

October 2, 2023

**New Mexico Oil Conservation Division** 

New Mexico Energy, Minerals, and Natural Resources Department 1220 South St. Francis Drive Santa Fe, New Mexico 87505

Re: Closure Request Macho State 002H

**Incident Number NAPP2319153053** 

Lea County, New Mexico

To Whom It May Concern:

Ensolum, LLC (Ensolum), on behalf of COG Operating, LLC (COG), has prepared this *Closure Request* to document assessment and soil sampling activities performed at the Macho State 002H (Site). The purpose of the Site assessment and soil sampling activities was to assess for the presence or absence of impacts to soil following a release of produced water within a lined containment at the Site. Based on field observations, field screening activities, and soil sample laboratory analytical results, COG is submitting this *Closure Request*, describing Site assessment and delineation activities that have occurred and requesting no further action and closure for Incident Number NAPP2319153053.

### SITE DESCRIPTION AND RELEASE SUMMARY

The Site is located in Unit E, Section 02, Township 24 South, Range 33 East, in Lea County, New Mexico (32.2480°, -103.5507°) and is associated with oil and gas exploration and production operations on State Land managed by the New Mexico State Land Office (NMSLO).

On July 5, 2023, a cracked bypass valve resulted in the release of approximately 10.5845 barrels (bbls) of produced water into the graveled and lined secondary containment. The saturated gravel was immediately removed from the lined containment and hauled to a disposal facility. COG reported the release to the New Mexico Oil Conservation Division (NMOCD) on a *Release Notification Form C-141* (Form C-141) on July 10, 2023. The release was assigned Incident Number NAPP2319153053.

Since the release remained within a lined containment on the active well pad, an assessment of cultural properties had already been completed prior to the construction of the well pad and as such, the Cultural Properties Protection Rule (CPP) has been followed. No additional cultural resource surveys were completed in connection with this release. The release area is not expected to be reclaimed until the oil and gas well is plugged and abandoned and the well pad is reclaimed. The Reclamation Plan for this release will default to the NMSLO-approved Reclamation Plan for the well pad per 19.2.100.67 of the New Mexico Administrative Code (NMAC).

#### SITE CHARACTERIZATION AND CLOSURE CRITERIA

The Site was characterized for applicability of Table I, Closure Criteria for Soils Impacted by a Release, of Title 19, Chapter 15, Part 29 (19.15.29) of the NMAC. Results from the characterization desktop

COG Operating, LLC Closure Request Macho State 002H

Page 2

review are presented on page 3 of the Form C-141, Site Assessment/Characterization. Potential Site receptors are identified on Figure 1.

Depth to groundwater at the Site is estimated to be between 51 and 100 feet below ground surface (bgs) based on the nearest groundwater well data. The closest permitted groundwater well with depth to groundwater data is New Mexico Office of the State Engineer (NMOSE) well C-04595 POD 1, located approximately 0.95 miles northwest of the Site. The groundwater well was drilled during March 2022 to a total depth of 55 feet bgs and no water was encountered.

There are nine water wells located between 0.95 miles and 3 miles in all cardinal directions of the Site indicating regional depth to groundwater is greater than 55 feet bgs. There are no surface features, such as watercourses, ponds, wetlands, or vegetation indicative of shallow groundwater near the Site. Based on the number of wells surrounding the Site, a consistent pattern of depth to groundwater that corresponds to topography and, therefore, underlying geology, it is evident that groundwater is deep and a conservative estimate of between 51 and 100 feet bgs is estimated. All wells used for depth to groundwater determination are presented on Figure 1. The referenced well records and a map showing the distance to the surrounding wells are included in Appendix A.

The closest continuously flowing or significant watercourse to the Site is a freshwater emergent wetland, located approximately 2,200 feet east of the Site. The Site is greater than 200 feet from a lakebed, sinkhole, or playa lake and greater than 300 feet from an occupied residence, school, hospital, institution, church, or wetland. The Site is greater than 1,000 feet to a freshwater well or spring and is not within a 100-year floodplain or overlying a subsurface mine. The Site is not underlain by unstable geology (low potential karst designation area). Site receptors are identified on Figure 1.

Based on the results of the Site Characterization, the following NMOCD Table I Closure Criteria (Closure Criteria) apply:

- Benzene: 10 milligrams per kilogram (mg/kg)
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX): 50 mg/kg
- Total petroleum hydrocarbons (TPH)-gasoline range organics (GRO) and TPH-diesel range organics (DRO): 1,000 mg/kg
- TPH: 2,500 mg/kg
- Chloride: 10,000 mg/kg

### SITE ASSESSMENT ACTIVITIES AND LABORATORY ANALYTICAL RESULTS

A liner integrity inspection was conducted by Ensolum personnel on July 21, 2023. Upon inspection, the liner was determined to be insufficient. Four delineation soil samples (SS01 through SS04) were collected around the lined containment at a depth of 0.5 feet bgs to confirm the lateral extent of the release.

On August 9, 2023, one borehole (BH01) was advanced via hand auger at the location of the tear in the liner to assess for the presence or absence of impacted soil. Discrete delineation soil samples BH01 and BH01A were collected from the borehole at depths of 0.5 feet and 2 feet bgs. Hand auger refusal was encountered at a depth of 2 feet bgs. The delineation soil samples were field screened for volatile organic compounds (VOCs) utilizing a calibrated photoionization detector (PID) and chloride using Hach® chloride QuanTab® test strips. Field screening results and observations from the borehole were documented on a lithologic/soil sampling log, which is included as Appendix B. The borehole was backfilled with the soil removed and COG repaired the tear in the liner. The delineation soil sample



COG Operating, LLC Closure Request Macho State 002H

Page 3

locations are depicted on Figure 2. Photographic documentation was conducted at the Site. A photographic log is included in Appendix C.

The soil samples were placed directly into pre-cleaned glass jars, labeled with the location, date, time, sampler name, method of analysis, and immediately placed on ice. The soil samples were transported under strict chain-of-custody procedures to Eurofins Laboratories (Eurofins) in Carlsbad, New Mexico, for analyses of the following constituents of concern (COCs): BTEX following United States Environmental Protection Agency (EPA) Method 8021B; TPH-GRO, TPH-DRO, and TPH-oil range organics (ORO) following EPA Method 8015M/D; and chloride following EPA Method 300.0.

Laboratory analytical results for delineation soil samples SS01 through SS04, collected around the lined containment, indicated all COC concentrations were compliant with the most stringent Table I Closure Criteria and successfully defined the lateral extent of the release. Laboratory analytical results for delineation soil samples BH01 and BH01A, collected at 0.5 feet and 2 feet bgs beneath the tear in the liner, indicated all COC concentrations were compliant with the Site Closure Criteria and defined the vertical extent of the release. Laboratory analytical results are summarized in Table 1 and the complete laboratory analytical reports are included as Appendix D.

#### **CLOSURE REQUEST**

Following the failed liner integrity inspection at the Site, Ensolum personnel advanced one borehole (BH01) at the location of the tear in the liner to assess for the presence or absence of impacted soil resulting from the July 5, 2023, produced water release within the lined containment. Two delineation soil samples were collected from borehole BH01, at depths ranging from 0.5 feet to 2 feet bgs. Laboratory analytical results for the delineation soil samples indicated all COC concentrations were compliant with the Site Closure Criteria. Additionally, laboratory analytical results for soil samples SS01 through SS04, collected around the containment, were compliant with the most stringent Table I Closure Criteria. The release was contained laterally within the lined containment and the tear in the liner was repaired.

Based on initial response efforts, absence of elevated field screening results, and soil sample laboratory analytical results compliant with the Site Closure Criteria directly beneath the tear in the liner, COG respectfully requests closure for Incident Number NAPP2319153053. The Final Form C-141 is included as Appendix E.

If you have any questions or comments, please contact Ms. Hadlie Green at (432) 557-8895 or hgreen@ensolum.com.

Sincerely, **Ensolum**, **LLC** 

Hadlie Green
Project Geologist

Aimee Cole

Senior Managing Scientist

cc: Jacob Laird, COG Operating, LLC
New Mexico State Land Office



COG Operating, LLC Closure Request Macho State 002H

Page 4

### Appendices:

Figure 1 Site Receptor Map

Figure 2 Delineation Soil Sample Locations
Table 1 Soil Sample Analytical Results
Appendix A Referenced Well Records
Lithologic/Soil Sampling Log

Appendix C Photographic Log

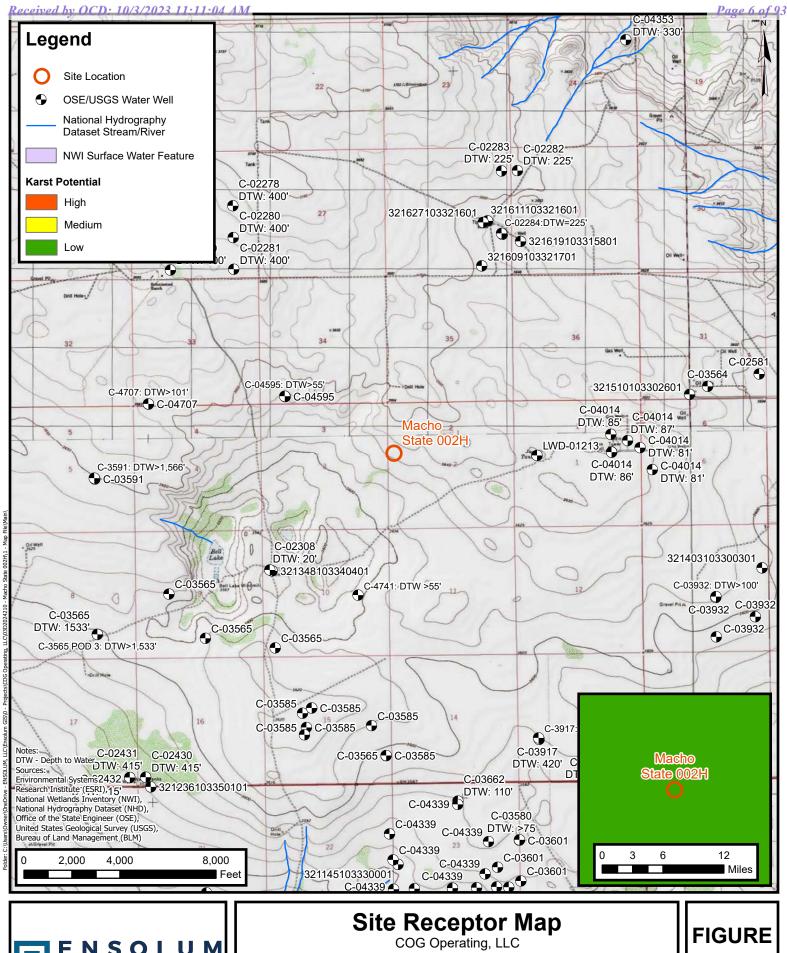
Appendix D Laboratory Analytical Reports & Chain-of-Custody Documentation

Appendix E Final C-141





**FIGURES** 





Macho State 002H Incident Number: NAPP2319153053 Unit E, Sec 02, T24S, R33E Lea County, New Mexico

Released to Imaging: 1/19/2024 2:56:34





# **Delineation Soil Sample Locations**COG Operating, LLC

Macho State 002H
Incident Number: NAPP2319153053
Unit E, Sec 02, T24S, R33E
Lea County, New Mexico

FIGURE 2



**TABLES** 



### TABLE 1

### **SOIL SAMPLE ANALYTICAL RESULTS**

Macho State 002H COG Operating, LLC Lea County, New Mexico

Sample Designation	Date	Depth (feet bgs)	Benzene (mg/kg)	Total BTEX (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH ORO (mg/kg)	GRO+DRO (mg/kg)	Total TPH (mg/kg)	Chloride (mg/kg)
NMOCD Table I	Closure Criteria (	(NMAC 19.15.29)	10	50	NE	NE	NE	1,000	2,500	10,000
				Deli	neation Soil Sam	ples				
SS01	07/21/2023	0.5	<0.00199	<0.00398	<49.7	<49.7	<49.7	<49.7	<49.7	120
SS02	07/21/2023	0.5	<0.00199	<0.00398	<49.6	<49.6	<49.6	<49.6	<49.6	36.7
SS03	07/21/2023	0.5	<0.00200	<0.00400	<50.4	<50.4	<50.4	<50.4	<50.4	41.4
SS04	07/21/2023	0.5	<0.00198	<0.00397	<50.4	<50.4	<50.4	<50.4	<50.4	79.9
BH01	08/09/2023	0.5	<0.00198	<0.00397	<50.1	<50.1	<50.1	<50.1	<50.1	1,510
BH01A	08/09/2023	2	<0.00200	<0.00400	<50.4	<50.4	<50.4	<50.4	<50.4	1,890

#### Notes:

bgs: below ground surface mg/kg: milligrams per kilogram

NMOCD: New Mexico Oil Conservation Division

NMAC: New Mexico Administrative Code

NE: Not Established

BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes

GRO: Gasoline Range Organics DRO: Diesel Range Organics ORO: Oil Range Organics

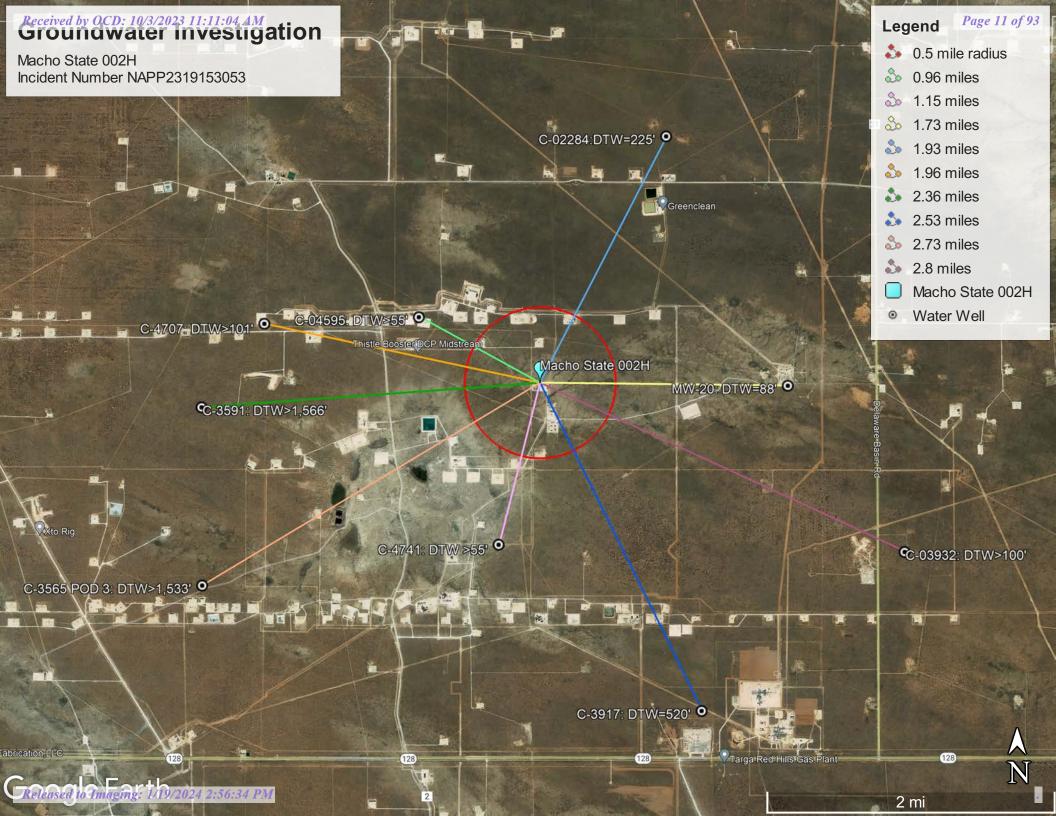
TPH: Total Petroleum Hydrocarbon

Concentrations in **bold** exceed the NMOCD Table I Closure Criteria or reclamation standard where applicable.



**APPENDIX A** 

Referenced Well Records





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OF.									Y	N	
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(FROM GPS)  DESCRIPTION  Neptune		G WELL LOCATION TO	103 STREET ADDR	ESS AND COMMO	20.72			ALECCION DE CONTRACTO	ERE AV	AILABLE	
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## WELL RECORD & LOG

### OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

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LOC	ATION	$n_1$	0	<del>• • • • • • • • • • • • • • • • • • • </del>	2	45.33	9.1	243		<u>, v - v</u>	PAGE	1 OF 2
				-								

	DEPTH	(feet bgl)	THICKNESS				IAL ENCOUNTE		WATER	ESTIMATED YIELD FOR
	FROM	ТО	(feet)				IES OR FRACTU ully describe all u		BEARING? (YES / NO)	WATER- BEARING ZONES (gpm)
	0	28	28	CALIC	HG	HEO	HARO		C Y DON	
	28	35	7	CAUCH		JERY	HARD		CYSN	
	35	96.5	61.5	SAND	FIR	JE U		MO CU	M SOX C N	N/A
							<del></del>		OAON	
									C $X$ $C$ $N$	
-									$C_A \subset N$	
WEI									$O^{Y} O^{N}$	
5									$C_A C_B$	3
200			_						$C^{Y}C^{N}$	
3IC)									$O^{Y} O^{N}$	3.0
Š									$O_A \cup_N$	
4. HYDROGEOLOGIC LOG OF WELL									$C_A \subset_N$	5
DRO							<u></u>		$O_A O_N$	
HX									$C_{\Lambda}$	
4									$C^{Y}C^{N}$	\ <u>\</u>
							<u> </u>		$\bigcup_{X} \bigcup_{X} \bigcup_{X}$	
									$O^{Y} C^{N}$	
									$C_{\Lambda}$	
									$O_{\Lambda} O_{N}$	
		ļ							$C_A C_N$	
									$C^{Y}$	
				OF WATER-BEAF			PUMP	l v	OTAL ESTIMATED (gpm):	
	AIR LIF	T (`I	BAILER (	OTHER - SPECIF	?Y:	mon	HOT WE	11		N/A
NO	WELL TES	T TEST	RESULTS - ATT FTIME, END TI	ACH A COPY OF E	DATA COLL E SHOWING	ECTED DUI DISCHARG	RING WELL TEST E AND DRAWDO	ING, INCLU OWN OVER	IDING DISCHARGE THE TESTING PERIC	NETHOD,
VISION	MISCELLA	NEOUS INF	ORMATION:							
										39
:SU		•							•	$\omega$ from
; RIC						· ·			-	
5. TEST; RIG SUPER	PRINT NAM	ME(S) OF DE	RILL RIG SUPER	VISOR(S) THAT P	ROVIDED C	ONSITE SUP	ERVISION OF WI	ELL CONSTI	RUCTION OTHER TI	_
SIGNATURE	CORRECT	RECORD OF	THE ABOVE D	TES THAT, TO THE ESCRIBED HOLE O DAYS AFTER CO	AND THAT	HE OR SHE	WILL FILE THIS	ND BELIEF, WELL REC	THE FOREGOING IS ORD WITH THE STA	S A TRUE AND ATE ENGINEER
GNA				· ·		Λ.	A -		00: -	
6. SI				<u>ە</u> ك	HW /	<u>46 UN</u>	Œ_		2-21-17	
		SIGNATI	JRE OF DRILLE	P / PRINT SIGN	EE NAME				DATE	
FOR	R OSE INTER	NAL USE		· · ·			W	R-20 WELL	RECORD & LOG (Ve	rsion 06/08/2012)
_	E NUMBER	-	-4014	· · · · · · · · · · · · · · · · · · ·	I	UMBER	Y TR	N NUMBER	<del> </del>	75
LO	TATION	m	on		245	.33E	7.24	3		PAGE 2 OF 2



## New Mexico Office of the State Engineer

## **Point of Diversion Summary**

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(NAD83 UTM in meters)

Well Tag POD Number Q64 Q16 Q4 Sec Tws Rng

X

C 02284 4 2 4 26 23S 33E

637907 3571626\*

9

**Driller License: Driller Company:** 

**Driller Name:** CARL BRININSTOOL

Drill Start Date:Drill Finish Date:12/31/1919Plug Date:Log File Date:PCW Rcv Date:Source:

Pump Type:Pipe Discharge Size:Estimated Yield:3 GPMCasing Size:6.50Depth Well:325 feetDepth Water:225 feet

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

9/28/23 8:13 AM

POINT OF DIVERSION SUMMARY

<sup>\*</sup>UTM location was derived from PLSS - see Help



NO	OSE POD NO. (WE POD 1 (TW-1)		)		ELL TAG ID NO			OSE FILE NO( C-4707	S).			
OCATIO	WELL OWNER N. Devon Energy	AME(S)						PHONE (OPTI 575-748-18:				
WELL L	WELL OWNER M 6488 7 Rivers		ADDRESS					CITY Artesia		STATE NM	88210	ZIP
GENERAL AND WELL LOCATION	WELL LOCATION	LAT	DI	EGREES 32	MINUTES 15	SECONI 14.13		* ACCURACY	REQUIRED: ONE TEN	TH OF A	SECOND	
NERA	(FROM GPS)	LO	NGITUDE	103	35	1.32	W	* DATUM RE	QUIRED: WGS 84			
1. GE	THE STATE OF THE S		RIG WELL LOCATION TO T23S R33E NMPM		S AND COMMON	N LANDMA	RKS – PL	SS (SECTION, TO	WNSHJIP, RANGE) W	HERE AV	AILABLE	
_	LICENSE NO.		NAME OF LICENSED	DRILLER					NAME OF WELL DE	RILLING	COMPANY	
	1249				kie D. Atkins	į.					g Associates, I	nc.
	DRILLING START 4/11/23	TED	DRILLING ENDED 4/12/23	DEPTH OF COMP Temporar	LETED WELL (F y Well Materi	200		DLE DEPTH (FT) ±101	DEPTH WATER FIR	ST ENCO		
Z	COMPLETED WE	LL IS:	ARTESIAN	DRY HOLE	SHALLO	W (UNCON	FINED)		WATER LEVEL PLETED WELL	I/A	DATE STATIC 4/18/2	
) I	DRILLING FLUID	:	☐ AIR	☐ MUD	ADDITIV	/ES – SPECI	FY:	•				
RM/	DRILLING METH	OD:	ROTARY HAM	MER CABLE	TOOL 🗸 OTH	IER – SPECI	FY:	Hollow Stem	Auger CHECK	C HERE II LLED	F PITLESS ADAI	PTER IS
NFC	DEPTH (feet	bgl)	BORE HOLE		ATERIAL ANI	D/OR	C	ASING	CASING	CAS	SING WALL	SLOT
DRILLING & CASING INFORMATION	FROM	ТО	DIAM (inches)	(include eac	GRADE h casing string, tions of screen)	(C. C. C	CON	NECTION TYPE	INSIDE DIAM. (inches)	TH	IICKNESS (inches)	SIZE (inches)
& CA	0	101	±6.25		oil Boring		(add cou	oling diameter)	-			
ING												
RILL										-		
2. DI										1		
	*					*						
										+		
	DEPTH (feet	bgl)	BORE HOLE	LIST	ANNULAR SI	EAL MAT	ERIAL	AND	AMOUNT		МЕТНО	D OF
IAL	FROM	то	DIAM. (inches)		L PACK SIZE				(cubic feet)		PLACEM	
rer					1	N/A						
MA												
LAR										-		
3. ANNULAR MATERIAL									USE (III) FF	727	2023 PMO 5	10
3. A												
FOR	OSE INTERNAL	USE						WR-2	0 WELL RECORD	& LOG	(Version 01/2	8/2022)
FILE	E NO. (-		70		POD NO	D. <b>\</b>		TRN	NO. 74260	76		
LOC	CATION 23	35.	336.3	3 4	3 3			WELL TAG I	DNO. MA		PAGE	1 OF 2

	DEPTH (f	eet bgl)	THICKNESS			ATERIAL ENCOUN		WAT S BEAR		ESTIMATED YIELD FOR WATER-
	FROM	ТО	(feet)			ets to fully describe a		(YES		BEARING ZONES (gpm)
	0	9	9	Sand,	fine-grained, poor	ly graded with caliche	e, Tan	Y	✓ N	
	9	50	41	Sand, fir	ne-grained, poorly	graded, cemented lay	ers, Tan	Y	✓ N	
	50	65	15	Sand,	very fine-grained,	poorly graded, Tan/	Brown	Y	✓N	
	65	101	36	Clay, S	tiff, consolidated,	with fine silt, Reddish	Brown	Y	√ N	
								Y	N	
H								Y	N	
WEI								Y	N	
OF								Y	N	
90′								Y	N	
ICI								Y	N	
907								Y	N	
EO								Y	N	
4. HYDROGEOLOGIC LOG OF WELL								Y	N	
HYD								Y	N	
4.								Y	N	
								Y	N	
								Y	N	
i i								Y	N	
								Y	N	
								Y	N	
5								Y	N	
	METHOD U	SED TO E	STIMATE YIELD	OF WATER-BEAR	ING STRATA:			TOTAL ESTIM	1ATED	
	PUM	) []A	IR LIFT	BAILER	OTHER – SPECII	FY:		WELL YIELD	(gpm):	0.00
NOIS	WELL TES					D DURING WELL T				
	MISCELLA	NEOUS IN	FORMATION: T		anial name avea de au	d soil boring backfi	Had main a de	ill auttin as from	n total d	outh to tou foot
TEST; RIG SUPERVI			be	low ground surface	e(bgs), then hydr	ated bentonite chip	s ten feet bg	s to surface.	n total de	epin to ten feet
: su			41 TI	nistle Unit #043						
; RIC				none one no to			1	ISE OF APR	27 200	3×43:30 +
EST	PRINT NAM	IF(S) OF D	RILL RIG SUPER	RVISOR(S) THAT P	ROVIDED ONSIT	E SUPERVISION O				
5. T	Shane Eldric	CATA								
TURE	CORRECT F	RECORD C	F THE ABOVE I		AND THAT HE	OR HER KNOWLED OR SHE WILL FILE WELL DRILLING:				
6. SIGNATURE	Jack A	Atkins			Jackie D. Atkins			4/2	6/23	
9	<i>U</i>	SIGNAT	URE OF DRILLE	ER / PRINT SIGNE	EE NAME				DATE	
FOI	R OSE INTER	VAL LICE					WR-20 WE	II RECORD &	LOG (V~	rsion 01/28/2022)
		-47r	17		POD NO.	1		742691		131011 01/20/2022)

WELL TAG ID NO. MY

PAGE 2 OF 2

LOCATION





## STATE ENGINEER OFFICE

1 2013 JAN 25 P 1: 44

										• 44	
	POD NUMBE	R (WELL N	UMBER)				OSE FILE NUM	MBER(S)	<u> </u>		
NO.	ICP-088					_	(	C-359	/	_	
CAT	WELL OWN			<del></del>		- <del></del>	PHONE (OPTI-	ONAL)		_	
ŎŢ			Potash (USA)				575-942-2	2799 			
GENERAL AND WELL LOCATION	WELL OWN		g address er Boulevard				Hobbs		STATE NM	88	ZIP 240
× 0											<del></del>
Z	WELL			DEGREES		43.77 N	• ACCURACY	REQUIRED: ONE TEN	TH OF A SEC	מאסי	
RAL	LOCATIO (FROM GE		TITUDE	32	14		_	QUIRED: WGS 84	moi nace	OND	
ENE		ro	NGITUDE	103	35	27.84 W		<u> </u>	<u> </u>		
- C	DESCRIPTION	ON KELATI	NG WEEL LOCATION	TO STREET ADDRES	SS AND COMMON LAI	NDMAKKS					
•	(2.5 ACRI	E)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION		TOWNSHIP	 □ NORTH	RANGE	EAST
۸L	1/4		1/4	<b>¼</b>	1/4	_	5	24	SOOTH	33	₩EST
Ž.	SUBDIVISIO	N NAME				LOT NUM	MBER	BLOCK NUMBER		UNIT/TRA	СТ
OPTIONAL	HYDROGRA	bille cimi				1		MAP NUMBER		TRACT NU	haben
2.	HIDROGRA	IFIUC SURV	EI					MAP NOMBER		IKACINO	MISER
	LICENSE NU	IMBER	NAME OF LICENS	SED DON LED		· <del></del>		NAME OF WELL DE	ULLING CON	(DANV	
	WD #		Phillip Stewa					Stewart Broth			
	DRILLING S		DRILLING ENDER		PLETED WELL (FT)	BORE HO	LE DEPTH (FT)	DEPTH WATER FIR			
z	12/8/	2012	01/10/2013		NA	15	66 FT		NA		
DRILLING INFORMATION	COMPLETE	D WELL IS:	ARTESIAN	✓ DRY HOLE	SHALLOW (U	NCONFINED)		STATIC WATER LE	VEL IN COM NA	PLETED WEI	L (FT)
FOH	DRILLING F	'LUID:	Air	✓ MUD	ADDITIVES -	SPECIFY: ET	H GEL, PL	ATINUM PAC,	BI-CAR	B, SODA	ASH,
Z D	DRILLING N	AETHOD:	ROTARY	HAMMER	CABLE TOOL	ОТНІ	ER - SPECIFY:	TACKLE, MYL	OGEL, N	aCl	
rri	DEPTI	I (FT)	BORE HOLE		CASING		NECTION	INSIDE DIA.		WALL	SLOT
DRI	FROM	то	DIA. (IN)		ATERIAL		(CASING)	CASING (IN)	ļ	IESS (IN)	SIZE (IN)
ų	0	1263	12.625	J-55	5 #36 steel	th	eaded	8.921	0.3	302	
	1263	1566	8.75	<del></del> -	NA		<del></del> -	<del></del>	<del> </del>	<u> </u>	
					<del></del>				-		<del></del> ,
	DEPTI	1 (ET)	711011150	1 0	ORMATION DESC	DIDTION OF I	DDINCIDAL	ATED DEADING	TDATA		- VIELD
٤	FROM	TO	THICKNESS (FT)	1	<del>-</del>			R FRACTURE ZON			YIELD (GPM)
STRATA	NA		NA	<del></del>			NA		<del></del> -		NA
S S											
Z											
BEARING											
ER 1											
4. WATER	метноо u Bypass		TIMATE YIELD OF W	ATER-BEARING STR	ATA			TOTAL ESTIMATE	NA		
			A. MOE					11001 1 0000	ND 0 1 0 0	001	(D/OB)
	FOR OSE		C-359	1	POD NUN	IBER /	<u> </u>	WELL RECO			19/08) 508
				<del></del>						PAGE	
	LOCATIO	ן אנ	メイラード	226	Sec 5.41	d				LYAGE	01 2



, , - T			SUBMER	SIBLE	D JET	✓ NO PUMP – WELL NOT EQUIPPED	<u></u>		
Ψ.	TYPE OF	PUMP: 	TURBINE		CYLINDER	OTHER - SPECIFY:			
S. SEAL AND PUMP	ANNU	II AD	DEPTH FROM	(FT)	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METH( PLACE	
Y	SEAL	AND	NA		NA	NA	NA	N,	Α
S.SE	GRAVĖ	LPACK							
. T									
	DEPTI	I (FT)	THICK	NESS		COLOR AND TYPE OF MATERIAL ENCOUNT	ERED	WA	TER .
	FROM	то	(FT	)	(INCL	JDE WATER-BEARING CAVITIES OR FRACT	JRE ZONES)	BEAR	
أ ي ا	0	20	20	)		Caliche		☐ YES	Ø NO
	20	55	35	<u> </u>	(	Gutuna Fm red siltstones and sands	tones	☐ YES	☑ NO
٠, ٠,	55	1250	115	55	Dewey Lake	Fm.Red siltstones and mudstones, gr	ray/green mottling	☐ YE\$	Ø NO
	1250	1281	31			Rustler Fm./A-5, white anhydrite		☐ YES	☑ NO
	1281	1316	35			H-4 sub-mbr milky white halite		☐ YES	☑ NO
WELL	1316	1332	16	 i		A-4 sub-mbr white anhydrite		☐ YES	☑ NO
9	1332	1350	18	3		Magenta Dolomite		☐ YES	☑ NO
	1350	1397	47	,		A-3 sub-mbr, white anhydrite		☐ YES	☑ NO
	1397	1504	11	1		H-3 sub-mbr milky halite		☐ YES	✓ NO
CEOLOGIC	1504	1514	10	)		Ore zone, anhydrite and white polyh	alite	☐ YES	Ø NO
EO	1514	1520	6			Halite, with some anhydrite		☐ YES	□ NO
و ،	1520	1528	8			Brown mudstone/ scattered halite	3	☐ YES	□ NO
	1528	1566	38	3		Clear to milky halite	<del></del>	☐ YES	□ NO
·, · ,								☐ YES	□ №
								☐ YES	□ NO
								☐ YES	□ NO
´·								☐ YES	□ NO
[			ATTACH	ADDITION	IAL PAGES AS N	EEDED TO FULLY DESCRIBE THE GEOLOGIC	LOG OF THE WELL		
- 7			METHOD:	BAILE	R DUMP	☐ AIR LIFT ☐ OTHER - SPECIFY: NA			1
L INFO	WELL	TEST	TEST RESU AND A TAB	LTS - ATTA	ACH A COPY OF I	DATA COLLECTED DURING WELL TESTING, AND DRAWDOWN OVER THE TESTING PERI	INCLUDING STARTTI	MES T	IME,
NO	ADDITION	VAL STATEN	MENTS OR EXPL	ANATIONS:			ب	11/11 11/11	
TEȘT & ADDITIONAL							JAN	活温	
Ψ							25	活	
ST &							Т	ו ביי	
TE.							-	<u> </u>	
7.							·	<u> </u>	<u>!</u>
						EST OF HIS OR HER KNOWLEDGE AND BELL			
Ę						D THAT HE OR SHE WILL FILE THIS WELL R ION OF WELL DRILLING:	ECORD WITH THE STA	ATE ENGIN	EEK AND
SIGNATURE	-		_ %	(2)	( N				
	t	Mg.	Pill	1 //	Man I	1-24-13			
8. SI(			', ', A.	RE OF DRIL	•	DATE			

FOR OSE INTERN	NAL USE		WELL RECORD & LOG	(Version 6/9/08)
FILE NUMBER	C-3591	POD NUMBER /	TRN NUMBER	
LOCATION	T245 - R33E	- Sec 5, 412		PAGE 2 OF 2

		<del> </del>					ORDERT EXTE	A CRED (S)		·. ·. ···
							OSE FILE NUI C-3917	MBER(S)		
	NGIL OUST	TD 3731 erve						VALA I		
	MARK McCL		)				PHONE (OPTI	ONAL)		
\$ 14. \$ 14.	WELL OWN		2 A PUDDING				CITY.		OTE A TELE	ZIP
	BOX 795	er Mailing	ADDRESS	```			TATUM	NM	STATE	21P 38267
	BOX 755						17.101.1	1017		
	WELL					ONDS				
	LOCATIO	N LA	TITUDE 32	12	54.52	N		REQUIRED: ONE TEN	TH OF A SECOND	
	(FROM GP	S)   LO	NGITUDE 103	31	54.52	W	* DATUM RE	QUIRED: WGS 84		
	DESCRIPTIO	ON RELATIN	NG WELL LOCATION TO	STREET ADDRESS AN	O COMMON LAND	MARKS – PLS	S (SECTION, TO	WNSHIIP, RANGE) WH	ERE AVAILABLE	3.54
	I rom inching	3 POP 0	LATA DE CELEVITA MEDIA	NOTE TO				THE SEVELLED	TI DIG 200 M100	
	LICENSE NU WD-1058	MBER	NAME OF LICENSED  CASEY KEY	DRILLER				NAME OF WELL DR	ILLING COMPANY PUMP SERVICE IN	ıc
		TA NAMED		DEPOS AND AND END	T. 21277 T. (TW)	l perputati	D DEBUGG (DE)			
	DRILLING ST 03/1/16	TAKTED	DRILLING ENDED 03/4/16	DEPTH OF COMPLETE 600'	D WELL (FT)	eoo,	E DEPTH (FT)	520'	ST ENCOUNTERED (F)	r)
	COMPLETED	WELL IS:	ARTESIAN	DRY HOLE	SHALLOW (UNC	ONFINED)		STATIC WATER LEV	EL IN COMPLETED W	ELL (FT)
(TIO	DRILLING FI	LUID;	Z AIR		ADDITIVES - SP	ECIFY:	<del></del>			
. ME	DRILLING M	ETHOD:	ROTARY	HAMMER [	CABLE TOOL	Потне	R – SPECIFY:			
Ę.	DEPTH (			CASING MATER						1
CASING INFORMATION	FROM	TO	DIAM (inches)	GRAING MATER GRAI  (include each cas note sections	DE ing string, and	CONN	SING IECTION YPE	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
Ü %	-1.50	20	10-3/4	STE	L			10"	1/4"	
	-1.50	300	9-7/8	PVC SC	H 40	SF	LINE	6"	SCHr40	192
TI	300	600	9-7/8	PVC SC	H 40	SF	LINE	6"	SCH49	.032
DRILLING					<u>.</u>				77.% 75.50	
2. 1					• • •					5
·		· · · ·							man_rypoid	
									29	a big
. * 14 a 1.										
									Ö	1
									F	1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	DEPTH (	feet bgl)	BORE HOLE	LISTANN	ULAR SEAL M	ATERIAL A	ND	AMOUNT	METHO	)D OF
H	FROM	TO	DIAM. (inches)		CK SIZE-RANG			(cubic feet)	PLACE	
ERI/	0	20	10-3/4		CEMENT				TOP P	IOUR
ATI	20	<u>-</u> -	9-7/8		GRAVEL PAC	· · · · · · · · · · · · · · · · · · ·		·	TOP P	
Z Z	20	000	3-7/0		GIAVELIAC				10 P	OUR
ANNULAR MATERIAL										
N.										
					<del> </del>					
٤,										
FOR	OSE INTER	NAL USE		·		· · · · · · · · · · · · · · · · · · ·	WR-26	WELL RECORD &	LOG (Version 06/	08/2012)

POD NUMBER

TRN NUMBER

PAGE 1 OF 2

FILE NUMBER (-20

LOCATION

		<u> </u>						<del></del>	7.035		
	DEPTH (	feet bgl) TO	THICKNESS (feet)	INCLUDE WATE	ID TYPE OF MATEI ER-BEARING CAVI pplemental sheets to	TIES OR FRAC	CTURE ZONE	S	WA' BEAR (YES	UNG?	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	0	20	20	***************************************	SURFAC	E			ΠΥ	■N	
	20	80	60		TAN SANDS	TONE			□ Y	■N	
	80	120	40		GREY SANDS	ONTE			□ Y	■ N	
	120	150	30	RED	SANDY CLAY & GR	EY SANDSTON				■ N	
	150	170	20		GREEN & RED SA			——	<u> </u>	■ N	
	170	180	10		GREY SANDS				<u> </u>	■ N	
ELI	180	240	60		RED & GREY SAI				<u>□                                    </u>	■ N	
W T	240	280	40		GREY SANDS				<u>□</u> Y	■ N	
0.90			<del> </del>		RED & GREY SAI	<del></del>			<u> </u>	■ N	
31.5	280	320	40						<u> </u>	■ N	
HYDROGEOLOGIC LOG OF WELL	320	380	60		RED SANDS						
Ď	380	520	40	K	ED SANDSTONE W/				☐ Y <b> </b>	■ N	20 5014
OCI	520	600	80	· .	RED SANDS	IONE		<del></del>		□ N	30 GPM
/DR						·	<del></del>		□ Y	□ N	
4. IFI							******************		□ Y	□N	
								<del>  </del>	☐ Y	□N	
									□ Y	□ N	
									☐ Y	□N	
									□ Y	□N	
									☐ Y	□ N	:
									□ Y	□N	
									□ Y	□N	· · · · · · · · · · · · · · · · · · ·
	METHOD U	SED TO ES	STIMATE YIELD	OF WATER-BEARIN	G STRATA:	□ PUMP			LESTIN		
	AIR LIF	r 🗆	BAILER	OTHER - SPECIFY:				W E.L.1	_ IIEEE	) (gpm): 3	0
NO	WELL TES	TEST STAR	RESULTS - ATTA T TIME, END TIM	ACH A COPY OF DAT ME, AND A TABLE SI	TA COLLECTED DU HOWING DISCHAR	RING WELL T GE AND DRA	IESTING, INC WDOWN OV	LUDIN ER THE	G DISC TESTIN	HARGE N IG PERIO	ÆTHOD, D.
VIS	MISCELLA	NEOUS INI	FORMATION: WE	ELL TESTED WITH A T	EST PUMP						NIIV STA
PER			***				:			-	
18.										<u> </u>	5 77
TEST; RIG SUPERVISION											- 5
EST	PRINT NAN	(E(S) OF D	RILL RIG SUPER	VISOR(S) THAT PRO	VIDED ONSITE SU	PERVISION O	F WELL CON	STRUC	TION O	THER TH	AN LICENSEE:
. S. 1	CASEY KEY										
	THE UNDE	RSIGNED I	HEREBY CERTIF	TES THAT, TO THE B	EST OF HIS OR HE	R KNOWLEDO	GE AND BELI	EF, THE	FORE	GOING 13	A TRUE AND
SIGNATURE				ESCRIBED HOLE AN O DAYS AFTER COM			THIS WELL R	ECORD	WITH '	THE STA	TE ENGINEER
ΙΥ		. ^	1								
SIG	160			YOGI HUR	FORD		03-	11-201	6		
٥	7991	SIGNAT	URE OF DRILLE	R / PRINT SIGNEE	NAME				<del> </del>	DATE	
	<u> </u>	7									
	OSE INTER	NAL USE			T						sion 06/08/2012)
	E NUMBER	<u>C-3</u>	11 <del> </del>	0 0 1	POD NUMBER	1	TRN NUME	BER.	J +8	$520^{2}$	)
LOC	CATION	リムラ	ころろとこし	13.314							PAGE 2 OF 2



### WELL RECORD & LOG

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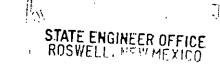
1 2017 DEC 11 1P 4: 02 1

Ν̈́O	ICP-08		(L NUMBER)					OSE FILE NO C-3565 P				
Ě	WELL OW	'NPR NAM	(IE(S)					PHONE (OPT)	ONAL)		<del></del>	
GENERAL AND WELL LOCATION	Interco	ntinent	tal Potash (USA	<b>N</b> )				575-942-2	27 <b>9</b> 9			
=	WELL OW	NER MAI	ILING ADDRESS					CHY		STATE		ZIP
W.E.	600 We	est Ber	nder Boulevard					Hobbs		NM	88	8240
2	WEI.			DEGREES	MINUTES	SECÓN	DS					
1,4	LOCAT		LATITUDE	32	13	39	.75 N	• ACCURACY	REQUIRED: ONE TE	VIH OF A SE	COND	
꽃	(FROM	GPS)	LONGITUDE	103	35	27	.62 W	* DATUM RE	QUARED; WGS 84			
EN	DESCRIP	TION REL		ON TO STREET ADDRE				<u> </u>				
_ <u>.</u>												
_	(2.5 AC	RE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	,	SECTION		TOWNSHIP	☐ se#tH	RANGE	Ø IASI
ź		и	1/4	1/4	<b>14</b>			8	24	Scott	33	□ wisa
NO.	SUBDIVISION NAME LOT NUMBER BLOCK NUMBER UNIT/TRACT									cr		
: OPTIONAL												
7.	HYDROGE	CAPHIC SI	URVEY						MAP NUMBER		TRACTNO	JMBER
												<u></u>
	LICENSE		1	NSED DRILLER					NAME OF WELL DE			
	WD #331 Phillip Stewart Stewart Brothers Drilling Co.											
	PRILLING STARTED DRILLING ENDED DEPTH OF COMPLETED WELL (FT) BORE HOLE DEPTH (FT) DEPTH WATER FIRST ENCOUNTERED (FT)  9/27/2012 10/21/2012 NA 1533 FT NA											
Š	3/2/	72012	10/21/20		19/2				STATIC WATER LE			i (Et)
PRILLING INFORMATION	COMPLET	ED WFILL	.IS: ARTESIAN	DRY HOLE	SHALLOW	' (UNCON	arined)			NA		
043	DRILLING	FLUID.	☐ AIR	✓ MUD	ADDITIVE	S SPEC	IFY. ET	H GEL, PL	ATINUM PAC,	BI-CAR	B, SODA	ASH,
NC 13	DRILLING	METHOL	RUTARY	HAMMER	CABLE TO	юL.	ОПІ	R - SPECIFY,	TACKLE, MYL	OGEL, N	aCI	
137	DEPT	H (FT)	BORE HOL	E C	ASING			NECTION	INSIDE DIA.		WALL	SLOT
138	FROM	TO		<del></del>	ATERIAL		TYPE	(CASING)	CASING (IN)	<del></del>	ESS (IN)	SIZE (IN)
	0	125		J-55	#36 steel		the	eaded	8.921	0.3	302	
	1250	153	3 8.75		NA					ļ		
		<u> </u>								<u> </u>		
		<u> </u>		<del></del>								
ایا		TH (FT)	THICKNES. (FT)	S FC					ATER-BEARING S R FRACTURE ZON			YIELD (GPM)
STRATA	FROM NA	ТО	NA NA	<del> </del>	(INCLUDE WA		EARING	NA NA	K PRACTORE ZUM			NA NA
SI.	INA		INA.		<u>_</u>			IVA				
NC		<del> </del>		<del></del> -								
3.8	_	<del></del> -	-							<del></del>		
WATER BEARIN		<del></del>		<del></del>								
[3.1]	METHOD	ISED TO I	ESTIMATE YORLD OF A	MATER-BEARING STRA	TA				TOTAL ESTIMATED	WILL VIEL	D (GPM)	
	Bypass									na		
		<u></u>										
	FOR OS	LINTER	NAL USE						WELL RECO	RD & LOG	(Version to	9/08)
					POD NI	UMBER			<del></del>		C + 2 + 2 1 (1) 1 1 / 1	
	FILE NUMBER POD NUMBER TRN NUMBER  LOCATION  PAGE LOC 2											

						II.	चुन ११ ११ .		- <del></del>		
JN C	TYPE O	PF PUMP:	□ SUBMER		☐ JET ☐ CYLINDER	☑ NO PUMP – WELL NOT EQUIPPE	STATE ENGINE ROSWELL, ME	ER OF I	EICE UCO		
SEAL AND PUMP			DEPTH	I (FT)	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	(CUBIC FT)	PLACE	IOD 27-1		
SEAL.	SEAL	ULAR JAND EL PACK	NA		NA	NA NA	NA		IA		
41											
-	DEPT	TO TO	THICK!			COLOR AND TYPE OF MATERIAL ENCOUN			TER RING?		
	0	20	20	·	<del> </del>	Caliche		☐ YES	Ø NO		
	20	55	35		(	Sutuna Fm red siltstones and sand	Istones	☐ YES			
	55	1227	118	31	Dewey Lake	Fm.Red siltstones and mudstones,	gray/green mottling	☐ YES	☑ NO		
	1227	1262	35	;		Rustler Fm./A-5, white anhydri	6	☐ YES	Ø NO		
נ	1262	1295	33	}		H-4 sub-mbr milky white hali	е	☐ YES	Ø NO		
GEOLOGIC LOG OF WELL	1295	1310	15	;		A-4 sub-mbr while anhydrite		☐ YES	Ø NO		
90.5	1310							☐ YES	Ø NO		
100	1330							☐ YES	Ø NO		
SGIC	1375	1479	112			H-3 sub-mbr, - milky halite		☐ YES	Ø NO		
OTO	1479	1489	10		<u></u>	Ore zone, anhydrite and white poly	nalite	YES	Ø №0		
6. GE	1489	1533	44		ļ	Halite, with some anhydrite		☐ YES	□ NO		
٠		<u> </u>				-		☐ YES	□ NO		
								☐ YES	ON D		
								☐ YES	ON D		
								☐ YES	ON []		
					<del></del>			☐ YES	□ NO		
	l		ATTACH /	ADDITION.	AL PAGES AS NE	EDED TO FULLY DESCRIBE THE GEOLOGI	LOG OF THE WELL	L 116'	Ц по		
		<del></del>	METHOD:	BAILE		☐ AIR LIFT ☐ OTHER - SPECIFY: NA					
TIONAL INFO	WELL.	TEST	TEST RESUL	TS - ATTA	CH A COPY OF DA	ATA COLLECTED DURING WELL TESTING, ND DRAWDOWN OVER THE TESTING PER	INCLUDING START TIN	ME, END TU	ME,		
IV	ADDITION.	AL STATEM	ENTS OR EXPLA		TO ENGLISHED TO	NO DIGITAL OTES THE TEST OF SE	00.				
Ĕ	/4/////////////////////////////////////	Marie I fee in	INTER OF IZE	The Charles							
ADD											
<b>3</b>   <b>3</b>											
7. TEST											
							==				
3						ST OF HIS OR HER KNOWLEDGE AND BELF THAT HE OR SHE WILL FILE THIS WELL R					
SIGNATURE	THE PERI	MIT HOLD	DER WITHIN 2	0 DAYS AF	TER COMPLETIO	N OF WELL DRILLING:			•		
S	4	8.8	$\alpha$	22	. A	17-18-13					
æ	SIGNATURE OF DRILLER  DATE										

FOR OSE INTERNAL USE		WELL RECORD & LOG	(Version 6/9/08)
FILE NUMBER	POD NUMBER	TRN NUMBER	
LOCATION			PAGE 2 OF 2





1 2012 DEC 11 1P 4: 02 .

					·						
×	ICP-08	ber (well 5	NUMBER)				C-3565 P				
GENERAL AND WELL LOCATION	WELLOW	NER NAME	(S)		<del></del>		PHONE (OPTI				
نَ ا			l Potash (USA)				575-942-				
3			<u> </u>					2199			
3	WELL OW	NER MAIL	NG ADDRESS				CITY		STATE		ZIP
× E	600 We	est Bend	ler Boulevard				Hobbs		NM	88	3240
2				DEGREES	MINUTES SEC	ONDS	1				
1	WEL.						• 400110 403	Y REQUIRED: ONE TEX	eru on a cu	CONTIN	
S	LOCAT	<u> </u>	ATITUDE	32	13	39.75 N	_		THO WE	COND	
<u> </u>	(FROM	GPS)   L	ONGITUDE	103	35	27.62 W	* DATUM RE	QUIRED: WGS 84			
E.	DESCRIP	DON RELAT	ING WELL LOCATION	TO STREET ADDRE	SS AND COMMON LAN	MARKS	·				
9.			The whole by control	· · · · · · · · · · · · · · · · · · ·	201112 COMMON 12111	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
	(2,5 AC	RED.	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION		TOWNSHIP		RANGE	
١.						oze non			NUR ITE	İ	☑ EAST
3		4	1/4	1/4	1/4		8	24	✓ soumi	33	□ wist
Θ	SUBDIVIS	ION NAME				LOT NUN	BER	BLOCK NUMBER		UNIT/ITRA	ст
E											
2. OPTIONAL	HYDROGE	RAPHIC SUR	VEY			·		MAP NUMBER		TRACT NU	IMBER
~											
	<u> </u>				· · · · · · · · · · · · · · · · · · ·			l			
	LICENSE	NUMBER	NAME OF LICENS	ED DRILLER				NAME OF WELL DI	ULLING CON	IPANY	
	WD	#331	Phillip Stewa	ort				Stewart Broth	ers Drilli	ng Co.	
1 .	DRILLING STARTED DRILLING ENDED DEPTH OF COMPLETED WELL (FT) BORE HOLE DEPTH (FT) DEPTH WATER FIRST ENCOUNTERED (									TERED (FI)	
l i	9/27	/2012	10/21/2012	1	NA		33 FT		NA		
Õ			1 7012 1120 12		101					-i	
DRILLING INFORMATION	CON ADM 17T	ED WELL IS	: ARTESIAN	DRY HOLE	SHALLOW (UN			STATIC WATER LE		PLETED WEI	LL (FT)
W.	COMPLET	ED WELL IS	: AKIESIAN	DK T HOLE	C SHADJOW (DA	LONFINED)			NA		
Ē	DRILLING	FLUID.	AIR	MUD MUD	ADDITIVES - S	ectey: ET	H GEL, PL	ATINUM PAC,	BI-CAR	B. SODA	ASH.
<u>~</u>			✓ ROTARY					TACKLE, MYL			,
NC	DRILLING	METHOD:	▼   ROTARY	HAMMER	CABLE TOOL	OTH	R - SPECIFY:	TACKEE, WITE	OGEL, IV		
13	DEPT	H (FT)	BORE HOLE	(	CASING	CON	NECTION	INSIDE DIA.	CASING	3 WALL	SLOT
조	FROM	то	DIA. (IN)	M.	ATERIAL	TYPE	(CASING)	CASING (IN)	THICKN	IESS (IN)	SIZE (IN)
] r	0	1250	12.625	J-55	#36 steel	the	eaded	8.921	0.3	302	
	1250	1533	8.75		NA			-	<u> </u>		
		1000			141			· · · · · ·	·		•
		-	_	<del>- </del>		-		<u> </u>	1		<del></del> -
		<u> </u>				<u>_l</u>		<u> </u>	<u> </u>		
	DEPT	ዝ (PT)	THICKNESS	F(	DRMATION DESCRI	PITON OF P	RINCIPAL W	ATER-BEARING S	TRATA		YIELD
5	FROM	то	(PT)		(INCLUDE WATE					l	(GPM)
STRATA	NA		NA NA	<del>                                     </del>	· · · · · · · · · · · · · · · · · · ·		NA				NA
.J.	, , ,		177				101				130
ارد			_	·   · · · · · · · · · · · · · · · · · ·							
WATER BEARIN									_		
<u>\ \ \ \ \ \   </u>											
<del>-</del>									,		
E	METHOD	ISED TO ES	TIMATE YIELD OF WA	TER REARING STRA	TA			TOTAL ESTIMATED	WELL VIEL	D (CBN)	
🗧	Bypass		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	TON-MAKE THE STREET				TOTAL ESTEWATED		D(Gray	
-	-ypass								na		
	FOR OSE	INTERN	AL USE					WELL RECO	RD & LOG	(Version 6/	9/08)
					POD NUMB	ER		TRN NUMBE		,	
	FILE NU	FILE NUMBER POD NUMBER TRN NUMBER									

	TYPEO	F PI IMP	SUBMER	ISIBLE	□ıeı	☑ NO PUMP – WELL NOT EQUIPPED			
JWD.	111120		TURBIN	Е	CYLINDER	OTHER - SPECIFY:			
SEAL AND PUMP			DEPTI	I (FT)	BORE HOLE	MATERIAL TYPE AND SIZE	AMOUNT		OD OF
X	ANNI	JLAR	FROM	то	DIA. (IN)	MATERIAL TITE AND SIZE	(CUBIC FT)	PLACE	MENT
EAI	SEAL GRAVE	AND LPACK	NA NA		NA NA	NA NA	NA NA	N	Α
4	0.0						<u> </u>	ļ	
			<u> </u>				<u> </u>	<u> </u>	
	DEPT		THICK		I .	COLOR AND TYPE OF MATERIAL ENCOUNT		WA' BEAR	
	FROM	то	(FT	( <del>)</del>	(INCL	UDE WATER-BEARING CAVITIES OR FRACTI	IKE ZONES)	ļ <u>.</u>	
	0	20	20			Caliche		YES	Ø №0
	20	55	35	· <del>·····</del>		Sutuna Fm red siltstones and sands		YES	Ø №0
	55	1227	118		Dewey Lake	Fm.Red siltstones and mudstones, gr	ay/green mottling	☐ YES	Ø NO
	1227	1262	35		<u> </u>	Rustler Fm./A-5, white anhydrite		☐ YES	Ø NO
1	1262	1295	33	<u> </u>		H-4 sub-mbr milky white halite		☐ YES	<b>Ø</b> №0
WE	1295	1310	15	5		A-4 sub-mbr white anhydrite		☐ YES	Ø №
90	1310	1330	20			Magenta Dolomite		☐ YES	Ø NO
ľ	1330	1375	45	5		A-3 sub-mbr. white anhydrite		☐ YES	Ø №
Sic	1375	1479	11	2		H-3 sub-mbr milky halite		☐ YES	Ø NO
GEOLOGIC LOC OF WELL	1479	1489	10	)		Ore zone, anhydrite and white polyha	ilite	☐ YES	Ø NO
CEC	1489	1533	44	3		Halite, with some anhydrite		☐ YES	□ NO
فه								☐ YES	□ NO
								☐ YES	Ои
	·							☐ YES	□ NO
								☐ YES	□ NO
								☐ YES	□ NO
								☐ YES	□ NO
			ATTACH	ADDITION	AL PAGES AS NE	EDED TO FULLY DESCRIBE THE GEOLOGIC	LOG OF THE WELL		
			METHOD:	BAILE	R □ PUMP	☐ AIR LIFT ☐ OTHER - SPECIFY: NA		<del></del>	
NE	WELL	TEST	TEST RESU	LTS - ATTA	CH A COPY OF D	ATA COLLECTED DURING WELL TESTING, II	VCLUDING START TI	ME, END TI	ME,
& ADDITIONAL INFO			AND A TAB	LE SHOWIN	NG DISCHARGE	AND DRAWDOWN OVER THE TESTING PERIO	D.		
ğ	ADDITION	AL STATEM	ENTS OR EXPL	NATIONS:		•			
Tig									
¥									
EST (									
7. 1									
							<u> </u>		
旨						ST OF HIS OR HER KNOWLEDGE AND BELIE THAT HE OR SHE WILL FILE THIS WELL RE			
5						ON OF WELL DRILLING:			
SIGNATURE		<u>۔</u> چ	-	01	A.				
8.51	_1	العا	SIGNATUR	E OF DOLL	سب س				
			SIGNATUR	G OF DKILL		DATE			

FOR OSE INTERNAL USE		WELL RECORD & LOG	(Version 6/9/08)
FILE NUMBER	POD NUMBER	TRN NUMBER	
LOCA #664:17 CT   1.1. J30 Z10Z			PAGE 2 OF 2

BOSMETT HEM WEXICO



## WELL RECORD & LOG

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	_										
	OSE POD NU	IMBER (W	ELL NUMBER)					OSE FILE NU	MBER(S)		""
GENERAL AND WELL LOCATION	S5-BH-03							C 03932			
Ē	WELL OWN	ER NAME	(S)	·	-			PHONE (OPTI	ONAL)	<del></del>	<u></u>
2	Brvce Kra	ger % Pa	arkhill, Smith & Coo	per Attention	: R.H. Holder						
ļ			NG ADDRESS					CITY		STATE	ZIP
			NG ADDRESS					į.			ZIP
\$	4222 85th	Street						Lubbock		TX 79423	<del> </del>
2	WELL	T	D	EGREES	MINUTES	SECOND	s	Γ.			
<	LOCATIO	ω .	ATITION	32	14	48.24	N	* ACCURACY	REQUIRED: ONE TEN	TH OF A SECOND	
₹	(FROM GF	<u> </u>	ATITUDE					* DATUM RE	QUIRED: WGS 84		
	(FRESH E)	L	ONGITUDE	103	29	16.72	W	L			
E E	DESCRIPTION	ON RELAT	ING WELL LOCATION T	O STREET ADDRE	SS AND COMMO	LANDMA	KS - PLS	S (SECTION, TO	WNSHJIP, RANGE) WH	ERE AVAILABLE	
-	SE 1/2 of S	SE 1/4 o	f SW 1/4 of NE 1/2	of Section 05,	Township 24S,	Range 34	E				
	LICENSE NU	MBER	NAME OF LICENSEI	DRILLER					NAME OF WELL DRI	LLING COMPANY	==
	WD-1		, , , , , , , , , , , , , , , , , , , ,		Lee Peterson				ļ	Drilling & Testing, Ir	ic
			DOWN ON THE PARTY			<u></u>	OBCIO	I C DEPOSIT CET			
	DRILLING S		DRILLING ENDED	DEPTH OF COM	IPLETED WELL (F	')   1		LE DEPTH (FT)	DEPTH WATER FIR:	ST ENCOUNTERED (FT	)
ĺ	02/09	9/16	02/10/16					100'			
									STATIC WATER LEV	EL IN COMPLETED W	ELL (FT)
z	COMPLETE	) WELL IS	ARTESIAN	Z DRY HOLE	SHALLO	W (UNCONE	INED)				
\ XI	DRILLING F	LUID:	/ AIR	MUD	ADDITIV	ES – SPECIF	Υ:				
CASING INFORMATION	DRILLING M	(ETHOD:	ROTARY	HAMMER	CABLET	rool	OTHE	R - SPECIFY:			
] <u>§</u>	DEPTH	(feet bal)		CASING	ATERIAL ANI	D/OR			1		T
	<u> </u>		BOKE HOLL	CABINGI	GRADE	JOK		ASING	CASING	CASING WALL	SLOT
<u>ĕ</u>	FROM	TO	DIAM	(include ea	ch casing string,	, and		NECTION TYPE	INSIDE DIAM.	THICKNESS (inches)	SIZE (inches)
AS .			(inches)	note se	ctions of screen	)			(inches)	(Hiches).	<u> </u>
		l				_					lien
DRILLING &										in the second	
Ţ										ep and	7 7 2
RII				<del> </del>					<del></del>		
2. D	<u> </u>			<del> </del> -	· · · · · · · · · · · · · · · · · · ·			<del>_</del>	<del> </del>		1.,-4
7				<u> </u>				<del></del>			1 2 2 2 2
								_		23	1
					7-1						
		_									
	B=====	<u> </u>		<del>†                                    </del>						<u> </u>	
,	DEPTH	(feet bgl)		_	T ANNULAR SI			-	AMOUNT	METHO	
M	FROM	ТО	DIAM. (inches)	GRAV	EL PACK SIZĒ	-RANGE E	YINTE	.RVAL	(cubic feet)	PLACE	MEN I
ER		_									
[A]									<u> </u>		
Z .						_		_			
[Y						_		_			
	<u></u>			<del> </del>		_		_	<del></del>		
ANNULAR MATERIAL											
65											
EOB	OCE BITER	NIAL TIO			-	···		TUD 0	O WELL BEGORS	- 10C (N : 100	0/15)
	OSE INTER	MAL US	3020		POD NU	Пирер	3		0 WELL RECORD &	01/122	791 12)
$\vdash$		${}$		2 2 17	LOD NC	MDEK	<u> </u>		TIL	101 433	
LCC	ATION C	<b>24</b> 5	2.134E.J.	2.3.4					<u> </u>	レし PAGE	1 OF 2

		g . t .ts					
	DEPTH ( FROM	TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONE (attach supplemental sheets to fully describe all units)	~	WATER BEARING? YES / NO)	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
}	0	3	3	Reddish Brown Silty Sand		Y ✓N	
	3	5	2	Light Reddish Brown Sand		Y ✓N	
	5	7	2	Tan to White Caliche with Sand		Y <b>√</b> N	
	7	25	18	Tan-White Caliche, Light Reddish Brown Sand		Y ✓N	
	25	30	5	Light Reddish Brown Sand		Y / N	-u
ų	30	50	20	Light Reddish Brown Fine Sand with Caliche Pebbles		Y <b>√</b> N	
4. HYDROGEOLOGIC LOG OF WELL	50	58	8	Light Reddish Brown Sand		Y <b>√</b> N	
OF	58	. 94	36	Light Reddish Brown Sand with Sandstone Pebbles		Y <b>√</b> N	
,0G	94	95	1	Reddish Brown Sandy Gravel		Y ✓N	
ICI	95	96	1	Green to Gray Shaley Claystone		Y √N	
907	96	99	1	Dark Reddish Brown Silty Sand		Y <b>√</b> N	<del></del>
EO.	99	100	1	Green to Gray Clayey Shale		Y ✓N	
<b>ROC</b>						Y N	
HVD						Y N	
4. ]						Y N	
						Y N	
				1		Y N	
						Y N	
						Y N	
	1					Y N	
						Y N	
	METHOD U	SED TO ES	TIMATE YIELD	OF WATER-BEARING STRATA:	TOTALE	STIMATED	
	PUM	р П <u>а</u>	IR LIFT	BAILER OTHER – SPECIFY:		IELD (gpm):	0.00
				DAILER COTTENTS			
NOIS	WELL TES	TEST STAR	RESULTS - ATT. T TIME, END TII	ACH A COPY OF DATA COLLECTED DURING WELL TESTING, IN ME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OV	CLUDING I ER THE TE	DISCHARGE I STING PERIC	METHOD, DD.
(VIS	MISCELLA	NEOUS INF	ORMATION: B	oring location drilled only as a soil boring and plugged after compl	etion ner u	ell plugging	nlan
PER			ь	sing rocation titrica only as a son boring and plugged after compr	ellon per w	en plugging	piaii.
e su							
; RIC							
TEST; RIG SUPERVI	PRINT NAN	(E(S) OF D	BILL BIC STIDER	VISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CON	STRUCTIC	м отцер тр	IAN I ICENCEE
5. T	Tidivi ivili	L(S) OF B	MILL MO BOY EN	(TIBONG) THAT I NOTIDED CHAILE SOLEKTISION OF WELL CON	STRUCTIC	M OTHER IT	IAN CICENSEE.
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						<del></del>	
FOR	R OSE INTERI	NAL USE		WR-20 WF	LL RECOR	D & LOG (Ve	rsion 06/08/2012)

POD NUMBER

TRN NUMBER

PAGE 2 OF 2

FILE NUMBER

LOCATION

Tom Blaine, P.E. State Engineer



Roswell Office 1900 WEST SECOND STREET ROSWELL, NM 88201

### STATE OF NEW MEXICO OFFICE OF THE STATE ENGINEER

Trn Nbr: File Mbr:

581433 C 03932

Well File Nbr: C 03932 POD3

Mar. 28, 2016

ROBERT H HOLDER BRYCE KRAGER 4222 85TH ST LUBBOCK, TX 79423

Greetings:

The above numbered permit was issued in your name on 01/27/2016.

The Well Record was received in this office on 03/01/2016, stating that it had been completed on 02/10/2016, and was a dry well. The well is to be plugged or capped or otherwise maintained in a manner satisfactory to the State Engineer.

Please note that another well can be drilled under this permit if the well is completed and the well log filed on or before 01/14/2017.

If you have any questions, please feel free to contact us.

Sincerely,

(575)622-6521

drywell



## WELL RECORD & LOG

### OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

		IMBER (W	ELL NUMBER)					OSE FILE NUM	MBER(S)			
GENERAL AND WELL LOCATION	S5-BH-03							C 03932				
CAT	WELL OWN				D 77 77 11			PHONE (OPTI	ONAL)			
100		-	rkhill, Smith & Coc	per Attention:	R.H. Holder							
TT			NG ADDRESS					CITY		STATE	<b>50.100</b>	ZIP
WE	4222 85th	Street		<del>.</del>				Lubbock		TX	79423	
N Q	WELL		E	EGREES	MINUTES	SECO						
/T/	LOCATIO	N L	ATITUDE	32	14	48.	24 <sub>N</sub>		REQUIRED; ONE TEN	TH OF A ST	COND	
IER	(FROM GE	PS)	ONGITUDE	103	29	16.	72 W	* DATUM REG	QUIRED: WGS 84			
GEN	DESCRIPTI	ON RELAT	ING WELL LOCATION T	O STREET ADDRES	SS AND COMMO	N LANDM	ARKS – PLS	S (SECTION, TO	WNSHJIP, RANGE) WH	ERE AVAI	LABLE	
1.	SE 1/2 of 9	SE 1/4 of	f SW 1/4 of NE 1/2	of Section 05, T	ownship 24S,	Range	34E					
	LICENSE NU	IMBER	NAME OF LICENSE	D DRILLER					NAME OF WELL DR	LLING CO	MPANY	
	WD-				Lee Peterson						Testing, Inc	<b>c</b> .
	DRILLING S	TARTED	DRILLING ENDED	DEPTH OF COM	PLETED WELL (F	T)	BORE HOL	E DEPTH (FT)	DEPTH WATER FIRS	T ENCOU	NTERED (FT)	<del></del> -
	02/09	9/16	02/10/16				1	100'				
	7)			,	——————————————————————————————————————				STATIC WATER LEV	EL IN CON	MPLETED WE	LL (FT)
NO	COMPLETE	D WELL IS	ARTESIAN	✓ DRY HOLE	SHALLO	W (UNCO	NFINED)				·····	
2. DRILLING & CASING INFORMATION	DRILLING F	LUID:	✓ AfR	MUD .	ADDITIV	ES – SPE	CIFY:				·	
RM	DRILLING N	ÆTHOD:	✓ ROTARY	HAMMER	CABLET	OOL	С отне	R – SPECIFY:				
NFC	DEPTH	(feet bgl)	BORE HOLE		ATERIAL ANI	O/OR		SING	CASING	CASIN	IG WALL	SLOT
NG.1	FROM TO DIAM			GRADE th casing string,	and	CONN	IECTION	INSIDE DIAM		KŅĘSS	SIZE	
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7		(feet bgl)	BORE HOLE DIAM. (inches)		' ANNULAR SI EL PACK SIZE				AMOUNT (cubic feet)		METHO! PLACEM	
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		メネニ	DICTE, J.	2.3.4					し人		IAGE	, 0, 2

					: <u></u> -	
	DEPTH (f	feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONE (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	0	3	3	Reddish Brown Silty Sand	Y VN	
	3	5	2	Light Reddish Brown Sand	Y ✓N	
	5	7	2	Tan to White Caliche with Sand	Y √N	
	7	25	18	Tan-White Caliche, Light Reddish Brown Sand	Y ✓N	
	25	30	5	Light Reddish Brown Sand	Y √N	
ر بر	30	50	20	Light Reddish Brown Fine Sand with Caliche Pebbles	Y ✓N	
VEL	50	58	8	Light Reddish Brown Sand	Y √N	<del></del>
OF.	58	94	36	Light Reddish Brown Sand with Sandstone Pebbles	Y ✓N	
ğ	94	95	1	Reddish Brown Sandy Gravel	Y VN	
HYDROGEOLOGIC LOG OF WELL	95	96	1	Green to Gray Shaley Claystone	Y √N	
500	96	99	1	Dark Reddish Brown Silty Sand	Y VN	
EOI	99	100		Green to Gray Clayey Shale	Y √N	
ROG	· · · · · · · · · · · · · · · · · · ·				Y N	
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	METHOD U	SED TO ES	TIMATE YIELD	OF WATER-BEARING STRATA	TOTAL ESTIMATED	
·	PUM			BAILER OTHER – SPECIFY:	WELL YIELD (gpm):	0.00
SION	WELL TES			ACH A COPY OF DATA COLLECTED DURING WELL TESTING, INC ME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVI		
TEST; RIG SUPERVIS				oring location drilled only as a soil boring and plugged after completely be a soil boring and plugged after completely be a soil boring and plugged after completely be a soil boring and plugged after completely boring and plugged after completel	W	
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	R OSE INTERI E NUMBER	NAL USE	2020	POD NUMBER 3 TRN NUMB	LL RECORD & LOG (Ve	rsion 06/08/2012)
<del></del>	CATION	2016	77/1705	2-2.U		PAGE 2 OF 2
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Tom Blaine, P.E. State Engineer



Roswell Office 1900 WEST SECOND STREET ROSWELL, NM 88201

## STATE OF NEW MEXICO OFFICE OF THE STATE ENGINEER

Trn Nbr: File Nbr: 581433

C 03932

Well File Mbr: C 03932 POD3

Apr. 12, 2016

ROBERT H. HOLDER BRYCE KARGER 4222 85TH ST. LUBBOCK, TX 79423

Greetings:

The above numbered permit was issued in your name on 01/27/2016.

The Well Record was received in this office on 03/01/2016, stating that it had been completed on 02/10/2016, and was a dry well. The well is to be plugged or capped or otherwise maintained in a manner satisfactory to the State Engineer.

Please note that another well can be drilled under this permit if the well is completed and the well log filed on or before 01/14/2017.

If you have any questions, please feel free to contact us.

Sincerely,

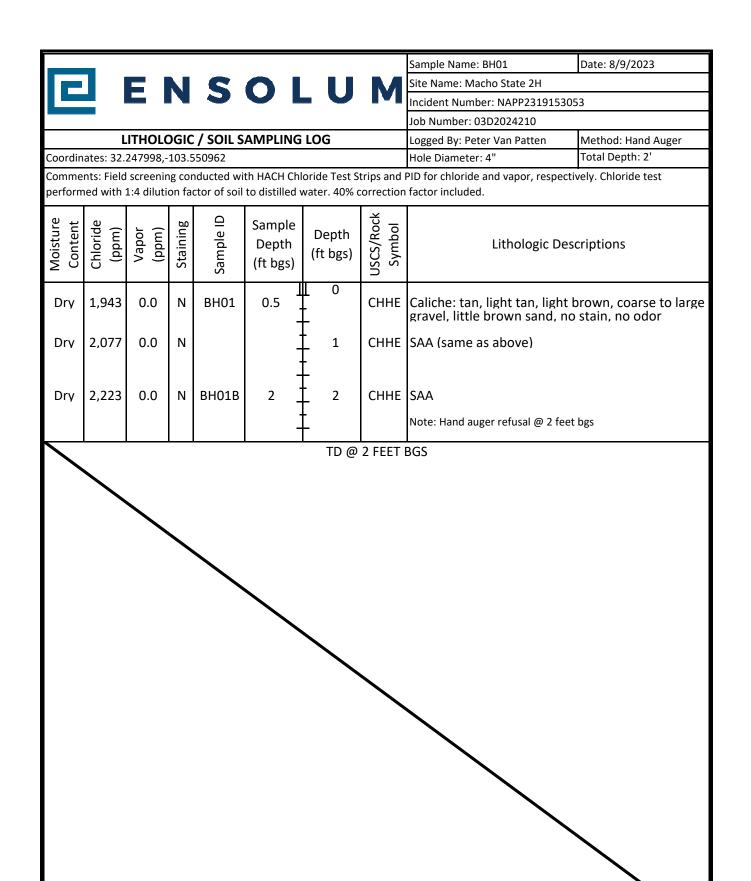
Deborah Dunaway (575)622-6521

drywell



**APPENDIX B** 

Lithologic Soil Sampling Log





APPENDIX C

Photographic Log



#### Photographic Log

COG Operating, LLC
Macho State 002H
Incident Number NAPP2319153053





Photograph: 1 Date: 7/5/2023

Description: Initial release discovery

View: Southwest

Photograph: 2 Date: 7/21/2022

Description: Liner inspection activities

View: Southeast





Photograph: 3 Date: 8/9/2023

Description: Hole identified during inspection activities

View: Southeast

Photograph: 4 Date: 8/9/2023

Description: Liner delineation activities

View: South



APPENDIX D

Laboratory Analytical Reports & Chain of Custody Documentation

**Environment Testing** 

# **ANALYTICAL REPORT**

# PREPARED FOR

Attn: Hadlie Green Ensolum 601 N. Marienfeld St.

Suite 400 Midland, Texas 79701

Generated 8/7/2023 12:33:32 PM

# **JOB DESCRIPTION**

Macho State 2H SDG NUMBER 03D2024210

# **JOB NUMBER**

890-4982-1

Eurofins Carlsbad 1089 N Canal St. Carlsbad NM 88220

# **Eurofins Carlsbad**

#### **Job Notes**

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

# **Authorization**

Generated 8/7/2023 12:33:32 PM

Authorized for release by Jessica Kramer, Project Manager Jessica.Kramer@et.eurofinsus.com (432)704-5440

Eurofins Carlsbad is a laboratory within Eurofins Environment Testing South Central, LLC, a company within Eurofins Environment Testing Group of Companies Page 2 of 24 8/7/2023 Client: Ensolum
Project/Site: Macho State 2H

Laboratory Job ID: 890-4982-1
SDG: 03D2024210

# **Table of Contents**

1
3
4
5
6
10
11
15
17
19
20
21
22
23

2

3

4

6

8

10

11

13

14

#### **Definitions/Glossary**

Job ID: 890-4982-1 Client: Ensolum Project/Site: Macho State 2H SDG: 03D2024210

**Qualifiers** 

**GC VOA** 

Qualifier **Qualifier Description** F1 MS and/or MSD recovery exceeds control limits. S1+ Surrogate recovery exceeds control limits, high biased. Indicates the analyte was analyzed for but not detected.

**GC Semi VOA** 

Qualifier **Qualifier Description** S1+ Surrogate recovery exceeds control limits, high biased. Indicates the analyte was analyzed for but not detected.

**HPLC/IC** 

Qualifier **Qualifier Description** F1 MS and/or MSD recovery exceeds control limits.

U

Indicates the analyte was analyzed for but not detected.

**Glossary** 

Abbreviation These commonly used abbreviations may or may not be present in this report.

¤ Listed under the "D" column to designate that the result is reported on a dry weight basis

%R Percent Recovery CFL Contains Free Liquid CFU Colony Forming Unit Contains No Free Liquid **CNF** 

Duplicate Error Ratio (normalized absolute difference) DER

Dil Fac **Dilution Factor** 

Detection Limit (DoD/DOE)

DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

DLC Decision Level Concentration (Radiochemistry)

EDL Estimated Detection Limit (Dioxin) LOD Limit of Detection (DoD/DOE) Limit of Quantitation (DoD/DOE) LOQ

MCL EPA recommended "Maximum Contaminant Level" MDA Minimum Detectable Activity (Radiochemistry) MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit ML Minimum Level (Dioxin) MPN Most Probable Number MOI Method Quantitation Limit

NC Not Calculated

Not Detected at the reporting limit (or MDL or EDL if shown) ND

NEG Negative / Absent POS Positive / Present Practical Quantitation Limit **PQL** 

**PRES** Presumptive **Quality Control** QC

Relative Error Ratio (Radiochemistry) **RER** 

Reporting Limit or Requested Limit (Radiochemistry) RL

**RPD** Relative Percent Difference, a measure of the relative difference between two points

Toxicity Equivalent Factor (Dioxin) TEF Toxicity Equivalent Quotient (Dioxin) **TEQ** 

**TNTC** Too Numerous To Count

#### Case Narrative

Client: Ensolum

Project/Site: Macho State 2H

Job ID: 890-4982-1

SDG: 03D2024210

Job ID: 890-4982-1

**Laboratory: Eurofins Carlsbad** 

Narrative

Job Narrative 890-4982-1

#### Receipt

The samples were received on 7/21/2023 4:26 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.4°C

#### **Receipt Exceptions**

The following samples were received and analyzed from an unpreserved bulk soil jar: SS01 (890-4982-1), SS02 (890-4982-2), SS03 (890-4982-3) and SS04 (890-4982-4).

#### **GC VOA**

Method 8021B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-58735 and analytical batch 880-58782 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

Method 8021B: The continuing calibration verification (CCV) associated with batch 880-58782 recovered above the upper control limit for Benzene, Toluene, Ethylbenzene, m-Xylene & p-Xylene and o-Xylene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated sample is impacted: (CCV 880-58782/33).

Method 8021B: Surrogate recovery for the following samples were outside control limits: SS01 (890-4982-1), SS02 (890-4982-2), SS03 (890-4982-3), SS04 (890-4982-4), (LCSD 880-58735/2-A), (890-4976-A-1-D), (890-4976-A-1-B MS) and (890-4976-A-1-C MSD). Evidence of matrix interferences is not obvious.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

#### GC Semi VOA

Method 8015MOD\_NM: The surrogate recovery for the blank associated with preparation batch 880-59193 and analytical batch 880-59388 was outside the upper control limits.

Method 8015MOD\_NM: Surrogate recovery for the following sample was outside control limits: SS03 (890-4982-3). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8015MOD\_NM: Surrogate recovery for the following samples were outside control limits: (CCV 880-59388/20), (CCV 880-59388/31) and (CCV 880-59388/5). Evidence of matrix interferences is not obvious.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

#### HPLC/IC

Method 300\_ORGFM\_28D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 880-58446 and analytical batch 880-58488 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

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# **Client Sample Results**

Client: Ensolum Job ID: 890-4982-1 Project/Site: Macho State 2H SDG: 03D2024210

**Client Sample ID: SS01** Lab Sample ID: 890-4982-1

Date Collected: 07/21/23 13:50 Matrix: Solid Date Received: 07/21/23 16:26

Sample Depth: 0.5

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199	mg/Kg		07/28/23 13:24	07/30/23 03:19	1
Toluene	<0.00199	U	0.00199	mg/Kg		07/28/23 13:24	07/30/23 03:19	1
Ethylbenzene	< 0.00199	U	0.00199	mg/Kg		07/28/23 13:24	07/30/23 03:19	1
m-Xylene & p-Xylene	<0.00398	U	0.00398	mg/Kg		07/28/23 13:24	07/30/23 03:19	1
o-Xylene	< 0.00199	U	0.00199	mg/Kg		07/28/23 13:24	07/30/23 03:19	1
Xylenes, Total	<0.00398	U	0.00398	mg/Kg		07/28/23 13:24	07/30/23 03:19	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	146	S1+	70 - 130			07/28/23 13:24	07/30/23 03:19	1
1,4-Difluorobenzene (Surr)	95		70 - 130			07/28/23 13:24	07/30/23 03:19	1
Method: TAL SOP Total BTEX - 1	Total BTEX Cald	culation						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	< 0.00398	IJ	0.00398	mg/Kg			07/31/23 14:05	1
: Method: SW846 8015 NM - Diese	el Range Organ			g,r.tg			07/01/20 11:00	·
Method: SW846 8015 NM - Diese Analyte	Result	ics (DRO) (	GC)	Unit	D	Prepared	Analyzed	
Analyte	•	ics (DRO) (	GC)		<u>D</u>	Prepared		Dil Fac
	Result   <49.7	ics (DRO) (Gualifier	RL 49.7	Unit	<u>D</u>	Prepared	Analyzed	
Analyte Total TPH  Method: SW846 8015B NM - Dies	Result <49.7	ics (DRO) (Gualifier	RL 49.7	Unit	<u>D</u>	Prepared Prepared	Analyzed	1
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics	Result <49.7	Qualifier Unics (DRO) Qualifier	RL 49.7	Unit mg/Kg			Analyzed 08/07/23 10:37	1
Analyte Total TPH	Result <49.7  sel Range Orga Result	ics (DRO) (Outline DRO) Qualifier U  nics (DRO) Qualifier U	(GC) RL RL	Unit mg/Kg		Prepared	Analyzed 08/07/23 10:37 Analyzed	Dil Fac
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over	Result <49.7  sel Range Orga Result <49.7	ics (DRO) (Control of the control of	(GC)  RL 49.7  (GC)  RL 49.7	Unit mg/Kg  Unit mg/Kg		Prepared 08/03/23 09:28	Analyzed 08/07/23 10:37  Analyzed 08/05/23 16:38	Dil Fac
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28)	Result <49.7  sel Range Orga Result <49.7  <49.7	ics (DRO) (COMPANIES (DRO)) Qualifier U Qualifier U U U	(GC)  RL 49.7  (GC)  RL 49.7  49.7	Unit mg/Kg  Unit mg/Kg  mg/Kg		Prepared 08/03/23 09:28 08/03/23 09:28	Analyzed 08/07/23 10:37  Analyzed 08/05/23 16:38 08/05/23 16:38	1 Dil Fac
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) Oll Range Organics (Over C28-C36)	Result	ics (DRO) (COMPANIES (DRO)) Qualifier U Qualifier U U U	GC) RL 49.7  (GC) RL 49.7  49.7  49.7	Unit mg/Kg  Unit mg/Kg  mg/Kg		Prepared 08/03/23 09:28 08/03/23 09:28 08/03/23 09:28	Analyzed 08/07/23 10:37  Analyzed 08/05/23 16:38 08/05/23 16:38	1 Dil Fac
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) Oll Range Organics (Over C28-C36)  Surrogate	Result   <49.7	ics (DRO) ( Qualifier U  nics (DRO) Qualifier U  U	GC)  RL 49.7  (GC)  RL 49.7  49.7  49.7  Limits	Unit mg/Kg  Unit mg/Kg  mg/Kg		Prepared 08/03/23 09:28 08/03/23 09:28 08/03/23 09:28 Prepared	Analyzed  08/07/23 10:37  Analyzed  08/05/23 16:38  08/05/23 16:38  Analyzed	Dil Fac
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) Oll Range Organics (Over C28-C36)  Surrogate 1-Chlorooctane	Result   <49.7	ics (DRO) ( Qualifier U  nics (DRO) Qualifier U  U  Qualifier	RL 49.7  (GC)  RL 49.7  49.7  49.7  49.7  Limits 70 - 130 70 - 130	Unit mg/Kg  Unit mg/Kg  mg/Kg		Prepared 08/03/23 09:28 08/03/23 09:28 08/03/23 09:28 Prepared 08/03/23 09:28	Analyzed 08/07/23 10:37  Analyzed 08/05/23 16:38 08/05/23 16:38  Analyzed 08/05/23 16:38	Dil Fac  1  1  Dil Fac  Dil Fac
Analyte Total TPH  Method: SW846 8015B NM - Dies Analyte Gasoline Range Organics (GRO)-C6-C10 Diesel Range Organics (Over C10-C28) OII Range Organics (Over C28-C36)  Surrogate 1-Chlorooctane o-Terphenyl	Result   <49.7	ics (DRO) ( Qualifier U  nics (DRO) Qualifier U  U  Qualifier	RL 49.7  (GC)  RL 49.7  49.7  49.7  49.7  Limits 70 - 130 70 - 130	Unit mg/Kg  Unit mg/Kg  mg/Kg		Prepared 08/03/23 09:28 08/03/23 09:28 08/03/23 09:28 Prepared 08/03/23 09:28	Analyzed 08/07/23 10:37  Analyzed 08/05/23 16:38 08/05/23 16:38  Analyzed 08/05/23 16:38	1 Dil Fac 1 1 1 1 Dil Fac 1

**Client Sample ID: SS02** Lab Sample ID: 890-4982-2

Date Collected: 07/21/23 13:55 **Matrix: Solid** 

Date Received: 07/21/23 16:26

Sample Depth: 0.5

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00199	U	0.00199	mg/Kg		07/28/23 13:24	07/30/23 03:45	1
Toluene	<0.00199	U	0.00199	mg/Kg		07/28/23 13:24	07/30/23 03:45	1
Ethylbenzene	<0.00199	U	0.00199	mg/Kg		07/28/23 13:24	07/30/23 03:45	1
m-Xylene & p-Xylene	<0.00398	U	0.00398	mg/Kg		07/28/23 13:24	07/30/23 03:45	1
o-Xylene	<0.00199	U	0.00199	mg/Kg		07/28/23 13:24	07/30/23 03:45	1
Xylenes, Total	<0.00398	U	0.00398	mg/Kg		07/28/23 13:24	07/30/23 03:45	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)		S1+	70 - 130			07/28/23 13:24	07/30/23 03:45	1

Job ID: 890-4982-1

Client: Ensolum Project/Site: Macho State 2H SDG: 03D2024210

**Client Sample ID: SS02** Lab Sample ID: 890-4982-2

Date Collected: 07/21/23 13:55 Matrix: Solid Date Received: 07/21/23 16:26

Sample Depth: 0.5

Method: SW846 8021B - Volatile	Organic Compounds	(GC) (Continued)
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Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
1 4-Difluorobenzene (Surr)	90	70 - 130	07/28/23 13:24	07/30/23 03:45	1

#### **Method: TAL SOP Total BTEX - Total BTEX Calculation**

Analyte	Result Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00398 U	0.00398	ma/Ka			07/31/23 14:05	1

l .		
Method: SW846 8015 NM -	Discal Dance Occasion	(DDO) (CC)
I WETDOO'S WAAH AU15 NIVI .	. Diesei Ranne Ornanics	(I)R()) ((=(.)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<49.6	U	49.6	ma/Ka			08/07/23 10:37	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<49.6	U	49.6	mg/Kg		08/03/23 09:28	08/05/23 17:00	1
Diesel Range Organics (Over C10-C28)	<49.6	U	49.6	mg/Kg		08/03/23 09:28	08/05/23 17:00	1
Oll Range Organics (Over C28-C36)	<49.6	U	49.6	mg/Kg		08/03/23 09:28	08/05/23 17:00	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	119	70 - 130	08/03/23 09:28	08/05/23 17:00	1
o-Terphenyl	100	70 - 130	08/03/23 09:28	08/05/23 17:00	1

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	36.7		4.96	mg/Kg			07/26/23 01:02	1

**Client Sample ID: SS03** Lab Sample ID: 890-4982-3

Date Collected: 07/21/23 14:00 Date Received: 07/21/23 16:26

Sample Depth: 0.5

Method: SW846 8021B -	M-1-4!1- O	0 (00)

metriod. Offoro our ID - foldtile c	ngame comp		,					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		07/28/23 13:24	07/30/23 04:10	1
Toluene	<0.00200	U	0.00200	mg/Kg		07/28/23 13:24	07/30/23 04:10	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		07/28/23 13:24	07/30/23 04:10	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		07/28/23 13:24	07/30/23 04:10	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		07/28/23 13:24	07/30/23 04:10	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		07/28/23 13:24	07/30/23 04:10	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	148	S1+	70 - 130			07/28/23 13:24	07/30/23 04:10	1

					•	
4-Bromofluorobenzene (Surr)	148	S1+	70 - 130	07/28/23 13:24	07/30/23 04:10	1
1,4-Difluorobenzene (Surr)	90		70 - 130	07/28/23 13:24	07/30/23 04:10	1

#### **Method: TAL SOP Total BTEX - Total BTEX Calculation**

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00400	U	0.00400	ma/Ka			07/31/23 14:05	1

Method: SW846 8015 NM - Diesel Range Organics (DRO) (GC
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Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.4	U	50.4	mg/Kg			08/07/23 10:37	1

**Eurofins Carlsbad** 

**Matrix: Solid** 

Job ID: 890-4982-1

Client: Ensolum Project/Site: Macho State 2H SDG: 03D2024210

**Client Sample ID: SS03** Lab Sample ID: 890-4982-3

Date Collected: 07/21/23 14:00 Matrix: Solid Date Received: 07/21/23 16:26

Sample Depth: 0.5

Method: SW846 8015B NM - Dies	sel Range Orga	nics (DRO)	(GC)					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.4	U	50.4	mg/Kg		08/03/23 09:28	08/05/23 17:22	1
Diesel Range Organics (Over C10-C28)	<50.4	U	50.4	mg/Kg		08/03/23 09:28	08/05/23 17:22	1
Oll Range Organics (Over C28-C36)	<50.4	U	50.4	mg/Kg		08/03/23 09:28	08/05/23 17:22	,
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	133	S1+	70 - 130			08/03/23 09:28	08/05/23 17:22	1
o-Terphenyl	104		70 - 130			08/03/23 09:28	08/05/23 17:22	1
Method: EPA 300.0 - Anions, Ion	Chromatograp	hy - Solubl	e					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	41.4		5.05	mg/Kg			07/26/23 01:08	1

Lab Sample ID: 890-4982-4 Client Sample ID: SS04 Date Collected: 07/21/23 14:05 Matrix: Solid

Date Received: 07/21/23 16:26

Sample Depth: 0.5

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00198	U	0.00198	mg/Kg		07/28/23 13:24	07/30/23 04:36	1
Toluene	<0.00198	U	0.00198	mg/Kg		07/28/23 13:24	07/30/23 04:36	1
Ethylbenzene	<0.00198	U	0.00198	mg/Kg		07/28/23 13:24	07/30/23 04:36	1
m-Xylene & p-Xylene	< 0.00397	U	0.00397	mg/Kg		07/28/23 13:24	07/30/23 04:36	1
o-Xylene	<0.00198	U	0.00198	mg/Kg		07/28/23 13:24	07/30/23 04:36	1
Xylenes, Total	<0.00397	U	0.00397	mg/Kg		07/28/23 13:24	07/30/23 04:36	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	152	S1+	70 - 130			07/28/23 13:24	07/30/23 04:36	1
1,4-Difluorobenzene (Surr)	81		70 - 130			07/28/23 13:24	07/30/23 04:36	1
Method: TAL SOP Total BTEX - T	otal BTEX Cald	culation						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00397	U	0.00397	mg/Kg			07/31/23 14:05	1
Method: SW846 8015 NM - Diese	l Range Organ	ics (DRO) (	GC)					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.4	U	50.4	mg/Kg			08/07/23 10:37	1
Method: SW846 8015B NM - Dies	el Range Orga	nics (DRO)	(GC)					
Analyte		Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.4	U	50.4	mg/Kg		08/03/23 09:28	08/05/23 17:45	1
Diesel Range Organics (Over C10-C28)	<50.4	U	50.4	mg/Kg		08/03/23 09:28	08/05/23 17:45	1
OII Range Organics (Over C28-C36)	<50.4	U	50.4	mg/Kg		08/03/23 09:28	08/05/23 17:45	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	126		70 - 130			08/03/23 09:28	08/05/23 17:45	1

# **Client Sample Results**

Client: Ensolum Job ID: 890-4982-1
Project/Site: Macho State 2H SDG: 03D2024210

Client Sample ID: SS04 Lab Sample ID: 890-4982-4

Date Collected: 07/21/23 14:05

Matrix: Solid

Date Received: 07/21/23 16:26 Sample Depth: 0.5

Method: EPA 300.0 - Anions, Ion C	hromatography - Solub	le					
Analyte	Result Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	79.9	5.02	mg/Kg			07/26/23 01:14	1

6

0

46

11

13

12

# **Surrogate Summary**

Job ID: 890-4982-1 Client: Ensolum Project/Site: Macho State 2H SDG: 03D2024210

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Solid Prep Type: Total/NA

		BFB1	DFBZ1	Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	
890-4976-A-1-B MS	Matrix Spike	155 S1+	98	
890-4976-A-1-C MSD	Matrix Spike Duplicate	158 S1+	103	
390-4982-1	SS01	146 S1+	95	
390-4982-2	SS02	151 S1+	90	
390-4982-3	SS03	148 S1+	90	
390-4982-4	SS04	152 S1+	81	
_CS 880-58735/1-A	Lab Control Sample	117	88	
_CSD 880-58735/2-A	Lab Control Sample Dup	144 S1+	96	
MB 880-58735/5-A	Method Blank	79	82	

DFBZ = 1,4-Difluorobenzene (Surr)

Method: 8015B NM - Diesel Range Organics (DRO) (GC)

Prep Type: Total/NA **Matrix: Solid** 

				Percent Surrogate Recovery (Acceptance Limits)
		1CO1	OTPH1	
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	
890-4979-A-1-D MS	Matrix Spike	125	92	
890-4979-A-1-E MSD	Matrix Spike Duplicate	103	76	
890-4982-1	SS01	122	103	
890-4982-2	SS02	119	100	
890-4982-3	SS03	133 S1+	104	
890-4982-4	SS04	126	108	
LCS 880-59193/2-A	Lab Control Sample	95	95	
LCSD 880-59193/3-A	Lab Control Sample Dup	95	109	
MB 880-59193/1-A	Method Blank	132 S1+	118	

1CO = 1-Chlorooctane OTPH = o-Terphenyl

Client: Ensolum Job ID: 890-4982-1 Project/Site: Macho State 2H SDG: 03D2024210

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-58735/5-A

Lab Sample ID: LCS 880-58735/1-A

**Matrix: Solid** 

Analysis Batch: 58782

**Matrix: Solid** Analysis Batch: 58782 Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 58735

	MB	MB						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		07/28/23 13:24	07/29/23 18:51	1
Toluene	<0.00200	U	0.00200	mg/Kg		07/28/23 13:24	07/29/23 18:51	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		07/28/23 13:24	07/29/23 18:51	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		07/28/23 13:24	07/29/23 18:51	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		07/28/23 13:24	07/29/23 18:51	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		07/28/23 13:24	07/29/23 18:51	1

MB MB

Surrogate	%Recovery	Qualifier	Limits		Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	79		70 - 130	_	07/28/23 13:24	07/29/23 18:51	1
1,4-Difluorobenzene (Surr)	82		70 - 130		07/28/23 13:24	07/29/23 18:51	1

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA Prep Batch: 58735

LCS LCS Spike Analyte Added Result Qualifier Unit %Rec Limits Benzene 0.100 0.09556 mg/Kg 96 70 - 130 Toluene 0.100 0.09532 mg/Kg 95 70 - 130 0.100 102 Ethylbenzene 0.1016 mg/Kg 70 - 130 0.200 0.1885 94 70 - 130 m-Xylene & p-Xylene mg/Kg 0.100 0.09037 70 - 130 o-Xylene mg/Kg 90

LCS LCS

Surrogate	%Recovery Qualifier	Limits
4-Bromofluorobenzene (Surr)	117	70 - 130
1,4-Difluorobenzene (Surr)	88	70 - 130

Client Sample ID: Lab Control Sample Dup

**Matrix: Solid** 

Lab Sample ID: LCSD 880-58735/2-A

Analysis Batch: 58782

Prep Type: Total/NA Prep Batch: 58735

	Spike	LCSD	LCSD				70KeC		KPD	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
Benzene	0.100	0.1172		mg/Kg		117	70 - 130	20	35	
Toluene	0.100	0.1169		mg/Kg		117	70 - 130	20	35	
Ethylbenzene	0.100	0.1255		mg/Kg		126	70 - 130	21	35	
m-Xylene & p-Xylene	0.200	0.2264		mg/Kg		113	70 - 130	18	35	
o-Xylene	0.100	0.1156		mg/Kg		116	70 - 130	24	35	

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	144	S1+	70 - 130
1,4-Difluorobenzene (Surr)	96		70 - 130

Lab Sample ID: 890-4976-A-1-B MS

**Matrix: Solid** 

Analysis Batch: 58782

Client Sample ID: Matrix Spike Prep Type: Total/NA

Prep Batch: 58735

	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	<0.00202	U	0.0996	0.1169		mg/Kg	_	117	70 - 130	
Toluene	<0.00202	U	0.0996	0.1192		mg/Kg		120	70 - 130	

#### **QC Sample Results**

Client: Ensolum Job ID: 890-4982-1 Project/Site: Macho State 2H SDG: 03D2024210

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: 890-4976-A-1-B MS Client Sample ID: Matrix Spike Prep Type: Total/NA

**Matrix: Solid** Analysis Batch: 58782

Sample Sample Spike MS MS %Rec Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits Ethylbenzene <0.00202 U F1 0.0996 0.1254 126 70 - 130 mg/Kg m-Xylene & p-Xylene <0.00404 0.199 0.2223 mg/Kg 112 70 - 130 0.0996 o-Xylene <0.00202 U 0.1178 70 - 130 mg/Kg 118

MS MS

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	155	S1+	70 - 130
1,4-Difluorobenzene (Surr)	98		70 - 130

Lab Sample ID: 890-4976-A-1-C MSD Client Sample ID: Matrix Spike Duplicate

**Matrix: Solid** 

Prep Type: Total/NA

Prep Batch: 58735

**Analysis Batch: 58782** Prep Batch: 58735 Sample Sample Spike MSD MSD RPD

Result Qualifier Result Qualifier %Rec RPD Limit Analyte babbA Unit Limits 0.0994 Benzene <0.00202 U 0.1214 mg/Kg 122 70 - 130 4 35 0.1228 Toluene <0.00202 U 0.0994 mg/Kg 124 70 - 130 3 35 Ethylbenzene <0.00202 UF1 0.0994 0.1325 F1 133 70 - 130 5 35 mg/Kg 0.199 70 - 130 35 m-Xylene & p-Xylene <0.00404 U 0.2321 mg/Kg 117 0.0994 <0.00202 U 0.1208 70 - 130 o-Xylene mg/Kg 122 3

MSD MSD

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	158	S1+	70 - 130
1,4-Difluorobenzene (Surr)	103		70 - 130

Method: 8015B NM - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 880-59193/1-A

**Matrix: Solid** 

Analysis Batch: 59388

Client Sample ID: Method Blank Prep Type: Total/NA

Prep Batch: 59193

	MB	MB						
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	<50.0	U	50.0	mg/Kg		08/03/23 09:28	08/05/23 08:24	1
Diesel Range Organics (Over C10-C28)	<50.0	U	50.0	mg/Kg		08/03/23 09:28	08/05/23 08:24	1
Oll Range Organics (Over C28-C36)	<50.0	U	50.0	mg/Kg		08/03/23 09:28	08/05/23 08:24	1

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	132	S1+	70 - 130	08/03/23 09:28	08/05/23 08:24	1
o-Terphenyl	118		70 - 130	08/03/23 09:28	08/05/23 08:24	1

Lab Sample ID: LCS 880-59193/2-A

**Matrix: Solid** 

Analysis Batch: 59388

**Client Sample ID: Lab Control Sample** Prep Type: Total/NA

Prep Batch: 59193

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Gasoline Range Organics	1000	1000		mg/Kg		100	70 - 130	
(GRO)-C6-C10								
Diesel Range Organics (Over	1000	971.1		mg/Kg		97	70 - 130	
C10-C28)								

Job ID: 890-4982-1 Client: Ensolum Project/Site: Macho State 2H SDG: 03D2024210

Method: 8015B NM - Diesel Range Organics (DRO) (GC) (Continued)

LCS LCS

%Recovery Qualifier

95

95

Lab Sample ID: LCS 880-59193/2-A Client Sample ID: Lab Control Sample

Limits

70 - 130

70 - 130

**Matrix: Solid** 

Surrogate

o-Terphenyl

1-Chlorooctane

Analysis Batch: 59388

Prep Type: Total/NA

Prep Batch: 59193

Lab Sample ID: LCSD 880-59193/3-A

**Matrix: Solid** Analysis Batch: 59388 Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 59193

Spike LCSD LCSD %Rec RPD Analyte Added Result Qualifier Unit D %Rec Limits **RPD** Limit 1000 975.9 98 70 - 1302 20 Gasoline Range Organics mg/Kg (GRO)-C6-C10 Diesel Range Organics (Over 1000 979.0 98 mg/Kg 70 - 13020 C10-C28)

LCSD LCSD

Surrogate %Recovery Qualifier Limits 95 70 - 130 1-Chlorooctane 109 70 - 130 o-Terphenyl

Lab Sample ID: 890-4979-A-1-D MS Client Sample ID: Matrix Spike

**Matrix: Solid** 

**Analysis Batch: 59388** 

Prep Type: Total/NA

Prep Batch: 59193

Sample Sample MS MS Spike Analyte Added Result Qualifier Result Qualifier Unit D %Rec Limits Gasoline Range Organics <50.3 U 992 1031 mg/Kg 101 70 - 130 (GRO)-C6-C10 Diesel Range Organics (Over <50.3 U 992 1253 mg/Kg 124 70 - 130 C10-C28)

MS MS %Recovery Qualifier Surrogate Limits 70 - 130 1-Chlorooctane 125 o-Terphenyl 92 70 - 130

Lab Sample ID: 890-4979-A-1-E MSD Client Sample ID: Matrix Spike Duplicate

**Matrix: Solid** 

Analysis Batch: 59388

Prep Type: Total/NA

Prep Batch: 59193

Sample Sample MSD MSD RPD Spike %Rec Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits **RPD** Limit <50.3 U 992 Gasoline Range Organics 1146 mg/Kg 113 70 - 130 11 20 (GRO)-C6-C10 Diesel Range Organics (Over <50.3 U 992 1041 mg/Kg 103 70 - 130 18 20

C10-C28)

MSD MSD

Surrogate	%Recovery	Qualifier	Limits
1-Chlorooctane	103		70 - 130
o-Terphenyl	76		70 - 130

#### QC Sample Results

Client: Ensolum Job ID: 890-4982-1 Project/Site: Macho State 2H SDG: 03D2024210

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-58446/1-A **Matrix: Solid** 

Lab Sample ID: LCS 880-58446/2-A

Client Sample ID: Method Blank

**Prep Type: Soluble** 

Analysis Batch: 58488

MB MB

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00	U	5.00	mg/Kg			07/25/23 22:10	1

Client Sample ID: Lab Control Sample

**Prep Type: Soluble** 

**Analysis Batch: 58488** 

**Matrix: Solid** 

Spike LCS LCS %Rec Added Result Qualifier %Rec Analyte Unit D Limits Chloride 250 231.5 mg/Kg 93 90 - 110

Lab Sample ID: LCSD 880-58446/3-A Client Sample ID: Lab Control Sample Dup

**Matrix: Solid Prep Type: Soluble** 

Analysis Batch: 58488

LCSD LCSD %Rec RPD Spike Analyte Added Result Qualifier Unit %Rec Limits RPD Limit Chloride 250 232.1 mg/Kg 90 - 110

Lab Sample ID: 890-4980-A-3-B MS Client Sample ID: Matrix Spike **Matrix: Solid Prep Type: Soluble** 

**Analysis Batch: 58488** 

Spike MS MS Sample Sample %Rec Analyte Result Qualifier Added Result Qualifier %Rec Unit Limits Chloride 81.0 F1 248 301.0 F1 90 - 110 mg/Kg

Lab Sample ID: 890-4980-A-3-C MSD Client Sample ID: Matrix Spike Duplicate **Prep Type: Soluble** 

**Matrix: Solid** 

Analysis Batch: 58488

Sample Sample Spike MSD MSD %Rec RPD Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits RPD Limit Chloride 81.0 F1 248 302.4 F1 mg/Kg 89 90 - 110 20

# **QC Association Summary**

Client: Ensolum Job ID: 890-4982-1
Project/Site: Macho State 2H SDG: 03D2024210

**GC VOA** 

Prep Batch: 58735

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4982-1	SS01	Total/NA	Solid	5035	
890-4982-2	SS02	Total/NA	Solid	5035	
890-4982-3	SS03	Total/NA	Solid	5035	
890-4982-4	SS04	Total/NA	Solid	5035	
MB 880-58735/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-58735/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-58735/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
890-4976-A-1-B MS	Matrix Spike	Total/NA	Solid	5035	
890-4976-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 58782

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4982-1	SS01	Total/NA	Solid	8021B	58735
890-4982-2	SS02	Total/NA	Solid	8021B	58735
890-4982-3	SS03	Total/NA	Solid	8021B	58735
890-4982-4	SS04	Total/NA	Solid	8021B	58735
MB 880-58735/5-A	Method Blank	Total/NA	Solid	8021B	58735
LCS 880-58735/1-A	Lab Control Sample	Total/NA	Solid	8021B	58735
LCSD 880-58735/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	58735
890-4976-A-1-B MS	Matrix Spike	Total/NA	Solid	8021B	58735
890-4976-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	58735

**Analysis Batch: 58871** 

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4982-1	SS01	Total/NA	Solid	Total BTEX	
890-4982-2	SS02	Total/NA	Solid	Total BTEX	
890-4982-3	SS03	Total/NA	Solid	Total BTEX	
890-4982-4	SS04	Total/NA	Solid	Total BTEX	

GC Semi VOA

Prep Batch: 59193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4982-1	SS01	Total/NA	Solid	8015NM Prep	
890-4982-2	SS02	Total/NA	Solid	8015NM Prep	
890-4982-3	SS03	Total/NA	Solid	8015NM Prep	
890-4982-4	SS04	Total/NA	Solid	8015NM Prep	
MB 880-59193/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-59193/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-59193/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
890-4979-A-1-D MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
890-4979-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 59388

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4982-1	SS01	Total/NA	Solid	8015B NM	59193
890-4982-2	SS02	Total/NA	Solid	8015B NM	59193
890-4982-3	SS03	Total/NA	Solid	8015B NM	59193
890-4982-4	SS04	Total/NA	Solid	8015B NM	59193
MB 880-59193/1-A	Method Blank	Total/NA	Solid	8015B NM	59193
LCS 880-59193/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	59193

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Page 15 of 24

# **QC Association Summary**

Client: Ensolum
Project/Site: Macho State 2H
SDG: 03D2024210

GC Semi VOA (Continued)

#### Analysis Batch: 59388 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 880-59193/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	59193
890-4979-A-1-D MS	Matrix Spike	Total/NA	Solid	8015B NM	59193
890-4979-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	59193

#### Analysis Batch: 59497

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4982-1	SS01	Total/NA	Solid	8015 NM	
890-4982-2	SS02	Total/NA	Solid	8015 NM	
890-4982-3	SS03	Total/NA	Solid	8015 NM	
890-4982-4	SS04	Total/NA	Solid	8015 NM	

#### **HPLC/IC**

#### Leach Batch: 58446

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4982-1	SS01	Soluble	Solid	DI Leach	
890-4982-2	SS02	Soluble	Solid	DI Leach	
890-4982-3	SS03	Soluble	Solid	DI Leach	
890-4982-4	SS04	Soluble	Solid	DI Leach	
MB 880-58446/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-58446/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-58446/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
890-4980-A-3-B MS	Matrix Spike	Soluble	Solid	DI Leach	
890-4980-A-3-C MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

#### **Analysis Batch: 58488**

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-4982-1	SS01	Soluble	Solid	300.0	58446
890-4982-2	SS02	Soluble	Solid	300.0	58446
890-4982-3	SS03	Soluble	Solid	300.0	58446
890-4982-4	SS04	Soluble	Solid	300.0	58446
MB 880-58446/1-A	Method Blank	Soluble	Solid	300.0	58446
LCS 880-58446/2-A	Lab Control Sample	Soluble	Solid	300.0	58446
LCSD 880-58446/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	58446
890-4980-A-3-B MS	Matrix Spike	Soluble	Solid	300.0	58446
890-4980-A-3-C MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	58446

#### **Lab Chronicle**

Client: Ensolum Job ID: 890-4982-1 Project/Site: Macho State 2H SDG: 03D2024210

**Client Sample ID: SS01** Lab Sample ID: 890-4982-1 Date Collected: 07/21/23 13:50

Matrix: Solid

Date Received: 07/21/23 16:26

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.02 g	5 mL	58735	07/28/23 13:24	EL	EET MIC
Total/NA	Analysis	8021B		1	5 mL	5 mL	58782	07/30/23 03:19	AJ	EET MID
Total/NA	Analysis	Total BTEX		1			58871	07/31/23 14:05	AJ	EET MIC
Total/NA	Analysis	8015 NM		1			59497	08/07/23 10:37	SM	EET MID
Total/NA	Prep	8015NM Prep			10.07 g	10 mL	59193	08/03/23 09:28	TKC	EET MIC
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	59388	08/05/23 16:38	SM	EET MIC
Soluble	Leach	DI Leach			5 g	50 mL	58446	07/25/23 09:41	KS	EET MIC
Soluble	Analysis	300.0		1			58488	07/26/23 00:55	CH	EET MID

**Client Sample ID: SS02** Lab Sample ID: 890-4982-2

Date Collected: 07/21/23 13:55 Matrix: Solid

Date Received: 07/21/23 16:26

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.03 g	5 mL	58735	07/28/23 13:24	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	58782	07/30/23 03:45	AJ	EET MID
Total/NA	Analysis	Total BTEX		1			58871	07/31/23 14:05	AJ	EET MID
Total/NA	Analysis	8015 NM		1			59497	08/07/23 10:37	SM	EET MID
Total/NA	Prep	8015NM Prep			10.09 g	10 mL	59193	08/03/23 09:28	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	59388	08/05/23 17:00	SM	EET MID
Soluble	Leach	DI Leach			5.04 g	50 mL	58446	07/25/23 09:41	KS	EET MID
Soluble	Analysis	300.0		1			58488	07/26/23 01:02	CH	EET MID

**Client Sample ID: SS03** Lab Sample ID: 890-4982-3 Date Collected: 07/21/23 14:00

Date Received: 07/21/23 16:26

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.00 g	5 mL	58735	07/28/23 13:24	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	58782	07/30/23 04:10	AJ	EET MID
Total/NA	Analysis	Total BTEX		1			58871	07/31/23 14:05	AJ	EET MID
Total/NA	Analysis	8015 NM		1			59497	08/07/23 10:37	SM	EET MID
Total/NA	Prep	8015NM Prep			9.93 g	10 mL	59193	08/03/23 09:28	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	59388	08/05/23 17:22	SM	EET MID
Soluble	Leach	DI Leach			4.95 g	50 mL	58446	07/25/23 09:41	KS	EET MID
Soluble	Analysis	300.0		1			58488	07/26/23 01:08	CH	EET MID

**Client Sample ID: SS04** Lab Sample ID: 890-4982-4

Date Collected: 07/21/23 14:05 Date Received: 07/21/23 16:26

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.04 g	5 mL	58735	07/28/23 13:24	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	58782	07/30/23 04:36	AJ	EET MID
Total/NA	Analysis	Total BTEX		1			58871	07/31/23 14:05	AJ	EET MID

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Page 17 of 24

Released to Imaging: 1/19/2024 2:56:34 PM

**Matrix: Solid** 

**Matrix: Solid** 

#### **Lab Chronicle**

Client: Ensolum Job ID: 890-4982-1 Project/Site: Macho State 2H SDG: 03D2024210

Client Sample ID: SS04 Lab Sample ID: 890-4982-4 Date Collected: 07/21/23 14:05

Matrix: Solid

Date Received: 07/21/23 16:26

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8015 NM		1			59497	08/07/23 10:37	SM	EET MID
Total/NA	Prep	8015NM Prep			9.92 g	10 mL	59193	08/03/23 09:28	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	59388	08/05/23 17:45	SM	EET MID
Soluble	Leach	DI Leach			4.98 g	50 mL	58446	07/25/23 09:41	KS	EET MID
Soluble	Analysis	300.0		1			58488	07/26/23 01:14	CH	EET MID

#### Laboratory References:

EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

# **Accreditation/Certification Summary**

Client: Ensolum Job ID: 890-4982-1 Project/Site: Macho State 2H SDG: 03D2024210

**Laboratory: Eurofins Midland** 

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority Texas		rogram	Identification Number	Expiration Date
		ELAP	T104704400-23-26	06-30-24
The following analytes the agency does not of	• '	ut the laboratory is not certifi	ied by the governing authority. This list ma	ay include analytes for whic
Analysis Method	Prep Method	Matrix	Analyte	
8015 NM		Solid	Total TPH	
Total BTEX		Solid	Total BTEX	

# **Method Summary**

Client: Ensolum Job ID: 890-4982-1
Project/Site: Macho State 2H SDG: 03D2024210

oject/Site. Macrio State 2n SDG. 03D2024210

Method	Method Description	Protocol	Laboratory
8021B	Volatile Organic Compounds (GC)	SW846	EET MID
Total BTEX	Total BTEX Calculation	TAL SOP	EET MID
8015 NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
8015B NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
300.0	Anions, Ion Chromatography	EPA	EET MID
5035	Closed System Purge and Trap	SW846	EET MID
8015NM Prep	Microextraction	SW846	EET MID
DI Leach	Deionized Water Leaching Procedure	ASTM	EET MID

#### **Protocol References:**

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

#### Laboratory References:

EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

**Eurofins Carlsbad** 

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# **Sample Summary**

Client: Ensolum

Project/Site: Macho State 2H

Job ID: 890-4982-1

SDG: 03D2024210

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-4982-1	SS01	Solid	07/21/23 13:50	07/21/23 16:26	0.5
890-4982-2	SS02	Solid	07/21/23 13:55	07/21/23 16:26	0.5
890-4982-3	SS03	Solid	07/21/23 14:00	07/21/23 16:26	0.5
890-4982-4	SS04	Solid	07/21/23 14:05	07/21/23 16:26	0.5

4

9

10

12

13

12

Relinquished by: (Signature)

Received by: (Signature)

Date/Time

Relinquished by: (Signature)

Received by: (Signature)

Date/Time

Revised Date: 08/25/2020 Rev. 2020.2

13 14

# eurofins

# Chain of Custody

Work Order Comments  State of Project:  Reporting: Level III   PST/UST   TRRP   Level IV    Deliverables: EDD   ADaPT   Other:  Preservative Codes  None: NO DI Water: H <sub>2</sub> O <sub>4</sub> : H <sub>2</sub> NaOH: Na  H <sub>3</sub> PO <sub>4</sub> : NABIS
Level III   PST/UST   TRRP   ADaPT   Other:
□ Level III □ PST/JUST □ TRRP □  ADaPT □ Other:  Preservative (  None: NO DI V  Cool: Cool Mel  H2S04: H2 Na(  H3PO4: HP  NaHSO4: NABIS
□ Level III □ PST/UST □ TRRP □  ADaPT □ Other:  Preservative (  None: NO DI \  Cool: Cool Mel  H2S04: H2 Na  NaHSO4: HP  NaHSO4: NABIS
ADaPT Other:  Preservativ  None: NO  Cool: Cool  HCL: HC  H <sub>2</sub> SO <sub>4</sub> : H <sub>2</sub> H <sub>3</sub> PO <sub>4</sub> : HP  NaHSO <sub>4</sub> : NABIS
ervativ NABIS
NABIS
NABIS
H₃PO₄: HP NaHSO₄: NABIS
NaHSO4: NABIS
Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> : NaSO <sub>3</sub>
890-4982 Chain of Custody  NaOH+Ascorbic Acid: SAPC
Na Control Score Control Control
Sample Comments
Mg Mn Mo Ni K Se Ag SiO₂ Na Sr Tl Sn U V Zn
In Mo Ni Se Ag TI U Hg: 1631/245.1/7470/7471
It assigns standard terms and conditions
Cooler Custody Seals:   Yes   No   NA   Correction Factor:   - C

### **Login Sample Receipt Checklist**

Client: Ensolum Job Number: 890-4982-1 SDG Number: 03D2024210

Login Number: 4982 List Source: Eurofins Carlsbad

List Number: 1 Creator: Clifton, Cloe

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	N/A	Refer to Job Narrative for details.
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	

Page 62 of 93

### **Login Sample Receipt Checklist**

Client: Ensolum Job Number: 890-4982-1 SDG Number: 03D2024210

> **List Source: Eurofins Midland** List Creation: 07/25/23 10:57 AM

Login Number: 4982 List Number: 2

Creator: Rodriguez, Leticia

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is	N/A	

<6mm (1/4").

**Environment Testing** 

# **ANALYTICAL REPORT**

# PREPARED FOR

Attn: Hadlie Green Ensolum 601 N. Marienfeld St. Suite 400 Midland, Texas 79701

Generated 8/21/2023 2:58:29 PM

# **JOB DESCRIPTION**

Macho State 2H SDG NUMBER 03D2024210

# **JOB NUMBER**

890-5071-1

Eurofins Carlsbad 1089 N Canal St. Carlsbad NM 88220

# **Eurofins Carlsbad**

#### **Job Notes**

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

# **Authorization**

Generated 8/21/2023 2:58:29 PM

8/21/2023

Authorized for release by Jessica Kramer, Project Manager <u>Jessica.Kramer@et.eurofinsus.com</u> (432)704-5440

Eurofins Carlsbad is a laboratory within Eurofins Environment Testing South Central, LLC, a company within Eurofins Environment Testing Group of Companies

Page 2 of 21

Client: Ensolum
Project/Site: Macho State 2H

Laboratory Job ID: 890-5071-1
SDG: 03D2024210

**Table of Contents** 

Cover Page	1
Table of Contents	3
Definitions/Glossary	4
Case Narrative	5
Client Sample Results	6
Surrogate Summary	8
QC Sample Results	9
QC Association Summary	13
Lab Chronicle	15
Certification Summary	16
Method Summary	17
Sample Summary	18
Chain of Custody	19
Receipt Checklists	20

#### **Definitions/Glossary**

Job ID: 890-5071-1 Client: Ensolum Project/Site: Macho State 2H SDG: 03D2024210

**Qualifiers** 

**GC VOA** 

Qualifier **Qualifier Description** 

Indicates the analyte was analyzed for but not detected.

**GC Semi VOA** 

Qualifier **Qualifier Description** 

S1+ Surrogate recovery exceeds control limits, high biased. Indicates the analyte was analyzed for but not detected.

HPLC/IC

Qualifier **Qualifier Description** 

F1 MS and/or MSD recovery exceeds control limits. U Indicates the analyte was analyzed for but not detected.

**Glossary** 

Abbreviation These commonly used abbreviations may or may not be present in this report.

Listed under the "D" column to designate that the result is reported on a dry weight basis

%R Percent Recovery CFL Contains Free Liquid CFU Colony Forming Unit CNF Contains No Free Liquid

DER Duplicate Error Ratio (normalized absolute difference)

Dil Fac **Dilution Factor** 

DL Detection Limit (DoD/DOE)

DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

DLC Decision Level Concentration (Radiochemistry)

**EDL** Estimated Detection Limit (Dioxin) LOD Limit of Detection (DoD/DOE) LOQ Limit of Quantitation (DoD/DOE)

MCL EPA recommended "Maximum Contaminant Level" Minimum Detectable Activity (Radiochemistry) MDA MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit Minimum Level (Dioxin) ML MPN Most Probable Number Method Quantitation Limit MQL

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

NEG Negative / Absent POS Positive / Present

**PQL Practical Quantitation Limit** 

**PRES** Presumptive QC **Quality Control** 

RER Relative Error Ratio (Radiochemistry)

Reporting Limit or Requested Limit (Radiochemistry) RL

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin) TEQ Toxicity Equivalent Quotient (Dioxin)

**TNTC** Too Numerous To Count

#### **Case Narrative**

Job ID: 890-5071-1 Client: Ensolum Project/Site: Macho State 2H

SDG: 03D2024210

Job ID: 890-5071-1

**Laboratory: Eurofins Carlsbad** 

Narrative

Job Narrative 890-5071-1

#### Receipt

The samples were received on 8/9/2023 2:40 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.2°C

#### **Receipt Exceptions**

The following samples were received and analyzed from an unpreserved bulk soil jar: BH01 (890-5071-1) and BH01B (890-5071-2).

#### **GC VOA**

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method 8015MOD\_NM: The surrogate recovery for the blank associated with preparation batch 880-60389 and analytical batch 880-60609 was outside the upper control limits.

Method 8015MOD NM: Surrogate recovery for the following samples were outside control limits: (CCV 880-60609/21), (CCV 880-60609/32), (CCV 880-60609/6) and (LCS 880-60389/2-A). Evidence of matrix interferences is not obvious.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

#### HPLC/IC

Method 300 ORGFM 28D: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 880-60064 and analytical batch 880-60267 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits. The associated samples are: BH01 (890-5071-1), BH01B (890-5071-2), (880-31978-A-1-A), (880-31978-A-1-B MS) and (880-31978-A-1-C MSD).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

# **Client Sample Results**

Client: Ensolum Job ID: 890-5071-1 Project/Site: Macho State 2H SDG: 03D2024210

Lab Sample ID: 890-5071-1 **Client Sample ID: BH01** Matrix: Solid

Date Collected: 08/09/23 11:40 Date Received: 08/09/23 14:40 Sample Depth: COMP

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00198	U	0.00198	mg/Kg		08/17/23 09:14	08/17/23 16:57	1
Toluene	<0.00198	U	0.00198	mg/Kg		08/17/23 09:14	08/17/23 16:57	1
Ethylbenzene	<0.00198	U	0.00198	mg/Kg		08/17/23 09:14	08/17/23 16:57	1
m-Xylene & p-Xylene	<0.00397	U	0.00397	mg/Kg		08/17/23 09:14	08/17/23 16:57	1
o-Xylene	<0.00198	U	0.00198	mg/Kg		08/17/23 09:14	08/17/23 16:57	1
Xylenes, Total	<0.00397	U	0.00397	mg/Kg		08/17/23 09:14	08/17/23 16:57	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	82		70 - 130			08/17/23 09:14	08/17/23 16:57	1
1,4-Difluorobenzene (Surr)	71		70 - 130			08/17/23 09:14	08/17/23 16:57	1

Method: TAL SOP Total BTEX - Total BTEX Calculation										
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac		
Total BTEX	<0.00397	U	0.00397	mg/Kg			08/18/23 08:44	1		

Method: SW846 8015 NM - Diesel Ra	ange Organi	cs (DRO) (0	GC)					
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.1	U	50.1	mg/Kg			08/21/23 11:32	1

Method: SW846 8015B NM - Diesel Range Organics (DRO) (GC)									
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac	
Gasoline Range Organics (GRO)-C6-C10	<50.1	U	50.1	mg/Kg		08/16/23 14:53	08/19/23 18:13	1	
Diesel Range Organics (Over C10-C28)	<50.1	U	50.1	mg/Kg		08/16/23 14:53	08/19/23 18:13	1	
OII Range Organics (Over C28-C36)	<50.1	U	50.1	mg/Kg		08/16/23 14:53	08/19/23 18:13	1	
Surrogate	%Recovery	Qualifier	l imits			Prenared	Analyzed	Dil Fac	

Carrogate	7011CCCVC1 y	Quanner	Lillies	•	repared	Analyzea	Dii i ac
1-Chlorooctane	117		70 - 130	08/	16/23 14:53	08/19/23 18:13	1
o-Terphenyl	102		70 - 130	08/	/16/23 14:53	08/19/23 18:13	1
Г., .,							

Method: EPA 300.0 - Anions, Ion Chromatography - Soluble										
	Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac	
Į	Chloride	1510		24.9	mg/Kg			08/15/23 05:48	5	

**Client Sample ID: BH01A** Lab Sample ID: 890-5071-2 Date Collected: 08/09/23 12:00

Date Received: 08/09/23 14:40 Sample Depth: COMP

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	U	0.00200	mg/Kg		08/17/23 09:14	08/17/23 17:17	1
Toluene	<0.00200	U	0.00200	mg/Kg		08/17/23 09:14	08/17/23 17:17	1
Ethylbenzene	<0.00200	U	0.00200	mg/Kg		08/17/23 09:14	08/17/23 17:17	1
m-Xylene & p-Xylene	<0.00400	U	0.00400	mg/Kg		08/17/23 09:14	08/17/23 17:17	1
o-Xylene	<0.00200	U	0.00200	mg/Kg		08/17/23 09:14	08/17/23 17:17	1
Xylenes, Total	<0.00400	U	0.00400	mg/Kg		08/17/23 09:14	08/17/23 17:17	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)			70 - 130			08/17/23 09:14	08/17/23 17:17	1

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**Matrix: Solid** 

# **Client Sample Results**

Client: Ensolum
Project/Site: Macho State 2H
SDG: 03D2024210

Client Sample ID: BH01A Lab Sample ID: 890-5071-2

Date Collected: 08/09/23 12:00 Matrix: Solid
Date Received: 08/09/23 14:40

Sample Depth: COMP

Chloride

Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1,4-Difluorobenzene (Surr)	80		70 - 130			08/17/23 09:14	08/17/23 17:17	1
Method: TAL SOP Total BTEX -	Total BTEX Cald	ulation						
Analyte		Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	<0.00400	U	0.00400	mg/Kg			08/18/23 08:44	1
Method: SW846 8015 NM - Dies	sel Range Organ	ics (DRO) (	GC)					
Analyte		Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total TPH	<50.4	U	50.4	mg/Kg			08/21/23 11:32	1
Analyte	Result	Qualifier	RL	Unit	<u>D</u>	Prepared	Analyzed	Dil Fac
Method: SW846 8015B NM - Di	esel Range Orga	nics (DRO)	(GC)					
Gasoline Range Organics (GRO)-C6-C10	<50.4	U	50.4	mg/Kg		08/16/23 14:53	08/19/23 18:34	1
Diesel Range Organics (Over	<50.4	U	50.4	mg/Kg		08/16/23 14:53	08/19/23 18:34	1
C10-C28)				3. 3				
Oll Range Organics (Over C28-C36)	<50.4	U	50.4	mg/Kg		08/16/23 14:53	08/19/23 18:34	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
1-Chlorooctane	122		70 - 130			08/16/23 14:53	08/19/23 18:34	1
o-Terphenyl	107		70 - 130			08/16/23 14:53	08/19/23 18:34	1

25.0

mg/Kg

1890

08/15/23 05:58

# **Surrogate Summary**

Client: Ensolum Job ID: 890-5071-1 Project/Site: Macho State 2H SDG: 03D2024210

Method: 8021B - Volatile Organic Compounds (GC)

Matrix: Solid Prep Type: Total/NA

_				Percent Surrogate Re
		BFB1	DFBZ1	
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	
880-32194-A-1-D MS	Matrix Spike	118	117	
880-32194-A-1-E MSD	Matrix Spike Duplicate	125	120	
890-5071-1	BH01	82	71	
890-5071-2	BH01B	88	80	
LCS 880-60430/1-A	Lab Control Sample	113	114	
LCSD 880-60430/2-A	Lab Control Sample Dup	115	104	
MB 880-60430/5-A	Method Blank	71	99	
Surrogate Legend				

BFB = 4-Bromofluorobenzene (Surr) DFBZ = 1,4-Difluorobenzene (Surr)

Method: 8015B NM - Diesel Range Organics (DRO) (GC)

Prep Type: Total/NA **Matrix: Solid** 

_			
		1001	OTPH1
Lab Sample ID	Client Sample ID	(70-130)	(70-130)
880-31775-A-1-D MS	Matrix Spike	104	79
880-31775-A-1-E MSD	Matrix Spike Duplicate	105	78
890-5071-1	BH01	117	102
890-5071-2	BH01B	122	107
LCS 880-60389/2-A	Lab Control Sample	131 S1+	120
LCSD 880-60389/3-A	Lab Control Sample Dup	130	113
MB 880-60389/1-A	Method Blank	156 S1+	145 S1+

Surrogate Legend

1CO = 1-Chlorooctane

OTPH = o-Terphenyl

#### QC Sample Results

Client: Ensolum Job ID: 890-5071-1 Project/Site: Macho State 2H SDG: 03D2024210

#### Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 880-60430/5-A

**Matrix: Solid** 

Analysis Batch: 60428 MD MD Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 60430

	IVIE	) IVID						
Analyte	Resul	t Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.00200	Ū	0.00200	mg/Kg		08/17/23 09:14	08/17/23 11:26	1
Toluene	<0.00200	U	0.00200	mg/Kg		08/17/23 09:14	08/17/23 11:26	1
Ethylbenzen	e <0.00200	U	0.00200	mg/Kg		08/17/23 09:14	08/17/23 11:26	1
m-Xylene &	p-Xylene <0.00400	) U	0.00400	mg/Kg		08/17/23 09:14	08/17/23 11:26	1
o-Xylene	<0.00200	) U	0.00200	mg/Kg		08/17/23 09:14	08/17/23 11:26	1
Xylenes, Tot	al <0.00400	U	0.00400	mg/Kg		08/17/23 09:14	08/17/23 11:26	1

MB MB

Surrogate	%Recovery	Qualifier	Limits		Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	71		70 - 130	08	8/17/23 09:14	08/17/23 11:26	1
1,4-Difluorobenzene (Surr)	99		70 - 130	08	8/17/23 09:14	08/17/23 11:26	1

Lab Sample ID: LCS 880-60430/1-A

Matrix: Solid

Analysis Batch: 60428

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

Prep Batch: 60430

	Spike	LCS	LCS				%Rec	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	0.100	0.09480		mg/Kg		95	70 - 130	
Toluene	0.100	0.1113		mg/Kg		111	70 - 130	
Ethylbenzene	0.100	0.1133		mg/Kg		113	70 - 130	
m-Xylene & p-Xylene	0.200	0.2460		mg/Kg		123	70 - 130	
o-Xylene	0.100	0.1203		mg/Kg		120	70 - 130	

LCS LCS

Surrogate	%Recovery Qualif	ier Limits
4-Bromofluorobenzene (Surr)	113	70 - 130
1,4-Difluorobenzene (Surr)	114	70 - 130

Lab Sample ID: LCSD 880-60430/2-A

**Matrix: Solid** 

Analysis Batch: 60428

**Client Sample ID: Lab Control Sample Dup** 

Prep Type: Total/NA Prep Batch: 60430

LCSD LCSD RPD Spike %Rec Analyte Added Result Qualifier Unit %Rec Limits Limit Benzene 0.100 0.09120 mg/Kg 91 70 - 130 35 Toluene 0.100 0.1069 mg/Kg 107 70 - 130 35 Ethylbenzene 0.100 0.1079 mg/Kg 108 70 - 130 35 0.200 m-Xylene & p-Xylene 0.2357 mg/Kg 118 70 - 130 35 0.100 0.1157 70 - 130 o-Xylene mg/Kg 116 35

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	115		70 - 130
1.4-Difluorobenzene (Surr)	104		70 - 130

Lab Sample ID: 880-32194-A-1-D MS

**Matrix: Solid** 

Analysis Batch: 60428

Client Sample ID: Matrix Spike Prep Type: Total/NA

Prep Batch: 60430

_	Sample	Sample	Spike	MS	MS				%Rec	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Benzene	<0.00202	U	0.0994	0.09908		mg/Kg		100	70 - 130	
Toluene	<0.00202	U	0.0994	0.1071		mg/Kg		108	70 - 130	

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Page 9 of 21

#### QC Sample Results

Job ID: 890-5071-1 Client: Ensolum Project/Site: Macho State 2H SDG: 03D2024210

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: 880-32194-A-1-D MS

Lab Sample ID: 880-32194-A-1-E MSD

**Matrix: Solid** 

**Matrix: Solid** 

Analysis Batch: 60428

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 60430

Sample Sample Spike MS MS %Rec Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits Ethylbenzene <0.00202 U 0.0994 0.1051 106 70 - 130 mg/Kg m-Xylene & p-Xylene <0.00403 0.199 0.2281 mg/Kg 115 70 - 130 0.0994 <0.00202 U 0.1126 70 - 130 o-Xylene mg/Kg 113

MS MS

Surrogate	%Recovery Qualifier	Limits
4-Bromofluorobenzene (Surr)	118	70 - 130
1,4-Difluorobenzene (Surr)	117	70 - 130

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

8

5

Prep Batch: 60430

**Analysis Batch: 60428** Sample Sample Spike MSD MSD RPD Result Qualifier %Rec RPD Limit Analyte babbA Result Qualifier Limits Unit Benzene <0.00202 U 0.0998 0.08800 mg/Kg 88 70 - 130 12 35 Toluene <0.00202 U 0.0998 0.09855 mg/Kg 99 70 - 130 8 35 8 35

Ethylbenzene <0.00202 U 0.0998 0.09672 97 70 - 130 mg/Kg 0.200 m-Xylene & p-Xylene <0.00403 U 0.2114 mg/Kg 106 70 - 130 <0.00202 U 0.0998 0.1071 70 - 130 o-Xylene mg/Kg 107 MSD MSD

Surrogate	%Recovery	Qualifier	Limits
4-Bromofluorobenzene (Surr)	125		70 - 130
1,4-Difluorobenzene (Surr)	120		70 - 130

Method: 8015B NM - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 880-60389/1-A

**Matrix: Solid** 

**Analysis Batch: 60609** 

Client Sample ID: Method Blank Prep Type: Total/NA

Prep Batch: 60389

мв мв Result Qualifier RL Unit D Prepared Analyzed Dil Fac Analyte 50.0 08/16/23 14:52 <50.0 U 08/19/23 07:38 Gasoline Range Organics mg/Kg (GRO)-C6-C10 08/16/23 14:52 08/19/23 07:38 Diesel Range Organics (Over <50.0 U 50.0 mg/Kg C10-C28) OII Range Organics (Over C28-C36) <50.0 U 50.0 08/16/23 14:52 08/19/23 07:38 mg/Kg

MB MB

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Chlorooctane	156	S1+	70 - 130	08/16/23 14:52	08/19/23 07:38	1
o-Terphenyl	145	S1+	70 - 130	08/16/23 14:52	08/19/23 07:38	1

Lab Sample ID: LCS 880-60389/2-A

**Matrix: Solid** 

Released to Imaging: 1/19/2024 2:56:34 PM

**Analysis Batch: 60609** 

Client Sample ID: Lab Control Sample Prep Type: Total/NA

Prep Batch: 60389

Spike LCS LCS %Rec Added Analyte Result Qualifier Unit %Rec Limits 1000 104 70 - 130 1041 Gasoline Range Organics mg/Kg (GRO)-C6-C10 Diesel Range Organics (Over 1000 1099 mg/Kg 110 70 - 130

C10-C28)

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35

Job ID: 890-5071-1 Client: Ensolum Project/Site: Macho State 2H SDG: 03D2024210

Method: 8015B NM - Diesel Range Organics (DRO) (GC) (Continued)

LCS LCS

Lab Sample ID: LCS 880-60389/2-A Client Sample ID: Lab Control Sample

**Matrix: Solid** 

**Analysis Batch: 60609** 

Prep Type: Total/NA

Prep Batch: 60389

Surrogate %Recovery Qualifier Limits 1-Chlorooctane 131 S1+ 70 - 130 o-Terphenyl 120 70 - 130

Lab Sample ID: LCSD 880-60389/3-A Client Sample ID: Lab Control Sample Dup

**Matrix: Solid** 

Analysis Batch: 60609

Prep Type: Total/NA

Prep Batch: 60389

Spike LCSD LCSD %Rec RPD Analyte Added Result Qualifier Unit D %Rec Limits RPD Limit 1000 962.4 96 70 - 1308 20 Gasoline Range Organics mg/Kg (GRO)-C6-C10 Diesel Range Organics (Over 1000 953.3 95 mg/Kg 70 - 13020 14

C10-C28)

LCSD LCSD

Surrogate %Recovery Qualifier Limits 70 - 130 1-Chlorooctane 130 113 70 - 130 o-Terphenyl

Lab Sample ID: 880-31775-A-1-D MS Client Sample ID: Matrix Spike

**Matrix: Solid** 

**Analysis Batch: 60609** 

Prep Type: Total/NA

Prep Batch: 60389

Sample Sample MS MS Spike Added Analyte Result Qualifier Result Qualifier Unit D %Rec Limits Gasoline Range Organics <50.2 U 998 1166 mg/Kg 113 70 - 130 (GRO)-C6-C10 Diesel Range Organics (Over <50.2 U 998 968.0 mg/Kg 97 70 - 130

C10-C28)

MS MS %Recovery Qualifier Surrogate

Limits 70 - 130 1-Chlorooctane 104 o-Terphenyl 79 70 - 130

Lab Sample ID: 880-31775-A-1-E MSD Client Sample ID: Matrix Spike Duplicate **Matrix: Solid** 

Prep Type: Total/NA **Analysis Batch: 60609** Prep Batch: 60389 Sample Sample MSD MSD RPD Spike %Rec

Result Qualifier Analyte Added Result Qualifier Unit %Rec Limits RPD Limit <50.2 U 998 Gasoline Range Organics 1174 113 70 - 130 20 mg/Kg (GRO)-C6-C10 Diesel Range Organics (Over <50.2 U 998 956.5 mg/Kg 96 70 - 130 20

C10-C28)

MSD MSD

%Recovery Qualifier Surrogate Limits 1-Chlorooctane 105 70 - 130 78 70 - 130 o-Terphenyl

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#### QC Sample Results

Client: Ensolum Job ID: 890-5071-1 Project/Site: Macho State 2H

SDG: 03D2024210

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 880-60064/1-A

**Matrix: Solid** 

Analysis Batch: 60267

Client Sample ID: Method Blank

Client Sample ID: Matrix Spike Duplicate

**Prep Type: Soluble** 

**Prep Type: Soluble** 

мв мв Dil Fac Analyte Result Qualifier RL Unit D Prepared Analyzed Chloride <5.00 U 5.00 mg/Kg 08/15/23 01:18

Lab Sample ID: LCS 880-60064/2-A Client Sample ID: Lab Control Sample **Matrix: Solid Prep Type: Soluble** 

**Analysis Batch: 60267** 

Spike LCS LCS %Rec Added Analyte Result Qualifier Unit D %Rec Limits Chloride 250 269.8 mg/Kg 108 90 - 110

Lab Sample ID: LCSD 880-60064/3-A Client Sample ID: Lab Control Sample Dup **Matrix: Solid Prep Type: Soluble** 

Analysis Batch: 60267

LCSD LCSD %Rec RPD Spike Analyte Added Result Qualifier Unit %Rec Limits RPD Limit Chloride 250 270.8 mg/Kg 108 90 - 110

Lab Sample ID: 880-31978-A-1-B MS Client Sample ID: Matrix Spike **Matrix: Solid Prep Type: Soluble** 

**Analysis Batch: 60267** 

Spike MS MS Sample Sample %Rec Analyte Result Qualifier Added Result Qualifier %Rec Unit Limits 349.2 F1 Chloride 190 F1 252 63 90 - 110 mg/Kg

Lab Sample ID: 880-31978-A-1-C MSD

**Matrix: Solid** 

Analysis Batch: 60267

Sample Sample Spike MSD MSD %Rec RPD Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits RPD Limit Chloride 190 F1 250 347.0 F1 mg/Kg 63 90 - 110 20

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# **QC Association Summary**

Client: Ensolum Job ID: 890-5071-1
Project/Site: Macho State 2H SDG: 03D2024210

**GC VOA** 

Analysis Batch: 60428

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5071-1	BH01	Total/NA	Solid	8021B	60430
890-5071-2	BH01B	Total/NA	Solid	8021B	60430
MB 880-60430/5-A	Method Blank	Total/NA	Solid	8021B	60430
LCS 880-60430/1-A	Lab Control Sample	Total/NA	Solid	8021B	60430
LCSD 880-60430/2-A	Lab Control Sample Dup	Total/NA	Solid	8021B	60430
880-32194-A-1-D MS	Matrix Spike	Total/NA	Solid	8021B	60430
880-32194-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8021B	60430

Prep Batch: 60430

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5071-1	BH01	Total/NA	Solid	5035	
890-5071-2	BH01B	Total/NA	Solid	5035	
MB 880-60430/5-A	Method Blank	Total/NA	Solid	5035	
LCS 880-60430/1-A	Lab Control Sample	Total/NA	Solid	5035	
LCSD 880-60430/2-A	Lab Control Sample Dup	Total/NA	Solid	5035	
880-32194-A-1-D MS	Matrix Spike	Total/NA	Solid	5035	
880-32194-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	5035	

Analysis Batch: 60535

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5071-1	BH01	Total/NA	Solid	Total BTEX	
890-5071-2	BH01B	Total/NA	Solid	Total BTEX	

GC Semi VOA

Prep Batch: 60389

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5071-1	BH01	Total/NA	Solid	8015NM Prep	
890-5071-2	BH01B	Total/NA	Solid	8015NM Prep	
MB 880-60389/1-A	Method Blank	Total/NA	Solid	8015NM Prep	
LCS 880-60389/2-A	Lab Control Sample	Total/NA	Solid	8015NM Prep	
LCSD 880-60389/3-A	Lab Control Sample Dup	Total/NA	Solid	8015NM Prep	
880-31775-A-1-D MS	Matrix Spike	Total/NA	Solid	8015NM Prep	
880-31775-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8015NM Prep	

Analysis Batch: 60609

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5071-1	BH01	Total/NA	Solid	8015B NM	60389
890-5071-2	BH01B	Total/NA	Solid	8015B NM	60389
MB 880-60389/1-A	Method Blank	Total/NA	Solid	8015B NM	60389
LCS 880-60389/2-A	Lab Control Sample	Total/NA	Solid	8015B NM	60389
LCSD 880-60389/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B NM	60389
880-31775-A-1-D MS	Matrix Spike	Total/NA	Solid	8015B NM	60389
880-31775-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B NM	60389

Analysis Batch: 60720

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5071-1	BH01	Total/NA	Solid	8015 NM	
890-5071-2	BH01B	Total/NA	Solid	8015 NM	

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# **QC Association Summary**

Client: Ensolum
Project/Site: Macho State 2H
SDG: 03D2024210

HPLC/IC

#### Leach Batch: 60064

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5071-1	890-5071-1 BH01		Solid	DI Leach	
890-5071-2	BH01B	Soluble	Solid	DI Leach	
MB 880-60064/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 880-60064/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 880-60064/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
880-31978-A-1-B MS	Matrix Spike	Soluble	Solid	DI Leach	
880-31978-A-1-C MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

#### Analysis Batch: 60267

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
890-5071-1	BH01	Soluble	Solid	300.0	60064
890-5071-2	BH01B	Soluble	Solid	300.0	60064
MB 880-60064/1-A	Method Blank	Soluble	Solid	300.0	60064
LCS 880-60064/2-A	Lab Control Sample	Soluble	Solid	300.0	60064
LCSD 880-60064/3-A	Lab Control Sample Dup	Soluble	Solid	300.0	60064
880-31978-A-1-B MS	Matrix Spike	Soluble	Solid	300.0	60064
880-31978-A-1-C MSD	Matrix Spike Duplicate	Soluble	Solid	300.0	60064

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Job ID: 890-5071-1

Client: Ensolum Project/Site: Macho State 2H SDG: 03D2024210

**Client Sample ID: BH01** Lab Sample ID: 890-5071-1

Date Collected: 08/09/23 11:40 Matrix: Solid Date Received: 08/09/23 14:40

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.04 g	5 mL	60430	08/17/23 09:14	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	60428	08/17/23 16:57	SM	EET MID
Total/NA	Analysis	Total BTEX		1			60535	08/18/23 08:44	SM	EET MID
Total/NA	Analysis	8015 NM		1			60720	08/21/23 11:32	SM	EET MID
Total/NA	Prep	8015NM Prep			9.98 g	10 mL	60389	08/16/23 14:53	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	60609	08/19/23 18:13	SM	EET MID
Soluble	Leach	DI Leach			5.02 g	50 mL	60064	08/13/23 12:41	SMC	EET MID
Soluble	Analysis	300.0		5	50 mL	50 mL	60267	08/15/23 05:48	SMC	EET MID

**Client Sample ID: BH01B** Lab Sample ID: 890-5071-2 Date Collected: 08/09/23 12:00 Matrix: Solid

Date Received: 08/09/23 14:40

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	5035			5.00 g	5 mL	60430	08/17/23 09:14	EL	EET MID
Total/NA	Analysis	8021B		1	5 mL	5 mL	60428	08/17/23 17:17	SM	EET MID
Total/NA	Analysis	Total BTEX		1			60535	08/18/23 08:44	SM	EET MID
Total/NA	Analysis	8015 NM		1			60720	08/21/23 11:32	SM	EET MID
Total/NA	Prep	8015NM Prep			9.92 g	10 mL	60389	08/16/23 14:53	TKC	EET MID
Total/NA	Analysis	8015B NM		1	1 uL	1 uL	60609	08/19/23 18:34	SM	EET MID
Soluble	Leach	DI Leach			5.01 g	50 mL	60064	08/13/23 12:41	SMC	EET MID
Soluble	Analysis	300.0		5	50 mL	50 mL	60267	08/15/23 05:58	SMC	EET MID

**Laboratory References:** 

EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

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# **Accreditation/Certification Summary**

Client: Ensolum
Project/Site: Macho State 2H
SDG: 03D2024210

Laboratory: Eurofins Midland

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Pr	ogram	Identification Number	<b>Expiration Date</b>
Texas	NI	ELAP	T104704400-23-26	06-30-24
The following analytes	are included in this report, by	it the laboratory is not certifi	ed by the governing authority. This list ma	ov include analytes fo
the agency does not of	. ,	at the laboratory is not certifi	ed by the governing authority. This list his	ay iliciude allaiytes io
0 ,	. ,	Matrix	Analyte	ay include analytes to
the agency does not of	fer certification.	•	, , ,	ay include analytes to

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## **Method Summary**

Client: Ensolum Job ID: 890-5071-1 Project/Site: Macho State 2H SDG: 03D2024210

Method	Method Description	Protocol	Laboratory
8021B	Volatile Organic Compounds (GC)	SW846	EET MID
Total BTEX	Total BTEX Calculation	TAL SOP	EET MID
8015 NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
8015B NM	Diesel Range Organics (DRO) (GC)	SW846	EET MID
300.0	Anions, Ion Chromatography	EPA	EET MID
5035	Closed System Purge and Trap	SW846	EET MID
8015NM Prep	Microextraction	SW846	EET MID
DI Leach	Deionized Water Leaching Procedure	ASTM	EET MID

#### **Protocol References:**

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

#### Laboratory References:

EET MID = Eurofins Midland, 1211 W. Florida Ave, Midland, TX 79701, TEL (432)704-5440

**Eurofins Carlsbad** 

# **Sample Summary**

Client: Ensolum

Project/Site: Macho State 2H

Job ID: 890-5071-1

SDG: 03D2024210

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Depth
890-5071-1	BH01	Solid	08/09/23 11:40	08/09/23 14:40	COMP
890-5071-2	BH01B	Solid	08/09/23 12:00	08/09/23 14:40	COMP

Relinquished by: (Signature)

Received by: (Signature)

Date/Time

Relinquished by: (Signature)

Received by: (Signature)

Date/Time

Revised Date: 08/25/2020 Rev 2020.2

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eurofins

Environment Testing

Kenco

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# Chain of Custody

Midland, TX (432) 704-5440, San Antonio, TX (210) 509-3334 EL Paso, TX (915) 585-3443, Lubbock, TX (806) 794-1296 Hobbs, NM (575) 392-7550, Carlsbad, NM (575) 988-3199 Houston, TX (281) 240-4200, Dallas, TX (214) 902-0300

Work Order No:

www.xenco.com

Page

9

Project Manager:	Hadlie Green	Bill to:	Bill to: (if different)	_	Hadlie Green	Green			Work Order Comments	
	Ensolum, LLC	Comp	Company Name:	-	Ensolum, LLC	m, LL		Program: UST/PST	☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐	
	601 N Marienfeld St Suite 400	Address	SS	0	01 N	Marie	601 N Marienfeld St Suite 400			
e ZIP:	Midland, TX 79701	City, S	City, State ZIP:	7	Midland, TX 79701	d, TX	79701	Reporting: Level II DL	Reporting: Level II   Level III   PST/UST   TRRP   Level IV	
	432-557-8895	Email: hgreen@ensolum.com	n@ensolu	m.cor	ız			Deliverables: EDD	ADaPT Other:	
Name:	Macho State 2H	Turn Around	ā					ANALYSIS REQUEST	Preservative Codes	
Project Number:	03D2024210	☑ Routine ☐ Rush		Pres. Code					None: NO DI Water: H <sub>2</sub> O	
Project Location:	32.2480,-103.5507	Due Date:							⊻.	
Sampler's Name:	Peter Van Patten	TAT starts the day received by	ceived by							
PO#:		the lab, if received by 4:30pm	4:30pm	rs	_				H <sub>2</sub> SO <sub>4</sub> : H <sub>2</sub> NaCH: Na	
SAMPLE RECEIPT	Temp Blank: (*Yes)No	Wet-loe: Yes	No	nete	(0.0				H <sub>3</sub> PO <sub>4</sub> : HP	
Samples Received Intact:	tact: Yes No Thermometer ID:		Madi	arar	300					
Cooler Custody Seals:	:: Yes No/ (N/A) Correction Factor:		U	Pa	PA:					21
Sample Custody Seals:	s: Yes No N/A Temperature Reading:	Reading:	4.4		S (E		1)	890-5071 Chain of Custody		of
Total Containers:	Corrected Temperature:	nperature:	j j		IDE	015)	802		NaCH+Ascorbic Acid: SAPC	19
Sample Identification	Ufication Matrix Date	Time Depth	Grab/ Comp	# of Cont	CHLOR	TPH (8	втех (		Sample Comments	Page
BH01	Soil 8/9/2023	1140 0.5'	Comp	-	×	×	×			
BH01B	B Soil 8/9/2023	1200 2.0'	Comp	-	×	×	×			
						1	\			
			-	1	1					
		A	H							
		1 / 1/20	G							И
	The state of the s	10								<b>P</b> ]
										:34
				_						:56
				L						4 2
Total 200.7 / 6010	200.8 / 6020:	8RCRA 13PPM T	Texas 11 Al Sb As Ba Be	A St	As	Ba E	œ	Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se	Ag SiO <sub>2</sub> Na Sr TI Sn U V Zn	202
Circle Method(s) an	Metal(s) to be analyzed		010: 8RC		Sb As	s Ba	Be Cd Cr	Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Ti U	Hg: 1631 / 245.1 / 7470 / 7471	19/2
Notice: Signature of this d	ocument and relinquishment of samples const	itutes a valid purchase	order from cli	ent con	pany to	Eurof	ns Xenco, its af	Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Eurofins Xenco, its affiliates and subcontractors. It assigns standard terms and conditions the control of t	nd conditions	: 1/
of service. Eurofins Xence of Eurofins Xenco. A mini	o will be liable only for the cost of samples and mum charge of \$85.00 will be applied to each p	shall not assume any re roject and a charge of \$	6 for each sai	nple su	bmitted	to Eu	ofins Xenco, bu	of service. Eurofins Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client is such to see an other losses of expenses incurred by the client is such to see a control of the cost of samples and shall not analyzed. These terms will be enforced unless previously negotiated.	ously negotiated.	ing
										-

# **Login Sample Receipt Checklist**

 Client: Ensolum
 Job Number: 890-5071-1

 SDG Number: 03D2024210

Login Number: 5071 List Source: Eurofins Carlsbad

List Number: 1 Creator: Clifton, Cloe

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	N/A	Refer to Job Narrative for details.
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	

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### **Login Sample Receipt Checklist**

Client: Ensolum Job Number: 890-5071-1 SDG Number: 03D2024210

Login Number: 5071 **List Source: Eurofins Midland** List Number: 2 List Creation: 08/11/23 10:51 AM

Creator: Rodriguez, Leticia

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is	N/A	

<6mm (1/4").



**APPENDIX E** 

Final C-141

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

State of New Mexico Energy Minerals and Natural Resources Department

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

Form C-141 Revised August 24, 2018 Submit to appropriate OCD District office

Incident ID	NAPP2319153053
District RP	
Facility ID	fAPP2203546963
Application ID	

# **Release Notification**

#### **Responsible Party**

Responsible Party	COG Operating, LLC	OGRID	229137
Contact Name	Jacob Laird	Contact Telephone	(575) 703-5482
Contact email	Jacob.Laird@ConocoPhillips.com	Incident # (assigned by OCD)	NAPP2319153053
Contact mailing address	600 West Illinois Avenue, Midlar	nd, Texas 79701	

Location of Release Source						
Latitude	32.248	80		Longitude -103.5	5507	
			(NAD 83 in deci	imal degrees to 5 decimal places)		
Site Name		Macho Stat	e 002H	Site Type Tanl	k Battery	
Date Release	Discovered	July 5, 2023	3	API# (if applicable) 30-0	25-39885	
TT ': T ::		T 1:	n l	C .		
Unit Letter	Section	Township	Range	County		
E	02	24S	33E	Lea		
Surface Owner: State Federal Tribal Private (Name:						
Nature and Volume of Release						
	Materia	l(s) Released (Select al		calculations or specific justification for th	e volumes provided below)	
Crude Oi	1	Volume Release	d (bbls)	Volume Reco	overed (bbls)	

#### Produced Water Volume Released (bbls) Volume Recovered (bbls) 10.5845 0 Is the concentration of dissolved chloride in the ■ Yes □ No produced water >10,000 mg/l? Condensate Volume Recovered (bbls) Volume Released (bbls) Natural Gas Volume Released (Mcf) Volume Recovered (Mcf) Other (describe) Volume/Weight Released (provide units) Volume/Weight Recovered (provide units)

Cause of Release

The release was caused by a cracked BPV.

The release occurred within a gravel lined facility. Evaluation will be made of the spill area for any possible impact from the release.

Page 87 of 93

Incident ID	NAPP2319153053
District RP	
Facility ID	fAPP2203546963
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC?  ☐ Yes ■ No		responsible party consider this a major release?  To whom? When and by what means (phone, email, etc)?			
II 1 E5, was ininectate in	once given to the OCD. By whom.	To whom: When and by what means (phone, eman, etc).			
	Initi	al Response			
The responsible p	party must undertake the following actions im	nediately unless they could create a safety hazard that would result in injury			
■ The impacted area ha ■ Released materials ha	ease has been stopped.  Is been secured to protect human heal are been contained via the use of bern ecoverable materials have been remo	ns or dikes, absorbent pads, or other containment devices.			
	d above have <u>not</u> been undertaken, ex				
has begun, please attach	a narrative of actions to date. If ren	ence remediation immediately after discovery of a release. If remediation redial efforts have been successfully completed or if the release occurred AC), please attach all information needed for closure evaluation.			
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.					
Printed Name Brittar	ny N. Esparza	Title: Environmental Technician			
Signature:	tant Esparage	Date: 7/10/2023			
email: Brittany.Espar	za@ConocoPhillips.com	Date: 7/10/2023 Telephone: (432) 221-0398			
OCD Only					
Received by: Shelly Wel	lls	Date: 7/10/2023			

					Spill Calcu	lation - On-Pac	Surface Pool Spill
Received by OCD: 10/3/202 Convert Irregular shape into a series of rectangles	2 11:11:0 Length (ft.)	Width (ft.)	Average Depth (in.)	Estimated <u>Pool</u> Area (sq. ft.)	Estimated volume of each pool area (bbl.)	Penetration allowance (ft.)	Total Estimated Volume of Spill (bbl.)
Rectangle A	34	22	1.0	748.00	11.10	0.00	11.14
Rectangle B				0.00	0.00	0.00	0.00
Rectangle C				0.00	0.00	0.00	0.00
Rectangle D				0.00	0.00	0.00	0.00
Rectangle E				0.00	0.00	0.00	0.00
Rectangle F				0.00	0.00	0.00	0.00
Rectangle G				0.00	0.00	0.00	0.00
Rectangle H				0.00	0.00	0.00	0.00
Rectangle I				0.00	0.00	0.00	0.00
Rectangle J		Į.		0.00	0.00	0.00	0.00
Released to Imaging: 1/19/2	2024 2:56	:34 PM		Total	Volumo Pologgo So	il not imported	10 5845

Total Volume Release, Soil not impacted:

10.5845

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

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** 

CONDITIONS

Action 238158

#### **CONDITIONS**

Operator:	OGRID:
COG OPERATING LLC	229137
600 W Illinois Ave	Action Number:
Midland, TX 79701	238158
	Action Type:
	[C-141] Release Corrective Action (C-141)

#### CONDITIONS

Created By		Condition Date
scwells	None	9/30/2023

	Page 90 of 9.	3
Incident ID	NAPP2319153053	
District RP		
Facility ID	fAPP2203546963	
Application ID		

# Site Assessment/Characterization

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?	<u>51-100</u> (ft bgs)			
Did this release impact groundwater or surface water?	☐ Yes ⊠ No			
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ⊠ No			
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ⊠ No			
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ⊠ No			
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ⊠ No			
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ⊠ No			
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ⊠ No			
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ⊠ No			
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ⊠ No			
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ⊠ No			
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ⊠ No			
Did the release impact areas <b>not</b> on an exploration, development, production, or storage site?	☐ Yes ⊠ No			
Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and ver contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.	tical extents of soil			
Characterization Report Checklist: Each of the following items must be included in the report.				
<ul> <li>Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.</li> <li>Field data</li> <li>Data table of soil contaminant concentration data</li> <li>Depth to water determination</li> <li>Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release</li> <li>Boring or excavation logs</li> <li>Photographs including date and GIS information</li> <li>Topographic/Aerial maps</li> </ul>				

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

☐ Laboratory data including chain of custody

Received by OCD: 10/3/2023 11:11:04 AM Form C-141 State of New Mexico Page 4 Oil Conservation Division

I	<i>age</i>	91	of	93
				_

Incident ID	NAPP2319153053
District RP	
Facility ID	fAPP2203546963
Application ID	

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.				
Printed Name:Jacob Laird	Title: _Environmental Engineer			
Signature: Jacob Laird	Date:10/2/2023			
email:Jacob.Laird@conocophillips.com	Telephone:575-703-5482			
OCD Only				
Received by: Shelly Wells	Date: 10/3/2023			

Page 92 of 93

Incident ID	NAPP2319153053
District RP	
Facility ID	fAPP2203546963
Application ID	

# Closure

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 (electronic submittals in .pdf format are preferred) 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.

Closure Report Attachment Checklist: Each of the following	ng items must be included in the closure report.
A scaled site and sampling diagram as described in 19.15.2	29.11 NMAC
Photographs of the remediated site prior to backfill or phomust be notified 2 days prior to liner inspection)	otos of the liner integrity if applicable (Note: appropriate OCD District office
☐ Laboratory analyses of final sampling (Note: appropriate C	ODC District office must be notified 2 days prior to final sampling)
Description of remediation activities	
may endanger public health or the environment. The acceptance should their operations have failed to adequately investigate and human health or the environment. In addition, OCD acceptance compliance with any other federal, state, or local laws and/or regions.	ertain release notifications and perform corrective actions for releases which the of a C-141 report by the OCD does not relieve the operator of liability of remediate contamination that pose a threat to groundwater, surface water, and a C-141 report does not relieve the operator of responsibility for gulations. The responsible party acknowledges they must substantially the conditions that existed prior to the release or their final land use in the OCD when reclamation and re-vegetation are complete.  Title: _Environmental Engineer  Date:10/2/2023  Telephone:575-703-5482
OCD Only	
Received by: Shelly Wells	Date: <u>10/3/2023</u>
	arty of liability should their operations have failed to adequately investigate and ace water, human health, or the environment nor does not relieve the responsible and/or regulations.
Closure Approved by: Scott Rodgers	Date: 01/19/2024
Printed Name: Scott Rodgers	Title: _ Environmental Specialist Adv.

District I
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Phone: (575) 393-6161 Fax: (575) 393-0720

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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** 

CONDITIONS

Action 271831

#### **CONDITIONS**

Operator:	OGRID:
COG OPERATING LLC	229137
600 W Illinois Ave	Action Number:
Midland, TX 79701	271831
	Action Type:
	[C-141] Release Corrective Action (C-141)

#### CONDITIONS

Created By	Condition	Condition Date
scott.rodgers	This Remediation Closure Report is approved. Areas reasonably needed for production or subsequent drilling operations will need to be reclaimed and revegetated as soon as they are no longer reasonably needed. A report for reclamation and revegetation will need to be submitted and approved prior to this incident receiving the final status of "Restoration Complete".	1/19/2024