VIA ELECTRONIC MAIL

October 13, 2021

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

Subject: **2021 Third Quarter - Solar SVE System Update**
Trunk L Tank Battery
Harvest Four Corners, LLC
Incident Number NVF1900731813
Remediation Permit Number 3RP-13665
Rio Arriba County, New Mexico

To Whom It May Concern:

WSP USA Inc. (WSP), on behalf of Harvest Four Corners, LLC (Harvest), presents the following *2021 Third Quarter - Solar SVE System Update* report summarizing the solar soil vapor extraction (SVE) system performance at the Trunk L Tank Battery (Site), located in Unit A of Section 28, Township 28 North, Range 05 West, in Rio Arriba County, New Mexico (Figure 1).

BACKGROUND

The solar SVE system was installed on September 18, 2019, to remediate subsurface soil impacts following a release on December 14, 2018. Excessive liquids were released onto the Site during a pigging event. Additionally, the volume of fluid in the slug catcher was elevated due to a stuck float valve, causing a release of approximately 22 barrels (bbls) into the lined secondary containment. Harvest reported the release to the New Mexico Oil Conservation Division (NMOCD) on a Release Notification and Corrective Action Form C-141 on December 28, 2018, and the event was assigned Incident Number NVF1900731813. A solar SVE system was installed to remediate impacts resulting from the release. Reports summarizing remediation system operation for the previous quarters of system operation have been submitted to the NMOCD.

SOLAR SVE SYSTEM OPERATION AND MONITORING

The solar SVE system consists of 3 deep SVE wells, 3 shallow SVE wells, and a 2.75 horsepower, three-phase blower capable of producing 105 cubic feet per minute (cfm) at 50 inches of water column (IWC) vacuum, with a maximum vacuum capability of 84 IWC. Each SVE well was installed with its own adjustable valve and vacuum gauge on a manifold to control flow and vacuum. WSP utilized a solar-powered SVE system due to the remote location and the lack of electrical grid power at the Site. The blower is powered by 10 solar panels with a nominal maximum power output of 3,050 watts. The blower is connected to the solar panels via a motor controller that automatically starts the system as soon as sunlight is available and throttles the blower up as sun power increases throughout the day to maximize efficiency. Seasonally, there are approximately 10 hours in the winter and 12 hours in the summer of available solar power in Farmington, New Mexico. The complete solar SVE system is constructed as one unit designed for utilization at off-grid locations and operates autonomously. The layout of the solar SVE system is depicted on Figure 2.

Between startup of the solar SVE system on September 18, 2019, and the most recent site visit on September 29, 2021, there have been 742 days of operation, with an estimated 9,043 total hours of nominal daylight available for solar SVE system operation. Since installation, the system had an actual runtime of 8,994 hours, for an overall

WSP USA
848 EAST 2ND AVENUE
DURANGO CO 81301

Tel.: 970-385-1096
wsp.com

runtime efficiency of 99.5 percent (%). Below is a table showing SVE system runtime in comparison with nominal available daylight hours per month, according to the National Oceanic and Atmospheric Administration's National Weather Service.

Time Period	Start up on September 18, 2019 to June 8, 2021	June 8, 2021 to June 30, 2021	July 1, 2021 to July 31, 2021	August 1, 2021 to August 31, 2020	September 1, 2021 to September 28, 2021
Days	629	23	31	31	28
Avg. Nominal Daylight Hours	12	14	14	13	12
Available Runtime Hours	7,548	322	434	403	336

Total Available Daylight Runtime Hours	**9,043**
Actual Runtime Hours	**8,994**
Cumulative % Runtime	**99.5%**
Quarterly Available Daylight Runtime Hours	**1,495**
Quarterly Runtime Hours	**1,518**
Quarterly % Runtime	**101.5%**

AIR EMISSIONS MONITORING

An initial air sample was collected on September 18, 2019, from the influent side of the blower on the solar SVE system. Subsequent air samples were collected with the most recent sample collected September 28, 2021 (Table 1). Samples were collected in 1-Liter Tedlar® bags via a high vacuum air sampler and submitted to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico, for analyses of benzene, toluene, ethylbenzene, and total xylenes (BTEX) using United States Environmental Protection Agency (EPA) Method 8021 and total volatile petroleum hydrocarbons (TVPH) using EPA Method 8015.

Estimated air emissions were calculated using air sample data collected to-date (Table 2). The impacted mass source removal via the solar SVE system to-date is an estimated 54,772 pounds (lbs) of TVPH. An estimated 8,834 gallons (210 bbls) of air equivalent condensate has been recovered to-date. An increase in TVPH analytical results was observed due to system optimization in May 2020, through focusing system operation on the four SVE wells with the highest photoionization detector measurements.

PLAN FOR NEXT QUARTER OF OPERATION

During the upcoming fourth quarter 2021 operations, visits to the Site will continue monthly by WSP personnel to ensure 90% runtime efficiency continues and that any maintenance issues are addressed. An air sample will be collected in the fourth quarter and analyzed for full volatile organic compounds (VOCs) by Method 8260, fixed gas analysis of oxygen and carbon dioxide, and TVPH by EPA Method 8015. An updated quarterly report with sample results, runtime, and mass source removal will be submitted under separate cover.

Quarterly air sampling and reporting will continue until a decline in VOCs is observed and indicates that hydrocarbon impacts have been reduced. At that time, WSP will conduct additional soil sampling to investigate potential residual impacts and request closure if concentrations of BTEX and TPH are below the applicable standards as detailed in the approved Remediation Work Plan dated May 28, 2019.

If the final delineation samples indicate hydrocarbon impact has been reduced to below Table 1 Closure Criteria, WSP will present the confirmation laboratory analysis data in a report and request closure of the release. Should the results indicate that analytes in the soil exceed Table 1 Closure Criteria, WSP will continue to operate the system and make operational adjustments based on results of the investigation.

WSP appreciates the opportunity to provide this report to the NMOCD. If you have any questions or comments regarding this update, do not hesitate to contact Eric Carroll at (970) 385-1096 or via email at eric.carroll@wsp.com or Jennifer Deal at (505) 324-5128 or at jdeal@harvestmidstream.com.

Kind regards,

Eric Carroll
Associate Consultant, Geologist

Robert Rebel, P.E.
Environmental Engineer, Technical Principal

cc: Jennifer Deal, Harvest Four Corners

Encl.

Figure 1 - Site Location Map
Figure 2 – SVE System Layout
Table 1 – Air Sample Analytical Results
Table 2 – Soil Vapor System Recovery & Emissions Summary
Enclosure A – Laboratory Analytical Report

FIGURES

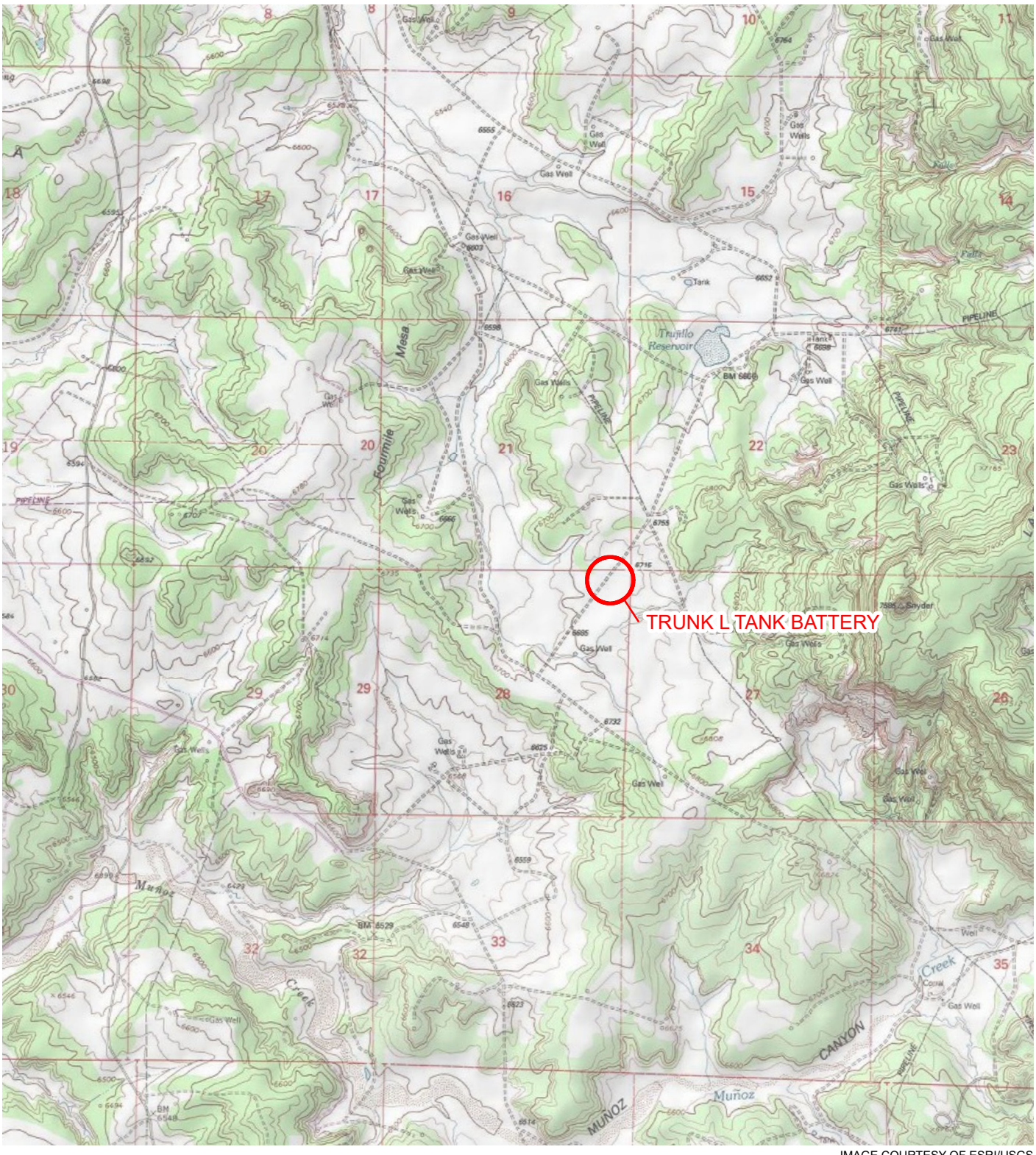

IMAGE COURTESY OF ESRI/USGS

LEGEND

SITE LOCATION

0 3,000 6,000

Feet

N

NEW MEXICO

FIGURE 1
SITE LOCATION MAP
TRUNK L TANK BATTERY
NENE SEC 28 T28N R5W
RIO ARRIBA COUNTY, NEW MEXICO
HARVEST FOUR CORNERS, LLC

P:\Harvest Four Corners\GIS\MXD\090319022_TRUNK L\090319022_FIG01_SL_2019.mxd

IMAGE COURTESY OF GOOGLE EARTH 2016

LEGEND

- SHALLOW SVE WELL
- DEEP SVE WELL
- ABOVEGROUND REMEDIATION SYSTEM LINE
- SOLAR SVE SKID
- 27.5 FOOT SHALLOW SVE RADIUS OF INFLUENCE
- 27.5 FOOT DEEP SVE RADIUS OF INFLUENCE

0 60 120
Feet

N

FIGURE 2
SVE SYSTEM LAYOUT
TRUNK L TANK BATTERY
NENE SEC 28 T28N R5W
RIO ARRIBA COUNTY, NEW MEXICO
HARVEST FOUR CORNERS, LLC

wsp

P:\Harvest Four Corners\GIS\MXD\090319022_TRUNK L\090319022_FIG02_SVE_SYSTEM LAYOUT_2020.mxd

TABLES

TABLE 1

AIR SAMPLE ANALYTICAL RESULTS
TRUNK L TANK BATTERY
RIO ARRIBA COUNTY, NEW MEXICO

Sample ID	Sample Date	Vapor PID (ppm)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	TVPH (µg/L)
Influent 9/18	9/18/2019	946	1,000	1,500	50	550	NA
Influent 10/18	10/18/2019	931	250	410	6.5	74	NA
Influent 11/14	11/14/2019	578	1.8	4.3	0.19	1.7	250
Influent 3/3/20	3/3/2020	868	3.9	22	1.3	13	760
Influent 5/1/20	5/1/2020	913	610	1,500	58	570	95,000
Influent 6/10/20	6/10/2020	1,527	640	1,600	56	530	95,000
Influent 9/15	9/15/2020	1,077	180	840	24	230	35,000
Influent 12/2/20	12/2/2020	1,320	380	1,100	23	270	86,000
Influent 3/1/21	3/1/2021	1,469	440	2,100	110	1,100	120,000
Influent 6/8/21	6/8/2021	1,380	300	1,200	42	380	89,000
Influent 9/28/21	9/28/2021	916	150	230	*<10*	49	26,000

NOTES:
µg/L - micrograms per liter
NA - not analyzed
PID - photoionization detector
PPM - parts per million
TVPH- total volume petroleum hydrocarbons
Italics denote that the laboratory method detection limit was used for calculations for a non-detected result

TABLE 2

SOIL VAPOR EXTRACTION SYSTEM RECOVERY & EMISSIONS SUMMARY
TRUNK L TANK BATTERY
RIO ARRIBA COUNTY, NEW MEXICO

Sample Information and Lab Analysis								
Date	**Total Flow (cf)**	**Delta Flow (cf)**	**PID (ppm)**	**Benzene (µg/L)**	**Toluene (µg/L)**	**Ethyl-benzene (µg/L)**	**Total Xylenes (µg/L)**	**TVPH (µg/L)**
9/18/2019*	3,033	3,033	1,435	1,000	1,500	50	550	3,013
10/18/2019*	723,303	720,270	931	250	410	6.5	74	744
11/14/2019	1,334,343	611,040	578	1.8	4.3	0.19	1.7	250
3/3/2020	2,898,866	1,564,523	868	3.9	22	1.3	13	760
4/1/2020**	3,795,613	896,747	838	3.7	21	1.2	12	733
5/1/2020	3,882,637	87,024	913	610	1,500	58	570	95,000
6/10/2020	4,869,885	987,248	1,527	640	1,600	56	530	95,000
9/15/2020	7,089,263	2,219,378	1,077	180	840	24	230	35,000
12/2/2020	8,447,393	1,358,130	1,320	380	1,100	23	270	86,000
3/1/2021	10,571,393	2,124,000	1,469	440	2,100	110	1,100	120,000
6/8/2021	13,226,681	2,655,288	1,380	300	1,200	42	380	89,000
9/28/2021	16,596,641	3,369,960	916	150	230	*10*	49	26,000
Average			1,104	330	877	32	315	45,958

Vapor Extraction Calculations						
Date	**Flow Rate (cfm)**	**Benzene (lb/hr)**	**Toluene (lb/hr)**	**Ethyl-benzene (lb/hr)**	**Total Xylenes (lb/hr)**	**TVPH (lb/hr)**
9/18/2019	33.70	0.1262	0.1892	0.0063	0.0694	0.380
10/18/2019	37.75	0.0353	0.0579	0.0009	0.0105	0.105
11/14/2019	38.00	0.0003	0.0006	0.0000	0.0002	0.036
3/3/2020	21.26	0.0003	0.0018	0.0001	0.0010	0.060
4/1/2020	21.26	0.0003	0.0017	0.0001	0.0010	0.058
5/1/2020	39.20	0.0895	0.2201	0.0085	0.0836	13.940
6/10/2020	29.33	0.0703	0.1757	0.0061	0.0582	10.430
9/15/2020	27.77	0.0187	0.0873	0.0025	0.0239	3.638
12/2/2020	26.63	0.0379	0.1097	0.0023	0.0269	8.573
3/1/2021	40.00	0.0659	0.3144	0.0165	0.1647	17.968
6/8/2021	34.20	0.0384	0.1536	0.0054	0.0486	11.394
9/28/2021	37.00	0.0208	0.0319	0.0014	0.0068	3.601
Average	32.18	0.04	0.11	0.004	0.04	5.85

TABLE 2

SOIL VAPOR EXTRACTION SYSTEM RECOVERY & EMISSIONS SUMMARY
TRUNK L TANK BATTERY
RIO ARRIBA COUNTY, NEW MEXICO

Pounds Extracted Over Total Operating Time								
Date	**Total Operational Hours**	**Delta Hours**	**Benzene (lbs)**	**Toluene (lbs)**	**Ethyl-benzene (lbs)**	**Total Xylenes (lbs)**	**Total BTEX (lbs)**	**TVPH (lbs)**
9/18/2019	1.5	1.5	0.2	0.3	0.0	0.1	0.6	0.6
10/18/2019	319.5	318.0	11.2	18.4	0.3	3.3	33.3	33.4
11/14/2019	587.5	268.0	0.1	0.2	0.0	0.1	0.3	9.5
3/3/2020	1,814	1,226.5	0.4	2.1	0.1	1.3	3.9	74.2
4/1/2020	2,517	703.0	0.2	1.2	0.1	0.7	2.1	41.0
5/1/2020	2,554	37.0	3.3	8.1	0.3	3.1	14.9	515.8
6/10/2020	3,115	561.0	39.4	98.6	3.4	32.6	174.1	5,851
9/15/2020	4,447	1,332.0	24.9	116.3	3.3	31.8	176.4	4,846
12/2/2020	5,297	850.0	32.2	93.2	1.9	22.9	150.2	7,287
3/1/2021	6,182	885.0	58.3	278.3	14.6	145.8	496.9	15,902
6/8/2021	7,476	1,294.0	49.7	198.8	7.0	63.0	318.4	14,744
9/28/2021	8,994	1,518.0	31.5	48.4	2.1	10.3	92.3	5,467
Total Extracted to Date			251.5	863.8	33.2	314.9	1,463.4	54,772

NOTES:

* - TVPH data extrapolated from PID values
** - Analytical data extrapolated from PID values
BTEX - benzene, toluene, ethylbenzene, total xylenes
cf - cubic feet
cfm - cubic feet per minute
lbs - pounds
lb/hr - pounds per hour
µg/L - microgram per liter
PID - photoionization detector
ppm - parts per million
TVPH - total volatile petroleum hydrocarbons

Italics denote that the laboratory method detection limit was used for calculations for a non-detected result

ENCLOSURE A – LABORATORY ANALYTICAL REPORT

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

October 13, 2021

Jennifer Deal

Harvest
1755 Arroyo Dr.
Bloomfield, NM 87413
TEL: (505) 632-4475
FAX

RE: Trunk L OrderNo.: 2109H35

Dear Jennifer Deal:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/30/2021 for the analyses presented in the following report.

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

Please don't hesitate to contact HEAL for any additional information or clarifications.

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2109H35**
Date Reported: **10/13/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Harvest
Client Sample ID: Influent 9-28-21
Project: Trunk L
Collection Date: 9/28/2021 4:50:00 PM
Lab ID: 2109H35-001 **Matrix:** AIR
Received Date: 9/30/2021 7:10:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **mb**	
Gasoline Range Organics (GRO)	26000	500		µg/L	100	10/6/2021 10:55:00 AM	R81827
Surr: BFB	125	37.3-213		%Rec	100	10/6/2021 10:55:00 AM	R81827
EPA METHOD 8021B: VOLATILES						Analyst: **mb**	
Benzene	150	10		µg/L	100	10/6/2021 10:55:00 AM	R81827
Toluene	230	10		µg/L	100	10/6/2021 10:55:00 AM	R81827
Ethylbenzene	ND	10		µg/L	100	10/6/2021 10:55:00 AM	R81827
Xylenes, Total	49	20		µg/L	100	10/6/2021 10:55:00 AM	R81827
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	100	10/6/2021 10:55:00 AM	R81827

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

Sample Log-In Check List

Client Name: Harvest | Work Order Number: 2109H35 | RcptNo: 1

Received By: Cheyenne Cason 9/30/2021 7:10:00 AM

Completed By: Sean Livingston 9/30/2021 10:07:00 AM

Reviewed By: JR 9/30/21

Chain of Custody

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

Log In

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

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? _____
Checked by: KPG 9/30/21

Special Handling (if applicable)

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

Person Notified: _____ Date: _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	NA	Good				

Chain-of-Custody Record

Client: Harvest

Jennifer Deal

Mailing Address:

Phone #:

email or Fax#:

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

☒ Standard ☐ Rush

Project Name: Trunk L

Project #:

Project Manager: WSP- Danny Burns

Sampler: DB

On Ice: ☐ Yes ☒ No

# of Coolers: 1

Cooler Temp(including CF): NA (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2109H35	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
9-28	1650	Air	Influent 9-28-21	1-Tedlar	—	001	X	X								

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
9-29-21	1700		Chris Walls		9/29/21	1700
9/29/21	1820					

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
			Chris Carr		9/30/21	0710

Remarks:

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

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 57166

CONDITIONS

Operator:	OGRID:
Harvest Four Corners, LLC 1111 Travis Street Houston, TX 77002	373888
	Action Number: 57166
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
nvelez	Accepted for the record. See app ID 154314 for most updated status.	11/23/2022