered: N/A

Type & amount of coke breeze used: 3800 lbs.

Depths anodes placed: 280', 270', 250', 240', 230', 215', 185', 175', 165', 155'

Depths vent pipes placed: N/A

Vent pipe perforations: 210'

Remarks: gb #1

RECEIVED
MAY 31 1991
OIL CON. DIV.
DIST. 3

If any of the above data is unavailable, please indicate so. Copies of all logs, including Drillers Log, Water Analyses & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included.

*Land Type may be shown: F-Federal; I-Indian; S-State; P-Fee.
If Federal or Indian, add Lease Number.

El Paso Natural Gas Company
Form 7-238 (Rev. 1-69)

WELL CASING
CATHODIC PROTECTION CONSTRUCTION REPORT
DAILY LOG

Logging

Drilling Log (Attach Hereto). ☐

Completion Date 10-1-75

Well Name	Location	CPS No.
Huerfano #171	NW 36 - 26N - 10W	1003W

Type & Size Bit Used	Work Order No.
	54486.19-50-2

Anode Hole Depth	Total Drilling Rig Time	Total Lbs. Coke Used	Lost Circulation Mat'l Used	No. Sacks Mud Used
325'		3800		

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Anode Depth	280	270	250	240	230	215	185	175	165	155
Anode Output (Amps)	4.0	4.0	3.4	4.1	3.9	3.4	3.7	4.4	4.4	4.4

	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Anode Depth										
Anode Output (Amps)										

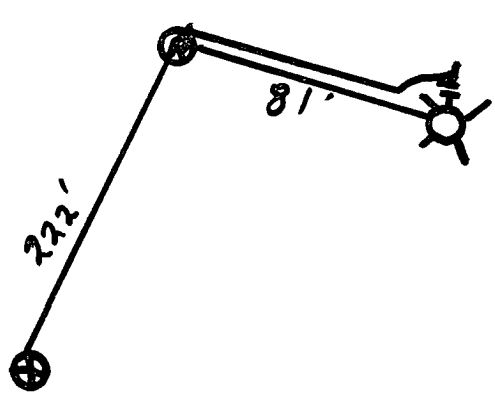
Total Circuit Resistance			No. 8 C.P. Cable Used	No. 2 C.P. Cable Used
Volts 11.5	Amps 15.0 A	Ohms .76	2565	

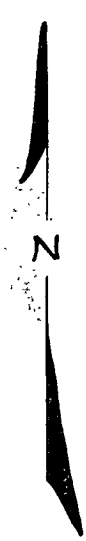
Remarks: VENT HOSE PERF. 210' DRILLER SAID WATER AT 110'
SET 24' SURFACE CASING

All Construction Completed

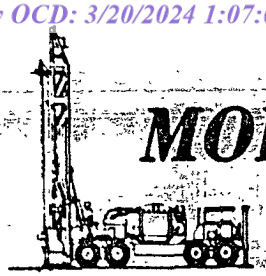
C. W. Hunt
(Signature)

GROUND BED LAYOUT SKETCH





Less!



MORGAN DRILLING COMPANY

P.O. Box 326 • Broken Bow, Oklahoma 74728

Ph. Office 405/584-6000
Mobile 584-6860
Night 420-3248

DATE 10 - 1 - 75

Work Order No. 54486.19-50-20

Huerfano Unit #171

CUSTOMER	SERVICE ADDRESS	CITY
El Paso Nat Gas Co.	Box 990	Farmington, N.M. 874

PUR. NO.	REQ. NO.	SERVICEMAN	VEHICLE NO.	DATE COMPLETED
CP3 1003 W		Morgan Drilling	T-4	

LITHOLOGIC LOG

Material	From	To	Water Strata	Time
Blue Shale	110'	140'	110'	
Gray Sandstone	140'	160'		
Blue Shale	160'	200'		
Gray Sandstone	200'	230'		
Blue Shale	230'	270'		
Gray Sandstone	270'	300'		
Blue Shale	300'	325'		

Date started _____, 19__
Date completed _____, 19__

INSTRUCTIONS:

SERVICE PERFORMED:

TOTAL DEPTH 305'

RIG TIME

WATER TRUCK

DRILLERS CERTIFICATION

This well was drilled under my supervision and the report is true to the b of my knowledge.

Name Don Gibson

Address _____

Well driller's license number _____

Signed _____

Date _____

915

Customer's Signature

By Edward R. Pauler

Form 741 (Rev. 11-57)

EL PASO NATURAL GAS COMPANY
ENGINEERING DEPARTMENT

Sheet

Date:

By:

1003 W

10-1.75

110	1.5		90	1.4	PERF. 210'		
	1.6			1.3	DRILLER SAID	WATER	
20	1.6	7.5	300		AT 110'		
	1.4	TD	305				
30	1.5						
	1.3						
40	1.3						
	1.3						
50	1.5						
	1.6	10					
60	1.4						
	1.4	9					
70	1.5						
	1.5	8					
80	1.4						
	1.4	7					
90	1.4						
	1.0						
200	0.8						
	1.3						
10	1.4						
	1.4	6					
20	1.3						
	1.4						
30	1.5	5					
	1.5						
40	1.5	4					
	1.5						
50	1.4	3					
	1.2						
60	1.0						
	1.0						
70	1.4	2					
	1.4						
80	1.4	1					
	1.4						

1.	280	1.4	4.0
2.	270	1.4	4.0
3.	250	1.4	3.4
4.	240	1.4	4.1
5.	230	1.6	3.9
6.	215	1.6	3.4
7.	185	1.4	3.7
8.	175	1.6	4.4
9.	165	1.5	4.4
10	155	1.6	4.4
	2165		
	4.25 60		
	11.5V	15.0A	.76Ω

MW		gals/mol
lo	C_1	6 4
30	C_2	10 12
44	C_3	10 42
58	IC_4	12 38
"	NC_4	11 93
72	IC_5	13 85
"	NC_5	13 71
86	IC_6	15 50
"	C_6	15 57
100	IC_7	17 2
"	C_7	17 46
114	C_8	19 39
28	$C_2^=$	9 64
42	$C_3^=$	9 67

MISC

MW		gals/mol
44	CO_2	6 38
34	H_2S	5 17
28	N_2	4 16
2	H_2	3 38

3946

30-045-26233

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO
(Submit 3 copies to OCD Aztec Office)

Operator MERIDIAN OIL INC. Location: Unit A Sec. 36 Twp 26 Rng 10

Name of Well/Wells or Pipeline Serviced HUERFANO UNIT #134E

cps 1834w

Elevation 6639' Completion Date 9/30/87 Total Depth 380' Land Type* N/A

Casing, Sizes, Types & Depths 20' OF 8" PVC CASING

If Casing is cemented, show amounts & types used N/A

If Cement or Bentonite Plugs have been placed, show depths & amounts used

N/A

Depths & thickness of water zones with description of water when possible:

Fresh, Clear, Salty, Sulphur, Etc. 170' NO SAMPLE

Depths gas encountered: N/A

Type & amount of coke breeze used: N/A

Depths anodes placed: 340', 330', 320', 310', 285', 275', 265', 255', 245', 235'

Depths vent pipes placed: N/A

Vent pipe perforations: 220'

Remarks: gb #1

RECEIVED
MAY 31 1991
OIL CON. DIV
DIST. 3

If any of the above data is unavailable, please indicate so. Copies of all logs, including Drillers Log, Water Analyses & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included.

*Land Type may be shown: F-Federal; I-Indian; S-State; P-Fee.
If Federal or Indian, add Lease Number.

FM-07-0238 (Rev. 10-82)

MERIDIAN OIL INC.
WELL CASING
CATHODIC PROTECTION CONSTRUCTION REPORT
DAILY LOG

Drilling Log (Attach Hereto) ☐ Completion Date 9-30-87

CPS #	Well Name, Line or Plant:	Work Order #	Status:	Ins. Union Check
1834w	Huerfano 134E		84N	☑ Good ☐ Bad

Location:	Anode Size:	Anode Type:	Size Bit:
A 36-26-10	21" x 60"	Duriron	6 3/4"

Depth Drilled	Depth Logged	Drilling Rig Time	Total Lbs. Coke Used	Lost Circulation Mat'l Used	No. Sacks Mud Used
380	370	6 hrs.			Elev. 6639

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Anode Depth	340	330	320	310	285	275	265	255	245	235
Anode Output (Amps)	4.9	5.8	6.6	6.4	4.9	5.6	5.8	6.4	7.0	5.8
Anode Depth	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Anode Output (Amps)	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20

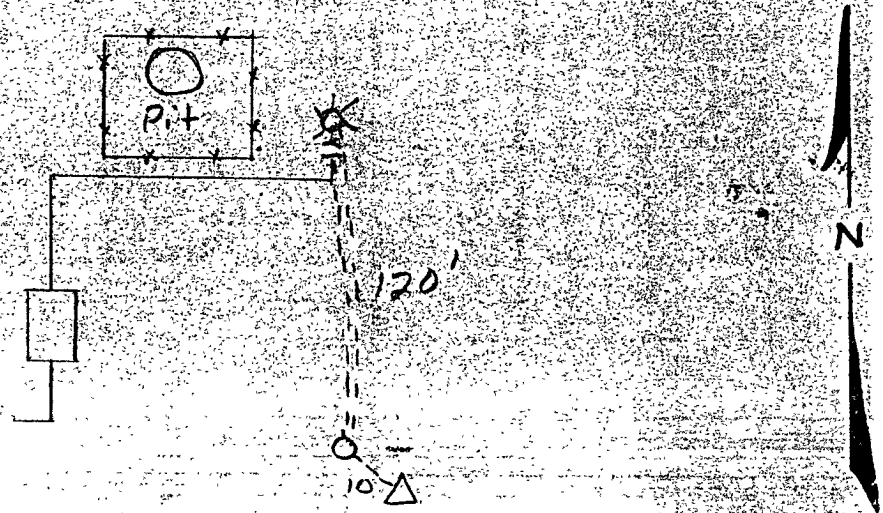
Total Circuit Resistance			No. 8 C.P. Cable Used	No. 2 C.P. Cable Used
Volts 11.8	Amps 20.5	Ohms .58		

Remarks: Driller said water was at 170'. No water sample was taken. Vent is perforated up to 160'. 20' of 8" P.V.C. was set.

20 X 22.00 P/FOOT

Rectifier Size: 40 V 16 A 4300 ✓
Addn'l Depth: -520 ✓
Depth Credit: 130' ✓ 440 (CASING) 3780
Extra Cable: 30 ✓ ✓ 4220 ✓
Ditch & 1 Cable: 10 ✓ 7.50 ✓
Ditch & 2 Cable: 120' 3.90 ✓
25' Meter Pole: 62.40 ✓
20' Meter Pole:
10' Stub Pole: 150.00
Junction Box: 40.00
4483.80
Tx 224.19
4707.99

All Construction Completed
Randy Smith
(Signature)



e639

BURG CORROSION SYSTEMS, INC.

P.O. BOX 1359 - PHONE 334-6141
AZTEC, NEW MEXICO 87410

Date 8-30-87

DEEP WELL GROUNDBED LOG

Company Meridian Oil

Well No. 134E Location Huerfano Volts Applied 11.8 Amperes 20.

Depth	Reading	Depth	Reading	✓	Anode	Depth	Anode	Anode Depth	Amps	Depth	Reading
0											
5		230	2.1			455	1	340	3.2	680	4.9
10		235	2.7	✓	(10)	460	2	330	3.3	685	5.8
15		240	3.2			465	3	320	3.6	690	6.6
20		245	3.4	✓	(9)	470	4	310	3.2	695	6.4
25		250	3.2			475	5	285	3.7	700	4.9
30		255	3.2	✓	(8)	480	6	275	3.5	705	5.6
35		260	3.1			485	7	265	3.6	710	5.8
40		265	3.2	✓	(7)	490	8	255	3.8	715	6.4
45		270	2.9			495	9	245	4.0	720	7.0
50		275	3.1	✓	(6)	500	10	235	3.3	725	5.8
55		280	3.2			505				730	
60		285	2.8	✓	(5)	510				735	
65		290	2.3			515				740	
70		295	1.8			520				745	
75		300	1.3			525				750	
80		305	1.7			530				755	
85		310	2.9	✓	(4)	535				760	
90		315	3.0			540				765	
95		320	3.2	✓	(3)	545				770	
100		325	2.9			550				775	
105		330	2.7	✓	(2)	555				780	
110		335	2.7			560				785	
115		340	2.8	✓	(1)	565				790	
120		345	2.5			670				795	
125		350	2.1			575				800	
130		355	1.9			580				805	
135		360	1.5			585				810	
140		365	1.8			590				815	
145		370	TD 370			595				820	
150		375				600				825	
155		380				605				830	
160	1.7	385				610				835	
165	1.3	390				615				840	
170	1.7	395				620				845	
175	2.2	400				625				850	
180	2.7	405				630				855	
185	2.8	410				635				860	
190	3.0	415				640				865	
195	3.1	420				645				870	
200	2.9	425				650				875	
205	2.9	430				655				880	
210	2.7	435				660				885	
215	2.4	440				665				890	
220	1.9	445				670				895	
225	1.2	450				675				900	

BURGE CORROSION SYSTEMS, INC.

1834W

P.O. BOX 1359 · PHONE 334-6141
AZTEC, NEW MEXICO 87410

COMPANY Meridian DAILY DRILLING REPORT 10-1 19 87

WELL NAME:	WELL NUMBER:	SECTION:	TOWNSHIP:	RANGE:
Huerfano	134E	36	26	10

WATER AT: 170 ft FEET: HOLE MADE: 6 3/4 380 ft

DESCRIPTION OF FORMATION

FROM	TO	FORMATION IS	COLOR
0	15	Sand	tan
15	~~30~~ 50	Sandstone	tan
~~30~~ 50	90	Shale	Grey
90	150	Sandstone	lt Grey
150	180	water Sand	lt Grey
180	220	Shale	purple lt Grey
220	~~250~~ 270	Sandstone	lt Grey
270	300	Shale	Purple
300	330	~~Sha~~ Sandstone	lt Grey
330	380	Shale + Sandy Shale	dk Grey
		TD 380 ft	
		SET 20 P.V.C. Casing	

REMARKS: No water Sample set 20 ft Casing

Kevin Burge. Driller Tool Dresser

3209

30-045-26540

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO
(Submit 3 copies to OCD Aztec Office)

Operator MERIDIAN OIL INC. Location: Unit K Sec. 36 Twp 26 Rng 10

Name of Well/Wells or Pipeline Serviced HUERFANO UNIT #171E

cps 1973w

Elevation 6706' Completion Date 6/30/88 Total Depth 340' Land Type* N/A

Casing, Sizes, Types & Depths NONE SET

If Casing is cemented, show amounts & types used N/A

If Cement or Bentonite Plugs have been placed, show depths & amounts used

N/A

Depths & thickness of water zones with description of water when possible:

Fresh, Clear, Salty, Sulphur, Etc. 140' NO SAMPLE

Depths gas encountered: N/A

Type & amount of coke breeze used: N/A

Depths anodes placed: 300', 290', 280', 265', 240', 225', 210', 175', 160'

Depths vent pipes placed: 335'

Vent pipe perforations: 215'

Remarks: gb #1

RECEIVED
MAY 31 1991.
OIL CON. DIV.
DIST. 3

If any of the above data is unavailable, please indicate so. Copies of all logs, including Drillers Log, Water Analyses & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included.

*Land Type may be shown: F-Federal; I-Indian; S-State; P-Fee.
If Federal or Indian, add Lease Number.

7-0238 (Rev. 10-82)

WELL CASING

CATHODIC PROTECTION CONSTRUCTION REPORT

DAILY LOG

Comp 7-1-88 Q2

illing Log (Attach Hereto) ☒ Completion Date 6-30-88

PS #	Well Name, Line or Plant:	Work Order #	Static:	Ins. Union Check
1973W	Duerfano unit 171E	545304 2054530A	600N = .768	☒ Good ☐ Bad

Location:	Anode Size:	Anode Type.	Size Bit:
K-36-26-10	2" x 60"	Duriron	6 3/4

Depth Drilled	Depth Logged	Drilling Rig Time	Total Lbs Coke Used	Lost Circulation Mat'l Used	No. Sacks Mud Used
340'	325'				

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
Anode Depth	300	290	280	265	250	240	225	210	175	160
Anode Output (Amps)	6.5	6.0	6.2	7.2	6.2	6.2	6.4	5.4	5.6	6.2
Anode Depth	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Anode Output (Amps)	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20

Total Circuit Resistance			No. 8 C.P. Cable Used	No. 2 C.P. Cable Used
Volts 11.7	Amps 30.6	Ohms .37		

Remarks: Driller said ~~water~~ water to be at 140'. No surface casing was installed. Installed 335' of 1" PVC vent pipe, bottom 215' perforated. No water sample after standing overnight

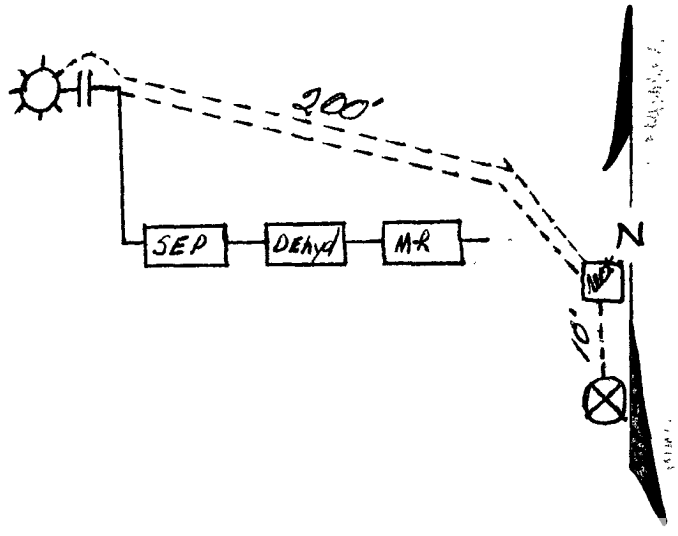
QB 4074.00 -
669.00 -

Rectifier Size: 40 V 16 A
Addn'l Depth
Depth Credit: 175'@ 3.50 - 612.50 -
Extra Cable: 230'@ .24 55.20 -
Ditch & 1 Cable: 210@.70 147.00 -
25 'Meter Pole:
20' Meter Pole:
10' Stub Pole: 1@ 158.50 158.50 -
1 junction box 225.00 -
4716.20
tax 235.81 of
4952.01

All Construction Completed

Calvin Rochman
(Signature)

GROUND BED LAYOUT SKETCH



6704

... Services Co.
1608 Schofield Ln.
P.O. Box 8
Farmington, NM 87499
(505) 327-9215
(505) 325-1946

Date: 6-29-88

Company: Meridian Oil Co.

Well No. 165E Location A30-26-09 Volts Applied 117 Amperes 26.8

Depth	Reading	Depth	Reading	Depth	Reading	Depth	Reading
0							
5		230	2.0 (3)	455	# Anode w/o Coke w/ Coke Anode Depth	680	
10		235	2.0	460		685	
15		240	2.1 (2)	465		690	
20		245	2.1 #(1)	470		695	
25		250	1.2	475		700	
30		255	0.9	480		705	
35		260	0.9	485	#1 - 2.8 - 6.0 - 245'	710	
40		265	1.2	490	#2 - 3.3 - 7.0 - 238'	715	
45		270	1.8	495	#3 - 2.8 - 6.5 - 230	720	
50		275	2.2	500	#4 - 2.5 - 6.2 - 222	725	
55		280		505	#5 - 3.0 - 7.0 - 214	730	
60		285	TD	510	#6 - 3.0 - 6.5 - 205	735	
65		290		515	#7 - 3.0 - 7.8 - 195	740	
70		295		520	#8 - 2.8 - 7.0 - 188	745	
75		300		525	#9 - 2.4 - 5.2 - 180	750	
80		305		530	#10 - 2.8 - 5.0 - 170	755	
85		310		535		760	
90		315		540		765	
95		320		545		770	
100	1.4 water	325		550		775	
105	1.8	330		555		780	
110	2.0	335		560		785	
115	1.9	340		565		790	
120	1.8	345		670		795	
125	1.6	350		575		800	
130	1.5	355		580		805	
135	1.5	360		585		810	
140	1.6	365		590		815	
145	1.2	370		595		820	
150	0.9	375		600		825	
155	1.0	380		605		830	
160	1.6	385		610		835	
165	1.9	390		615		840	
170	2.0 (10)	395		620		845	
175	1.8	400		625		850	
180	1.9 (9)	405		630		855	
185	2.0	410		635		860	
190	1.9 (8)	415		640		865	
195	2.2 (7)	420		645		870	
200	2.0	425		650		875	
205	2.2 (6)	430		655		880	
210	2.0	435		660		885	
215	2.2 (5)	440		665		890	
220	1.9	445		670		895	
225	2.0 (4)	450		675		900	

D. CRASS DRILLING CO.

Drill No. 3

1973

DRILLER'S WELL LOG

S. P. No. Huerfano Unit 165-E Date 6-29-88

Client Meridian Oil Co. Prospect

County SAN JUAN State New Mex.

If hole is a redrill or if moved from original staked position show distance and direction moved:

FROM	TO	FORMATION — COLOR — HARDNESS
0	75	SAND
75	90	Shale
90	100	SAND
100	165	Sandy Shale
165	250	Shale
250	280	Sandstone

Mud Bran Lime

Rock Bit Number Make

Remarks: Water @ 100'
Set 80' CASING 7 Hrs.

Driller Lonnie Brown

#148 30-045-11781

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO

Operator Meridian Oil Co. Location: Unit D Sec. 01 Twp 25 Rng 10

Name of Well/Wells or Pipeline Serviced

Huerfano Unit #148

Elevation 6751 Completion Date 3-2-93 Total Depth 374' Land Type F

Casing Strings, Sizes, Types & Depths 2/25 Set 98' of 8" PVC Casing.

No Gas, Water, or Boulders Were Encountered During Casing.

If Casing Strings are cemented, show amounts & types used Cemented

With 22 Sacks.

If Cement or Bentonite Plugs have been placed, show depths & amounts used

None

Depths & thickness of water zones with description of water: Fresh, Clear,

Salty, Sulphur, Etc. 105'

Depths gas encountered: None

Ground bed depth with type & amount of coke breeze used: 374'

Depths anodes placed: 335, 328, 321, 314, 307, 300, 265, 258, 251, 244, 225, 218, 210, 195, 185

Depths vent pipes placed: 374'

Vent pipe perforations: Bottom 265'

Remarks:

RECEIVED
JAN 31 1994
OIL CON. DIV.
DIST. 3

If any of the above data is unavailable, please indicate so. Copies of all logs, including Drillers Log, Water Analyses & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included.

Land Type may be shown: F-Federal; I-Indian; S-State; P-Fee.
If Federal or Indian, add Lease Number.

TECH, Inc
333 East Main
Farmington
New Mexico
87401
505/327-3311

LABORATORY REPORT

OIL-FIELD WATER ANALYSIS

938w

Lab Number: 25930319-04
Client: Meridian Oil
Sample ID: Huerfano # 148
Location: Groundbed

Date Sampled: 03-02-93
Date Received: 03-19-93
Date Analyzed: 03-22-93
Date Reported: 03-22-93

DISSOLVED SOLIDS:

	me/L	mg/L	Detection Limit, mg/L
Calcium, Ca++	0.2	4	1.0
Magnesium, Mg++	0.4	5	1.0
Sodium, Na+ (calc)	9.1	208	5.0
Chloride, Cl-	0.2	6	2.0
Sulfate, SO4--	5.5	264	5.0
Bicarbonate, HCO3-	0.8	49	5.0
Carbonate, CO3--	3.2	96	1.0
Hydroxide, OH-	ND	ND	1.0
Total Dissolved Solids (calculated):		630	10.0

OTHER PROPERTIES:

pH (units):	9.6
resistivity (ohm-meters):	11.6
specific gravity at 60F:	1.0056
room temperature (F):	73

ND = Not Detected at the stated detection limit

Comments:

Methods: American Petroleum Institute, "Recommended Practice for Analysis of Oil-Field Waters," 2nd edition.

analyst

5198

30-045-20303

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO
(Submit 3 copies to OCD Aztec Office)

Operator MERIDIAN OIL Location: Unit SE Sec. 12 Twp 25 Rng 10

Name of Well/Wells or Pipeline Serviced HUERFANO UNIT #150

cps 940w

Elevation 6830' Completion Date 8/7/75 Total Depth 325' Land Type* N/A

Casing, Sizes, Types & Depths N/A

If Casing is cemented, show amounts & types used N/A

If Cement or Bentonite Plugs have been placed, show depths & amounts used

N/A

Depths & thickness of water zones with description of water when possible:

Fresh, Clear, Salty, Sulphur, Etc. 140'

Depths gas encountered: N/A

Type & amount of coke breeze used: 3000 lbs.

Depths anodes placed: 250', 235', 225', 215', 200', 180', 170', 160', 150', 140'

Depths vent pipes placed: N/A

Vent pipe perforations: 200'

Remarks: gb #1

RECEIVED
MAY 31 1991
OIL CON. DIV.
DIST. 3

If any of the above data is unavailable, please indicate so. Copies of all logs, including Drillers Log, Water Analyses & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included.

*Land Type may be shown: F-Federal; I-Indian; S-State; P-Fee.
If Federal or Indian, add Lease Number.

El Paso Natural Gas Company
Form 7-238 (Rev. 1-69)

WELL CASING
CATHODIC PROTECTION CONSTRUCTION REPORT
DAILY LOG

Drilling Log (Attach Hereto). ☐

Completion Date 8-7-75

Well Name	Location	CPS No.
Huerfano #150	SE 12-25N-10W	940 W

Type & Size Bit Used	Work Order No.
6 3/4"	54436.19-50-26

Anode Hole Depth	Total Drilling Rig Time	Total Lbs. Coke Used	Lost Circulation Mat'l Used	No. Sacks Mud Used
325		3,000		

	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10
Anode Depth	250	235	225	215	200	180	170	160	150	140
Anode Output (Amps)	3.4	3.0	3.8	3.6	2.4	3.6	4.0	4.4	4.8	4.6

	# 11	# 12	# 13	# 14	# 15	# 16	# 17	# 18	# 19	# 20
Anode Depth										
Anode Output (Amps)										

Total Circuit Resistance Volts	Amps	Ohms	No. 8 C.P. Cable Used	No. 2 C.P. Cable Used
11.8	14.5	0.81	2225	

Remarks: Drill with Air. Driller said water AT 140' Vent Hose Perforated 200' Logging Anode stopped AT 295'

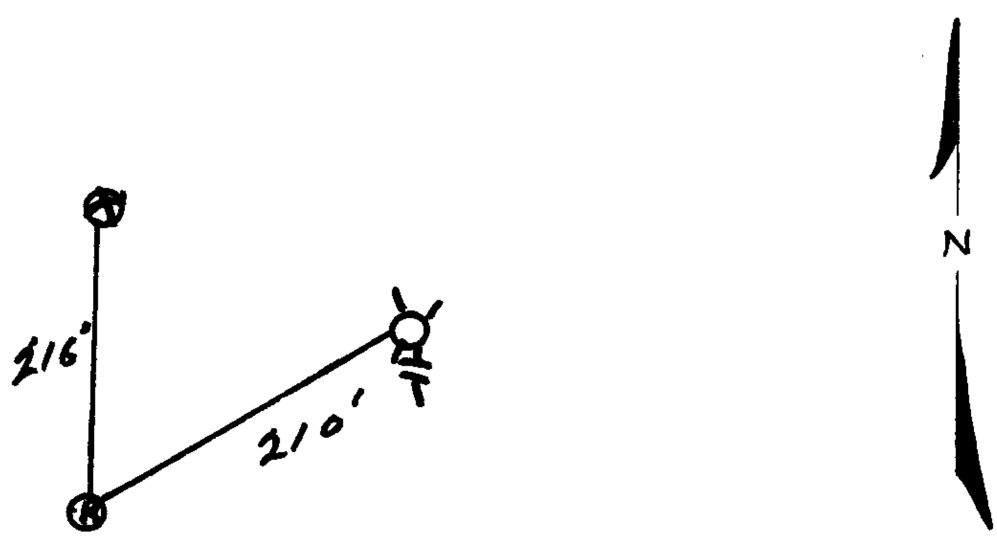
Driller - 889.20
[illegible] - 340.08
Supp - 213.40
Wire 206.93
Coke 180.00
[illegible] [illegible]
[illegible] 76.00
[illegible] 144.50
Vent 33.00
[illegible] 5.00

2447.71

All Construction Completed

Edward R. Paulek
(Signature)

GROUND BED LAYOUT SKETCH



855

EL PASO NATURAL GAS COMPANY

ENGINEERING DEPARTMENT

Date:

By:

940 W

Driller said water AT 140'

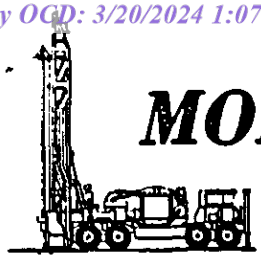
Vent Hose Perforated 200'

Marker	Depth	Reading
⑩	140	2.2
		2.4
⑨	150	2.4
		2.2
⑧	160	2.2
		2.2
⑦	170	2.0
		2.0
⑥	180	2.0
		1.4
	190	1.2
		1.2
⑤	200	1.4
		1.2
	210	1.2
④		2.0
	220	2.0
③		1.8
	230	1.8
②		1.8
	240	1.4
		1.4
①	250	1.8
		1.6
	260	1.2
		1.2
	270	1.2
		1.4
	280	1.0
		Bottom 285
	290	
	300	
	310	

1	250	1.8	3.4
2	235	2.0	3.0
3	225	2.2	3.8
4	215	1.8	3.6
5	200	1.4	2.4
6	180	2.4	3.6
7	170	2.4	4.0
8	160	2.8	4.4
9	150	2.8	4.8
10	140	2.6	4.0
	1925	11.8	14.5

0.81

	1925
+	300
	2225



MORGAN DRILLING COMPANY

P.O. Box 326 • Broken Bow, Oklahoma 74728

Ph. Office 405/584-6000
Mobile 584-6860
Night 420-3248

DATE 8-7-75

Work Order No. 54436-19-50-22

Requirement 150

CUSTOMER	SERVICE ADDRESS	CITY
El Paso Nat Co	Farmington New Mexico	Farmington N.M.
TEL. NO. / REQ. NO.	SERVICEMAN	VEHICLE NO.	DATE COMPLETED
cps 940 w	Morgan Drilling Co	T.4.	8-7-75

LITHOLOGIC LOG

Material	From	To	Water Strata	Time
~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	
[illegible]	0			10:30
Blue shale	140	325	140	
Graysand Stone	225	250		
Blue shale	250	270		
Graysand Stone	270	290		
Blue shale	290			12:35

Date started _____, 19__
Date completed _____, 19__

INSTRUCTIONS:

SERVICE PERFORMED:

TOTAL DEPTH 325'

RIG TIME

WATER TRUCK

DRILLERS CERTIFICATION

This well was drilled under my supervision and the report is true to the be of my knowledge.

Name A.E. Gibson

Address _____

Well driller's license number _____

Signed _____

Date _____

Customer's Signature

By Edward R. Powell

1327

E

150E- 30-045-26358

DATA SHEET FOR DEEP GROUND BED CATHODIC PROTECTION WELLS
NORTHWESTERN NEW MEXICO
(Submit 3 copies to OCD Aztec Office)

Operator MERIDIAN OIL INC. Location: Unit N Sec. 12 Twp 25 Rng 10

Name of Well/Wells or Pipeline Serviced HUERFANO UNIT #150E

cps 1838w

Elevation 6895' Completion Date 8/20/87 Total Depth 420' Land Type* N/A

Casing, Sizes, Types & Depths 40' OF 8" CASING

If Casing is cemented, show amounts & types used N/A

If Cement or Bentonite Plugs have been placed, show depths & amounts used

N/A

Depths & thickness of water zones with description of water when possible:

Fresh, Clear, Salty, Sulphur, Etc. 160' NO SAMPLE

Depths gas encountered: N/A

Type & amount of coke breeze used: N/A

Depths anodes placed: 375', 365', 355', 345', 335', 325', 290', 280', 270', 260'

Depths vent pipes placed: 410'

Vent pipe perforations: 290'

Remarks: gb #1

RECEIVED
MAY 31 1991
OIL CON. DIV.
DIST. 3

If any of the above data is unavailable, please indicate so. Copies of all logs, including Drillers Log, Water Analyses & Well Bore Schematics should be submitted when available. Unplugged abandoned wells are to be included.

*Land Type may be shown: F-Federal; I-Indian; S-State; P-Fee.
If Federal or Indian, add Lease Number.

FM-07-0238 (Rev 10-82)

Comp 9-1-87

WELL CASING
CATHODIC PROTECTION CONSTRUCTION REPORT
DAILY LOG

Drilling Log (Attach Hereto) ☐ 9595601 Completion Date 8/20/87

ELEV. = NOT AVAILABLE

CPS #	Well Name, Line or Plant	Work Order #	Static	Ins Union Check
1338 W	Huerfano Unit #150E		.79V W	☒ Good ☐ Bad

Location	Anode Size	Anode Type	Size Bit
N SW 12-25-10	2" x 60"	DURION	6 3/4"

Depth Drilled	Depth Logged	Drilling Rig Time	Total Lbs Coke Used	Lost Circulation Mat'l Used	No Sacks Mud Used
420'	410'				

Anode Depth	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
	375	365	355	345	335	325	290	280	270	260
Anode Output (Amps)	5.2	5.7	5.6	5.9	5.7	4.0	6.0	6.1	5.3	5.8
Anode Depth	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
Anode Output (Amps)										

Total Circuit Resistance			No. 8 C.P. Cable Used	No. 2 C.P. Cable Used
Volts 11.87	Amps 20.1	Ohms .59		

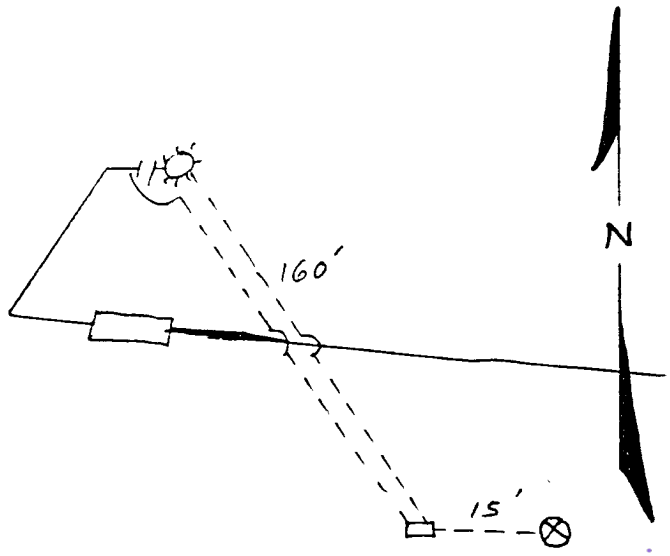
Remarks: WATER AT 160'. WATER SAMPLE WOOD NOT SETTLE OUT. SET 40' of 8" P.V.C. CASEING. INSTALLED 410' of 1" P.V.C. VENT pipe. PERFORATED 290'.

GND. Bed $4300.00

Rectifier Size:	40V 16A P.P.	
Addn'l Depth		
Depth Credit:	-90' ✓	-360.00 ✓
Extra Cable:	30' ✓	7.50 ✓
Ditch & 1 Cable:	15' ✓	5.85 ✓
Ditch & 2 Cable:	160' ✓	83.20 ✓
25' Meter Pole:	1	305.00 ✓
20' Meter Pole:	—	
10' Stub Pole:	—	
Junction Box:	1	40.00 ✓
40' of 8" P.V.C. CASEING		880.00 ✓
		$5261.55
	TAX	263.08
	TOTAL	$5524.63

All Construction Completed

J. E. Slatte
(Signature)



6895

MERIDIAN OIL

P. O. BOX 4289-Phone 327-0251
FARMINGTON, NM

Date 8/20/87

DEEP WELL GROUNDBED LOG

EPS- 1838 W

Company Meridian Oil

Well No. Hoorfano #150E Location SW 12/25/10 Volts Applied 11.87 Amperes 20.1

0															
5			230					455			680				
10			235					460			685				
15			240					465			690				
20			245					470			695				
25			250	1.2				475			700				
30			255	.4				480			705				
35			260	2.6	–	(10)		485			710				
40			265	2.1				490			715				
45			270	2.0	–	(9)		495			720				
50			275	2.0				500			725				
55			280	2.2	–	(8)		505			730				
60			285	2.2				510			735				
65			290	2.1	–	(7)		515			740				
70			295	2.0				520			745				
75			300	.9				525			750				
80			305	.7				530			755	1	37.5	2.9	5.2
85			310	.7				535			760	2	36.5	3.1	5.7
90			315	.6				540			765	3	35.5	3.0	5.6
95			320	1.4				545			770	4	34.5	3.1	5.9
100			325	2.1	–	(6)		550			775	5	33.5	3.1	5.7
105			330	2.3				555			780	6	32.5	2.9	4.0
110			335	2.3	–	(5)		560			785	7	29.0	2.7	6.0
115			340	2.3				565			790	8	28.0	2.9	6.1
120			345	2.3	–	(4)		570			795	9	27.0	2.9	5.3
125			350	2.2				575			800	10	26.0	3.3	5.8
130			355	2.3	–	(3)		580			805				
135			360	2.2				585			810				
140			365	2.3	–	(2)		590			815				
145			370	2.2				595			820				
150			375	2.1	–	(1)	(1)	600			825				
155			380	2.2				605			830				
160	WATER		385	2.3	–	(GB)		610			835				
165			390	2.5				615			840				
170			395	2.3				620			845				
175			400	2.6				625			850				
180			405	2.6				630			855				
185			410	–	T.D			635			860				
190			415					640			865				
195			420		Drilled To			645			870				
200			425					650			875				
205			430					655			880				
210			435					660			885				
215			440					665			890				
220			445					670			895				
225			450					675			900				

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APPENDIX C

Executed C-138 Solid Waste Acceptance Form

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

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

Form C-138
Revised 08/01/11

*Surface Waste Management Facility Operator and Generator shall maintain and make this documentation available for Division inspection.

97057-1125

REQUEST FOR APPROVAL TO ACCEPT SOLID WASTE

1. Generator Name and Address:
Enterprise Field Services, LLC, 614 Reilly Ave, Farmington NM 87401

PayKey:AM14058
PM: M.E. Eddleman
AFE: N68031

2. Originating Site:
Huerfano #188

3. Location of Material (Street Address, City, State or ULSTR):
UL M Section 32 T25N R9W; 36.425127, -107.835661

Nov 2023

4. Source and Description of Waste:
Source: Remediation activities associated with a natural gas pipeline leak.
Description: Hydrocarbon/Condensate impacted soil associated natural gas pipeline release.
Estimated Volume 50 yd^3 / bbls Known Volume (to be entered by the operator at the end of the haul) 366 yd^3 / bbls

5. GENERATOR CERTIFICATION STATEMENT OF WASTE STATUS

I, Thomas Long Thomas Long, representative or authorized agent for Enterprise Products Operating do hereby
Generator Signature
certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination, the above described waste is: (Check the appropriate classification)

☒ RCRA Exempt: Oil field wastes generated from oil and gas exploration and production operations and are not mixed with non-exempt waste. ***Operator Use Only: Waste Acceptance Frequency*** ☐ ***Monthly*** ☐ ***Weekly*** ☐ ***Per Load***

☐ RCRA Non-Exempt: Oil field waste which is non-hazardous that does not exceed the minimum standards for waste hazardous by characteristics established in RCRA regulations, 40 CFR 261.21-261.24, or listed hazardous waste as defined in 40 CFR, part 261, subpart D, as amended. The following documentation is attached to demonstrate the above-described waste is non-hazardous. (Check the appropriate items)

☐ MSDS Information ☐ RCRA Hazardous Waste Analysis ☐ Process Knowledge ☐ Other (Provide description in Box 4)

GENERATOR 19.15.36.15 WASTE TESTING CERTIFICATION STATEMENT FOR LANDFARMS

I, Thomas Long Thomas Long 11-13-2023, representative for Enterprise Products Operating authorizes Envirotech, Inc. to complete
Generator Signature
the required testing/sign the Generator Waste Testing Certification.

I, Greg Crabtree, representative for Envirotech, Inc. do hereby certify that representative samples of the oil field waste have been subjected to the paint filter test and tested for chloride content and that the samples have been found to conform to the specific requirements applicable to landfarms pursuant to Section 15 of 19.15.36 NMAC. The results of the representative samples are attached to demonstrate the above-described waste conform to the requirements of Section 15 of 19.15.36 NMAC.

5. Transporter: OFT and Subcontractors

OCD Permitted Surface Waste Management Facility

Name and Facility Permit #: **Envirotech Inc. Soil Remediation Facility * Permit #: NM 01-0011**
Address of Facility: **Hilltop, NM**
Method of Treatment and/or Disposal:
☐ Evaporation ☐ Injection ☐ Treating Plant ☒ Landfarm ☐ Landfill ☐ Other

Waste Acceptance Status:

☒ **APPROVED** ☐ **DENIED** (Must Be Maintained As Permanent Record)

PRINT NAME: Greg Crabtree TITLE: Enviro Manager DATE: 11/13/23
SIGNATURE: Surface Waste Management Facility Authorized Agent TELEPHONE NO.: 505-632-0615

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APPENDIX D

Photographic Documentation

SITE PHOTOGRAPHS

Closure Report
Enterprise Field Services, LLC
Huerfano #188 (11/13/23)
Ensolum Project No. 05A1226295

ENSOLUM

Photograph 1 Photograph Description: View of the in-process excavation activities.	
Photograph 2 Photograph Description: View of the in-process excavation activities.	
Photograph 3 Photograph Description: View of final excavation.	

SITE PHOTOGRAPHS

Closure Report
Enterprise Field Services, LLC
Huerfano #188 (11/13/23)
Ensolum Project No. 05A1226295

ENSOLUM

Photograph 4 Photograph Description: View of the excavation after initial restoration.	

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APPENDIX E

Regulatory Correspondence

From: Kyle Summers
To: Chad D"Aponti; Ranee Deechilly
Subject: Fwd: Huerfano #188 - UL M Section 32 T25N R9W; 36.425127, -107.835661; NMOCD Incident # nAPP2331745754
Date: Wednesday, November 15, 2023 4:49:19 PM

Kyle Summers
Principal
903-821-5603
Ensolum, LLC

From: nnepawq@frontiernet.net <nnepawq@frontiernet.net>
Sent: Wednesday, November 15, 2023 4:47:15 PM
To: 'Long, Thomas' <tjlong@eprod.com>
Cc: 'Velez, Nelson, EMNRD' <Nelson.Velez@emnrd.nm.gov>; 'Stone, Brian' <bmstone@eprod.com>; Kyle Summers <ksummers@ensolum.com>
Subject: RE: Huerfano #188 - UL M Section 32 T25N R9W; 36.425127, -107.835661; NMOCD Incident # nAPP2331745754

[**EXTERNAL EMAIL**]

Tom,

Go ahead and sample as planned.

--Steve

Steve Austin
Senior Hydrologist
NNEPA WQ/NPDES Program
505-368-1037

From: Long, Thomas <tjlong@eprod.com>
Sent: Wednesday, November 15, 2023 1:40 PM
To: nnepawq@frontiernet.net
Cc: Velez, Nelson, EMNRD <Nelson.Velez@emnrd.nm.gov>; Stone, Brian <bmstone@eprod.com>; Kyle Summers <ksummers@ensolum.com>
Subject: Huerfano #188 - UL M Section 32 T25N R9W; 36.425127, -107.835661; NMOCD Incident # nAPP2331745754

Steve,

This email is a notification and a variance request. Enterprise is requesting a variance for required

48-hour notification per 19.15.29.12D (1a) NMAC. Enterprise would like to collect closure samples on Friday, November 17, 2023 at 9:00 a.m.

Please acknowledge acceptance of this variance request.

If you have any questions, please call or email.

Thomas J. Long
Senior Environmental Scientist
Enterprise Products Company
614 Reilly Ave.
Farmington, New Mexico 87401
505-599-2286 (office)
505-215-4727 (Cell)
tjlong@eprod.com

Enterprise Products

ENSOLUM

APPENDIX F

Table 1 – Soil Analytical Summary

ENSOLUM

TABLE 1
Huerfano #188 (11/13/23)
SOIL ANALYTICAL SUMMARY

Sample I.D.	Date	Sample Type C- Composite G - Grab	Sample Depth (feet)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Total BTEX[1] (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH MRO (mg/kg)	Total Combined TPH (GRO/DRO/MRO)[1] (mg/kg)	Chloride (mg/kg)
New Mexico Energy, Mineral & Natural Resources Department Oil Conservation Division Closure Criteria (Tier I)				**10**	**NE**	**NE**	**NE**	**50**	**NE**	**NE**	**NE**	**100**	**600**
Excavation Composite Soil Samples													
S-1	11.17.23	C	16	<0.037	<0.074	<0.074	<0.15	ND	<7.4	<9.4	<47	ND	<60
S-2	11.17.23	C	16	<0.13	<0.27	<0.27	<0.54	ND	<27	<9.6	<48	ND	<60
S-3	11.17.23	C	0 to 16	0.038	0.15	<0.040	0.27	0.46	<4.0	<9.1	<46	ND	<60
S-4	11.17.23	C	0 to 16	0.044	0.19	<0.069	0.36	0.59	<6.9	<9.7	<49	ND	<60
S-5	11.17.23	C	0 to 16	<0.019	<0.038	<0.038	<0.076	ND	<3.8	<9.2	<46	ND	<59
S-6	11.17.23	C	0 to 16	<0.018	<0.036	<0.036	0.077	0.077	<3.6	<9.8	<49	ND	<60
S-7	11.17.23	C	0 to 16	<0.017	<0.035	<0.035	<0.070	ND	<3.5	<9.3	<46	ND	<61
S-8	11.17.23	C	0 to 16	0.040	0.15	<0.072	0.26	0.45	<7.2	<9.2	<46	ND	<59
S-9	11.17.23	C	0 to 16	0.037	0.14	<0.071	0.29	0.47	<7.1	<9.6	<48	ND	<60
S-10	11.17.23	C	0 to 16	<0.037	<0.075	<0.075	<0.15	ND	<7.5	<9.2	<46	ND	<60

[1] = *Total combined concentrations are rounded to two (2) significant figures to match the laboratory resolution of the individual constituents.*

ND = Not Detected above the Practical Quantitation Limits (PQLs) or Reporting Limits (RLs)

NE = Not established

mg/kg = milligrams per kilogram

BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes

TPH = Total Petroleum Hydrocarbons

GRO = Gasoline Range Organics

DRO = Diesel Range Organics

MRO = Motor Oil/Lube Oil Range Organics

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APPENDIX G

Laboratory Data Sheets & Chain of Custody Documentation

eurofins | Environment Testing

Eurofins Environment Testing South Central, LLC
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

November 29, 2023

Kyle Summers
ENSOLUM
606 S. Rio Grande Suite A
Aztec, NM 87410
TEL: (903) 821-5603
FAX:

RE: Huerfano 188 OrderNo.: 2311A02

Dear Kyle Summers:

Eurofins Environment Testing South Central, LLC received 10 sample(s) on 11/18/2023 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please do not hesitate to contact Eurofins Albuquerque for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **2311A02**
Date Reported: **11/29/2023**

CLIENT: ENSOLUM **Client Sample ID:** S-1
Project: Huerfano 188 **Collection Date:** 11/17/2023 9:00:00 AM
Lab ID: 2311A02-001 **Matrix:** MEOH BLAN **Received Date:** 11/18/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	ND	60		mg/Kg	20	11/19/2023 11:31:32 AM	78892
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**	
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	11/20/2023 10:41:25 AM	78896
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	11/20/2023 10:41:25 AM	78896
Surr: DNOP	88.0	69-147		%Rec	1	11/20/2023 10:41:25 AM	78896
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	7.4		mg/Kg	2	11/20/2023 11:34:00 AM	R101307
Surr: BFB	111	15-244		%Rec	2	11/20/2023 11:34:00 AM	R101307
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**	
Benzene	ND	0.037		mg/Kg	2	11/20/2023 11:34:00 AM	BS10130
Toluene	ND	0.074		mg/Kg	2	11/20/2023 11:34:00 AM	BS10130
Ethylbenzene	ND	0.074		mg/Kg	2	11/20/2023 11:34:00 AM	BS10130
Xylenes, Total	ND	0.15		mg/Kg	2	11/20/2023 11:34:00 AM	BS10130
Surr: 4-Bromofluorobenzene	98.0	39.1-146		%Rec	2	11/20/2023 11:34:00 AM	BS10130

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **2311A02**
Date Reported: **11/29/2023**

CLIENT: ENSOLUM **Client Sample ID:** S-2
Project: Huerfano 188 **Collection Date:** 11/17/2023 9:05:00 AM
Lab ID: 2311A02-002 **Matrix:** MEOH BLAN **Received Date:** 11/18/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	ND	60		mg/Kg	20	11/19/2023 11:43:57 AM	78892
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**	
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	11/20/2023 10:51:54 AM	78896
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	11/20/2023 10:51:54 AM	78896
Surr: DNOP	90.8	69-147		%Rec	1	11/20/2023 10:51:54 AM	78896
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	27		mg/Kg	5	11/20/2023 11:56:00 AM	R101307
Surr: BFB	106	15-244		%Rec	5	11/20/2023 11:56:00 AM	R101307
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**	
Benzene	ND	0.13		mg/Kg	5	11/20/2023 11:56:00 AM	BS10130
Toluene	ND	0.27		mg/Kg	5	11/20/2023 11:56:00 AM	BS10130
Ethylbenzene	ND	0.27		mg/Kg	5	11/20/2023 11:56:00 AM	BS10130
Xylenes, Total	ND	0.54		mg/Kg	5	11/20/2023 11:56:00 AM	BS10130
Surr: 4-Bromofluorobenzene	98.5	39.1-146		%Rec	5	11/20/2023 11:56:00 AM	BS10130

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2311A02**
Date Reported: **11/29/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM **Client Sample ID:** S-3
Project: Huerfano 188 **Collection Date:** 11/17/2023 9:10:00 AM
Lab ID: 2311A02-003 **Matrix:** MEOH BLAN **Received Date:** 11/18/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	ND	60		mg/Kg	20	11/19/2023 11:56:22 AM	78892
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**	
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	11/20/2023 11:12:53 AM	78896
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	11/20/2023 11:12:53 AM	78896
Surr: DNOP	92.1	69-147		%Rec	1	11/20/2023 11:12:53 AM	78896
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	4.0		mg/Kg	1	11/20/2023 12:18:00 PM	R101307
Surr: BFB	105	15-244		%Rec	1	11/20/2023 12:18:00 PM	R101307
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**	
Benzene	0.038	0.020		mg/Kg	1	11/20/2023 12:18:00 PM	BS10130
Toluene	0.15	0.040		mg/Kg	1	11/20/2023 12:18:00 PM	BS10130
Ethylbenzene	ND	0.040		mg/Kg	1	11/20/2023 12:18:00 PM	BS10130
Xylenes, Total	0.27	0.080		mg/Kg	1	11/20/2023 12:18:00 PM	BS10130
Surr: 4-Bromofluorobenzene	95.6	39.1-146		%Rec	1	11/20/2023 12:18:00 PM	BS10130

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2311A02**
Date Reported: **11/29/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM **Client Sample ID:** S-4
Project: Huerfano 188 **Collection Date:** 11/17/2023 9:15:00 AM
Lab ID: 2311A02-004 **Matrix:** MEOH BLAN **Received Date:** 11/18/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	ND	60		mg/Kg	20	11/19/2023 12:08:47 PM	78892
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**	
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	11/20/2023 11:23:23 AM	78896
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	11/20/2023 11:23:23 AM	78896
Surr: DNOP	76.8	69-147		%Rec	1	11/20/2023 11:23:23 AM	78896
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	6.9		mg/Kg	2	11/20/2023 12:39:00 PM	R101307
Surr: BFB	108	15-244		%Rec	2	11/20/2023 12:39:00 PM	R101307
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**	
Benzene	0.044	0.035		mg/Kg	2	11/20/2023 12:39:00 PM	BS10130
Toluene	0.19	0.069		mg/Kg	2	11/20/2023 12:39:00 PM	BS10130
Ethylbenzene	ND	0.069		mg/Kg	2	11/20/2023 12:39:00 PM	BS10130
Xylenes, Total	0.36	0.14		mg/Kg	2	11/20/2023 12:39:00 PM	BS10130
Surr: 4-Bromofluorobenzene	98.0	39.1-146		%Rec	2	11/20/2023 12:39:00 PM	BS10130

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2311A02**
Date Reported: **11/29/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM **Client Sample ID:** S-5
Project: Huerfano 188 **Collection Date:** 11/17/2023 9:20:00 AM
Lab ID: 2311A02-005 **Matrix:** MEOH BLAN **Received Date:** 11/18/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	ND	59		mg/Kg	20	11/19/2023 12:21:11 PM	78892
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**	
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	11/20/2023 11:33:54 AM	78896
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	11/20/2023 11:33:54 AM	78896
Surr: DNOP	90.4	69-147		%Rec	1	11/20/2023 11:33:54 AM	78896
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	3.8		mg/Kg	1	11/20/2023 1:01:00 PM	R101307
Surr: BFB	99.4	15-244		%Rec	1	11/20/2023 1:01:00 PM	R101307
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**	
Benzene	ND	0.019		mg/Kg	1	11/20/2023 1:01:00 PM	BS10130
Toluene	ND	0.038		mg/Kg	1	11/20/2023 1:01:00 PM	BS10130
Ethylbenzene	ND	0.038		mg/Kg	1	11/20/2023 1:01:00 PM	BS10130
Xylenes, Total	ND	0.076		mg/Kg	1	11/20/2023 1:01:00 PM	BS10130
Surr: 4-Bromofluorobenzene	96.0	39.1-146		%Rec	1	11/20/2023 1:01:00 PM	BS10130

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2311A02**
Date Reported: **11/29/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM **Client Sample ID:** S-6
Project: Huerfano 188 **Collection Date:** 11/17/2023 9:25:00 AM
Lab ID: 2311A02-006 **Matrix:** MEOH BLAN **Received Date:** 11/18/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	ND	60		mg/Kg	20	11/19/2023 12:58:26 PM	78892
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**	
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	11/20/2023 11:44:27 AM	78896
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	11/20/2023 11:44:27 AM	78896
Surr: DNOP	94.0	69-147		%Rec	1	11/20/2023 11:44:27 AM	78896
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	3.6		mg/Kg	1	11/20/2023 1:23:00 PM	R101307
Surr: BFB	109	15-244		%Rec	1	11/20/2023 1:23:00 PM	R101307
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**	
Benzene	ND	0.018		mg/Kg	1	11/20/2023 1:23:00 PM	BS10130
Toluene	ND	0.036		mg/Kg	1	11/20/2023 1:23:00 PM	BS10130
Ethylbenzene	ND	0.036		mg/Kg	1	11/20/2023 1:23:00 PM	BS10130
Xylenes, Total	0.077	0.072		mg/Kg	1	11/20/2023 1:23:00 PM	BS10130
Surr: 4-Bromofluorobenzene	99.4	39.1-146		%Rec	1	11/20/2023 1:23:00 PM	BS10130

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2311A02**
Date Reported: **11/29/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM **Client Sample ID:** S-7
Project: Huerfano 188 **Collection Date:** 11/17/2023 9:30:00 AM
Lab ID: 2311A02-007 **Matrix:** MEOH BLAN **Received Date:** 11/18/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	ND	61		mg/Kg	20	11/19/2023 1:10:50 PM	78892
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**	
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	11/20/2023 11:55:01 AM	78896
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	11/20/2023 11:55:01 AM	78896
Surr: DNOP	91.7	69-147		%Rec	1	11/20/2023 11:55:01 AM	78896
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	3.5		mg/Kg	1	11/20/2023 1:45:00 PM	R101307
Surr: BFB	104	15-244		%Rec	1	11/20/2023 1:45:00 PM	R101307
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**	
Benzene	ND	0.017		mg/Kg	1	11/20/2023 1:45:00 PM	BS10130
Toluene	ND	0.035		mg/Kg	1	11/20/2023 1:45:00 PM	BS10130
Ethylbenzene	ND	0.035		mg/Kg	1	11/20/2023 1:45:00 PM	BS10130
Xylenes, Total	ND	0.070		mg/Kg	1	11/20/2023 1:45:00 PM	BS10130
Surr: 4-Bromofluorobenzene	98.4	39.1-146		%Rec	1	11/20/2023 1:45:00 PM	BS10130

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2311A02**
Date Reported: **11/29/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM **Client Sample ID:** S-8
Project: Huerfano 188 **Collection Date:** 11/17/2023 9:35:00 AM
Lab ID: 2311A02-008 **Matrix:** MEOH BLAN **Received Date:** 11/18/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	ND	59		mg/Kg	20	11/19/2023 1:23:14 PM	78892
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**	
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	11/20/2023 12:05:35 PM	78896
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	11/20/2023 12:05:35 PM	78896
Surr: DNOP	91.9	69-147		%Rec	1	11/20/2023 12:05:35 PM	78896
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	7.2		mg/Kg	2	11/20/2023 2:06:00 PM	R101307
Surr: BFB	105	15-244		%Rec	2	11/20/2023 2:06:00 PM	R101307
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**	
Benzene	0.040	0.036		mg/Kg	2	11/20/2023 2:06:00 PM	BS10130
Toluene	0.15	0.072		mg/Kg	2	11/20/2023 2:06:00 PM	BS10130
Ethylbenzene	ND	0.072		mg/Kg	2	11/20/2023 2:06:00 PM	BS10130
Xylenes, Total	0.26	0.14		mg/Kg	2	11/20/2023 2:06:00 PM	BS10130
Surr: 4-Bromofluorobenzene	97.0	39.1-146		%Rec	2	11/20/2023 2:06:00 PM	BS10130

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2311A02**
Date Reported: **11/29/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM **Client Sample ID:** S-9
Project: Huerfano 188 **Collection Date:** 11/17/2023 9:40:00 AM
Lab ID: 2311A02-009 **Matrix:** MEOH BLAN **Received Date:** 11/18/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	ND	60		mg/Kg	20	11/19/2023 1:35:39 PM	78892
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**	
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	11/20/2023 12:16:09 PM	78896
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	11/20/2023 12:16:09 PM	78896
Surr: DNOP	90.9	69-147		%Rec	1	11/20/2023 12:16:09 PM	78896
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	7.1		mg/Kg	2	11/20/2023 2:28:00 PM	R101307
Surr: BFB	107	15-244		%Rec	2	11/20/2023 2:28:00 PM	R101307
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**	
Benzene	0.037	0.036		mg/Kg	2	11/20/2023 2:28:00 PM	BS10130
Toluene	0.14	0.071		mg/Kg	2	11/20/2023 2:28:00 PM	BS10130
Ethylbenzene	ND	0.071		mg/Kg	2	11/20/2023 2:28:00 PM	BS10130
Xylenes, Total	0.29	0.14		mg/Kg	2	11/20/2023 2:28:00 PM	BS10130
Surr: 4-Bromofluorobenzene	97.4	39.1-146		%Rec	2	11/20/2023 2:28:00 PM	BS10130

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2311A02**
Date Reported: **11/29/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: ENSOLUM **Client Sample ID:** S-10
Project: Huerfano 188 **Collection Date:** 11/17/2023 9:45:00 AM
Lab ID: 2311A02-010 **Matrix:** MEOH BLAN **Received Date:** 11/18/2023 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	ND	60		mg/Kg	20	11/19/2023 1:48:03 PM	78892
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**	
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	11/20/2023 12:26:45 PM	78896
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	11/20/2023 12:26:45 PM	78896
Surr: DNOP	94.0	69-147		%Rec	1	11/20/2023 12:26:45 PM	78896
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**	
Gasoline Range Organics (GRO)	ND	7.5		mg/Kg	2	11/20/2023 2:50:00 PM	R101307
Surr: BFB	100	15-244		%Rec	2	11/20/2023 2:50:00 PM	R101307
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**	
Benzene	ND	0.037		mg/Kg	2	11/20/2023 2:50:00 PM	BS10130
Toluene	ND	0.075		mg/Kg	2	11/20/2023 2:50:00 PM	BS10130
Ethylbenzene	ND	0.075		mg/Kg	2	11/20/2023 2:50:00 PM	BS10130
Xylenes, Total	ND	0.15		mg/Kg	2	11/20/2023 2:50:00 PM	BS10130
Surr: 4-Bromofluorobenzene	96.9	39.1-146		%Rec	2	11/20/2023 2:50:00 PM	BS10130

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2311A02**

29-Nov-23

Client: ENSOLUM

Project: Huerfano 188

Sample ID:	**MB-78892**	SampType:	**mblk**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**PBS**	Batch ID:	**78892**	RunNo:	**101309**					
Prep Date:	**11/19/2023**	Analysis Date:	**11/19/2023**	SeqNo:	**3726155**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID:	**LCS-78892**	SampType:	**lcs**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**LCSS**	Batch ID:	**78892**	RunNo:	**101309**					
Prep Date:	**11/19/2023**	Analysis Date:	**11/19/2023**	SeqNo:	**3726159**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	90.7	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2311A02**

29-Nov-23

Client: ENSOLUM

Project: Huerfano 188

Sample ID: **2311A02-010AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **S-10** Batch ID: **78896** RunNo: **101310**

Prep Date: **11/20/2023** Analysis Date: **11/20/2023** SeqNo: **3726253** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	39	9.3	46.73	0	82.8	54.2	135			
Surr: DNOP	3.8		4.673		82.2	69	147			

Sample ID: **LCS-78896** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **LCSS** Batch ID: **78896** RunNo: **101310**

Prep Date: **11/20/2023** Analysis Date: **11/20/2023** SeqNo: **3726254** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	10	50.00	0	89.5	61.9	130			
Surr: DNOP	4.2		5.000		84.9	69	147			

Sample ID: **MB-78896** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **PBS** Batch ID: **78896** RunNo: **101310**

Prep Date: **11/20/2023** Analysis Date: **11/20/2023** SeqNo: **3726255** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.8		10.00		87.6	69	147			

Sample ID: **2311A02-010AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **S-10** Batch ID: **78896** RunNo: **101310**

Prep Date: **11/20/2023** Analysis Date: **11/20/2023** SeqNo: **3726446** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	9.7	48.64	0	88.8	54.2	135	11.0	29.2	
Surr: DNOP	4.3		4.864		88.3	69	147	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2311A02**

29-Nov-23

Client: ENSOLUM

Project: Huerfano 188

Sample ID: **2.5ug gro lcs**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **R101307**	RunNo: **101307**
Prep Date:	Analysis Date: **11/20/2023**	SeqNo: **3726120** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	94.6	70	130			
Surr: BFB	2200		1000		222	15	244			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **R101307**	RunNo: **101307**
Prep Date:	Analysis Date: **11/20/2023**	SeqNo: **3726121** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		104	15	244			

Sample ID: **2311a02-002ams**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **S-2**	Batch ID: **R101307**	RunNo: **101307**
Prep Date:	Analysis Date: **11/20/2023**	SeqNo: **3726716** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	130	27	135.0	0	93.6	70	130			
Surr: BFB	12000		5400		220	15	244			

Sample ID: **2311a02-002amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **S-2**	Batch ID: **R101307**	RunNo: **101307**
Prep Date:	Analysis Date: **11/20/2023**	SeqNo: **3726717** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	120	27	135.0	0	91.3	70	130	2.51	20	
Surr: BFB	12000		5400		220	15	244	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2311A02**

29-Nov-23

Client: ENSOLUM

Project: Huerfano 188

Sample ID: **100ng btex lcs**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **BS101307**	RunNo: **101307**
Prep Date:	Analysis Date: **11/20/2023**	SeqNo: **3726148** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.95	0.025	1.000	0	94.9	70	130			
Toluene	0.97	0.050	1.000	0	97.3	70	130			
Ethylbenzene	0.98	0.050	1.000	0	98.2	70	130			
Xylenes, Total	3.0	0.10	3.000	0	98.4	70	130			
Surr: 4-Bromofluorobenzene	1.0		1.000		102	39.1	146			

Sample ID: **mb**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **BS101307**	RunNo: **101307**
Prep Date:	Analysis Date: **11/20/2023**	SeqNo: **3726149** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.98		1.000		97.6	39.1	146			

Sample ID: **2311a02-001ams**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **S-1**	Batch ID: **BS101307**	RunNo: **101307**
Prep Date:	Analysis Date: **11/20/2023**	SeqNo: **3726848** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.5	0.037	1.484	0	99.1	70	130			
Toluene	1.5	0.074	1.484	0	98.4	70	130			
Ethylbenzene	1.5	0.074	1.484	0	99.3	70	130			
Xylenes, Total	4.4	0.15	4.451	0	99.8	70	130			
Surr: 4-Bromofluorobenzene	1.4		1.484		95.5	39.1	146			

Sample ID: **2311a02-001amsd**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **S-1**	Batch ID: **BS101307**	RunNo: **101307**
Prep Date:	Analysis Date: **11/20/2023**	SeqNo: **3726850** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.5	0.037	1.484	0	98.8	70	130	0.263	20	
Toluene	1.5	0.074	1.484	0	99.7	70	130	1.31	20	
Ethylbenzene	1.5	0.074	1.484	0	99.5	70	130	0.247	20	
Xylenes, Total	4.4	0.15	4.451	0	99.1	70	130	0.717	20	
Surr: 4-Bromofluorobenzene	1.4		1.484		95.6	39.1	146	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

eurofins | Environment Testing

Eurofins Environment Testing South Central, LLC
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: ENSOLUM Work Order Number: 2311A02 RcptNo: 1

Received By: Tracy Casarrubias 11/18/2023 7:00:00 AM

Completed By: Tracy Casarrubias 11/18/2023 8:31:16 AM

Reviewed By: JM 11/20/23

Chain of Custody

1. Is Chain of Custody complete?	Yes ☐	No ☑	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☐	No ☐	NA ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: (<2 or >12 unless noted)

Adjusted?

Checked by: TMC 11/18/23

Special Handling (if applicable)

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

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions: Phone number and Email/Fax are missing on COC- TMC 11/18/23

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.8	Good	Yes	Morty		

Chain-of-Custody Record

Client: Ensolum, LLC.

Mailing Address: 606 S Rio Grande Suit A 87410

Phone #:

email or Fax#:

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 100%

☐ Standard ☒ Rush 11-20-23

Project Name: Huerfano 188

Project #:

Project Manager: K Summers

Sampler: C D'Antonio

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(Including CF): 1.8 - 0 = 1.8 (°C)

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2311A02	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	(Cl, F, Br, NO3, NO2, PO4, SO4)	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
11/17	900	S	S-1	1 4oz Jar	Cool	001	✓	✓					✓			
11/17	905	S	S-2		Cool	002	✓	✓					✓			
11/17	910	S	S-3		Cool	003	✓	✓					✓			
11/17	915	S	S-4		Cool	004	✓	✓					✓			
11/17	920	S	S-5		Cool	005	✓	✓					✓			
11/17	925	S	S-6		Cool	006	✓	✓					✓			
11/17	930	S	S-7		Cool	007	✓	✓					✓			
11/17	935	S	S-8		Cool	008	✓	✓					✓			
11/17	940	S	S-9		Cool	009	✓	✓					✓			
11/17	945	S	S-10		Cool	010	✓	✓					✓			

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
11/17/23	1042				11/17/23	1042
11/17/23	1800			Courier	11/18/23	7:00

Remarks: Tom long

Same Day

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

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

QUESTIONS

Action 325143

QUESTIONS

Operator: Enterprise Field Services, LLC PO Box 4324 Houston, TX 77210	OGRID: 241602
	Action Number: 325143
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2331745754**
Incident Name	**NAPP2331745754 HUERFANO #188 @ 0**
Incident Type	**Natural Gas Release**
Incident Status	**Remediation Closure Report Received**

Location of Release Source	
Please answer all the questions in this group.	
Site Name	HUERFANO #188
Date Release Discovered	11/13/2023
Surface Owner	Navajo

Incident Details	
Please answer all the questions in this group.	
Incident Type	Natural Gas Release
Did this release result in a fire or is the result of a fire	No
Did this release result in any injuries	No
Has this release reached or does it have a reasonable probability of reaching a watercourse	No
Has this release endangered or does it have a reasonable probability of endangering public health	No
Has this release substantially damaged or will it substantially damage property or the environment	No
Is this release of a volume that is or may with reasonable probability be detrimental to fresh water	No

Nature and Volume of Release	
Material(s) released, please answer all that apply below. Any calculations or specific justifications for the volumes provided should be attached to the follow-up C-141 submission.	
Crude Oil Released (bbls) Details	*Not answered.*
Produced Water Released (bbls) Details	*Not answered.*
Is the concentration of chloride in the produced water >10,000 mg/l	*Not answered.*
Condensate Released (bbls) Details	Cause: Corrosion | Pipeline (Any) | Condensate | Released: 5 BBL | Recovered: 0 BBL | Lost: 5 BBL.
Natural Gas Vented (Mcf) Details	*Not answered.*
Natural Gas Flared (Mcf) Details	*Not answered.*
Other Released Details	*Not answered.*
Are there additional details for the questions above (i.e. any answer containing Other, Specify, Unknown, and/or Fire, or any negative lost amounts)	*Not answered.*

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QUESTIONS (continued)

Operator: Enterprise Field Services, LLC PO Box 4324 Houston, TX 77210	OGRID: 241602
	Action Number: 325143
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Nature and Volume of Release (continued)	
Is this a gas only submission (i.e. only significant Mcf values reported)	**More info needed to determine if this will be treated as a "gas only" report.**
Was this a major release as defined by Subsection A of 19.15.29.7 NMAC	**No**
Reasons why this would be considered a submission for a notification of a major release	*Unavailable.*
With the implementation of the 19.15.27 NMAC (05/25/2021), venting and/or flaring of natural gas (i.e. gas only) are to be submitted on the C-129 form.	

Initial Response	
The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury.	
The source of the release has been stopped	True
The impacted area has been secured to protect human health and the environment	True
Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices	True
All free liquids and recoverable materials have been removed and managed appropriately	True
If all the actions described above have not been undertaken, explain why	*Not answered.*
Per Paragraph (4) of Subsection B of 19.15.29.8 NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please prepare and attach a narrative of actions to date in the follow-up C-141 submission. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see Subparagraph (a) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC), please prepare and attach all information needed for closure evaluation in the follow-up C-141 submission.	

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

I hereby agree and sign off to the above statement	Name: Thomas Long Title: Sr Field Environmental Scientist Email: tjlong@eprod.com Date: 03/20/2024

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QUESTIONS (continued)

Operator: Enterprise Field Services, LLC PO Box 4324 Houston, TX 77210	OGRID: 241602
	Action Number: 325143
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Site Characterization	
Please answer all the questions in this group (only required when seeking remediation plan approval and beyond). This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
What is the shallowest depth to groundwater beneath the area affected by the release in feet below ground surface (ft bgs)	Between 26 and 50 (ft.)
What method was used to determine the depth to ground water	OCD Imaging Records Lookup
Did this release impact groundwater or surface water	No
What is the minimum distance, between the closest lateral extents of the release and the following surface areas:	
A continuously flowing watercourse or any other significant watercourse	Between 100 and 200 (ft.)
Any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)	Greater than 5 (mi.)
An occupied permanent residence, school, hospital, institution, or church	Between 1 and 5 (mi.)
A spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes	Between 1 and 5 (mi.)
Any other fresh water well or spring	Greater than 5 (mi.)
Incorporated municipal boundaries or a defined municipal fresh water well field	Greater than 5 (mi.)
A wetland	Between 1 and 5 (mi.)
A subsurface mine	Greater than 5 (mi.)
An (non-karst) unstable area	Greater than 5 (mi.)
Categorize the risk of this well / site being in a karst geology	Low
A 100-year floodplain	Between 1 and 5 (mi.)
Did the release impact areas not on an exploration, development, production, or storage site	No

Remediation Plan	
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
Requesting a remediation plan approval with this submission	Yes
Attach a comprehensive report demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined, pursuant to 19.15.29.11 NMAC and 19.15.29.13 NMAC.	
Have the lateral and vertical extents of contamination been fully delineated	Yes
Was this release entirely contained within a lined containment area	No
Soil Contamination Sampling: (Provide the highest observable value for each, in milligrams per kilograms.)	
Chloride (EPA 300.0 or SM4500 Cl B)	60
TPH (GRO+DRO+MRO) (EPA SW-846 Method 8015M)	49
GRO+DRO (EPA SW-846 Method 8015M)	46
BTEX (EPA SW-846 Method 8021B or 8260B)	0.6
Benzene (EPA SW-846 Method 8021B or 8260B)	0.1
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.	
On what estimated date will the remediation commence	11/13/2023
On what date will (or did) the final sampling or liner inspection occur	11/17/2023
On what date will (or was) the remediation complete(d)	11/17/2023
What is the estimated surface area (in square feet) that will be reclaimed	313
What is the estimated volume (in cubic yards) that will be reclaimed	366
What is the estimated surface area (in square feet) that will be remediated	313
What is the estimated volume (in cubic yards) that will be remediated	366
These estimated dates and measurements are recognized to be the best guess or calculation at the time of submission and may (be) change(d) over time as more remediation efforts are completed.	
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

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QUESTIONS (continued)

Operator: Enterprise Field Services, LLC PO Box 4324 Houston, TX 77210	OGRID: 241602
	Action Number: 325143
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Remediation Plan (continued)	
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
This remediation will (or is expected to) utilize the following processes to remediate / reduce contaminants:	
(Select all answers below that apply.)	
(Ex Situ) Excavation and **off-site** disposal (i.e. dig and haul, hydrovac, etc.)	Yes
Which OCD approved facility will be used for **off-site** disposal	ENVIROTECH LANDFARM #2 [fEEM0112336756]
OR which OCD approved well (API) will be used for **off-site** disposal	*Not answered.*
OR is the **off-site** disposal site, to be used, out-of-state	*Not answered.*
OR is the **off-site** disposal site, to be used, an NMED facility	*Not answered.*
(Ex Situ) Excavation and **on-site** remediation (i.e. On-Site Land Farms)	*Not answered.*
(In Situ) Soil Vapor Extraction	*Not answered.*
(In Situ) Chemical processing (i.e. Soil Shredding, Potassium Permanganate, etc.)	*Not answered.*
(In Situ) Biological processing (i.e. Microbes / Fertilizer, etc.)	*Not answered.*
(In Situ) Physical processing (i.e. Soil Washing, Gypsum, Disking, etc.)	*Not answered.*
Ground Water Abatement pursuant to 19.15.30 NMAC	*Not answered.*
OTHER (Non-listed remedial process)	*Not answered.*
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.	
I hereby agree and sign off to the above statement	Name: Thomas Long Title: Sr Field Environmental Scientist Email: tjlong@eprod.com Date: 03/20/2024
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

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QUESTIONS (continued)

Operator: Enterprise Field Services, LLC PO Box 4324 Houston, TX 77210	OGRID: 241602
	Action Number: 325143
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Deferral Requests Only *Only answer the questions in this group if seeking a deferral upon approval this submission. Each of the following items must be confirmed as part of any request for deferral of remediation.*	
Requesting a deferral of the remediation closure due date with the approval of this submission	No

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

QUESTIONS (continued)

Operator: Enterprise Field Services, LLC PO Box 4324 Houston, TX 77210	OGRID: 241602
	Action Number: 325143
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Sampling Event Information	
Last sampling notification (C-141N) recorded	**300839**
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	**11/17/2023**
What was the (estimated) number of samples that were to be gathered	**10**
What was the sampling surface area in square feet	**200**

Remediation Closure Request	
Only answer the questions in this group if seeking remediation closure for this release because all remediation steps have been completed.	
Requesting a remediation closure approval with this submission	Yes
Have the lateral and vertical extents of contamination been fully delineated	**Yes**
Was this release entirely contained within a lined containment area	**No**
All areas reasonably needed for production or subsequent drilling operations have been stabilized, returned to the sites existing grade, and have a soil cover that prevents ponding of water, minimizing dust and erosion	Yes
What was the total surface area (in square feet) remediated	313
What was the total volume (cubic yards) remediated	366
All areas not reasonably needed for production or subsequent drilling operations have been reclaimed to contain a minimum of four feet of non-waste contain earthen material with concentrations less than 600 mg/kg chlorides, 100 mg/kg TPH, 50 mg/kg BTEX, and 10 mg/kg Benzene	Yes
What was the total surface area (in square feet) reclaimed	313
What was the total volume (in cubic yards) reclaimed	366
Summarize any additional remediation activities not included by answers (above)	None

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (in .pdf format) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

I hereby agree and sign off to the above statement	Name: Thomas Long Title: Sr Field Environmental Scientist Email: tjlong@eprod.com Date: 03/20/2024

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QUESTIONS (continued)

Operator: Enterprise Field Services, LLC PO Box 4324 Houston, TX 77210	OGRID: 241602
	Action Number: 325143
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Reclamation Report	
Only answer the questions in this group if all reclamation steps have been completed.	
Requesting a reclamation approval with this submission	No

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CONDITIONS

Action 325143

CONDITIONS

Operator:	OGRID:
Enterprise Field Services, LLC PO Box 4324 Houston, TX 77210	241602
	Action Number: 325143
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

CONDITIONS

Created By	Condition	Condition Date
nvelez	None	3/22/2024