BW - 8

ANNUAL REPORT

2021

From: Ayarbe, John
To: Chavez, Carl J, EMNRD
Cc: "Pieter Bergstein (pieter@bergsteinenterprises.com)"; "susan@bergsteinenterprises.com"
Subject: [EXTERNAL] SUBMITTAL of 2021 Annual Class III Well
Date: Monday, May 9, 2022 9:22:23 AM
Attachments: 2021 Annual Report_Salty Dog_5-09-2022.pdf

Hi Carl,

Attached is an electronic copy of the 2021 Annual Class III Well Report for the Salty Dog brine station. I'm submitting the report to you on behalf of PAB Services, Inc. The report was prepared in accordance with the requirements of discharge permit BW-8.

Please let me know if you have questions.

Thanks!

John P. Ayarbe
Senior Hydrogeologist

Daniel B. Stephens & Associates, Inc.
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DBS&A
Daniel B. Stephens & Associates, Inc.
a Geo-Logic Company

May 9, 2022

Mr. Carl Chavez
New Mexico Oil Conservation Division
Environmental Bureau
1220 South St. Francis Drive
Santa Fe, New Mexico 87505-4225

Re: 2021 Annual Class III Well Report
Salty Dog Brine Station, Lea County, New Mexico
DP-BW-8, API No. 30-025-26307

Dear Mr. Chavez:

On behalf of PAB Services, Inc., Daniel B. Stephens & Associates, Inc. (DBS&A) is submitting the enclosed annual Class III well report for the Salty Dog brine station located in Lea County, New Mexico. The report includes the annual certification by the site operator (Appendix A).

Please call us at (505) 822-9400 if you have any questions or require additional information.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.

John Ayarbe, P.G.
Senior Hydrogeologist

JA/rpf
Enclosure
cc: Pieter Bergstein, PAB Services, Inc.

2021 Annual Class III Well Report
Salty Dog Brine Station
Lea County, New Mexico
DP-BW-8, API No. 30-025-26307

Prepared for

New Mexico Energy, Minerals and Natural Resources Department, Oil Conservation Division

Prepared by

DBS&A
Daniel B. Stephens & Associates, Inc.
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DB19.1198

May 9, 2022

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1. Introduction

Daniel B. Stephens & Associates, Inc. (DBS&A) has prepared this annual Class III well report for submission to the New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division (OCD) Environmental Bureau on behalf of PAB Services, Inc. (PAB) for operation of a brine well (Brine Supply Well #1 [API No. 30-025-26307]) at the Salty Dog Brine Station (the site). The site is located in Lea County, New Mexico, approximately 11 miles west of Hobbs, New Mexico along U.S. Highway 62/180 (US 62/180) (Figure 1). This report summarizes operational and monitoring activities conducted at the site in 2021, and was prepared in accordance with the requirements of discharge permit (DP) BW-8, last renewed on May 17, 2019 (NMEMNRD, 2019). Submittal of this report meets Condition 2.J of the permit.

Appendix A provides an annual certification signed by Mr. Pieter Bergstein stating that continued salt solution mining will not cause cavern collapse, surface subsidence, or property damage, and will not otherwise threaten public health and the environment, based on geologic and engineering data.

Salty Dog is a brine water production and loading station, consisting of fresh water supply wells, a brine production well, and a concrete truck loading pad with two brine filling stations. Fresh water is stored in two 1,000-barrel (bbl) aboveground storage tanks (ASTs) near the loading station and a series of ASTs at the brine well. Produced brine is pumped from the brine well to a bermed tank battery consisting of six 750-bbl ASTs, where the brine is stored for sale. The brine well is located approximately 0.5 mile southwest of the brine filling station (Figure 1). Figure 2 provides an aerial photograph of the brine station showing the layout of the current facility infrastructure.

Brine is produced from the in situ extraction of salt at the brine well, a UIC Class III well (Brine Supply Well #1 [API No. 30-025-26307]). The brine well is approximately 3,000 feet deep and has been in operation since the early 1980s. The Salty Dog brine well is configured for reverse circulation brine recovery, where fresh water is circulated down the casing annulus into the Salado Formation—a Permian-age sedimentary rock unit composed of halite (salt) and other evaporative beds. Fresh water dissolves the salt, and the brine is extracted through the center tubing of the well. Figure 3 provides a generalized schematic of the brine well showing its construction, current tubing depth, and the penetrated geologic units.

The physical location of the brine well is 1,980 feet from south line (FSL) and 1,980 feet from east line (FEL) (NW/4 SE/4, Unit Letter J) in Section 5, Township 19 South, Range 36 East, New Mexico Principal Meridian (NMPM). The brine well was installed in June 1979. The original discharge permit for the brine well (GWB-2) appears to have been issued on December 18, 1982 (OCD, 1994). The discharge permit was last renewed on May 17, 2019 (NMEMNRD, 2019).

Injection water used in brine production is obtained from the Ogallala Aquifer by pumping from two fresh water supply wells (FWS-1 and FWS-2) and groundwater remediation well RW-2. Well FWS-1 is the main fresh water supply well. Well FWS-2, located near the brine well, is used as an auxiliary fresh water well during periods of high brine demand. Well RW-2 is used to remove and provide hydraulic containment of chloride-impacted groundwater in the brine well area; groundwater extracted from this well is also used for brine production. Chloride-impacted groundwater in the former brine pond area is contained and removed by pumping from FWS-1. Depth to regional groundwater is approximately 70 feet below ground surface (bgs). Figure 4 shows the well locations.

2. Brine Well Operational Activities

The following subsections report fluid injection/brine production volumes and well maintenance activities.

2.1 Fluid Injection and Brine Production

Except for an approximately 2-year shutdown between 2011 and 2013 and temporary interruptions for routine maintenance and testing (e.g., February 2009 sonar survey [SOCON, 2009]), the brine well has been in continuous operation since 1980, producing an average of approximately 10,500 barrels per month (bbl/mo) of brine between 1980 and 2009. This production rate is based on 1987, 1996–1999, and 2009 brine production and sales records (Salty Dog, 1988, 1999, and Undated).

Both fluid injection and brine production volumes are metered, and daily volumes are recorded on monthly fresh and brine water report forms (Appendix B). Table 1 summarizes monthly injection and production volumes for the reporting period. Injection water for the brine well comes from two fresh water wells (FWS-1 and FWS-2) and a groundwater remediation well (RW-2) (Figure 4). In 2021, average monthly ratios of injected water to produced brine ranged from 0.95 to 1.00.

Table 1. Monthly Water Injection and Brine Production Volumes, 2021

Month	Volume (bbl)		Ratio (Injection : Production)
	Water Injection	Brine Production	
January	7,370	7,370	1.00
February	11,960	11,960	1.00
March	20,635	20,645	1.00
April	—	—	—
May	19,680	19,740	1.00
June	23,115	23,115	1.00
July	29,925	31,360	0.95
August	—	—	—
September	43,670	43,710	1.00
October	35,225	35,425	0.99
November	—	—	—
December	27,330	27,330	1.00
Annual total	218,910	220,655	—

bbl = Barrels

Based on the data reported in Table 1 and previously reported production records (Salty Dog, 1988, 1999, and Undated; DBS&A, 2014), the estimated cumulative volume of brine production is 7,241,574 bbl.

In 2021, brine production activities at the site dissolved an estimated 31,243 bbl of Salado Formation. This estimate is based on the brine production data reported in Table 1, the average total dissolved solids (TDS) concentrations of the produced brine and injection water reported in Table 2, and an assumed density of the Salado Formation of 2.17 grams per cubic centimeter (g/cm^3). Based on the historical and current brine production data, the total estimated size of the brine solution cavern is approximately 1,047,132 bbl, with an estimated cavern floor diameter of 175 feet. The estimation of the cavern floor diameter was calculated using the OCD example salt cavern characterization approach and site data (Appendix C). In 2012, OCD estimated a volume of 1,022,196 bbl for the Salty Dog solution cavern (NMEMNRD, 2012).

Table 2. Injection Water and Produced Brine Chemical and Physical Characteristics

Constituent	Average Concentration (mg/L [a])	
	Injection Water	Produced Brine
pH (s.u.)	7.82	7.17
Specific gravity (unitless)	1.000	1.200
Chloride	810	185,000
Sodium	395	61,000
TDS	1,750	309,000

[a] Unless otherwise noted
mg/L = Milligram per liter
NM = Not measured
s.u. = Standard units
TDS = Total dissolved solids

2.2 Injection Pressure

Pressure is monitored on the well tubing and on the annulus between the inner tubing and outer casing. These measurements are recorded on the monthly fresh and brine water report forms (Appendix B). In 2021, recorded daily tubing pressure remained steady at 125 pounds per square inch (psi), while annulus pressure was generally 375 psi.

2.3 Chemical and Physical Analyses

Condition 2.A of DP-BW-8 requires semiannual monitoring of the chemical and physical characteristics of the injection water and produced brine, including pH, density, and TDS and chloride concentrations. The permit also requires that the sodium concentration of the produced brine be analyzed.

Table 2 reports average constituent concentrations calculated from the 2021 semiannual monitoring data. Samples of the injection water and produced brine were collected in June and November 2021. Dissolution of the Salado Formation increases the constituent concentrations and specific gravity of the produced brine relative to the injection water. The average TDS concentration and average specific gravity of the injection water are 1,750 milligrams per liter (mg/L) and 1.000, respectively, while the same properties of the produced brine are 309,000 mg/L and 1.200, respectively. Appendix D provides the laboratory analytical reports associated with the semiannual monitoring events.

Historical water quality analyses show TDS concentrations of the fresh water and produced brine to be approximately 600 mg/L and 320,000 to 350,000 mg/L, respectively (Martin, 1982; Unichem, 1987).

2.4 Deviations from Normal Operations

There were no deviations from normal operations in 2021.

2.5 Leaks and Spills

There were no leaks or spills in 2021.

On May 20, 2021, PAB received a letter of violation from OCD for supposed releases of brine in multiple areas at the site. The OCD identified the supposed released during an inspection conducted on May 5, 2021 (OCD, 2021). In response to the letter of violation and in consultation with OCD, PAB collected soil samples from 12 locations around the brine well on July 28, 2021. The soil samples were submitted to Cardinal Laboratories in Hobbs, New Mexico for analysis of several constituents, including benzene, toluene, ethylbenzene, and total xylenes (BTEX), chloride, and gasoline, diesel, and mineral oil range organics. The results of the analysis showed that the constituents of each sample were below applicable criteria specified in Table I of 19.15.29 NMAC. It was therefore deemed that abatement was unnecessary (DBS&A, 2021).

2.6 Area of Review

Condition 3.G of DP BW-8 requires Salty Dog to report within 72 hours the discovery of any new wells, conduits, or other devices that (1) are within a 1-mile radius and (2) may penetrate to the injection zone of the brine well.

The brine station is located on private property in rural southeastern New Mexico, approximately 11 miles west of Hobbs. The majority of the area surrounding the site is undeveloped and owned by the State of New Mexico.

On April 12, 2022, DBS&A conducted an area of review evaluation using the OCD online oil and gas maps application. This application is accessible through the OCD website (http://www.emnrd.state.nm.us/OCD/ocdgis.html). Appendix E provides a map produced from the area of review evaluation. The map shows that there are two previously plugged and abandoned wells (API 30-025-03989 and API 30-025-42773) southwest of the Salty Dog brine

well. However, no new brine wells or other penetrations that may penetrate into the injection zone of the Salty Dog brine well are present within a 1-mile radius of the brine well.

2.7 Mechanical Integrity Test

A mechanical integrity test (MIT) was not conducted on the brine well in 2021. The last MIT was performed in 2018.

In December 2017, the brine well was damaged because anhydrite had collapsed the well tubing. The well was subsequently repaired, and was operational again in February 2018. On February 9, 2018, before placing the well back in operation, PAB conducted an MIT on the well; it passed the test. Gary Robinson of OCD was present during the MIT. A record of the MIT was provided in the 2017 annual Class III well report (DBS&A, 2018a).

Prior to the February 2018 MIT, the last MIT was performed on October 31, 2013, when Salty Dog conducted a Bradenhead test on the brine well. The test showed no problems with the integrity of the well casing. Results of this test were reported to OCD on November 15, 2013.

Pursuant to 20.6.2.5204 New Mexico Administrative Code (NMAC), PAB is required to demonstrate mechanical integrity of the brine well at least once every five years.

3. Other Facility Activities

There were no other facility activities in 2021 outside of normal operations.

4. Subsidence Monitoring and Cavern Characterization

Condition 2.B.1 of DP BW-08 requires Salty Dog to monitor for potential land subsidence in the area of the brine well (OCD, 2019). To meet this condition, PAB contracted Peterson Drilling and Testing, Inc. and DBS&A to install five subsidence survey monitoring points at the site in March 2018 (DBS&A, 2018b). The five subsidence survey monitoring points include three points located approximately 200 feet from the brine well, one point located approximately 60 feet from the brine well, and one point that is a metal tab welded to the brine well casing (Figure 5). Construction and placement of the monitoring points were conducted in accordance with

DBS&A (2014). Basin Surveys of Hobbs, New Mexico surveyed the monitoring points after their installation (Appendix F). The initial survey was conducted on March 23, 2018 using the nearest U.S. Geological Survey (USGS) benchmark referenced to NMSPCE (NAD 83).

In accordance with Condition 2.B.1 of DP-BW-8, Salty Dog has each monitoring point surveyed semiannually to at least the nearest 0.10 foot (OCD, 2019). Atkins Engineering Associates Inc. (Atkins) conducted the 2021 semiannual surveys on June 29 and November 23, 2021. The survey data are reported in Table 3, and show no indication of land subsidence. The semiannually surveyed elevations at SMP-01 through SMP-04 are all within ±0.03 foot of the initial survey. At SMP-05, the 2021 elevations are 1.66 feet lower than the initial elevation; however, there are no indications of subsidence at the brine well, where the SMP-05 metal tab is welded. In 2021, Atkins replaced Basin Surveys and began to conduct subsidence monitoring at the site. The differences between the initial survey and those in 2021 at SMP-05 appear to be due to the change in surveyors. Appendix F provides the survey reports.

Table 3. Semiannual Surface Subsidence Monitoring, 2021

Survey Monitoring Point	Elevation (feet msl)		
	Initial 3/23/2018	First Semiannual 6/29/2021	Second Semiannual 11/23/2021
SMP-01	3,810.11	3,810.10	3,810.10
SMP-02	3,809.01	3,809.02	3,809.02
SMP-03	3,808.80	3,808.83	3,808.83
SMP-04	3,806.32	3,806.33	3,806.33
SMP-05 (brine well)	3,811.72	3,810.06	3,810.06

msl = Above mean sea level

Condition 2.B.2 of DP BW-08 requires solution cavern characterization using geophysical methods to estimate the size and shape of the solution cavern. During a December 9, 2016 phone call between DBS&A (on behalf of PAB) and OCD (Jim Griswold and Carl Chavez), it was agreed that solution cavern characterization using geophysical methods would be conducted only if surface subsidence was detected during semiannual surveying of the monitoring points. Section 2.1 of this report presents an estimated size and diameter for the solution cavern.

5. Groundwater Conditions

Salty Dog is addressing groundwater impacts resulting from releases at the brine well and a former brine pond. A hole in the casing of the brine well at 250 feet bgs was discovered in 1999 (Salty Dog, 1999). The hole released brine, impacting groundwater, and was repaired in August 1999 by installing a casing liner (Salty Dog, 1999). In October 2008, the brine pond was removed and impacted soil was excavated and disposed of (DBS&A, 2008). The area of the former brine pond is shown in Figures 1 and 2.

Two chloride plumes currently exist at the site: one in the area of the brine station (i.e., the former brine pond area) and a second near the brine well. In 2009, PAB initiated groundwater extraction to remove and provide hydraulic containment of brine-impacted groundwater at the brine station and near the brine well (DBS&A, 2009). Groundwater abatement and monitoring activities are being conducted to satisfy an administrative compliance order issued by OCD (ACO 2008-02) and settlement agreement and stipulated revised final order (NM-OCD 2008-2A) between OCD and Mr. Bergstein.

Groundwater monitoring and extraction data are reported and evaluated in reports submitted to OCD (e.g., DBS&A, 2022). The data include water levels and water quality at the site monitor wells. Site monitor wells are shown in Figure 4.

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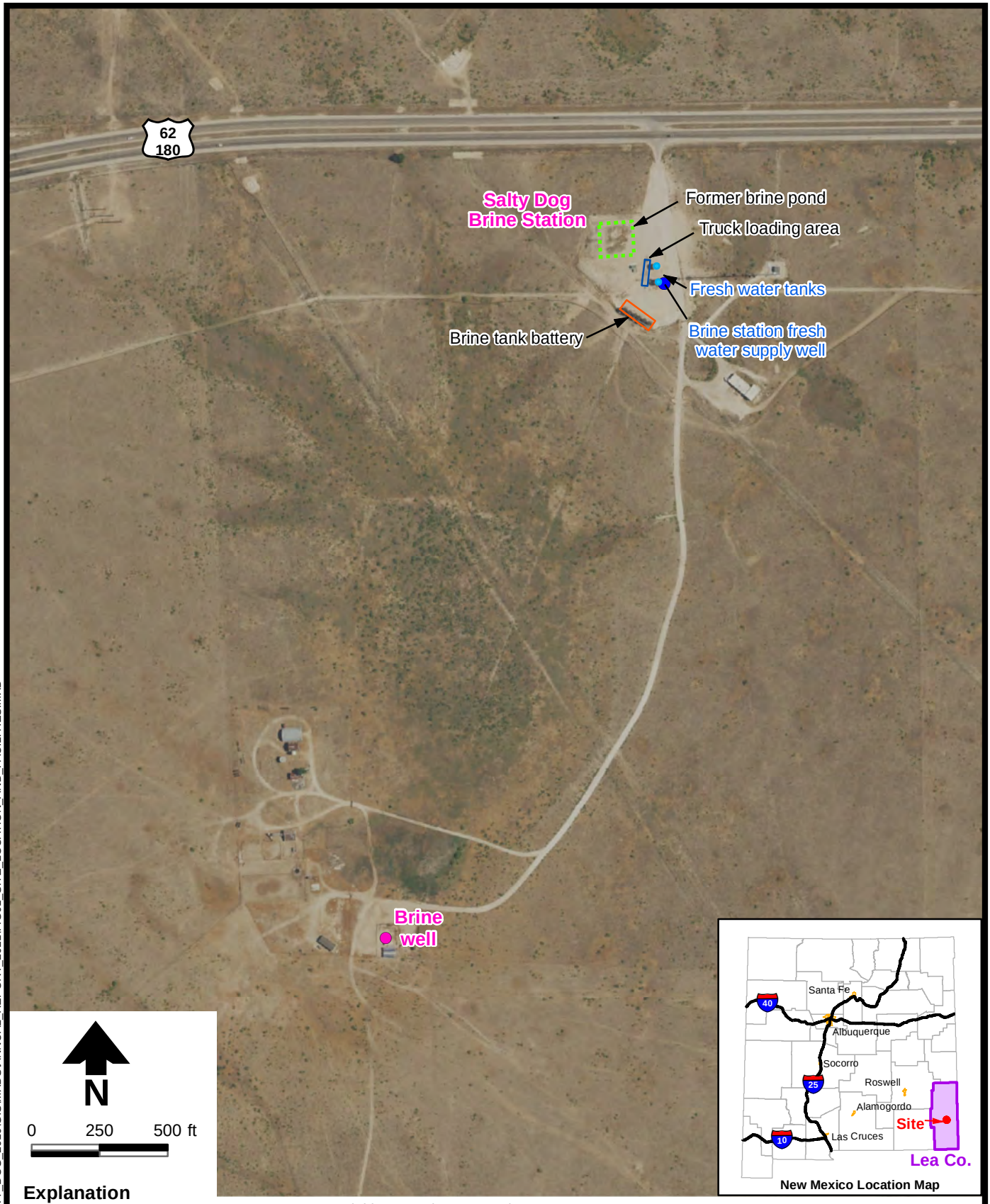
Figures



Source: Aerial imagery (NAIP, 2020).

S:\PROJECTS\DB19.1198_SALTY_DOG_2019\GIS\MXDS\ANNUAL_REPORT_2021\FIG01_SITE_LOCATION_AND_FACILITIES.MXD

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4/11/2022
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SALTY DOG BRINE STATION

Site Location and Facilities

Figure 1

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Source: Aerial imagery (NAIP, 2020).

Figure 2

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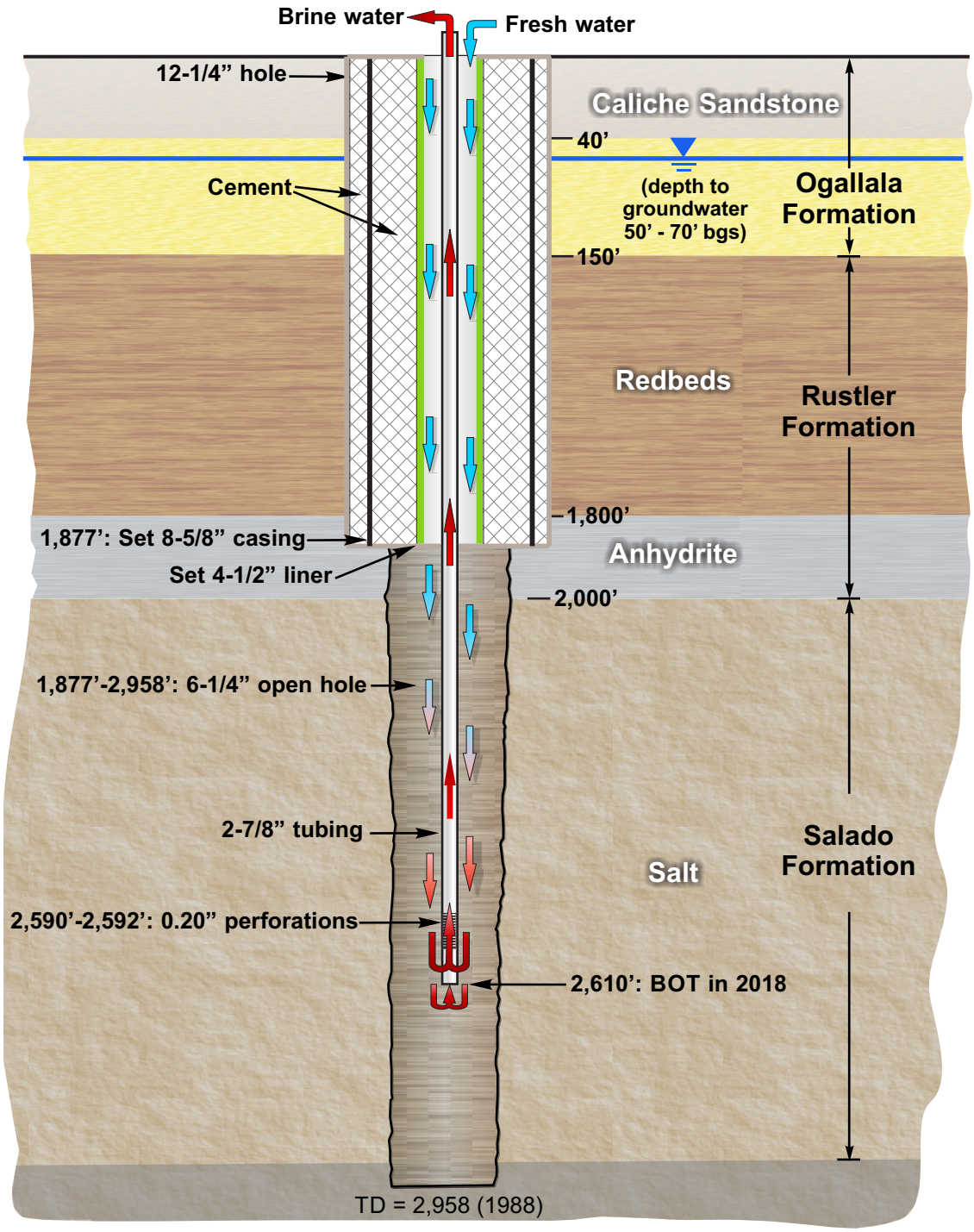
SALTY DOG BRINE STATION

Aerial Photograph of Salty Dog Brine Station

Salty Dog Brine Well



Notes:
1. BOT = Bottom of tubing
2. Figure not to scale

Sources:
1. Completion data based on OCD well reports
2. Lithology from Salty Dog (1988)

S:\Projects\ES08.0118_Salty_Dog_2018\VR_drawings\Fig03_Generalized_brine_well_schematic.cdr

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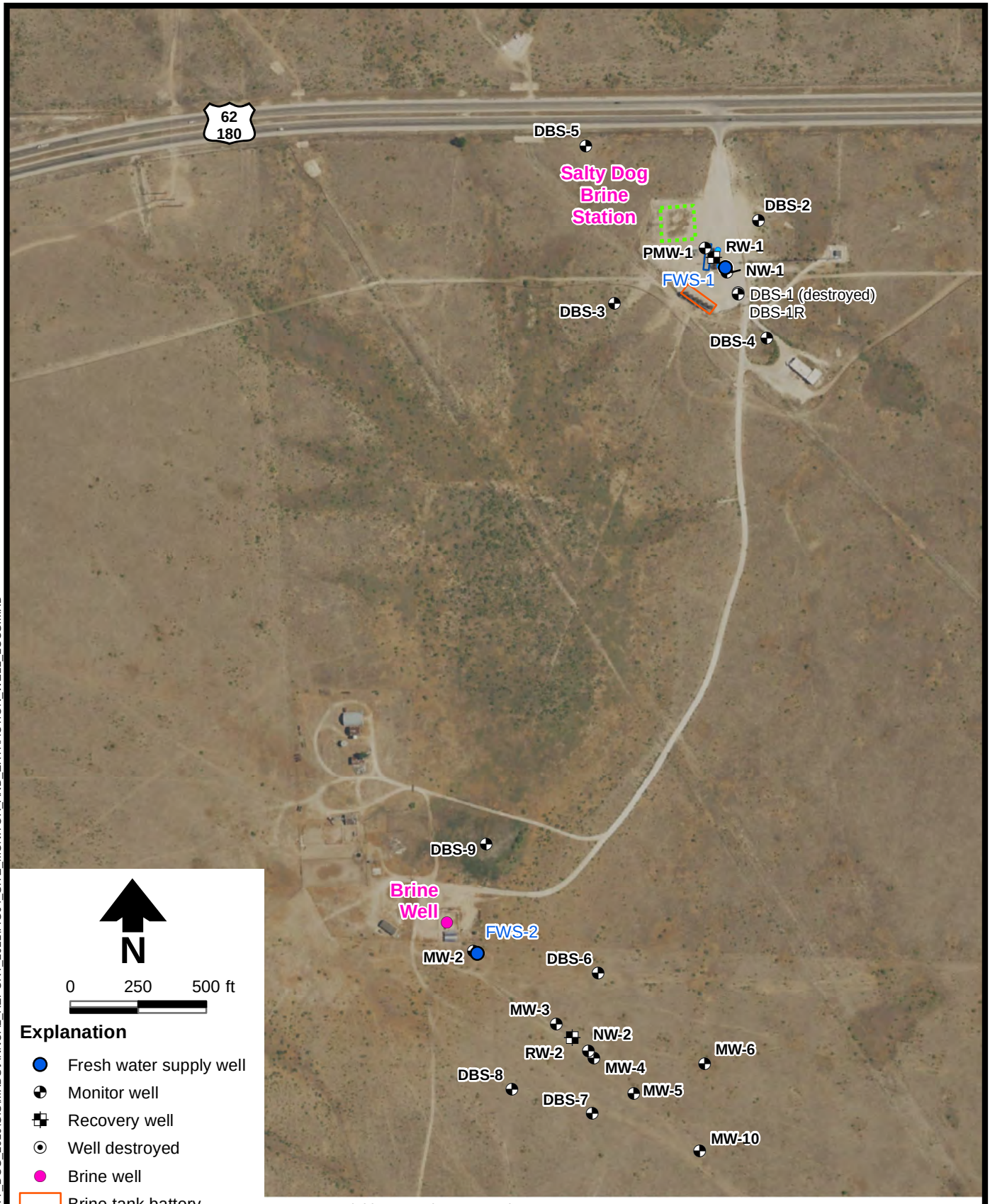
3/29/2021 DB19.1198

SALTY DOG BRINE STATION
Generalized Brine Well Schematic

Figure 3



Source: Aerial imagery (NAIP, 2020).

S:\PROJECTS\DB19.1198_SALTY_DOG_2019\GIS\MXDS\ANNUAL_REPORT_2021\FIG04_SITE_MONITOR_AND_EXTRACTION_WELL_LOCS.MXD

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4/11/2022
DB19.1198

SALTY DOG BRINE STATION

Monitor and Extraction Well Locations

Figure 4

Source: Aerial imagery (NAIP, 2020).

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SALTY DOG BRINE STATION
Land Subsidence
Survey Monitoring Point Locations

Figure 5

Appendix A

Annual Certification

DBS&A
Daniel B. Stephens & Associates, Inc.

Annual Certification

PAB Services, Inc. certifies that continued salt solution mining will not cause cavern collapse, surface subsidence, property damage, or otherwise threaten public health and the environment based on geologic and engineering data.

Peter Bergsten	CEO
Name	Title
	5/5/22
Signature	Date

Appendix B

2021 Monthly Fresh Water and Brine Report Forms

DBS&A
Daniel B. Stephens & Associates, Inc.

MONTHLY FRESH & BRINE WATER REPORT

FACILITY/LOCATION Salty Dog

MONTH/YEAR January 2021

Date	AMOUNT OF FRESH WATER PUMPED DOWN HOLE BBLS	AMOUNT OF BRINE WATER OUT OF HOLE BBLS SOLD	DAILY TUBING PRESSURES PSI	DAILY CASING PRESSURES PSI	FRESH WATER SOLD
1	1,100	1,100	125	375	
2	1000	1000	125	375	
3	500	500	125	375	
4	100	100	125	375	170
5					75
6	365	365	125	375	
7	115	115	125	375	
8	500	500	125	375	
9	920	920	125		
10	100	100	125	375	
11	1020	1020	125	375	
12	230	230	125	375	
13	370	370	125	375	
14					40
15					130
16					
17					120
18					30
19					60
20					
21					130
22	200	200	125	375	
23					
24					
25					
26					
27	200	200	125	375	30
28					320
29	450	450	125	375	
30	100	100	125	375	
31	100	100			
TOTALS					

REPAIRS AND/OR EXPENSES

Date	Company Performing Work/Repairs	Descritpion of Work/Repairs	Estimated Cost	Work Authorized by

FACILITY/LOCATION Salty Dog

MONTH/YEAR Feburery 2025

Date	AMOUNT OF FRESH WATER PUMPED DOWN HOLE BBLS	AMOUNT OF BRINE WATER OUT OF HOLE BBLS SOLD	DAILY TUBING PRESSURES PSI	DAILY CASING PRESSURES PSI	FRESH WATER SOLD
1	15	15	125	375	160
2	515	515	125	375	
3	710	710	125	375	
4					
5	210	210	125	375	
6	200	200	125	375	
7	200	200	125	375	40
8	115	115	125	375	
9	400	400	125	375	120
10	1400	1400	125	375	
11	450	450	125	375	
12	360	360	125	375	
13	150	150	125	375	
14	300	300	125	375	
15					
16	200	200	125	375	
17	1100	1100	125	375	
18	375	375	125	375	
19			125	375	
20	100	100	125	375	
21					
22	300	300	125	375	
23	710	710	125	375	
24	610	610	125	375	
25	610	610	125	375	
26	620	620	125	375	
27	1950	1950	125	375	
28	300	300	125	375	
29					
30					
31					
TOTALS					

REPAIRS AND/OR EXPENSES

Date	Company Performing Work/Repairs	Descritpion of Work/Repairs	Estimated Cost	Work Authorized by

MONTHLY FRESH & BRINE WATER REPORT

FACILITY/LOCATION Salty Dog

MONTH/YEAR March 2021

Date	AMOUNT OF FRESH WATER PUMPED DOWN HOLE BBLS	AMOUNT OF BRINE WATER OUT OF HOLE BBLS SOLD	DAILY TUBING PRESSURES PSI	DAILY CASING PRESSURES PSI	FRESH WATER SOLD
1	1160	1100	125	375	
2	1330	1330	125	375	320
3	1220	1220	125	375	320
4	1430	1430	125	375	320
5	360				120
6	1420	1420	125	375	
7	400	400			
8	525	525	125	375	360
9	335	336	125	375	300
10	300	300	125	375	120
11	300	300	125	375	40
12	100	100	125	375	130
13	200	200	125	375	
14	400	400	125	375	
15	2020	2020	125	125	190
16	800	800	125	125	100
17	100	100	125	125	
18	250	250	125	125	
19	905	905	125	125	
20	1270	1270	125	375	
21	[illegible]	[illegible]	125	375	
22	900	900	125	375	[illegible]
23	320	320	125	375	70
24	15	15	125	375	
25	380	380	125	375	60
26					
27	200	200	125	375	
28	600	600	125	375	
29	410	410	125	375	60
30	425	425	125	375	60
31	2020	2020	125	375	
TOTALS	18420	18420	125	375	2330

REPAIRS AND/OR EXPENSES

Date	Company Performing Work/Repairs	Descritpion of Work/Repairs	Estimated Cost	Work Authorized by
	Petroleum	well down		
	Rang	well down		

MONTHLY FRESH & BRINE WATER REPORT

FACILITY/LOCATION Salty Dog

MONTH/YEAR May 2021

Date	AMOUNT OF FRESH WATER PUMPED DOWN HOLE BBLS	AMOUNT OF BRINE WATER OUT OF HOLE BBLS SOLD	DAILY TUBING PRESSURES PSI	DAILY CASING PRESSURES PSI	FRESH WATER SOLD
1	170	170	125	375	
2	2300	2300	125	350	
3	450	450	125	350	
4	110	110	125	375	
5	1000	1000	125	375	175
6	1625	1625	125	375	
7	200	200	125	375	20
8	300	300	125	375	130
9	300	300	125	375	
10	500	500	125	375	
11	1800	1800	125	375	130
12	900	900	125	375	130
13	1050	1050	125	375	
14	700	700	125	375	
15	2700	2700	125	375	
16	800	800	125	375	
17			125	375	
18	1640	1640	125	375	
19	135	135	125	375	301
20			125	375	80
21	2100	2100	125	375	
22	50	50	125	375	
23	200	200	125	375	
24	170	170	125	375	
25	200	200	125	375	
26	200	200	125	375	
27			125	375	100
28			125	375	
29			125	375	
30			125	375	
31			125	375	
TOTALS					

REPAIRS AND/OR EXPENSES

Date	Company Performing Work/Repairs	Descritpion of Work/Repairs	Estimated Cost	Work Authorized by

MONTHLY FRESH & BRINE WATER REPORT

FACILITY/LOCATION Salty Dog

MONTH/YEAR June 2021

Date	AMOUNT OF FRESH WATER PUMPED DOWN HOLE BBLS	AMOUNT OF BRINE WATER OUT OF HOLE BBLS SOLD	DAILY TUBING PRESSURES PSI	DAILY CASING PRESSURES PSI	FRESH WATER SOLD
1	575 300	570 300	125	375	
2	760 300	760 300	125	375	
3	1800	1800	125	370	
4	800	800			
5	1100	1100			
6	630	630			
7	600	600			
8	~~+125~~ 1190	~~+125~~ 1190			
9	1100	1100			160
10	260	260			
11	900	900			
12	1800	1800			
13	1130	1130			120
14	1290	1290			~~160~~ 1250
15	660	660			80
16	930	930			
17	1000	1000			80
18	590	590			70
19	1000	1600			500
20	100	100			30
21	200	200			125
22	600	600			
23	900	900			
24					10
25					
26	200	200			
27	180	100			
28	400	400			
29	925				
30	495	495			
31					
TOTALS					

REPAIRS AND/OR EXPENSES

Date	Company Performing Work/Repairs	Descritpion of Work/Repairs	Estimated Cost	Work Authorized by

MONTHLY FRESH & BRINE WATER REPORT

FACILITY/LOCATION Salty Dog 1,4,6

MONTH/YEAR 07 - 21

Date	AMOUNT OF FRESH WATER PUMPED DOWN HOLE BBLS	AMOUNT OF BRINE WATER OUT OF HOLE BBLS SOLD	DAILY TUBING PRESSURES PSI	DAILY CASING PRESSURES PSI	FRESH WATER SOLD
1	570	570	125	375	
2	380	380	125	375	
3	530	530	125	375	
4			125	375	
5	600	600 15/16	125	375	
6	1565	1565	125	375	26
7			125	375	6
8	1230	1230	125	375	
9	5860	3860	125	375	
10	400	400	125	375	
11	480	480	125	375	70
12	2030	2030	125	375	25
13	3395	3260	125	375	
14	1590	1590	125	375	
15	1450	1450	125	375	160
16	300	300	125	375	125
17	1,030	1,030	125	375	
18	70	70	125	375	
19	800	800	125	375	
20	410	410	125	375	
21	500	500	125	375	
22	300	300	125	375	
23	750	850	125	375	
24	450	1800	125	375	
25	1045	1045	125	375	
26	1520	1520	125	375	
27	2030	2030	125	375	
28	940	940	125	375	
29	700	700	125	375	
30			125	375	
31	900	900	125	375	
TOTALS					

REPAIRS AND/OR EXPENSES

Date	Company Performing Work/Repairs	Descritpion of Work/Repairs	Estimated Cost	Work Authorized by

MONTHLY FRESH & BRINE WATER REPORT

FACILITY/LOCATION	Salty Dog
MONTH/YEAR	2021 / September

Date	AMOUNT OF FRESH WATER PUMPED DOWN HOLE BBLS	AMOUNT OF BRINE WATER OUT OF HOLE BBLS SOLD	DAILY TUBING PRESSURES PSI	DAILY CASING PRESSURES PSI	FRESH WATER SOLD
1	1100	1100 ✓			
2	1140	1140 ✓			
3	740	740 ✓			120
4	1800	1800 ✓			
5	3620	3620 ✓			
6	2700	2700 ✓			1460
7	1010	1010 ✓			55
8	1060	1060 ✓			
9	695	695 ✓			70
10	710	710 ✓			50
11	1450	1450 ✓			
12	1290	1290 ✓			20
13	1390	1390 ✓			
14	1020	1020 ✓			
15	2540	2550 ✓			240
16	920	920 ✓			25
17	1150	1150 ✓			
18	900	900 ✓			
19	1500	1500 ✓			
20	4070	4070 ✓			150
21	900	900 ✓			80
22	2160	2160 ✓			
23	1460	1460 ✓			37
24	1240	1240 ✓			
25	820	820 ✓			
26					
27	295	295 ✓			
28	240	240 ✓			30
29	1700	1700 ✓			125
30	3050	3050 ✓			
31					
TOTALS		42,670		1	

REPAIRS AND/OR EXPENSES

Date	Company Performing Work/Repairs	Descritpion of Work/Repairs	Estimated Cost	Work Authorized by

MONTHLY FRESH & BRINE WATER REPORT

FACILITY /LOCATION	Salty Dog
MONTH/YEAR	Oct-21

DATE	AMOUNT OF FRESH WATER PUMPED DOWN HOLE BBLS	AMOUNT OF BRINE WATER OUT OF HOLE BBLS SOLD	DAILY TUBING PRESSURES PSI	DAILY CASING PRESSURES PSI	FRESH WATER SOLD
1	3600	3800			
2	1900	1900			
3	1500	1500			
4	1560	1560			25
5	600	600			115
6	1290	1290			100
7	1800	1800			25
8	800	800			220
9	820	820			
10	400	400			
11	1050	1050			
12	1610	1610			25
13	625	625			
14	500	500			115
15	600	600			120
16	200	200			20
17	400	400			170
18	2120	2120			
19	600	600			170
20	1800	1800			
21	3350	3350			125
22	1500	1500			
23	1550	1550			180
24	400	400			30
25	400	400			20
26	300	300			220
27	1800	1800			160
28	1170	1170			
29	300	300			90
30	380	380			
31	300	300			
TOTALS	35225	35425	0	0	1930

MONTHLY FRESH & BRINE WATER REPORT

FACILITY /LOCATION	Salty Dog
MONTH/YEAR	Nov-21

DATE	AMOUNT OF FRESH WATER PUMPED DOWN HOLE BBLS	AMOUNT OF BRINE WATER OUT OF HOLE BBLS SOLD	DAILY TUBING PRESSURES PSI	DAILY CASING PRESSURES PSI	FRESH WATER SOLD
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
TOTALS	0	0	0	0	0

MONTHLY FRESH & BRINE WATER REPORT

FACILITY /LOCATION	Salty Dog
MONTH/YEAR	Dec-21

DATE	AMOUNT OF FRESH WATER PUMPED DOWN HOLE BBLS	AMOUNT OF BRINE WATER OUT OF HOLE BBLS SOLD	DAILY TUBING PRESSURES PSI	DAILY CASING PRESSURES PSI	FRESH WATER SOLD
1	300	300			360
2	430	430			
3	2160	2160			
4	1430	1430			25
5	860	860			
6	460	460			
7	180	180			
8	2330	2330			
9	800	800			25
10	400	400			
11	1250	1250			
12	420	420			120
13	1320	1320			
14	1300	1300			100
15					25
16	820	820			240
17	1190	1190			90
18	2220	2220			30
19	700	700			90
20	800	800			
21	470	470			
22	1790	1790			180
23	290	290			50
24	1200	1200			
25	400	400			
26					
27	220	220			
28	400	400			100
29	1400	1400			120
30	1790	1790			
31					
TOTALS	27330	27330	0	0	1555

Appendix C

Brine Well Cavern Characterization

DBS&A
Daniel B. Stephens & Associates, Inc.

Calculation Cover Sheet

Daniel B. Stephens & Associates, Inc.

Project Name Salty Dog Brine Well Cavern Characterization Project Number DB19.1198.00

Calculation Number 1 Discipline Hydrology No. of Sheets 2

PROJECT:

Salty Dog

SITE:

Salty Dog Brine Station, Lea County, New Mexico.

SUBJECT:

Brine Well Cavern Characterization

SOURCES OF DATA:

1. Monthly fresh and brine water report forms
2. Laboratory analytical reports for brine and freshwater sampling
3. Historical documents and information

The above data sources are referenced and summarized in the main body of the 2021 Annual Class III Well Report, Salty Dog Brine Station.

SOURCES OF FORMULAE & REFERENCES:

New Mexico Energy, Minerals and Natural Resources Department (NMEMNRD). Undated. Example Salt Cavern Characterization. Emailed to DBS&A from NMENMRD on December 7, 2018 (Included herein).

☐ Preliminary Calculation ☑ Final Calculation Supersedes Calculation No. _____

Rev. No.	Revision	Calculation By	Date	Checked By	Date	Approved By	Date

Project No. DB19.1198.00 Date 4/21/2022

Subject Brine Well Cavern Characterization Sheet 1 of 1

By J. Kessler Checked By J. Ayarbe Calculation No. 1

1. Purpose

Calculate the estimated height and estimated floor diameter of the brine cavern at the Salty Dog Brine Station.

2. Given

1. Volume of the brine cavern at the end of 2021:

Volume = 1,047,132 barrels (bbl)

Value based on historical and present brine production data, as presented in the main body of the 2021 Annual Class III Well Report, Salty Dog Brine Station.

2. Equation for the volume of a cone:

$$Volume = \frac{\pi \times radius^2 \times height}{3}$$

3. Brine well construction (Figure 3):

Casing is set at 1,877 feet below ground surface (feet bgs). Tubing was set at 2,610 feet bgs in 2018, when the brine well was repaired.

3. Method

Cavern height calculated as the difference between the bottom of the well casing and the 2018 tubing depth of 2,610 feet bgs.

Floor diameter calculated by solving for radius in the cone-volume equation.

4. Solution

Cavern Height

$$height = 2{,}610 \text{ feet} - 1{,}877\ feet = 733\ feet$$

Cavern Floor Diameter

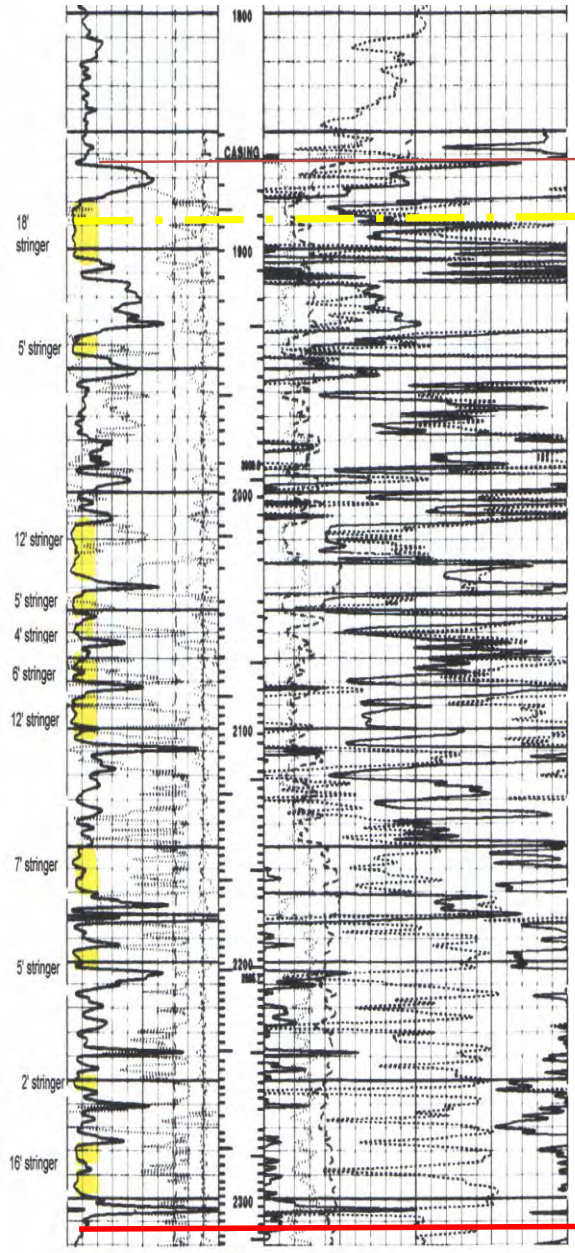
$$1\ bbl = 5.614584 \text{ acre-feet}$$

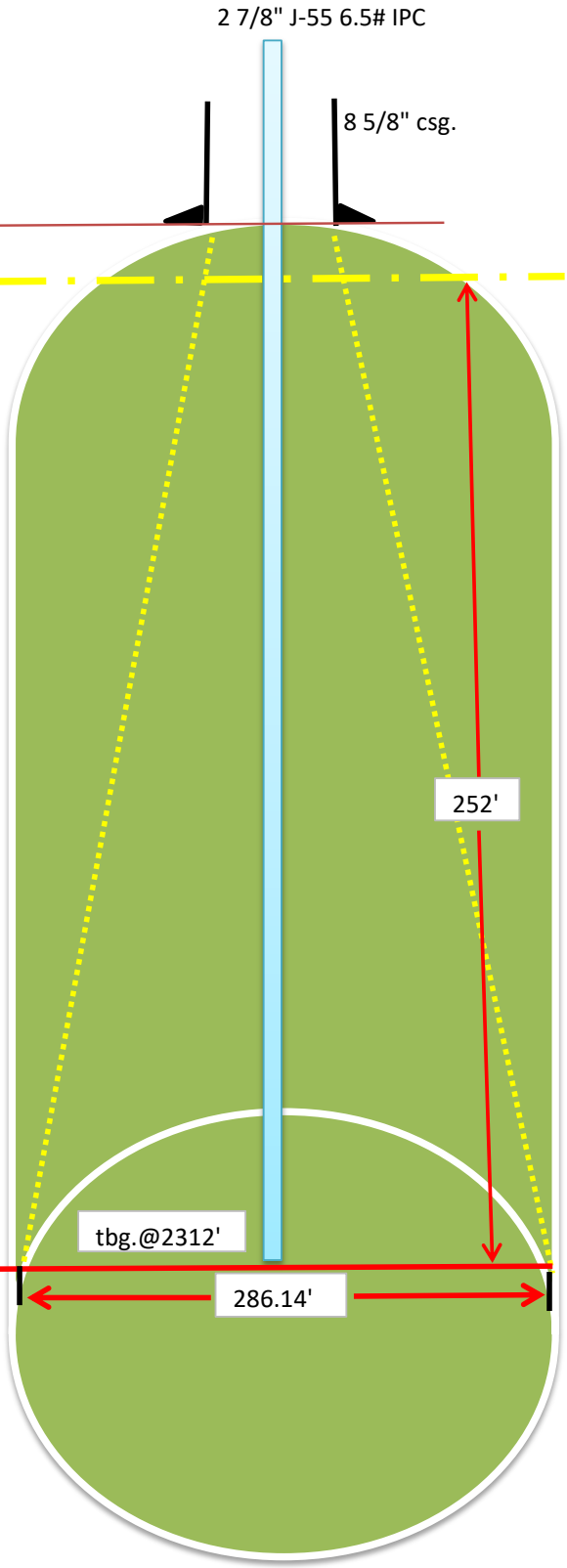
$$radius = \sqrt{\frac{3 \times Volume}{\pi \times height}} = \sqrt{\frac{3 \times 1{,}047{,}132\ bbl}{\pi \times 733\ feet} \times \frac{5.614584 ft^3}{bbl}} = 87.52\ feet$$

$$diameter = 2 \times radius = 2 \times 87.52\ feet = 175.0\ feet$$

EXAMPLE SALT CAVERN CHARACTERIZATION

John Doe Well No6
API 30-015-#####
SEC36 T18S R38E LAT: 32.##### LONG:-103.#####





PPG 9.97 brine
PPG 8.34 fresh
SG 1.1951
2006 to 2017 Total Brine bbl. 3,538,154
122.136 LBS / BBL = 432,135,977 LBS HALITE
(432,135,977 LBS) / (80BLS per ft³) = 5,401,700 ft³

$V = \prod R^2 h / 3$
$V = (3.14159 * 143.07^2) * (252') / 3$
$V = 5,401,648.6\ ft.^3$

Est. hight is 252'
Est. cavern floor diameter is 286.14'

Appendix D

Laboratory Analytical Reports

DBS&A
Daniel B. Stephens & Associates, Inc.

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

June 21, 2021

Mike Zbrozek

Daniel B. Stephens & Assoc.
6020 Academy NE Suite 100
Albuquerque, NM 87109
TEL:
FAX

RE: Salty Dog OrderNo.: 2106279

Dear Mike Zbrozek:

Hall Environmental Analysis Laboratory received 14 sample(s) on 6/4/2021 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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **2106279**
Date Reported: **6/21/2021**

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: DBS-1R
Project: Salty Dog
Collection Date: 6/2/2021 4:15:00 PM
Lab ID: 2106279-001 **Matrix:** AQUEOUS **Received Date:** 6/4/2021 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	2200	100	*	mg/L	200	6/11/2021 1:07:14 AM	A79019

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, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: DBS-2
Project: Salty Dog
Collection Date: 6/2/2021 4:45:00 PM
Lab ID: 2106279-002 **Matrix:** AQUEOUS **Received Date:** 6/4/2021 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Chloride	85	5.0		mg/L	10	6/7/2021 12:07:27 PM	R78920

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: PMW-1
Project: Salty Dog
Collection Date: 6/2/2021 3:50:00 PM
Lab ID: 2106279-003 **Matrix:** AQUEOUS **Received Date:** 6/4/2021 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	6800	250	*	mg/L	500	6/11/2021 1:19:34 AM	A79019

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: DBS-4
Project: Salty Dog
Collection Date: 6/3/2021 9:30:00 AM
Lab ID: 2106279-004 **Matrix:** AQUEOUS **Received Date:** 6/4/2021 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Chloride	39	5.0		mg/L	10	6/7/2021 1:24:48 PM	R78920

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, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: DBS-5
Project: Salty Dog
Collection Date: 6/3/2021 10:00:00 AM
Lab ID: 2106279-005 **Matrix:** AQUEOUS **Received Date:** 6/4/2021 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Chloride	170	50		mg/L	100	6/7/2021 2:03:26 PM	R78920

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, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: DBS-3
Project: Salty Dog
Collection Date: 6/3/2021 10:35:00 AM
Lab ID: 2106279-006 **Matrix:** AQUEOUS **Received Date:** 6/4/2021 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Chloride	52	5.0		mg/L	10	6/7/2021 2:16:19 PM	R78920

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: DBS-9
Project: Salty Dog
Collection Date: 6/3/2021 11:15:00 AM
Lab ID: 2106279-007 **Matrix:** AQUEOUS **Received Date:** 6/4/2021 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Chloride	290	50	*	mg/L	100	6/7/2021 2:54:58 PM	R78920

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: DBS-8
Project: Salty Dog
Collection Date: 6/3/2021 11:35:00 AM
Lab ID: 2106279-008 **Matrix:** AQUEOUS **Received Date:** 6/4/2021 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Chloride	35	5.0		mg/L	10	6/7/2021 3:33:38 PM	R78920

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: DBS-10
Project: Salty Dog
Collection Date: 6/3/2021 12:15:00 PM
Lab ID: 2106279-009
Matrix: AQUEOUS
Received Date: 6/4/2021 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Chloride	560	50	*	mg/L	100	6/7/2021 4:12:16 PM	R78920

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: DBS-6
Project: Salty Dog
Collection Date: 6/3/2021 3:15:00 PM
Lab ID: 2106279-010
Matrix: AQUEOUS
Received Date: 6/4/2021 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Chloride	250	50		mg/L	100	6/7/2021 4:38:01 PM	R78920

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, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: MW-5
Project: Salty Dog
Collection Date: 6/3/2021 1:30:00 PM
Lab ID: 2106279-011 **Matrix:** AQUEOUS **Received Date:** 6/4/2021 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Chloride	640	50	*	mg/L	100	6/7/2021 5:03:46 PM	R78920

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, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** MW-3
Project: Salty Dog **Collection Date:** 6/3/2021 2:55:00 PM
Lab ID: 2106279-012 **Matrix:** AQUEOUS **Received Date:** 6/4/2021 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY						Analyst: **CAS**	
Specific Gravity	0.9991	0			1	6/9/2021 4:37:00 PM	R79010
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Fluoride	ND	1.0		mg/L	10	6/11/2021 1:44:14 AM	A79019
Chloride	4400	250	*	mg/L	500	6/11/2021 1:31:54 AM	A79019
Bromide	2.0	1.0		mg/L	10	6/7/2021 5:16:40 PM	R78920
Phosphorus, Orthophosphate (As P)	ND	5.0	H	mg/L	10	6/11/2021 1:44:14 AM	A79019
Sulfate	290	5.0	*	mg/L	10	6/7/2021 5:16:40 PM	R78920
Nitrate+Nitrite as N	ND	4.0		mg/L	20	6/17/2021 10:34:18 PM	R79167
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **CAS**	
Conductivity	19000	100		µmhos/c	10	6/15/2021 1:22:09 PM	R79103
SM2320B: ALKALINITY						Analyst: **CAS**	
Bicarbonate (As CaCO3)	226.3	20.00		mg/L Ca	1	6/8/2021 6:18:24 PM	R78958
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	6/8/2021 6:18:24 PM	R78958
Total Alkalinity (as CaCO3)	226.3	20.00		mg/L Ca	1	6/8/2021 6:18:24 PM	R78958
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	9910	200	*D	mg/L	1	6/11/2021 2:15:00 PM	60550
SM4500-H+B / 9040C: PH						Analyst: **CAS**	
pH	7.53		H	pH units	1	6/8/2021 6:18:24 PM	R78958
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ags**	
Calcium	840	10		mg/L	10	6/11/2021 6:49:30 PM	60475
Magnesium	130	10		mg/L	10	6/11/2021 6:49:30 PM	60475
Potassium	14	10		mg/L	10	6/11/2021 6:49:30 PM	60475
Sodium	2500	50		mg/L	50	6/11/2021 6:52:30 PM	60475

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: Brine
Project: Salty Dog
Collection Date: 6/3/2021 3:30:00 PM
Lab ID: 2106279-013 **Matrix:** AQUEOUS **Received Date:** 6/4/2021 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY						Analyst: **CAS**	
Specific Gravity	1.200	0			1	6/9/2021 4:37:00 PM	R79010
EPA METHOD 300.0: ANIONS						Analyst: **JMT**	
Chloride	170000	10000	*	mg/L	2E+	6/11/2021 2:21:17 AM	A79019
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	315000	2000	*D	mg/L	1	6/11/2021 2:15:00 PM	60550
SM4500-H+B / 9040C: PH						Analyst: **CAS**	
pH	7.21		H	pH units	1	6/8/2021 12:59:09 PM	R78958
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ags**	
Sodium	71000	2000		mg/L	2E+	6/11/2021 6:55:28 PM	60475

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: Injection
Project: Salty Dog
Collection Date: 6/3/2021 3:45:00 PM
Lab ID: 2106279-014 **Matrix:** AQUEOUS **Received Date:** 6/4/2021 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY						Analyst: **CAS**	
Specific Gravity	0.9995	0			1	6/9/2021 4:37:00 PM	R79010
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Chloride	520	50	*	mg/L	100	6/7/2021 6:46:51 PM	R78920
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	1210	40.0	*D	mg/L	1	6/11/2021 2:15:00 PM	60550
SM4500-H+B / 9040C: PH						Analyst: **CAS**	
pH	7.78		H	pH units	1	6/8/2021 1:03:43 PM	R78958
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **ags**	
Sodium	310	20		mg/L	20	6/11/2021 6:12:09 PM	60475

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

Qualifiers:

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

ANALYTICAL REPORT

June 17, 2021

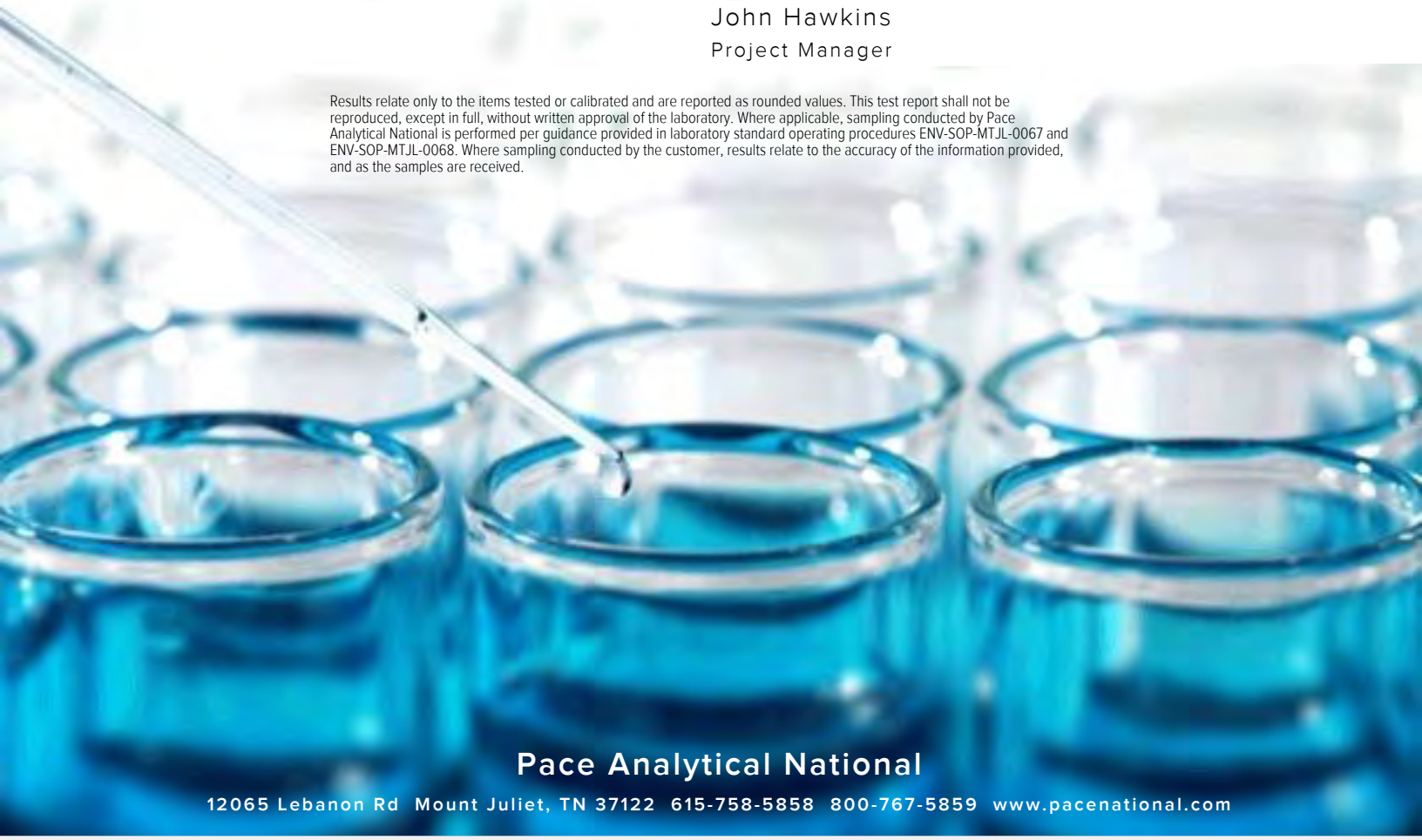
Hall Environmental Analysis Laboratory

Sample Delivery Group:	L1363019
Samples Received:	06/08/2021
Project Number:	
Description:	

Report To: Jackie Bolte
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

SAMPLE SUMMARY

2106279-012C MW-3 L1363019-01 GW

Collected by	Collected date/time	Received date/time
	06/03/21 14:55	06/08/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1688858	1	06/15/21 21:06	06/15/21 21:06	AMH	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	mV			date / time	
ORP	194	T8	1	06/15/2021 21:06	WG1688858

L1363019-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1363019-01 06/15/21 21:06 • (DUP) R3667688-3 06/15/21 21:06

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	194	187	1	6.40		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3667688-1 06/15/21 21:06 • (LCSD) R3667688-2 06/15/21 21:06

Analyte	Spike Amount mV	LCS Result mV	LCSD Result mV	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	Diff mV	Diff Limits mV
ORP	106	106	106	100	100	86.0-105			0.000	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
T8	Sample(s) received past/too close to holding time expiration.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

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

SUB CONTRATOR: Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

A134

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS L1363019
1	2106279-012C	MW-3	125HDP	Aqueous	6/3/2021 2:55:00 PM	1	ORP -01

Sample Receipt Checklist

		If Applicable	
COC Seal Present/Intact:	Y N	VOA Zero Headspace:	Y N
COC Signed/Accurate:	✓Y N	Pres.Correct/Check:	Y N
Bottles arrive intact:	✓Y N		
Correct bottles used:	✓Y N		
Sufficient volume sent:	✓Y N		
RAD Screen <0.5 mR/hr:	✓Y N		

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: SGL	Date: 6/4/2021	Time: 11:50 AM	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By: [signature]	Date: 6/8/21	Time: 0900

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED: ☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples 2.7-.1=2.6 °C T607 Attempt to Cool ? ____

Comments: ____

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2106279**

21-Jun-21

Client: Daniel B. Stephens & Assoc.

Project: Salty Dog

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R78920**	RunNo: **78920**
Prep Date:	Analysis Date: **6/7/2021**	SeqNo: **2768606** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Bromide	ND	0.10								
Sulfate	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R78920**	RunNo: **78920**
Prep Date:	Analysis Date: **6/7/2021**	SeqNo: **2768609** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.6	0.50	5.000	0	92.0	90	110			
Bromide	2.4	0.10	2.500	0	95.6	90	110			
Sulfate	9.4	0.50	10.00	0	94.5	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **A79019**	RunNo: **79019**
Prep Date:	Analysis Date: **6/10/2021**	SeqNo: **2772142** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Phosphorus, Orthophosphate (As P	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **A79019**	RunNo: **79019**
Prep Date:	Analysis Date: **6/10/2021**	SeqNo: **2772143** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.54	0.10	0.5000	0	108	90	110			
Chloride	4.7	0.50	5.000	0	94.3	90	110			
Phosphorus, Orthophosphate (As P	4.7	0.50	5.000	0	93.4	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R79167**	RunNo: **79167**
Prep Date:	Analysis Date: **6/17/2021**	SeqNo: **2778673** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate+Nitrite as N	ND	0.20								

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2106279**
21-Jun-21

Client: Daniel B. Stephens & Assoc.
Project: Salty Dog

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSW**	Batch ID: **R79167**	RunNo: **79167**							
Prep Date:	Analysis Date: **6/17/2021**	SeqNo: **2778679**	Units: **mg/L**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate+Nitrite as N	3.4	0.20	3.500	0	98.3	90	110			

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2106279**
21-Jun-21

Client: Daniel B. Stephens & Assoc.
Project: Salty Dog

Sample ID: **LCS-1 100.1US EC**	SampType: **lcs**	TestCode: **SM2510B: Specific Conductance**
Client ID: **LCSW**	Batch ID: **R79103**	RunNo: **79103**
Prep Date:	Analysis Date: **6/15/2021**	SeqNo: **2776630** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	100.1	0	100	85	115			

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2106279**

21-Jun-21

Client: Daniel B. Stephens & Assoc.

Project: Salty Dog

Sample ID: **MB-60475**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **60475**	RunNo: **79050**
Prep Date: **6/7/2021**	Analysis Date: **6/11/2021**	SeqNo: **2773736** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID: **LCS-60475**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **60475**	RunNo: **79050**
Prep Date: **6/7/2021**	Analysis Date: **6/11/2021**	SeqNo: **2773738** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	52	1.0	50.00	0	104	80	120			
Magnesium	51	1.0	50.00	0	102	80	120			
Potassium	50	1.0	50.00	0	99.6	80	120			
Sodium	51	1.0	50.00	0	103	80	120			

Sample ID: **LCSD-60475**	SampType: **LCSD**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSS02**	Batch ID: **60475**	RunNo: **79050**
Prep Date: **6/7/2021**	Analysis Date: **6/11/2021**	SeqNo: **2773739** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	52	1.0	50.00	0	103	80	120	0.534	20	
Magnesium	51	1.0	50.00	0	101	80	120	0.497	20	
Potassium	50	1.0	50.00	0	99.0	80	120	0.612	20	
Sodium	50	1.0	50.00	0	101	80	120	2.03	20	

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2106279**
21-Jun-21

Client: Daniel B. Stephens & Assoc.
Project: Salty Dog

Sample ID: **2106279-012A dup**	SampType: **dup**	TestCode: **SM4500-H+B / 9040C: pH**
Client ID: **MW-3**	Batch ID: **R78958**	RunNo: **78958**
Prep Date:	Analysis Date: **6/8/2021**	SeqNo: **2770026** Units: **pH units**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.53									H

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2106279**

21-Jun-21

Client: Daniel B. Stephens & Assoc.

Project: Salty Dog

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R78958**	RunNo: **78958**							
Prep Date:	Analysis Date: **6/8/2021**	SeqNo: **2769902**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-1 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R78958**	RunNo: **78958**							
Prep Date:	Analysis Date: **6/8/2021**	SeqNo: **2769903**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	73.44	20.00	80.00	0	91.8	90	110			

Sample ID: **lcsd alk**	SampType: **lcsd**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSS02**	Batch ID: **R78958**	RunNo: **78958**							
Prep Date:	Analysis Date: **6/8/2021**	SeqNo: **2769904**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	74.72	20.00	80.00	0	93.4	90	110	1.73	20	

Sample ID: **mb-2 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R78958**	RunNo: **78958**							
Prep Date:	Analysis Date: **6/8/2021**	SeqNo: **2769926**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-2 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R78958**	RunNo: **78958**							
Prep Date:	Analysis Date: **6/8/2021**	SeqNo: **2769927**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	74.36	20.00	80.00	0	93.0	90	110			

Sample ID: **2106279-012A dup**	SampType: **dup**	TestCode: **SM2320B: Alkalinity**							
Client ID: **MW-3**	Batch ID: **R78958**	RunNo: **78958**							
Prep Date:	Analysis Date: **6/8/2021**	SeqNo: **2769929**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	227.1	20.00						0.353	20	

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2106279**
21-Jun-21

Client: Daniel B. Stephens & Assoc.
Project: Salty Dog

Sample ID: **MB-60550**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **60550**	RunNo: **79026**
Prep Date: **6/10/2021**	Analysis Date: **6/11/2021**	SeqNo: **2772439** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-60550**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **60550**	RunNo: **79026**
Prep Date: **6/10/2021**	Analysis Date: **6/11/2021**	SeqNo: **2772440** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1030	20.0	1000	0	103	80	120			

Sample ID: **2106279-014ADUP**	SampType: **DUP**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **Injection**	Batch ID: **60550**	RunNo: **79026**
Prep Date: **6/10/2021**	Analysis Date: **6/11/2021**	SeqNo: **2772462** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1220	40.0						0.495	10	*D

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: **Daniel B. Stephens & Assoc.** Work Order Number: **2106279** RcptNo: 1

Received By: **Desiree Dominguez** **6/4/2021 11:00:00 AM** DD

Completed By: **Sean Livingston** **6/4/2021 11:35:56 AM** Sean Livingston

Reviewed By: JO 06-04-21

Chain of Custody

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

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 ☐	# of preserved bottles checked for pH: 4 (<2 or >12 unless noted)
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted? 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 ☐	Checked by: JR 6/4/21

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: Poured off 125ml from sample 012A for ORP analysis JR 6/4/21.

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.8	Good				

Chain-of-Custody Record

Client: Daniel B Stephens

Mailing Address: ABQ OFFICE

Phone #: 505-822-9400

email or Fax#: MZbrozek@Geo-Logic.com

QA/QC Package:

☒ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

☒ Standard ☐ Rush

Project Name: Salty Dog

Project #: DB19.1198.00

Project Manager: M. Zbrozek

Sampler: M. Zbrozek

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 5.6+0.2=5.8 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2106279	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)	Cl only 300					
6/2/21	1615	GW	DBS-1R	1 poly	NA	001											X					
	1645		DBS-2			002											X					
	1550		PMW-1			003											X					
6/3/21	0930		DBS-4			004											X					
	1000		DBS-5			005											X					
	1035		DBS-3			006											X					
	1115		DBS-9			007											X					
	1135		DBS-8			008											X					
	1215		DBS-10			009											X					
	1515		DBS-6			010											X					
↓	1330	↓	MW-5	↓	↓	011											X					

Date:	Time:	Relinquished by:	Received by:	Via:	Date Time
6/4/21	1050			COC	6.4.21 11:00
Date:	Time:	Relinquished by:	Received by:	Via:	Date Time

Remarks:

Page 1 of 2

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.

Chain-of-Custody Record

Client: DBSA

Mailing Address: ABQ Office

Phone #: 505-822-9400

email or Fax#: MZbrozek@Geo-Logic.com

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: Salty Dog

Project #: DB19.1198.00

Project Manager: M. Zbrozek

Sampler: M. Z.

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp (including CF): 5.6+0.2 = 5.8 (°C)

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

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2106279
6/3/21	1455	GW	MW-3	3 poly	Varies	012
↓	1530	↓	Brine	2 poly	↓	013
↓	1545	↓	Injection	2 poly	↓	014

Analysis Request

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 300	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA) ORP	8270 (Semi-VOA)	Total Coliform (Present/Absent)	Spec Grav, TDS, pH	Chloride 300	Sodium 6010B	Sp Conductivity	Total Alk, Bicarb, Carb	Ca, Mg, K, Na 6010B
						X	X			X			X	X	X
										X	X	X			
										X	X	X			

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
6/4/21	0950			CDO	6.4.21	11:00
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time

Remarks:

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

December 20, 2021

John Ayarbe

Daniel B. Stephens & Assoc.
6020 Academy NE Suite 100
Albuquerque, NM 87109
TEL:
FAX:

RE: Salty Dog OrderNo.: 2112013

Dear John Ayarbe:

Hall Environmental Analysis Laboratory received 14 sample(s) on 12/1/2021 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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **2112013**
Date Reported: **12/20/2021**

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: DBS-8
Project: Salty Dog
Collection Date: 11/28/2021 11:18:00 AM
Lab ID: 2112013-001
Matrix: GROUNDWA
Received Date: 12/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Chloride	35	5.0		mg/L	10	12/3/2021 8:38:07 AM	R83267

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: DBS-10
Project: Salty Dog
Collection Date: 11/28/2021 11:46:00 AM
Lab ID: 2112013-002
Matrix: GROUNDWA
Received Date: 12/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Chloride	560	50	*	mg/L	100	12/3/2021 9:15:20 AM	R83267

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 interference
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, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: MW-5
Project: Salty Dog
Collection Date: 11/28/2021 12:45:00 PM
Lab ID: 2112013-003
Matrix: GROUNDWA
Received Date: 12/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Chloride	680	50	*	mg/L	100	12/3/2021 9:40:08 AM	R83267

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** MW-3
Project: Salty Dog **Collection Date:** 11/28/2021 1:52:00 PM
Lab ID: 2112013-004 **Matrix:** GROUNDWA **Received Date:** 12/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY						Analyst: **CAS**	
Specific Gravity	1.004	0			1	12/8/2021 3:22:00 PM	R84392
EPA METHOD 300.0: ANIONS						Analyst: **LRN**	
Chloride	6100	250	*	mg/L	500	12/8/2021 10:58:55 AM	R84398
SM2510B: SPECIFIC CONDUCTANCE						Analyst: **LRN**	
Conductivity	22000	100		µmhos/c	10	12/8/2021 1:34:07 PM	R84394
SM2320B: ALKALINITY						Analyst: **LRN**	
Bicarbonate (As CaCO3)	230.6	20.00		mg/L Ca	1	12/7/2021 12:53:49 PM	R84355
Carbonate (As CaCO3)	ND	2.000		mg/L Ca	1	12/7/2021 12:53:49 PM	R84355
Total Alkalinity (as CaCO3)	230.6	20.00		mg/L Ca	1	12/7/2021 12:53:49 PM	R84355
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	11200	100	*D	mg/L	1	12/2/2021 3:07:00 PM	64244
SM4500-H+B / 9040C: PH						Analyst: **LRN**	
pH	7.66		H	pH units	1	12/7/2021 12:53:49 PM	R84355
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Calcium	1100	100		mg/L	100	12/14/2021 3:33:06 PM	64364
Magnesium	170	10		mg/L	10	12/14/2021 3:29:55 PM	64364
Potassium	17	1.0		mg/L	1	12/9/2021 8:29:10 PM	64364
Sodium	2700	100		mg/L	100	12/14/2021 3:33:06 PM	64364

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: DBS-6
Project: Salty Dog
Collection Date: 11/28/2021 2:11:00 PM
Lab ID: 2112013-005
Matrix: GROUNDWA
Received Date: 12/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Chloride	270	50	*	mg/L	100	12/3/2021 11:06:59 AM	R83267

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 interference
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, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: Brine
Project: Salty Dog
Collection Date: 11/28/2021 2:20:00 PM
Lab ID: 2112013-006
Matrix: GROUNDWA
Received Date: 12/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY						Analyst: **CAS**	
Specific Gravity	1.200	0			1	12/8/2021 3:22:00 PM	R84392
EPA METHOD 300.0: ANIONS						Analyst: **LRN**	
Chloride	200000	10000	*	mg/L	2E+	12/8/2021 11:11:20 AM	R84398
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	303000	2000	*D	mg/L	1	12/2/2021 3:07:00 PM	64244
SM4500-H+B / 9040C: PH						Analyst: **LRN**	
pH	7.12		H	pH units	1	12/7/2021 1:06:21 PM	R84355
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Sodium	51000	1000		mg/L	1E+	12/14/2021 3:48:38 PM	64364

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: Injection
Project: Salty Dog
Collection Date: 11/28/2021 2:25:00 PM
Lab ID: 2112013-007
Matrix: GROUNDWA
Received Date: 12/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY						Analyst: **CAS**	
Specific Gravity	1.001	0			1	12/8/2021 3:22:00 PM	R84392
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Chloride	1100	50	*	mg/L	100	12/3/2021 11:56:39 AM	R83267
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	2290	40.0	*D	mg/L	1	12/2/2021 3:07:00 PM	64244
SM4500-H+B / 9040C: PH						Analyst: **LRN**	
pH	7.86		H	pH units	1	12/7/2021 1:10:52 PM	R84355
EPA 6010B: TOTAL RECOVERABLE METALS						Analyst: **JLF**	
Sodium	480	10		mg/L	10	12/14/2021 3:51:37 PM	64364

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: DBS-9
Project: Salty Dog
Collection Date: 11/28/2021 2:44:00 PM
Lab ID: 2112013-008
Matrix: GROUNDWA
Received Date: 12/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Chloride	300	50	*	mg/L	100	12/3/2021 1:11:07 PM	R83267

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** DBS-2
Project: Salty Dog **Collection Date:** 11/28/2021 3:00:00 PM
Lab ID: 2112013-009 **Matrix:** GROUNDWA **Received Date:** 12/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Chloride	100	5.0		mg/L	10	12/3/2021 1:23:32 PM	R83267

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: DBS-4
Project: Salty Dog
Collection Date: 11/28/2021 3:15:00 PM
Lab ID: 2112013-010
Matrix: GROUNDWA
Received Date: 12/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Chloride	40	5.0		mg/L	10	12/3/2021 1:48:20 PM	R83267

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: DBS-3
Project: Salty Dog
Collection Date: 11/28/2021 3:36:00 PM
Lab ID: 2112013-011
Matrix: GROUNDWA
Received Date: 12/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Chloride	53	5.0		mg/L	10	12/3/2021 2:13:10 PM	R83267

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: DBS-5
Project: Salty Dog
Collection Date: 11/28/2021 3:50:00 PM
Lab ID: 2112013-012
Matrix: GROUNDWA
Received Date: 12/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **CAS**	
Chloride	200	5.0		mg/L	10	12/3/2021 3:02:50 PM	R83267

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc. **Client Sample ID:** DBS-1R
Project: Salty Dog **Collection Date:** 11/28/2021 4:05:00 PM
Lab ID: 2112013-013 **Matrix:** GROUNDWA **Received Date:** 12/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **LRN**	
Chloride	2100	100	*	mg/L	200	12/8/2021 11:23:45 AM	R84398

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Daniel B. Stephens & Assoc.
Client Sample ID: PMW-1
Project: Salty Dog
Collection Date: 11/28/2021 4:22:00 PM
Lab ID: 2112013-014
Matrix: GROUNDWA
Received Date: 12/1/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **LRN**	
Chloride	9800	500	*	mg/L	1E+	12/8/2021 11:36:10 AM	R84398

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

Qualifiers:

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

ANALYTICAL REPORT

December 09, 2021

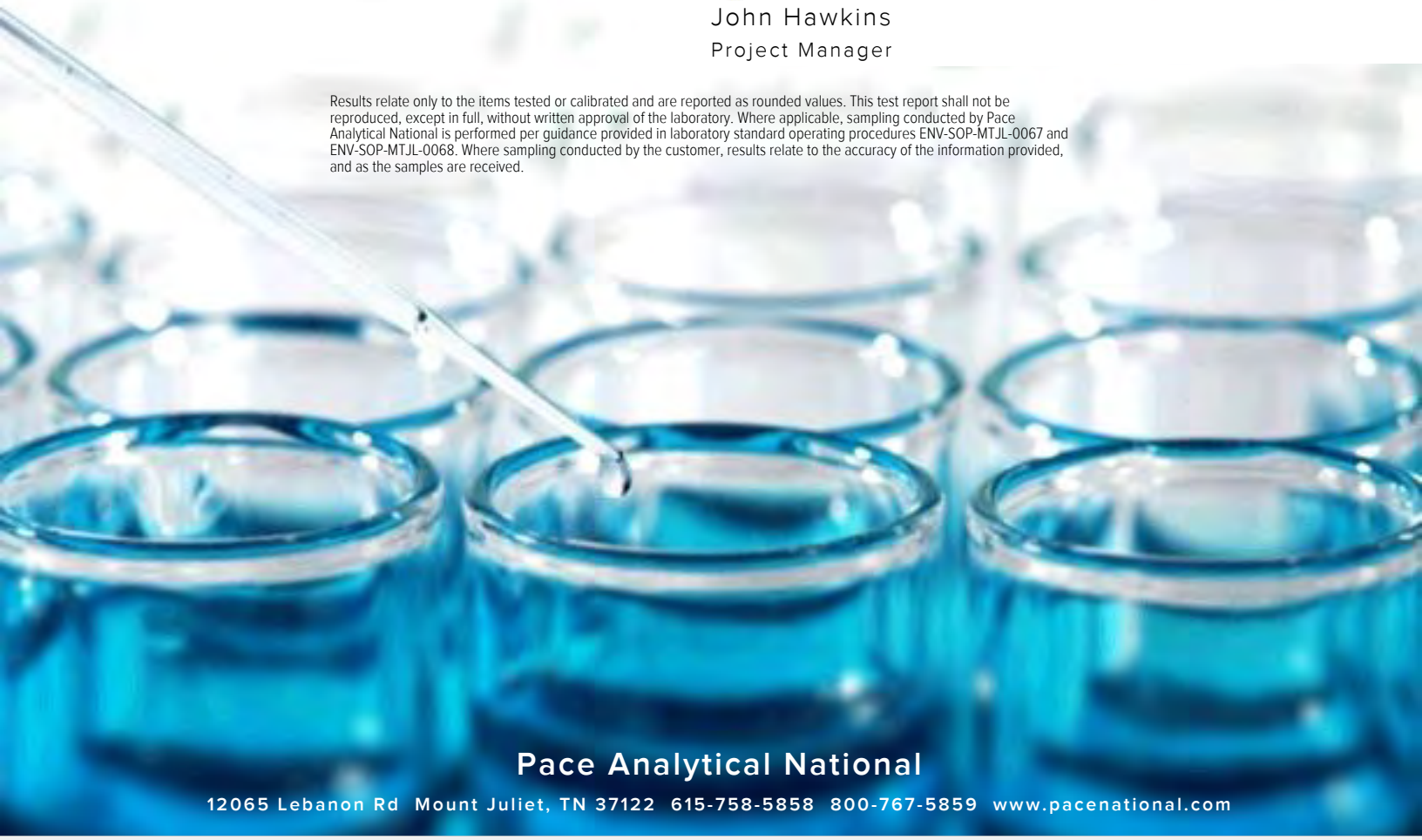
Hall Environmental Analysis Laboratory

Sample Delivery Group:	L1436983
Samples Received:	12/02/2021
Project Number:	
Description:	

Report To: Andy Freeman
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager



Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

SAMPLE SUMMARY

2112013-004C MW-3 L1436983-01 GW

Collected by	Collected date/time	Received date/time
	11/28/21 13:52	12/02/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2580	WG1784670	1	12/09/21 04:02	12/09/21 04:02	ARD	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Wet Chemistry by Method 2580

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	mV			date / time	
ORP	235	T8	1	12/09/2021 04:02	WG1784670

L1436983-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1436983-01 12/09/21 04:02 • (DUP) R3738691-3 12/09/21 04:02

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	235	240	1	4.70		20

L1437663-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1437663-01 12/09/21 04:02 • (DUP) R3738691-4 12/09/21 04:02

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	307	307	1	0.700		20

L1437663-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1437663-02 12/09/21 04:02 • (DUP) R3738691-5 12/09/21 04:02

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	276	276	1	0.100		20

L1437663-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1437663-03 12/09/21 04:02 • (DUP) R3738691-6 12/09/21 04:02

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	310	312	1	2.00		20

L1437663-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1437663-04 12/09/21 04:02 • (DUP) R3738691-7 12/09/21 04:02

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	109	113	1	4.30		20

L1437663-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1437663-05 12/09/21 04:02 • (DUP) R3738691-8 12/09/21 04:02

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	97.4	101	1	3.80		20

QUALITY CONTROL SUMMARY

L1436983-01

L1437663-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1437663-06 12/09/21 04:02 • (DUP) R3738691-9 12/09/21 04:02

Analyte	Original Result mV	DUP Result mV	Dilution	DUP Diff mV	DUP Qualifier	DUP Diff Limits mV
ORP	243	246	1	3.10		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3738691-1 12/09/21 04:02 • (LCSD) R3738691-2 12/09/21 04:02

Analyte	Spike Amount mV	LCS Result mV	LCSD Result mV	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	Diff mV	Diff Limits mV
ORP	223	223	227	100	102	86.0-105			3.30	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
T8	Sample(s) received past/too close to holding time expiration.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

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

SUB CONTRATOR: **Pace TN**	COMPANY: **PACE TN**	PHONE: **(800) 767-5859**	FAX: **(615) 758-5859**
ADDRESS: **12065 Lebanon Rd**		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: **Mt. Juliet, TN 37122**			

L1436983

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2112013-004C	MW-3	125HDP	Groundwater	11/28/2021 1:52:00 PM	1	ORP -01

I129

Sample Receipt Checklist
COC Seal Present/Intact: __Y __N — If Applicable
COC Signed/Accurate: __Y __N — VOA Zero Headspace: __Y __N
Bottles arrive intact: __Y __N — Pres.Correct Check: __Y __N
Correct bottles used: __Y __N
Sufficient volume sent: __Y __N
RAD Screen <0.5 mR/hr: __Y __N

Temp: 1.0 +0 = 1.0

Fedex: 7753 6437 6514

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: Sec	Date: 12/1/2021	Time: 9:46 AM	Received By:	Date: 12/2/21	Time: 0900
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples _____ °C Attempt to Cool ? _____
Comments: _____

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2112013**

20-Dec-21

Client: Daniel B. Stephens & Assoc.

Project: Salty Dog

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R83267**	RunNo: **83267**
Prep Date:	Analysis Date: **12/3/2021**	SeqNo: **2961166** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R83267**	RunNo: **83267**
Prep Date:	Analysis Date: **12/3/2021**	SeqNo: **2961167** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.6	0.50	5.000	0	92.6	90	110			

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R84398**	RunNo: **84398**
Prep Date:	Analysis Date: **12/8/2021**	SeqNo: **2964895** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R84398**	RunNo: **84398**
Prep Date:	Analysis Date: **12/8/2021**	SeqNo: **2964896** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	93.0	90	110			

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 interference
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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2112013**

20-Dec-21

Client: Daniel B. Stephens & Assoc.

Project: Salty Dog

Sample ID: **lcs-1 99.3uS eC**	SampType: **lcs**	TestCode: **SM2510B: Specific Conductance**
Client ID: **LCSW**	Batch ID: **R84394**	RunNo: **84394**
Prep Date:	Analysis Date: **12/8/2021**	SeqNo: **2964718** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	99.30	0	103	85	115			

Sample ID: **lcs-2 99.3uS eC**	SampType: **lcs**	TestCode: **SM2510B: Specific Conductance**
Client ID: **LCSW**	Batch ID: **R84394**	RunNo: **84394**
Prep Date:	Analysis Date: **12/8/2021**	SeqNo: **2964745** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	10	99.30	0	104	85	115			

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 interference
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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2112013**

20-Dec-21

Client: Daniel B. Stephens & Assoc.

Project: Salty Dog

Sample ID: **MB-64364**	SampType: **MBLK**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **PBW**	Batch ID: **64364**	RunNo: **84455**
Prep Date: **12/7/2021**	Analysis Date: **12/9/2021**	SeqNo: **2966812** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID: **LCS-64364**	SampType: **LCS**	TestCode: **EPA 6010B: Total Recoverable Metals**
Client ID: **LCSW**	Batch ID: **64364**	RunNo: **84455**
Prep Date: **12/7/2021**	Analysis Date: **12/9/2021**	SeqNo: **2966814** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	51	1.0	50.00	0	103	80	120			
Magnesium	52	1.0	50.00	0	104	80	120			
Potassium	51	1.0	50.00	0	102	80	120			
Sodium	51	1.0	50.00	0	103	80	120			

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 interference
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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2112013**

20-Dec-21

Client: Daniel B. Stephens & Assoc.

Project: Salty Dog

Sample ID: **mb-1 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R84355**	RunNo: **84355**							
Prep Date:	Analysis Date: **12/7/2021**	SeqNo: **2963279**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-1 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R84355**	RunNo: **84355**							
Prep Date:	Analysis Date: **12/7/2021**	SeqNo: **2963280**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	84.96	20.00	80.00	0	106	90	110			

Sample ID: **mb-2 alk**	SampType: **mblk**	TestCode: **SM2320B: Alkalinity**							
Client ID: **PBW**	Batch ID: **R84355**	RunNo: **84355**							
Prep Date:	Analysis Date: **12/7/2021**	SeqNo: **2963302**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20.00								

Sample ID: **lcs-2 alk**	SampType: **lcs**	TestCode: **SM2320B: Alkalinity**							
Client ID: **LCSW**	Batch ID: **R84355**	RunNo: **84355**							
Prep Date:	Analysis Date: **12/7/2021**	SeqNo: **2963303**	Units: **mg/L CaCO3**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	76.56	20.00	80.00	0	95.7	90	110			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2112013**
20-Dec-21

Client: Daniel B. Stephens & Assoc.
Project: Salty Dog

Sample ID: **2112013-004ADUP**	SampType: **DUP**	TestCode: **Specific Gravity**							
Client ID: **MW-3**	Batch ID: **R84392**	RunNo: **84392**							
Prep Date:	Analysis Date: **12/8/2021**	SeqNo: **2964544**	Units:						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	1.006	0						0.199	20	

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 interference
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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2112013**

20-Dec-21

Client: Daniel B. Stephens & Assoc.

Project: Salty Dog

Sample ID: **MB-64244**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **64244**	RunNo: **83248**
Prep Date: **12/1/2021**	Analysis Date: **12/2/2021**	SeqNo: **2957843** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-64244**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **64244**	RunNo: **83248**
Prep Date: **12/1/2021**	Analysis Date: **12/2/2021**	SeqNo: **2957844** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	996	20.0	1000	0	99.6	80	120			

Qualifiers:

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

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: Daniel B. Stephens & Assoc. | Work Order Number: 2112013 | RcptNo: 1

Received By: Sean Livingston 12/1/2021 8:00:00 AM S-Lyst

Completed By: Sean Livingston 12/1/2021 9:22:29 AM S-Lyst

Reviewed By: ~~JR 12/1/21~~ JR 12/1/21 JR 12/1/21

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: 3 (<2 or >12 unless noted)

Adjusted? no

Checked by: CM 12/1/21

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	0.2	Good				
2	2.8	Good				

Chain-of-Custody Record

Client: DBS&A

Mailing Address: 6020 Academy Rd NE Suite 100, Albuquerque NM 87123

Phone #: 505-822-9400

email or Fax#: JAYARBE@Geo-logic.com

QA/QC Package:
☑ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: SALTY DOG

Project #: DB19.1198.00

Project Manager: J. AYARBE

Sampler: M. Zbrozek

On Ice: ☑ Yes ☐ No

# of Coolers: 2

Cooler Temp(including CF): 0.2 +0 = 0.2 (°C) 2.8 +0 = 2.8

HEAL No. 2112013

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.	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 300	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA) TORP	8270 (Semi-VOA)	Total Coliform (Present/Absent)	Spec Grav, TDS, pH	Sodium 6010B	Spec Conductivity	Total Alk, Bicarb, Carb	Ca, Mg, K, Na, 6010B	Cl ONLY EPA 300
11/23/21	1118	GW	DBS-8	1 poly	none	001																X
	1146		DBS-10			002																X
	1245		MW-5			003																X
	1352		MW-3	4 poly	3 none 1 HNO_3	004							X	X			X		X	X	X	
	1411		DBS-6	1 poly	none	005											X					X
	1420		BRINE	2 poly	1 None 1 HNO_3	006											X	X				X
	1425		Injection	2 poly	1 none 1 HNO_3	007											X	X				X
	1444		DBS-9	1 poly	none	008																X
	1500		DBS-2			009																X
	1515		DBS-4			010																X
	1536		DBS-3			011																X
	1550		DBS-5			012																X

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
11/29/21	1700		A Cummins		11/29/21	1700
11/30/21	1900		See Courier		12/1/21	8:00

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.

Chain-of-Custody Record

Client: Daniel B Stephens & Assoc

Mailing Address: 6020 Academy RD NE Suite #100, Albuquerque NM 87109

Phone #: 505-822-9400

email or Fax#: JAYARBE@Geo-logic.com

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: Salty Dog

Project #: DB19.1198.00

Project Manager: J. AYARBE

Sampler: M. Zbrozek

On Ice: ☑ Yes ☐ No

# of Coolers: 2

Cooler Temp(including CF): 0.2+0=0.2 (°C) 2.9+0=2.9°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.	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_4 300)	8260 (VOA) ORP	8270 (Semi-VOA)	Total Coliform (Present/Absent)	Spec Grav, TDS, pH	Sodium 6010B	Spec Conductivity	Total A'K, Bicarb, Carb	Ca, Mg, K, Na 6010B	Cl ONLY 300
11/28/21	1605	GW	DBS-1R	1 poly	none	013																X
1	1622	1	PMW-1	1	1	014																X

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
11/29/21	1700				11/29/21	1700
11/30/21	1900		See courier		12/1/21	8:00

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.

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

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

SUB CONTRATOR: **Pace TN**	COMPANY: **PACE TN**	PHONE: **(800) 767-5859**	FAX: **(615) 758-5859**
ADDRESS: **12065 Lebanon Rd**		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: **Mt. Juliet, TN 37122**			

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2112013-004C	MW-3	125HDP	Groundwater	11/28/2021 1:52:00 PM	1	ORP

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: Sul	Date: 12/1/2021	Time: 9:46 AM	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAT: Standard ☑ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:

☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY

Temp of samples _____ °C Attempt to Cool ? _____

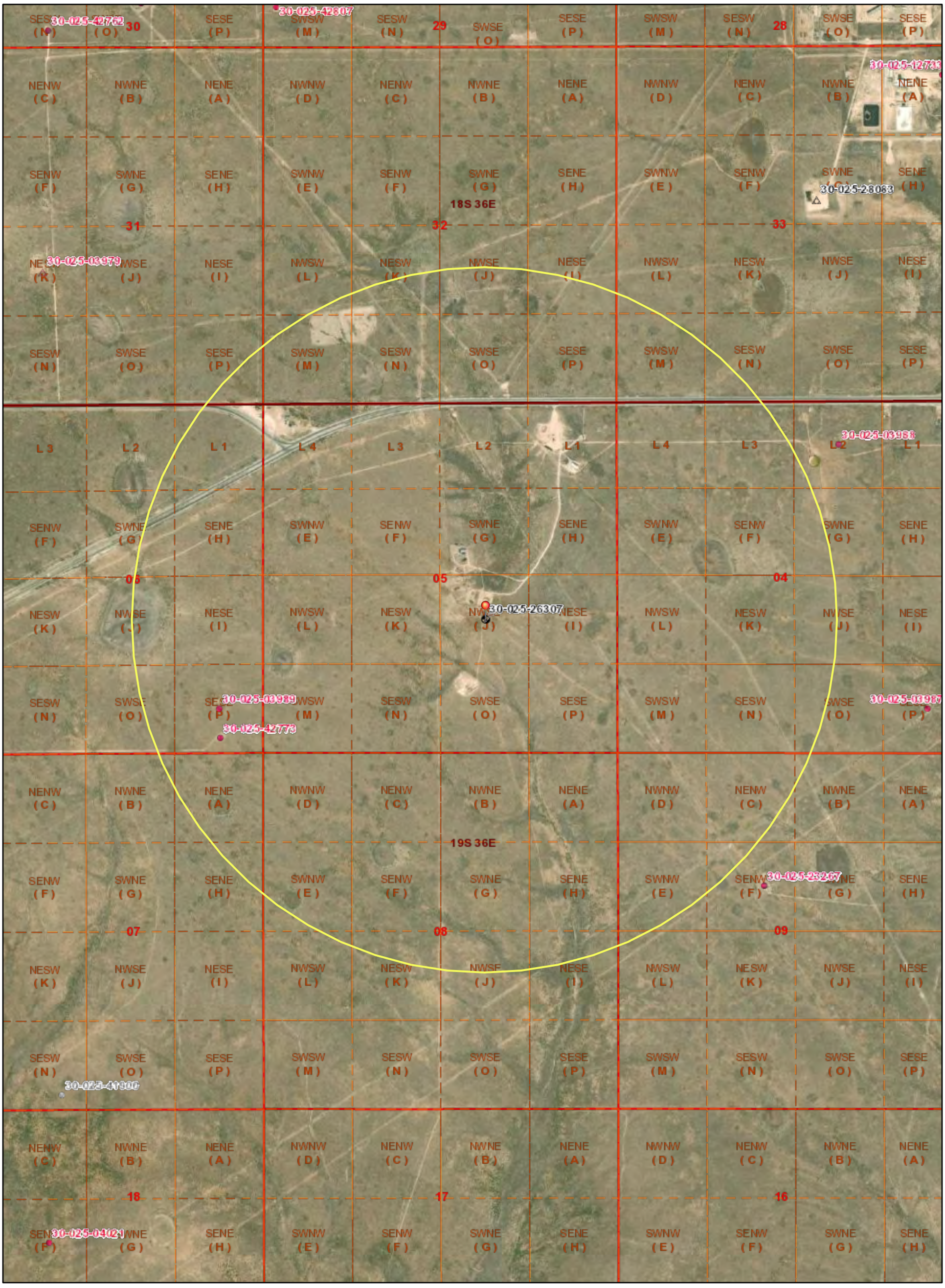
Comments: _____

Appendix E

Area of Review Evaluation

DBS&A
Daniel B. Stephens & Associates, Inc.

30-025-26307 - BW-8 Area of Review



4/12/2022, 9:21:04 AM

Wells - Large Scale
- undefined
- Miscellaneous
- CO2, Active
- CO2, Cancelled
- CO2, New
- CO2, Plugged
- CO2, Temporarily Abandoned
- Gas, Active
- Gas, Cancelled
- Gas, New
- Gas, Plugged
- Gas, Temporarily Abandoned
- Injection, Active
- Injection, Cancelled
- Injection, New
- Injection, Plugged
- Injection, Temporarily Abandoned
- Oil, Active
- Oil, Cancelled
- Oil, New
- Oil, Plugged
- Oil, Temporarily Abandoned
- Salt Water Injection, Active

1:20,000

0 0.17 0.35 0.7 mi

0 0.3 0.6 1.2 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Oil Conservation Division of the New Mexico Energy, Minerals and Natural Resources Department.
BLM

New Mexico Oil Conservation Division

NM OCD Oil and Gas Map. http://nm-emnrd.maps.arcgis.com/apps/webappviewer/index.html?id=4d017f2306164de29fd2fb9f8f35ca75: New Mexico Oil Conservation Division

Appendix F

2021 Survey Data for Land Surface Subsidence Monitoring

DBS&A
Daniel B. Stephens & Associates, Inc.

Atkins
ENGINEERING ASSOCIATES INC.

2904 W 2nd St.
Roswell, NM 88201
voice: 575.624.2420
fax: 575.624.2421
www.atkinseng.com

06/29/2021

Michael C Zbrozek
Geologist
Daniel B. Stephens & Associates, Inc.
6020 Academy Road NE, Suite 100
Albuquerque, NM 87109

Emailed to: mzbrozek@geo-logic.com on date of letter.

RE: Salty Dog Brine Facility

Atkins Engineering Associates, Inc. (AEA) has completed the survey at the Salty Dog Brine Facility. The following table summarizes the coordinate and elevation data for the subsidence monitoring locations located on site.

Name	Northing (USft)	Easting (USft)	Latitude (DMS)	Longitude (DMS)	Elevation (USft)
SMP-1	615475.977	836301.437	32°41'17.960"	-103°22'28.520"	3810.10
SMP-2	615354.850	836264.338	32°41'16.795"	-103°22'28.966"	3809.02
SMP-3	615673.004	836230.089	32°41'19.945"	-103°22'29.334"	3808.83
SMP-4	615615.830	836543.487	32°41'19.352"	-103°22'25.673"	3806.33
SMP-5	615539.029	836348.733	32°41'18.609"	-103°22'27.960"	3810.06
Benchmark	615608.14	836310.07	32°41'19.27"	-103°22'28.40"	3808.62

Horizontal coordinates shown are coordinates provided by earlier survey. Previous survey was conducted by Gary L. Jones, NMPS 7977. Coordinates are in NM State Plane East (NAD83).

Elevations for subsidence monitoring locations were established by using closed level loops, referenced to onsite benchmark previously set by Gary L. Jones. Benchmark is a ½" rebar with plastic cap 7977.

Attached to this email is a .xlsx spreadsheet of the table above.

If you have any questions, please contact me at (575) 624-2420 or ryan@atkinseng.com

Ryan C. Cortez, PS 22761

6/29/2021
Date (Signed)

RYAN C CORTEZ
NEW MEXICO
22761
PROFESSIONAL SURVEYOR

Atkins
ENGINEERING ASSOCIATES INC.

2904 W 2nd St.
Roswell, NM 88201
voice: 575.624.2420
fax: 575.624.2421
www.atkinseng.com

11/29/2021

Michael C Zbrozek
Geologist
Daniel B. Stephens & Associates, Inc.
6020 Academy Road NE, Suite 100
Albuquerque, NM 87109

Emailed to: mzbrozek@geo-logic.com on date of letter.

RE: Salty Dog Brine Facility

Atkins Engineering Associates, Inc. (AEA) has completed the survey at the Salty Dog Brine Facility. Field work was performed on 11/23/2021. The following table summarizes the coordinate and elevation data for the subsidence monitoring locations located on site.

Name	Northing (USft)	Easting (USft)	Latitude (DMS)	Longitude (DMS)	Elevation (USft)
SMP-1	615475.977	836301.437	32°41'17.960"	-103°22'28.520"	3810.10
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If you have any questions, please contact me at (575) 624-2420 or ryan@atkinseng.com

Ryan C. Cortez, PS 22761

11/29/2021
Date (Signed)