# BW - ____8____

# ANNUAL REPORTS

(2)

## Chavez, Carl J, EMNRD

**From:** Ayarbe, John <jayarbe@geo-logic.com>
**Sent:** Friday, May 3, 2019 12:13 PM
**To:** Chavez, Carl J, EMNRD
**Cc:** 'Pieter Bergstein (pieter@bergsteinenterprises.com)'; 'susan@thestandardenergy.com'; Zbrozek, Michael
**Subject:** [EXT] 2018 Annual Class III Well Report - Salty Dog Brine Station
**Attachments:** Salty Dog 2018 Annual Report_5-03-2019.pdf

Hi Carl,

Attached is an electronic copy of the 2018 Annual Class III Well Report for the Salty Dog brine station. The report was prepared in accordance with the requirements of discharge permit (DP) BW-8.

Please let me know if you have questions.

Thanks,

**John P. Ayarbe**
Senior Hydrogeologist

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# 2018 Annual Class III Well Report

# Salty Dog Brine Station

## DP BW-8, API No. 30-025-26307

## Lea County, New Mexico

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

**May 3, 2019**

*Daniel B. Stephens & Associates, Inc.*

6020 Academy NE, Suite 100 • Albuquerque, New Mexico 87109

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### Lea County, New Mexico

## 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 the 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 62/80) (Figure 1). This report summarizes operational and monitoring activities conducted at the site in 2018, and was prepared in accordance with the requirements of discharge permit (DP) BW-8, last renewed on November 8, 2013 (NMEMNRD, 2013). The 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, property damage, or 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). 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 presents a November 2017 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 November 8, 2013 (NMEMNRD, 2013). A permit renewal application was submitted to OCD in July 2018 (DBS&A, 2018c). OCD deemed the application administrative complete on October 11, 2018 (OCD, 2018).

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 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 60 feet below ground surface (bgs). Figure 4 shows the locations of the wells.

## 2. Brine Well Operational Activities

The following subsections report fluid injection and 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 2018, monthly ratios of injected water to produced brine ranged from 0.93 to 1.30.

**Table 1. Monthly Water Injection and Brine Production Volumes, 2018**

| Month | Volume (bbl) | | Ratio (injection:production) |
|---|---|---|---|
| | Water Injection | Brine Production | |
| January | — | — | — |
| February | 15,753 | 12,125 | 1.30 |
| March | 36,001 | 35,715 | 1.01 |
| April | 15,840 | 16,120 | 0.98 |
| May | 16,765 | 15,925 | 1.05 |
| June | 22,045 | 21,555 | 1.02 |
| July | — | 28,520 | — |
| August | 37,310 | 36,805 | 1.01 |
| September | 20,300 | 20,025 | 1.01 |
| October | 16,769 | 17,192 | 0.98 |
| November | 24,745 | 26,605 | 0.93 |
| December | 28,082 | 28,556 | 0.98 |
| Annual total | 233,610 | 259,143 | — |

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 6,355,938 bbl.

In 2018, brine production activities at the site dissolved an estimated 32,541 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 915,845 bbl. 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.) | 7.86 | 7.11 |
| Specific gravity (unitless) | 0.9972 | 1.179 |
| Chloride | 415 | 190,000 |
| Sodium | NM | 71,500 |
| TDS | 1,011 | 273,500 |

[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 2018, recorded daily tubing pressure was 100 pounds per square inch (psi), while annulus pressure ranged from 325 to 375 psi.

### *2.3 Chemical and Physical Analyses*

Condition 2.A of DP BW-8 requires quarterly 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. Since DP BW-8 was issued, PAB requested that the monitoring frequency be reduced from quarterly to semiannually. In consultation with OCD, PAB initiated semiannual monitoring in 2017.

Table 2 reports average constituent concentrations calculated from the 2018 semiannual monitoring data. Samples of the injection water and produced brine were collected in June and November 2018. 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 1,011 milligrams per liter (mg/L) and 0.9972, respectively, while the same properties of the produced brine are 273,500 mg/L and 1.179, respectively. Appendix C 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*

In December 2017, the brine well was damaged because anhydrite had collapsed the well tubing, stopping brine production (Sayre, 2017). Between December 2017 and February 2018, PAB had the well repaired. The existing well, which was originally drilled to 2,958 feet bgs, was redrilled and cleaned out to 2,791 feet bgs. New tubing was then installed to a depth of 2,610 feet bgs. The tubing was perforated with 0.20-inch-diameter holes from 2,590 to 2,592 feet bgs (Figure 3). A drilling and repair log and C-103 forms were submitted to OCD (DBS&A, 2018a). The brine well was operational again in February 2018.

In October 2018, PAB stopped pumping fresh water from wells FWS-2 and RW-2, as they replaced the pumps at the two wells. During this period, fresh water for injection was supplied by pumping from FWS-1 exclusively.

### *2.5 Leaks and Spills*

There were no leaks or spills in 2018.

### *2.6 Area of Review*

Condition 3.L of DP BW-8 requires Salty Dog to report within 72 hours the discovery of any new wells, conduits, or other devices that are both within a 1-mile radius and 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 February 28, 2019, 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 D provides a map produced from the area of review evaluation. The map shows that there are no new brine wells or other penetrations within a 1-mile radius of the site that may penetrate into the injection zone of the Salty Dog brine well.

### *2.7 Mechanical Integrity Test*

In December 2017, the brine well was damaged because anhydrite had collapsed the well tubing. The well was subsequently repaired and operational again in February 2018 (see Section 2.4). On February 9, 2018, before placing the well back in operation, PAB conducted a mechanical integrity test (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

In March 2018, PAB services contracted Peterson Drilling and Testing, Inc. and DBS&A to install a new monitor well and five subsidence survey monitoring points at the site (DBS&A, 2018b). As requested by OCD, the new monitor well, designated DBS-10, was installed in the brine well area, approximately 300 feet downgradient of existing monitor well MW-5. In accordance with the existing groundwater monitoring program, DBS-10 is monitored semiannually, and the monitoring reported in the semiannual groundwater monitoring and operation and maintenance (O&M) reports. 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). The monitoring points are surveyed semiannually, and the results are reported in the annual Class III well reports.

During the second semiannual groundwater monitoring event in November 2018, DBS&A discovered that the totalizer flow meter at well FWS-1 was broken. PAB replaced the flow meter in December 2018.

PAB has had difficulty maintaining pumping in the brine well area. In October 2018, the 3-horsepower pump at RW-2 burned out and was subsequently replaced with a bladder pump. PAB installed a bladder pump in an effort to prevent pump burnout.

## 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, 2013). In March 2018, five subsidence survey monitoring points were installed to meet this condition (Figure 5). Basin Surveys of Hobbs, New Mexico surveyed the monitoring points after their installation (Appendix E). 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, 2013). Basin Surveys conducted the 2018 semiannual surveys on June 19 and December 15, 2018. The survey data are reported in Table 3 and show no indication of land subsidence. The semiannually surveyed elevations are within ±0.02 foot of the initial survey. Appendix E provides the survey reports.

**Table 3. Semiannual Surface Subsidence Monitoring, 2018**

| Survey Monitoring Point | Elevation (feet msl) | | |
|---|---|---|---|
| | Initial 3/23/2018 | First Semiannual 6/19/2018 | Second Semiannual 12/15/2018 |
| SMP-01 | 3,810.11 | 3,810.10 | 3,810.10 |
| SMP-02 | 3,809.01 | 3,809.02 | 3,809.00 |
| SMP-03 | 3,808.80 | 3,808.82 | 3,808.81 |
| SMP-04 | 3,806.32 | 3,806.33 | 3,806.32 |
| SMP-05 (brine well) | 3,811.72 | 3,811.71 | 3,811.72 |

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 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 (DBS&A, 2019). The data include water levels and water quality at the site monitor wells. Site monitor wells are shown in Figure 4.

## References

Daniel B. Stephens & Associates, Inc. (DBS&A). 2008. *Closure report, brine pond and loading area, Salty Dog Brine Station, Lea County, New Mexico*. Prepared for the New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division, Environmental Bureau, Santa Fe, New Mexico. December 3, 2008.

DBS&A. 2009. *Recovery well installation and pump test report, Salty Dog Brine Station, Lea County, New Mexico*. Prepared for the New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division, Environmental Bureau, Santa Fe, New Mexico. November 20, 2009.

DBS&A. 2014. *Work plan for surface subsidence monitoring and solution cavern characterization, Salty Dog Brine Station*. Prepared for the New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division, Environmental Bureau, Santa Fe, New Mexico. September 17, 2014.

DBS&A. 2018a. *2017 annual Class III well report, Salty Dog Brine Station, DP BW-8, API No. 30-025-26307, Lea County, New Mexico*. Prepared for the New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division. May 1, 2018.

DBS&A. 2018b. Letter report from John Ayarbe and Michael D. McVey to Carl Chavez, OCD, regarding Installation of monitor well and subsidence survey monitoring points, Salty Dog Brine Station (API No. 30-025-26307). June 25, 2018.

DBS&A. 2018c. Discharge plan application for brine extraction facilities submitted to OCD for Salty Dog Brine Station. Transmitted electronically by e-mail from John P. Ayarbe to Carl J. Chavez, OCD, regarding Salty Dog Brine Station - DP BW-8 renewal application. July 9, 2018.

DBS&A. 2019. *Semiannual groundwater monitoring and O&M report, July 1 through December 31, 2018, Salty Dog Brine Station, Lea County, New Mexico*. Prepared for the New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division, Environmental Bureau, Santa Fe, New Mexico. March 22, 2019.

Martin Water Laboratories, Inc. (Martin). 1982. Result of water analyses for raw water and brine water samples collected November 1, 1982. Prepared for Natural Resources Engineering Inc. November 1, 1982.

New Mexico Energy, Minerals and Natural Resources Department (NMEMNRD). 2012. Presentation from pre-proposal conference, Request for professional & technical services, I&W Brine Cavern project, Carlsbad, New Mexico. May 9, 2012.

NMEMNRD. 2013. Letter from Jami Bailey to Pieter Bergstein, Salty Dog, Inc., regarding Renewal of discharge permit BW-8 for brine supply well #1 in Unit J of Section 5, Township 19 South, Range 36 East NMPM, Lea County, New Mexico. November 8, 2013.

Oil Conservation Division, New Mexico Energy, Minerals and Natural Resources Department (OCD). 1994. Letter from Roger C. Anderson to Larry Squires, Salty Dog, regarding Discharge plan BW-08 renewal, Salty Dog Inc. water station, Lea County, New Mexico. March 4, 1994.

Salty Dog, Inc. (Salty Dog). 1988. Letter report outlining facility data for quarter ending September 1987. February 25, 1988.

Salty Dog. 1999. Form C-103 report on Brine supply well #1. Submitted September 8, 1999. Approved by OCD December 1, 1999.

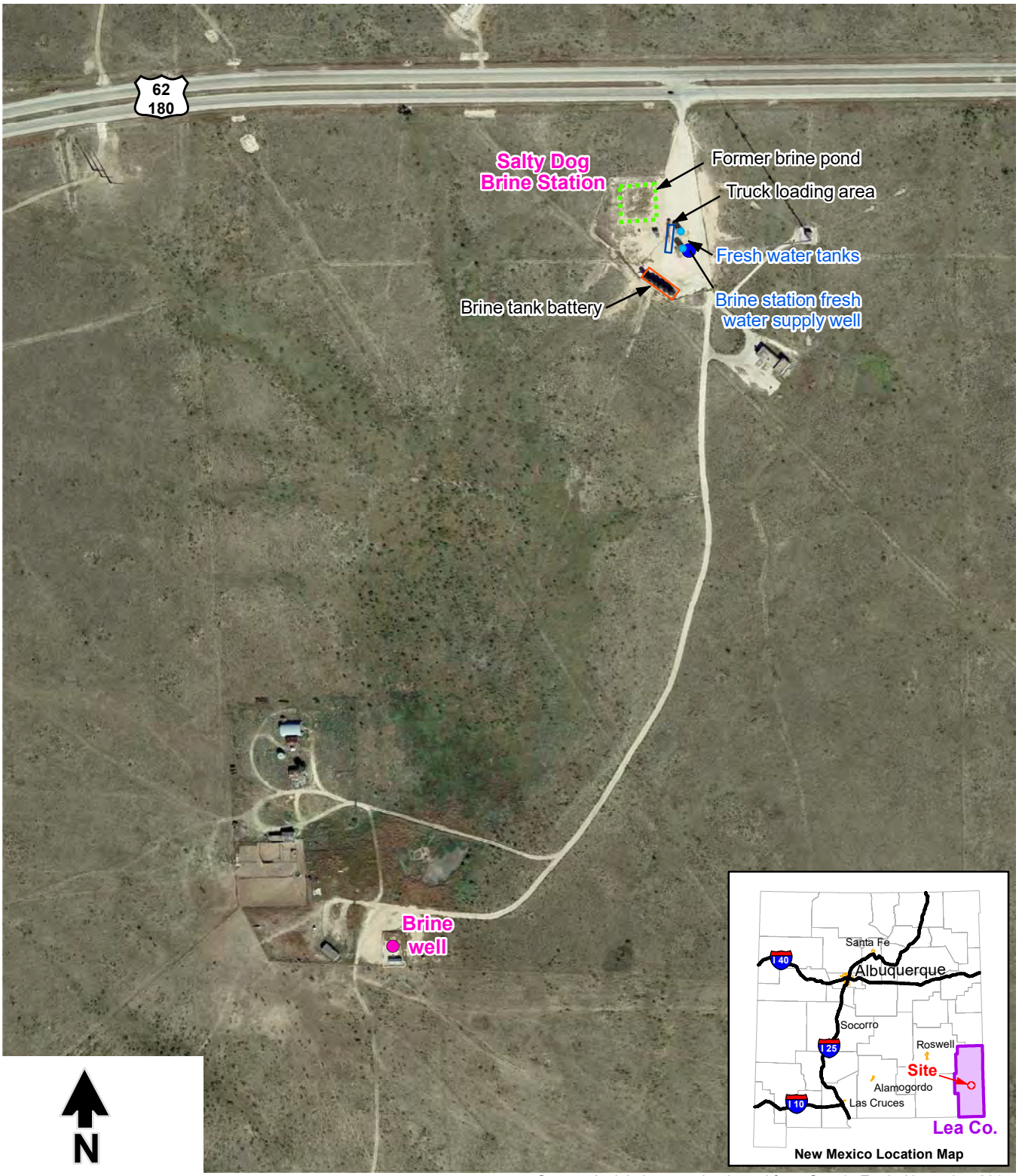
Salty Dog. Undated. E-mail from James Millett to Jim Griswold, OCD, regarding Salty Dog 2009 sales.

Sayre, J. 2017. Personal communication between Jim Sayre, PAB Services, Inc., and Daniel B. Stephens & Associates, Inc. December 2017.

SOCON Sonar Well Services, Inc. (SOCON). 2009. *ECHO-LOG, Salty Dog, Inc. Brine well No: 1, Hobbs, New Mexico: First SOCON Sonar Well Services survey.* February 5, 2009.

Unichem International (Unichem). 1987. Laboratory results for water samples collected on November 25, 1987. Prepared for Larry Squires. December 1, 1987.

# Figures




Source: Aerial photograph adapted from Google Earth, November 2017.

S:\PROJECTS\ES08.0118_SALTY_DOG_2018\GIS\MXD\ANNUAL_2018\FIG01_SITE_LOCATION_AND_FACILITIES.MXD

*Daniel B. Stephens & Associates, Inc.*
4/30/2019
JN ES08.0118

SALTY DOG BRINE STATION
**Site Location and Facilities**

Figure 1

S:\PROJECTS\ES08.0118_SALTY_DOG_2018\GIS\MXD\ANNUAL_2018\FIG02_SITE_2018_AERIAL_PHOTO.MXD


Source: Aerial photograph adapted from Google Earth, November 2017.

Figure 2

SALTY DOG BRINE STATION

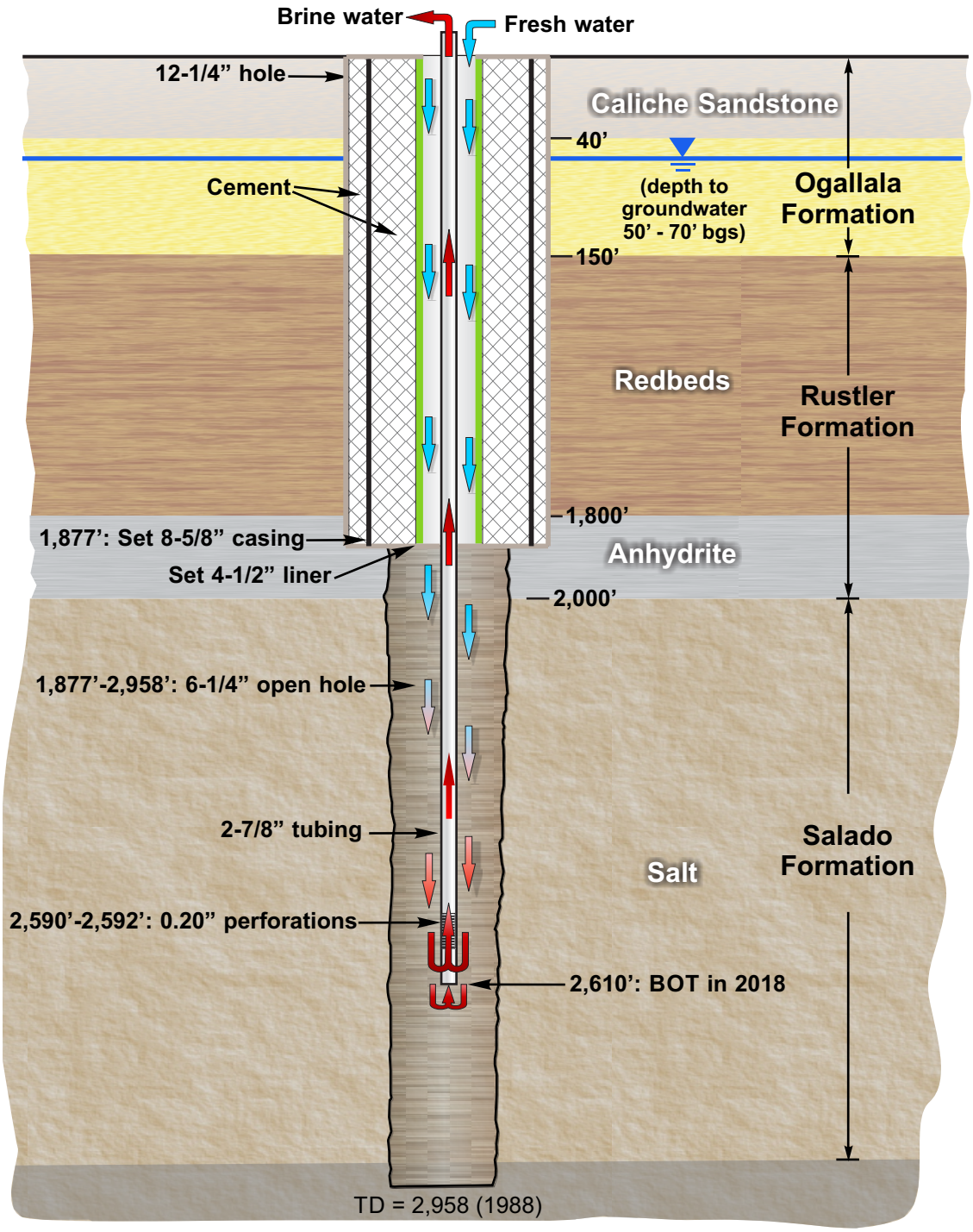
**2017 Aerial Photograph of Salty Dog Brine Station**

*Daniel B. Stephens & Associates, Inc.*

4/30/2019

JN ES08.0118

## 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)

SALTY DOG BRINE STATION

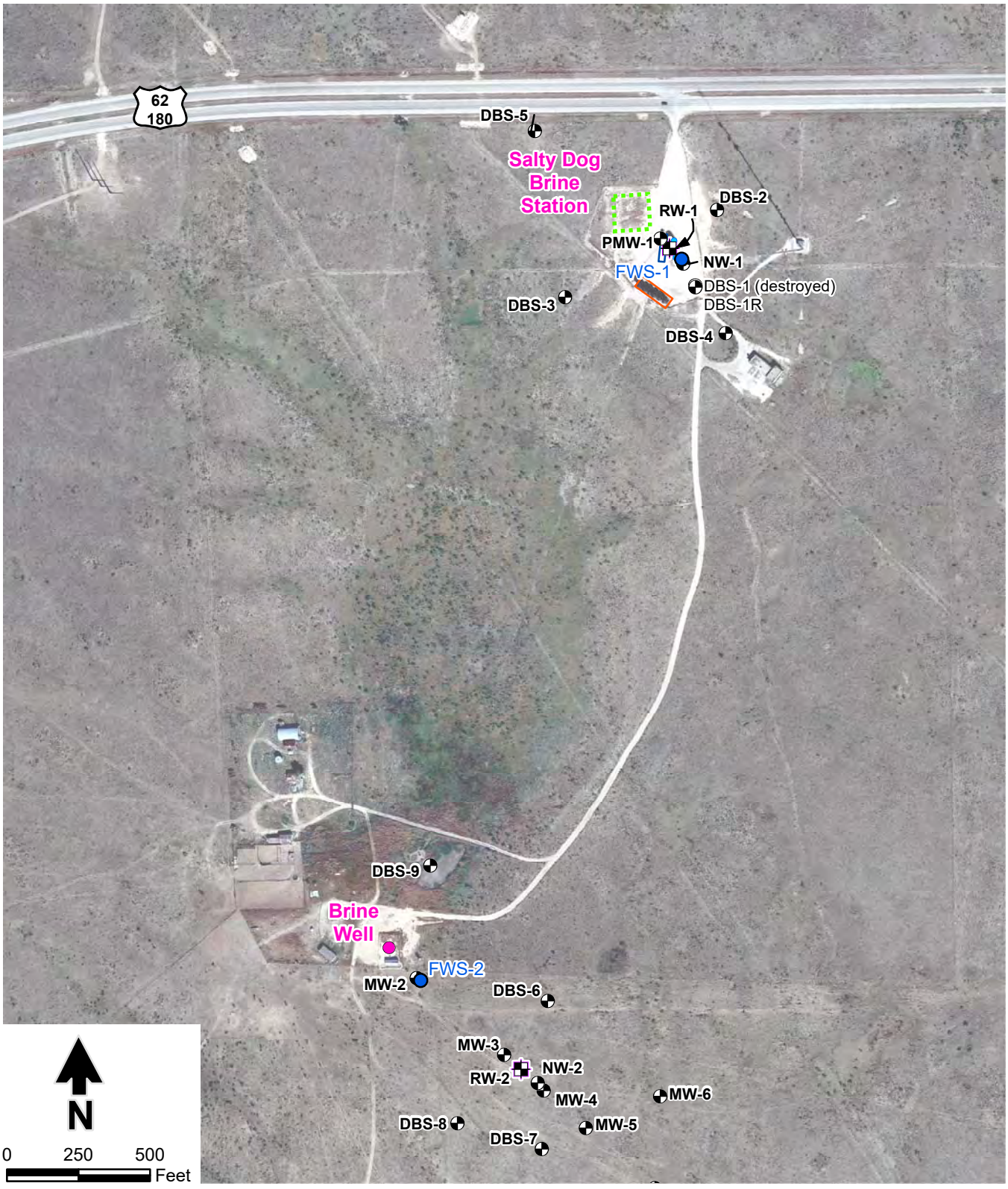
**Generalized Brine Well Schematic**

*Daniel B. Stephens & Associates, Inc.*

5-1-19 JN ES08.0118

Figure 3

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




Source: Aerial photograph adapted from Google Earth, November 2017.

**Explanation**

- Fresh water supply well
- Monitor well
- Recovery well
- Well destroyed
- Brine well
- Brine tank battery
- Truck loading area
- Former brine pond

S:\PROJECTS\ES08.0118_SALTY_DOG_2018\GIS\MXD\ANNUAL_2018\FIG04_SITE_MONITOR_AND_EXTRACTION_WELL_LOCS.MXD

*Daniel B. Stephens & Associates, Inc.*

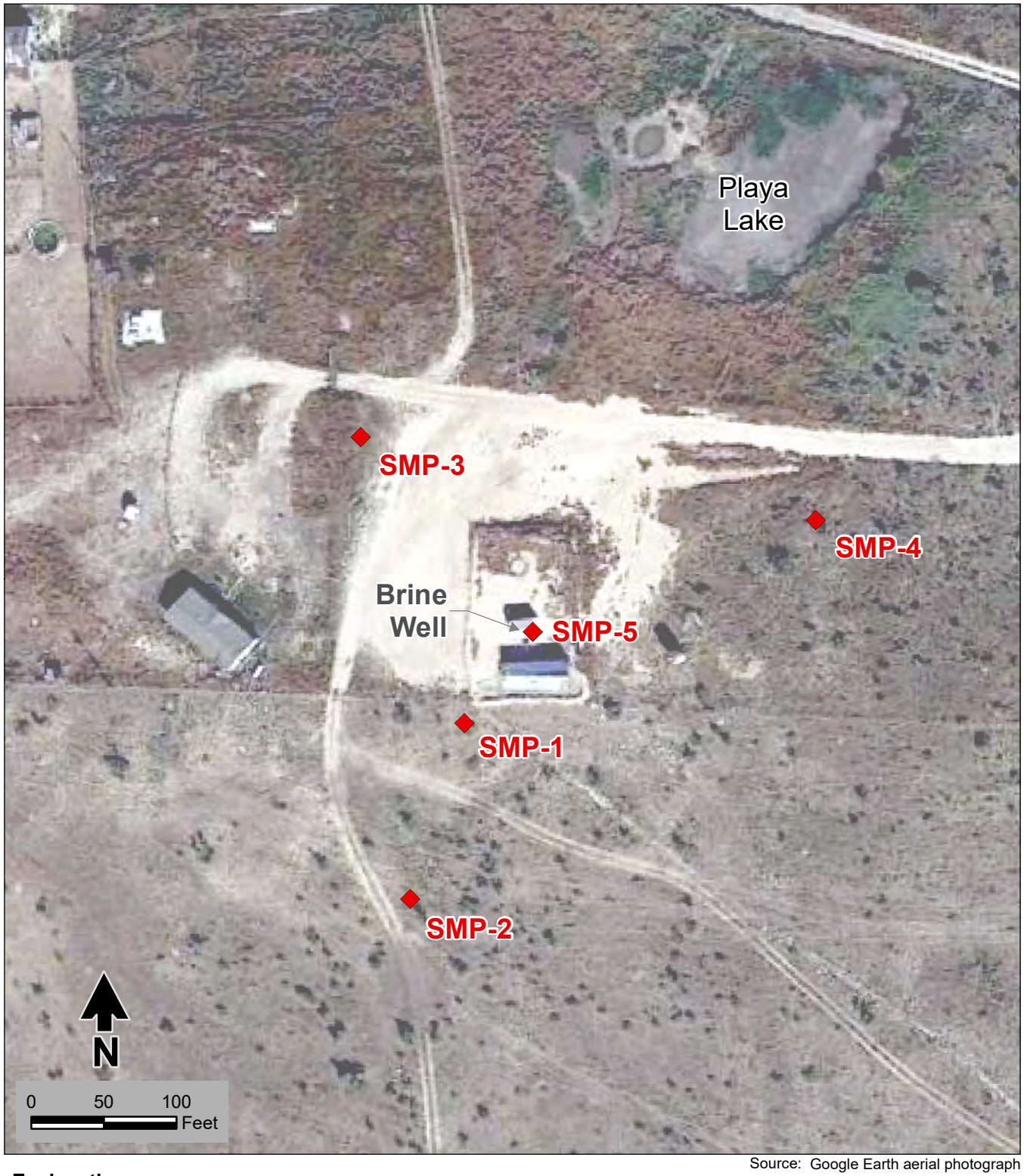
5/1/2019

JN ES08.0118.06

SALTY DOG BRINE STATION

# Monitor and Extraction Well Locations

Figure 4




Source: Google Earth aerial photograph dated November 2017

**Explanation**

◆ Survey monument

SALTY DOG BRINE STATION

**Land Subsidence**
**Survey Monitoring Point Locations**

*Daniel B. Stephens & Associates, Inc.*
5/1/2019
JN ES08.0118

Figure 5

S:\Projects\ES08.0118_Salty_Dog_2018\GIS\MXD\Annual_2018\Fig5_Ltr_Report.mxd

# Appendix A

# Annual Certification

# 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.

| Name | Title |
| --- | --- |
| Peter Bienstein President | President |

| Signature | Date |
| --- | --- |
|  | 4/2/19 |

# Appendix B

# 2018 Monthly Fresh and Brine Water Report Forms

**Terry Payton**

**From:** Patsy Hunt <patsy@thestandardenergy.com>
**Sent:** Wednesday, February 14, 2018 3:24 PM
**To:** terry@thestandardenergy.com
**Subject:** RE: MONTHLY SWD REPORTS 2-8-18

I asked Jim about this and he said no that there was nothing to report. It was down all month long.

NO JAN 2018 REPORT

---

**From:** Terry Payton [mailto:terry@thestandardenergy.com]
**Sent:** Wednesday, February 14, 2018 12:00 PM
**To:** patsy@thestandardenergy.com; Jim Sayre
**Subject:** RE: MONTHLY SWD REPORTS 2-8-18

Did you do a report for Salty Dog for January? Daniel B Stephens needs copies of these monthly reports for Salty Dog, and I haven't seen one for January.

Thanks!

Terry Payton
Financial Officer
Bergstein Enterprises, Ltd.
PO Box 191
Lubbock, TX 79408
Office: 806-741-1080
Fax: 806-741-1301

***"Standard Energy Services is a Platinum Safety Award winning company."***



---

**From:** Patsy Hunt [mailto:patsy@thestandardenergy.com]
**Sent:** Thursday, February 8, 2018 10:06 AM
**To:** terry@thestandardenergy.com
**Subject:** MONTHLY SWD REPORTS 2-8-18

Patsy Hunt
patsy@thestandardenergy.com
Billing Clerk - Hobbs Yard
Standard Energy Services
PO Box 513
Hobbs, NM 88241
Ph. 575-393-8352
Fax 575-393-8353

" Standard Energy Services is a Platinum Safety Award winning company."

28,000

# MONTHLY FRESH & BRINE WATER REPORT

FACILITY/LOCATION SALT Dog

MONTH/YEAR Feb 2018

| 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 | 0 | 0 | | | |
| 2 | 0 | 0 | | | |
| 3 | 0 | 0 | | | |
| 4 | 0 | 0 | | | |
| 5 | 0 | 0 | | | |
| 6 | 0 | 0 | | | |
| 7 | 0 | 0 | | | |
| 8 | 0 | 0 | | | |
| 9 | 0 | 0 | | | |
| 10 | 0 | 0 | | | |
| 11 | 590 | 570 | 100 | 350 | |
| 12 | 620 | 590 | 100 | 350 | |
| 13 | 440 | 400 | 100 | 350 | |
| 14 | 1010 | 990 | 100 | 350 | |
| 15 | 410 | 380 | 100 | 350 | |
| 16 | 300 | 250 | 100 | 350 | |
| 17 | 0 | 0 | 100 | 350 | |
| 18 | 320 | 295 | 100 | 350 | |
| 19 | 50 | 20 | 100 | 350 | |
| 20 | 720 | 690 | 100 | 350 | |
| 21 | 320 | 290 | 100 | 350 | |
| 22 | 230 | 200 | 100 | 350 | |
| 23 | 1800 | 1725 | 100 | 350 | |
| 24 | 1275 | 1200 | 100 | 350 | |
| 25 | | | | | |
| 26 | 2380 | 2345 | 100 | 365 | |
| 27 | | 680 | 100 | 365 | |
| 28 | 1560 | 1500 200 | 100 | 365 | |
| 29 | | | | | |
| 30 | | | | | |
| 31 | | | | | |
| TOTALS | | 12,145 | | | |

## 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 2014

| 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 |
|---|---|---|---|---|---|
| T 1 | 3375 | 3300 | 100 | 350 | |
| F 2 | 950 | 920 | 100 | 350 | |
| S 3 | 840 | 820 | 100 | 350 | |
| S 4 | 1000 | 980 | 100 | 350 | |
| M 5 | 4590 | 4545 | 100 | 350 | |
| T 6 | 1445 | 1400 | 100 | 350 | |
| W 7 | 750 | 720 | 100 | 375 | |
| T 8 | 520 | 500 | 100 | 375 | |
| F 9 | 1626 | 1700 | 100 | 375 | |
| S 10 | 695 | 680 | 100 | 375 | |
| S 11 | 200 | 190 | 100 | 350 | |
| M 12 | 390 | 380 | 100 | 350 | |
| T 13 | 450 | 468 | 100 | 350 | |
| W 14 | 600 | 590 | 100 | 350 | |
| T 15 | 3400 | 3436 | 100 | 350 | |
| F 16 | 1560 | 1550 | 100 | 375 | |
| S 17 | 510 | 500 | 100 | 375 | |
| S 18 | 250 | 220 | 100 | 375 | |
| M 19 | 310 | 366 | 100 | 350 | |
| T 20 | 870 | 863 | 100 | 350 | |
| W 21 | 1200 | 1180 | 100 | 350 | |
| T 22 | 620 | 610 610 | 100 | 350 | |
| F 23 | 100 | 100 100 | 100 | 350 | |
| S 24 | ~~0~~ | ~~0~~ | 100 | 350 | |
| S 25 | 310 | 300 300 | 100 | 375 | |
| M 26 | 1040 | 1030 | 100 | 375 | |
| T 27 | 1475 | 1467 | 100 | 375 | |
| W 28 | 2175 | 2170 | 100 | 375 | |
| T 29 | 785 | 780 | 100 | 375 | |
| F 30 | 2450 | 2440 | 100 | 375 | |
| S 31 | 1515 | 1510 | 100 | 375 | |
| TOTALS | | 35,709 | | | |

## REPAIRS AND/OR EXPENSES

| Date | Company Performing Work/Repairs | Descritpion of Work/Repairs | Estimated Cost | Work Authorized by |
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# MONTHLY FRESH & BRINE WATER REPORT

FACILITY/LOCATION Salty Dog

MONTH/YEAR April 18

| 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 | ~~0~~ | ~~0~~ | 100 | 375 | |
| 2 | 450 | 440 | 100 | 375 | |
| 3 | ~~0~~ | 200 | 100 | 375 | |
| 4 | ~~0~~ | 30 | 100 | 375 | |
| 5 | 265 | 250 | 100 | 375 | |
| 6 | 285 | 280 | 100 | 375 | |
| 7 | 1455 | 1445 | 100 | 375 | |
| 8 | ~~0~~ | 55 ~~55~~ | 100 | 375 | |
| 9 | 780 | 710 | 100 | 375 | |
| 10 | 1040 | 1030 | 100 | 375 | |
| 11 | 1260 | 1250 | 100 | 375 | |
| 12 | 110 | 100 | 100 | 375 | |
| 13 | 170 | 160 | 100 | 375 | |
| 14 | 920 | 910 | 100 | 375 | |
| 15 | 680 | 670 | 100 | 375 | |
| 16 | 290 | 280 | 100 | 375 | |
| 17 | 700 | 690 | 100 | 375 | |
| 18 | 400 | 380 ~~380~~ | 100 | 375 | |
| 19 | 555 | 550 | 100 | 375 | |
| 20 | 895 | 890 | 100 | 375 | |
| 21 | ~~0~~ | 120 | 100 | 375 | |
| 22 | ~~0~~ | 100 | 100 | 375 | |
| 23 | 1390 | 1370 | 100 | 375 | |
| 24 | 190 | 180 | 100 | 375 | |
| 25 | 700 | 680 | 100 | 375 | |
| 26 | 1330 | 1310 | 100 | 375 | |
| 27 | 950 | 920 | 100 | 375 | |
| 28 | 565 | 550 ~~440~~ | 100 | 375 | |
| 29 | ~~0~~ | 120 | 100 | 375 | |
| 30 | 460 | 430 | 100 | 375 | |
| 31 | | | | | |
| TOTALS | 15840 | | | | |

## REPAIRS AND/OR EXPENSES

| Date | Company Performing Work/Repairs | Descritpion of Work/Repairs | Estimated Cost | Work Authorized by |
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# MONTHLY FRESH & BRINE WATER REPORT

FACILITY/LOCATION SALTY Dog

MONTH/YEAR MAY 2018

| | AMOUNT OF FRESH WATER PUMPED DOWN HOLE | AMOUNT OF BRINE WATER OUT OF HOLE | DAILY TUBING PRESSURES | DAILY CASING PRESSURES | FRESH WATER |
|---|---|---|---|---|---|
| Date | BBLS | BBLS SOLD | PSI | PSI | SOLD |
| 1 | 340 | 330 | 100 | 375 | |
| 2 | ~~0~~ | 120 | 100 | 375 | |
| 3 | ~~0~~ | 100 | 100 | 375 | |
| 4 | 370 | 360 | 100 | 375 | |
| 5 | 410 | 400 | 100 | 375 | |
| 6 | 205 | 200 | 100 | 375 | |
| 7 | 375 | 365 | 100 | 375 | |
| 8 | 245 | 240 | 100 | 375 | |
| 9 | 775 | 770 | 100 | 375 | |
| 10 | 310 | 300 | 100 | 375 | |
| 11 | 600 | 585 110 | 100 | 375 | |
| 12 | 1090 | 1070 | 100 | 375 | |
| 13 | 90 | 80 | 100 | 375 | |
| 14 | 400 | 390 | 100 | 375 | |
| 15 | ~~0~~ | 140 | 100 | 375 | |
| 16 | 345 | 340 | 100 | 375 | |
| 17 | 820 | 810 | 100 | 375 | |
| 18 | 915 | 900 | 100 | 375 | |
| 19 | 390 | 380 | 100 | 375 | |
| 20 | 650 | 640 | 100 | 375 | |
| 21 | 245 | 240 | 100 | 375 | |
| 22 | 670 | 650 | 100 | 375 | |
| 23 | 1020 | 1005 | 100 | 375 | |
| 24 | 1200 | 1190 | 100 | 375 | |
| 25 | 1225 | 1200 | 100 | 375 | |
| 26 | 1085 | 1080 | 100 | 375 | |
| 27 | ~~0~~ | ~~0~~ | 100 | 375 | |
| 28 | 210 | 200 | 100 | 375 | |
| 29 | 2000 | 1090 | 100 | 375 | |
| 30 | 550 | 540 100 | 100 | 375 | |
| 31 | 230 | 210 | 100 | 375 | |
| TOTALS | | | | | |

## REPAIRS AND/OR EXPENSES

| Date | Company Performing Work/Repairs | Descritpion of Work/Repairs | Estimated Cost | Work Authorized by |
|---|---|---|---|---|
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# MONTHLY FRESH & BRINE WATER REPORT

FACILITY/LOCATION SALTY Dog

MONTH/YEAR June 2018

| 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 | 470 | 460 | 100 | 375 | |
| 2 | ~~0~~ | ~~0~~ | 100 | 375 | |
| 3 | 490 | 470 | 100 | 375 | |
| 4 | 630 | 625 | 100 | 375 | |
| 5 | 1170 | 1155 | 100 | 375 | |
| 6 | 430 | 420 | 100 | 375 | |
| 7 | 900 | 890 | 100 | 375 | |
| 8 | 635 | 620 | 100 | 375 | |
| 9 | 325 | 310 | 100 | 375 | |
| 10 | ~~0~~ | ~~0~~ | 100 | 375 | |
| 11 | ~~0~~ | ~~0~~ | 100 | 375 | |
| 12 | 150 | 145 ~~145~~ | 100 | 375 | |
| 13 | 215 | 200 | 100 | 375 | |
| 14 | 160 | 150 | 100 | 375 | |
| 15 | ~~0~~ | 45 | 100 | 375 | |
| 16 | ~~0~~ | ~~0~~ | 100 | 375 | |
| 17 | 225 | 210 | 100 | 375 | |
| 18 | 1285 | 1255 | 100 | 375 | |
| 19 | 1470 | 1455 | 100 | 375 | |
| 20 | 455 | 440 | 100 | 375 | |
| 21 | 685 | 675 | 100 | 375 | |
| 22 | 2900 | 2880 | 100 | 375 | |
| 23 | 965 | 950 | 100 | 375 | |
| 24 | 515 | 510 | 100 | 375 | |
| 25 | 970 | 935 ~~470~~ | 100 | 375 | |
| 26 | 935 | 900 | 100 | 375 | |
| 27 | 1795 ~~1795~~ | 1765 | 100 | 375 | |
| 28 | 2770 | 2720 ~~2720~~ | 100 | 350 | |
| 29 | 1300 | 1270 | 100 | 350 | |
| 30 | 200 | 100 | 100 | 375 | |
| 31 | | | | | |
| TOTALS | 22045 | 21,555 | | | |

## REPAIRS AND/OR EXPENSES

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

# MONTHLY FRESH & BRINE WATER REPORT

FACILITY/LOCATION SALTY Dog

MONTH/YEAR JULY 2018

| | AMOUNT OF FRESH WATER PUMPED DOWN HOLE | AMOUNT OF BRINE WATER OUT OF HOLE | DAILY TUBING PRESSURES | DAILY CASING PRESSURES | FRESH WATER |
|---|---|---|---|---|---|
| Date | BBLS | BBLS SOLD | PSI | PSI | SOLD |
| 1 | | 200 | 100 | 350 | |
| 2 | | 870 | 100 | 350 | |
| 3 | | 900 | 100 | 350 | |
| 4 | | 1145 | 100 | 350 | |
| 5 | | 270 | 100 | 350 | |
| 6 | | 335 | 100 | 350 | |
| 7 | | 250 | 100 | 350 | |
| 8 | | 300 | 100 | 350 | |
| 9 | | 590 | 100 | 350 | |
| 10 | | 790 ~~530~~ | 100 | 350 | |
| 11 | | 1570 | 100 | 350 | 175 |
| 12 | | 380 | 100 | 350 | |
| 13 | | | | | |
| 14 | | 1,360 | 100 | 350 | |
| 15 | | 510 | 100 | 350 | |
| 16 | | 560 | 100 | 350 | |
| 17 | | 1960 | 100 | 350 | 120 |
| 18 | | 1120 | 100 | 350 | 280 |
| 19 | | 2140 | 100 | 350 | 90 |
| 20 | | 1745 | 100 | 350 | 120 |
| 21 | | 740 | 100 | 350 | |
| 22 | | 100 | 100 | 350 | |
| 23 | | 1370 | 100 | 350 | |
| 24 | | 1385 | 100 | 350 | |
| 21390 25 | | 800 | 100 | 350 | |
| 26 | | 2190 | 100 | 350 | 140 |
| 27 | | 1100 | 100 | 350 | |
| 28 | | 660 660 | | | 250 |
| 29 | | 950 100 | | | 130 |
| 29210 30 | | 1920 | | | 140 |
| 31 | | 120 | | | |
| TOTALS | | 28,330 | | | |

## REPAIRS AND/OR EXPENSES

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

# MONTHLY FRESH & BRINE WATER REPORT

FACILITY/LOCATION SALTY Dog

MONTH/YEAR Aug

| 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 | 1,540 | 1560 | 100 | 350 | |
| 2 | 2290 | 2260 | 100 | 350 | 240 |
| 3 | 2120 | 2090 | 100 | 350 | |
| 4 | 1085 | 1050 | 100 | 350 | |
| 5 | 1050 | 1020 | 100 | 350 | |
| 6 | 350 | 330 | 100 | 350 | 130 |
| 7 | 880 | 840 | 100 | 350 | 130 |
| 8 | 740 | 730 | 100 | 350 | |
| 9 | 720 | 700 | 100 | 350 | 100 |
| 10 | 700 | 695 | 100 | 350 | 2 |
| 11 | 990 | 970 | 100 | 350 | |
| 12 | 820 | 800 | 100 | 350 | |
| 13 | 600 | 590 | 100 | 350 | 240 |
| 14 | 1700 | 1690 | 100 | 350 | 25 |
| 15 | 1520 | 1510 | 100 | 350 | |
| 16 | 540 | 520 | 100 | 350 | |
| 17 | 1250 | 1240 | 100 | 350 | |
| 18 | 2030 | 2020 | 100 | 350 | |
| 19 | 1120 | 1100 | 100 | 350 | |
| 20 | 210 | 200 | 100 | 350 | 20 |
| 21 | 470 | 465 | 100 | 350 | 190 |
| 22 | 2010 | 2000 | 100 | 350 | |
| 23 | 1865 | 1855 | 100 | 350 | |
| 24 | 955 | 945 | 100 | 350 | 160 |
| 25 | 650 | 640 | 100 | 350 | |
| 26 | 1675 | 1665 | 100 | 350 | |
| 27 | 1360 | 1350 | 100 | 350 | |
| 28 | 1670 | 1635 | 100 | 350 | 110 |
| 29 | 2320 | 2295 | 100 | 350 | |
| 30 | 1730 | 1700 | 100 | 350 | |
| 31 | 700 | 520 | 100 | 350 | |
| TOTALS | | 37105 | | | |

7960

30855

## REPAIRS AND/OR EXPENSES

| Date | Company Performing Work/Repairs | Descritpion of Work/Repairs | Estimated Cost | Work Authorized by |
|---|---|---|---|---|
| | | 37105 | | |
| | | | | |
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| | | | | |

# MONTHLY FRESH & BRINE WATER REPORT

FACILITY/LOCATION SALTY Dog

MONTH/YEAR Sep 2016

| 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 | 440 | 430 | 100 | 350 | |
| 2 | 0 | 0 | 100 | 350 | |
| 3 | 0 | 0 | 100 | 375 | |
| 4 | 0 | 0 | 100 | 375 | |
| 5 | 0 | 0 | 100 | 375 | |
| 6 | 0 | 0 | 100 | 375 | |
| 7 | 0 | 0 | 100 | 375 | 120 |
| 8 | 0 | 0 | 100 | 375 | |
| 9 | 0 | 0 | 100 | 375 | |
| 10 | 140 | 135 | 100 | 350 | |
| 11 | 1190 | 1175 | 100 | 350 | |
| 12 | 740 | 730 | 100 | 350 | 130 |
| 13 | 1235 | 1220 | 100 | 350 | 75 |
| 14 | 570 | 560 | 100 | 350 | |
| 15 | 670 | 650 | 100 | 350 | |
| 16 | 350 | 320 | 100 | 350 | |
| 17 | 350 | 330 | 100 | 350 | |
| 18 | 965 | 940 | 100 | 350 | 40 |
| 19 | 1605 | 1590 | 100 | 350 | 25 |
| 20 | 1540 | 1520 | 100 | 350 | 310 |
| 21 | 2770 | 2755 | 100 | 325 | 11 |
| 22 | 950 | 980 | 100 | 350 | |
| 23 | 0 | 0 | 100 | 350 | |
| 24 | 330 | 320 320 | 100 | 350 | |
| 25 | 615 | 610 | 100 | 350 | |
| 26 | 1490 | 1480 | 100 | 350 | |
| 27 | 1010 | 1000 | 100 | 350 | |
| 28 | 1315 | 1300 | 100 | 350 | |
| 29 | 1190 | 1170 | 100 | 350 | |
| 30 | 835 | 810 | 100 | 350 | |
| 31 | | | | | |
| TOTALS | | 19965 | | | |

## REPAIRS AND/OR EXPENSES

| Date | Company Performing Work/Repairs | Descritpion of Work/Repairs | Estimated Cost | Work Authorized by |
|---|---|---|---|---|
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10965

# MONTHLY FRESH & BRINE WATER REPORT

FACILITY/LOCATION Salty Dog

MONTH/YEAR Oct 2016

| | AMOUNT OF FRESH WATER PUMPED DOWN HOLE | AMOUNT OF BRINE WATER OUT OF HOLE | DAILY TUBING PRESSURES | DAILY CASING PRESSURES | FRESH WATER |
|---|---|---|---|---|---|
| Date | BBLS | BBLS SOLD | PSI | PSI | SOLD |
| 1 | 1090 | 1070 | 100 | 350 | ~~0~~ |
| 2 | 870 | 850 | 100 | 350 | ~~0~~ |
| 3 | 410 | 400 | 100 | 350 | ~~0~~ |
| 4 | 615 | 600 | 100 | 350 | ~~0~~ |
| 5 | 210 | 200 | 100 | 350 | ~~0~~ |
| 6 | ~~0~~ | ~~0~~ | 100 | 350 | ~~0~~ |
| 7 | 100 | 100 | 100 | 350 | ~~0~~ |
| 8 | 110 | 110 110 | 100 | 350 | 25 |
| 9 | 133 | 130 | 100 | 350 | 145 |
| 10 | 300 | 295 | 100 | 350 | |
| 11 | 360 | 360 | 100 | 350 | |
| 12 | 325 | 920 | 100 | 350 | 120 |
| 13 | ~~0~~ | 0 | 100 | 350 | |
| 14 | 100 | 100 | 100 | 350 | |
| 15 | 351 | 350 | 100 | 350 | 195 |
| 16 | 910 | 905 | 100 | 350 | 110 |
| 17 | 105 | 105 | 100 | 350 | |
| 18 | 185 | 180 | 100 | 350 | |
| 19 | 635 | 630 | 100 | 350 | |
| 20 | 275 | 270 | 100 | 350 | 180 |
| 21 | 365 | 360 | 100 | 350 | |
| 22 | 850 | 845 100 | 100 | 350 | |
| 23 | 340 | 330 | 100 | 350 | |
| 24 | 280 | 275 | 100 | 350 | |
| 25 | 1055 | 1050 | 100 | 325 | |
| 26 | 1660 | 1650 | 100 | 325 | |
| 27 | 1025 | 1020 | 100 | 325 | |
| 28 | 465 | 460 | 100 | 325 | |
| 29 | 1085 | 1080 | 100 | 325 | 155 |
| 30 | 1780 | 1777 | 100 | 325 | |
| 31 | 780 | 770 | 100 | 325 | |
| TOTALS | | 17,192 | | | |

## REPAIRS AND/OR EXPENSES

| Date | Company Performing Work/Repairs | Descritpion of Work/Repairs | Estimated Cost | Work Authorized by |
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# MONTHLY FRESH & BRINE WATER REPORT

| | |
|---|---|
| FACILITY/LOCATION | SALTY Dog |
| MONTH/YEAR | NOV 18 |

| | AMOUNT OF FRESH WATER PUMPED DOWN HOLE | AMOUNT OF BRINE WATER OUT OF HOLE | DAILY TUBING PRESSURES | DAILY CASING PRESSURES | FRESH WATER |
|---|---|---|---|---|---|
| Date | BBLS | BBLS SOLD | PSI | PSI | SOLD |
| 1 | 280 | 273 | 100 | 325 | 60 |
| 2 | 600 | 590 | 100 | 325 | 5 |
| 3 | 205 | 200 | 100 | 325 | |
| 4 | 335 | 330 | 100 | 325 | 10 |
| 5 | 895 | 885 | 100 | 325 | 25 |
| 6 | 880 | 865 | 100 | 325 | 130 |
| 7 | ~~2020~~ | 2010 | 100 | 325 | |
| 8 | 615 | 600 | 100 | 325 | 40 |
| 9 | 865 | 850 | 100 | 325 | 250 |
| 10 | 1395 | 1385 | 100 | 325 | |
| 11 | 2120 | 2110 | 100 | 325 | |
| 12 | 3210 | 3195 | 100 | 325 | 40 |
| 13 | 1700 | 1685 | 100 | 325 | |
| 14 | 1720 | 1710 | 100 | 325 | 260 |
| 15 | 1365 | 1350 ~~1380~~ | 100 | 325 | 300 |
| 16 | 1810 | 1797 | 100 | 325 | |
| 17 | 875 | 855 ~~855~~ | 100 | 325 | 130 |
| 18 | ~~0~~ | 100 | 100 | 325 | |
| 19 | 950 | 930 ~~840~~ | 100 | 325 | |
| 20 | 375 | 360 | 100 | 325 | 40 |
| 21 | ~~0~~ | 180 | 100 | 325 | |
| 22 | ~~0~~ | 100 | 100 | 325 | |
| 23 | 370 | 360 | 100 | 325 | |
| 24 | ~~0~~ | 0 | 100 | 325 | |
| 25 | 510 | 500 | 100 | 325 | |
| 26 | 805 | 790 | 100 | 325 | |
| 27 | 510 | 500 | 100 | 325 | |
| 28 | 630 | 615 | 100 | 325 | |
| 29 | 80 | 70 ~~70~~ | 100 | 325 | 130 |
| 30 | 1425 | 1410 | 100 | 325 | |
| 31 | | | | | |
| TOTALS | | 25740 | | | |

## REPAIRS AND/OR EXPENSES

| Date | Company Performing Work/Repairs | Descritpion of Work/Repairs | Estimated Cost | Work Authorized by |
|---|---|---|---|---|
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# MONTHLY FRESH & BRINE WATER REPORT

**FACILITY/LOCATION** Solt Dog

**MONTH/YEAR** December 2018

| | AMOUNT OF FRESH WATER PUMPED DOWN HOLE | AMOUNT OF BRINE WATER OUT OF HOLE | DAILY TUBING PRESSURES | DAILY CASING PRESSURES | FRESH WATER |
|---|---|---|---|---|---|
| Date | BBLS | BBLS SOLD | PSI | PSI | SOLD |
| 1 | 3650 | 3600 | 100 | 325 | |
| 2 | 1700 | 1680 | 100 | 325 | |
| 3 | 1320 | 1310 | 100 | 325 | |
| 4 | 2420 | 2400 | 100 | 325 | |
| 5 | 190 | 180 | 100 | 325 | |
| 6 | | 1085 | 100 | 325 | |
| 7 | 442 | 440 | 100 | 325 | |
| 8 | 0 | 0 | 100 | 325 | |
| 9 | 0 | 100 | 100 | 325 | |
| 10 | 0 | 110 | 100 | 325 | |
| 11 | 680 | 660 | 100 | 325 | |
| 12 | 1020 | 1010 | 100 | 325 | |
| 13 | 1040 | 1034 | 100 | 325 | |
| 14 | 1035 | 1030 | 100 | 325 | |
| 15 | 0 | 0 | 100 | 325 | |
| 16 | 285 | 280 | 100 | 325 | |
| 17 | 755 | 742 | 100 | 325 | |
| 18 | 2900 | 2870 | 100 | 325 | |
| 19 | 1000 | 990 | 100 | 350 | |
| 20 | 830 | 800 | 100 | 350 | |
| 21 | 1650 | 1620 | 100 | 350 | |
| 22 | 310 | 320 | 100 | 350 | |
| 23 | 1740 | 1720 | 100 | 350 | |
| 24 | 0 | 0 | 100 | 350 | |
| 25 | 210 | 200 | 100 | 350 | |
| 26 | 760 | 755 | 100 | 350 | |
| 27 | 1040 | 1020 | 100 | 350 | |
| 28 | 1920 | 1900 | 100 | 350 | |
| 29 | 0 | 0 | 100 | 350 | |
| 30 | 715 | 700 | 100 | 350 | |
| 31 | 0 | 0 | 100 | 350 | |
| TOTALS | | | | | |

## REPAIRS AND/OR EXPENSES

| Date | Company Performing Work/Repairs | Descritpion of Work/Repairs | Estimated Cost | Work Authorized by |
|---|---|---|---|---|
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# Appendix C

# Laboratory Analytical Reports

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

July 05, 2018

John Ayarbe

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

RE: Salty Dog OrderNo.: 1806C36

Dear John Ayarbe:

Hall Environmental Analysis Laboratory received 14 sample(s) on 6/20/2018 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

**Analytical Report**
Lab Order **1806C36**
Date Reported: **7/5/2018**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Daniel B. Stephens & Assoc.
**Client Sample ID:** DBS-5
**Project:** Salty Dog
**Collection Date:** 6/18/2018 5:00:00 PM
**Lab ID:** 1806C36-001
**Matrix:** AQUEOUS
**Received Date:** 6/20/2018 11:26:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 180 | 5.0 | | mg/L | 10 | 6/26/2018 2:07:17 PM | R52265 |

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 Detection Limit |
| S | % Recovery outside of range due to dilution or matrix | W | Sample container temperature is out of limit as specified |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Daniel B. Stephens & Assoc.
**Client Sample ID:** DBS-3
**Project:** Salty Dog
**Collection Date:** 6/18/2018 5:20:00 PM
**Lab ID:** 1806C36-002
**Matrix:** AQUEOUS
**Received Date:** 6/20/2018 11:26:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 47 | 5.0 | | mg/L | 10 | 6/26/2018 3:24:25 PM | R52265 |

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 Detection Limit |
| S | % Recovery outside of range due to dilution or matrix | W | Sample container temperature is out of limit as specified |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Daniel B. Stephens & Assoc.
**Client Sample ID:** DBS-2
**Project:** Salty Dog
**Collection Date:** 6/18/2018 5:45:00 PM
**Lab ID:** 1806C36-003
**Matrix:** AQUEOUS
**Received Date:** 6/20/2018 11:26:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 47 | 5.0 | | mg/L | 10 | 6/26/2018 3:50:09 PM | R52265 |

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 Detection Limit |
| S | % Recovery outside of range due to dilution or matrix | W | Sample container temperature is out of limit as specified |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Daniel B. Stephens & Assoc.
**Client Sample ID:** DBS-4
**Project:** Salty Dog
**Collection Date:** 6/19/2018 9:40:00 AM
**Lab ID:** 1806C36-004
**Matrix:** AQUEOUS
**Received Date:** 6/20/2018 11:26:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 39 | 5.0 | | mg/L | 10 | 6/26/2018 4:15:52 PM | R52265 |

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 Detection Limit |
| S | % Recovery outside of range due to dilution or matrix | W | Sample container temperature is out of limit as specified |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Daniel B. Stephens & Assoc.
**Client Sample ID:** DBS-9
**Project:** Salty Dog
**Collection Date:** 6/19/2018 10:05:00 AM
**Lab ID:** 1806C36-005
**Matrix:** AQUEOUS
**Received Date:** 6/20/2018 11:26:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 260 | 50 | * | mg/L | 100 | 6/26/2018 4:54:26 PM | R52265 |

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 Detection Limit |
| S | % Recovery outside of range due to dilution or matrix | W | Sample container temperature is out of limit as specified |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Daniel B. Stephens & Assoc.
**Client Sample ID:** DBS-8
**Project:** Salty Dog
**Collection Date:** 6/19/2018 10:45:00 AM
**Lab ID:** 1806C36-006
**Matrix:** AQUEOUS
**Received Date:** 6/20/2018 11:26:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 33 | 5.0 | | mg/L | 10 | 6/26/2018 5:33:01 PM | R52265 |

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 Detection Limit |
| S | % Recovery outside of range due to dilution or matrix | W | Sample container temperature is out of limit as specified |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Daniel B. Stephens & Assoc.
**Client Sample ID:** DBS-10
**Project:** Salty Dog
**Collection Date:** 6/19/2018 11:15:00 AM
**Lab ID:** 1806C36-007
**Matrix:** AQUEOUS
**Received Date:** 6/20/2018 11:26:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 690 | 50 | * | mg/L | 100 | 6/26/2018 6:11:36 PM | R52265 |

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 Detection Limit |
| S | % Recovery outside of range due to dilution or matrix | W | Sample container temperature is out of limit as specified |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Daniel B. Stephens & Assoc.
**Client Sample ID:** DBS-6
**Project:** Salty Dog
**Collection Date:** 6/19/2018 11:45:00 AM
**Lab ID:** 1806C36-008
**Matrix:** AQUEOUS
**Received Date:** 6/20/2018 11:26:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 210 | 50 | | mg/L | 100 | 6/26/2018 6:37:19 PM | R52265 |

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 Detection Limit |
| S | % Recovery outside of range due to dilution or matrix | W | Sample container temperature is out of limit as specified |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Daniel B. Stephens & Assoc.
**Client Sample ID:** MW-5
**Project:** Salty Dog
**Collection Date:** 6/19/2018 1:25:00 PM
**Lab ID:** 1806C36-009
**Matrix:** AQUEOUS
**Received Date:** 6/20/2018 11:26:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 840 | 50 | * | mg/L | 100 | 6/26/2018 7:03:02 PM | R52265 |

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 Detection Limit |
| S | % Recovery outside of range due to dilution or matrix | W | Sample container temperature is out of limit as specified |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Daniel B. Stephens & Assoc.
**Client Sample ID:** MW-3
**Project:** Salty Dog
**Collection Date:** 6/19/2018 2:05:00 PM
**Lab ID:** 1806C36-010
**Matrix:** AQUEOUS
**Received Date:** 6/20/2018 11:26:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 7300 | 500 | * | mg/L | 1E | 7/2/2018 10:41:16 PM | R52405 |

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 Detection Limit |
| S | % Recovery outside of range due to dilution or matrix | W | Sample container temperature is out of limit as specified |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Daniel B. Stephens & Assoc.
**Client Sample ID:** DBS-1R
**Project:** Salty Dog
**Collection Date:** 6/19/2018 2:35:00 PM
**Lab ID:** 1806C36-011
**Matrix:** AQUEOUS
**Received Date:** 6/20/2018 11:26:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 190 | 50 | | mg/L | 100 | 6/26/2018 8:20:12 PM | R52265 |

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 Detection Limit |
| S | % Recovery outside of range due to dilution or matrix | W | Sample container temperature is out of limit as specified |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Daniel B. Stephens & Assoc.
**Client Sample ID:** PMW-1
**Project:** Salty Dog
**Collection Date:** 6/19/2018 3:20:00 PM
**Lab ID:** 1806C36-012
**Matrix:** AQUEOUS
**Received Date:** 6/20/2018 11:26:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 9600 | 500 | * | mg/L | 1E | 7/2/2018 10:53:41 PM | R52405 |

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 Detection Limit |
| S | % Recovery outside of range due to dilution or matrix | W | Sample container temperature is out of limit as specified |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Daniel B. Stephens & Assoc.
**Client Sample ID:** Brine
**Project:** Salty Dog
**Collection Date:** 6/19/2018 2:40:00 PM
**Lab ID:** 1806C36-013 **Matrix:** AQUEOUS **Received Date:** 6/20/2018 11:26:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **SPECIFIC GRAVITY** | | | | | | Analyst: **JRR** | |
| Specific Gravity | 1.163 | 0 | | | 1 | 6/26/2018 11:53:00 AM | R52241 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 170000 | 5000 | * | mg/L | 1E | 6/26/2018 9:11:39 PM | R52265 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 238000 | 2000 | *D | mg/L | 1 | 6/26/2018 7:58:00 PM | 38867 |
| **SM4500-H+B / 9040C: PH** | | | | | | Analyst: **JRR** | |
| pH | 6.76 | | H | pH units | 1 | 6/21/2018 12:10:03 PM | R52161 |
| **EPA 6010B: TOTAL RECOVERABLE METALS** | | | | | | Analyst: **MED** | |
| Sodium | 61000 | 1000 | | mg/L | 1E | 6/29/2018 6:03:12 PM | 38878 |

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 Detection Limit |
| W | Sample container temperature is out of limit as specified |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Daniel B. Stephens & Assoc.
**Client Sample ID:** Injection
**Project:** Salty Dog
**Collection Date:** 6/19/2018 2:55:00 PM
**Lab ID:** 1806C36-014
**Matrix:** AQUEOUS
**Received Date:** 6/20/2018 11:26:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **SPECIFIC GRAVITY** | | | | | | Analyst: **JRR** | |
| Specific Gravity | 0.9954 | 0 | | | 1 | 6/26/2018 11:53:00 AM | R52241 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 460 | 50 | * | mg/L | 100 | 6/26/2018 10:03:05 PM | R52265 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 1040 | 20.0 | * | mg/L | 1 | 6/26/2018 7:58:00 PM | 38867 |
| **SM4500-H+B / 9040C: PH** | | | | | | Analyst: **JRR** | |
| pH | 7.96 | | H | pH units | 1 | 6/21/2018 12:14:20 PM | R52161 |

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 Detection Limit |
| S | % Recovery outside of range due to dilution or matrix | W | Sample container temperature is out of limit as specified |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1806C36**

***05-Jul-18***

**Client:** Daniel B. Stephens & Assoc.

**Project:** Salty Dog

| Sample ID | **MB** | SampType: | **MBLK** | TestCode: | **EPA Method 300.0: Anions** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBW** | Batch ID: | **R52265** | RunNo: | **52265** | | | | | |
| Prep Date: | | Analysis Date: | **6/26/2018** | SeqNo: | **1712501** | 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: | **R52265** | RunNo: | **52265** | | | | | |
| Prep Date: | | Analysis Date: | **6/26/2018** | SeqNo: | **1712502** | Units: | **mg/L** | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | 5.1 | 0.50 | 5.000 | 0 | 103 | 90 | 110 | | | |

| Sample ID | **MB** | SampType: | **mblk** | TestCode: | **EPA Method 300.0: Anions** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBW** | Batch ID: | **R52405** | RunNo: | **52405** | | | | | |
| Prep Date: | | Analysis Date: | **7/2/2018** | SeqNo: | **1719515** | 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: | **R52405** | RunNo: | **52405** | | | | | |
| Prep Date: | | Analysis Date: | **7/2/2018** | SeqNo: | **1719516** | 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 | 94.4 | 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 Detection Limit |
| S | % Recovery outside of range due to dilution or matrix | W | Sample container temperature is out of limit as specified |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1806C36**

***05-Jul-18***

**Client:** Daniel B. Stephens & Assoc.

**Project:** Salty Dog

| Sample ID | **MB-38878** | SampType: | **MBLK** | TestCode: | **EPA 6010B: Total Recoverable Metals** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBW** | Batch ID: | **38878** | RunNo: | **52388** | | | | | |
| Prep Date: | **6/25/2018** | Analysis Date: | **6/29/2018** | SeqNo: | **1716681** | Units: | **mg/L** | | | |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sodium | ND | 1.0 | | | | | | | | |

| Sample ID | **LCS-38878** | SampType: | **LCS** | TestCode: | **EPA 6010B: Total Recoverable Metals** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSW** | Batch ID: | **38878** | RunNo: | **52388** | | | | | |
| Prep Date: | **6/25/2018** | Analysis Date: | **6/29/2018** | SeqNo: | **1716683** | Units: | **mg/L** | | | |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sodium | 51 | 1.0 | 50.00 | 0 | 101 | 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 Detection Limit |
| S | % Recovery outside of range due to dilution or matrix | W | Sample container temperature is out of limit as specified |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **1806C36**
***05-Jul-18***

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

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | **1806C36-013ADUP** | SampType: | **DUP** | | TestCode: | **Specific Gravity** | | | | |
| Client ID: | **Brine** | Batch ID: | **R52241** | | RunNo: | **52241** | | | | |
| Prep Date: | | Analysis Date: | **6/26/2018** | | SeqNo: | **1711825** | Units: | | | |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Specific Gravity | 1.160 | 0 | | | | | | 0.207 | 20 | |

**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 Detection Limit |
| S | % Recovery outside of range due to dilution or matrix | W | Sample container temperature is out of limit as specified |

# QC SUMMARY REPORT
## Hall Environmental Analysis Laboratory, Inc.

WO#: **1806C36**
***05-Jul-18***

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

| Sample ID | **MB-38867** | SampType: | **MBLK** | TestCode: | **SM2540C MOD: Total Dissolved Solids** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBW** | Batch ID: | **38867** | RunNo: | **52256** | | | | | |
| Prep Date: | **6/25/2018** | Analysis Date: | **6/26/2018** | SeqNo: | **1712029** | 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-38867** | SampType: | **LCS** | TestCode: | **SM2540C MOD: Total Dissolved Solids** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSW** | Batch ID: | **38867** | RunNo: | **52256** | | | | | |
| Prep Date: | **6/25/2018** | Analysis Date: | **6/26/2018** | SeqNo: | **1712030** | Units: | **mg/L** | | | |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | 1010 | 20.0 | 1000 | 0 | 101 | 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 Detection Limit |
| S | % Recovery outside of range due to dilution or matrix | W | Sample container temperature is out of limit as specified |

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

# Sample Log-In Check List

Client Name: DBS | Work Order Number: 1806C36 | RcptNo: 1

Received By: **Michelle Garcia** 6/20/2018 11:26:00 AM Michelle Garcia

Completed By: **Ashley Gallegos** 6/20/2018 1:19:28 PM

Reviewed By: JJO 6/20/18

Labeled by: JAB 06/20/18

## 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. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
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: 1 (<2 or >12 unless noted)
Adjusted? Yes
Checked by: JB

## 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: All For 3005 analysis: Added approx. 0.5 mL HNO3 to 013B 1of for preferred pH. Held for 24 hours prior to analysis

17. **Cooler Information**

| Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|---|---|---|---|---|---|---|
| 1 | 3.4 | Not Good | | | | |

# Chain-of-Custody Record

Client: DBS&A

Mailing Address: 6020 Academy Rd NE
ABQ

Phone #: 505-822-9400

email or Fax#: JAyarbe@Geo-logic.com
MEbiotek@geo-logic.com

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

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☑ Standard ☐ Rush _____

Project Name: Salty Dog

Project #: ES08.0118.06

Project Manager: J. Ayarbe

Sampler: M. Ebiotek

On Ice: ☑ Yes ☐ No

Sample Temperature: 3.4


**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 Request ID | Container Type and # | Preservative Type | HEAL No. 1800C316 | BTEX + MTBE + TMB's (8021) | BTEX + MTBE + TPH (Gas only) | TPH 8015B (GRO / DRO / MRO) | TPH (Method 418.1) | EDB (Method 504.1) | PAH's (8310 or 8270 SIMS) | RCRA 8 Metals | Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$) | 8081 Pesticides / 8082 PCB's | 8260B (VOA) | 8270 (Semi-VOA) | | | | | Air Bubbles (Y or N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6.18 | 1700 | GW | DBS-5 | 1 poly | NA | -001 | | | | | | | | X | | | | | | | | |
| | 1720 | | DBS-3 | | | -002 | | | | | | | | X | | | | | | | | |
| | 1745 | | DBS-2 | | | -003 | | | | | | | | X | | | | | | | | |
| 19.18 | 0940 | | DBS-4 | | | -004 | | | | | | | | X | | | | | | | | |
| | 1005 | | DBS-9 | | | -005 | | | | | | | | X | | | | | | | | |
| | 1045 | | DBS-8 | | | -006 | | | | | | | | X | | | | | | | | |
| | 1115 | | DBS-10 | | | -007 | | | | | | | | X | | | | | | | | |
| | 1145 | | DBS-6 | | | -008 | | | | | | | | X | | | | | | | | |
| | 1325 | | MW-5 | | | -009 | | | | | | | | X | | | | | | | | |
| | 1405 | | MW-3 | | | -010 | | | | | | | | X | | | | | | | | |
| | 1435 | | DBS-1R | | | -011 | | | | | | | | X | | | | | | | | |
| | 1520 | | PMW-1 | | | -012 | | | | | | | | X | | | | | | | | |

| Date | Time | Relinquished by: | Received by: | Date | Time |
|---|---|---|---|---|---|
| 6/20/18 | 1126 | | | 06/20/18 | 1126 |
| Date: | Time: | Relinquished by: | Received by: | Date | Time |

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: DBSA

Mailing Address: 6020 Academy RD NE

Phone #: 505-822-9400

email or Fax#: JAyarbe@geo-logic.com

QA/QC Package: MZbrozek@geo-logic.com

☐ Standard ☐ Level 4 (Full Validation)

Accreditation

☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☑ Standard ☐ Rush _____

Project Name: SALTY DOG

Project #: ES06.0118.06

Project Manager: J. Ayarbe

Sampler: M. Zbrozek

On Ice: ☑ Yes ☐ No

Sample Temperature: 3.4°


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 Request ID | Container Type and # | Preservative Type | HEAL No. 1806C36 | BTEX + MTBE + TMB's (8021) | BTEX + MTBE + TPH (Gas only) | TPH 8015B (GRO / DRO / MRO) | TPH (Method 418.1) | EDB (Method 504.1) | PAH's (8310 or 8270 SIMS) | RCRA 8 Metals | Anions ($F^-$, $Cl^-$, $NO_3$, $NO_2$, $PO_4$, $SO_4$) | 8081 Pesticides / 8082 PCB's | 8260B (VOA) | 8270 (Semi-VOA) | $Na^+$ | TDS, pH, Spec Grav | | | Air Bubbles (Y or N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| .19.18 | 1440 | GW | Brine | 3 poly | 1 $HNO_3$ | -013 | | | | | | | | X | | | | X | X | | | |
| .19.18 | 1455 | GW | Injection | 2 poly | NA | -014 | | | | | | | | X | | | | | X | | | |

| Date: | Time: | Relinquished by: | Received by: | Date | Time |
|---|---|---|---|---|---|
| 1/20/18 | 1126 | | | 01/20/18 | 1126 |
| Date: | Time: | Relinquished by: | Received by: | Date | Time |

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*
*4901 Hawkins NE*
*Albuquerque, NM 87109*
*TEL: 505-345-3975 FAX: 505-345-4107*
*Website: www.hallenvironmental.com*

November 27, 2018

John Ayarbe

Daniel B. Stephens & Assoc.
6020 Academy NE Suite 100
Albuquerque, NM 87109
TEL: (505) 822-9400
FAX (505) 822-8877

RE: Salty Dog OrderNo.: 1811579

Dear John Ayarbe:

Hall Environmental Analysis Laboratory received 13 sample(s) on 11/9/2018 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.

**CLIENT:** Daniel B. Stephens & Assoc. **Lab Order:** 1811579
**Project:** Salty Dog

**Lab ID:** 1811579-001 **Collection Date:** 11/8/2018 10:00:00 AM
**Client Sample ID:** DBS-8 **Matrix:** AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **smb** | |
| Chloride | 30 | 5.0 | | mg/L | 10 | 11/13/2018 12:34:44 PM | R55635 |

**Lab ID:** 1811579-002 **Collection Date:** 11/8/2018 10:30:00 AM
**Client Sample ID:** DBS-10 **Matrix:** AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **smb** | |
| Chloride | 590 | 50 | * | mg/L | 100 | 11/13/2018 1:13:18 PM | R55635 |

**Lab ID:** 1811579-003 **Collection Date:** 11/8/2018 11:10:00 AM
**Client Sample ID:** DBS-6 **Matrix:** AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **smb** | |
| Chloride | 190 | 50 | | mg/L | 100 | 11/13/2018 1:39:01 PM | R55635 |

**Lab ID:** 1811579-004 **Collection Date:** 11/8/2018 11:40:00 AM
**Client Sample ID:** MW-5 **Matrix:** AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **smb** | |
| Chloride | 680 | 50 | * | mg/L | 100 | 11/13/2018 2:04:45 PM | R55635 |

**Lab ID:** 1811579-005 **Collection Date:** 11/8/2018 12:30:00 PM
**Client Sample ID:** MW-3 **Matrix:** AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **smb** | |
| Chloride | 8000 | 500 | * | mg/L | 1E | 11/19/2018 2:05:58 PM | R55763 |

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 Detection Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Daniel B. Stephens & Assoc. **Lab Order:** 1811579
**Project:** Salty Dog

**Lab ID:** 1811579-006 **Collection Date:** 11/8/2018 1:10:00 PM
**Client Sample ID:** DBS-3 **Matrix:** AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **smb** | |
| Chloride | 46 | 5.0 | | mg/L | 10 | 11/13/2018 3:09:03 PM | R55635 |

**Lab ID:** 1811579-007 **Collection Date:** 11/8/2018 1:45:00 PM
**Client Sample ID:** DBS-4 **Matrix:** AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **smb** | |
| Chloride | 35 | 5.0 | | mg/L | 10 | 11/13/2018 4:00:29 PM | R55635 |

**Lab ID:** 1811579-008 **Collection Date:** 11/8/2018 1:55:00 PM
**Client Sample ID:** DBS-2 **Matrix:** AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **smb** | |
| Chloride | 47 | 5.0 | | mg/L | 10 | 11/13/2018 4:26:13 PM | R55635 |

**Lab ID:** 1811579-009 **Collection Date:** 11/8/2018 2:15:00 PM
**Client Sample ID:** DBS-5 **Matrix:** AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **smb** | |
| Chloride | 170 | 5.0 | | mg/L | 10 | 11/13/2018 5:17:39 PM | R55635 |

**Lab ID:** 1811579-010 **Collection Date:** 11/8/2018 2:35:00 PM
**Client Sample ID:** DBS-1R **Matrix:** AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **smb** | |
| Chloride | 180 | 5.0 | | mg/L | 10 | 11/13/2018 6:09:06 PM | R55635 |

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 Detection Limit |

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Daniel B. Stephens & Assoc. **Lab Order:** 1811579
**Project:** Salty Dog

**Lab ID:** 1811579-011 **Collection Date:** 11/8/2018 2:50:00 PM
**Client Sample ID:** Injection **Matrix:** AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|
| **SPECIFIC GRAVITY** | | | | | | Analyst: **JRR** | |
| Specific Gravity | 0.9989 | 0 | | | 1 | 11/16/2018 1:26:00 PM | R55711 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **smb** | |
| Chloride | 370 | 50 | * | mg/L | 100 | 11/13/2018 6:47:41 PM | R55635 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 981 | 20.0 | * | mg/L | 1 | 11/19/2018 4:51:00 PM | 41562 |
| **SM4500-H+B / 9040C: PH** | | | | | | Analyst: **JRR** | |
| pH | 7.75 | | H | pH units | 1 | 11/15/2018 11:52:16 AM | R55698 |

**Lab ID:** 1811579-012 **Collection Date:** 11/8/2018 3:30:00 PM
**Client Sample ID:** PMW-1 **Matrix:** AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **smb** | |
| Chloride | 10000 | 500 | * | mg/L | 1E | 11/13/2018 7:13:23 PM | R55635 |

**Lab ID:** 1811579-013 **Collection Date:** 11/8/2018 4:10:00 PM
**Client Sample ID:** Brine **Matrix:** AQUEOUS

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch ID |
|---|---|---|---|---|---|---|---|
| **SPECIFIC GRAVITY** | | | | | | Analyst: **JRR** | |
| Specific Gravity | 1.195 | 0 | | | 1 | 11/16/2018 1:26:00 PM | R55711 |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **MRA** | |
| Chloride | 210000 | 10000 | * | mg/L | 2E | 11/14/2018 6:22:42 PM | R55641 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: **KS** | |
| Total Dissolved Solids | 309000 | 2000 | *D | mg/L | 1 | 11/19/2018 4:51:00 PM | 41562 |
| **SM4500-H+B / 9040C: PH** | | | | | | Analyst: **JRR** | |
| pH | 7.46 | | H | pH units | 1 | 11/15/2018 11:56:49 AM | R55698 |
| **EPA METHOD 200.7: METALS** | | | | | | Analyst: **pmf** | |
| Sodium | 82000 | 1000 | | mg/L | 1E | 11/19/2018 4:03:44 PM | 41554 |

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 Detection Limit |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1811579**

***27-Nov-18***

**Client:** Daniel B. Stephens & Assoc.

**Project:** Salty Dog

| Sample ID | **MB-41554** | SampType: | **MBLK** | TestCode: | **EPA Method 200.7: Metals** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBW** | Batch ID: | **41554** | RunNo: | **55720** | | | | | |
| Prep Date: | **11/15/2018** | Analysis Date: | **11/16/2018** | SeqNo: | **1856689** | Units: | **mg/L** | | | |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sodium | ND | 1.0 | | | | | | | | |

| Sample ID | **LLLCS-41554** | SampType: | **LCSLL** | TestCode: | **EPA Method 200.7: Metals** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **BatchQC** | Batch ID: | **41554** | RunNo: | **55720** | | | | | |
| Prep Date: | **11/15/2018** | Analysis Date: | **11/16/2018** | SeqNo: | **1856690** | Units: | **mg/L** | | | |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sodium | ND | 1.0 | 0.5000 | 0 | 150 | 50 | 150 | | | |

| Sample ID | **LCS-41554** | SampType: | **LCS** | TestCode: | **EPA Method 200.7: Metals** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSW** | Batch ID: | **41554** | RunNo: | **55720** | | | | | |
| Prep Date: | **11/15/2018** | Analysis Date: | **11/16/2018** | SeqNo: | **1856691** | Units: | **mg/L** | | | |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sodium | 51 | 1.0 | 50.00 | 0 | 103 | 85 | 115 | | | |

**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 Detection Limit |
| S | % Recovery outside of range due to dilution or matrix | W | Sample container temperature is out of limit as specified |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1811579**

***27-Nov-18***

**Client:** Daniel B. Stephens & Assoc.

**Project:** Salty Dog

| Sample ID | **1811579-006AMS** | SampType: | **MS** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **DBS-3** | Batch ID: | **R55635** | | RunNo: | **55635** | | | | |
| Prep Date: | | Analysis Date: | **11/13/2018** | | SeqNo: | **1853450** | Units: | **mg/L** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | 95 | 5.0 | 50.00 | 45.70 | 99.0 | 77.5 | 116 | | | |

| Sample ID | **1811579-006AMSD** | SampType: | **MSD** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **DBS-3** | Batch ID: | **R55635** | | RunNo: | **55635** | | | | |
| Prep Date: | | Analysis Date: | **11/13/2018** | | SeqNo: | **1853451** | Units: | **mg/L** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | 93 | 5.0 | 50.00 | 45.70 | 94.7 | 77.5 | 116 | 2.30 | 20 | |

| Sample ID | **MB** | SampType: | **MBLK** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBW** | Batch ID: | **R55635** | | RunNo: | **55635** | | | | |
| Prep Date: | | Analysis Date: | **11/13/2018** | | SeqNo: | **1853461** | 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: | **R55635** | | RunNo: | **55635** | | | | |
| Prep Date: | | Analysis Date: | **11/13/2018** | | SeqNo: | **1853462** | Units: | **mg/L** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | 4.9 | 0.50 | 5.000 | 0 | 97.6 | 90 | 110 | | | |

| Sample ID | **MB** | SampType: | **mblk** | | TestCode: | **EPA Method 300.0: Anions** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBW** | Batch ID: | **R55641** | | RunNo: | **55641** | | | | |
| Prep Date: | | Analysis Date: | **11/14/2018** | | SeqNo: | **1853987** | 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: | **R55641** | | RunNo: | **55641** | | | | |
| Prep Date: | | Analysis Date: | **11/14/2018** | | SeqNo: | **1853988** | Units: | **mg/L** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | 4.8 | 0.50 | 5.000 | 0 | 96.6 | 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 Detection Limit |
| S | % Recovery outside of range due to dilution or matrix | W | Sample container temperature is out of limit as specified |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1811579**

***27-Nov-18***

**Client:** Daniel B. Stephens & Assoc.

**Project:** Salty Dog

| Sample ID **MB** | SampType: **MBLK** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **PBW** | Batch ID: **R55763** | RunNo: **55763** |
| Prep Date: | Analysis Date: **11/19/2018** | SeqNo: **1858894** 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: **R55763** | RunNo: **55763** |
| Prep Date: | Analysis Date: **11/19/2018** | SeqNo: **1858896** 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 | 93.6 | 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 Detection Limit |
| S | % Recovery outside of range due to dilution or matrix | W | Sample container temperature is out of limit as specified |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1811579**

***27-Nov-18***

**Client:** Daniel B. Stephens & Assoc.

**Project:** Salty Dog

| Sample ID | **1811579-011ADUP** | SampType: | **DUP** | TestCode: | **Specific Gravity** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **Injection** | Batch ID: | **R55711** | RunNo: | **55711** | | | | | |
| Prep Date: | | Analysis Date: | **11/16/2018** | SeqNo: | **1856564** | Units: | | | | |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Specific Gravity | 0.9950 | 0 | | | | | | 0.391 | 20 | |

**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 Detection Limit |
| S | % Recovery outside of range due to dilution or matrix | W | Sample container temperature is out of limit as specified |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **1811579**

***27-Nov-18***

**Client:** Daniel B. Stephens & Assoc.

**Project:** Salty Dog

| Sample ID | **MB-41562** | SampType: | **MBLK** | TestCode: | **SM2540C MOD: Total Dissolved Solids** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBW** | Batch ID: | **41562** | RunNo: | **55750** | | | | | |
| Prep Date: | **11/15/2018** | Analysis Date: | **11/19/2018** | SeqNo: | **1857855** | 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-41562** | SampType: | **LCS** | TestCode: | **SM2540C MOD: Total Dissolved Solids** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **LCSW** | Batch ID: | **41562** | RunNo: | **55750** | | | | | |
| Prep Date: | **11/15/2018** | Analysis Date: | **11/19/2018** | SeqNo: | **1857856** | Units: | **mg/L** | | | |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids | 1020 | 20.0 | 1000 | 0 | 102 | 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 Detection Limit |
| S | % Recovery outside of range due to dilution or matrix | W | Sample container temperature is out of limit as specified |

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

# Sample Log-In Check List

Client Name: DBS | Work Order Number: 1811579 | RcptNo: 1

Received By: Ashley Gallegos 11/9/2018 8:46:00 AM

Completed By: Ashley Gallegos 11/12/2018 9:49:32 AM

Reviewed By: ENM 11/12/18

CB: JO 11/12/18

## 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 ☐
   Approved by client.
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. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
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: 1 (<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 JO 11/12/18

## Special Handling (if applicable)

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

| | | | |
|---|---|---|---|
| Person Notified: | Mike Z | Date: | 11/12/2018 |
| By Whom: | Ashley Gallegos/Isaiah Orti | Via: | ☐ eMail ☑ Phone ☐ Fax ☑ In Person |
| Regarding: | High temp. No sample for DBS-11 received sample DBS-6 not listed on chain. | | |
| Client Instructions: | Proceed with analysis. ~~Chage~~ Change sample DBS-11 to read DBS-6 | | |

16. Additional remarks: JO 11/12/18

17. Cooler Information

| Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|---|---|---|---|---|---|---|
| 1 | 7.8 | Good | Not Present | | | |

# Chain-of-Custody Record

1/2

Client: DBSA

Mailing Address:

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 #: E508.0118.18

Project Manager: J. Ayache

Sampler: M. Zbrozek

On Ice: ☒ Yes ☐ No

# of Coolers: 1 CF = +1.0

Cooler Temp (including CF): 7.8

**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. 1811579 | 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) | TDS, pH, Spec Gravity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11.8.18 | 1000 | GW | DBS-8 | 1 poly | | -001 | | | | | | | X | | | | |
| | 1030 | | DBS-10 | | | -002 | | | | | | | X | | | | |
| | 1110 | | DBS-NL6 IO 11/12/18 | | | -003 | | | | | | | X | | | | |
| | 1140 | | MW-5 | | | -004 | | | | | | | X | | | | |
| | 1230 | | MW-3 | | | -005 | | | | | | | X | | | | |
| | 1310 | | DBS-3 | | | -006 | | | | | | | X | | | | |
| | 1345 | | DBS-4 | | | -007 | | | | | | | X | | | | |
| | 1355 | | DBS-2 | | | -008 | | | | | | | X | | | | |
| | 1415 | | DBS-5 | | | -009 | | | | | | | X | | | | |
| | 1435 | | DBS-1R | | | -010 | | | | | | | X | | | | |
| ~~1550~~ | 1450 | | Injection | | | -011 | | | | | | | X | | | | X |
| | 1530 | | PMW-1 | | | -012 | | | | | | | X | | | | |

| Date | Time | Relinquished by | Received by | Via | Date | Time |
|---|---|---|---|---|---|---|
| 11.9.18 | 0846 | | | CDO | 11/09/18 | 0846 |
| | | | | | | |

Remarks: Temp approved

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.

2/2

# Chain-of-Custody Record

Client: DBSA

Mailing Address:

Phone #: 505-822-9100

email or Fax#: MZlotek@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 #: ES08.0118.18

Project Manager: J. Ayalbe

Sampler: M. Zlotek

On Ice: ☒ Yes ☐ No

# of Coolers: 1 CF = +1.0

Cooler Temp (including CF): 7.8

**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. 1811SD | 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 | F, Br, $NO_3$, $NO_2$, $PO_4$, $SO_4$ | 8260 (VOA) | 8270 (Semi-VOA) | Total Coliform (Present/Absent) | $Na^+$ | TDS, Spec Grav, pH | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11.8.18 | 1610 | W | Brine | 2 poly | HNO3 | -013 | | | | | | | X | | | | X | X | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | | | |

| Date | Time | Relinquished by | Received by | Via | Date | Time |
|---|---|---|---|---|---|---|
| 11.9.18 | 846 | | | CDO | 11/09/18 | 0841 |
| | | | | | | |

Remarks: Temp approved

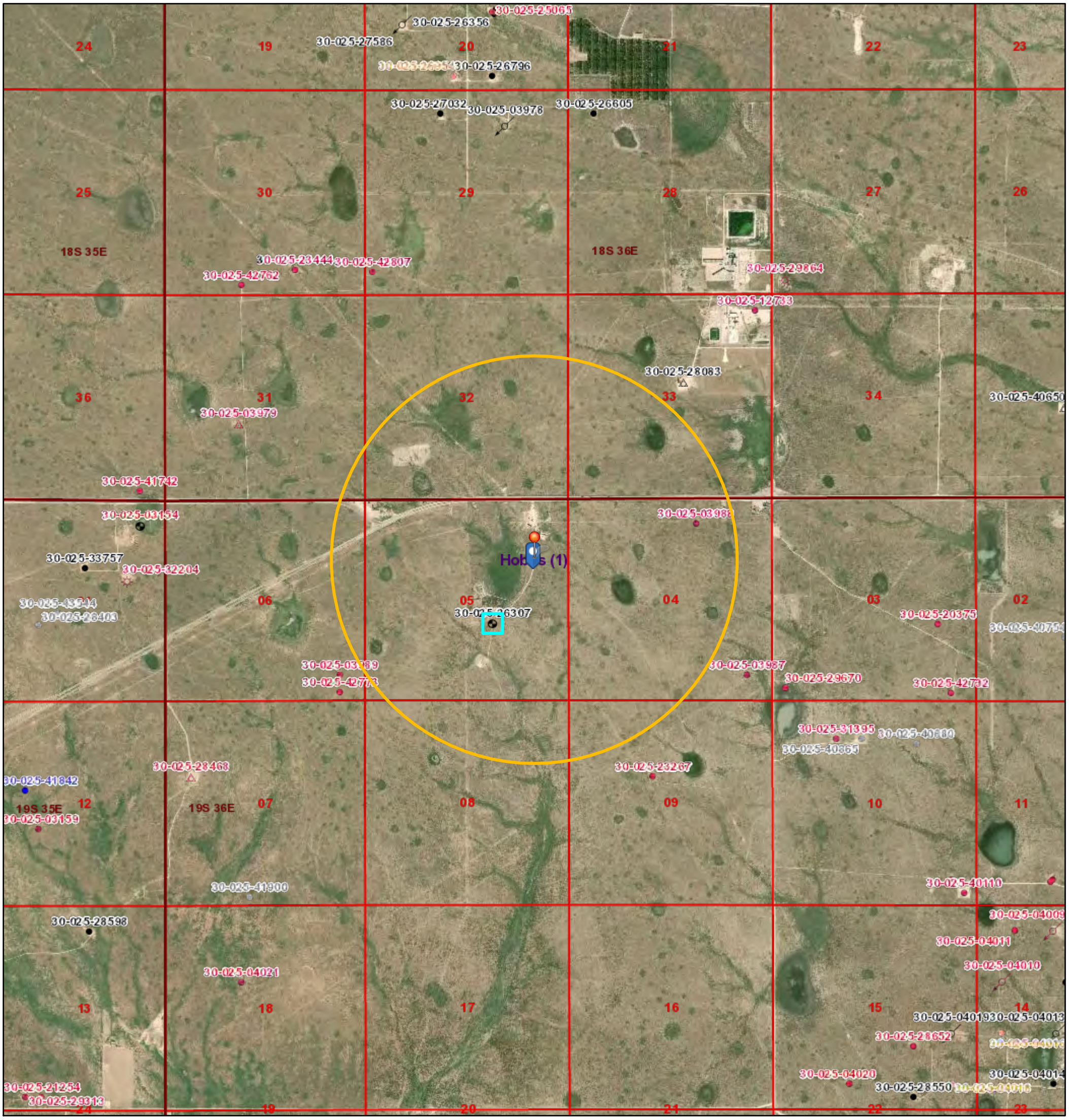
RA

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.

# Appendix D

# Area of Review Evaluation

# OCD Well Locations




2/28/2019, 8:20:40 AM

1:36,112

0 0.35 0.7 1.4 mi

0 0.5 1 2 km

Well Locations - Large Scale

- Miscellaneous
- CO2 Active
- CO2 Cancelled
- CO2 New
- CO2, Plugged
- CO2, Temporarily Abandoned
- Gas Active
- Gas, Cancelled, Never Drilled
- 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 Abondoned
- Salt Water Injection, Active
- Salt Water Injection, Cancelled
- Salt Water Injection, New
- Salt Water Injection, Plugged
- Salt Water InjectionTemporarily Abandoned
- Water, Active
- Water, Cancelled
- Water, New
- Water, Plugged
- Water, Temporarily Abandoned

Well Locations - Small Scale

- Active
- New
- Plugged
- Cancelled
- Temporarily Abandoned
- OCD Districts
- OCD District Offices
- PLSS First Division

OCD, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, BLM

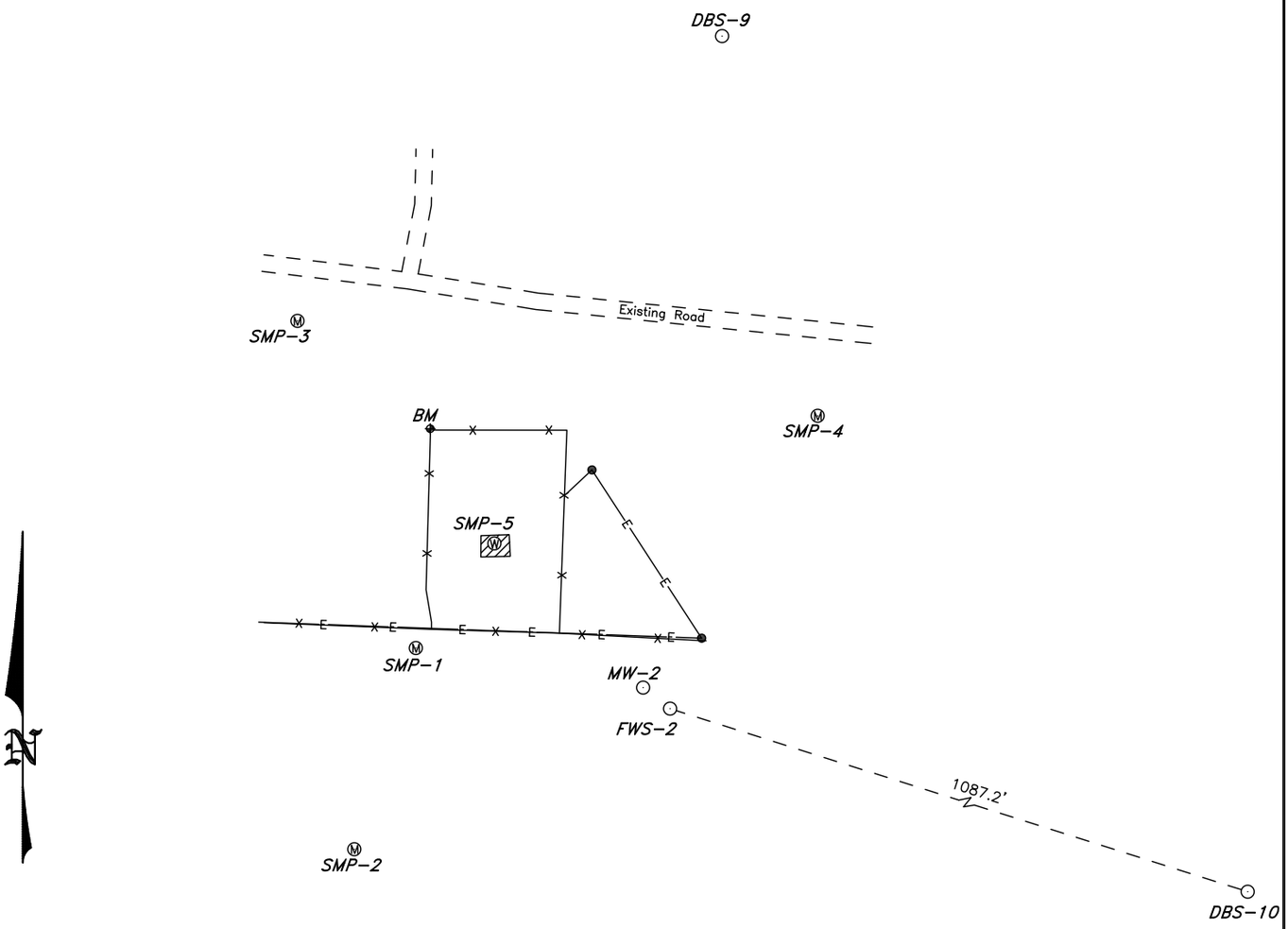
New Mexico Oil Conservation Division

NM OCD Oil and Gas Map. http://nm-emnrd.maps.arcgis.com/apps/webappviewer/: New Mexico Oil Conservation Division

# Appendix E

# 2018 Survey Data for Land Surface Subsidence Monitoring

# SECTION 5, TOWNSHIP 19 SOUTH, RANGE 36 EAST, N.M.P.M.,
## LEA COUNTY, NEW MEXICO.




ALL COORDINATES ARE BASED ON NMSPCE (NAD83)

| NAME | SECTION CALLS | NORTHING | EASTING | LATITUDE | LONGITUDE | ELEVATION TOP CASING | ELEVATION CONCRETE |
|---|---|---|---|---|---|---|---|
| SMP-1 | 2153' FSL & 2020' FEL | 615475.977 | 836301.437 | N32°41'17.960" | W103°22'28.520" | 3810.11' | 3810.37' |
| SMP-2 | 2032' FSL & 2058' FEL | 615354.850 | 836264.338 | N32°41'16.795" | W103°22'28.966" | 3809.01' | 3809.39' |
| SMP-3 | 2350' FSL & 2089' FEL | 615673.004 | 836230.083 | N32°41'19.945" | W103°22'29.334" | 3808.80' | 3809.17' |
| SMP-4 | 2291' FSL & 1776' FEL | 615615.830 | 836543.487 | N32°41'19.352" | W103°22'25.673" | 3806.32' | 3806.73' |
| SMP-5 | 2216' FSL & 1972' FEL | 615539.029 | 836348.733 | N32°41'18.609" | W103°22'27.960" | 3811.72' | |
| DBS-9 | 2520' FSL & 1831' FEL | 615844.539 | 836485.906 | N32°41'21.593" | W103°22'26.317" | | |
| DBS-10 | 1389' FSL & 1060' FEL | 614720.368 | 837270.028 | N32°41'10.428" | W103°22'17.269" | 3807.48' | 3805.44' |
| BENCH MARK | | 615608.14 | 836310.07 | N32°41'19.27" | W103°22'28.40" | | |

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.

GARY L. JONES N.M. P.S. No. 7977
T.X. P.L.S. No. 5074

GARY L. JONES NEW MEXICO 7977 REGISTERED PROFESSIONAL LAND SURVEYOR

200 0 200 400 FEET

DANIEL B. STEPHENS & ASSOCIATES, INC

REF: SALTY DOG BRINE FACILITY

MONITOR WELLS AND SUSTENANCE MONITORING POINTS
LOCATED IN SECTION 5, TOWNSHIP 19 SOUTH, RANGE 36 EAST,
N.M.P.M., LEA COUNTY, NEW MEXICO.

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focused on excellence in the oilfield
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 – Office
(575) 392-2206 – Fax
basinsurveys.com

| W.O. Number: 33610 | Drawn By: K. GOAD | Date: 03-29-2018 | Survey Date: 03-23-2018 | Sheet 1 of 1 Sheets |
|---|---|---|---|---|

# SECTION 5, TOWNSHIP 19 SOUTH, RANGE 36 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.


ALL COORDINATES ARE BASED ON NMSPCE (NAD83)

| NAME | SECTION CALLS | NORTHING | EASTING | LATITUDE | LONGITUDE | ELEVATION TOP CASING | ELEVATION CONCRETE |
|---|---|---|---|---|---|---|---|
| SMP-1 | 2153' FSL & 2020' FEL | 615475.977 | 836301.437 | N32°41'17.960" | W103°22'28.520" | 3810.11' | 3810.37' |
| SMP-2 | 2032' FSL & 2058' FEL | 615354.850 | 836264.338 | N32°41'16.795" | W103°22'28.966" | 3809.01' | 3809.39' |
| SMP-3 | 2350' FSL & 2089' FEL | 615673.004 | 836230.083 | N32°41'19.945" | W103°22'29.334" | 3808.80' | 3809.17' |
| SMP-4 | 2291' FSL & 1776' FEL | 615615.830 | 836543.487 | N32°41'19.352" | W103°22'25.673" | 3806.32' | 3806.73' |
| SMP-5 | 2216' FSL & 1972' FEL | 615539.029 | 836348.733 | N32°41'18.609" | W103°22'27.960" | 3811.72' | |
| DBS-9 | 2520' FSL & 1831' FEL | 615844.539 | 836485.906 | N32°41'21.593" | W103°22'26.317" | | |
| DBS-10 | 1389' FSL & 1060' FEL | 614720.368 | 837270.028 | N32°41'10.428" | W103°22'17.269" | 3807.48' | 3805.44' |
| BENCH MARK | | 615608.14 | 836310.07 | N32°41'19.27" | W103°22'28.40" | | |

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.

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TERRY L. ASEL, N.M. P.S. No. 5074

GARY L. JONES NEW MEXICO 7977 REGISTERED PROFESSIONAL LAND SURVEYOR

200 0 200 400 FEET

DANIEL B. STEPHENS & ASSOCIATES, INC

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1120 N. West County Rd.
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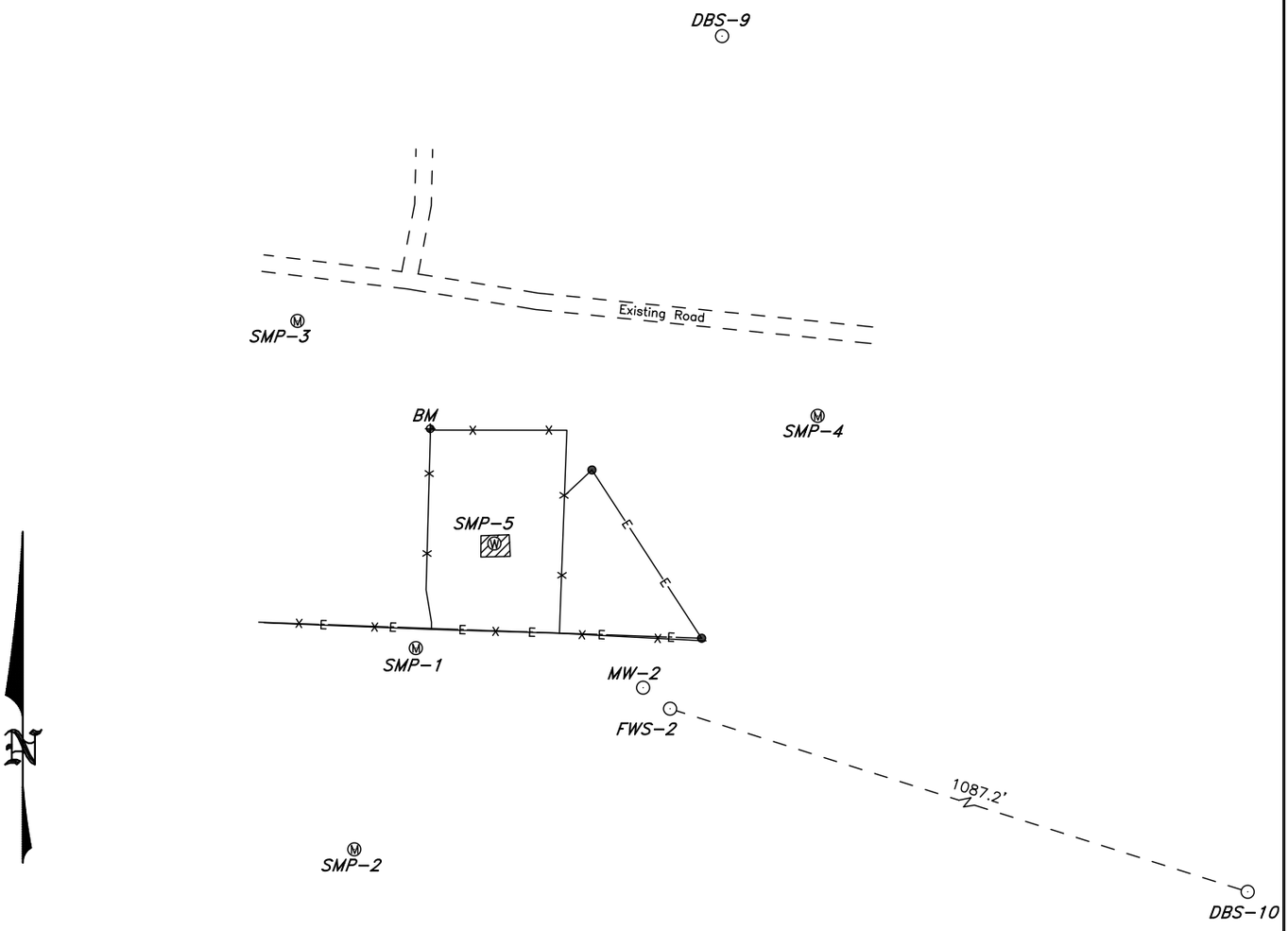
(575) 393-7316 – Office
(575) 392-2206 – Fax
basinsurveys.com

| W.O. Number: 33610 | Drawn By: K. GOAD | Date: 03-29-2018 | Survey Date: 03-23-2018 | Sheet 1 of 1 Sheets |
|---|---|---|---|---|

# SECTION 5, TOWNSHIP 19 SOUTH, RANGE 36 EAST, N.M.P.M.,
## LEA COUNTY, NEW MEXICO.




ALL COORDINATES ARE BASED ON NMSPCE (NAD83)

| NAME | SECTION CALLS | NORTHING | EASTING | LATITUDE | LONGITUDE | ELEVATION TOP CASING | ELEVATION CONCRETE |
|---|---|---|---|---|---|---|---|
| SMP-1 | 2153' FSL & 2020' FEL | 615475.977 | 836301.437 | N32°41'17.960" | W103°22'28.520" | 3810.10' | 3810.37' |
| SMP-2 | 2032' FSL & 2058' FEL | 615354.850 | 836264.338 | N32°41'16.795" | W103°22'28.966" | 3809.02' | 3809.39' |
| SMP-3 | 2350' FSL & 2089' FEL | 615673.004 | 836230.083 | N32°41'19.945" | W103°22'29.334" | 3808.82' | 3809.17' |
| SMP-4 | 2291' FSL & 1776' FEL | 615615.830 | 836543.487 | N32°41'19.352" | W103°22'25.673" | 3806.33' | 3806.73' |
| SMP-5 | 2216' FSL & 1972' FEL | 615539.029 | 836348.733 | N32°41'18.609" | W103°22'27.960" | 3811.71' | |
| DBS-9 | 2520' FSL & 1831' FEL | 615844.539 | 836485.906 | N32°41'21.593" | W103°22'26.317" | | |
| DBS-10 | 1389' FSL & 1060' FEL | 614720.368 | 837270.028 | N32°41'10.428" | W103°22'17.269" | 3807.48' | 3805.44' |
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I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.

GARY L. JONES N.M. P.S. No. 7977
T.X. P.L.S. No. 5074

GARY L. JONES NEW MEXICO 7977 REGISTERED PROFESSIONAL LAND SURVEYOR

200 0 200 400 FEET

DANIEL B. STEPHENS & ASSOCIATES, INC

REF: SALTY DOG BRINE FACILITY

MONITOR WELLS AND SUSTENANCE MONITORING POINTS
LOCATED IN SECTION 5, TOWNSHIP 19 SOUTH, RANGE 36 EAST,
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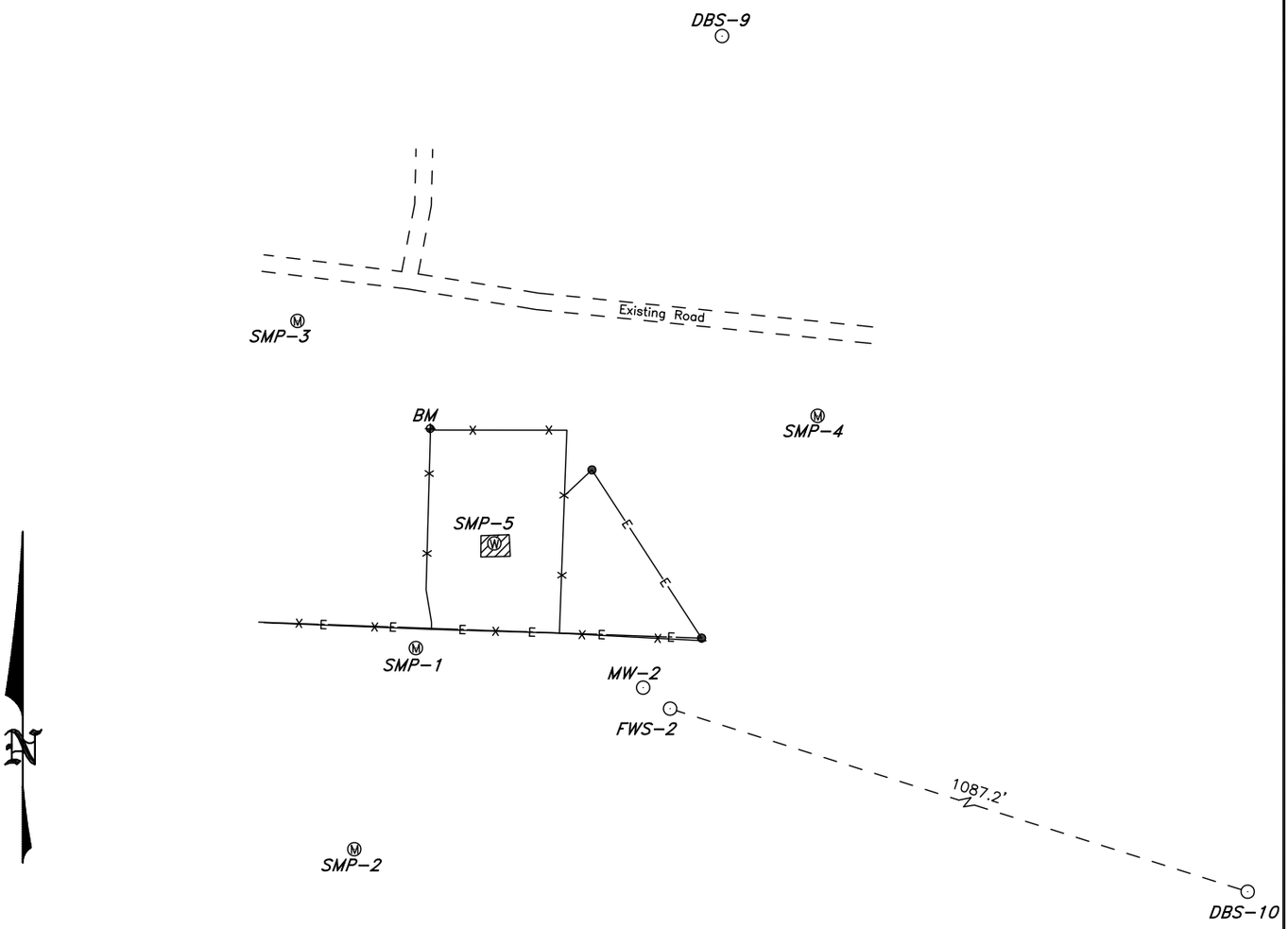
Hobbs, New Mexico 88241
(575) 393-7316 – Office
(575) 392-2206 – Fax
basinsurveys.com

| W.O. Number: 33811 | Drawn By: K. GOAD | Date: 06-19-2018 | Survey Date: 06-15-2018 | Sheet 1 of 1 Sheets |
|---|---|---|---|---|

# SECTION 5, TOWNSHIP 19 SOUTH, RANGE 36 EAST, N.M.P.M.,
## LEA COUNTY, NEW MEXICO.




ALL COORDINATES ARE BASED ON NMSPCE (NAD83)

| NAME | SECTION CALLS | NORTHING | EASTING | LATITUDE | LONGITUDE | ELEVATION TOP CASING | ELEVATION CONCRETE |
|---|---|---|---|---|---|---|---|
| SMP-1 | 2153' FSL & 2020' FEL | 615475.977 | 836301.437 | N32°41'17.960" | W103°22'28.520" | 3810.10' | 3810.38' |
| SMP-2 | 2032' FSL & 2058' FEL | 615354.850 | 836264.338 | N32°41'16.795" | W103°22'28.966" | 3809.00' | 3809.41' |
| SMP-3 | 2350' FSL & 2089' FEL | 615673.004 | 836230.083 | N32°41'19.945" | W103°22'29.334" | 3808.81' | 3809.18' |
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| SMP-5 | 2216' FSL & 1972' FEL | 615539.029 | 836348.733 | N32°41'18.609" | W103°22'27.960" | 3811.72' | |
| DBS-9 | 2520' FSL & 1831' FEL | 615844.539 | 836485.906 | N32°41'21.593" | W103°22'26.317" | | |
| DBS-10 | 1389' FSL & 1060' FEL | 614720.368 | 837270.028 | N32°41'10.428" | W103°22'17.269" | 3807.48' | 3805.44' |
| BENCH MARK | | 615608.14 | 836310.07 | N32°41'19.27" | W103°22'28.40" | 3808.62' | |

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.

GARY L. JONES, N.M. P.S. No. 7977
T.H. McLAUGHLIN, N.M.P.S. No. 5074

GARY L. JONES NEW MEXICO 7977 REGISTERED PROFESSIONAL LAND SURVEYOR

200 0 200 400 FEET

DANIEL B. STEPHENS & ASSOCIATES, INC

REF: SALTY DOG BRINE FACILITY

MONITOR WELLS AND SUSTENANCE MONITORING POINTS
LOCATED IN SECTION 5, TOWNSHIP 19 SOUTH, RANGE 36 EAST,
N.M.P.M., LEA COUNTY, NEW MEXICO.

basin surveys
focused on excellence in the oilfield
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 – Office
(575) 392-2206 – Fax
basinsurveys.com

| W.O. Number: 34246 | Drawn By: K. GOAD | Date: 12-24-2018 | Survey Date: 12-15-2018 | Sheet 1 of 1 Sheets |
|---|---|---|---|---|

# SECTION 5, TOWNSHIP 19 SOUTH, RANGE 36 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.


ALL COORDINATES ARE BASED ON NMSPCE (NAD83)

| NAME | SECTION CALLS | NORTHING | EASTING | LATITUDE | LONGITUDE | ELEVATION TOP CASING | ELEVATION CONCRETE |
|---|---|---|---|---|---|---|---|
| SMP-1 | 2153' FSL & 2020' FEL | 615475.977 | 836301.437 | N32°41'17.960" | W103°22'28.520" | 3810.10' | 3810.38' |
| SMP-2 | 2032' FSL & 2058' FEL | 615354.850 | 836264.338 | N32°41'16.795" | W103°22'28.966" | 3809.00' | 3809.41' |
| SMP-3 | 2350' FSL & 2089' FEL | 615673.004 | 836230.083 | N32°41'19.945" | W103°22'29.334" | 3808.81' | 3809.18' |
| SMP-4 | 2291' FSL & 1776' FEL | 615615.830 | 836543.487 | N32°41'19.352" | W103°22'25.673" | 3806.32' | 3806.72' |
| SMP-5 | 2216' FSL & 1972' FEL | 615539.029 | 836348.733 | N32°41'18.609" | W103°22'27.960" | 3811.72' | |
| DBS-9 | 2520' FSL & 1831' FEL | 615844.539 | 836485.906 | N32°41'21.593" | W103°22'26.317" | | |
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