

BW - _____004_____

**ANNUAL
REPORTS**

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ANNUAL CLASS III WELL REPORT FOR 2017

Wasserhund Inc.

Buckeye Brine Station

OCD Permit BW-04

Expiration Date: November 08, 2018

API No. 30-025-26883 Eidson #1

Unit Letter M-Section 31-Ts 16s – R35e

May 01, 2018

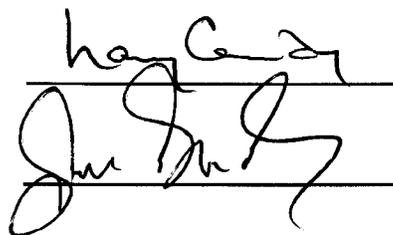
Submitted By: Price LLC on behalf of Wasserhund Inc Principals Mr. Larry and Jon Gandy.



Wayne Price-LLC

Larry Gandy

Jon Gandy



Bullet Point 2- Summary of Operations:

(Permit Condition 2.J.2 Annual Report: “Summary of Class III well operations for the year including a description and reason for any remedial or major work on the well with a copy of C-103.”) Permit Expires November 08, 2018.

During the 2017 year there was no major remedial work on the brine well. General housekeeping was routinely performed and inspections were conducted for awareness of the BW-04 permit conditions. *(A copy of the most recent OCD approved Discharge Plan permit BW-04 is included for reference in **Appendix “A”**).*

The brine well was drilled in 1980 and has been in operation for approximately 36 years and is sited on State Highway 08, approximately 12 miles southwest of Lovington, NM. The well is producing out of the Salado “Salt Formation” at a depth of approximately 1900-2460 feet below surface.

The brine well has been producing for a number of years and may possibly be considered approaching an “end of life” scenario due to its age. This scenario is not due to a safety aspect, i.e. collapse, since the well has produced only about one-half of normal volume compared to similar wells of age. Bullet point 10 (Brine Cavity/Subsidence Information) below discusses the safety aspects of this well in more detail.

As with most brine wells of this age, repeated required annual testing which flexes the cavern support, thus causing flexure stress cracking and the past required reverse flow issue, has caused these older wells to have pre-mature down-hole problems, such as “sloughing” of the salt-anhydrite layers damaging the tubing and making re-entry virtually impossible and extremely expensive. This well had to be whip-stocked in 2008 in order to reenter after a severe down-hole problem.

To ensure the safety of the well a Pro-active well “Area of Review” has been conducted annually and will continue including yearly cavern size calculations.

Evaluation of the last sonar test conducted determined cavern stability and is discussed further in Bullet Point 10 below.

While this is an older well, it still has not reached its productive end of life and is deemed safe and is an extremely valuable asset for the oil and gas industry.

Bullet Point 3- Production Volumes:

(Permit condition 2.J.3 “Monthly fluid injection and brine production volume, including the cumulative total carried over each year”

Monthly, Yearly and Lifetime Injection and Production Volumes:

The monthly, yearly and lifetime fresh water injection and brine production volumes are attached herein for review. The total 2017 fresh water injected was 304,453 barrels and brine production volume was 300,182 barrels.

The lifetime fresh water volumes are reported at 9,577,581 barrels and the life time brine production volume is 9,532,364 barrels.

Wassehund Inc. purchased this well from another operator a number of years ago and at that time it appeared the past operator may not have recorded the fresh water injection. Wasserhund Inc. started submitting annual reports in 2011 and carried forward the brine production numbers.

In order to amend the fresh water records, the last seven years were selected where fresh water was reported, and an average fresh water to brine water ratio was calculated. This number was used to back calculate the estimated amount of fresh water that was injected.

This years report reflects a fresh water number that will be carried forward in the future and is reflected in the above numbers.

Enclosed in **Appendix “B”** is the injection and production and a comparison chart of injected water to produced water with comments.

Bullet Point 4- “Injection Pressure Data.”

(Permit condition 2.J.4 “Injection Pressure Data”

Maximum and Average Injection Pressure:

The average injection pressure as noted by Wasserhund Inc.’s personnel is approximately 260-280 psig. This reading is taken from a pressure gauge mounted on the pump outlet.

Antidotal evidence may suggest older brine wells have a tendency to have a lower frac gradient over time. For this reason Wasserhund will not exceed 315 psig on the casing when operating or testing the formation. The tubing pressure should not exceed 369 psig.

Wasserhund Inc. has set the maximum pump pressure for injection into the tubing at 340 psig. If pumping down the casing the maximum pressure shall not exceed 315 psig.

Special Note: This is a change from previous years and a special Brine Well Maximum Test Pressure Calculator is included in **Appendix “D”** for reference. The new frac gradient for this well is set at .65 psi/ft.

Bullet Point 5- Chemical Analysis:

(Permit condition 2.J.5 “A copy of the quarterly chemical analysis shall be included with data summary and all QA/QC information.”)

Please find attached in **Appendix “C”** the latest chemical analysis and chain-of-custody of the brine and fresh water injection water samples collected during the 2017 year and analyzed by Hall Environmental, Albuquerque NM. The sampling process and laboratory used common approved EPA methods to collect, analyze and reporting.

The injection water was collected from the fresh water tank load line that is connected directly to the fresh water storage tanks. The fresh water is supplied by a fresh-water well located just west of the site.

The brine water was collected from the brine water tank load line that is connected directly to the brine water storage tanks. This sample point is representative of the brine water at the station.

The analysis revealed the brine water is predominately sodium chloride with a high density of 1.203 specific gravity. This analysis is very representative of Salado “Salt” formation waters found in the area. Pursuant to the 2017 chemical analysis, the Density of the brine ranged from 1.174 SG to 1.203 SG for an average of 1.191 which equates to 9.93 lbs./gal.

Wasserhund routinely performs field-testing to ensure brine well quality. This testing generally shows close to 10 lb brine using the field method.

Bullet Point 6- Mechanical Integrity:

(Permit condition 2.J.6 “Copy of any mechanical integrity test chart, including the type of test, i.e., duration, gauge pressure, etc.”)

A 4-hour Cavern Mechanical Integrity Test (MIT) was successfully ran and passed on November 28, 2016 and subsequently approved by OCD.

Pursuant to the permit conditions this test was not due until 2018. Therefore, the next five-year test will be scheduled for November of 2021, unless otherwise required by OCD for good cause shown or permit condition requirement.

Please find in **Appendix “D”** a copy of the approved C-103, test chart with meter calibration notes.

Bullet Point 7- Deviations from Normal Production Methods:

(Permit condition 2.J.7 “Brief explanation describing deviations from normal operations.”)

In 2008 two OCD permitted brine wells collapsed. As a result of those incidents, the OCD issued a temporary moratorium on new brine well permits. During the moratorium OCD facilitated a work group to determine a proper path forward for current and new brine well operations.

As a result of those proceedings, OCD issued instructions to operators to change OCD’s previous requirement of injecting fresh water down the annulus and producing brine up the tubing (i.e reverse-flow); to injecting fresh water down the tubing and producing brine up the annulus, (i.e. conventional-flow).

Wasserhund Inc. has been successful in changing the flow pattern to conventional flow, and is making quality 10# brine, with occasional reverse flow for maintenance.

Bullet Point 8- Leak and Spill Reports:

(Permit condition 2.J.8 “Results of any leaks and spill reports;”)

There were no reportable leaks and spills in 2017.

The loading areas are concrete with spill containers under the hose connections that are designed to catch de-minimus drips from hose connections. Drivers routinely suck out the spill containers, for re-cycling.

The entire facility is bermed to prevent run-on or run-off and all reportable or non-reportable spills are cleaned up pursuant to OCD rules and guidance.

Bullet Point 9- Area of Review Update Summary:

(Permit condition 2.J.9 “An Area of Review (AOR) update summary;”)

An extensive AOR review was conducted for the Eidson #1 brine well, OCD permit # BW-04, located in UL M of Section 31-Ts16S-R35e. Wasserhund Inc. used OCD records and actual field verification (see **Appendix “E”**) to confirm wells in the AOR.

Using OCD on-line files, a well status list and AOR plot plan was constructed (see **Appendix “E”**) listing all wells within adjacent quarter sections of the BW-04 location. The list shows API#, Operator well name, UL, Section, Township and Range, footages,

Wells within 660 ft (i.e. critical zone) and ¼ mile, casing program status, casing/ cementing status, and corrective action required status.

This method was formulated to provide a baseline for future AOR studies. Since brine wells are limited in size, a critical AOR of 660 feet was initially established and all wells within that radius was researched in detail.

Using the current estimated diameter of the brine well @ 318 feet (R = 159 ft) up-dated for 2017, a 10:1 safety factor is applied that equates to about 1590 ft. As the brine well grows, this newly calculated critical AOR will be expanded and new wells will be added and all existing wells restudied.

The rationale behind this approach is the fact that brine wells are non-static in terms of size and configuration, and the fact that the brine well operator has only indirect control on wells drilled in close proximity.

Initially focusing on the current wells in the ¼ mile AOR, and assuming the status of these wells remain the same, may be a mistake. Therefore, a more dynamic approach is being undertaken, and each well in the critical Area of Review (AOR) will be looked at on an annual basis, or whenever any planned activity or new wells are noticed in the AOR.

In the 2017 review, there were no wells added to the list. **Appendix "E"** contains the check-off list showing the OCD wells in all adjacent quarter sections surrounding the BW-04 brine well.

There currently are three wells located within the critical 1590 ft, and ¼ miles radius of review. The critical zone wells were investigated by checking the OCD on-line well records.

The three wells located in the new critical zone, i.e. within 1590 feet, were reinvestigated by checking the OCD on-line well records. The last recorded file records for the three wells located in the critical AOR are identified as API# 30-025-25146, 30-025-35678 and 30-025-31621 and the following provides the most recent results found in the OCD public records.

The Findings are as follows:

API # 30-025-25146: In 2010, a C-103 was submitted to the OCD to P&A the well by setting plugs at the top, top of salt, bottom of salt, and place a cement plug in tubing at 5700 feet. This work was completed and C-103 filed with the OCD District I office in Hobbs and subsequently approved.

This well was properly plugged and abandoned in September of 2012 and approved by OCD. This well has been transferred to Lime Rock Resources.

Conclusions: The OCD records show that a subsequent P&A report was filed and approved by OCD.

Corrective Actions: Well has been P&A.

API # 30-025-35678: The Chesapeake St. VII #7, (Now Chevron USA) according to OCD records, is located 660 FNL & 660 FEL of UL A Section 1-Ts17s-R34e. It is shown to be located approximately 1600 ft to the SW of the BW-04 well.

In November of 2013, OCD sent Chevron USA Inc. a Letter of Violation and Shut-In Directive due to an observation of a Bradenhead issue, and required corrective actions and a Mechanical Integrity Test. In the 2014 year another Bradenhead test was conducted and witnessed by OCD.

This well has since been transferred to Lime Rock Resources and has been recompleted in the Abo formation.

Conclusions: OCD has approved the recompletion in 2016.

Corrective Actions and Recommendation: This well appears to have adequate cemented casing coverage across the salt section and no corrective actions are required.

In 2016 this well passed an OCD Braden-head survey witnessed by OCD.

API # 30-025-31621: The BTA Oil Producers Vacuum 9205 JV-P Com was drilled and completed in 1992 as a gas well. The Casing strings are as follows: 13-3/8" surface casing set at 423 feet cemented with 480 sacks, circulated to the surface. 8 5/8" Intermediate casing set at 4795 cemented with 2500 sacks, circulated to the surface.

A 5-1/2" production string was set at 12,900 ft and cemented with 2100 sacks, circulated to the surface.

Conclusions: This well is properly cemented from top to bottom, and the salt section is adequately covered. In 2016 this well passed an OCD Braden-head survey witnessed by OCD.

Corrective Actions: No Corrective actions required.

Bullet Point 10- Subsidence/Cavern Volumes/Geometric Measurements

(Permit condition 2.J.10. "A summary with interpretations of MIT's, surface subsidence surveys, cavern volume and geometric measurements with conclusion(s) and recommendation(s);")

Since the use of sonar tests in other wells has not provided adequate information, the continued use of sonar may be in question until the validity of using sonar test is resolved.

The last cavern survey (2008) for this well did not provide any useful information pertaining to the size and shape of this particular cavern. An alternate method has been

discussed with Jim Griswold-OCD and it was mutually decided that an estimated worst-case diameter is to be determined in order to provide maximum protection and ensure the permit conditions are being met.

The Solution Mining Research Institute (SMRI), other state agencies, OCD work-group, along with various studies conducted during the permitting of the WIPP site, has concluded that failures, such as “catastrophic collapses”, have a higher probability when the roof diameter of the cavern exceeds a certain value compared to the actual depth of the cavern.

This number is typically called D/H where “D” is the diameter of the cavity and “H” is the depth from surface to the casing shoe. Various reports seem to conclude that when a ratio of D/H reaches or exceeds .66 then the probably of collapse increases to a point that the well may be considered un-safe, thus closing procedures such as proper plugging and abandonment, and possible long term subsidence monitoring should be instituted.

The alternate method mentioned above involves calculating the maximum diameter of the cavern by using a worst-case scenario of an “***inverted cone***” ***i.e. base located at the top***. The volume of the cavern is calculated using the lifetime brine production volumes and using a “*rule of thumb*” conversion factor to determine the volumetric size of the cavern. The rule of thumb conversion factor was taken from the 1982 Wilson Report and equates that every barrel of brine produced will create approximately one cubic foot of cavity.

Please find attached in **Appendix “F”**, a wellbore sketch, and the calculations for the brine well, and the lifetime brine production tally of approximately 9.53 million barrels of brine produced as of December 2017. The maximum diameter was calculated to be approximately 318 feet with a corresponding D/H ratio of .151 updated for the 2017 year.

Comparing the current D/H ratio of .151 to the .66 value mentioned above, it can be concluded that the current brine well status meets and exceeds the recommended safety value by approximately four times.

Permit Condition 2.B. SOLUTION CAVERN MONITORING PROGRAM:

1. Surface Subsidence Monitoring Plan: The Permittee shall submit a Surface Subsidence Monitoring Plan to OCD within 180 days of the effective date of this permit. The Surface Subsidence Monitoring Plan shall specify that the Permittee will install at least three survey monuments and shall include a proposal to monitor the elevation of the monuments at least semiannually.

The Permittee shall survey each benchmark at least semiannually to monitor for possible surface subsidence and shall tie each survey to the nearest USGS benchmark. The Permittee shall employ a licensed professional surveyor to conduct the subsidence-

monitoring program. The Permittee shall submit the results of all subsidence surveys to OCD within 15 days of the survey. If the monitored surface subsidence at any measuring point reaches 0.10 feet compared to its baseline elevation, then the Permittee shall suspend operation of the Class III well. If the Permittee cannot demonstrate the integrity of the cavern and well to the satisfaction of OCD, then it shall cease all brine production and submit a corrective action plan to mitigate the subsidence.

Wasserhund Inc did submit a plan in last year's reports to meet the requirement of the rule.

Special Request: This facility currently does not have subsidence monitors installed and Wasserhund Inc. respectfully request waiver of this requirement until further evaluation can be completed or closure of the site commences.

This request is based on the fact the well continues to exhibit good Cavern Mechanical Integrity, very low D/H ratio, and the fact the radius of the Cavern does not encroach upon any buildings, wells, or public ROW's. Currently there have been no subsidence issues noted or experienced.

2. Solution Cavern Characterization Program: *The Permittee shall submit a Solution Cavern Characterization Plan to characterize the size and shape of the solution cavern using geophysical methods within 180 days of the effective date of this permit. The Permittee shall characterize the size and shape of the solution cavern using a geophysical methods approved by OCD at least once before November 8, 2018. The Permittee shall demonstrate that at least 90% of the calculated volume of salt removed based upon injection and production volumes has been accounted for by the approved geophysical method(s) for such testing to be considered truly representative.*

Solution Cavern Characterization Plan:

The 2013 annual report included a Solution Cavern Characterization Plan using a combination of calculated results and experimenting with various geophysical methods, including actually performing an "Induced Current Method".

To date, the geophysical method proposed has only been partially successful and due to the high cost of other methods, an accurate cavern size or shape has not been delineated.

We currently are not aware of any one single tool that can accomplish this requirement. The Carlsbad old I&W well is an example where many methods were used and the exact cavern shape is estimated using a consensus of several very expensive methods. When OCD required sonar testing, it also was not totally successful.

To integrate the actual size and shape in bedded salt may be virtually impossible, especially if trying to compare the volume with the calculated volume.

The best method still appears to be the “Worst Case” cone calculation method.

OCD had not provided guidance on this issue in the past and Wasserhund Inc. would like to participate in a study group concerning how to accomplish this feat economically.

Special Note: In an E-mail dated April 3, 2018 OCD (Mr. Carl Chavez Environmental Engineer) notify Wayne Price LLC that a study group was not being planned, but OCD is now accepting the Cone Calculation method when an additional well log is supplied supporting the calculation. OCD sent an example and is included in Appendix “F”.

Since the BW-04 well never had any logs run, a well log was obtained from a nearby well and annotated to reflect the geophysical characterization of the area lithology. In addition a well bore schematic is included for reference and a mass balance has been calculated and the results are included in **Appendix ‘F’**.

The mass balance compares the measured salt removed to the calculated salt removed. The comparison was within 1%, which satisfies permit condition 2.

Wasserhund Inc. would like to point out that the OCD example showed a cone with the base at the bottom, while Wasserhund has always used a cone with the base inverted to present the Worst Case analysis of a roof collapse.

Both methods will work, but the D/H critical calculation has to use the inverted base to obtain the proper D/H ratio.

Bullet Point #11- Ratio of Injected/Produced Fluids

(Permit condition 2.J.11 “A summary of the ratio of the volume of injected fluids to the volume of produced brine;”)

See Bullet Point #3 and Appendix “B” for comparison chart numbers.

Special Note: Wasserhund Inc. requests a minor modification of the permit requirement 3.K *“The Permittee shall suspend injection if the monthly injection volume is less than 110% or greater than 120% of associated brine production. If such an event occurs, the Permittee shall notify OCD within 24 hours.”*

*And a **Minor Modification** to permit requirement 2.B.2.b, which has similar language to above, but sets a variance between 90% to 110%. This requirement seems to fit the Wasserhund BW-04 better, but there are still times that the monthly variance can be out side of this range, while there is no immediate issue at hand.*

Generally the Annual variance does fall into the 90%-110% range.

**Dear Jim Griswold-NMOCD Environmental Bureau Chief and Carl Chavez
Environmental Engineer.**

As you know, this topic has been discussed and kicked around for a long time. The current permit requirements do not take into account many factors that can cause the normal variance to be under or over the requirement of 110%-120% and outside of the range of 90% to 110%, notwithstanding some anomaly.

The theoretical 115% ratio came about using the rule of thumb from the "Old Wilson" report that 1 barrel of 10 lb. brine causes a cavity increase of approximately one cubic foot. If you back calculate, this equates to a salt density of about 90 lbs./ft³.

Many deeper brine wells such as the Wasserhund BW-04 well probably has a higher salt density, possibly even up to 100-120 lbs./ft³. Thus, it requires less fresh water to make 10 lb. brine water, which lowers the Fresh Water/Brine Water ratio.

As long as the brine well can make a quality brine and does not experience any unexpected loss in pressure, the requirement to suspend operations is not based on any real parameter or trend that may be an immediate threat to the well, groundwater or the environment. The current requirement puts some operators in a continuous violation and interruption of operations.

Of course notwithstanding, if you have a well that produces for extended periods of time, or starts to pressure up, then you know you may have communicated to a pressure zone, or, if the well loses circulation and/or pressure, then immediate action should be taken and notification to the agency made.

The point to be made here is that the permit required parameters are a trailing indicator not a leading indicator. Of course a continued pattern that deviates from the statically norm (emphasis on norm for a particular well) would be cause for concern. However, this concern may or may not, be an indication of possible collapse, which appears to be OCD's main emphasis for the monitoring.

Currently the permit could reads as follows:

The Permittee shall immediately suspend injection and notify the agency within 72 hours, if the Fresh Water Injection does not cause a normal immediate return of Brine Water to the surface, or if the well flows excessively for an unusual amount of time without fresh water injection after the cavern pressure has been stabilized to it's normal operating pressure, or if permittee has become aware of any out of zone injection or communication. The Permittee shall include in each annual report a summary showing the monthly variance, the average monthly variance for the year and the total accumulative variance over the life of the well. The operator shall certify and explain that any yearly variance that falls outside of the range of 20%, (Difference between the normal ratio of Fresh Water input and Brine Water output) will not cause harm to Fresh Water, Public Health or the Environment.

The point here is that each operator should determine the normal range for their specific well and relay that to the agency in the annual report.

Bullet Point #12- Summary of Activities

(Permit condition 2.J.12 “A summary of all major Facility activities or events, which occurred during the year with any conclusions and recommendations;”)

See *Bullet Point #2* for summary.

5.B. BONDING OR FINANCIAL ASSURANCE: *The Permittee shall submit an estimate of the minimum cost to properly close, plug and abandon its Class III well, conduct ground water restoration if applicable, and any post-operational monitoring as may be needed (see 20.6.2.5210B(17) NMAC) within 90 days of permit issuance (See 20.6.2.5210B(17) NMAC). The Permittee’s cost estimate shall be based on third person estimates. After review, OCD will require the Permittee to submit a single well plugging bond based on the third person cost estimate.*

Appendix “G” contains a third party closure estimate for the Wasserhund Inc. BW-04 brine well.

Bullet Point #13- Annual Certification

(Permit condition 2.J.13 “Annual Certification in accordance with Permit Condition 2.B.3. “2.B.3. Annual Certification: The Permittee shall certify annually 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.”)

Operator Response: Based on all current information and actual on-site observance, the operator of record hereby certifies that the current operations pose no threat to public health and the environment at the submission of this report. If any substantial event that, has or may cause, this current certification to change, then the operator will notify OCD and take the necessary actions to protect the public and environment.

By signing the cover sheet of Bullet Point 1 of permit condition 2.J.1, the operator hereby certifies this condition of the permit.

Bullet Point 14- Groundwater Monitoring:

(Permit condition 2.J.14 “A summary of any new discoveries of ground water contamination with all leaks, spills and releases and corrective actions taken;”)

The BW-04 Wasserhund Inc. Buckeye facility currently does not have groundwater monitoring at this site.

Bullet Point 15- Annual Reporting

(Permit condition 2.J.15 “The Permittee shall file its Annual Report in an electronic format with a hard copy submitted to OCD’s Environmental Bureau.”)

The operator hereby submits a PDF file on flash drive and a hard copy can be supplied upon request.

Appendix "A"

- Discharge Plan BW-04-Expires November 11, 2018

BW-4

**Wasserhund/Buckeye
Eidson State #1**

**Permit Renewal
11/8/13**

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey
Division Director
Oil Conservation Division



November 8, 2013

Larry Gandy
Wasserhund, Inc.
PO Box 827
Tatum, New Mexico 88267

RE: Renewal of Discharge Permit BW-4 for the Eidson State #1 Brine Well in Unit M of Section 31, Township 16 South, Range 35 East NMPM; Lea County, New Mexico

Dear Mr. Gandy,

Pursuant to all applicable parts of the Water Quality Control Commission regulations 20.6.2 NMAC and more specifically 20.6.2.3104 thru.3999 discharge permit, and 20.6.2.5000 thru .5299 Underground Injection Control, the Oil Conservation Division hereby renews the discharge permit and authorizes operation and injection for the Wasserhund, Inc. (owner/operator) brine well BW-4 (API# 30-025-26883) at the location described above and under the conditions specified in the attached Discharge Permit Approval Conditions.

Be advised that approval of this permit does not relieve the owner/operator of responsibility should operations result in pollution of surface water, groundwater, or the environment. Nor does this permit relieve the owner/operator of any responsibility or consequences associated with subsidence or cavern failure. This permit does not relieve the owner/operator of its responsibility to comply with any other applicable governmental rules or regulations.

If you have any questions, please contact Jim Griswold of my staff at (505) 476-3465 or by email at jim.griswold@state.nm.us. On behalf of the Oil Conservation Division, I wish to thank you and your staff for your cooperation and patience during this renewal application review.

Respectfully,

A handwritten signature in blue ink, appearing to read "Jami Bailey", is written over a light blue rectangular background.

Jami Bailey
Director

JB/JG/jg
Attachment – Discharge Permit Approval Conditions

cc: Michael Mariano, State Land Office

DISCHARGE PERMIT BW-4

1. GENERAL PROVISIONS:

1.A. PERMITTEE AND PERMITTED FACILITY: The Director of the Oil Conservation Division (OCD) of the Energy, Minerals and Natural Resources Department renews Discharge Permit BW-4 (Discharge Permit) to Wasserhund, Inc. (Permittee) to operate its Underground Injection Control (UIC) Class III well for the in situ extraction of salt (Eidson State #1 Brine Well - API No. 30-025-26883) located 567 feet FSL and 162 feet FWL (SW/4 SW/4, Unit Letter M) in Section 31, Township 16 South, Range 35 East, NMPM, Lea County, New Mexico at its Brine Production Facility (Facility). The Facility is located approximately 5 miles north of Buckeye, New Mexico along the west side of NM 238.

The Permittee is permitted to inject water into the subsurface salt layers and produce brine for use in the oil and gas industry. Ground water that may be affected by a spill, leak, or accidental discharge occurs at a depth of approximately 75 feet below ground surface and has a total dissolved solids concentration of approximately 500 mg/L.

1.B. SCOPE OF PERMIT: OCD has been granted the authority by statute and by delegation from the Water Quality Control Commission (WQCC) to administer the Water Quality Act (Chapter 74, Article 6 NMSA 1978) as it applies to Class III wells associated with the oil and gas industry (See Section 74-6-4, 74-6-5 NMSA 1978).

The Water Quality Act and the rules promulgated pursuant to the Act protect ground water and surface water of the State of New Mexico by providing that, unless otherwise allowed by 20.6.2 NMAC, no person shall cause or allow effluent or leachate to discharge so that it may move directly or indirectly into ground water unless such discharge is pursuant to an approved discharge plan (See 20.6.2.3104 NMAC, 20.6.2.3106 NMAC, and 20.6.2.5000 through 20.6.2.5299 NMAC).

This Discharge Permit for a Class III well is issued pursuant to the Water Quality Act and WQCC rules, 20.6.2 NMAC. This Discharge Permit does not authorize any treatment of, or on-site disposal of, any materials, product, by-product, or oil-field waste.

Pursuant to 20.6.2.5004A NMAC, the following underground injection activities are prohibited:

1. The injection of fluids into a motor vehicle waste disposal well is prohibited.
2. The injection of fluids into a large capacity cesspool is prohibited.
3. The injection of any hazardous or radioactive waste into a well is prohibited except as provided by 20.6.2.5004A(3) NMAC.
4. Class IV wells are prohibited, except for wells re-injecting treated ground water into the same formation from which it was drawn as part of a removal or remedial action.

5. Barrier wells, drainage wells, recharge wells, return flow wells, and motor vehicle waste disposal wells are prohibited.

This Discharge Permit does not convey any property rights of any sort nor any exclusive privilege, and does not authorize any injury to persons or property, any invasion of other private rights, or any infringement of state, federal, or local laws, rules or regulations.

The Permittee shall operate in accordance with the terms and conditions specified in this Discharge Permit to comply with the Water Quality Act and the rules issued pursuant to that Act, so that neither a hazard to public health nor undue risk to property will result (see 20.6.2.3109C NMAC); so that no discharge will cause or may cause any stream standard to be violated (see 20.6.2.3109H(2) NMAC); so that no discharge of any water contaminant will result in a hazard to public health, (see 20.6.2.3109H(3) NMAC); so that the numerical standards specified of 20.6.2.3103 NMAC are not exceeded; and, so that the technical criteria and performance standards (see 20.6.2.5000 through 20.6.2.5299 NMAC) for Class III wells are met. Pursuant to 20.6.2.5003B NMAC, the Permittee shall comply with 20.6.2.1 through 20.6.2.5299 NMAC.

The Permittee shall not allow or cause water pollution, discharge, or release of any water contaminant that exceeds the Water Quality Control Commission (WQCC) standards specified at 20.6.2.3101 NMAC and 20.6.2.3103 NMAC or 20.6.4 NMAC (Water Quality Standards for Interstate and Intrastate Streams). Pursuant to 20.6.2.5101A NMAC, the Permittee shall not inject non-hazardous fluids into ground water having 10,000 mg/l or less total dissolved solids (TDS).

The issuance of this permit does not relieve the Permittee from the responsibility of complying with the provisions of the Water Quality Act, any applicable regulations or water quality standards of the WQCC, or any applicable federal laws, regulations or standards (See Section 74-6-5 NMSA 1978).

1.C. DISCHARGE PERMIT RENEWAL: This Discharge Permit is a permit renewal that replaces the permit being renewed. Replacement of a prior permit does not relieve the Permittee of its responsibility to comply with the terms of that prior permit while that permit was in effect.

1.D. DEFINITIONS: Terms not specifically defined in this Discharge Permit shall have the same meanings as those in the Water Quality Act or the rules adopted pursuant to the Act, as the context requires.

1.E. FILING FEES AND PERMIT FEES: Pursuant to 20.6.2.3114 NMAC, every facility that submits a Discharge Permit application for initial approval or renewal shall pay the permit fees specified in Table 1 and the filing fee specified in Table 2 of 20.6.2.3114 NMAC. OCD has already received the required \$100.00 filing fee. The Permittee is now required to submit the \$1,700.00 permit fee for a Class III well. Please remit payment made payable to the Water Quality Management Fund in care of OCD at 1220 South St. Francis Drive in Santa Fe, New Mexico 87505.

1.F. EFFECTIVE DATE, EXPIRATION, RENEWAL CONDITIONS, AND PENALTIES FOR OPERATING WITHOUT A DISCHARGE PERMIT: This Discharge Permit becomes effective 30 days from the date that the Permittee receives this discharge permit or until the permit is terminated or expires. This Discharge Permit will expire on **November 8, 2018**. The Permittee shall submit an application for renewal no later than 120 days before that expiration date, pursuant to 20.6.2.5101F NMAC. If a Permittee submits a renewal application at least 120 days before the Discharge Permit expires and is in compliance with the approved Discharge Permit, then the existing Discharge Permit will not expire until OCD has approved or disapproved the renewal application. A discharge permit continued under this provision remains fully effective and enforceable. Operating with an expired Discharge Permit may subject the Permittee to civil and/or criminal penalties (See Section 74-6-10.1 NMSA 1978 and Section 74-6-10.2 NMSA 1978).

1.G. MODIFICATIONS AND TERMINATIONS: The Permittee shall notify the OCD Director and OCD's Environmental Bureau of any Facility expansion or process modification (See 20.6.2.3107C NMAC). The OCD Director may require the Permittee to submit a Discharge Permit modification application pursuant to 20.6.2.3109E NMAC and may modify or terminate a Discharge Permit pursuant to Sections 74-6-5(M) through (N) NMSA 1978.

1. If data submitted pursuant to any monitoring requirements specified in this Discharge Permit or other information available to the OCD Director indicate that 20.6.2 NMAC is being or may be violated, then the OCD Director may require modification or, if it is determined by the OCD Director that the modification may not be adequate, may terminate this Discharge Permit for a Class III well that was approved pursuant to the requirements of 20.6.2.5000 through 20.6.2.5299 NMAC for the following causes:

a. Noncompliance by Permittee with any condition of this Discharge Permit;
or,

b. The Permittee's failure in the discharge permit application or during the discharge permit review process to disclose fully all relevant facts, or Permittee's misrepresentation of any relevant facts at any time; or,

c. A determination that the permitted activity may cause a hazard to public health or undue risk to property and can only be regulated to acceptable levels by discharge permit modification or termination (See Section 75-6-6 NMSA 1978; 20.6.2.5101I NMAC; and, 20.6.2.3109E NMAC).

2. This Discharge Permit may also be modified or terminated for any of the following causes:

a. Violation of any provisions of the Water Quality Act or any applicable regulations, standard of performance or water quality standards;

b. Violation of any applicable state or federal effluent regulations or limitations; or

c. Change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge (See Section 75-6-5M NMSA 1978).

1.H. TRANSFER OF CLASS III WELL DISCHARGE PERMIT:

1. The transfer provisions of 20.6.2.3111 NMAC do not apply to a discharge permit for a Class III well.

2. Pursuant to 20.6.2.5101H NMAC, the Permittee may request to transfer its Class III well discharge permit if:

a. The OCD Director receives written notice 30 days prior to the transfer date; and,

b. The OCD Director does not object prior to the proposed transfer date. OCD may require modifications to the discharge permit as a condition of transfer, and may require demonstration of adequate financial responsibility.

3. The written notice required in accordance with Permit Condition 1.H.2.a shall:

a. Have been signed by the Permittee and the succeeding Permittee, and shall include an acknowledgement that the succeeding Permittee shall be responsible for compliance with the Class III well discharge permit upon taking possession of the facility; and

b. Set a specific date for transfer of the discharge permit responsibility, coverage and liability; and

c. Include information relating to the succeeding Permittee's financial responsibility required by 20.6.2.5210B(17) NMAC.

1.I. COMPLIANCE AND ENFORCEMENT: If the Permittee violates or is violating a condition of this Discharge Permit, OCD may issue a compliance order that requires compliance immediately or within a specified time period, or assess a civil penalty, or both (See Section 74-6-10 NMSA 1978). The compliance order may also include a suspension or termination of this Discharge Permit. OCD may also commence a civil action in district court for appropriate relief, including injunctive relief (See Section 74-6-10(A)(2) NMSA 1978). The Permittee may be subject to criminal penalties for discharging a water contaminant without a discharge permit or in violation of a condition of a discharge permit; making any false material statement, representation, certification or omission of material fact in a renewal application, record, report, plan or other document filed, submitted or required to be maintained under the Water Quality Act; falsifying, tampering with or rendering inaccurate any monitoring device, method or record required to be maintained under the Water Quality Act; or failing to monitor, sample or report as required by a Discharge Permit issued pursuant to a state or federal law or regulation (See Section 74-6-10.2 NMSA 1978).

2. GENERAL FACILITY OPERATIONS:

2.A. QUARTERLY MONITORING REQUIREMENTS FOR CLASS III WELLS: The Permittee may use either or both fresh water or water from otherwise non-potable sources. Pursuant to 20.6.2.5207C, the Permittee shall provide analysis of the injected fluids at least quarterly to yield data representative of their characteristics. The Permittee shall analyze the injected fluids for the following characteristics:

- pH;
- density;
- concentration of total dissolved solids; and,
- chloride concentration.

The Permittee shall also provide analysis of the produced brine on a quarterly basis. The Permittee shall analyze the produced brine for the following characteristics:

- pH;
- density;
- concentration of total dissolved solids;
- chloride concentration; and,
- sodium concentration.

2.B. SOLUTION CAVERN MONITORING PROGRAM:

1. Surface Subsidence Monitoring Plan: The Permittee shall submit a Surface Subsidence Monitoring Plan to OCD within 180 days of the effective date of this permit. The Surface Subsidence Monitoring Plan shall specify that the Permittee will install at least three survey monuments and shall include a proposal to monitor the elevation of the monuments at least semiannually.

The Permittee shall survey each benchmark at least semiannually to monitor for possible surface subsidence and shall tie each survey to the nearest USGS benchmark. The Permittee shall employ a licensed professional surveyor to conduct the subsidence monitoring program. The Permittee shall submit the results of all subsidence surveys to OCD within 15 days of the survey. If the monitored surface subsidence at any measuring point reaches 0.10 feet compared to its baseline elevation, then the Permittee shall suspend operation of the Class III well. If the Permittee cannot demonstrate the integrity of the cavern and well to the satisfaction of OCD, then it shall cease all brine production and submit a corrective action plan to mitigate the subsidence.

2. Solution Cavern Characterization Program: The Permittee shall submit a Solution Cavern Characterization Plan to characterize the size and shape of the solution cavern using geophysical methods within 180 days of the effective date of this permit. The Permittee shall characterize the size and shape of the solution cavern using a geophysical method approved by OCD at least once before November 8, 2018. The Permittee shall demonstrate that at least 90% of the calculated volume of salt removed based upon injection and production volumes has been accounted for by the approved geophysical method(s) for such testing to be considered truly representative.

a. The Permittee shall provide an estimate of the size and shape of the solution cavern at least annually, based on fluid injection and brine production data.

b. The Permit shall compare the ratio of the volume of injected fluids to the volume of produced brine monthly. If the average ratio of injected fluid to produced brine varies is less than 90% or greater than 110%, the Permittee shall report this to OCD and cease injection and production operations of its Class III well within 24 hours. The Permittee shall begin an investigation to determine the cause of this abnormal ratio within 72 hours. The Permittee shall submit to OCD a report of its investigation within 15 days of cessation of injection and production operations of its Class III well.

3. Annual Certification: The Permittee shall certify annually 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.

If the solution cavern is determined by either OCD or the Permittee to be potentially unstable by either direct or indirect means, then the Permittee shall cease all fluid injection and brine production within 24 hours. If the Permittee ceases operations because it or OCD has determined that the solution cavern is unstable, then it shall submit a plan to stabilize the solution cavern within 30 days. OCD may require the Permittee to implement additional subsidence monitoring and to conduct additional corrective action.

2.C. CONTINGENCY PLANS: The Permittee shall implement its proposed contingency plan(s) included in its Permit Renewal Application to cope with failure of a system(s) in the Discharge Permit.

2.D. CLOSURE: Prior to closure of the facility, the Permittee shall submit for OCD's approval, a closure plan including a completed form C-103 for plugging and abandonment of the Class III well. The Permittee shall plug and abandon its well pursuant to 20.6.2.5209 NMAC and as specified in Permit Condition 2.D.

1. Pre-Closure Notification: Pursuant to 20.6.2.5005A NMAC, the Permittee shall submit a pre-closure notification to OCD's Environmental Bureau at least 30 days prior to the date that it proposes to close or to discontinue operation of its Class III well. Pursuant to 20.6.2.5005B NMAC, OCD's Environmental Bureau must approve all proposed well closure activities before Permittee may implement its proposed closure plan.

2. Required Information: The Permittee shall provide OCD's Environmental Bureau with the following information:

- Name of facility;
- Address of facility;
- Name of Permittee (and owner or operator, if appropriate);
- Address of Permittee (and owner or operator, if appropriate);
- Contact person;
- Phone number;
- Number and type of well(s);

- Year of well construction;
- Well construction details;
- Type of discharge;
- Average flow (gallons per day);
- Proposed well closure activities (*e.g.*, sample fluids/sediment, appropriate disposal of remaining fluids/sediments, remove well and any contaminated soil, clean out well, install permanent plug, conversion to other type of well, ground water and vadose zone investigation, other);
- Proposed date of well closure;
- Name of Preparer; and,
- Date.

2.E. PLUGGING AND ABANDONMENT PLAN: Pursuant to 20.6.2.5209A NMAC, when the Permittee proposes to plug and abandon its Class III well, it shall submit to OCD a plugging and abandonment plan that meets the requirements of 20.6.2.3109C NMAC, 20.6.2.5101C NMAC, and 20.6.2.5005 NMAC for protection of ground water. If requested by OCD, Permittee shall submit for approval prior to closure, a revised or updated plugging and abandonment plan. The obligation to implement the plugging and abandonment plan as well as the requirements of the plan survives the termination or expiration of this Discharge Permit. The Permittee shall comply with 20.6.2.5209 NMAC.

2.F RECORD KEEPING: The Permittee shall maintain records of all inspections, surveys, investigations, *etc.*, required by this Discharge Permit at its Facility office for a minimum of five years and shall make those records available for inspection by OCD.

2.G. RELEASE REPORTING: The Permittee shall comply with the following permit conditions, pursuant to 20.6.2.1203 NMAC, if it determines that a release of oil or other water contaminant, in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property, has occurred. The Permittee shall report unauthorized releases of water contaminants in accordance with any additional commitments made in its approved Contingency Plan. If the Permittee determines that any constituent exceeds the standards specified at 20.6.2.3103 NMAC, then it shall report a release to OCD's Environmental Bureau.

1. Oral Notification: As soon as possible after learning of such a discharge, but in no event more than twenty-four (24) hours thereafter, the Permittee shall notify OCD's Environmental Bureau. The Permittee shall provide the following:

- The name, address, and telephone number of the person or persons in charge of the facility, as well as of the owner and/or operator of the facility;
- The name and location of the facility;
- The date, time, location, and duration of the discharge;
- The source and cause of discharge;
- A description of the discharge, including its chemical composition;
- The estimated volume of the discharge; and,

- Any corrective or abatement actions taken to mitigate immediate damage from the discharge.

2. Written Notification: Within one week after the Permittee has discovered a discharge, the Permittee shall send written notification (may use form C-141 with attachments) to OCD's Environmental Bureau verifying the prior oral notification as to each of the foregoing items and providing any appropriate additions or corrections to the information contained in the prior oral notification.

The Permittee shall provide subsequent written reports as required by OCD's Environmental Bureau.

2.H. OTHER REQUIREMENTS:

1. Inspection and Entry: Pursuant to Section 74-6-9 NMSA 1978 and 20.6.2.3107A NMAC, the Permittee shall allow any authorized representative of the OCD Director, to:

- Upon the presentation of proper credentials, enter the premises at reasonable times;
- Inspect and copy records required by this Discharge Permit;
- Inspect any treatment works, monitoring, and analytical equipment;
- Sample any injection fluid or produced brine; and,
- Use the Permittee's monitoring systems and wells in order to collect samples.

2. Advance Notice: The Permittee shall provide OCD's Environmental Bureau and Hobbs District Office with at least five (5) working days advance notice of any environmental sampling to be performed pursuant to this Discharge Permit, or any well plugging, abandonment or decommissioning of any equipment associated with its Class III well.

3. Environmental Monitoring: The Permittee shall ensure that any environmental sampling and analytical laboratory data collected meets the standards specified in 20.6.2.3107B NMAC. The Permittee shall ensure that all environmental samples are analyzed by an accredited "National Environmental Laboratory Accreditation Conference" (NELAC) Laboratory. The Permittee shall submit data summary tables, all raw analytical data, and laboratory QA/QC.

2.I. BONDING OR FINANCIAL ASSURANCE: Pursuant to 20.6.2.5210B(17) NMAC, the Permittee shall maintain at a minimum, a single well plugging bond in the amount that it shall determine, in accordance with Permit Condition 5.B, to cover potential costs associated with plugging and abandonment of the Class III well, surface restoration, and post-operational monitoring, as may be needed. OCD may require additional financial assurance to ensure adequate funding is available to plug and abandon the well and/or for any required corrective actions.

Methods by which the Permittee shall demonstrate the ability to undertake these measures shall include submission of a surety bond or other adequate assurances, such as financial statements or other materials acceptable to the OCD Director, such as: (1) a surety bond; (2) a trust fund with a New Mexico bank in the name of the State of New Mexico, with the State as Beneficiary; (3) a

non-renewable letter of credit made out to the State of New Mexico; (4) liability insurance specifically covering the contingencies listed in this paragraph; or (5) a performance bond, generally in conjunction with another type of financial assurance. If an adequate bond is posted by the Permittee to a federal or another state agency, and this bond covers all of the measures specified above, the OCD Director shall consider this bond as satisfying the bonding requirements of Sections 20.6.2.5000 through 20.6.2.5299 NMAC wholly or in part, depending upon the extent to which such bond is adequate to ensure that the Permittee will fully perform the measures required hereinabove.

2.J. ANNUAL REPORT: The Permittee shall submit its annual report pursuant to 20.6.2.3107 NMAC to OCD's Environmental Bureau by **June 1st** of the following year. The annual report shall include the following:

- Cover sheet marked as "Annual Class III Well Report, Name of Permittee, Discharge Permit Number, API number of well(s), date of report, and person submitting report;
- Summary of Class III well operations for the year including a description and reason for any remedial or major work on the well with a copy of form C-103;
- Monthly fluid injection and brine production volume, including the cumulative total carried over each year;
- Injection pressure data;
- A copy of the quarterly chemical analyses shall be included with data summary and all QA/QC information;
- Copy of any mechanical integrity test chart, including the type of test, *i.e.*, duration, gauge pressure, etc.;
- Brief explanation describing deviations from the normal operations;
- Results of any leaks and spill reports;
- An Area of Review (AOR) update summary;
- A summary with interpretation of MITs, surface subsidence surveys, cavern volume and geometry measurements with conclusion(s) and recommendation(s);
- A summary of the ratio of the volume of injected fluids to the volume of produced brine;
- A summary of all major Facility activities or events, which occurred during the year with any conclusions and recommendations;
- Annual Certification in accordance with Permit Condition 2.B.3.
- A summary of any new discoveries of ground water contamination with all leaks, spills and releases and corrective actions taken; and,
- The Permittee shall file its Annual Report in an electronic format with a hard copy submittal to OCD's Environmental Bureau.

3. CLASS III WELL OPERATIONS:

3.A. OPERATING REQUIREMENTS: The Permittee shall comply with the operating requirements specified in 20.6.2.5206A NMAC and 20.6.2.5206A NMAC to ensure that:

1. Injection will occur through the innermost tubing string and brine production through the annulus between the casing and tubing string to promote cavern development at depth. Injection and production flow can be reversed as required to achieve optimal cavern shaping, mine salt most efficiently, and to periodically clean the tubing and annulus. Injection must only occur in the intended solution mining interval.

2. Injection between the outermost casing and the well bore is prohibited in a zone other than the authorized injection zone. If the Permittee determines that its Class III well is discharging or suspects that it is discharging fluids into a zone or zones other than the permitted injection zone specified in Permit Condition 3.B.1., then the Permittee shall within 24 hours notify OCD's Environmental Bureau and Hobbs District Office of the circumstances and action(s) taken. The Permittee shall cease operations until proper repairs are made and it has received approval from OCD to re-start injection operations.

3.B. INJECTION OPERATIONS:

1. **Well Injection Pressure Limit:** The Permittee shall ensure that the maximum wellhead or surface injection pressure on its Class III well shall not exceed the fracture pressure of the injection salt formation and will not cause new fractures or propagate any existing fractures of cause damage to the system.

2. **Pressure Limiting Device:** The Permittee shall equip and operate its Class III well or system with a pressure limiting device which shall, at all times, limit surface injection pressure to the maximum allowable pressure for its Class III well. The Permittee shall monitor the pressure-limiting device daily and shall report all pressure exceedances within 24 hours of detecting an exceedance to OCD's Environmental Bureau.

The Permittee shall take all steps necessary to ensure that the injected fluids enter only the proposed injection interval and is not permitted to escape to other formations or onto the ground surface. The Permittee shall report to OCD's Environmental Bureau within 24 hours of discovery any indication that new fractures or existing fractures have been propagated, or that damage to the well, the injection zone, or formation has occurred.

3.C. CONTINUOUS MONITORING DEVICES: The Permittee shall use continuous monitoring devices to provide a record of injection pressure, flow rate, flow volume, and pressure on the annulus between the tubing and the long string of casing.

3.D. MECHANICAL INTEGRITY FOR CLASS III WELLS:

1. Pursuant to 20.6.2.5204 NMAC, the Permittee shall demonstrate mechanical integrity for its Class III well at least once every five years or more frequently as the OCD

Director may require for good cause during the life of the well. The Permittee shall demonstrate mechanical integrity for its Class III well every time it performs a well workover, including when it pulls the tubing. A Class III well has mechanical integrity if there is no detectable leak in the casing or tubing which OCD considers to be significant at maximum operating temperature and pressure; and no detectable conduit for fluid movement out of the injection zone through the well bore or vertical channels adjacent to the well bore which the OCD Director considers to be significant. The Permittee shall conduct a casing Mechanical Integrity Test (MIT) from the surface to the approved injection depth to assess casing integrity. The MIT shall consist of a 30-minute test at a minimum pressure of 300 psig measured at the surface.

The Permittee shall notify OCD's Environmental Bureau 5 days prior to conducting any MIT to allow OCD the opportunity to witness the MIT.

2. The following criteria will determine if the Class III well has passed the MIT:

- a. Passes MIT if zero bleed-off during the test;
- b. Passes MIT if final test pressure is within $\pm 10\%$ of starting pressure, if approved by OCD;
- c. When the MIT is not witnessed by OCD and fails, the Permittee shall notify OCD within 24 hours of the failure of the MIT.

3. Pursuant to 20.6.2.5204C NMAC, the OCD Director may consider the use by the Permittee of equivalent alternative test methods to determine mechanical integrity. The Permittee shall submit information on the proposed test and all technical data supporting its use. The OCD Director may approve the Permittee's request if it will reliably demonstrate the mechanical integrity of the well for which its use is proposed.

4. Pursuant to 20.6.2.5204D NMAC, when conducting and evaluating the MIT(s), the Permittee shall apply methods and standards generally accepted in the oil and gas industry. When the Permittee reports the results of all MIT(s) to the OCD Director, it shall include a description of the test(s), the method(s) used, and the test results.

3.E. WELL WORKOVER OPERATIONS: Pursuant to 20.6.2.5205A(5) NMAC, the Permittee shall provide notice to and shall obtain approval from OCD's District Office in Hobbs and the Environmental Bureau in Santa Fe prior to commencement of any remedial work or any other workover operations to allow OCD the opportunity to witness the operation. The Permittee shall request approval using form C-103 (Sundry Notices and Reports on Wells) with copies sent to OCD's Environmental Bureau and Hobbs District Office. Properly completed Forms C-103 and/or C-105 must be filed with OCD upon completion of workover activities and copies included in that year's Annual Report.

3.K. FLUIDS INJECTION AND BRINE PRODUCTION VOLUMES AND PRESSURES: The Permittee shall continuously monitor the volumes of water injected and brine production. The Permittee shall submit monthly reports of its injection and production volumes on or before the 10th day of the following month. The Permittee shall suspend injection if the monthly injection volume is less than 110% or greater than 120% of associated brine production. If such an event occurs, the Permittee shall notify OCD within 24 hours.

3.L. AREA OF REVIEW (AOR): The Permittee shall report within 72 hours of discovery any new wells, conduits, or any other device that penetrates or may penetrate the injection zone within a 1-mile radius from its Class III well.

4. CLASS V WELLS: Pursuant to 20.6.2.5002B NMAC, leach fields and other waste fluids disposal systems that inject non-hazardous fluid into or above an underground source of drinking water are UIC Class V injection wells. This Discharge Permit does not authorize the use of a Class V injection well for the disposal of industrial waste. Pursuant to 20.6.2.5005 NMAC, the Permittee shall close any Class V industrial waste injection well that injects non-hazardous industrial wastes or a mixture of industrial wastes and domestic wastes (*e.g.*, septic systems, leach fields, dry wells, *etc.*) within 90 calendar days of the issuance of this Discharge Permit. The Permittee shall document the closure of any Class V wells used for the disposal of non-hazardous industrial wastes or a mixture of industrial wastes and domestic wastes other than contaminated ground water in its Annual Report. Other Class V wells, including wells used only for the injection of domestic wastes, shall be permitted by the New Mexico Environment Department.

5. SCHEDULE OF COMPLIANCE:

5.A. ANNUAL REPORT: The Permittee shall submit its annual report to OCD by June 1st of each year.

5.B. BONDING OR FINANCIAL ASSURANCE: The Permittee shall submit an estimate of the minimum cost to properly close, plug and abandon its Class III well, conduct ground water restoration if applicable, and any post-operational monitoring as may be needed (see 20.6.2.5210B(17) NMAC) within 90 days of permit issuance (See 20.6.2.5210B(17) NMAC). The Permittee's cost estimate shall be based on third person estimates. After review, OCD will require the Permittee to submit a single well plugging bond based on the third person cost estimate.

5.C. SURFACE SUBSIDENCE MONITORING PLAN: The Permittee shall submit the Surface Subsidence Monitoring Plan required in accordance with Permit Condition 2.B.1 within 180 days of permit issuance.

5.D. SOLUTION CAVERN CHARACTERIZATION PLAN: The Permittee shall submit the Solution Cavern Characterization Plan required in accordance with Permit Condition 2.B.2 within 180 days of permit issuance.

Appendix “B”

- Injection and Production Volumes/Comparison Charts

2017		Wasserhund Inc OCD BW-04 Annual Production Data & Comparison Chart									
		Fresh IN		Brine Out		Ratio FW/BW	Meets Permit Condition		See bullet point #11 Annual report for explanaton		
							90 to 110%	110 to 120%			
	Jan	36370		36210		100%	2.B.2.b				
	Feb	26730		26586		101%	2.B.2.b				
	Mar	29515		29421		100%	2.B.2.b				
	Apr	16420		16302		101%	2.B.2.b				
	May	21130		21026		100%	2.B.2.b				
	Jun	23882		23767		100%	2.B.2.b				
	Jul	23337		20227		115%	X	3K			
	Aug	36617		36502		100%	2.B.2.b				
	Sept	27436		27321		100%	2.B.2.b				
	Oct	20615		20572		100%	2.B.2.b				
	Nov	15050		14999		100%	2.B.2.b				
	Dec	27351		27249		100%	2.B.2.b				
	Total	304,453		300,182		101%	FW/BW	2.B.2.b			
	Total Fresh Water and Brine Production Carry Over from Years Past	2016	9,273,128	bbls***	9,227,911	bbls	100.49%	FW/BW	2.B.2.b		
	Total Life Time Production Year Ending	2017	9,577,581	bbls	9,528,093	bbls	100.52%	FW/BW	2.B.2.b		
	*** Estimated carried forward-see bullet point #3 Annual report										

Appendix "C"

- Chemical Analysis Fresh Water
- Chemical Analysis Brine Water



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

April 17, 2017

Wayne Price
Wasserhund Inc
PO Box 2140
Lovington, NM 88260
TEL: (505) 715-2809
FAX

RE: Buckeye Tatum 1st qtr 2017

OrderNo.: 1704039

Dear Wayne Price:

Hall Environmental Analysis Laboratory received 4 sample(s) on 4/3/2017 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 #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Wasserhund Inc

Client Sample ID: Buckeye-Fresh

Project: Buckeye Tatum 1st qtr 2017

Collection Date: 3/31/2017 12:00:00 PM

Lab ID: 1704039-001

Matrix: AQUEOUS

Received Date: 4/3/2017 1:08:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: LGT
Specific Gravity	0.9985		0		1	4/5/2017 4:15:00 PM	R41912
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	220	50		mg/L	100	4/4/2017 11:15:28 PM	R41868
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	642	20.0	*	mg/L	1	4/9/2017 7:07:00 PM	31133
SM4500-H+B: PH							Analyst: JRR
pH	7.74		H	pH units	1	4/4/2017 5:27:27 PM	R41894

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
	R RPD outside accepted recovery limits	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: Wasserhund Inc

Client Sample ID: Buckeye-Brine

Project: Buckeye Tatum 1st qtr 2017

Collection Date: 3/31/2017 12:10:00 PM

Lab ID: 1704039-002

Matrix: AQUEOUS

Received Date: 4/3/2017 1:08:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: LGT
Specific Gravity	1.184	0			1	4/5/2017 4:15:00 PM	R41912
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	160000	10000	*	mg/L	2E	4/7/2017 1:35:00 AM	A41955
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	298000	2000	*D	mg/L	1	4/9/2017 7:07:00 PM	31133
SM4500-H+B: PH							Analyst: JRR
pH	6.78		H	pH units	1	4/4/2017 5:31:59 PM	R41894
EPA METHOD 200.7: METALS							Analyst: pmf
Sodium	88000	5000		mg/L	1E	4/12/2017 12:07:40 PM	31124

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
	R RPD outside accepted recovery limits	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: Wasserhund Inc

Client Sample ID: Tatum-Fresh

Project: Buckeye Tatum 1st qtr 2017

Collection Date: 3/31/2017 1:00:00 PM

Lab ID: 1704039-003

Matrix: AQUEOUS

Received Date: 4/3/2017 1:08:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: LGT
Specific Gravity	0.9980		0		1	4/5/2017 4:15:00 PM	R41912
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	82	5.0		mg/L	10	4/4/2017 11:52:41 PM	R41868
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	782	20.0	*	mg/L	1	4/8/2017 1:38:00 PM	31115
SM4500-H+B: PH							Analyst: JRR
pH	7.99		H	pH units	1	4/4/2017 5:36:00 PM	R41894

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
	R RPD outside accepted recovery limits	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: Wasserhund Inc

Client Sample ID: Tatum-Brine

Project: Buckeye Tatum 1st qtr 2017

Collection Date: 3/31/2017 1:10:00 PM

Lab ID: 1704039-004

Matrix: AQUEOUS

Received Date: 4/3/2017 1:08:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: LGT
Specific Gravity	1.035		0		1	4/5/2017 4:15:00 PM	R41912
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	31000	1000	*	mg/L	2E	4/7/2017 1:47:25 AM	A41955
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	58000	1000	*D	mg/L	1	4/8/2017 1:38:00 PM	31115
SM4500-H+B: PH							Analyst: JRR
pH	6.42		H	pH units	1	4/4/2017 5:40:08 PM	R41894
EPA METHOD 200.7: METALS							Analyst: pmf
Sodium	18000	500		mg/L	500	4/7/2017 4:19:36 PM	31104

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
	R RPD outside accepted recovery limits	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#: 1704039

17-Apr-17

Client: Wasserhund Inc
Project: Buckeye Tatum 1st qtr 2017

Sample ID	MB-31104	SampType:	MBLK	TestCode:	EPA Method 200.7: Metals					
Client ID:	PBW	Batch ID:	31104	RunNo:	41953					
Prep Date:	4/5/2017	Analysis Date:	4/7/2017	SeqNo:	1317572	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0								

Sample ID	LCSLL-31104	SampType:	LCSLL	TestCode:	EPA Method 200.7: Metals					
Client ID:	BatchQC	Batch ID:	31104	RunNo:	41953					
Prep Date:	4/5/2017	Analysis Date:	4/7/2017	SeqNo:	1317573	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0	0.5000	0	80.2	50	150			

Sample ID	LCS-31104	SampType:	LCS	TestCode:	EPA Method 200.7: Metals					
Client ID:	LCSW	Batch ID:	31104	RunNo:	41953					
Prep Date:	4/5/2017	Analysis Date:	4/7/2017	SeqNo:	1317574	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	48	1.0	50.00	0	95.4	85	115			

Sample ID	MB-31124	SampType:	MBLK	TestCode:	EPA Method 200.7: Metals					
Client ID:	PBW	Batch ID:	31124	RunNo:	41999					
Prep Date:	4/6/2017	Analysis Date:	4/7/2017	SeqNo:	1319036	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0								

Sample ID	LCSLL-31124	SampType:	LCSLL	TestCode:	EPA Method 200.7: Metals					
Client ID:	BatchQC	Batch ID:	31124	RunNo:	41999					
Prep Date:	4/6/2017	Analysis Date:	4/7/2017	SeqNo:	1319037	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0	0.5000	0	114	50	150			

Sample ID	LCS-31124	SampType:	LCS	TestCode:	EPA Method 200.7: Metals					
Client ID:	LCSW	Batch ID:	31124	RunNo:	41999					
Prep Date:	4/6/2017	Analysis Date:	4/7/2017	SeqNo:	1319038	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	48	1.0	50.00	0	97.0	85	115			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1704039

17-Apr-17

Client: Wasserhund Inc
Project: Buckeye Tatum 1st qtr 2017

Sample ID MB	SampType: mblk		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R41868		RunNo: 41868							
Prep Date:	Analysis Date: 4/4/2017		SeqNo: 1315703		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: R41868		RunNo: 41868							
Prep Date:	Analysis Date: 4/4/2017		SeqNo: 1315704		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	95.4	90	110			

Sample ID MB	SampType: mblk		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: A41955		RunNo: 41955							
Prep Date:	Analysis Date: 4/6/2017		SeqNo: 1317699		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: A41955		RunNo: 41955							
Prep Date:	Analysis Date: 4/6/2017		SeqNo: 1317700		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	98.9	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 |
| R RPD outside accepted recovery limits | 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#: 1704039

17-Apr-17

Client: Wasserhund Inc
Project: Buckeye Tatum 1st qtr 2017

Sample ID	MB-31115	SampType:	MBLK	TestCode:	SM2540C MOD: Total Dissolved Solids					
Client ID:	PBW	Batch ID:	31115	RunNo:	41978					
Prep Date:	4/6/2017	Analysis Date:	4/8/2017	SeqNo:	1318207	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-31115	SampType:	LCS	TestCode:	SM2540C MOD: Total Dissolved Solids					
Client ID:	LCSW	Batch ID:	31115	RunNo:	41978					
Prep Date:	4/6/2017	Analysis Date:	4/8/2017	SeqNo:	1318208	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1030	20.0	1000	0	103	80	120			

Sample ID	MB-31133	SampType:	MBLK	TestCode:	SM2540C MOD: Total Dissolved Solids					
Client ID:	PBW	Batch ID:	31133	RunNo:	41980					
Prep Date:	4/7/2017	Analysis Date:	4/9/2017	SeqNo:	1318255	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-31133	SampType:	LCS	TestCode:	SM2540C MOD: Total Dissolved Solids					
Client ID:	LCSW	Batch ID:	31133	RunNo:	41980					
Prep Date:	4/7/2017	Analysis Date:	4/9/2017	SeqNo:	1318256	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			

Sample ID	1704039-001AMS	SampType:	MS	TestCode:	SM2540C MOD: Total Dissolved Solids					
Client ID:	Buckeye-Fresh	Batch ID:	31133	RunNo:	41980					
Prep Date:	4/7/2017	Analysis Date:	4/9/2017	SeqNo:	1318258	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1660	20.0	1000	642.0	102	80	120			

Sample ID	1704039-001AMSD	SampType:	MSD	TestCode:	SM2540C MOD: Total Dissolved Solids					
Client ID:	Buckeye-Fresh	Batch ID:	31133	RunNo:	41980					
Prep Date:	4/7/2017	Analysis Date:	4/9/2017	SeqNo:	1318259	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1650	20.0	1000	642.0	101	80	120	0.846	5	

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
- R RPD outside accepted recovery limits
- 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

Sample Log-In Check List

Client Name: **WASSERHUND INC**

Work Order Number: **1704039**

RcptNo: **1**

Received By: **Anne Thorne** 4/3/2017 1:08:00 PM

Completed By: **Lindsay Mangin** 4/3/2017 2:55:09 PM

Reviewed By: *[Signature]* 04/03/17

[Signature]
[Signature]

Chain of Custody

- 1. Custody seals intact on sample bottles? Yes No Not Present
- 2. Is Chain of Custody complete? Yes No Not Present
- 3. How was the sample delivered? Client

Log In

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

of preserved bottles checked for pH: **2**
(\geq or >12 unless noted)
Adjusted? **Yes**
Checked by: **SRE**

Special Handling (if applicable)

- 16. Was client notified of all discrepancies with this order? Yes No NA

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

- 17. Additional remarks: *For metals analysis: Poured out of -002A + -004A liter containers into unpreserved -002B + -004B 500 mL containers and preserved w/ 1 mL HNO₃*
- 18. **Cooler Information** for acceptable pH. *04/03/17 @ 1600 SRE*

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.8	Good	Not Present			



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

August 16, 2017

Wayne Price
Wasserhund Inc
PO Box 2140
Lovington, NM 88260
TEL: (505) 715-2809
FAX

RE: Buckeye Tatum 2nd QTR 2017

OrderNo.: 1707799

Dear Wayne Price:

Hall Environmental Analysis Laboratory received 4 sample(s) on 7/17/2017 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 #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Wasserhund Inc

Client Sample ID: Buckeye-Fresh

Project: Buckeye Tatum 2nd QTR 2017

Collection Date: 7/14/2017 12:00:00 PM

Lab ID: 1707799-001

Matrix: AQUEOUS

Received Date: 7/17/2017 11:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: JRR
Specific Gravity	0.9996		0		1	7/20/2017 10:58:00 AM	R44358
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	190	50		mg/L	100	7/25/2017 4:29:46 PM	R44519
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	602	20.0	*	mg/L	1	7/24/2017 3:50:00 PM	32930
SM4500-H+B: PH							Analyst: JRR
pH	7.66		H	pH units	1	7/19/2017 3:00:06 PM	R44365

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	Page 1 of 8
	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 Quantitative 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: Wasserhund Inc

Client Sample ID: Buckeye-Brine

Project: Buckeye Tatum 2nd QTR 2017

Collection Date: 7/14/2017 12:05:00 PM

Lab ID: 1707799-002

Matrix: AQUEOUS

Received Date: 7/17/2017 11:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: JRR
Specific Gravity	1.203	0			1	7/20/2017 10:58:00 AM	R44358
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	190000	5000	*	mg/L	1E	7/25/2017 4:54:35 PM	R44519
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	348000	2000	*D	mg/L	1	7/24/2017 3:50:00 PM	32930
SM4500-H+B: PH							Analyst: JRR
pH	6.80		H	pH units	1	7/19/2017 3:04:39 PM	R44365
EPA METHOD 200.7: METALS							Analyst: ELS
Sodium	93000	2000		mg/L	2E	7/28/2017 2:36:20 PM	A44595

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 Quantitative 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: Wasserhund Inc

Client Sample ID: Tatum-Fresh

Project: Buckeye Tatum 2nd QTR 2017

Collection Date: 7/14/2017 12:55:00 PM

Lab ID: 1707799-003

Matrix: AQUEOUS

Received Date: 7/17/2017 11:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: JRR
Specific Gravity	0.9946		0		1	7/20/2017 10:58:00 AM	R44358
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	80	5.0		mg/L	10	7/25/2017 5:07:00 PM	R44519
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	667	20.0	*	mg/L	1	7/24/2017 3:50:00 PM	32930
SM4500-H+B: PH							Analyst: JRR
pH	8.03		H	pH units	1	7/19/2017 3:09:12 PM	R44365

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	Page 3 of 8
	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 Quantitative 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: Wasserhund Inc

Client Sample ID: Tatum-Brine

Project: Buckeye Tatum 2nd QTR 2017

Collection Date: 7/14/2017 1:05:00 PM

Lab ID: 1707799-004

Matrix: AQUEOUS

Received Date: 7/17/2017 11:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: JRR
Specific Gravity	0.9968		0		1	7/20/2017 10:58:00 AM	R44358
EPA METHOD 300.0: ANIONS							Analyst: SRM
Chloride	230	50		mg/L	100	7/28/2017 2:34:01 AM	R44577
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	974	40.0	*D	mg/L	1	7/24/2017 3:50:00 PM	32930
SM4500-H+B: PH							Analyst: JRR
pH	8.05		H	pH units	1	7/19/2017 3:13:45 PM	R44365
EPA METHOD 200.7: METALS							Analyst: TES
Sodium	140	10		mg/L	10	7/21/2017 3:05:37 PM	32913

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	Page 4 of 8
	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 Quantitative 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#: 1707799

16-Aug-17

Client: Wasserhund Inc
Project: Buckeye Tatum 2nd QTR 2017

Sample ID	MB-32913	SampType:	MBLK	TestCode:	EPA Method 200.7: Metals					
Client ID:	PBW	Batch ID:	32913	RunNo:	44403					
Prep Date:	7/20/2017	Analysis Date:	7/21/2017	SeqNo:	1403570	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0								

Sample ID	LLCS-32913	SampType:	LCSLL	TestCode:	EPA Method 200.7: Metals					
Client ID:	BatchQC	Batch ID:	32913	RunNo:	44403					
Prep Date:	7/20/2017	Analysis Date:	7/21/2017	SeqNo:	1403571	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0	0.5000	0	138	50	150			

Sample ID	LCS-32913	SampType:	LCS	TestCode:	EPA Method 200.7: Metals					
Client ID:	LCSW	Batch ID:	32913	RunNo:	44403					
Prep Date:	7/20/2017	Analysis Date:	7/21/2017	SeqNo:	1403572	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	50	1.0	50.00	0	99.0	85	115			

Sample ID	MB-A	SampType:	MBLK	TestCode:	EPA Method 200.7: Metals					
Client ID:	PBW	Batch ID:	A44595	RunNo:	44595					
Prep Date:		Analysis Date:	7/28/2017	SeqNo:	1409757	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0								

Sample ID	LCSLL-A	SampType:	LCSLL	TestCode:	EPA Method 200.7: Metals					
Client ID:	BatchQC	Batch ID:	A44595	RunNo:	44595					
Prep Date:		Analysis Date:	7/28/2017	SeqNo:	1409759	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0	0.5000	0	100	50	150			

Sample ID	LCS-A	SampType:	LCS	TestCode:	EPA Method 200.7: Metals					
Client ID:	LCSW	Batch ID:	A44595	RunNo:	44595					
Prep Date:		Analysis Date:	7/28/2017	SeqNo:	1409761	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	48	1.0	50.00	0	95.0	85	115			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative 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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1707799

16-Aug-17

Client: Wasserhund Inc
Project: Buckeye Tatum 2nd QTR 2017

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R44519		RunNo: 44519							
Prep Date:	Analysis Date: 7/25/2017		SeqNo: 1407705		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: R44519		RunNo: 44519							
Prep Date:	Analysis Date: 7/25/2017		SeqNo: 1407706		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	93.9	90	110			

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R44577		RunNo: 44577							
Prep Date:	Analysis Date: 7/27/2017		SeqNo: 1409416		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: R44577		RunNo: 44577							
Prep Date:	Analysis Date: 7/27/2017		SeqNo: 1409417		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.6	0.50	5.000	0	92.3	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative 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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1707799

16-Aug-17

Client: Wasserhund Inc
Project: Buckeye Tatum 2nd QTR 2017

Sample ID	1707799-001ADUP	SampType:	DUP	TestCode:	Specific Gravity					
Client ID:	Buckeye-Fresh	Batch ID:	R44358	RunNo:	44358					
Prep Date:		Analysis Date:	7/20/2017	SeqNo:	1401629	Units:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	0.9992	0						0.0400	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative 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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1707799

16-Aug-17

Client: Wasserhund Inc
Project: Buckeye Tatum 2nd QTR 2017

Sample ID MB-32930	SampType: MBLK		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: PBW	Batch ID: 32930		RunNo: 44444							
Prep Date: 7/20/2017	Analysis Date: 7/24/2017		SeqNo: 1404905		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-32930	SampType: LCS		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: LCSW	Batch ID: 32930		RunNo: 44444							
Prep Date: 7/20/2017	Analysis Date: 7/24/2017		SeqNo: 1404906		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1030	20.0	1000	0	103	80	120			

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 Quantitative 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 |

Sample Log-In Check List

Client Name: WASSERHUND INC

Work Order Number: 1707799

RcptNo: 1

Received By: Anne Thorne 7/17/2017 11:20:00 AM

Completed By: Ashley Gallegos 7/17/2017 12:10:42 PM

Reviewed By: ENM 7/17/17

Anne Thorne
AG

Chain of Custody

- 1. Custody seals intact on sample bottles? Yes No Not Present
- 2. Is Chain of Custody complete? Yes No Not Present
- 3. How was the sample delivered? Client

Log In

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

of preserved bottles checked for pH: 2
 (<2 or >12 unless noted)
 Adjusted? YES
 Checked by: Re

Special Handling (if applicable)

- 16. 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: _____

17. Additional remarks: *250 mL was poured off from -002A and -004A; 0.5 mL HNO₃ was added to both samples and they were held 24hrs prior to metals analysis. 7/17/17*

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.1	Good	Not Present			

1450 Re

Chain-of-Custody Record

Client: Wasserhund Inc
 Bill to Wasserhund
 Mailing Address: PO Box 2140
Lovington NM 88260
 Phone #: 505-715-2809
 email or Fax#: wayneprice77@earthlink.net
 QA/QC Package: Standard Level 4 (Full Validation)
 Accreditation: NELAP Other
 EDD (Type) _____

Turn-Around Time: Standard Rush
 Project Name: Buckeye-Tatum 2nd QTR-2017
 Project #: 2-2017
 Project Manager: Wayne Price-Price LLC
 Sampler: Wayne Price Sr
 On Ice: Yes No
 Sample Temperature: 4.1

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
7-14-17	12:20 PM	Liq	Buckeye-Fresh	1 L-P	ICE	1707729
"	12:05 PM	"	Buckeye-Brine	"	"	-001
"	12:55 PM	"	Tatum-Fresh	"	"	-002
"	1:05 PM	"	Tatum-Brine	"	"	-003
						-004

Date: 7-17-17 Time: 11:20 AM Relinquished by: WAYNE PRICE-SR
 Date: _____ Time: _____ Relinquished by: _____

Received by: [Signature] Date: 7/17/17
 Received by: _____ Date: _____

Remarks: Ice in field and Refrig during time until del to Lab

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

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F, Cl, NO ₃ , NO ₂ , PO ₄ , SO ₄)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	TDS, SG, Chlorides, PH, Na	TDS, SG, Chlorides, PH, Na	Air Bubbles (Y or N)

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

October 30, 2017

Wayne Price
Wasserhund Inc
PO Box 2140
Lovington, NM 88260
TEL: (505) 715-2809
FAX

RE: Buckeye Tatum 3rd QTR 2017

OrderNo.: 1710852

Dear Wayne Price:

Hall Environmental Analysis Laboratory received 4 sample(s) on 10/16/2017 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 #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1710852

Date Reported: 10/30/2017

CLIENT: Wasserhund Inc

Client Sample ID: Buckeye-Fresh

Project: Buckeye Tatum 3rd QTR 2017

Collection Date: 10/10/2017 2:00:00 PM

Lab ID: 1710852-001

Matrix: AQUEOUS

Received Date: 10/16/2017 11:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: JRR
Specific Gravity	0.9990		0		1	10/23/2017 2:37:00 PM	R46595
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	190	5.0		mg/L	10	10/16/2017 8:27:07 PM	R46405
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	586	20.0	*	mg/L	1	10/17/2017 3:18:00 PM	34424
SM4500-H+B: PH							Analyst: JRR
pH	7.90		H	pH units	1	10/18/2017 1:21:39 PM	R46502

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	Page 1 of 8
	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 Quantitative 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: Wasserhund Inc

Client Sample ID: Buckeye-Brine

Project: Buckeye Tatum 3rd QTR 2017

Collection Date: 10/10/2017 2:05:00 PM

Lab ID: 1710852-002

Matrix: AQUEOUS

Received Date: 10/16/2017 11:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: JRR
Specific Gravity	1.203	0			1	10/23/2017 2:37:00 PM	R46595
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	160000	10000	*	mg/L	2E	10/23/2017 11:15:54 PM	R46599
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	321000	2000	*D	mg/L	1	10/17/2017 3:18:00 PM	34424
SM4500-H+B: PH							Analyst: JRR
pH	6.72		H	pH units	1	10/18/2017 1:26:02 PM	R46502
EPA METHOD 200.7: METALS							Analyst: TES
Sodium	77000	2000		mg/L	2E	10/20/2017 4:11:09 PM	34473

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 Quantitative 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: Wasserhund Inc

Client Sample ID: Tatum-Fresh

Project: Buckeye Tatum 3rd QTR 2017

Collection Date: 10/10/2017 3:50:00 PM

Lab ID: 1710852-003

Matrix: AQUEOUS

Received Date: 10/16/2017 11:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: JRR
Specific Gravity	0.9982	0			1	10/23/2017 2:37:00 PM	R46595
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	77	5.0		mg/L	10	10/16/2017 9:16:48 PM	R46405
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	663	20.0	*	mg/L	1	10/17/2017 3:18:00 PM	34424
SM4500-H+B: PH							Analyst: JRR
pH	8.00		H	pH units	1	10/18/2017 1:30:23 PM	R46502

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	Page 3 of 8
	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 Quantitative 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: Wasserhund Inc

Client Sample ID: Tatum-Brine

Project: Buckeye Tatum 3rd QTR 2017

Collection Date: 10/10/2017 3:55:00 PM

Lab ID: 1710852-004

Matrix: AQUEOUS

Received Date: 10/16/2017 11:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: JRR
Specific Gravity	1.041	0			1	10/23/2017 2:37:00 PM	R46595
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	28000	2500	*	mg/L	5E	10/23/2017 11:28:18 PM	R46599
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	57200	2000	*D	mg/L	1	10/17/2017 3:18:00 PM	34424
SM4500-H+B: PH							Analyst: JRR
pH	7.49		H	pH units	1	10/18/2017 1:34:41 PM	R46502
EPA METHOD 200.7: METALS							Analyst: TES
Sodium	19000	500		mg/L	500	10/20/2017 4:12:57 PM	34473

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 Quantitative 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#: 1710852

30-Oct-17

Client: Wasserhund Inc
Project: Buckeye Tatum 3rd QTR 2017

Sample ID	MB-34473	SampType:	MBLK	TestCode:	EPA Method 200.7: Metals					
Client ID:	PBW	Batch ID:	34473	RunNo:	46509					
Prep Date:	10/18/2017	Analysis Date:	10/19/2017	SeqNo:	1481256	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0								

Sample ID	LLCS-34473	SampType:	LCSLL	TestCode:	EPA Method 200.7: Metals					
Client ID:	BatchQC	Batch ID:	34473	RunNo:	46509					
Prep Date:	10/18/2017	Analysis Date:	10/19/2017	SeqNo:	1481257	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0	0.5000	0	103	50	150			

Sample ID	LCS-34473	SampType:	LCS	TestCode:	EPA Method 200.7: Metals					
Client ID:	LCSW	Batch ID:	34473	RunNo:	46509					
Prep Date:	10/18/2017	Analysis Date:	10/19/2017	SeqNo:	1481258	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	50	1.0	50.00	0	99.2	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 Quantitative 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#: 1710852

30-Oct-17

Client: Wasserhund Inc
Project: Buckeye Tatum 3rd QTR 2017

Sample ID MB	SampType: mblk		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R46405		RunNo: 46405							
Prep Date:	Analysis Date: 10/16/2017		SeqNo: 1478479		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: R46405		RunNo: 46405							
Prep Date:	Analysis Date: 10/16/2017		SeqNo: 1478480		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	95.1	90	110			

Sample ID MB	SampType: mblk		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R46599		RunNo: 46599							
Prep Date:	Analysis Date: 10/23/2017		SeqNo: 1484119		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: R46599		RunNo: 46599							
Prep Date:	Analysis Date: 10/23/2017		SeqNo: 1484120		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.6	0.50	5.000	0	92.5	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 Quantitative 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#: 1710852

30-Oct-17

Client: Wasserhund Inc
Project: Buckeye Tatum 3rd QTR 2017

Sample ID	1710852-001ADUP	SampType:	DUP	TestCode:	Specific Gravity					
Client ID:	Buckeye-Fresh	Batch ID:	R46595	RunNo:	46595					
Prep Date:		Analysis Date:	10/23/2017	SeqNo:	1484020	Units:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	0.9986	0						0.0400	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 Quantitative 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#: 1710852

30-Oct-17

Client: Wasserhund Inc
Project: Buckeye Tatum 3rd QTR 2017

Sample ID MB-34424	SampType: MBLK		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: PBW	Batch ID: 34424		RunNo: 46412							
Prep Date: 10/16/2017	Analysis Date: 10/17/2017		SeqNo: 1478678		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-34424	SampType: LCS		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: LCSW	Batch ID: 34424		RunNo: 46412							
Prep Date: 10/16/2017	Analysis Date: 10/17/2017		SeqNo: 1478679		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 Quantitative 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 |

Sample Log-In Check List

Client Name: WASSERHUND INC

Work Order Number: 1710852

RcptNo: 1

Received By: **Sophia Campuzano** 10/16/2017 11:25:00 AM *Sophia Campuzano*
 Completed By: **Sophia Campuzano** 10/16/2017 11:30:47 AM *Sophia Campuzano*
 Reviewed By: *[Signature]* 10/16/17

Chain of Custody

- 1. Custody seals intact on sample bottles? Yes No Not Present
- 2. Is Chain of Custody complete? Yes No Not Present
- 3. How was the sample delivered? Client

Log In

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

of preserved bottles checked for pH: <u>2</u> (<u>2</u> or >12 unless noted)
Adjusted? <u>yes</u>
Checked by: <u>DDJ</u>

Special Handling (if applicable)

- 16. Was client notified of all discrepancies with this order? Yes No NA

Person Notified: _____	Date: _____
By Whom: _____	Via: <input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding: _____	
Client Instructions: _____	

17. Additional remarks: *Paired off from -002A to -002B and added 0.4 mL HNO₃*
Paired off from -004A to -004B and added 0.4 mL HNO₃

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.9	Good	Not Present			



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

March 13, 2018

Wayne Price
Wasserhund Inc
PO Box 2140
Lovington, NM 88260
TEL: (505) 715-2809
FAX

RE: Buckeye Tatum 4th Qtr 2017

OrderNo.: 1802994

Dear Wayne Price:

Hall Environmental Analysis Laboratory received 4 sample(s) on 2/19/2018 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 #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Wasserhund Inc

Client Sample ID: Buckeye-Fresh

Project: Buckeye Tatum 4th Qtr 2017

Collection Date: 2/12/2018 12:40:00 PM

Lab ID: 1802994-001

Matrix: AQUEOUS

Received Date: 2/19/2018 10:55:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: JRR
Specific Gravity	0.9964		0		1	2/20/2018 12:44:00 PM	R49250
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	180	50		mg/L	100	2/27/2018 7:38:46 PM	R49418
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	590	20.0	*	mg/L	1	2/20/2018 5:42:00 PM	36606
SM4500-H+B / 9040C: PH							Analyst: JRR
pH	7.79		H	pH units	1	2/22/2018 1:24:54 PM	R49344

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	Page 1 of 7
	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 Quantitative 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: Wasserhund Inc

Client Sample ID: Buckeye-Brine

Project: Buckeye Tatum 4th Qtr 2017

Collection Date: 2/12/2018 12:45:00 PM

Lab ID: 1802994-002

Matrix: AQUEOUS

Received Date: 2/19/2018 10:55:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: JRR
Specific Gravity	1.174	0			1	2/20/2018 12:44:00 PM	R49250
EPA METHOD 300.0: ANIONS							Analyst: CJS
Chloride	170000	10000	*	mg/L	2E	3/8/2018 2:08:28 AM	A49635
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	260000	2000	*D	mg/L	1	2/20/2018 5:42:00 PM	36606
SM4500-H+B / 9040C: PH							Analyst: JRR
pH	6.92		H	pH units	1	2/22/2018 1:29:21 PM	R49344
EPA METHOD 200.7: METALS							Analyst: pmf
Sodium	80000	2000		mg/L	2E	3/5/2018 3:14:06 PM	36678

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 Quantitative 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: Wasserhund Inc

Client Sample ID: Tatum-Fresh

Project: Buckeye Tatum 4th Qtr 2017

Collection Date: 2/12/2018 2:35:00 PM

Lab ID: 1802994-003

Matrix: AQUEOUS

Received Date: 2/19/2018 10:55:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: JRR
Specific Gravity	0.9961		0		1	2/20/2018 12:44:00 PM	R49250
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	78	5.0		mg/L	10	2/27/2018 8:16:01 PM	R49418
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	653	20.0	*	mg/L	1	2/20/2018 5:42:00 PM	36606
SM4500-H+B / 9040C: PH							Analyst: JRR
pH	7.95		H	pH units	1	2/22/2018 1:33:36 PM	R49344

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 Quantitative 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: Wasserhund Inc

Client Sample ID: Tatum-Brine

Project: Buckeye Tatum 4th Qtr 2017

Collection Date: 2/12/2018 2:45:00 PM

Lab ID: 1802994-004

Matrix: AQUEOUS

Received Date: 2/19/2018 10:55:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: JRR
Specific Gravity	1.039		0		1	2/20/2018 12:44:00 PM	R49250
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	30000	1000	*	mg/L	2E	3/4/2018 2:52:53 PM	R49545
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	62800	2000	*D	mg/L	1	2/20/2018 5:42:00 PM	36606
SM4500-H+B / 9040C: PH							Analyst: JRR
pH	6.76		H	pH units	1	2/22/2018 1:37:41 PM	R49344
EPA METHOD 200.7: METALS							Analyst: pmf
Sodium	20000	500		mg/L	500	2/27/2018 7:52:12 PM	36678

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 Quantitative 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#: 1802994

13-Mar-18

Client: Wasserhund Inc
Project: Buckeye Tatum 4th Qtr 2017

Sample ID	MB-36678	SampType:	MBLK	TestCode:	EPA Method 200.7: Metals					
Client ID:	PBW	Batch ID:	36678	RunNo:	49369					
Prep Date:	2/22/2018	Analysis Date:	2/23/2018	SeqNo:	1593856	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0								

Sample ID	LLCS-36678	SampType:	LCSLL	TestCode:	EPA Method 200.7: Metals					
Client ID:	BatchQC	Batch ID:	36678	RunNo:	49369					
Prep Date:	2/22/2018	Analysis Date:	2/23/2018	SeqNo:	1593862	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0	0.5000	0	104	50	150			

Sample ID	LCS-36678	SampType:	LCS	TestCode:	EPA Method 200.7: Metals					
Client ID:	LCSW	Batch ID:	36678	RunNo:	49369					
Prep Date:	2/22/2018	Analysis Date:	2/23/2018	SeqNo:	1593863	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	48	1.0	50.00	0	96.2	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 Quantitative 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#: 1802994

13-Mar-18

Client: Wasserhund Inc
Project: Buckeye Tatum 4th Qtr 2017

Sample ID MB	SampType: mblk		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R49418		RunNo: 49418							
Prep Date:	Analysis Date: 2/27/2018		SeqNo: 1596952		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: ics		TestCode: EPA Method 300.0: Anions							
Client ID: LCSW	Batch ID: R49418		RunNo: 49418							
Prep Date:	Analysis Date: 2/27/2018		SeqNo: 1596953		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	98.2	90	110			

Sample ID MB	SampType: mblk		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R49545		RunNo: 49545							
Prep Date:	Analysis Date: 3/4/2018		SeqNo: 1601219		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: ics		TestCode: EPA Method 300.0: Anions							
Client ID: LCSW	Batch ID: R49545		RunNo: 49545							
Prep Date:	Analysis Date: 3/4/2018		SeqNo: 1601220		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.6	0.50	5.000	0	92.3	90	110			

Sample ID MB	SampType: mblk		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: A49635		RunNo: 49635							
Prep Date:	Analysis Date: 3/7/2018		SeqNo: 1604753		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: ics		TestCode: EPA Method 300.0: Anions							
Client ID: LCSW	Batch ID: A49635		RunNo: 49635							
Prep Date:	Analysis Date: 3/7/2018		SeqNo: 1604755		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	96.7	90	110			

Qualifiers:

- | | |
|---------------------------------------------------------|-------------------------------------------------------------|
| * Value exceeds Maximum Contaminant Level. | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix | E Value above quantitation range |
| H Holding times for preparation or analysis exceeded | J Analyte detected below quantitation limits |
| ND Not Detected at the Reporting Limit | P Sample pH Not In Range |
| PQL Practical Quantitative 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#: 1802994

13-Mar-18

Client: Wasserhund Inc
Project: Buckeye Tatum 4th Qtr 2017

Sample ID	MB-36606	SampType:	MBLK	TestCode:	SM2540C MOD: Total Dissolved Solids					
Client ID:	PBW	Batch ID:	36606	RunNo:	49262					
Prep Date:	2/19/2018	Analysis Date:	2/20/2018	SeqNo:	1589272	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-36606	SampType:	LCS	TestCode:	SM2540C MOD: Total Dissolved Solids					
Client ID:	LCSW	Batch ID:	36606	RunNo:	49262					
Prep Date:	2/19/2018	Analysis Date:	2/20/2018	SeqNo:	1589273	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1000	20.0	1000	0	100	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 Quantitative 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 |

Sample Log-In Check List

Client Name: WASSERHUND INC

Work Order Number: 1802994

RcptNo: 1

Received By: Erin Melendrez 2/19/2018 10:55:00 AM *EM*

Completed By: Erin Melendrez 2/19/2018 11:39:52 AM *EM*

Reviewed By: *SR 02/19/18*

MW 2/19/18
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? Yes No
 (Note discrepancies on chain of custody)

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? Yes No
 (If no, notify customer for authorization.)

of preserved bottles checked for pH: 2
 (<2 or >12 unless noted)
 Adjusted? yes
 Checked by: *EM*

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: *for metals analysis: added 5% HNO₃ to 002B and 004B held for 24 hrs prior to analysis @ 1520 on 2/19/18*

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.1	Good	Not Present			

Appendix “D”

- C-103
- 2016 MIT Chart
- Recorder Calibration
- Brine Well Maximum Test Pressure Calculator

Submit 1 Copy To Appropriate District Office
 District I - (575) 393-6161
 1625 N. French Dr., Hobbs, NM 88240
 District II - (575) 748-1283
 811 S. First St., Artesia, NM 88210
 District III - (505) 334-6178
 1000 Rio Brazos Rd., Aztec, NM 87410
 District IV - (505) 476-3460
 1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
 Energy, Minerals and Natural Resources
OIL CONSERVATION DIVISION
 1220 South St. Francis Dr.
 Santa Fe, NM 87505

Form C-103
 Revised July 18, 2013

SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)		WELL API NO. 30-025-26883
1. Type of Well: Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other Brine Well		5. Indicate Type of Lease STATE <input checked="" type="checkbox"/> FEE <input type="checkbox"/>
2. Name of Operator Wasserhund, Inc.		6. State Oil & Gas Lease No. 25-26883
3. Address of Operator P.O. Box 2140, Lovington, NM 88260		7. Lease Name or Unit Agreement Name Eidson Brine Station, BW-004
4. Well Location Unit Letter <u>M</u> : <u>567.4</u> feet from the <u>South</u> line and <u>161.7</u> feet from the <u>West</u> line Section <u>31</u> Township <u>16S</u> Range <u>35E</u> NMPM County <u>Lea</u>		8. Well Number <u>1</u>
11. Elevation (Show whether DR, RKB, RT, GR, etc.)		9. OGRID Number <u>130851</u>
10. Pool name or Wildcat		

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>	P AND A <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	MULTIPLE COMPL <input type="checkbox"/>	CASING/CEMENT JOB <input type="checkbox"/>	
DOWNHOLE COMMINGLE <input type="checkbox"/>			
CLOSED-LOOP SYSTEM <input type="checkbox"/>			
OTHER: Integrity Test <input type="checkbox"/>		OTHER: <input type="checkbox"/>	

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

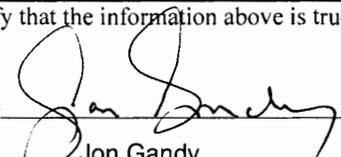
See Attached Chart

2016 DEC -2 A 3:21
 RECORDS SECTION

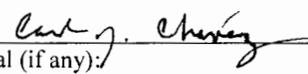
Spud Date:

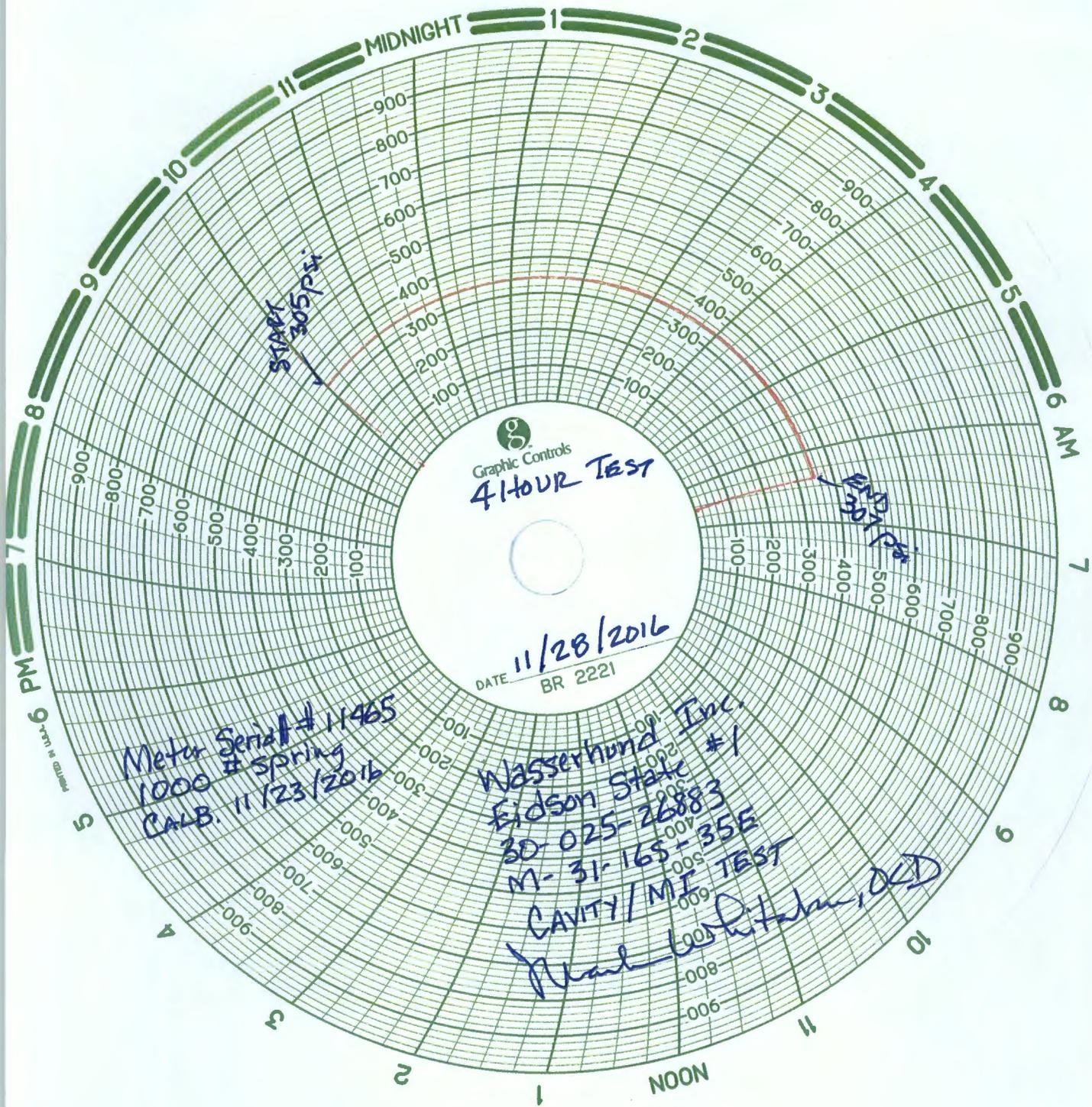
Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE  TITLE Secretary/Treasurer DATE 11/29/16
 Type or print name Jon Gandy E-mail address: jonrgandy@aol.com PHONE: 575-396-0522

For State Use Only

APPROVED BY:  TITLE _____ DATE 12/6/16
 Conditions of Approval (if any): _____



Graphic Controls
4 HOUR TEST

DATE 11/28/2016
BR 2221

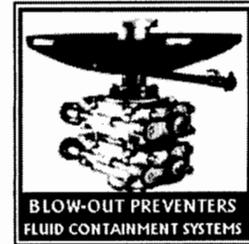
Meter Serial # 11465
1000 # Spring
CALB. 11/23/2016

Wasserhand Inc.
Edson State #1
30-025-26883
M-31-165-35E
CAVITY/MI TEST

Paul [Signature]

D & L Meters & Instrument Service, Inc.

Lovington, NM 88260
P.O. Box 1621
Office: (575) 396-3715
Fax: (575) 396-5812



Date: Wednesday, November 23, 2016

Invoice # _____

Certification of Pressure Recorder Test:

Company: Gandy
Unit: Gandy #4
Model: 8" PMC
Pressure Rating: 1,000#
Serial #: 11218

This Pressure Recorder was tested at midrange for accuracy and verified within +5% and -5% for 1,000# pressure element.



Issac Luna, Technician

Brine Well Maximum Test Pressure Calculator

Provides an approximate estimate for Maximum Test pressures allowed to prevent possible fracturing of formation.
 Inputs are for casing shoe depth, bottom hole depth, and frac gradient.
 Answers are given when pressure testing using Fresh water or Brine water.
 Major assumptions: Frac Gradient of .65 is used, casing is filled with brine or fresh water

BW-04 Wasserhund Buckeye

Note: When brine well has been operating in normal flow, then assume that casing is filled with Brine Water.

Input Depth to Casing Shoe 2100 ft
 Input Depth to Bottom Hole 2460 ft
 Input Frac/Gradient 0.65 psi/ft

Inputs are in Green

		Depth ft	Gradient-psi/ft	psig
Casing Shoe	FW	2100	0.433	909
Casing Shoe	BW	2100	0.5	1050
Casing Shoe	Frac	2100	0.65	1365
Bottom Hole	FW	2460	0.433	1065
Bottom Hole	BW	2460	0.5	1230
Bottom Hole	Frac	2460	0.65	1599

FW=Fresh Water
 BW=Brine Water

Using BW

Using FW

Tube Inj Tubing Max Test Pressure Max Surface Pressure = Depth to Bottom * (Frac Gradient -Water Head Gradient)
 Casing Inj Casing Max Test Pressure Max Surface Pressure = Depth to Casing Shoe * (Frac Gradient -Water Head Gradient)

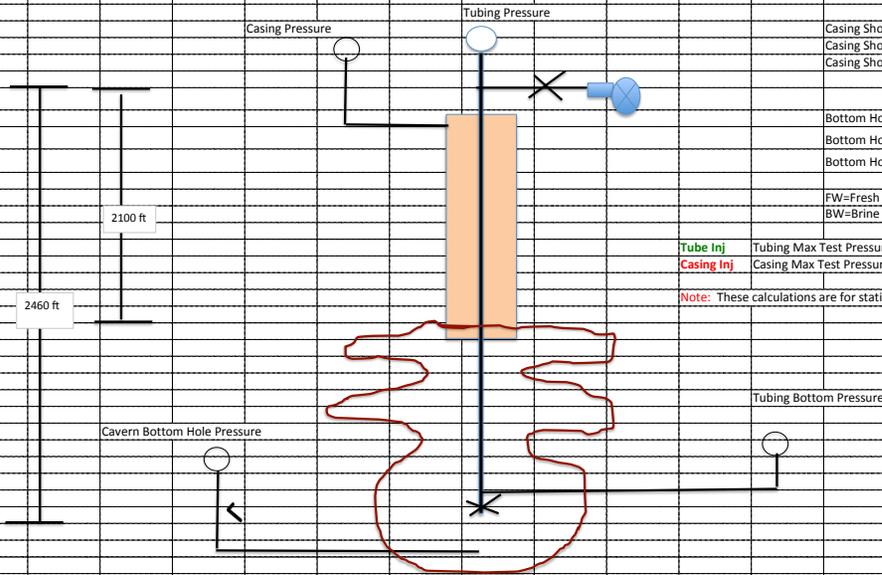
369 psig
 315 psig

534 psig
 456 psig

Answers in Yellow

Note: These calculations are for static test only and does not take into account dynamic pressure drops in Tubing or Casing.

Do Not Exceed Tubing or Casing Surface Pressures while Pumping or Testing



Appendix “E”

- AOR Well Status List
- AOR Plot Plan

2017 BW-04 AOR Review- Well Status List

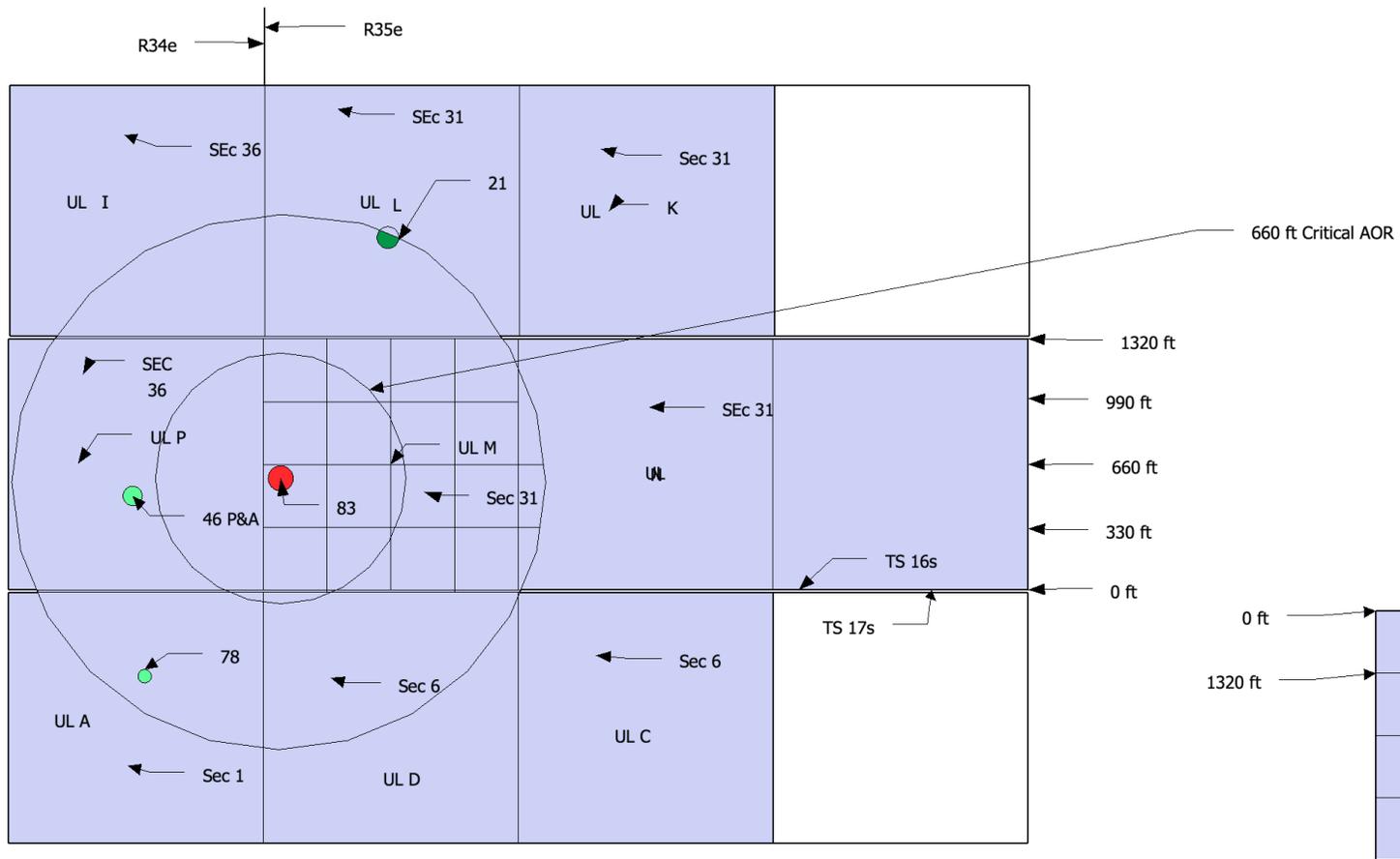
up-dated April 01,, 2018

API#	Well Name	UL	Section	Ts	Rg	Footage	Within 1/4 mi AOR * within 660 ft or Critical AOR	Casing Program Checked	Cased/Cemented across salt section	Corrective Action Required	
0	<u>30-025-26883</u>	<u>Wasserhund Eidson #1</u>	<u>M</u>	<u>31</u>	<u>16s</u>	<u>35e</u>	<u>567 FSL & 162 FWL</u>	NA	NA	NA	
1	30-025-25146	LimeRock-N Vacumm ABO #1	P	36	16s	34e	460 FSL & 660 FEL	yes*	yes	yes	NO-P&A
1	30-025-35678	LimeRock St.VII #7	A	1	17s	34e	660 FNL & 660 FEL	yes*	yes	no	Re-Completion OCD Approved No Action Required
1	30-025-31621	BTA Oil Producers	L	31	16s	35e	1980 FSL & 660 FWL	Yes*	yes	yes	no

2 2

3 Total # of wells in adjacent quarter-sections
 3 Total # of wells in 1/4 mile AOR
 3 Total # of wells that are within 660 ft or have become within the Critical AOR of the outside radius of the brine well and casing program will be checked Annually.

Notes:
 * Means the well is within 660 ft or Critical AOR (1500-1600 ft) of the outside radius of the brine well and casing program will be checked annually.

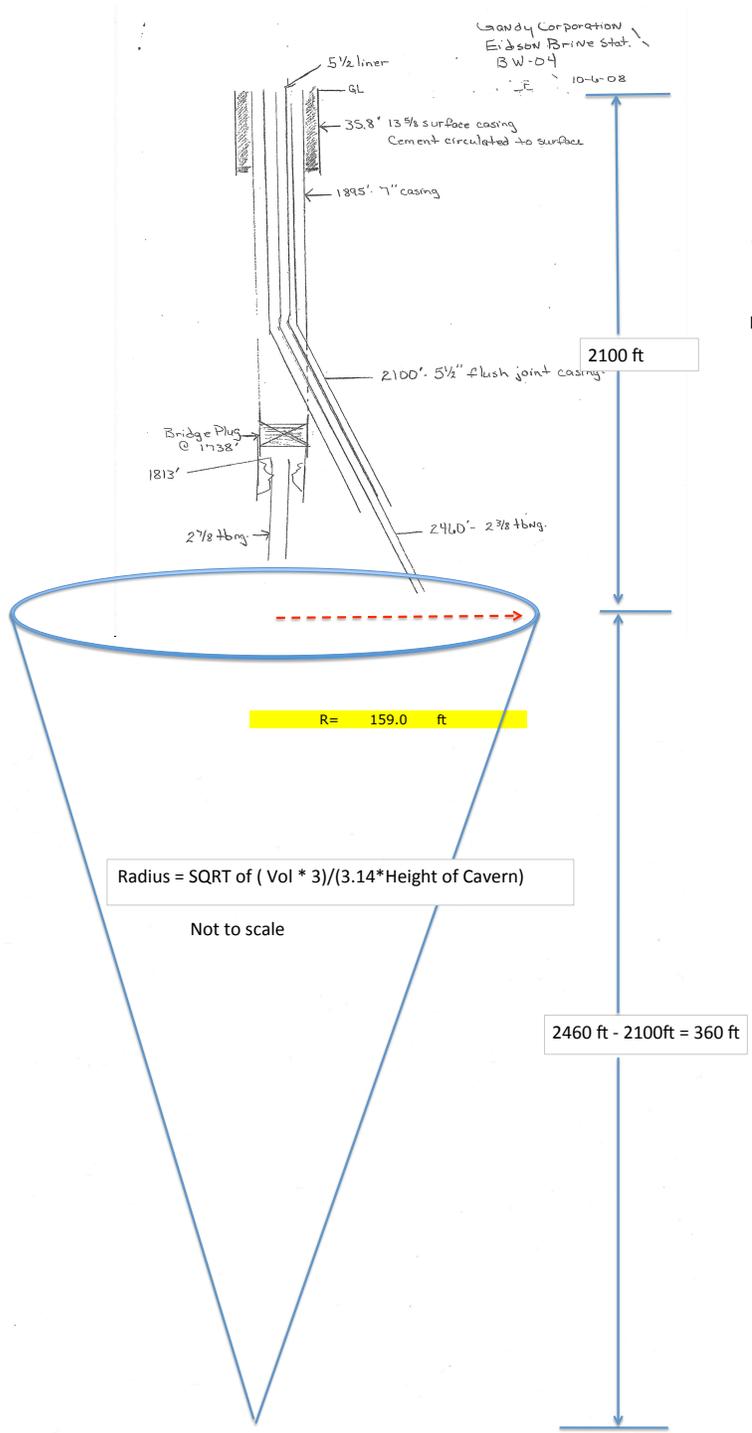


Brine Well Area of Review (AOR) UL Plot Plan	Well API#: 30-025-26883	Note: Wells are identified by the last 2 digits of the well's API#. API #'s are listed in the well status list.
Operator Name: Wasserhund INC	Permit # BW-04	
AOR Year: 2017	Location: UL M-Sec 31-Ts16s-R35e	

Appendix "F"

- Wellbore Sketch, Brine Cavity Calculations with new 2017 Radius and D/H calculations.

- ** **Cavern Characterization using New OCD Example applied to BW-04**
 - * **OCD Email**
 - * **Example of OCD Well Log + Cavern Layout**
 - * **BW-04 Cavern Superimposed on Nearby well log**
 - * **BW-04 Well Bore Schematic**
 - * **Mass Balance**



2017 Calculations

$$r = \sqrt[3]{\frac{V}{\pi * D}}$$

V	Volume	=	9,528,093 bbls
D	Depth	=	360 ft
H	Height	=	2100 ft
Kf	ft3 salt/bbl	159.0	1 est
r	=	159.0 ft	
Diameter	=	318.04 ft	
D/H	=	0.151	

From: "Chavez, Carl J, EMNRD" <CarlJ.Chavez@state.nm.us>
Subject: RE: Key Eunice BW-28 Compliance letter response.
Date: April 6, 2018 at 10:59:51 AM MDT
To: Wayne Price <wayneprice@q.com>

Wayne:

**E-mail for documentation by Price
LLC April 7, 2018- Per C. Chavex-
OCD can apply to Wasserhund wells
BW-04 & BW-22 also.**

Good morning. Please see attachment.

Thank you.

-----Original Message-----

From: Wayne Price <wayneprice@q.com>
Sent: Thursday, April 5, 2018 7:40 PM
To: Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
Cc: Wayne Price <wayneprice@q.com>
Subject: Re: Key Eunice BW-28 Compliance letter response.

Hi Carl,

What type of well Log?

On Apr 3, 2018, at 1:43 PM, Chavez, Carl J, EMNRD
<CarlJ.Chavez@state.nm.us> wrote:

Mr. Price, et al.:

Good afternoon. The New Mexico Oil Conservation Division (OCD) is in receipt of the Key Energy Services letter (letter) dated March 30, 2018.

The letter was recently added to the above subject well administrative record.

OCD will consider the letter for the upcoming discharge permit renewal.

Regarding the workgroup for the cavern characterization, etc., OCD

is accepting the "cone" calculation with additional well log characterization supporting the calculation. Upon request, OCD can send you an example. Therefore, OCD does not believe a "study group" is necessary at this time; however, it will remain an option as OCD reviews the submittals, receives any new proposals, and seeks out any new scientific information on the subject.

Thank you.

Mr. Carl J. Chavez, CHMM (#13099)
New Mexico Oil Conservation Division
Energy Minerals and Natural Resources Department
1220 South St Francis Drive
Santa Fe, New Mexico 87505
Ph. (505) 476-3490
E-mail: CarlJ.Chavez@state.nm.us

"Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?" (To see how, go to: <http://www.emnrd.state.nm.us/OCD> and see "Publications")

-----Original Message-----

From: Wayne Price <wayneprice@q.com>
Sent: Monday, April 2, 2018 12:26 PM
To: Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
Cc: Wayne Price <wayneprice@q.com>; Rick Graham <rgraham01@keyenergy.com>
Subject: Key Eunice BW-28 Compliance letter response.

Dear Mr. Griswold and Mr. Chavez:

Please find attached a response letter to your February 16, 2018 letter requesting record information and a response by May 04, 2018. Price LLC, a consultant for Key Energy has already supplied the Annual Reports for the 2011-2016 years .

Please note this response has some Minor Modification requests.

Please note, you can evaluate them now, or you can wait until we submit the renewal permit application which is due 120 days before expiration of November 08, 2018 of this year.

Please file in the Key OCD BW-28 file. Please let us know if you received this correspondence.

Wayne Price-Price LLC
312 Encantado Ridge CT NE
Rio Rancho, NM 87124
wayneprice@q.com
505-715-2809

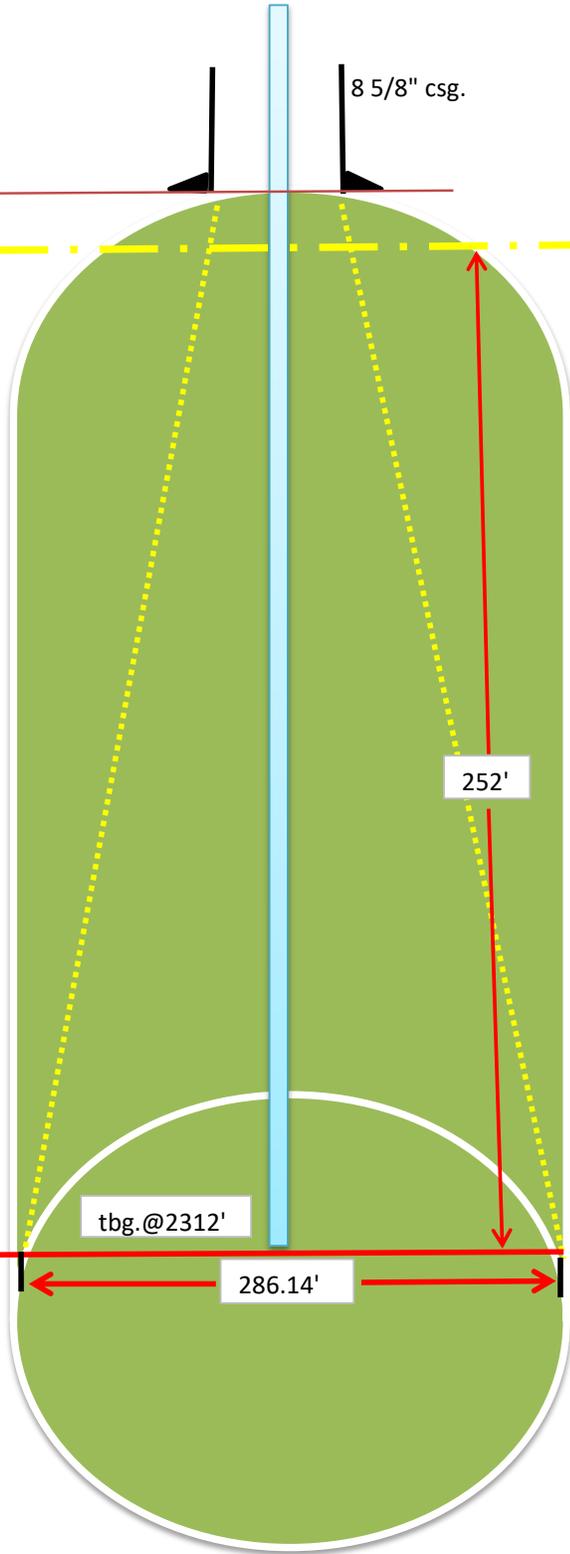
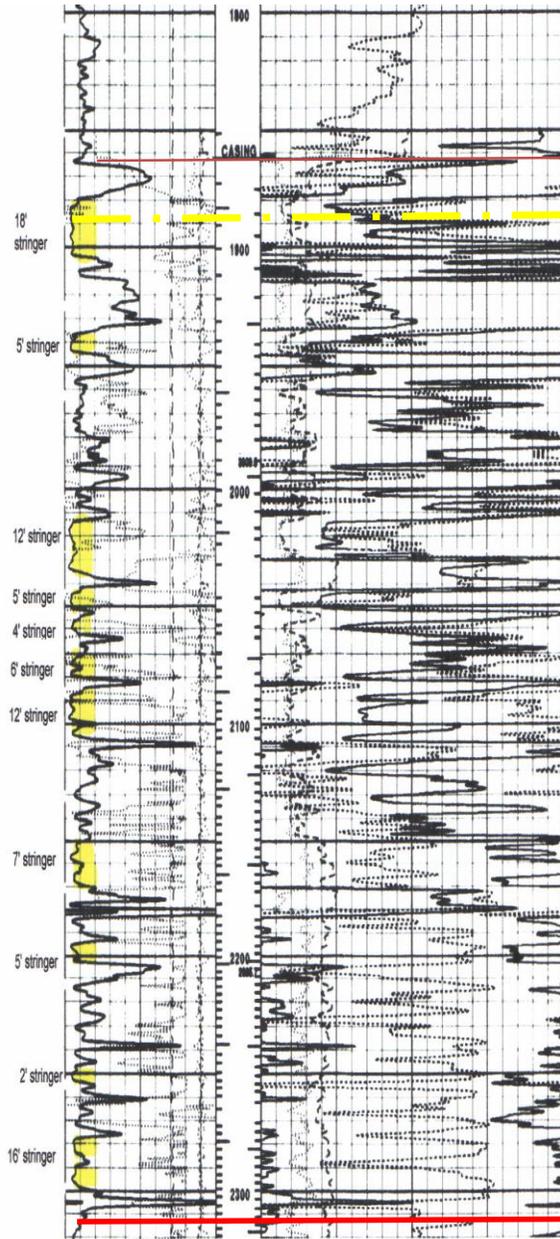
EXAMPLE SALT CAVERN CHARACTERIZATION

John Doe Well No6
 API 30-015-#####
 SEC36 T18S R38E

LAT: 32.##### LONG:-103.#####

2 7/8" J-55 6.5# IPC

8 5/8" csg.



PPG 9.97 brine
 PPG 8.34 fresh
 SG 1.1951

2006 to 2017 Total Brine bbl. 3,538,154

122.136 LBS / BBL = 432,135,977 LBS HALITE

(432,135,977 LBS) / (80BLS per ft³) = 5,401,700 ft³

$$V = \frac{\pi R^2 h}{3}$$

$$V = \frac{(3.14159 * 143.07^2) * (252')}{3}$$

$$V = 5,401,648.6 \text{ ft}^3$$

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

Amberger

SIDEWALL NEUTRON POROSITY LOG

460FS 660FE

P-36-T16S-R34E

SAGE ENERGY CO

NORTH VACUUM ABO NORTH UNIT # 1



30-025-25146

Jan
COMPANY K. K. AMINI

WELL EXXON A STATE #1

FIELD BUCKEYE

COUNTY LEA STATE NEW MEXICO

Location API Serial No. _____
460' FSL & 660' FEL
 Sec. 36 Twp. 16-S Rge. 34-E

Other Services:
NONE

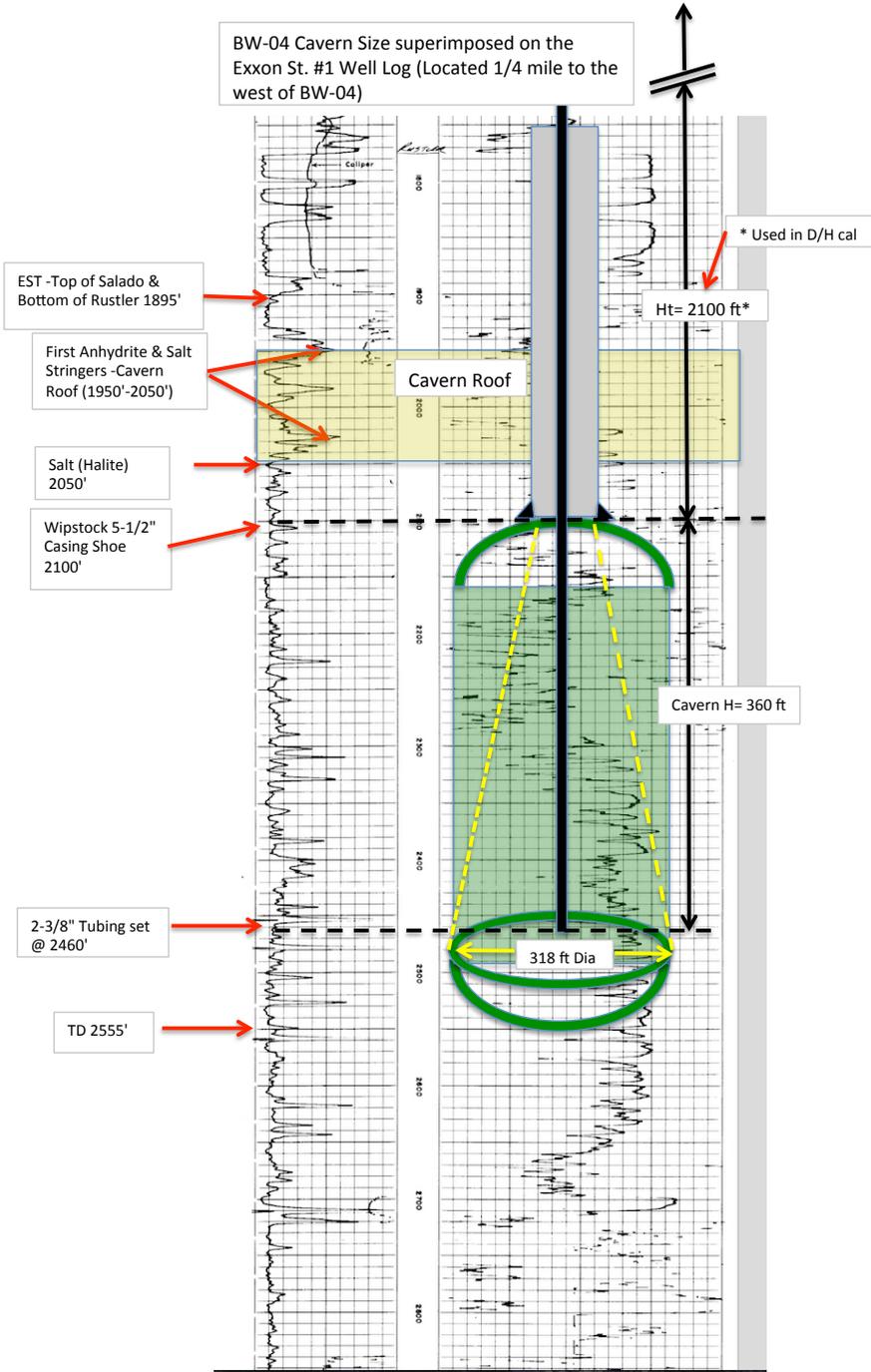
Permanent Datum: G.L. ; Elev.: 4036
 Log Measured From K.B. 12 Ft. Above Perm. Datum
 Drilling Measured From K.B.

Elev.: K.B. 4048
 D.F. _____
 G.L. 4036

Date	11-12-75				
Run No.	ONE				
Depth-Driller	8980				
Depth-Logger	8984				
Btm. Log Interval	8983				
Top Log Interval	SURFACE				
Casing-Driller	8 5/8 @ 1680	@	@	@	@
Casing-Logger	1678				
Bit Size	7 7/8				
Type Fluid in Hole	SALT GEL-STARCH				
Dens.	10	40			
Visc.	45.8 ml		ml	ml	ml
pH	6				
Fluid Loss	45.8 ml				
Source of Sample	CIRCULATED				
R _m @ Meas. Temp.	.065 @ 62 °F	@	°F	@	°F
R _{mf} @ Meas. Temp.	.049 @ 62 °F	@	°F	@	°F
R _{mc} @ Meas. Temp.	.096 @ 62 °F	@	°F	@	°F
Source: R _{mf} R _{mc}	M C				
R _m @ BHT	.034 @ 128 °F	@	°F	@	°F
TIME	Circulation Stopped	0615			
	Logger on Bottom	1100			
Max. Rec. Temp.	128	°F	°F	°F	°F
Equip.	7645	HOBBS			
Location	HOBBS				
Recorded By	KITTS				
Witnessed By	AMINI				

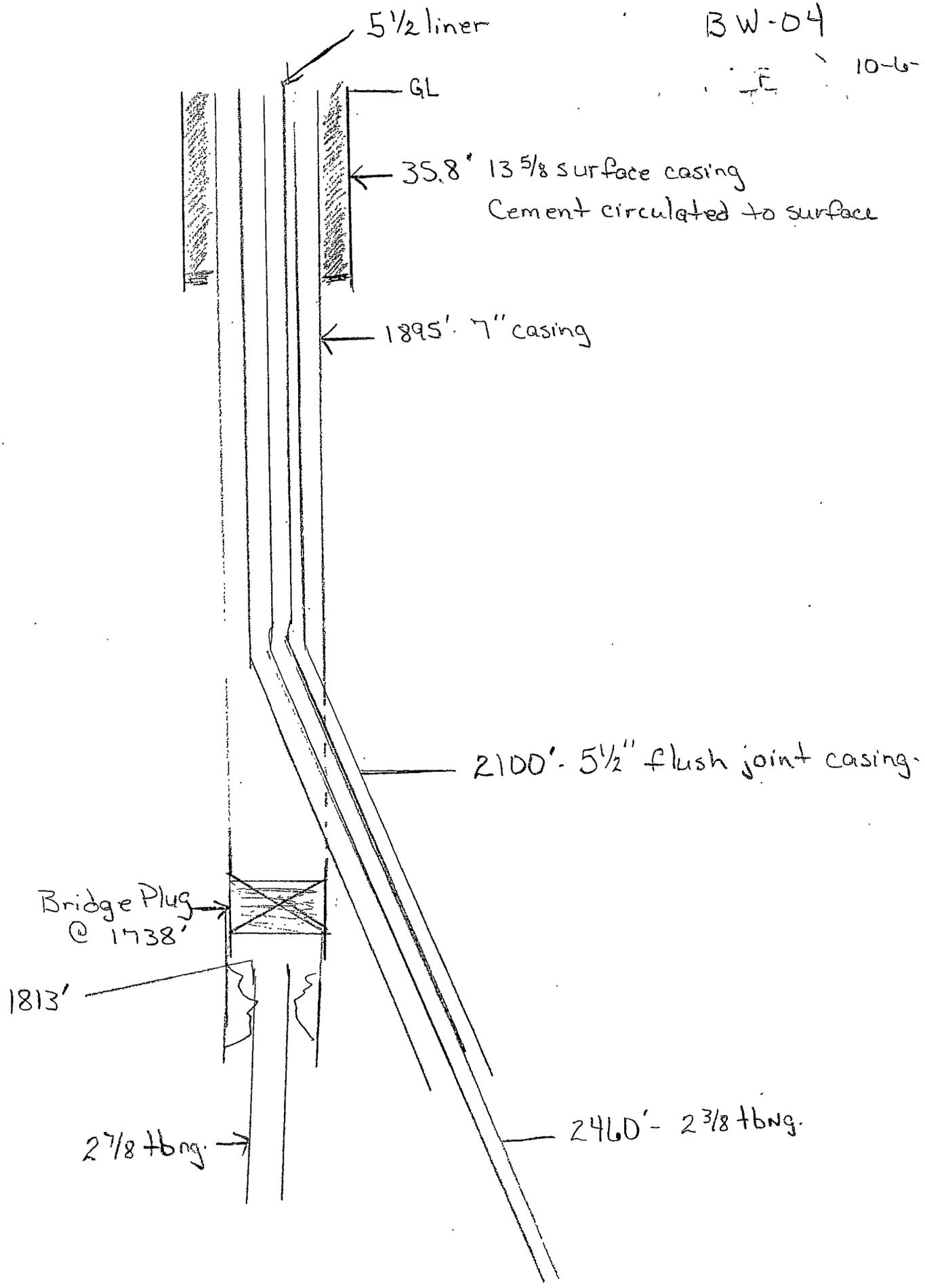
The well name, location and borehole reference data were furnished by the customer. FOLD HERE

BW-04 Cavern Size superimposed on the Exxon St. #1 Well Log (Located 1/4 mile to the west of BW-04)



Gandy Corporation
Edison Brine Stat.
BW-04

10-6-08



Appendix “G”

BW-04 Wasserhund Inc. Closure Cost Estimate.

2017 Annual Report
BW-04 Wasserhund Inc. Closure Cost

		CPI	
Pulling Unit Rig	\$25,000	1.03	\$25,750
Halliburton Cement Job	\$8,000.00	1.03	\$8,240
Post Subsidence Monitoring 5 years	\$15,000.00	1.03	\$15,450
Tank Removal, Pad Clean-Up	\$30,000.00	1.03	\$30,900
Consulting fees	\$10,000.00	1.03	\$10,300
Total Estimate	\$88,000	1.03	\$90,640

Wasserhund Inc.
P.O. Box 2140
575-396-0522
FAX 575-396-0797
Lovington, New Mexico 88260

ANNUAL CLASS III WELL REPORT FOR 2016

Wasserhund Inc.

Buckeye Brine Station

OCD Permit BW-04

Expiration Date: November 08, 2018

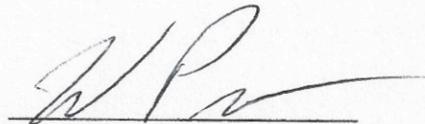
API No. 30-025-26883 Eidson #1

Unit Letter M-Section 31-Ts 16s – R35e

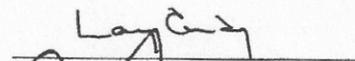
April 30, 2017

Submitted By: Price LLC on behalf of Wasserhund Inc Principals Mr. Larry and Jon Gandy.

Wayne Price-LLC



Larry Gandy



Jon Gandy



Bullet Point 2- Summary of Operations:

(Permit Condition 2.J.2 Annual Report: “Summary of Class III well operations for the year including a description and reason for any remedial or major work on the well with a copy of C-103.”) Permit Expires November 08, 2018.

During the 2016 year there was no major remedial work on the brine well. General housekeeping was routinely performed and inspections were conducted for awareness of the BW-04 permit conditions. *(A copy of the most recent OCD approved Discharge Plan permit BW-04 is included for reference in **Appendix “A”**).*

In 2013, Wasserhund Inc. installed an automated brine dispensing system, which included remote automated billing and tracking. The equipment was supplied by Flowpoint systems and Price LLC provided start-up consulting services.

The OCD held a Brine Well Operator’s meeting, in Hobbs on September 05, 2012 to discuss permit changes. The most notable change by OCD was the removing of the annual pressure test requirement, and went to a 5-year requirement allowing the “Open-to-Formation” test, and a successful test was performed in September of 2013 (Copy attached in **Appendix “D”**). The next scheduled 5-year test was scheduled for 2018.

The OCD sent out an E-Mail in July of 2016 indicating a test for this well was being scheduled for 2016. (See Bullet Point 6).

The brine well was drilled in 1980 and has been in operation for approximately 36 years and is sited on State Highway 08, approximately 12 miles southwest of Lovington, NM. The well is producing out of the Salado “Salt Formation” at a depth of approximately 1900-2460 feet below surface.

The brine well has been producing for a number of years and may possibly be considered approaching an “end of life” scenario due to its age. This scenario is not due to a safety aspect, i.e. collapse, since the well has produced only about one-half of normal volume compared to similar wells of age. Bullet point 10 (Brine Cavity/Subsidence Information) below discusses the safety aspects of this well in more detail.

As with most brine wells of this age, repeated required annual testing which flexes the cavern support, thus causing flexure stress cracking and the past required reverse flow issue, has caused these older wells to have pre-mature down-hole problems, such as “sloughing” of the salt-anhydrite layers damaging the tubing and making re-entry virtually impossible and extremely expensive. This well had to be whip-stocked in 2008 in order to reenter after a severe down-hole problem.

To ensure the safety of the well a Pro-active well “Area of Review” has been conducted annually and will continue including yearly cavern size calculations.

Evaluation of the last sonar test conducted determines cavern stability and is discussed further in Bullet Point 10 below.

While this is an older well, it still has not reached its productive end of life and is deemed safe and is an extremely valuable asset for the oil and gas industry.

Bullet Point 3- Production Volumes:

(Permit condition 2.J.3 “Monthly fluid injection and brine production volume, including the cumulative total carried over each year”

Wasserhund Inc. installed a new sales metering system in 2014 and installed new flow meters to monitor both water injected and brine produced.

Monthly, Yearly and Lifetime Injection and Production Volumes:

The monthly, yearly and lifetime fresh water injection and brine production volumes are attached herein for review. The total 2016 brine production volume was 265,462 bbls and the lifetime production volume is 9,227,911 bbls.

Enclosed in **Appendix “B”** is the injection and production and a comparison chart of injected water to produced water with comments.

Bullet Point 4- “Injection Pressure Data.”

(Permit condition 2.J.4 “Injection Pressure Data”

Maximum and Average Injection Pressure:

The average injection pressure as noted by Wasserhund Inc.’s personnel is approximately 280 psig. This reading is taken from a pressure gauge mounted on the pump outlet.

The maximum pressure (Injection) is set to 340 psig, which is well below the frac pressure for this well at the casing shoe. The casing shoe depth frac pressure is calculated to be 420 psig using a .70 psi/ft gradient.

Antidotal evidence may suggest older brine wells have a tendency to have a lower frac gradient over time. For this reason Wasserhund will not exceed 315 psig when testing the formation.

Special Note: This is a change from previous years and a special Brine Well Maximum Test Pressure Calculator is included in Appendix “D” for reference. The new frac gradient for this well is set at .65 psi/ft.

Bullet Point 5- Chemical Analysis:

(Permit condition 2.J.5 “A copy of the quarterly chemical analysis shall be included with data summary and all QA/QC information.”)

Please find attached in **Appendix “C”** the latest chemical analysis and chain-of-custody of the brine and fresh water injection water samples collected during the 2016 year and analyzed by Trace Analysis in Lubbock, Texas and Hall Environmental, Albuquerque NM. The sampling process and laboratory used common approved EPA methods to collect, analyze and reporting.

The injection water was collected from the fresh water tank load line that is connected directly to the fresh water storage tanks. The fresh water is supplied by a fresh-water well located just west of the site.

The brine water was collected from the brine water tank load line that is connected directly to the brine water storage tanks. This sample point is representative of the brine water at the station.

The analysis revealed the brine water is predominately sodium chloride with a high density of 1.208 specific gravity. This analysis is very representative of Salado “Salt” formation waters found in the area. Pursuant to the 2016 chemical analysis, the Density of the brine ranged from 1.171 SG to 1.208 SG for an average of 1.189, which equates to 9.90 lbs./gal.

Wasserhund routinely performs field-testing to ensure brine well quality. This testing generally shows close to 10 lb brine using the field method.

The Sodium-Chloride ratios for the year averaged .681, which is vey close to the theoretical value of .648 ratio for sodium chloride. This is a fair indication that the well is producing predominantly from the salt section.

Bullet Point 6- Mechanical Integrity:

(Permit condition 2.J.6 “Copy of any mechanical integrity test chart, including the type of test, i.e., duration, gauge pressure, etc.”)

A 4-hour Cavern Mechanical Integrity Test (MIT) was successfully ran and passed on November 28, 2016 and subsequently approved by OCD.

Pursuant to the permit conditions this test was not due until 2018. Therefore, the next five-year test will be scheduled for November of 2021, unless otherwise required by OCD for good cause shown or permit condition requirement.

Please find in **Appendix “D”** a copy of the approved C-103, test chart with meter calibration notes.

Bullet Point 7- Deviations from Normal Production Methods:

(Permit condition 2.J.7 “Brief explanation describing deviations from normal operations.”)

In 2008 two OCD permitted brine wells collapsed. As a result of those incidents, the OCD issued a temporary moratorium on new brine well permits. During the moratorium OCD facilitated a work group to determine a proper path forward for current and new brine well operations.

As a result of those proceedings, OCD issued instructions to operators to change OCD’s previous requirement of injecting fresh water down the annuals and producing brine up the tubing (i.e reverse-flow); to injecting fresh water down the tubing and producing brine up the annuals, (i.e. conventional-flow).

Wasserhund Inc. has been successful in changing the flow pattern to conventional flow, and is making quality 10# brine, with occasional reverse flow for maintenance.

Bullet Point 8- Leak and Spill Reports:

(Permit condition 2.J.8 “Results of any leaks and spill reports;”)

There were no reportable leaks and spills in 2016.

The loading areas are concrete with spill containers under the hose connections that are designed to catch de-minimus drips from hose connections. Drivers routinely suck out the spill containers, for re-cycling.

The entire facility is bermed to prevent run-on or run-off and all reportable or non-reportable spills are cleaned up pursuant to OCD rules and guidance.

Bullet Point 9- Area of Review Update Summary:

(Permit condition 2.J.9 “An Area of Review (AOR) update summary;”)

An extensive AOR review was conducted for the Eidson #1 brine well, OCD permit # BW-04, located in UL M of Section 31-Ts16S-R35e. Wasserhund Inc. used OCD records and actual field verification (see **Appendix “E”**) to confirm wells in the AOR.

Using OCD on-line files, a well status list and AOR plot plan was constructed (see **Appendix “E”**) listing all wells within adjacent quarter sections of the BW-04 location. The list shows API#, Operator well name, UL, Section, Township and Range, footages, Wells within 660 ft (i.e. critical zone) and ¼ mile, casing program status, casing/cementing status, and corrective action required status.

This method was formulated to provide a baseline for future AOR studies. Since brine wells are limited in size, a critical AOR of 660 feet was initially established and all wells within that radius was researched in detail.

Using the current estimated diameter of the brine well @ 313 feet (R = 156.5 ft) updated for 2016, a 10:1 safety factor is applied that equates to about 1565 ft. As the brine well grows, this newly calculated critical AOR will be expanded and new wells will be added and all existing wells restudied.

The rationale behind this approach is the fact that brine wells are non-static in terms of size and configuration, and the fact that the brine well operator has only indirect control on wells drilled in close proximity.

Initially focusing on the current wells in the ¼ mile AOR, and assuming the status of these wells remain the same, may be a mistake. Therefore, a more dynamic approach is being undertaken, and each well in the critical Area of Review (AOR) will be looked at on an annual basis, or whenever any planned activity or new wells are noticed in the AOR.

In the 2016 review, there were no wells added to the list. **Appendix "E"** contains the check-off list showing the OCD wells in all adjacent quarter sections surrounding the BW-04 brine well.

There currently are three wells located within the critical 1565 ft, and ¼ miles radius of review. The critical zone wells were investigated by checking the OCD on-line well records.

The three wells located in the new critical zone, i.e. within 1565 feet, were reinvestigated by checking the OCD on-line well records. The last recorded file records for the three wells located in the critical AOR are identified as API# 30-025-25146, 30-025-35678 and 30-025-31621 and the following provides the most recent results found in the OCD public records.

The Findings are as follows:

API # 30-025-25146: In 2010, a C-103 was submitted to the OCD to P&A the well by setting plugs at the top, top of salt, bottom of salt, and place a cement plug in tubing at 5700 feet. This work was completed and C-103 filed with the OCD District I office in Hobbs and subsequently approved.

This well was properly plugged and abandoned in September of 2012 and approved by OCD. This well has been transferred to Lime Rock Resources.

Conclusions: The OCD records show that a subsequent P&A report was filed and approved by OCD.

Corrective Actions: Well has been P&A.

API # 30-025-35678: The Chesapeake St. VII #7, (Now Chevron USA) according to OCD records, is located 660 FNL & 660 FEL of UL A Section 1-Ts17s-R34e. It is shown to be located approximately 1600 ft to the SW of the BW-04 well.

In November of 2013, OCD sent Chevron USA Inc. a Letter of Violation and Shut-In Directive due to an observation of a Bradenhead issue, and required corrective actions and a Mechanical Integrity Test. In the 2014 year another Bradenhead test was conducted and witnessed by OCD.

This well has since been transferred to Lime Rock Resources and has been approved by OCD for recompletion, which would appear to have the salt zone "Salado" casing cemented. See Copy of proposed recompletion diagram in **Appendix "E"**.

Conclusions: OCD has approved the proposed re-completion.

Corrective Actions and Recommendation: If completed as proposed, this well appears to have adequate cemented casing coverage across the salt section and no corrective actions are required.

In 2016 this well passed an OCD Braden-head survey witnessed by OCD.

API # 30-025-31621: The BTA Oil Producers Vacuum 9205 JV-P Com was drilled and completed in 1992 as a gas well. The Casing strings are as follows: 13-3/8" surface casing set at 423 feet cemented with 480 sacks, circulated to the surface. 8 5/8" Intermediate casing set at 4795 cemented with 2500 sacks, circulated to the surface.

A 5-1/2" production string was set at 12,900 ft and cemented with 2100 sacks, circulated to the surface.

Conclusions: This well is properly cemented from top to bottom, and the salt section is adequately covered. In 2016 this well passed an OCD Braden-head survey witnessed by OCD.

Corrective Actions: No Corrective actions required.

Bullet Point 10- Subsidence/Cavern Volumes/Geometric Measurements

(Permit condition 2.J.10. "A summary with interpretations of MIT's, surface subsidence surveys, cavern volume and geometric measurements with conclusion(s) and recommendation(s);")

Since the use of sonar tests in other wells has not provided adequate information, the continued use of sonar may be in question until the validity of using sonar test is resolved.

The last cavern survey (2008) for this well did not provide any useful information pertaining to the size and shape of this particular cavern. An alternate method has been

discussed with Jim Griswold-OCD and it was mutually decided that an estimated worst-case diameter is to be determined in order to provide maximum protection and ensure the permit conditions are being met.

The Solution Mining Research Institute (SMRI), other state agencies, OCD work-group, along with various studies conducted during the permitting of the WIPP site, has concluded that failures, such as “catastrophic collapses”, have a higher probability when the roof diameter of the cavern exceeds a certain value compared to the actual depth of the cavern.

This number is typically called D/H where “D” is the diameter of the cavity and “H” is the depth from surface to the casing shoe. Various reports seem to conclude that when a ratio of D/H reaches or exceeds .66 then the probably of collapse increases to a point that the well may be considered un-safe, thus closing procedures such as proper plugging and abandonment, and possible long term subsidence monitoring should be instituted.

The alternate method mentioned above involves calculating the maximum diameter of the cavern by using a worst-case scenario of an “**upright cone**”. The volume of the cavern is calculated using the lifetime brine production volumes and using a “*rule of thumb*” conversion factor to determine the volumetric size of the cavern. The rule of thumb conversion factor was taken from the 1982 Wilson Report and equates that every barrel of brine produced will create approximately one cubic foot of cavity.

Please find attached in **Appendix “F”**, a wellbore sketch, and the calculations for the brine well, and the lifetime brine production tally of approximately 9.22 million barrels of brine produced as of December 2016. The maximum diameter was calculated to be approximately 313 feet with a corresponding D/H ratio of .149 updated for the 2016 year.

Comparing the current D/H ratio of .149 to the .66 value mentioned above, it can be concluded that the current brine well status meets and exceeds the recommended safety value by approximately five times.

Permit Condition 2.B. SOLUTION CAVERN MONITORING PROGRAM:

1. Surface Subsidence Monitoring Plan: The Permittee shall submit a Surface Subsidence Monitoring Plan to OCD within 180 days of the effective date of this permit. The Surface Subsidence Monitoring Plan shall specify that the Permittee will install at least three survey monuments and shall include a proposal to monitor the elevation of the monuments at least semiannually.

The Permittee shall survey each benchmark at least semiannually to monitor for possible surface subsidence and shall tie each survey to the nearest USGS benchmark. The Permittee shall employ a licensed professional surveyor to conduct the subsidence-monitoring program. The Permittee shall submit the results of all subsidence surveys to

OCD within 15 days of the survey. If the monitored surface subsidence at any measuring point reaches 0.10 feet compared to its baseline elevation, then the Permittee shall suspend operation of the Class III well. If the Permittee cannot demonstrate the integrity of the cavern and well to the satisfaction of OCD, then it shall cease all brine production and submit a corrective action plan to mitigate the subsidence.

Wasserhund Inc did submit a plan in last year's reports to meet the requirement of the rule.

Special Request: This facility currently does not have subsidence monitors installed and Wasserhund Inc. respectfully request waiver of this requirement until further evaluation can be completed or closure of the site commences.

This request is based on the fact the well continues to exhibit good Cavern Mechanical Integrity, very low D/H ratio, and the fact the radius of the Cavern does not encroach upon any buildings, wells, or public ROW's. Currently there have been no subsidence issues noted or experienced.

2. Solution Cavern Characterization Program: *The Permittee shall submit a Solution Cavern Characterization Plan to characterize the size and shape of the solution cavern using geophysical methods within 180 days of the effective date of this permit. The Permittee shall characterize the size and shape of the solution cavern using a geophysical methods approved by OCD at least once before November 8, 2018. The Permittee shall demonstrate that at least 90% of the calculated volume of salt removed based upon injection and production volumes has been accounted for by the approved geophysical method(s) for such testing to be considered truly representative.*

Solution Cavern Characterization Plan: Wasserhund Inc. hereby proposes to use a combination of calculated results as determined above, and will experiment with various geophysical methods, including actually performing an "Induced Current Method" and report these results in the next annual report.

The "Induced Current" Method has not been totally successful, primarily to bad connections; low DC voltage used, capacitance effect, and ground interference. Wasserhund Inc. will investigate other methods and consult with OCD on this issue. The old fashion cavern calculation continues to be the best economic method available.

Bullet Point #11- Ratio of Injected/Produced Fluids

(Permit condition 2.J.11 "A summary of the ratio of the volume of injected fluids to the volume of produced brine;")

See Bullet Point #3 and Appendix "B" for comparison chart numbers.

Special Note: **Wasserhund Inc. requests a minor modification of the permit**

requirement 3.K *“The Permittee shall suspend injection if the monthly injection volume is less than 110% or greater than 120% of associated brine production. If such an event occurs, the Permittee shall notify OCD within 24 hours.”*

Dear Jim Griswold-NMOCD Environmental Bureau Chief and Carl Chavez Environmental Engineer.

As you know, this topic has been discussed and kicked around for a long time. The current permit requirement does not take into account many factors that can cause the variance to be under or over the requirement of 110%-120%. Every year we report this number in the annual report and while the average monthly injection for the year is normally within range, the actual monthly numbers can and are sometimes under and over. There are many reasons for this as we have discussed, and thus the requirement to suspend operations is not based on any real parameter or trend that may be an immediate threat to the well, groundwater or the environment. The current requirement put operators in a continuous violation and interruption of operations.

Of course notwithstanding, if you have a well that takes water without producing, or starts to pressure up, then you know you may have lost circulation or communicated to a pressure zone, then immediate action should be taken and notification to the agency.

The point to be made here is that this parameter is a trailing indicator not a leading indicator. Of course a continued pattern for a few months would be beneficial.

Currently the permit reads as follows:

The Permittee shall immediately suspend injection and notify the agency within 72 hours, if the Fresh Water Injection does not cause a normal immediate return of Brine Water to the surface, or if the well flows excessively for an unusual amount of time without fresh water injection after the cavern pressure has been stabilized to its normal operating pressure, or if permittee has become aware of any out of zone injection or communication. The Permittee shall include in each annual report a summary showing the monthly variance, the average monthly variance for the year and the total accumulative variance over the life of the well. The operator shall certify and explain that any yearly variance that falls outside of the range of 20%, (Difference between the Fresh Water input and Brine Water output) will not cause harm to Fresh Water, Public Health or the Environment.

Bullet Point #12- Summary of Activities

(Permit condition 2.J.12 “A summary of all major Facility activities or events, which occurred during the year with any conclusions and recommendations;”)

See *Bullet Point #2* for summary.

5.B. BONDING OR FINANCIAL ASSURANCE: *The Permittee shall submit an estimate of the minimum cost to properly close, plug and abandon its Class III well, conduct ground water restoration if applicable, and any post-operational monitoring as may be needed (see 20.6.2.5210B(17) NMAC) within 90 days of permit issuance (See 20.6.2.5210B(17) NMAC). The Permittee’s cost estimate shall be based on third person estimates. After review, OCD will require the Permittee to submit a single well plugging bond based on the third person cost estimate.*

Appendix “G” contains a third party closure estimate for the Wasserhund Inc. BW-04 brine well.

Bullet Point #13- Annual Certification

(Permit condition 2.J.13 “Annual Certification in accordance with Permit Condition 2.B.3. “2.B.3. Annual Certification: The Permittee shall certify annually 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.”)

Operator Response: Based on all current information and actual on-site observance, the operator of record hereby certifies that the current operations pose no threat to public health and the environment at the submission of this report. If any substantial event that, has or may cause, this current certification to change, then the operator will notify OCD and take the necessary actions to protect the public and environment.

By signing the cover sheet of Bullet Point 1 of permit condition 2.J.1, the operator hereby certifies this condition of the permit.

Bullet Point 14- Groundwater Monitoring:

(Permit condition 2.J.14 “A summary of any new discoveries of ground water contamination with all leaks, spills and releases and corrective actions taken;”)

The BW-04 Wasserhund Inc. Buckeye facility currently does not have groundwater monitoring at this site.

Bullet Point 15- Annual Reporting

(Permit condition 2.J.15 “The Permittee shall file its Annual Report in an electronic format with a hard copy submitted to OCD’s Environmental Bureau.”)

The operator hereby submits a PDF file on flash drive and one hard copy.

Appendix "A"

- Discharge Plan BW-04

BW-4

**Wasserhund/Buckeye
Eidson State #1**

**Permit Renewal
11/8/13**

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey
Division Director
Oil Conservation Division



November 8, 2013

Larry Gandy
Wasserhund, Inc.
PO Box 827
Tatum, New Mexico 88267

RE: Renewal of Discharge Permit BW-4 for the Eidson State #1 Brine Well in Unit M of Section 31, Township 16 South, Range 35 East NMPM; Lea County, New Mexico

Dear Mr. Gandy,

Pursuant to all applicable parts of the Water Quality Control Commission regulations 20.6.2 NMAC and more specifically 20.6.2.3104 thru.3999 discharge permit, and 20.6.2.5000 thru .5299 Underground Injection Control, the Oil Conservation Division hereby renews the discharge permit and authorizes operation and injection for the Wasserhund, Inc. (owner/operator) brine well BW-4 (API# 30-025-26883) at the location described above and under the conditions specified in the attached Discharge Permit Approval Conditions.

Be advised that approval of this permit does not relieve the owner/operator of responsibility should operations result in pollution of surface water, groundwater, or the environment. Nor does this permit relieve the owner/operator of any responsibility or consequences associated with subsidence or cavern failure. This permit does not relieve the owner/operator of its responsibility to comply with any other applicable governmental rules or regulations.

If you have any questions, please contact Jim Griswold of my staff at (505) 476-3465 or by email at jim.griswold@state.nm.us. On behalf of the Oil Conservation Division, I wish to thank you and your staff for your cooperation and patience during this renewal application review.

Respectfully,

A handwritten signature in blue ink, appearing to read "Jami Bailey", is written over a light blue rectangular background.

Jami Bailey
Director

JB/JG/jg
Attachment – Discharge Permit Approval Conditions

cc: Michael Mariano, State Land Office

DISCHARGE PERMIT BW-4

1. GENERAL PROVISIONS:

1.A. PERMITTEE AND PERMITTED FACILITY: The Director of the Oil Conservation Division (OCD) of the Energy, Minerals and Natural Resources Department renews Discharge Permit BW-4 (Discharge Permit) to Wasserhund, Inc. (Permittee) to operate its Underground Injection Control (UIC) Class III well for the in situ extraction of salt (Eidson State #1 Brine Well - API No. 30-025-26883) located 567 feet FSL and 162 feet FWL (SW/4 SW/4, Unit Letter M) in Section 31, Township 16 South, Range 35 East, NMPM, Lea County, New Mexico at its Brine Production Facility (Facility). The Facility is located approximately 5 miles north of Buckeye, New Mexico along the west side of NM 238.

The Permittee is permitted to inject water into the subsurface salt layers and produce brine for use in the oil and gas industry. Ground water that may be affected by a spill, leak, or accidental discharge occurs at a depth of approximately 75 feet below ground surface and has a total dissolved solids concentration of approximately 500 mg/L.

1.B. SCOPE OF PERMIT: OCD has been granted the authority by statute and by delegation from the Water Quality Control Commission (WQCC) to administer the Water Quality Act (Chapter 74, Article 6 NMSA 1978) as it applies to Class III wells associated with the oil and gas industry (See Section 74-6-4, 74-6-5 NMSA 1978).

The Water Quality Act and the rules promulgated pursuant to the Act protect ground water and surface water of the State of New Mexico by providing that, unless otherwise allowed by 20.6.2 NMAC, no person shall cause or allow effluent or leachate to discharge so that it may move directly or indirectly into ground water unless such discharge is pursuant to an approved discharge plan (See 20.6.2.3104 NMAC, 20.6.2.3106 NMAC, and 20.6.2.5000 through 20.6.2.5299 NMAC).

This Discharge Permit for a Class III well is issued pursuant to the Water Quality Act and WQCC rules, 20.6.2 NMAC. This Discharge Permit does not authorize any treatment of, or on-site disposal of, any materials, product, by-product, or oil-field waste.

Pursuant to 20.6.2.5004A NMAC, the following underground injection activities are prohibited:

1. The injection of fluids into a motor vehicle waste disposal well is prohibited.
2. The injection of fluids into a large capacity cesspool is prohibited.
3. The injection of any hazardous or radioactive waste into a well is prohibited except as provided by 20.6.2.5004A(3) NMAC.
4. Class IV wells are prohibited, except for wells re-injecting treated ground water into the same formation from which it was drawn as part of a removal or remedial action.

5. Barrier wells, drainage wells, recharge wells, return flow wells, and motor vehicle waste disposal wells are prohibited.

This Discharge Permit does not convey any property rights of any sort nor any exclusive privilege, and does not authorize any injury to persons or property, any invasion of other private rights, or any infringement of state, federal, or local laws, rules or regulations.

The Permittee shall operate in accordance with the terms and conditions specified in this Discharge Permit to comply with the Water Quality Act and the rules issued pursuant to that Act, so that neither a hazard to public health nor undue risk to property will result (see 20.6.2.3109C NMAC); so that no discharge will cause or may cause any stream standard to be violated (see 20.6.2.3109H(2) NMAC); so that no discharge of any water contaminant will result in a hazard to public health, (see 20.6.2.3109H(3) NMAC); so that the numerical standards specified of 20.6.2.3103 NMAC are not exceeded; and, so that the technical criteria and performance standards (see 20.6.2.5000 through 20.6.2.5299 NMAC) for Class III wells are met. Pursuant to 20.6.2.5003B NMAC, the Permittee shall comply with 20.6.2.1 through 20.6.2.5299 NMAC.

The Permittee shall not allow or cause water pollution, discharge, or release of any water contaminant that exceeds the Water Quality Control Commission (WQCC) standards specified at 20.6.2.3101 NMAC and 20.6.2.3103 NMAC or 20.6.4 NMAC (Water Quality Standards for Interstate and Intrastate Streams). Pursuant to 20.6.2.5101A NMAC, the Permittee shall not inject non-hazardous fluids into ground water having 10,000 mg/l or less total dissolved solids (TDS).

The issuance of this permit does not relieve the Permittee from the responsibility of complying with the provisions of the Water Quality Act, any applicable regulations or water quality standards of the WQCC, or any applicable federal laws, regulations or standards (See Section 74-6-5 NMSA 1978).

1.C. DISCHARGE PERMIT RENEWAL: This Discharge Permit is a permit renewal that replaces the permit being renewed. Replacement of a prior permit does not relieve the Permittee of its responsibility to comply with the terms of that prior permit while that permit was in effect.

1.D. DEFINITIONS: Terms not specifically defined in this Discharge Permit shall have the same meanings as those in the Water Quality Act or the rules adopted pursuant to the Act, as the context requires.

1.E. FILING FEES AND PERMIT FEES: Pursuant to 20.6.2.3114 NMAC, every facility that submits a Discharge Permit application for initial approval or renewal shall pay the permit fees specified in Table 1 and the filing fee specified in Table 2 of 20.6.2.3114 NMAC. OCD has already received the required \$100.00 filing fee. The Permittee is now required to submit the \$1,700.00 permit fee for a Class III well. Please remit payment made payable to the Water Quality Management Fund in care of OCD at 1220 South St. Francis Drive in Santa Fe, New Mexico 87505.

1.F. EFFECTIVE DATE, EXPIRATION, RENEWAL CONDITIONS, AND PENALTIES FOR OPERATING WITHOUT A DISCHARGE PERMIT: This Discharge Permit becomes effective 30 days from the date that the Permittee receives this discharge permit or until the permit is terminated or expires. This Discharge Permit will expire on **November 8, 2018**. The Permittee shall submit an application for renewal no later than 120 days before that expiration date, pursuant to 20.6.2.5101F NMAC. If a Permittee submits a renewal application at least 120 days before the Discharge Permit expires and is in compliance with the approved Discharge Permit, then the existing Discharge Permit will not expire until OCD has approved or disapproved the renewal application. A discharge permit continued under this provision remains fully effective and enforceable. Operating with an expired Discharge Permit may subject the Permittee to civil and/or criminal penalties (See Section 74-6-10.1 NMSA 1978 and Section 74-6-10.2 NMSA 1978).

1.G. MODIFICATIONS AND TERMINATIONS: The Permittee shall notify the OCD Director and OCD's Environmental Bureau of any Facility expansion or process modification (See 20.6.2.3107C NMAC). The OCD Director may require the Permittee to submit a Discharge Permit modification application pursuant to 20.6.2.3109E NMAC and may modify or terminate a Discharge Permit pursuant to Sections 74-6-5(M) through (N) NMSA 1978.

1. If data submitted pursuant to any monitoring requirements specified in this Discharge Permit or other information available to the OCD Director indicate that 20.6.2 NMAC is being or may be violated, then the OCD Director may require modification or, if it is determined by the OCD Director that the modification may not be adequate, may terminate this Discharge Permit for a Class III well that was approved pursuant to the requirements of 20.6.2.5000 through 20.6.2.5299 NMAC for the following causes:

a. Noncompliance by Permittee with any condition of this Discharge Permit;
or,

b. The Permittee's failure in the discharge permit application or during the discharge permit review process to disclose fully all relevant facts, or Permittee's misrepresentation of any relevant facts at any time; or,

c. A determination that the permitted activity may cause a hazard to public health or undue risk to property and can only be regulated to acceptable levels by discharge permit modification or termination (See Section 75-6-6 NMSA 1978; 20.6.2.5101I NMAC; and, 20.6.2.3109E NMAC).

2. This Discharge Permit may also be modified or terminated for any of the following causes:

a. Violation of any provisions of the Water Quality Act or any applicable regulations, standard of performance or water quality standards;

b. Violation of any applicable state or federal effluent regulations or limitations; or

c. Change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge (See Section 75-6-5M NMSA 1978).

1.H. TRANSFER OF CLASS III WELL DISCHARGE PERMIT:

1. The transfer provisions of 20.6.2.3111 NMAC do not apply to a discharge permit for a Class III well.

2. Pursuant to 20.6.2.5101H NMAC, the Permittee may request to transfer its Class III well discharge permit if:

a. The OCD Director receives written notice 30 days prior to the transfer date; and,

b. The OCD Director does not object prior to the proposed transfer date. OCD may require modifications to the discharge permit as a condition of transfer, and may require demonstration of adequate financial responsibility.

3. The written notice required in accordance with Permit Condition 1.H.2.a shall:

a. Have been signed by the Permittee and the succeeding Permittee, and shall include an acknowledgement that the succeeding Permittee shall be responsible for compliance with the Class III well discharge permit upon taking possession of the facility; and

b. Set a specific date for transfer of the discharge permit responsibility, coverage and liability; and

c. Include information relating to the succeeding Permittee's financial responsibility required by 20.6.2.5210B(17) NMAC.

1.I. COMPLIANCE AND ENFORCEMENT: If the Permittee violates or is violating a condition of this Discharge Permit, OCD may issue a compliance order that requires compliance immediately or within a specified time period, or assess a civil penalty, or both (See Section 74-6-10 NMSA 1978). The compliance order may also include a suspension or termination of this Discharge Permit. OCD may also commence a civil action in district court for appropriate relief, including injunctive relief (See Section 74-6-10(A)(2) NMSA 1978). The Permittee may be subject to criminal penalties for discharging a water contaminant without a discharge permit or in violation of a condition of a discharge permit; making any false material statement, representation, certification or omission of material fact in a renewal application, record, report, plan or other document filed, submitted or required to be maintained under the Water Quality Act; falsifying, tampering with or rendering inaccurate any monitoring device, method or record required to be maintained under the Water Quality Act; or failing to monitor, sample or report as required by a Discharge Permit issued pursuant to a state or federal law or regulation (See Section 74-6-10.2 NMSA 1978).

2. GENERAL FACILITY OPERATIONS:

2.A. QUARTERLY MONITORING REQUIREMENTS FOR CLASS III WELLS: The Permittee may use either or both fresh water or water from otherwise non-potable sources. Pursuant to 20.6.2.5207C, the Permittee shall provide analysis of the injected fluids at least quarterly to yield data representative of their characteristics. The Permittee shall analyze the injected fluids for the following characteristics:

- pH;
- density;
- concentration of total dissolved solids; and,
- chloride concentration.

The Permittee shall also provide analysis of the produced brine on a quarterly basis. The Permittee shall analyze the produced brine for the following characteristics:

- pH;
- density;
- concentration of total dissolved solids;
- chloride concentration; and,
- sodium concentration.

2.B. SOLUTION CAVERN MONITORING PROGRAM:

1. Surface Subsidence Monitoring Plan: The Permittee shall submit a Surface Subsidence Monitoring Plan to OCD within 180 days of the effective date of this permit. The Surface Subsidence Monitoring Plan shall specify that the Permittee will install at least three survey monuments and shall include a proposal to monitor the elevation of the monuments at least semiannually.

The Permittee shall survey each benchmark at least semiannually to monitor for possible surface subsidence and shall tie each survey to the nearest USGS benchmark. The Permittee shall employ a licensed professional surveyor to conduct the subsidence monitoring program. The Permittee shall submit the results of all subsidence surveys to OCD within 15 days of the survey. If the monitored surface subsidence at any measuring point reaches 0.10 feet compared to its baseline elevation, then the Permittee shall suspend operation of the Class III well. If the Permittee cannot demonstrate the integrity of the cavern and well to the satisfaction of OCD, then it shall cease all brine production and submit a corrective action plan to mitigate the subsidence.

2. Solution Cavern Characterization Program: The Permittee shall submit a Solution Cavern Characterization Plan to characterize the size and shape of the solution cavern using geophysical methods within 180 days of the effective date of this permit. The Permittee shall characterize the size and shape of the solution cavern using a geophysical method approved by OCD at least once before November 8, 2018. The Permittee shall demonstrate that at least 90% of the calculated volume of salt removed based upon injection and production volumes has been accounted for by the approved geophysical method(s) for such testing to be considered truly representative.

- a. The Permittee shall provide an estimate of the size and shape of the solution cavern at least annually, based on fluid injection and brine production data.
- b. The Permit shall compare the ratio of the volume of injected fluids to the volume of produced brine monthly. If the average ratio of injected fluid to produced brine varies is less than 90% or greater than 110%, the Permittee shall report this to OCD and cease injection and production operations of its Class III well within 24 hours. The Permittee shall begin an investigation to determine the cause of this abnormal ratio within 72 hours. The Permittee shall submit to OCD a report of its investigation within 15 days of cessation of injection and production operations of its Class III well.

3. Annual Certification: The Permittee shall certify annually 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.

If the solution cavern is determined by either OCD or the Permittee to be potentially unstable by either direct or indirect means, then the Permittee shall cease all fluid injection and brine production within 24 hours. If the Permittee ceases operations because it or OCD has determined that the solution cavern is unstable, then it shall submit a plan to stabilize the solution cavern within 30 days. OCD may require the Permittee to implement additional subsidence monitoring and to conduct additional corrective action.

2.C. CONTINGENCY PLANS: The Permittee shall implement its proposed contingency plan(s) included in its Permit Renewal Application to cope with failure of a system(s) in the Discharge Permit.

2.D. CLOSURE: Prior to closure of the facility, the Permittee shall submit for OCD's approval, a closure plan including a completed form C-103 for plugging and abandonment of the Class III well. The Permittee shall plug and abandon its well pursuant to 20.6.2.5209 NMAC and as specified in Permit Condition 2.D.

1. Pre-Closure Notification: Pursuant to 20.6.2.5005A NMAC, the Permittee shall submit a pre-closure notification to OCD's Environmental Bureau at least 30 days prior to the date that it proposes to close or to discontinue operation of its Class III well. Pursuant to 20.6.2.5005B NMAC, OCD's Environmental Bureau must approve all proposed well closure activities before Permittee may implement its proposed closure plan.

2. Required Information: The Permittee shall provide OCD's Environmental Bureau with the following information:

- Name of facility;
- Address of facility;
- Name of Permittee (and owner or operator, if appropriate);
- Address of Permittee (and owner or operator, if appropriate);
- Contact person;
- Phone number;
- Number and type of well(s);

- Year of well construction;
- Well construction details;
- Type of discharge;
- Average flow (gallons per day);
- Proposed well closure activities (*e.g.*, sample fluids/sediment, appropriate disposal of remaining fluids/sediments, remove well and any contaminated soil, clean out well, install permanent plug, conversion to other type of well, ground water and vadose zone investigation, other);
- Proposed date of well closure;
- Name of Preparer; and,
- Date.

2.E. PLUGGING AND ABANDONMENT PLAN: Pursuant to 20.6.2.5209A NMAC, when the Permittee proposes to plug and abandon its Class III well, it shall submit to OCD a plugging and abandonment plan that meets the requirements of 20.6.2.3109C NMAC, 20.6.2.5101C NMAC, and 20.6.2.5005 NMAC for protection of ground water. If requested by OCD, Permittee shall submit for approval prior to closure, a revised or updated plugging and abandonment plan. The obligation to implement the plugging and abandonment plan as well as the requirements of the plan survives the termination or expiration of this Discharge Permit. The Permittee shall comply with 20.6.2.5209 NMAC.

2.F RECORD KEEPING: The Permittee shall maintain records of all inspections, surveys, investigations, *etc.*, required by this Discharge Permit at its Facility office for a minimum of five years and shall make those records available for inspection by OCD.

2.G. RELEASE REPORTING: The Permittee shall comply with the following permit conditions, pursuant to 20.6.2.1203 NMAC, if it determines that a release of oil or other water contaminant, in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property, has occurred. The Permittee shall report unauthorized releases of water contaminants in accordance with any additional commitments made in its approved Contingency Plan. If the Permittee determines that any constituent exceeds the standards specified at 20.6.2.3103 NMAC, then it shall report a release to OCD's Environmental Bureau.

1. Oral Notification: As soon as possible after learning of such a discharge, but in no event more than twenty-four (24) hours thereafter, the Permittee shall notify OCD's Environmental Bureau. The Permittee shall provide the following:

- The name, address, and telephone number of the person or persons in charge of the facility, as well as of the owner and/or operator of the facility;
- The name and location of the facility;
- The date, time, location, and duration of the discharge;
- The source and cause of discharge;
- A description of the discharge, including its chemical composition;
- The estimated volume of the discharge; and,

- Any corrective or abatement actions taken to mitigate immediate damage from the discharge.

2. Written Notification: Within one week after the Permittee has discovered a discharge, the Permittee shall send written notification (may use form C-141 with attachments) to OCD's Environmental Bureau verifying the prior oral notification as to each of the foregoing items and providing any appropriate additions or corrections to the information contained in the prior oral notification.

The Permittee shall provide subsequent written reports as required by OCD's Environmental Bureau.

2.H. OTHER REQUIREMENTS:

1. Inspection and Entry: Pursuant to Section 74-6-9 NMSA 1978 and 20.6.2.3107A NMAC, the Permittee shall allow any authorized representative of the OCD Director, to:

- Upon the presentation of proper credentials, enter the premises at reasonable times;
- Inspect and copy records required by this Discharge Permit;
- Inspect any treatment works, monitoring, and analytical equipment;
- Sample any injection fluid or produced brine; and,
- Use the Permittee's monitoring systems and wells in order to collect samples.

2. Advance Notice: The Permittee shall provide OCD's Environmental Bureau and Hobbs District Office with at least five (5) working days advance notice of any environmental sampling to be performed pursuant to this Discharge Permit, or any well plugging, abandonment or decommissioning of any equipment associated with its Class III well.

3. Environmental Monitoring: The Permittee shall ensure that any environmental sampling and analytical laboratory data collected meets the standards specified in 20.6.2.3107B NMAC. The Permittee shall ensure that all environmental samples are analyzed by an accredited "National Environmental Laboratory Accreditation Conference" (NELAC) Laboratory. The Permittee shall submit data summary tables, all raw analytical data, and laboratory QA/QC.

2.I. BONDING OR FINANCIAL ASSURANCE: Pursuant to 20.6.2.5210B(17) NMAC, the Permittee shall maintain at a minimum, a single well plugging bond in the amount that it shall determine, in accordance with Permit Condition 5.B, to cover potential costs associated with plugging and abandonment of the Class III well, surface restoration, and post-operational monitoring, as may be needed. OCD may require additional financial assurance to ensure adequate funding is available to plug and abandon the well and/or for any required corrective actions.

Methods by which the Permittee shall demonstrate the ability to undertake these measures shall include submission of a surety bond or other adequate assurances, such as financial statements or other materials acceptable to the OCD Director, such as: (1) a surety bond; (2) a trust fund with a New Mexico bank in the name of the State of New Mexico, with the State as Beneficiary; (3) a

non-renewable letter of credit made out to the State of New Mexico; (4) liability insurance specifically covering the contingencies listed in this paragraph; or (5) a performance bond, generally in conjunction with another type of financial assurance. If an adequate bond is posted by the Permittee to a federal or another state agency, and this bond covers all of the measures specified above, the OCD Director shall consider this bond as satisfying the bonding requirements of Sections 20.6.2.5000 through 20.6.2.5299 NMAC wholly or in part, depending upon the extent to which such bond is adequate to ensure that the Permittee will fully perform the measures required hereinabove.

2.J. ANNUAL REPORT: The Permittee shall submit its annual report pursuant to 20.6.2.3107 NMAC to OCD's Environmental Bureau by **June 1st** of the following year. The annual report shall include the following:

- Cover sheet marked as "Annual Class III Well Report, Name of Permittee, Discharge Permit Number, API number of well(s), date of report, and person submitting report;
- Summary of Class III well operations for the year including a description and reason for any remedial or major work on the well with a copy of form C-103;
- Monthly fluid injection and brine production volume, including the cumulative total carried over each year;
- Injection pressure data;
- A copy of the quarterly chemical analyses shall be included with data summary and all QA/QC information;
- Copy of any mechanical integrity test chart, including the type of test, *i.e.*, duration, gauge pressure, etc.;
- Brief explanation describing deviations from the normal operations;
- Results of any leaks and spill reports;
- An Area of Review (AOR) update summary;
- A summary with interpretation of MITs, surface subsidence surveys, cavern volume and geometry measurements with conclusion(s) and recommendation(s);
- A summary of the ratio of the volume of injected fluids to the volume of produced brine;
- A summary of all major Facility activities or events, which occurred during the year with any conclusions and recommendations;
- Annual Certification in accordance with Permit Condition 2.B.3.
- A summary of any new discoveries of ground water contamination with all leaks, spills and releases and corrective actions taken; and,
- The Permittee shall file its Annual Report in an electronic format with a hard copy submittal to OCD's Environmental Bureau.

3. CLASS III WELL OPERATIONS:

3.A. OPERATING REQUIREMENTS: The Permittee shall comply with the operating requirements specified in 20.6.2.5206A NMAC and 20.6.2.5206A NMAC to ensure that:

1. Injection will occur through the innermost tubing string and brine production through the annulus between the casing and tubing string to promote cavern development at depth. Injection and production flow can be reversed as required to achieve optimal cavern shaping, mine salt most efficiently, and to periodically clean the tubing and annulus. Injection must only occur in the intended solution mining interval.

2. Injection between the outermost casing and the well bore is prohibited in a zone other than the authorized injection zone. If the Permittee determines that its Class III well is discharging or suspects that it is discharging fluids into a zone or zones other than the permitted injection zone specified in Permit Condition 3.B.1., then the Permittee shall within 24 hours notify OCD's Environmental Bureau and Hobbs District Office of the circumstances and action(s) taken. The Permittee shall cease operations until proper repairs are made and it has received approval from OCD to re-start injection operations.

3.B. INJECTION OPERATIONS:

1. **Well Injection Pressure Limit:** The Permittee shall ensure that the maximum wellhead or surface injection pressure on its Class III well shall not exceed the fracture pressure of the injection salt formation and will not cause new fractures or propagate any existing fractures of cause damage to the system.

2. **Pressure Limiting Device:** The Permittee shall equip and operate its Class III well or system with a pressure limiting device which shall, at all times, limit surface injection pressure to the maximum allowable pressure for its Class III well. The Permittee shall monitor the pressure-limiting device daily and shall report all pressure exceedances within 24 hours of detecting an exceedance to OCD's Environmental Bureau.

The Permittee shall take all steps necessary to ensure that the injected fluids enter only the proposed injection interval and is not permitted to escape to other formations or onto the ground surface. The Permittee shall report to OCD's Environmental Bureau within 24 hours of discovery any indication that new fractures or existing fractures have been propagated, or that damage to the well, the injection zone, or formation has occurred.

3.C. CONTINUOUS MONITORING DEVICES: The Permittee shall use continuous monitoring devices to provide a record of injection pressure, flow rate, flow volume, and pressure on the annulus between the tubing and the long string of casing.

3.D. MECHANICAL INTEGRITY FOR CLASS III WELLS:

1. Pursuant to 20.6.2.5204 NMAC, the Permittee shall demonstrate mechanical integrity for its Class III well at least once every five years or more frequently as the OCD

Director may require for good cause during the life of the well. The Permittee shall demonstrate mechanical integrity for its Class III well every time it performs a well workover, including when it pulls the tubing. A Class III well has mechanical integrity if there is no detectable leak in the casing or tubing which OCD considers to be significant at maximum operating temperature and pressure; and no detectable conduit for fluid movement out of the injection zone through the well bore or vertical channels adjacent to the well bore which the OCD Director considers to be significant. The Permittee shall conduct a casing Mechanical Integrity Test (MIT) from the surface to the approved injection depth to assess casing integrity. The MIT shall consist of a 30-minute test at a minimum pressure of 300 psig measured at the surface.

The Permittee shall notify OCD's Environmental Bureau 5 days prior to conducting any MIT to allow OCD the opportunity to witness the MIT.

2. The following criteria will determine if the Class III well has passed the MIT:

- a. Passes MIT if zero bleed-off during the test;
- b. Passes MIT if final test pressure is within $\pm 10\%$ of starting pressure, if approved by OCD;
- c. When the MIT is not witnessed by OCD and fails, the Permittee shall notify OCD within 24 hours of the failure of the MIT.

3. Pursuant to 20.6.2.5204C NMAC, the OCD Director may consider the use by the Permittee of equivalent alternative test methods to determine mechanical integrity. The Permittee shall submit information on the proposed test and all technical data supporting its use. The OCD Director may approve the Permittee's request if it will reliably demonstrate the mechanical integrity of the well for which its use is proposed.

4. Pursuant to 20.6.2.5204D NMAC, when conducting and evaluating the MIT(s), the Permittee shall apply methods and standards generally accepted in the oil and gas industry. When the Permittee reports the results of all MIT(s) to the OCD Director, it shall include a description of the test(s), the method(s) used, and the test results.

3.E. WELL WORKOVER OPERATIONS: Pursuant to 20.6.2.5205A(5) NMAC, the Permittee shall provide notice to and shall obtain approval from OCD's District Office in Hobbs and the Environmental Bureau in Santa Fe prior to commencement of any remedial work or any other workover operations to allow OCD the opportunity to witness the operation. The Permittee shall request approval using form C-103 (Sundry Notices and Reports on Wells) with copies sent to OCD's Environmental Bureau and Hobbs District Office. Properly completed Forms C-103 and/or C-105 must be filed with OCD upon completion of workover activities and copies included in that year's Annual Report.

3.K. FLUIDS INJECTION AND BRINE PRODUCTION VOLUMES AND PRESSURES: The Permittee shall continuously monitor the volumes of water injected and brine production. The Permittee shall submit monthly reports of its injection and production volumes on or before the 10th day of the following month. The Permittee shall suspend injection if the monthly injection volume is less than 110% or greater than 120% of associated brine production. If such an event occurs, the Permittee shall notify OCD within 24 hours.

3.L. AREA OF REVIEW (AOR): The Permittee shall report within 72 hours of discovery any new wells, conduits, or any other device that penetrates or may penetrate the injection zone within a 1-mile radius from its Class III well.

4. CLASS V WELLS: Pursuant to 20.6.2.5002B NMAC, leach fields and other waste fluids disposal systems that inject non-hazardous fluid into or above an underground source of drinking water are UIC Class V injection wells. This Discharge Permit does not authorize the use of a Class V injection well for the disposal of industrial waste. Pursuant to 20.6.2.5005 NMAC, the Permittee shall close any Class V industrial waste injection well that injects non-hazardous industrial wastes or a mixture of industrial wastes and domestic wastes (*e.g.*, septic systems, leach fields, dry wells, *etc.*) within 90 calendar days of the issuance of this Discharge Permit. The Permittee shall document the closure of any Class V wells used for the disposal of non-hazardous industrial wastes or a mixture of industrial wastes and domestic wastes other than contaminated ground water in its Annual Report. Other Class V wells, including wells used only for the injection of domestic wastes, shall be permitted by the New Mexico Environment Department.

5. SCHEDULE OF COMPLIANCE:

5.A. ANNUAL REPORT: The Permittee shall submit its annual report to OCD by June 1st of each year.

5.B. BONDING OR FINANCIAL ASSURANCE: The Permittee shall submit an estimate of the minimum cost to properly close, plug and abandon its Class III well, conduct ground water restoration if applicable, and any post-operational monitoring as may be needed (see 20.6.2.5210B(17) NMAC) within 90 days of permit issuance (See 20.6.2.5210B(17) NMAC). The Permittee's cost estimate shall be based on third person estimates. After review, OCD will require the Permittee to submit a single well plugging bond based on the third person cost estimate.

5.C. SURFACE SUBSIDENCE MONITORING PLAN: The Permittee shall submit the Surface Subsidence Monitoring Plan required in accordance with Permit Condition 2.B.1 within 180 days of permit issuance.

5.D. SOLUTION CAVERN CHARACTERIZATION PLAN: The Permittee shall submit the Solution Cavern Characterization Plan required in accordance with Permit Condition 2.B.2 within 180 days of permit issuance.

Appendix “B”

- Injection and Production Volumes/Comparison Charts

2016 Wasserhund Inc OCD BW-04 Annual Production Data												
								Plus numbers represent more fresh injected than brine produced. Neg numbers the opposite.				
				Brine-BBLS	Fresh-BBLS		% diff					
Jan				40524	40659		0.33%					
Feb				24732	24845		0.46%					
Mar				15914	16011		0.61%					
Apr				15003	15124		0.81%					
May				19261	19292		0.16%					
Jun				20440	20655		1.05%					
Jul				23497	23612		0.49%					
Aug				22449	22572		0.55%					
Sept				22730	22955		0.99%					
Oct				14084	14179		0.67%					
Nov				21508	21723		1.00%					
Dec				25320	25425		0.41%					
Total				265,462	267,052		0.60%					
Total Brine Water Production Carry Over from Years Past BBLs				8,962,449								
Total Production year ending 2016				9,227,911	bbls							

Appendix "C"

- Chemical Analysis Fresh Water
- Chemical Analysis Brine Water

Appendix "C"

- Chemical Analysis Fresh Water
- Chemical Analysis Brine Water



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E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Lester Wayne Price Jr.
Price LLC
312 Encantado Ridge Ct. NE
Rio Rancho, NM, 87124

Report Date: February 25, 2016

Work Order: 16022210



Project Location: Buckeye New Mexico
Project Name: Brine Well
Project Number: Brine Well

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
414778	Fresh Water	water	2016-02-17	14:25	2016-02-18
414779	Brine Water	water	2016-02-17	14:30	2016-02-18

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company, sampler, contacts and any special remarks.

This report consists of a total of 16 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Blair Leftwich

Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Brian Pellam, Operations Manager

Report Contents

Case Narrative	4
Analytical Report	5
Sample 414778 (Fresh Water)	5
Sample 414779 (Brine Water)	6
Method Blanks	7
QC Batch 128362 - Method Blank (1)	7
QC Batch 128394 - Method Blank (1)	7
QC Batch 128419 - Method Blank (1)	7
QC Batch 128463 - Method Blank (1)	7
Duplicates	9
QC Batch 128366 - Duplicate (1)	9
QC Batch 128394 - Duplicate (1)	9
QC Batch 128463 - Duplicate (1)	9
Laboratory Control Spikes	10
QC Batch 128362 - LCS (1)	10
QC Batch 128419 - LCS (1)	10
QC Batch 128463 - LCS (1)	10
Matrix Spikes	12
QC Batch 128362 - MS (1)	12
QC Batch 128419 - MS (1)	12
Calibration Standards	13
QC Batch 128362 - ICV (1)	13
QC Batch 128362 - CCV (1)	13
QC Batch 128366 - CCV (1)	13
QC Batch 128419 - CCV (1)	13
QC Batch 128419 - CCV (2)	13
Appendix	15
Report Definitions	15
Laboratory Certifications	15
Standard Flags	15
Attachments	16

Case Narrative

Samples for project Brine Well were received by TraceAnalysis, Inc. on 2016-02-18 and assigned to work order 16022210. Samples for work order 16022210 were received intact at a temperature of -0.1 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (IC)	E 300.0	108743	2016-02-23 at 10:00	128419	2016-02-23 at 10:08
Density	ASTM D854-92	108721	2016-02-23 at 13:10	128394	2016-02-23 at 13:15
Na, Dissolved	S 6010C	108686	2016-02-22 at 12:23	128362	2016-02-22 at 15:23
pH	SM 4500-H+	108694	2016-02-22 at 15:00	128366	2016-02-22 at 15:00
TDS	SM 2540C	108734	2016-02-23 at 15:30	128463	2016-02-23 at 15:30

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 16022210 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 414778 - Fresh Water

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 128419 Date Analyzed: 2016-02-23 Analyzed By: RL
Prep Batch: 108743 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,3,4,6	1820	mg/L	100	2.50

Sample: 414778 - Fresh Water

Laboratory: Lubbock
Analysis: Density Analytical Method: ASTM D854-92 Prep Method: N/A
QC Batch: 128394 Date Analyzed: 2016-02-23 Analyzed By: CF
Prep Batch: 108721 Sample Preparation: Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Density			0.980	g/ml	1	0.00

Sample: 414778 - Fresh Water

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 128366 Date Analyzed: 2016-02-22 Analyzed By: LQ
Prep Batch: 108694 Sample Preparation: Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,6	7.81	s.u.	1	2.00

Sample: 414778 - Fresh Water

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 128463 Date Analyzed: 2016-02-23 Analyzed By: LQ
Prep Batch: 108734 Sample Preparation: Prepared By: LQ

Report Date: February 25, 2016
Brine Well

Work Order: 16022210
Brine Well

Page Number: 6 of 16
Buckeye New Mexico

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,6	3240	mg/L	50	2.50

Sample: 414779 - Brine Water

Laboratory: Lubbock
Analysis: Na, Dissolved
QC Batch: 128362
Prep Batch: 108686

Analytical Method: S 6010C
Date Analyzed: 2016-02-22
Sample Preparation: 2016-02-22

Prep Method: S 3005A
Analyzed By: RR
Prepared By: RR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium		2,3,4,6	106000	mg/L	1000	1.00

Method Blanks

Method Blank (1) QC Batch: 128362

QC Batch: 128362 Date Analyzed: 2016-02-22 Analyzed By: RR
Prep Batch: 108686 QC Preparation: 2016-02-22 Prepared By: PM

Parameter	Flag	Cert	MDL Result	Units	RL
Dissolved Sodium		2,3,4,6	<0.0197	mg/L	1

Method Blank (1) QC Batch: 128394

QC Batch: 128394 Date Analyzed: 2016-02-23 Analyzed By: CF
Prep Batch: 108721 QC Preparation: 2016-02-23 Prepared By: CF

Parameter	Flag	Cert	MDL Result	Units	RL
Density			0.988	g/ml	

Method Blank (1) QC Batch: 128419

QC Batch: 128419 Date Analyzed: 2016-02-23 Analyzed By: RL
Prep Batch: 108743 QC Preparation: 2016-02-23 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1,2,3,4,6	<0.323	mg/L	2.5

Method Blank (1) QC Batch: 128463

QC Batch: 128463 Date Analyzed: 2016-02-23 Analyzed By: LQ
Prep Batch: 108734 QC Preparation: 2016-02-23 Prepared By: LQ

Report Date: February 25, 2016
Brine Well

Work Order: 16022210
Brine Well

Page Number: 8 of 16
Buckeye New Mexico

Parameter	Flag	Cert	MDL Result	Units	RL
Total Dissolved Solids		1,2,3,4,6	<25.0	mg/L	2.5

Duplicates

Duplicates (1) Duplicated Sample: 414780

QC Batch: 128366 Date Analyzed: 2016-02-22 Analyzed By: LQ
Prep Batch: 108694 QC Preparation: 2016-02-22 Prepared By: LQ

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH	1,2,4,6	7.91	7.93	s.u.	1	0	20

Duplicates (1) Duplicated Sample: 414780

QC Batch: 128394 Date Analyzed: 2016-02-23 Analyzed By: CF
Prep Batch: 108721 QC Preparation: 2016-02-23 Prepared By: CF

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Density		0.968	0.985	g/ml	1	2	20

Duplicates (1) Duplicated Sample: 414786

QC Batch: 128463 Date Analyzed: 2016-02-23 Analyzed By: LQ
Prep Batch: 108734 QC Preparation: 2016-02-23 Prepared By: LQ

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	1,2,3,4,6	1090	1120	mg/L	20	3	10

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Dissolved Solids		1,2,3,4,6	1010	mg/L	10	1000	<25.0	101	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec. Limit	RPD	RPD Limit
Total Dissolved Solids		1,2,3,4,6	1010	mg/L	10	1000	<25.0	101	90 - 110	0 10

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 414212

QC Batch: 128362 Date Analyzed: 2016-02-22 Analyzed By: RR
 Prep Batch: 108686 QC Preparation: 2016-02-22 Prepared By: PM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Sodium		2,3,4,6	491	mg/L	1	500	2.44	98	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec. Limit	RPD	RPD Limit	
Dissolved Sodium		2,3,4,6	500	mg/L	1	500	2.44	100	75 - 125	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 414780

QC Batch: 128419 Date Analyzed: 2016-02-23 Analyzed By: RL
 Prep Batch: 108743 QC Preparation: 2016-02-23 Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,2,3,4,6	340	mg/L	10	250	76.6	105	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec. Limit	RPD	RPD Limit	
Chloride		1,2,3,4,6	333	mg/L	10	250	76.6	102	80 - 120	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (CCV-2)

QC Batch: 128419

Date Analyzed: 2016-02-23

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1,2,3,4,6	mg/L	25.0	25.9	104	90 - 110	2016-02-23

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	L-A-B	L2418	Lubbock
2	Kansas	Kansas E-10317	Lubbock
3	LELAP	LELAP-02003	Lubbock
4	NELAP	T104704219-15-11	Lubbock
5	NELAP	T104704392-14-8	Midland
6		2015-066	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less than ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.

F Description

Qsr Surrogate recovery outside of laboratory limits.

U The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

Summary Report

Lester Wayne Price Jr.
 Price LLC
 312 Encantado Ridge Ct. NE
 Rio Rancho, NM 87124

Report Date: February 25, 2016

Work Order: 16022210



Project Location: Buckeye New Mexico
 Project Name: Brine Well

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
414778	Fresh Water	water	2016-02-17	14:25	2016-02-18
414779	Brine Water	water	2016-02-17	14:30	2016-02-18

Sample: 414778 - Fresh Water

Param	Flag	Result	Units	RL
Chloride		1820	mg/L	2.5
Density		0.980	g/ml	
pH		7.81	s.u.	2
Total Dissolved Solids		3240	mg/L	2.5

Sample: 414779 - Brine Water

Param	Flag	Result	Units	RL
Dissolved Sodium		106000	mg/L	1



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E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

(Corrected Report)

Lester Wayne Price Jr.
Price LLC
312 Encantado Ridge Ct. NE
Rio Rancho, NM, 87124

Report Date: March 24, 2016

Work Order: 16022210



Project Location: Buckeye New Mexico
Project Name: Brine Well
Project Number: Brine Well

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
414778	Fresh Water	water	2016-02-17	14:25	2016-02-18
414779	Brine Water	water	2016-02-17	14:30	2016-02-18

Report Corrections (Work Order 16022210)

- 3/24/16: Added Chloride, pH, TDS and Density to sample 414779.

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company, sampler, contacts and any special remarks.

This report consists of a total of 20 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Blair Leftwich

Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Johnny Grindstaff, Operations Manager

Report Contents

Case Narrative	5
Analytical Report	6
Sample 414778 (Fresh Water)	6
Sample 414779 (Brine Water)	7
Method Blanks	9
QC Batch 128362 - Method Blank (1)	9
QC Batch 128394 - Method Blank (1)	9
QC Batch 128419 - Method Blank (1)	9
QC Batch 128463 - Method Blank (1)	9
QC Batch 129013 - Method Blank (1)	10
QC Batch 129044 - Method Blank (1)	10
QC Batch 129049 - Method Blank (1)	10
Duplicates	11
QC Batch 128366 - Duplicate (1)	11
QC Batch 128394 - Duplicate (1)	11
QC Batch 128463 - Duplicate (1)	11
QC Batch 129013 - Duplicate (1)	11
QC Batch 129028 - Duplicate (1)	12
QC Batch 129044 - Duplicate (1)	12
Laboratory Control Spikes	13
QC Batch 128362 - LCS (1)	13
QC Batch 128419 - LCS (1)	13
QC Batch 128463 - LCS (1)	13
QC Batch 129044 - LCS (1)	14
QC Batch 129049 - LCS (1)	14
Matrix Spikes	15
QC Batch 128362 - MS (1)	15
QC Batch 128419 - MS (1)	15
QC Batch 129049 - MS (1)	15
Calibration Standards	17
QC Batch 128362 - ICV (1)	17
QC Batch 128362 - CCV (1)	17
QC Batch 128366 - CCV (1)	17
QC Batch 128419 - CCV (1)	17
QC Batch 128419 - CCV (2)	17
QC Batch 129028 - CCV (1)	18
QC Batch 129049 - CCV (1)	18
QC Batch 129049 - CCV (2)	18
Appendix	19
Report Definitions	19

Laboratory Certifications	19
Standard Flags	19
Result Comments	20
Attachments	20

Case Narrative

Samples for project Brine Well were received by TraceAnalysis, Inc. on 2016-02-18 and assigned to work order 16022210. Samples for work order 16022210 were received intact at a temperature of -0.1 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (IC)	E 300.0	108743	2016-02-23 at 10:00	128419	2016-02-23 at 10:08
Chloride (IC)	E 300.0	109290	2016-03-23 at 14:00	129049	2016-03-23 at 15:09
Density	ASTM D854-92	108721	2016-02-23 at 13:10	128394	2016-02-23 at 13:15
Density	ASTM D854-92	109263	2016-03-23 at 11:10	129013	2016-03-23 at 11:15
Na, Dissolved	S 6010C	108686	2016-02-22 at 12:23	128362	2016-02-22 at 15:23
pH	SM 4500-H+	108694	2016-02-22 at 15:00	128366	2016-02-22 at 15:00
pH	SM 4500-H+	109282	2016-03-23 at 12:30	129028	2016-03-23 at 12:30
TDS	SM 2540C	108734	2016-02-23 at 15:30	128463	2016-02-23 at 15:30
TDS	SM 2540C	109281	2016-03-23 at 16:30	129044	2016-03-23 at 16:30

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 16022210 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 414778 - Fresh Water

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 128419 Date Analyzed: 2016-02-23 Analyzed By: RL
Prep Batch: 108743 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,3,4,5	1820	mg/L	100	2.50

Sample: 414778 - Fresh Water

Laboratory: Lubbock
Analysis: Density Analytical Method: ASTM D854-92 Prep Method: N/A
QC Batch: 128394 Date Analyzed: 2016-02-23 Analyzed By: CF
Prep Batch: 108721 Sample Preparation: Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Density			0.980	g/ml	1	0.00

Sample: 414778 - Fresh Water

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 128366 Date Analyzed: 2016-02-22 Analyzed By: LQ
Prep Batch: 108694 Sample Preparation: Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,5	7.81	s.u.	1	2.00

Sample: 414778 - Fresh Water

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 128463 Date Analyzed: 2016-02-23 Analyzed By: LQ
Prep Batch: 108734 Sample Preparation: Prepared By: LQ

Report Date: March 24, 2016
Brine Well

Work Order: 16022210
Brine Well

Page Number: 7 of 20
Buckeye New Mexico

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,5	3240	mg/L	50	2.50

Sample: 414779 - Brine Water

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 129049 Date Analyzed: 2016-03-23 Analyzed By: RL
Prep Batch: 109290 Sample Preparation: 2016-03-23 Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	H	1,2,3,4,5	149000	mg/L	5000	2.50

Sample: 414779 - Brine Water

Laboratory: Lubbock
Analysis: Density Analytical Method: ASTM D854-92 Prep Method: N/A
QC Batch: 129013 Date Analyzed: 2016-03-23 Analyzed By: CF
Prep Batch: 109263 Sample Preparation: Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Density			1.16	g/ml	1	0.00

Sample: 414779 - Brine Water

Laboratory: Lubbock
Analysis: Na, Dissolved Analytical Method: S 6010C Prep Method: S 3005A
QC Batch: 128362 Date Analyzed: 2016-02-22 Analyzed By: RR
Prep Batch: 108686 Sample Preparation: 2016-02-22 Prepared By: RR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium		2,3,4,5	106000	mg/L	1000	1.00

Method Blanks

Method Blank (1) QC Batch: 128362

QC Batch: 128362 Date Analyzed: 2016-02-22 Analyzed By: RR
Prep Batch: 108686 QC Preparation: 2016-02-22 Prepared By: PM

Parameter	Flag	Cert	MDL Result	Units	RL
Dissolved Sodium		2,3,4,5	<0.0197	mg/L	1

Method Blank (1) QC Batch: 128394

QC Batch: 128394 Date Analyzed: 2016-02-23 Analyzed By: CF
Prep Batch: 108721 QC Preparation: 2016-02-23 Prepared By: CF

Parameter	Flag	Cert	MDL Result	Units	RL
Density			0.988	g/ml	

Method Blank (1) QC Batch: 128419

QC Batch: 128419 Date Analyzed: 2016-02-23 Analyzed By: RL
Prep Batch: 108743 QC Preparation: 2016-02-23 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1,2,3,4,5	<0.323	mg/L	2.5

Method Blank (1) QC Batch: 128463

QC Batch: 128463 Date Analyzed: 2016-02-23 Analyzed By: LQ
Prep Batch: 108734 QC Preparation: 2016-02-23 Prepared By: LQ

Report Date: March 24, 2016
Brine Well

Work Order: 16022210
Brine Well

Page Number: 10 of 20
Buckeye New Mexico

Parameter	Flag	Cert	MDL Result	Units	RL
Total Dissolved Solids		1,2,3,4,5	<25.0	mg/L	2.5

Method Blank (1) QC Batch: 129013

QC Batch: 129013 Date Analyzed: 2016-03-23 Analyzed By: CF
Prep Batch: 109263 QC Preparation: 2016-03-23 Prepared By: CF

Parameter	Flag	Cert	MDL Result	Units	RL
Density			0.979	g/ml	

Method Blank (1) QC Batch: 129044

QC Batch: 129044 Date Analyzed: 2016-03-23 Analyzed By: LQ
Prep Batch: 109281 QC Preparation: 2016-03-23 Prepared By: LQ

Parameter	Flag	Cert	MDL Result	Units	RL
Total Dissolved Solids		1,2,3,4,5	<25.0	mg/L	2.5

Method Blank (1) QC Batch: 129049

QC Batch: 129049 Date Analyzed: 2016-03-23 Analyzed By: RL
Prep Batch: 109290 QC Preparation: 2016-03-23 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1,2,3,4,5	<0.323	mg/L	2.5

Duplicates

Duplicates (1) Duplicated Sample: 414780

QC Batch: 128366 Date Analyzed: 2016-02-22 Analyzed By: LQ
Prep Batch: 108694 QC Preparation: 2016-02-22 Prepared By: LQ

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH	1,2,4,5	7.91	7.93	s.u.	1	0	20

Duplicates (1) Duplicated Sample: 414780

QC Batch: 128394 Date Analyzed: 2016-02-23 Analyzed By: CF
Prep Batch: 108721 QC Preparation: 2016-02-23 Prepared By: CF

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Density		0.968	0.985	g/ml	1	2	20

Duplicates (1) Duplicated Sample: 414786

QC Batch: 128463 Date Analyzed: 2016-02-23 Analyzed By: LQ
Prep Batch: 108734 QC Preparation: 2016-02-23 Prepared By: LQ

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	1,2,3,4,5	1090	1120	mg/L	20	3	10

Duplicates (1) Duplicated Sample: 414781

QC Batch: 129013 Date Analyzed: 2016-03-23 Analyzed By: CF
Prep Batch: 109263 QC Preparation: 2016-03-23 Prepared By: CF

Report Date: March 24, 2016
Brine Well

Work Order: 16022210
Brine Well

Page Number: 12 of 20
Buckeye New Mexico

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Density	2	0.978	0.996	g/ml	1	2	20

Duplicates (1) Duplicated Sample: 416191

QC Batch: 129028 Date Analyzed: 2016-03-23 Analyzed By: LQ
Prep Batch: 109282 QC Preparation: 2016-03-23 Prepared By: LQ

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH	1,2,4,5	7.18	7.18	s.u.	1	4	20

Duplicates (1) Duplicated Sample: 416188

QC Batch: 129044 Date Analyzed: 2016-03-23 Analyzed By: LQ
Prep Batch: 109281 QC Preparation: 2016-03-23 Prepared By: LQ

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	1,2,3,4,5	4630	4670	mg/L	50	1	10

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Dissolved Solids		1,2,3,4,5	1010	mg/L	10	1000	<25.0	101	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec. Limit	RPD	RPD Limit	
Total Dissolved Solids		1,2,3,4,5	1010	mg/L	10	1000	<25.0	101	90 - 110	0	10

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 129044
Prep Batch: 109281

Date Analyzed: 2016-03-23
QC Preparation: 2016-03-23

Analyzed By: LQ
Prepared By: LQ

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Dissolved Solids		1,2,3,4,5	995	mg/L	10	1000	<25.0	100	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec. Limit	RPD	RPD Limit	
Total Dissolved Solids		1,2,3,4,5	1020	mg/L	10	1000	<25.0	102	90 - 110	2	10

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 129049
Prep Batch: 109290

Date Analyzed: 2016-03-23
QC Preparation: 2016-03-23

Analyzed By: RL
Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,2,3,4,5	24.3	mg/L	1	25.0	<0.323	97	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec. Limit	RPD	RPD Limit	
Chloride		1,2,3,4,5	24.2	mg/L	1	25.0	<0.323	97	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 414212

QC Batch: 128362 Date Analyzed: 2016-02-22 Analyzed By: RR
 Prep Batch: 108686 QC Preparation: 2016-02-22 Prepared By: PM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Sodium		2,3,4,5	491	mg/L	1	500	2.44	98	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Dissolved Sodium		2,3,4,5	500	mg/L	1	500	2.44	100	75 - 125	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 414780

QC Batch: 128419 Date Analyzed: 2016-02-23 Analyzed By: RL
 Prep Batch: 108743 QC Preparation: 2016-02-23 Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,2,3,4,5	340	mg/L	10	250	76.6	105	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1,2,3,4,5	333	mg/L	10	250	76.6	102	80 - 120	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 416184

QC Batch: 129049 Date Analyzed: 2016-03-23 Analyzed By: RL
 Prep Batch: 109290 QC Preparation: 2016-03-23 Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,2,3,4,5	3570	mg/L	100	2500	1100	99	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1,2,3,4,5	3540	mg/L	100	2500	1100	98	80 - 120	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	L-A-B	L2418	Lubbock
2	Kansas	Kansas E-10317	Lubbock
3	LELAP	LELAP-02003	Lubbock
4	NELAP	T104704219-15-11	Lubbock
5		2015-066	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less than ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.

F Description

U The analyte is not detected above the SDL

Result Comments

- 1 Analyzed out of hold time.
- 2 Analyzed out of hold time.

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

LAB Order ID # 16022210

TraceAnalysis, Inc.

email: lab@traceanalysis.com

6701 Aberdeen Avenue, Suite 9
Lubbock, Texas 79424
Tel (806) 794-1296
Fax (806) 794-1298
1 (800) 378-1296

5002 Basin Street, Suite A1
Midland, Texas 79703
Tel (432) 689-6301
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200 East Sunset Rd., Suite E
El Paso, Texas 79922
Tel (915) 585-3443
Fax (915) 585-4944
1 (888) 588-3443

BioAquatic Testing
2501 Mayes Rd., Ste 100
Carrollton, Texas 75006
Tel (972) 242-7750
Fax (972) 242-7750

Branch:
3403 Industrial
Hobbs, NM 88240
Tel (575) 392-7500
Fax (575) 392-4506

Company Name: PRICE LLC
Address: (Street, City, Zip) 7210 SANDY NM
310 ENCANTADO RIDGE CT NE 87104
Contact Person: LESTER WAYNE PRICE JR
E-mail: wayprice23@hotmail.com

Project #: NA
Project Name: BRINE WELL
Project Location (including state): BOCKEYE NM
Sampler Signature: LWPak

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX			PRESERVATIVE METHOD						SAMPLING		
				WATER	SOIL	AIR	SLUDGE	HCl	HNO ₃	H ₂ SO ₄	NaOH	ICE	NONE	DATE	TIME
44778	FRESH WATER	1	1 PLASTIC	X										2/17/16	2:30PM
779	BRINE WATER	1	1 PLASTIC	X										2/17/16	2:30PM

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	INST	OBS	COR
Lester Wayne Price	PRICE LLC	2/17/16	12:30 PM	KLD	BTK	2-18-16	1:03			
				Murcell	TA	2-20-16	10:00			

ANALYSIS REQUEST (Circle or Specify Method No.)

<input type="checkbox"/>	MTBE 8021 / 602 / 8260 / 624
<input type="checkbox"/>	BTEX 8021 / 602 / 8260 / 624
<input type="checkbox"/>	TPH 418.1 / TX1005 / TX1005 Ext(C35)
<input type="checkbox"/>	TPH 8015 GRO / DRO / TVHC
<input type="checkbox"/>	PAH 8270 / 625
<input type="checkbox"/>	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010/200.7
<input type="checkbox"/>	TCLP Metals Ag As Ba Cd Cr Pb Se Hg
<input type="checkbox"/>	TCLP Volatiles
<input type="checkbox"/>	TCLP Semi Volatiles
<input type="checkbox"/>	TCLP Pesticides
<input type="checkbox"/>	RCI
<input type="checkbox"/>	GC/MS Vol. 8260 / 624
<input type="checkbox"/>	GC/MS Semi. Vol. 8270 / 625
<input type="checkbox"/>	PCB's 8082 / 608
<input type="checkbox"/>	Pesticides 8081 / 608
<input type="checkbox"/>	BOD, TSS, pH
<input type="checkbox"/>	Moisture Content
<input type="checkbox"/>	Cl, F, SO ₄ , NO ₃ -N, NO ₂ -N, PO ₄ -P, Alkalinity
<input type="checkbox"/>	Na, Ca, Mg, K, TDS, EC
<input checked="" type="checkbox"/>	Chloride, Density, Pl, TDS
<input checked="" type="checkbox"/>	Dissolved Sodium

REMARKS: COC # 1

LAB USE ONLY

Inject Y N
Headspace Y N

Log-in-Review

Dry Weight Basis Required
TRRP Report Required
Check If Special Reporting Limits Are Needed

REPORT # 2-15-16 NM
FAX: 2-25-16 NM

Summary Report

(Corrected Report)

Lester Waynce Price Jr.
Price LLC
312 Encantado Ridge Ct. NE
Rio Rancho, NM 87124

Report Date: March 24, 2016

Work Order: 16022210



Project Location: Buckeye New Mexico
Project Name: Brine Well

Report Corrections (Work Order 16022210)

- 3/24/16: Added Chloride, pH, TDS and Density to sample 414779.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
414778	Fresh Water	water	2016-02-17	14:25	2016-02-18
414779	Brine Water	water	2016-02-17	14:30	2016-02-18

Sample: 414778 - Fresh Water

Param	Flag	Result	Units	RL
Chloride		1820	mg/L	2.5
Density		0.980	g/ml	
pH		7.81	s.u.	2
Total Dissolved Solids		3240	mg/L	2.5

Sample: 414779 - Brine Water

Param	Flag	Result	Units	RL
Chloride	H	149000	mg/L	2.5
Density	1	1.16	g/ml	
Dissolved Sodium		106000	mg/L	1
pH		6.91	s.u.	2

continued ...

¹Analyzed out of hold time.

sample 414779 continued ...

Param	Flag	Result	Units	RL
Total Dissolved Solids		263000	mg/L	2.5



6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1296 806-794-1296 FAX 806-794-1298
200 East Sunset Road, Suite E El Paso, Texas 79922 915-585-3443 FAX 915-585-4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432-689-6301 FAX 432-689-6313
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972-242-7750
E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Lester Wayne Price Jr.
Price LLC
312 Encantado Ridge Ct. NE
Rio Rancho, NM, 87124

Report Date: May 17, 2016

Work Order: 16042902



Project Location: Buckeye NM & Tatum
Project Name: Gandy Brine/Fresh Well
Project Number: BW-4 & BW-22

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
418340	BW-4 Fresh Water-B	water	2016-04-28	13:10	2016-04-28
418341	BW-4 Brine Water-B	water	2016-04-28	13:20	2016-04-28
418342	BW-22 Fresh Water-T	water	2016-04-28	12:30	2016-04-28
418343	BW-22 Brine Water-T	water	2016-04-28	12:20	2016-04-28

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

TraceAnalysis, Inc. uses the attached chain of custody (COC) as the laboratory check-in documentation which includes sample receipt, temperature, sample preservation method and condition, collection date and time, testing requested, company, sampler, contacts and any special remarks.

This report consists of a total of 17 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Blair Leftwich

Dr. Blair Leftwich, Director
James Taylor, Assistant Director
Johnny Grindstaff, Operations Manager

Report Contents

Case Narrative	4
Analytical Report	5
Sample 418340 (BW-4 Fresh Water-B)	5
Sample 418341 (BW-4 Brine Water-B)	5
Sample 418342 (BW-22 Fresh Water-T)	7
Sample 418343 (BW-22 Brine Water-T)	7
Method Blanks	9
QC Batch 129873 - Method Blank (1)	9
QC Batch 129998 - Method Blank (1)	9
QC Batch 130128 - Method Blank (1)	9
Duplicates	10
QC Batch 129815 - Duplicate (1)	10
QC Batch 129873 - Duplicate (1)	10
Laboratory Control Spikes	11
QC Batch 129873 - LCS (1)	11
QC Batch 129998 - LCS (1)	11
QC Batch 130128 - LCS (1)	11
Matrix Spikes	13
QC Batch 129998 - MS (1)	13
QC Batch 130128 - MS (1)	13
Calibration Standards	14
QC Batch 129815 - CCV (1)	14
QC Batch 129998 - CCV (1)	14
QC Batch 129998 - CCV (2)	14
QC Batch 130128 - ICV (1)	14
QC Batch 130128 - CCV (1)	14
Appendix	16
Report Definitions	16
Laboratory Certifications	16
Standard Flags	16
Attachments	17

Case Narrative

Samples for project Gandy Brine/Fresh Well were received by TraceAnalysis, Inc. on 2016-04-28 and assigned to work order 16042902. Samples for work order 16042902 were received intact at a temperature of 3.0 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (IC)	E 300.0	110129	2016-05-06 at 10:00	129998	2016-05-06 at 10:30
Na, Dissolved	S 6010C	110161	2016-05-11 at 14:09	130128	2016-05-17 at 11:53
pH	SM 4500-H+	109974	2016-04-29 at 15:30	129815	2016-04-29 at 15:30
TDS	SM 2540C	109973	2016-04-29 at 15:16	129873	2016-04-29 at 16:15

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 16042902 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 418340 - BW-4 Fresh Water-B

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 129998 Date Analyzed: 2016-05-06 Analyzed By: RL
Prep Batch: 110129 Sample Preparation: 2016-05-06 Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,3,4,6	250	mg/L	10	2.50

Sample: 418340 - BW-4 Fresh Water-B

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 129815 Date Analyzed: 2016-04-29 Analyzed By: LQ
Prep Batch: 109974 Sample Preparation: 2016-04-29 Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,6	7.76	s.u.	1	2.00

Sample: 418340 - BW-4 Fresh Water-B

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 129873 Date Analyzed: 2016-04-29 Analyzed By: LQ
Prep Batch: 109973 Sample Preparation: 2016-04-29 Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,6	678	mg/L	20	2.50

Sample: 418341 - BW-4 Brine Water-B

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 129998 Date Analyzed: 2016-05-06 Analyzed By: RL
Prep Batch: 110129 Sample Preparation: 2016-05-06 Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,3,4,6	149000	mg/L	5000	2.50

Sample: 418341 - BW-4 Brine Water-B

Laboratory: Lubbock
Analysis: Na, Dissolved Analytical Method: S 6010C Prep Method: S 3005A
QC Batch: 130128 Date Analyzed: 2016-05-17 Analyzed By: RR
Prep Batch: 110161 Sample Preparation: 2016-05-11 Prepared By: RR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium		2,3,4,6	91000	mg/L	1100	1.00

Sample: 418341 - BW-4 Brine Water-B

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 129815 Date Analyzed: 2016-04-29 Analyzed By: LQ
Prep Batch: 109974 Sample Preparation: 2016-04-29 Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,6	6.92	s.u.	1	2.00

Sample: 418341 - BW-4 Brine Water-B

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 129873 Date Analyzed: 2016-04-29 Analyzed By: LQ
Prep Batch: 109973 Sample Preparation: 2016-04-29 Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,6	240000	mg/L	2000	2.50

Sample: 418342 - BW-22 Fresh Water-T

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 129998 Date Analyzed: 2016-05-06 Analyzed By: RL
Prep Batch: 110129 Sample Preparation: 2016-05-06 Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,3,4,6	79.4	mg/L	10	2.50

Sample: 418342 - BW-22 Fresh Water-T

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 129815 Date Analyzed: 2016-04-29 Analyzed By: LQ
Prep Batch: 109974 Sample Preparation: 2016-04-29 Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,6	7.85	s.u.	1	2.00

Sample: 418342 - BW-22 Fresh Water-T

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 129873 Date Analyzed: 2016-04-29 Analyzed By: LQ
Prep Batch: 109973 Sample Preparation: 2016-04-29 Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,6	670	mg/L	20	2.50

Sample: 418343 - BW-22 Brine Water-T

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 129998 Date Analyzed: 2016-05-06 Analyzed By: RL
Prep Batch: 110129 Sample Preparation: 2016-05-06 Prepared By: RL

continued ...

sample 418343 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,3,4,6	11500	mg/L	1000	2.50

Sample: 418343 - BW-22 Brine Water-T

Laboratory: Lubbock
 Analysis: Na, Dissolved Analytical Method: S 6010C Prep Method: S 3005A
 QC Batch: 130128 Date Analyzed: 2016-05-17 Analyzed By: RR
 Prep Batch: 110161 Sample Preparation: 2016-05-11 Prepared By: RR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium		2,3,4,6	5960	mg/L	1	1.00

Sample: 418343 - BW-22 Brine Water-T

Laboratory: Lubbock
 Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
 QC Batch: 129815 Date Analyzed: 2016-04-29 Analyzed By: LQ
 Prep Batch: 109974 Sample Preparation: 2016-04-29 Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,6	7.44	s.u.	1	2.00

Sample: 418343 - BW-22 Brine Water-T

Laboratory: Lubbock
 Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
 QC Batch: 129873 Date Analyzed: 2016-04-29 Analyzed By: LQ
 Prep Batch: 109973 Sample Preparation: 2016-04-29 Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,6	20700	mg/L	1000	2.50

Method Blanks

Method Blank (1) QC Batch: 129873

QC Batch: 129873 Date Analyzed: 2016-04-29 Analyzed By: LQ
Prep Batch: 109973 QC Preparation: 2016-04-29 Prepared By: LQ

Parameter	Flag	Cert	MDL Result	Units	RL
Total Dissolved Solids		1,2,3,4,6	<25.0	mg/L	2.5

Method Blank (1) QC Batch: 129998

QC Batch: 129998 Date Analyzed: 2016-05-06 Analyzed By: RL
Prep Batch: 110129 QC Preparation: 2016-05-06 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1,2,3,4,6	<0.297	mg/L	2.5

Method Blank (1) QC Batch: 130128

QC Batch: 130128 Date Analyzed: 2016-05-17 Analyzed By: RR
Prep Batch: 110161 QC Preparation: 2016-05-11 Prepared By: PM

Parameter	Flag	Cert	MDL Result	Units	RL
Dissolved Sodium		2,3,4,6	<0.0197	mg/L	1

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Sodium		2,3,4,6	53.4	mg/L	1	52.5	<0.0197	102	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Dissolved Sodium		2,3,4,6	54.7	mg/L	1	52.5	<0.0197	104	85 - 115	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 418342

QC Batch: 129998 Date Analyzed: 2016-05-06 Analyzed By: RL
 Prep Batch: 110129 QC Preparation: 2016-05-06 Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,2,3,4,6	334	mg/L	10	250	79.4	102	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1,2,3,4,6	333	mg/L	10	250	79.4	101	80 - 120	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 418341

QC Batch: 130128 Date Analyzed: 2016-05-17 Analyzed By: RR
 Prep Batch: 110161 QC Preparation: 2016-05-11 Prepared By: PM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Sodium		2,3,4,6	91500	mg/L	1	525	91000	95	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Dissolved Sodium		2,3,4,6	91500	mg/L	1	525	91000	95	75 - 125	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (CCV-1)

QC Batch: 130128

Date Analyzed: 2016-05-17

Analyzed By: RR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Sodium		2,3,4,6	mg/L	26.0	27.0	104	90 - 110	2016-05-17

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	L-A-B	L2418	Lubbock
2	Kansas	Kansas E-10317	Lubbock
3	LELAP	LELAP-02003	Lubbock
4	NELAP	T104704219-16-12	Lubbock
5	NELAP	T104704392-14-8	Midland
6		2015-066	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less than ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.

F Description

Qsr Surrogate recovery outside of laboratory limits.

U The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

TraceAnalysis, Inc.
 6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424
 Tel (806) 794-1296 Fax (806) 794-1298
 1 (800) 378-1296
 email: lab@traceanalysis.com

Company Name: PRICE LLC Phone #: 505-892-6643
 Address: (Street, City, Zip) RIO RANCHO NM 87104 Fax #: 505-892-6643
312 ENCANTADO RIDGE COURT NE
 Contact Person: LESTER WAYNE PRICE JR E-mail: lwprice23@hotmail.com

Invoice to: WANDY CORPORATION
 (If different from above)
 Project #: BW4 & BW-22
 Project Location (including state): BUCKEYE NM & TATUM
 Project Name: WANDY BRINE/FRESH WELL
 Sampler Signature: LWP

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX				PRESERVATIVE METHOD				SAMPLING		
				WATER	SOIL	AIR	SLUDGE	HCl	HNO ₃	H ₂ SO ₄	NaOH	ICE	NONE	DATE
340	BW-04	1	1-Liter Leak	X						X			4/28/16	1:10 PM
341	BW-22	1	1-Liter Plastic	X						X			4/28/16	1:20 PM
342	BW-22	1	1-Liter	X						X			"	12:30
343	BW-22	1	1-Liter	X						X			"	12:20

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	INST	OBS	COR
LWP	PRICE LLC	4/28/16	3:50 PM	[Signature]	BTC	4/28/16	3:50	3	3	3
LWP	PRICE LLC	4/28/16	3:50 PM	[Signature]	JFA	4/29/16	9:15	3	3	3

ANALYSIS REQUEST
 (Circle or Specify Method No)

MTBE 8021 / 602 / 8260 / 624	
BTEX 8021 / 602 / 8260 / 624	
TPH 418.1 / TX1005 / TX1005 Ext(C35)	
TPH 8015 GRO / DRO / TVHC	
PAH 8270 / 625	
Total Metals Ag As Ba Cd Cr Pb Se Hg 6010/200.7	
TCLP Metals Ag As Ba Cd Cr Pb Se Hg	
TCLP Volatiles	
TCLP Semi Volatiles	
TCLP Pesticides	
RCI	
GC/MS Vol. 8260 / 624	
GC/MS Semi. Vol. 8270 / 625	
PCB's 8082 / 608	
Pesticides 8081 / 608	
BOD, TSS, pH	
Moisture Content	
Cl, F, SO ₄ , NO ₃ -N, NO ₂ -N, PO ₄ -P, Alkalinity	
Na, Ca, Mg, K, TDS, EC	
TDS, CL, PH, PH	X
TDS, CL, PH & MA (DISSOLVE)	X

REMARKS: COC # 1

LAB USE ONLY

Intact N

Headspace Y / N / NA

Log-in-Review

Dry Weight Basis Required

TRRP Report Required

Check if Special Reporting Limits Are Needed

Carrier # AS: 2343750

Summary Report

Lester Wayne Price Jr.
 Price LLC
 312 Encantado Ridge Ct. NE
 Rio Rancho, NM 87124

Report Date: May 17, 2016

Work Order: 16042902



Project Location: Buckeye NM & Tatum
 Project Name: Gandy Brine/Fresh Well
 Project Number: BW-4 & BW-22

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
418340	BW-4 Fresh Water-B	water	2016-04-28	13:10	2016-04-28
418341	BW-4 Brine Water-B	water	2016-04-28	13:20	2016-04-28
418342	BW-22 Fresh Water-T	water	2016-04-28	12:30	2016-04-28
418343	BW-22 Brine Water-T	water	2016-04-28	12:20	2016-04-28

Sample: 418340 - BW-4 Fresh Water-B

Param	Flag	Result	Units	RL
Chloride		250	mg/L	2.5
pH		7.76	s.u.	2
Total Dissolved Solids		678	mg/L	2.5

Sample: 418341 - BW-4 Brine Water-B

Param	Flag	Result	Units	RL
Chloride		149000	mg/L	2.5
Dissolved Sodium		91000	mg/L	1
pH		6.92	s.u.	2
Total Dissolved Solids		240000	mg/L	2.5

Sample: 418342 - BW-22 Fresh Water-T

continued . . .

sample 418342 continued ...

Param	Flag	Result	Units	RL
Param	Flag	Result	Units	RL
Chloride		79.4	mg/L	2.5
pH		7.85	s.u.	2
Total Dissolved Solids		670	mg/L	2.5

Sample: 418343 - BW-22 Brine Water-T

Param	Flag	Result	Units	RL
Chloride		11500	mg/L	2.5
Dissolved Sodium		5960	mg/L	1
pH		7.44	s.u.	2
Total Dissolved Solids		20700	mg/L	2.5



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

August 17, 2016

Wayne Price
Wasserhund Inc
PO Box 2140
Lovington, NM 88260
TEL: (505) 715-2809
FAX

RE: Brine Wells

OrderNo.: 1608238

Dear Wayne Price:

Hall Environmental Analysis Laboratory received 4 sample(s) on 8/2/2016 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 #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written in a cursive style.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Wasserhund Inc

Client Sample ID: Buckeye-Fresh

Project: Brine Wells

Collection Date: 7/30/2016 2:30:00 PM

Lab ID: 1608238-001

Matrix: AQUEOUS

Received Date: 8/2/2016 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: LGT
Specific Gravity	0.9968		0		1	8/8/2016 2:53:00 PM	R36304
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	240	10		mg/L	20	8/4/2016 9:39:15 PM	A36247
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	676	20.0	*	mg/L	1	8/9/2016 8:31:00 AM	26813
SM4500-H+B: PH							Analyst: JRR
pH	7.81	1.68	H	pH units	1	8/4/2016 5:40:31 PM	R36251

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	Page 1 of 8
	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	
	R RPD outside accepted recovery limits	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: Wasserhund Inc

Client Sample ID: Buckeye-Brine

Project: Brine Wells

Collection Date: 7/30/2016 2:40:00 PM

Lab ID: 1608238-002

Matrix: AQUEOUS

Received Date: 8/2/2016 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: LGT
Specific Gravity	1.208	0			1	8/8/2016 2:53:00 PM	R36304
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	190000	5000	*	mg/L	1E	8/5/2016 11:38:44 PM	R36295
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	353000	2000	*D	mg/L	1	8/9/2016 8:31:00 AM	26813
SM4500-H+B: PH							Analyst: JRR
pH	6.83	1.68	H	pH units	1	8/4/2016 5:44:48 PM	R36251
EPA METHOD 200.7: DISSOLVED METALS							Analyst: MED
Sodium	120000	5000		mg/L	5E	8/6/2016 1:34:14 PM	A36279

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
	R	RPD outside accepted recovery limits	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: Wasserhund Inc

Client Sample ID: Tatum-Fresh

Project: Brine Wells

Collection Date: 7/30/2016 3:30:00 PM

Lab ID: 1608238-003

Matrix: AQUEOUS

Received Date: 8/2/2016 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: LGT
Specific Gravity	0.9979		0		1	8/8/2016 2:53:00 PM	R36304
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	65	10		mg/L	20	8/4/2016 10:28:53 PM	A36247
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	657	20.0	*	mg/L	1	8/9/2016 8:31:00 AM	26813
SM4500-H+B: PH							Analyst: JRR
pH	7.98	1.68	H	pH units	1	8/4/2016 5:49:03 PM	R36251

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
	R	RPD outside accepted recovery limits	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: Wasserhund Inc

Client Sample ID: Tatum-Brine

Project: Brine Wells

Collection Date: 7/30/2016 3:40:00 PM

Lab ID: 1608238-004

Matrix: AQUEOUS

Received Date: 8/2/2016 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: LGT
Specific Gravity	1.025	0			1	8/8/2016 2:53:00 PM	R36304
EPA METHOD 300.0: ANIONS							Analyst: MRA
Chloride	19000	500	*	mg/L	1E	8/8/2016 8:52:15 PM	R36324
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	39200	2000	*D	mg/L	1	8/9/2016 8:31:00 AM	26813
SM4500-H+B: PH							Analyst: JRR
pH	6.92	1.68	H	pH units	1	8/4/2016 5:53:12 PM	R36251
EPA METHOD 200.7: DISSOLVED METALS							Analyst: MED
Sodium	11000	500		mg/L	500	8/6/2016 1:32:30 PM	A36279

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
	R RPD outside accepted recovery limits	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#: 1608238

17-Aug-16

Client: Wasserhund Inc

Project: Brine Wells

Sample ID MB-A	SampType: MBLK		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: PBW	Batch ID: A36279		RunNo: 36279							
Prep Date:	Analysis Date: 8/6/2016		SeqNo: 1123618		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0								

Sample ID LCS-A	SampType: LCS		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: LCSW	Batch ID: A36279		RunNo: 36279							
Prep Date:	Analysis Date: 8/6/2016		SeqNo: 1123619		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	49	1.0	50.00	0	98.8	85	115			

Sample ID LLCS-A	SampType: LCSLL		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: BatchQC	Batch ID: A36279		RunNo: 36279							
Prep Date:	Analysis Date: 8/6/2016		SeqNo: 1123620		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0	0.5000	0	110	50	150			

Sample ID 1608238-002BMS	SampType: MS		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: Buckeye-Brine	Batch ID: A36279		RunNo: 36279							
Prep Date:	Analysis Date: 8/6/2016		SeqNo: 1123666		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	360000	5000	250000	116100	98.2	70	130			

Sample ID 1608238-002BMSD	SampType: MSD		TestCode: EPA Method 200.7: Dissolved Metals							
Client ID: Buckeye-Brine	Batch ID: A36279		RunNo: 36279							
Prep Date:	Analysis Date: 8/6/2016		SeqNo: 1123667		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	370000	5000	250000	116100	100	70	130	1.37	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 |
| R RPD outside accepted recovery limits | 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#: 1608238

17-Aug-16

Client: Wasserhund Inc

Project: Brine Wells

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: A36247		RunNo: 36247							
Prep Date:	Analysis Date: 8/4/2016		SeqNo: 1122810		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: A36247		RunNo: 36247							
Prep Date:	Analysis Date: 8/4/2016		SeqNo: 1122811		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.6	0.50	5.000	0	92.4	90	110			

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R36295		RunNo: 36295							
Prep Date:	Analysis Date: 8/5/2016		SeqNo: 1124287		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: R36295		RunNo: 36295							
Prep Date:	Analysis Date: 8/5/2016		SeqNo: 1124288		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	97.7	90	110			

Sample ID MB	SampType: mblk		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R36324		RunNo: 36324							
Prep Date:	Analysis Date: 8/8/2016		SeqNo: 1125092		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: R36324		RunNo: 36324							
Prep Date:	Analysis Date: 8/8/2016		SeqNo: 1125093		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	94.9	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1608238

17-Aug-16

Client: Wasserhund Inc

Project: Brine Wells

Sample ID	1608238-003ADUP	SampType:	DUP	TestCode:	Specific Gravity					
Client ID:	Tatum-Fresh	Batch ID:	R36304	RunNo:	36304					
Prep Date:		Analysis Date:	8/8/2016	SeqNo:	1124614	Units:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	0.9963	0						0.160	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1608238

17-Aug-16

Client: Wasserhund Inc

Project: Brine Wells

Sample ID	MB-26813	SampType:	MBLK	TestCode:	SM2540C MOD: Total Dissolved Solids					
Client ID:	PBW	Batch ID:	26813	RunNo:	36311					
Prep Date:	8/5/2016	Analysis Date:	8/9/2016	SeqNo:	1124795	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-26813	SampType:	LCS	TestCode:	SM2540C MOD: Total Dissolved Solids					
Client ID:	LCSW	Batch ID:	26813	RunNo:	36311					
Prep Date:	8/5/2016	Analysis Date:	8/9/2016	SeqNo:	1124796	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	997	20.0	1000	0	99.7	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- 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

Sample Log-In Check List

Client Name: **WASSERHUND INC**

Work Order Number: **1608238**

RcptNo: **1**

Received by/date: AS 08/02/16

Logged By: **Ashley Gallegos** 8/2/2016 10:00:00 AM AS

Completed By: **Ashley Gallegos** 8/4/2016 11:13:03 AM AS

Reviewed By: [Signature] 08/04/16

Chain of Custody

- 1. Custody seals intact on sample bottles? Yes No Not Present
- 2. Is Chain of Custody complete? Yes No Not Present
- 3. How was the sample delivered? Courier

Log In

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

of preserved bottles checked for pH: 2
 (<2 or >12 unless noted)
 Adjusted? NO Yes

Checked by: AS

Special Handling (if applicable)

- 16. 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: _____

17. Additional remarks: For metals analysis: added 0.4 mL HNO₃ to -002B, -004B for acceptable pH.

18. Cooler Information

Cooler No	Temp °C	Conclition	Seal Intact	Seal No	Seal Date	Signed By
1	2.2	Good	Yes			

8/4@1245
AS

Chain-of-Custody Record

Client: WASSER HUND INC.
 Mailing Address: P.O. BOX 2140
DUNSTON, NM 88260
 Phone #: 505-715-2809

Project Name: BRINE WELLS
 Project #: 2ND QTR SAMPLING 2016
 Project Manager: WAYNE PRICE - PRICE LLC

Sampler: 20 PRICE
 On Ice: Yes No
 Sample Temperature: 12.2°C

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
8/16	2:30 pm	LIQ	BUCKEYE - FRESH	1-L	ICE	110088238
"	2:40 pm	"	" - BRINE	1-L	"	-001
"	3:30 pm	"	TATUM - FRESH	1-L	"	-003
"	3:40 pm	"	" - BRINE	1-L	"	-004

Relinquished by: WAYNE PRICE Date: 8/1/16 Time: 11:40 AM
 Relinquished by: PRICE Date: 8/1/16 Time: 16:30



HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

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 PCBs	8260B (VOA)	8270 (Semi-VOA)	Air Bubbles (Y or N)
										X CL, 5G, PH, TOS	
										X CL, 5G, PH, TOS + DISOLVE	
										X	
										X	

Remarks: *SG-Specific Gravity Per W.P.
AG

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 29, 2016

Wayne Price
Wasserhund Inc
PO Box 2140
Lovington, NM 88260
TEL: (505) 715-2809
FAX

RE: BW-04 Buckeye BW-22 Tatum

OrderNo.: 1610E77

Dear Wayne Price:

Hall Environmental Analysis Laboratory received 4 sample(s) on 10/28/2016 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 #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written in a cursive style.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Wasserhund Inc

Client Sample ID: Buckeye-Fresh

Project: BW-04 Buckeye BW-22 Tatum

Collection Date: 10/27/2016 2:50:00 PM

Lab ID: 1610E77-001

Matrix: AQUEOUS

Received Date: 10/28/2016 3:04:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: LGT
Specific Gravity	0.9933	0			1	11/2/2016 2:24:00 PM	R38398
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	200	50		mg/L	100	10/31/2016 6:58:15 PM	R38358
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	662	20.0	*	mg/L	1	11/7/2016 10:42:00 AM	28453
SM4500-H+B: PH							Analyst: JRR
pH	8.11	1.68	H	pH units	1	11/2/2016 5:28:48 PM	R38415

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	Page 1 of 8
	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	
	R RPD outside accepted recovery limits	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: Wasserhund Inc

Client Sample ID: Buckeye-Brine

Project: BW-04 Buckeye BW-22 Tatum

Collection Date: 10/27/2016 3:00:00 PM

Lab ID: 1610E77-002

Matrix: AQUEOUS

Received Date: 10/28/2016 3:04:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: LGT
Specific Gravity	1.171	0			1	11/2/2016 2:24:00 PM	R38398
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	120000	10000	*	mg/L	2E	11/3/2016 3:54:43 AM	A38417
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	276000	2000	*D	mg/L	1	11/7/2016 10:42:00 AM	28453
SM4500-H+B: PH							Analyst: JRR
pH	7.05	1.68	H	pH units	1	11/2/2016 5:32:50 PM	R38415
EPA METHOD 200.7: METALS							Analyst: MED
Sodium	97000	2000		mg/L	2E	11/8/2016 1:43:33 PM	B38512

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
	R	RPD outside accepted recovery limits	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: Wasserhund Inc

Client Sample ID: Tatum-Fresh

Project: BW-04 Buckeye BW-22 Tatum

Collection Date: 10/27/2016 4:00:00 PM

Lab ID: 1610E77-003

Matrix: AQUEOUS

Received Date: 10/28/2016 3:04:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: LGT
Specific Gravity	0.9934	0			1	11/2/2016 2:24:00 PM	R38398
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	150	5.0		mg/L	10	10/31/2016 8:00:19 PM	R38358
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	784	20.0	*	mg/L	1	11/7/2016 10:42:00 AM	28453
SM4500-H+B: PH							Analyst: JRR
pH	8.06	1.68	H	pH units	1	11/2/2016 5:37:16 PM	R38415

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
	R RPD outside accepted recovery limits	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.

Analytical Report

Lab Order 1610E77

Date Reported: 11/29/2016

CLIENT: Wasserhund Inc

Client Sample ID: Tatum-Brine

Project: BW-04 Buckeye BW-22 Tatum

Collection Date: 10/27/2016 4:10:00 PM

Lab ID: 1610E77-004

Matrix: AQUEOUS

Received Date: 10/28/2016 3:04:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
SPECIFIC GRAVITY							Analyst: LGT
Specific Gravity	1.026	0			1	11/2/2016 2:24:00 PM	R38398
EPA METHOD 300.0: ANIONS							Analyst: LGT
Chloride	17000	1000	*	mg/L	2E	11/3/2016 4:07:08 AM	A38417
SM2540C MOD: TOTAL DISSOLVED SOLIDS							Analyst: KS
Total Dissolved Solids	39300	2000	*D	mg/L	1	11/7/2016 10:42:00 AM	28453
SM4500-H+B: PH							Analyst: JRR
pH	7.45	1.68	H	pH units	1	11/2/2016 5:41:30 PM	R38415
EPA METHOD 200.7: METALS							Analyst: MED
Sodium	12000	200		mg/L	200	11/8/2016 1:45:23 PM	B38512

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
	R	RPD outside accepted recovery limits	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#: 1610E77

29-Nov-16

Client: Wasserhund Inc
Project: BW-04 Buckeye BW-22 Tatum

Sample ID MB-B	SampType: MBLK		TestCode: EPA Method 200.7: Metals							
Client ID: PBW	Batch ID: B38512		RunNo: 38512							
Prep Date:	Analysis Date: 11/8/2016		SeqNo: 1203671		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0								

Sample ID LCS-B	SampType: LCS		TestCode: EPA Method 200.7: Metals							
Client ID: LCSW	Batch ID: B38512		RunNo: 38512							
Prep Date:	Analysis Date: 11/8/2016		SeqNo: 1203675		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	50	1.0	50.00	0	101	85	115			

Sample ID LLLCS-B	SampType: LCSLL		TestCode: EPA Method 200.7: Metals							
Client ID: BatchQC	Batch ID: B38512		RunNo: 38512							
Prep Date:	Analysis Date: 11/8/2016		SeqNo: 1203676		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0	0.5000	0	95.0	50	150			

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 |
| R RPD outside accepted recovery limits | 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#: 1610E77

29-Nov-16

Client: Wasserhund Inc
Project: BW-04 Buckeye BW-22 Tatum

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: R38358		RunNo: 38358							
Prep Date:	Analysis Date: 10/31/2016		SeqNo: 1197702		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: R38358		RunNo: 38358							
Prep Date:	Analysis Date: 10/31/2016		SeqNo: 1197703		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	101	90	110			

Sample ID MB	SampType: MBLK		TestCode: EPA Method 300.0: Anions							
Client ID: PBW	Batch ID: A38417		RunNo: 38417							
Prep Date:	Analysis Date: 11/3/2016		SeqNo: 1199971		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: A38417		RunNo: 38417							
Prep Date:	Analysis Date: 11/3/2016		SeqNo: 1199972		Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.6	0.50	5.000	0	91.1	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 |
| R RPD outside accepted recovery limits | 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#: 1610E77

29-Nov-16

Client: Wasserhund Inc
Project: BW-04 Buckeye BW-22 Tatum

Sample ID	1610E77-001ADUP	SampType:	DUP	TestCode:	Specific Gravity					
Client ID:	Buckeye-Fresh	Batch ID:	R38398	RunNo:	38398					
Prep Date:		Analysis Date:	11/2/2016	SeqNo:	1199193	Units:				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	0.9922	0						0.111	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 |
| R RPD outside accepted recovery limits | 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#: 1610E77

29-Nov-16

Client: Wasserhund Inc
Project: BW-04 Buckeye BW-22 Tatum

Sample ID MB-28453	SampType: MBLK		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: PBW	Batch ID: 28453		RunNo: 38482							
Prep Date: 11/3/2016	Analysis Date: 11/7/2016		SeqNo: 1201925		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-28453	SampType: LCS		TestCode: SM2540C MOD: Total Dissolved Solids							
Client ID: LCSW	Batch ID: 28453		RunNo: 38482							
Prep Date: 11/3/2016	Analysis Date: 11/7/2016		SeqNo: 1201926		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 |
| R RPD outside accepted recovery limits | RL Reporting Detection Limit |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

Sample Log-In Check List

Client Name: WASSERHUND INC

Work Order Number: 1610E77

RcptNo: 1

Received by/date: AG 10/28/16

Logged By: **Ashley Gallegos** 10/28/2016 3:04:00 PM AG

Completed By: **Ashley Gallegos** 10/31/2016 11:48:33 AM AG

Reviewed By: MJ 10/31/16

Chain of Custody

- 1. Custody seals intact on sample bottles? Yes No Not Present
- 2. Is Chain of Custody complete? Yes No Not Present
- 3. How was the sample delivered? Client

Log In

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

of preserved bottles checked for pH: 2
 (2 or >12 unless noted)
 Adjusted? yes
 Checked by: AS

Special Handling (if applicable)

- 16. 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: _____

17. Additional remarks: For metals analysis: added 1ml HNO3 to -002B, -004B for acceptable pH.

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.3	Good	Not Present			

10/31 @ 1330
AS

Appendix “D”

- C-103
- 2016 MIT Chart
- Recorder Calibration
- Brine Well Maximum Test Pressure Calculator

Submit 1 Copy To Appropriate District Office
 District I - (575) 393-6161
 1625 N. French Dr., Hobbs, NM 88240
 District II - (575) 748-1283
 811 S. First St., Artesia, NM 88210
 District III - (505) 334-6178
 1000 Rio Brazos Rd., Aztec, NM 87410
 District IV - (505) 476-3460
 1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
 Energy, Minerals and Natural Resources

Form C-103
 Revised July 18, 2013

OIL CONSERVATION DIVISION
 1220 South St. Francis Dr.
 Santa Fe, NM 87505

WELL API NO. 30-025-26883
5. Indicate Type of Lease STATE <input checked="" type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No. 25-26883
7. Lease Name or Unit Agreement Name Eidson Brine Station, BW-004
8. Well Number 1
9. OGRID Number 130851
10. Pool name or Wildcat
11. Elevation (Show whether DR, RKB, RT, GR, etc.)

SUNDRY NOTICES AND REPORTS ON WELLS
 (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well: Oil Well Gas Well Other Brine Well

2. Name of Operator
Wasserhund, Inc.

3. Address of Operator
P.O. Box 2140, Lovington, NM 88260

4. Well Location
 Unit Letter M : 567.4 feet from the South line and 161.7 feet from the West line
 Section 31 Township 16S Range 35E NMPM County Lea

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>	P AND A <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	MULTIPLE COMPL. <input type="checkbox"/>	CASING/CEMENT JOB <input type="checkbox"/>	
DOWNHOLE COMMINGLE <input type="checkbox"/>			
CLOSED-LOOP SYSTEM <input type="checkbox"/>			
OTHER: Integrity Test <input type="checkbox"/>		OTHER: <input type="checkbox"/>	

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

See Attached Chart

2015 DEC -2 A 9:21
 PRODUCTION

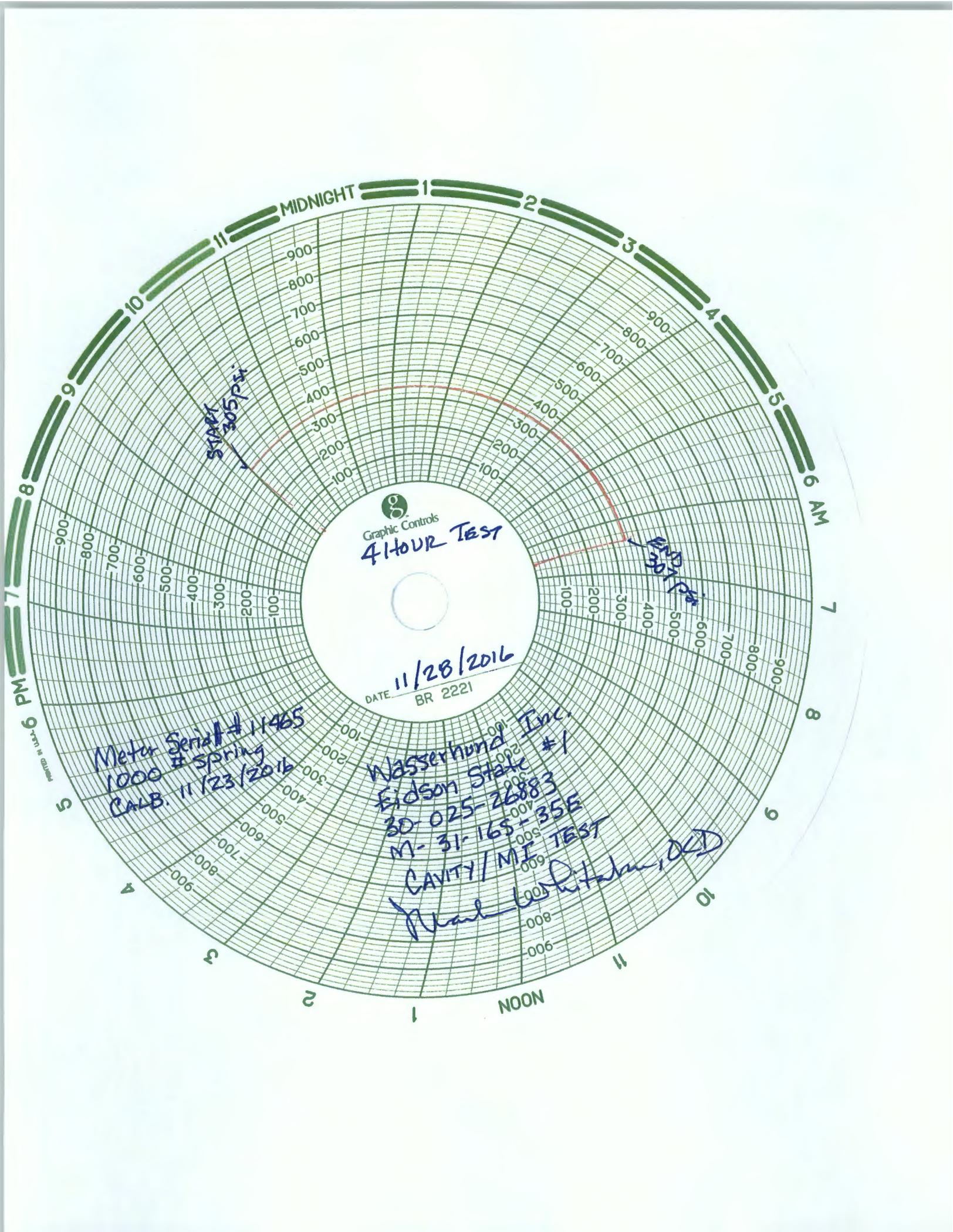
Spud Date:

Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Jon Gandy TITLE Secretary/Treasurer DATE 11/29/16
 Type or print name Jon Gandy E-mail address: jonrgandy@aol.com PHONE: 575-396-0522
For State Use Only

APPROVED BY: Carl J. Cheney TITLE _____ DATE 12/6/16
 Conditions of Approval (if any): _____



MIDNIGHT

6 AM

Graphic Controls
4 HOUR TEST

DATE 11/28/2016
BR 2221

Meter Serial # 11465
1000 # Spring
CALB. 11/23/2016

Wasserhund Inc.
Edson State #1
30-025-26883
M-31-165-35E
CAVITY/MT TEST

Handwritten Signature

START
305 psi

END
307 psi

6 PM

NOON

7

8

9

10

11

12

1

2

3

4

5

6

7

8

9

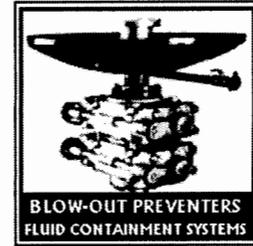
10

11

12

D & L Meters & Instrument Service, Inc.

Lovington, NM 88260
P.O. Box 1621
Office: (575) 396-3715
Fax: (575) 396-5812



Date: Wednesday, November 23, 2016

Invoice # _____

Certification of Pressure Recorder Test:

Company: Gandy
Unit: Gandy #4
Model: 8" PMC
Pressure Rating: 1,000#
Serial #: 11218

This Pressure Recorder was tested at midrange for accuracy and verified within +5% and -5% for 1,000# pressure element.



Issac Luna, Technician

Brine Well Maximum Test Pressure Calculator

Provides an approximate estimate for Maximum Test pressures allowed to prevent possible fracturing of formation.
 Inputs are for casing shoe depth, bottom hole depth, and frac gradient.
 Answers are given when pressure testing using Fresh water or Brine water.
 Major assumptions: Frac Gradient of .65 is used, casing is filled with brine or fresh water

BW-04 Wasserhund Buckeye

Note: When brine well has been operating in normal flow, then assume that casing is filled with Brine Water.

Input Depth to Casing Shoe 2100 ft
 Input Depth to Bottom Hole 2460 ft
 Input Frac/Gradient 0.65 psi/ft

Inputs are in Green

		Depth ft	Gradient-psi/ft	psig
Casing Shoe	FW	2100	0.433	909
Casing Shoe	BW	2100	0.5	1050
Casing Shoe	Frac	2100	0.65	1365
Bottom Hole	FW	2460	0.433	1065
Bottom Hole	BW	2460	0.5	1230
Bottom Hole	Frac	2460	0.65	1599

FW=Fresh Water
 BW=Brine Water

Using BW

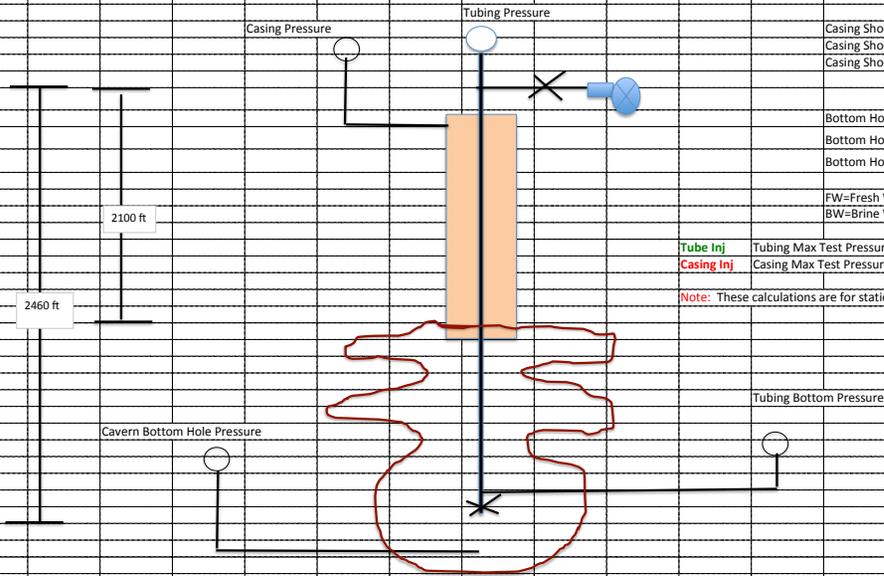
Using FW

Tube Inj Tubing Max Test Pressure Max Surface Pressure = Depth to Bottom * (Frac Gradient -Water Head Gradient)
Casing Inj Casing Max Test Pressure Max Surface Pressure = Depth to Casing Shoe * (Frac Gradient -Water Head Gradient)

369 psig
315 psig
534 psig
456 psig

Note: These calculations are for static test only and does not take into account dynamic pressure drops in Tubing or Casing.

Do Not Exceed Tubing or Casing Surface Pressures while Pumping or Testing



Appendix “E”

- AOR Well Status List
- AOR Plot Plan

2016 BW-04 AOR Review- Well Status List

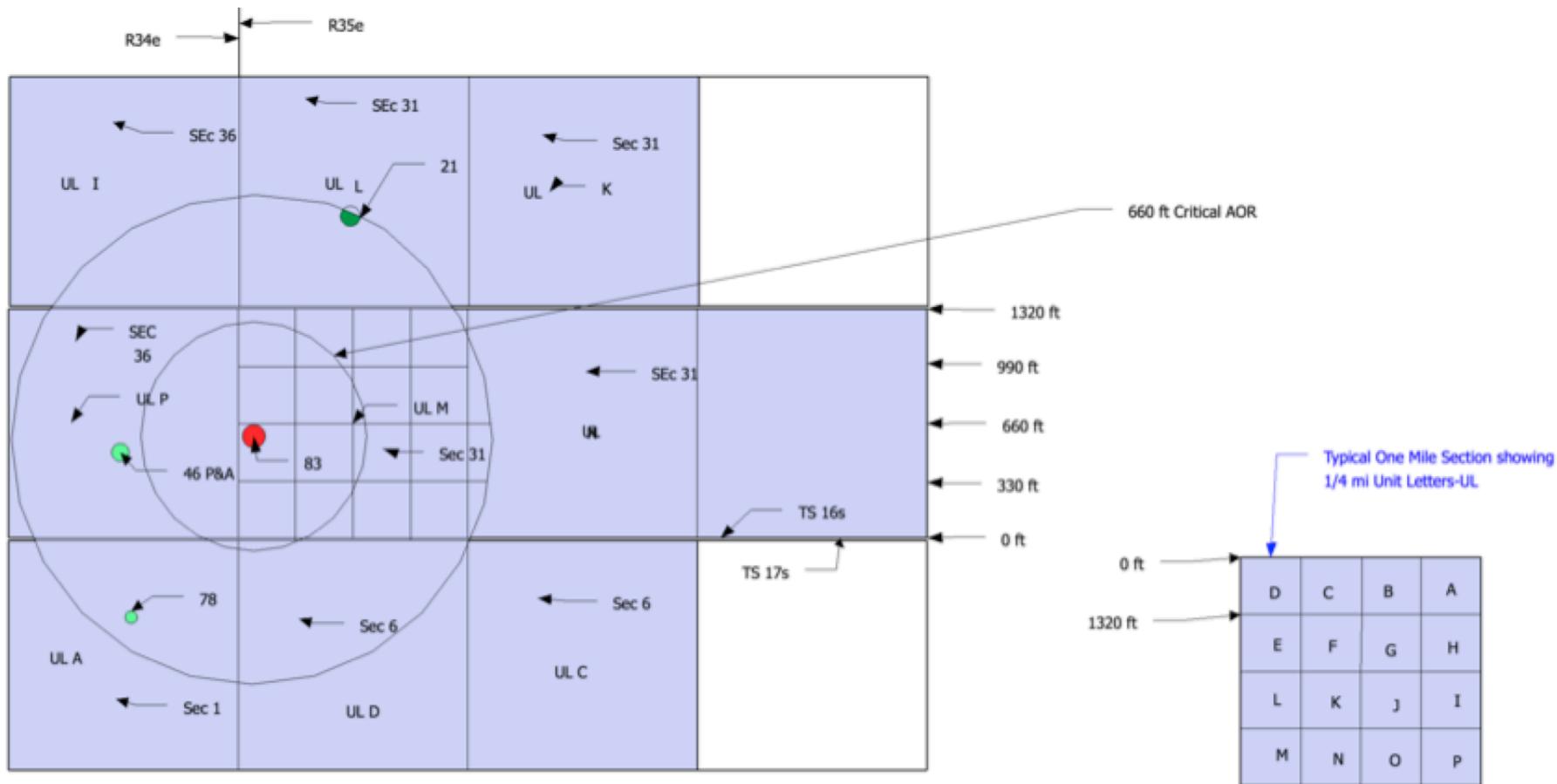
up-dated Feb 26, 2017

API#	Well Name	UL	Section	Ts	Rg	Footage	Within 1/4 mi AOR * within 660 ft or Critical AOR	Casing Program Checked	Cased/Cemented across salt section	Corrective Action Required	
0	<u>30-025-26883</u>	<u>Wasserhund Eidson #1</u>	<u>M</u>	<u>31</u>	<u>16s</u>	<u>35e</u>	<u>567 FSL & 162 FWL</u>	NA	NA	NA	
1	30-025-25146	LimeRock-N Vacumm ABO #1	P	36	16s	34e	460 FSL & 660 FEL	yes*	yes	yes	NO-P&A
1	30-025-35678	LimeRock St.VII #7	A	1	17s	34e	660 FNL & 660 FEL	yes*	yes	no	Re-Completion OCD Approved No Action Required
1	30-025-31621	BTA Oil Producers	L	31	16s	35e	1980 FSL & 660 FWL	Yes*	yes	yes	no

2 2

3 Total # of wells in adjacent quarter-sections
 3 Total # of wells in 1/4 mile AOR
 3 Total # of wells that are within 660 ft or have become within the Critical AOR of the outside radius of the brine well and casing program will be checked Annually.

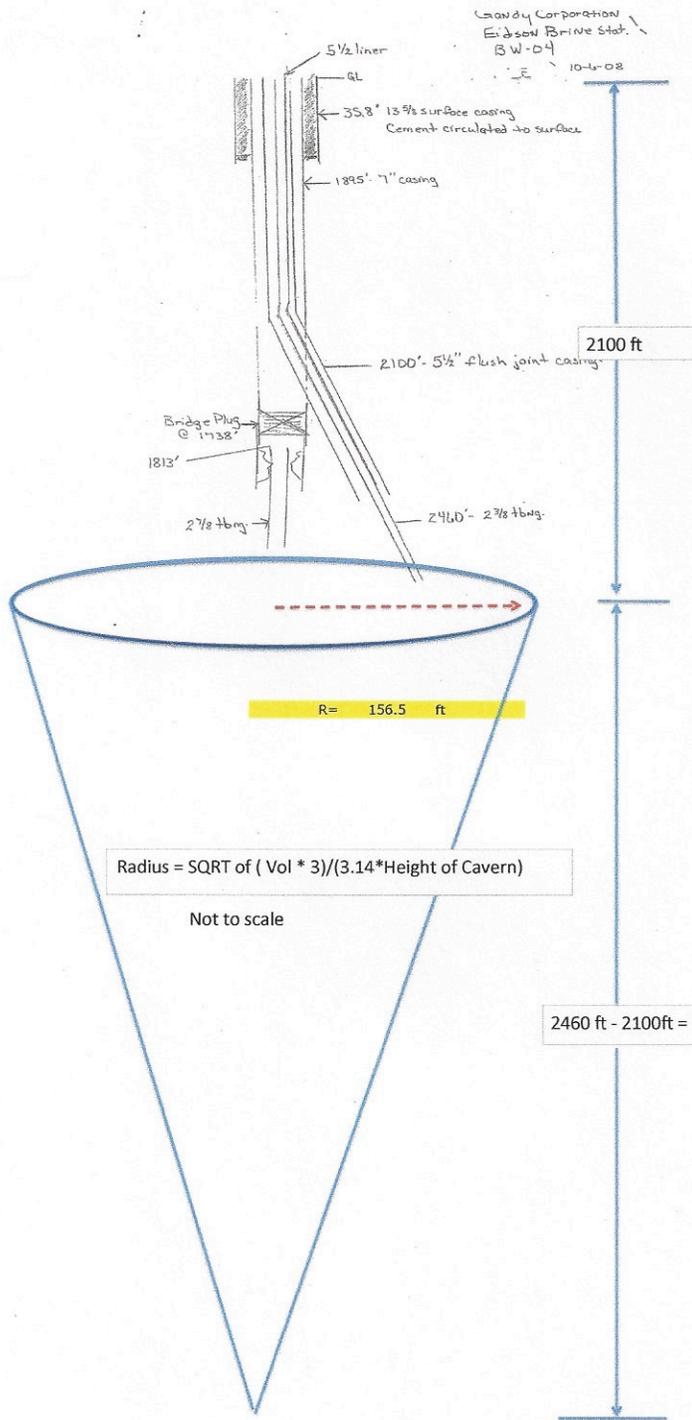
Notes:
 * Means the well is within 660 ft or Critical AOR (1500-1600 ft) of the outside radius of the brine well and casing program will be checked annually.



Brine Well Area of Review (AOR) UL Plot Plan		Well API#:	30-025-26883	Note: Wells are identified by the last 2 digits of the well's API#. API #'s are listed in the well status list.
Operator Name: Wasserhund INC		Permit #	BW-04	
AOR Year:	2016	Location:	UL M-Sec 31-Ts16s-R35e	

Appendix “F”

- Wellbore Sketch, Brine Cavity Calculations with new 2016 Radius and D/H calculations.



2016 Calculations

$$r = \sqrt[3]{\frac{V * 3}{\pi * D}}$$

V	Volume	=	9,227,911	bbls
D	Depth	=	360	ft
H	Height	=	2100	ft
Kf	ft ³ salt/bbl	156.5		1 est

r	=	156.5	ft
Diameter	=	312.99	ft

D/H =	0.149
-------	-------

Appendix “G”

BW-04 Wasserhund Inc. Closure Cost Estimate.

Appendix “G”

BW-04 Wasserhund Inc. Closure Cost Estimate.

2016 Annual Report
BW-04 Wasserhund Inc. Closure Cost

		CPI	
Pulling Unit Rig	\$25,000	1.03	\$25,750
Halliburton Cement Job	\$8,000.00	1.03	\$8,240
Post Subsidence Monitoring 5 years	\$15,000.00	1.03	\$15,450
Tank Removal, Pad Clean-Up	\$30,000.00	1.03	\$30,900
Consulting fees	\$10,000.00	1.03	\$10,300
Total Estimate	\$88,000	1.03	\$90,640

Wasserhund Inc.
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575-396-0522
FAX 575-396-0797
Lovington, New Mexico 88260

ANNUAL CLASS III WELL REPORT FOR 2014

Wasserhund Inc.

Buckeye Brine Station

OCD Permit BW-04

Expiration Date: November 08, 2018

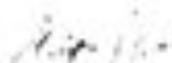
API No. 30-025-26883 Eidson #1

Unit Letter M-Section 31-Ts 16s – R35e

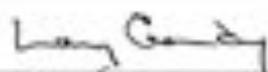
May 30, 2015

Submitted By: Price LLC on behalf of Wasserhund Inc Principals Mr. Larry and Jon Gandy.

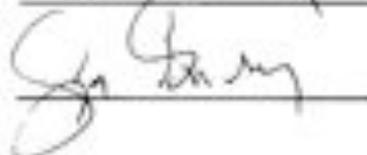
Wayne Price-LLC



Larry Gandy



Jon Gandy



Wasserhund Inc.
P.O. Box 2140
575-396-0522
FAX 575-396-0797
Lovington, New Mexico 88260

ANNUAL CLASS III WELL REPORT FOR 2014

Wasserhund Inc.

Buckeye Brine Station

OCD Permit BW-04

Expiration Date: November 08, 2018

API No. 30-025-26883 Eidson #1

Unit Letter M-Section 31-Ts 16s – R35e

May 30, 2015

Submitted By: Price LLC on behalf of Wasserhund Inc Principals Mr. Larry and Jon Gandy.



Wayne Price-LLC _____

Larry Gandy _____

Jon Gandy _____

Bullet Point 2- Summary of Operations:

(Permit Condition 2.J.2 Annual Report: "Summary of Class III well operations for the year including a description and reason for any remedial or major work on the well with a copy of C-103.") Permit Expires November 08, 2018.

During the 2014 year there was no major remedial work on the brine well. General housekeeping was routinely performed and on-site training and inspections were conducted for awareness of the BW-04 permit conditions. *(A copy of the most recent OCD approved Discharge Plan permit BW-04 and aerial photo is included for reference in Appendix "A").*

In 2013, Wasserhund Inc. installed an automated brine dispensing system, which included remote automated billing and tracking. The equipment was supplied by Flowpoint systems and Price LLC provided start-up consulting services. ***(Appendix "A" shows system filling station photos.)***

Inspections revealed that the loading area concrete sump was not tested in 2014 as planned. A third party consultant will schedule and perform the hydrostatic test and the results reported by June 01, 2015, next annual report.

The OCD held a Brine Well Operator's meeting, in Hobbs on September 05, 2012 to discuss permit changes. The most notable change by OCD was the removing of the annual pressure test requirement, and went to a 5-year requirement allowing the "Open-to-Formation" test, and a successful test was performed in September of 2013 (Copy attached in Appendix "D"). The next scheduled 5-year test will be due in 2018.

The brine well was drilled in 1980 and has been in operation for approximately 34 years and is sited on State Highway 08, approximately 12 miles southwest of Lovington, NM. The well is producing out of the Salado "Salt Formation" at a depth of approximately 1900-2460 feet below surface.

The brine well has been producing for a number of years and may possibly be considered approaching an "end of life" scenario due to its age. This scenario is not due to a safety aspect, i.e. collapse, since the well has produced only about one-half of normal volume compared to similar wells of age. Bullet point 10 (Brine Cavity/Subsidence Information) below discusses the safety aspects of this well in more detail.

As with most brine wells of this age, repeated required annual testing which flexes the cavern support, thus causing flexure stress cracking and the required reverse flow issue, has caused these older wells to have pre-mature down-hole problems, such as "sloughing" of the salt-anhydrite layers damaging the tubing and making re-entry virtually impossible and extremely expensive. This well had to be whip-stocked in 2008 in order to reenter after a severe down-hole problem.

A Pro-active well “Area of Review” has been conducted and will continue to ensure the safety of the well system, including cavern subsidence monitoring as required or directed by OCD. Currently, this well does not have subsidence devices installed.

A yearly cavity size calculation and evaluation of the last sonar test has been conducted to determine cavern stability and is discussed further in Bullet Point 10 below.

While this is an older well, it still has not reached its productive end of life and is deemed safe and is an extremely valuable asset for the oil and gas industry.

Bullet Point 3- Production Volumes:

(Permit condition 2.J.3 “Monthly fluid injection and brine production volume, including the cumulative total carried over each year”

Wasserhund Inc. installed a new sales metering system in 2014 and installed new flow meters to monitor both water injected and brine produced.

Monthly, Yearly and Lifetime Injection and Production Volumes:

The monthly, yearly and lifetime fresh water injection and brine production volumes are attached herein for review. The total 2014 brine production volume was 602,196 bbls and the lifetime production volume is 8,884,895 bbls.

Enclosed in **Appendix “B”** is the injection and production and a comparison chart of injected water to produced water with comments.

Bullet Point 4- “Injection Pressure Data.”

(Permit condition 2.J.4 “Injection Pressure Data”

Maximum and Average Injection Pressure:

The maximum operating injection pressure is approximately 340 psig, which is approximately 35 pounds below the recommended maximum surface pressure of 380 psig, utilizing a .70 psi/ft brine well gradient, measured from the top to the casing shoe.

The average injection pressure as noted by Wasserhund Inc.’s personnel is approximately 280 psig. This reading is taken from a pressure gauge mounted on the pump outlet.

Bullet Point 5- Chemical Analysis:

(Permit condition 2.J.5 “A copy of the quarterly chemical analysis shall be included with data summary and all QA/QC information.”)

Please find attached in **Appendix “C”** the latest chemical analysis and chain-of-custody of the brine and fresh water injection water samples collected April 14, 2014 and analyzed by Trace Analysis in Lubbock, Texas. The sampling process and laboratory used common approved EPA methods to collect, analyze and reporting.

The injection water was collected from the fresh water tank load line that is connected directly to the fresh water storage tanks. The fresh water is supplied by a fresh-water well located just west of the site.

The brine water was collected from the brine water tank load line that is connected directly to the brine water storage tanks. This sample point is representative of the brine water at the station.

The analysis revealed that the brine water is predominately sodium chloride with a high density of 1.20 specific gravity. This analysis is very representative of Salado “Salt” formation waters found in the area. During the year, it appeared the weight of the brine ranged from 1.2 SG down to 1.12 SG, and averaged 1.17 SG for the year equating to 9.75 lbs/gal, which is normally acceptable to Wasserhund customers. Wasserhund is in the process of double-checking the reason for the lighter weight product noticed at the end of the year.

Bullet Point 6- Mechanical Integrity:

(Permit condition 2.J.6 “Copy of any mechanical integrity test chart, including the type of test, i.e., duration, gauge pressure, etc.”)

A Mechanical Integrity Test (MIT) was successfully ran and passed on September 09, 2013. The next scheduled MIT will occur in 2018 as approved by OCD.

Please find in **Appendix “D”** a copy of the test chart and meter calibration record.

Bullet Point 7- Deviations from Normal Production Methods:

(Permit condition 2.J.7 “Brief explanation describing deviations from normal operations.”)

In 2008 two OCD permitted brine wells collapsed. As a result of those incidents, the OCD issued a temporary moratorium on new brine well permits. During the moratorium OCD facilitated a work group to determine a proper path forward for current and new brine well operations.

As a result of those proceedings, OCD issued instructions to operators to change OCD's previous requirement of injecting fresh water down the annuals and producing brine up the tubing (i.e reverse-flow); to injecting fresh water down the tubing and producing brine up the annuals, (i.e. conventional-flow).

Wasserhund Inc. has been successful in changing the flow pattern to conventional flow, and is making quality 10# brine, with occasional reverse flow for maintenance.

Bullet Point 8- Leak and Spill Reports:

(Permit condition 2.J.8 "Results of any leaks and spill reports;")

There were no reportable leaks and spills in 2014.

The loading areas are concrete with an integral concrete sump with spill containers under the hose connections, which are designed to catch de-minimis drips from hose connections. Drivers routinely suck out the spill containers, for re-cycling.

The entire facility is bermed to prevent run-on or run-off and all reportable or non-reportable spills are cleaned up pursuant to OCD rules and guidance.

Bullet Point 9- Area of Review Update Summary:

(Permit condition 2.J.9 "An Area of Review (AOR) update summary;")

An extensive AOR review was conducted for the Eidson #1 brine well, OCD permit # BW-04, located in UL M of Section 31-Ts16S-R35e. Wasserhund Inc. used OCD records and actual field verification (see **Appendix "E"**) to confirm wells in the AOR.

Using OCD on-line files, a well status list and AOR plot plan was constructed (see **Appendix "E"**) listing all wells within adjacent quarter sections of the BW-04 location. The list shows API#, Operator well name, UL, Section, Township and Range, footages, Wells within 660 ft (i.e. critical zone) and ¼ mile, casing program status, casing/cementing status, and corrective action required status.

This method was formulated to provide a baseline for future AOR studies. Since brine wells are limited in size, a critical AOR of 660 feet was initially established and all wells within that radius was researched in detail.

Using the current estimated diameter of the brine well @ 308 feet (R = 154 ft) up-dated for 2014, a 10:1 safety factor is applied that equates to about 1540 ft. As the brine well grows, this newly calculated critical AOR will be expanded and new wells will be added and all existing wells restudied.

The rationale behind this approach is the fact that brine wells are non-static in terms of size and configuration, and the fact that the brine well operator has only indirect control on wells drilled in close proximity.

Initially focusing on the current wells in the ¼ mile AOR, and assuming the status of these wells remain the same, may be a mistake. Therefore, a more dynamic approach is being undertaken, and each well in the critical Area of Review (AOR) will be looked at on an annual basis, or whenever any planned activity or new wells are noticed in the AOR.

In the 2014 review, there were no wells added to the list. **Appendix "E"** contains the check-off list showing the OCD wells in all adjacent quarter sections surrounding the BW-04 brine well.

There currently are three wells located within the critical 1540 ft, and ¼ miles radius of review. The critical zone wells were investigated by checking the OCD on-line well records.

The three wells located in the new critical zone, i.e. within 1540 feet, were reinvestigated by checking the OCD on-line well records. The last recorded file records for the three wells located in the critical AOR are identified as API# 30-025-25146, 30-025-35678 and 30-025-31621 and the following provides the most recent results found in the OCD public records.

The Findings are as follows:

API # 30-025-25146: In 2010, a C-103 was submitted to the OCD to P&A the well by setting plugs at the top, top of salt, bottom of salt, and place a cement plug in tubing at 5700 feet. This work was completed and C-103 filed with the OCD District I office in Hobbs and subsequently approved.

This well was properly plugged and abandoned in September of 2012 and approved by OCD.

Conclusions: The OCD records show that a subsequent P&A report was filed and approved by OCD.

Corrective Actions: Well has been P&A.

API # 30-025-35678: The Chesapeake St. VII #7, (Now Chevron USA) according to OCD records, is located 660 FNL & 660 FEL of UL A Section 1-Ts17s-R34e. It is shown to be located approximately 1600 ft to the SW of the BW-04 well.

In November of 2013, OCD sent Chevron USA Inc. a Letter of Violation and Shut-In Directive due to an observation of a Bradenhead issue, and required corrective actions and a Mechanical Integrity Test. In the 2014 year another Bradenhead test was conducted and witnessed by OCD.

Conclusions: This is a Gas producing well, but records indicate it did not produce during the 2014 year and possible OCD evaluation is still on-going.

Corrective Actions and Recommendation: This well appears to be in a temporary status for gas production and no issues have been experienced with the Wasserhund Brine Well BW-04.

API # 30-025-31621: The BTA Oil Producers Vacuum 9205 JV-P Com was drilled and completed in 1992 as a gas well. The Casing strings are as follows: 13-3/8" surface casing set at 423 feet cemented with 480 sacks, circulated to the surface. 8 5/8" Intermediate casing set at 4795 cemented with 2500 sacks, circulated to the surface.

A 5-1/2" production string was set at 12,900 ft and cemented with 2100 sacks, circulated to the surface.

Conclusions: This well is properly cemented from top to bottom, and the salt section is adequately covered.

Corrective Actions: No Corrective actions required.

Bullet Point 10- Subsidence/Cavern Volumes/Geometric Measurements

(Permit condition 2.J.10. "A summary with interpretations of MIT's, surface subsidence surveys, cavern volume and geometric measurements with conclusion(s) and recommendation(s);")

Since the use of sonar tests in other wells has not provided adequate information, the continued use of sonar may be in question until the validity of using sonar test is resolved.

The last cavern survey (2008) for this well did not provide any useful information pertaining to the size and shape of this particular cavern. An alternate method has been discussed with Jim Griswold-OCD and it was mutually decided that an estimated worst-case diameter is to be determined in order to provide maximum protection and ensure the permit conditions are being met.

The Solution Mining Research Institute (SMRI), other state agencies, OCD work-group, along with various studies conducted during the permitting of the WIPP site, has concluded that failures, such as "catastrophic collapses", have a higher probability when the roof diameter of the cavern exceeds a certain value compared to the actual depth of the cavern.

This number is typically called D/H where "D" is the diameter of the cavity and "H" is the depth from surface to the casing shoe. Various reports seem to conclude that when a ratio of D/H reaches or exceeds .66 then the probably of collapse increases to a point that the well may be considered un-safe, thus closing procedures such as proper plugging and abandonment, and possible long term subsidence monitoring should be instituted.

The alternate method mentioned above involves calculating the maximum diameter of the cavern by using a worst-case scenario of an "upright cone". The volume of the cavern is calculated using the lifetime brine production volumes and using a "rule of thumb" conversion factor to determine the volumetric size of the cavern. The rule of thumb conversion factor was taken from the 1982 Wilson Report and equates that every barrel of brine produced will create approximately one cubic foot of cavity.

Please find attached in **Appendix "F"**, a wellbore sketch, and the calculations for the brine well, and the lifetime brine production tally of approximately 8.884million barrels of brine produced as of December 2014. The maximum diameter was calculated to be approximately 308 feet with a corresponding D/H ratio of .147 updated for the 2014 year.

Comparing the current D/H ratio of .147 to the .66 value mentioned above, it can be concluded that the current brine well status meets and exceeds the recommended safety value by approximately five times.

Included in **Appendix "F"** is an aerial view showing the 154-foot radius superimposed around the brine well and station. The radius has increased by 6.0 feet from last year.

Permit Condition 2.B. SOLUTION CAVERN MONITORING PROGRAM:

1. Surface Subsidence Monitoring Plan: The Permittee shall submit a Surface Subsidence Monitoring Plan to OCD within 180 days of the effective date of this permit. The Surface Subsidence Monitoring Plan shall specify that the Permittee will install at least three survey monuments and shall include a proposal to monitor the elevation of the monuments at least semiannually.

The Permittee shall survey each benchmark at least semiannually to monitor for possible surface subsidence and shall tie each survey to the nearest USGS benchmark. The Permittee shall employ a licensed professional surveyor to conduct the subsidence monitoring program. The Permittee shall submit the results of all subsidence surveys to OCD within 15 days of the survey. If the monitored surface subsidence at any measuring point reaches 0.10 feet compared to its baseline elevation, then the Permittee shall suspend operation of the Class III well. If the Permittee cannot demonstrate the integrity of the cavern and well to the satisfaction of OCD, then it shall cease all brine production and submit a corrective action plan to mitigate the subsidence.

Wasserhund Inc. hereby, submits a subsidence monitoring plan pursuant to Permit Condition 2.B. "Solution Cavern Monitoring Plan Program". A copy of the proposal is included in **Appendix "G"** for OCD review and approval.

Special Note: Wasserhund Inc. request a Minor Modifications that allows the results be supplied in the annual report, unless there is an exceedance as noted in the permit.

2. Solution Cavern Characterization Program: *The Permittee shall submit a Solution Cavern Characterization Plan to characterize the size and shape of the solution cavern using geophysical methods within 180 days of the effective date of this permit. The Permittee shall characterize the size and shape of the solution cavern using a geophysical methods approved by OCD at least once before November 8, 2018. The Permittee shall demonstrate that at least 90% of the calculated volume of salt removed based upon injection and production volumes has been accounted for by the approved geophysical method(s) for such testing to be considered truly representative.*

Solution Cavern Characterization Plan: Wasserhund Inc. hereby proposes to use a combination of calculated results as determined above, and will experiment with various geophysical methods, including actually performing an “Induced Current Method” and report these results in the next annual report.

The ‘Induced Current’ Method has not been successful, primarily to bad connections and low voltage used. Wasserhund will continue trying this method and others as approved by OCD. The old fashion cavern calculation continues to be the best economic method available.

Bullet Point #11- Ratio of Injected/Produced Fluids

(Permit condition 2.J.11 “A summary of the ratio of the volume of injected fluids to the volume of produced brine;”)

See Bullet Point #3 and Appendix “B” for comparison chart numbers.

Special Note: **Key requests a minor modification of the permit requirement 3.K** *“The Permittee shall suspend injection if the monthly injection volume is less than 110% or greater than 120% of associated brine production. If such an event occurs, the Permittee shall notify OCD within 24 hours.”*

Dear Jim Giswold-NMOCD Environmental Bureau Chief: As you know, this topic has been discussed and kicked around for a long time. The current permit requirement does not take into account many factors that can cause the variance to be under or over the requirement of 110%-120%. Every year we report this number in the annual report and while the average monthly injection for the year is normally within range, the actual monthly numbers can and are sometimes under and over. There are many reasons for this as we have discussed, and thus the requirement to suspend operations is not based on any real parameter or trend that may be an immediate threat to the well, groundwater or the environment. The current requirement put operators in a continuous violation and interruption of operations. Notwithstanding, if you have a well that takes water without producing, or starts to pressure up, then you know you may have lost circulation or communicated to a pressure zone, then immediate action should be taken and notification to the agency. Currently the permit reads as follows:

The Permittee shall immediately suspend injection and notify the agency within 72 hours, if the Fresh Water Injection does not cause a normal immediate return of Brine Water to the surface, or if the well flows excessively for an unusual amount of time without fresh water injection after the cavern pressure has been stabilized to its normal operating pressure, or if permittee has become aware of any out of zone injection or communication. The Permittee shall include in each annual report a summary showing the monthly variance, the average monthly variance for the year and the total accumulative variance over the life of the well. The operator shall certify and explain that any yearly variance that falls outside of the range of 20%, (Difference between the Fresh Water input and Brine Water output) will not cause harm to Fresh Water, Public Health or the Environment.

Bullet Point #12- Summary of Activities

(Permit condition 2.J.12 “A summary of all major Facility activities or events, which occurred during the year with any conclusions and recommendations;”)

See Bullet Point #2 for summary.

5.B. BONDING OR FINANCIAL ASSURANCE: *The Permittee shall submit an estimate of the minimum cost to properly close, plug and abandon its Class III well, conduct ground water restoration if applicable, and any post-operational monitoring as may be needed (see 20.6.2.5210B(17) NMAC) within 90 days of permit issuance (See 20.6.2.5210B(17) NMAC). The Permittee’s cost estimate shall be based on third person estimates. After review, OCD will require the Permittee to submit a single well plugging bond based on the third person cost estimate.*

Appendix “H” contains a third party closure estimate for the Wasserhund Inc. BW-04 brine well.

Bullet Point #13- Annual Certification

(Permit condition 2.J.13 “Annual Certification in accordance with Permit Condition 2.B.3. **“2.B.3. Annual Certification:** The Permittee shall certify annually 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.”)

Operator Response: Based on all current information and actual on-site observance, the operator of record hereby certifies that the current operations pose no threat to public health and the environment at the submission of this report. If any substantial event that, has or may cause, this current certification to change, then the operator will notify OCD and take the necessary actions to protect the public and environment.

By signing the cover sheet of Bullet Point 1 of permit condition 2.J.1, the operator hereby certifies this condition of the permit.

Bullet Point 14- Groundwater Monitoring:

(Permit condition 2.J.14 “A summary of any new discoveries of ground water contamination with all leaks, spills and releases and corrective actions taken;”)

The BW-04 Wasserhund Inc. Buckeye facility, currently does not have groundwater monitoring at this site. There are no planned or intentional discharges of water contaminants that may move directly or indirectly into groundwater. Any unintentional discharge, leak, spill, or drip is handled pursuant to the permit conditions.

The closure of the “out-of-service” brine storage pit was started in December of 2013 and the Wasserhund has received OCD approved in install a down-gradient Monitoring Well in the 2015 year. The results concerning groundwater will be listed in the 2016 annual report.

Bullet Point 15- Annual Reporting

(Permit condition 2.J.15 “The Permittee shall file its Annual Report in an electronic format with a hard copy submitted to OCD’s Environmental Bureau.”)

The operator hereby submits a PDF file on flash drive and one hard copy.

Appendix "A"

- Aerial View Plot Plan
- Site Photos-New Flowpoint Dispensing System
- Discharge Plan BW-04



FW Well

Brine water storage tanks with impermeable berm and secondary containment.

Site Berms

FW

Pit Soil Pile for Disposal

Pumps

Pit reclamation shows red bed liner back-fill

concrete drive with sump

soil boring

238

Google

Imagery Date: Feb 14, 2014

32° 52' 37.1" N 101° 00' 28.6" W Elevation: 4013 ft

Eye alt: 4810 ft



BW-4

**Wasserhund/Buckeye
Eidson State #1**

**Permit Renewal
11/8/13**

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey
Division Director
Oil Conservation Division



November 8, 2013

Larry Gandy
Wasserhund, Inc.
PO Box 827
Tatum, New Mexico 88267

RE: Renewal of Discharge Permit BW-4 for the Eidson State #1 Brine Well in Unit M of Section 31, Township 16 South, Range 35 East NMPM; Lea County, New Mexico

Dear Mr. Gandy,

Pursuant to all applicable parts of the Water Quality Control Commission regulations 20.6.2 NMAC and more specifically 20.6.2.3104 thru.3999 discharge permit, and 20.6.2.5000 thru .5299 Underground Injection Control, the Oil Conservation Division hereby renews the discharge permit and authorizes operation and injection for the Wasserhund, Inc. (owner/operator) brine well BW-4 (API# 30-025-26883) at the location described above and under the conditions specified in the attached Discharge Permit Approval Conditions.

Be advised that approval of this permit does not relieve the owner/operator of responsibility should operations result in pollution of surface water, groundwater, or the environment. Nor does this permit relieve the owner/operator of any responsibility or consequences associated with subsidence or cavern failure. This permit does not relieve the owner/operator of its responsibility to comply with any other applicable governmental rules or regulations.

If you have any questions, please contact Jim Griswold of my staff at (505) 476-3465 or by email at jim.griswold@state.nm.us. On behalf of the Oil Conservation Division, I wish to thank you and your staff for your cooperation and patience during this renewal application review.

Respectfully,

A handwritten signature in blue ink that reads "Jami Bailey".

Jami Bailey
Director

JB/JG/jg
Attachment – Discharge Permit Approval Conditions

cc: Michael Mariano, State Land Office

DISCHARGE PERMIT BW-4

1. GENERAL PROVISIONS:

1.A. PERMITTEE AND PERMITTED FACILITY: The Director of the Oil Conservation Division (OCD) of the Energy, Minerals and Natural Resources Department renews Discharge Permit BW-4 (Discharge Permit) to Wasserhund, Inc. (Permittee) to operate its Underground Injection Control (UIC) Class III well for the in situ extraction of salt (Eidson State #1 Brine Well - API No. 30-025-26883) located 567 feet FSL and 162 feet FWL (SW/4 SW/4, Unit Letter M) in Section 31, Township 16 South, Range 35 East, NMPM, Lea County, New Mexico at its Brine Production Facility (Facility). The Facility is located approximately 5 miles north of Buckeye, New Mexico along the west side of NM 238.

The Permittee is permitted to inject water into the subsurface salt layers and produce brine for use in the oil and gas industry. Ground water that may be affected by a spill, leak, or accidental discharge occurs at a depth of approximately 75 feet below ground surface and has a total dissolved solids concentration of approximately 500 mg/L.

1.B. SCOPE OF PERMIT: OCD has been granted the authority by statute and by delegation from the Water Quality Control Commission (WQCC) to administer the Water Quality Act (Chapter 74, Article 6 NMSA 1978) as it applies to Class III wells associated with the oil and gas industry (See Section 74-6-4, 74-6-5 NMSA 1978).

The Water Quality Act and the rules promulgated pursuant to the Act protect ground water and surface water of the State of New Mexico by providing that, unless otherwise allowed by 20.6.2 NMAC, no person shall cause or allow effluent or leachate to discharge so that it may move directly or indirectly into ground water unless such discharge is pursuant to an approved discharge plan (See 20.6.2.3104 NMAC, 20.6.2.3106 NMAC, and 20.6.2.5000 through 20.6.2.5299 NMAC).

This Discharge Permit for a Class III well is issued pursuant to the Water Quality Act and WQCC rules, 20.6.2 NMAC. This Discharge Permit does not authorize any treatment of, or on-site disposal of, any materials, product, by-product, or oil-field waste.

Pursuant to 20.6.2.5004A NMAC, the following underground injection activities are prohibited:

1. The injection of fluids into a motor vehicle waste disposal well is prohibited.
2. The injection of fluids into a large capacity cesspool is prohibited.
3. The injection of any hazardous or radioactive waste into a well is prohibited except as provided by 20.6.2.5004A(3) NMAC.
4. Class IV wells are prohibited, except for wells re-injecting treated ground water into the same formation from which it was drawn as part of a removal or remedial action.

5. Barrier wells, drainage wells, recharge wells, return flow wells, and motor vehicle waste disposal wells are prohibited.

This Discharge Permit does not convey any property rights of any sort nor any exclusive privilege, and does not authorize any injury to persons or property, any invasion of other private rights, or any infringement of state, federal, or local laws, rules or regulations.

The Permittee shall operate in accordance with the terms and conditions specified in this Discharge Permit to comply with the Water Quality Act and the rules issued pursuant to that Act, so that neither a hazard to public health nor undue risk to property will result (see 20.6.2.3109C NMAC); so that no discharge will cause or may cause any stream standard to be violated (see 20.6.2.3109H(2) NMAC); so that no discharge of any water contaminant will result in a hazard to public health, (see 20.6.2.3109H(3) NMAC); so that the numerical standards specified of 20.6.2.3103 NMAC are not exceeded; and, so that the technical criteria and performance standards (see 20.6.2.5000 through 20.6.2.5299 NMAC) for Class III wells are met. Pursuant to 20.6.2.5003B NMAC, the Permittee shall comply with 20.6.2.1 through 20.6.2.5299 NMAC.

The Permittee shall not allow or cause water pollution, discharge, or release of any water contaminant that exceeds the Water Quality Control Commission (WQCC) standards specified at 20.6.2.3101 NMAC and 20.6.2.3103 NMAC or 20.6.4 NMAC (Water Quality Standards for Interstate and Intrastate Streams). Pursuant to 20.6.2.5101A NMAC, the Permittee shall not inject non-hazardous fluids into ground water having 10,000 mg/l or less total dissolved solids (TDS).

The issuance of this permit does not relieve the Permittee from the responsibility of complying with the provisions of the Water Quality Act, any applicable regulations or water quality standards of the WQCC, or any applicable federal laws, regulations or standards (See Section 74-6-5 NMSA 1978).

1.C. DISCHARGE PERMIT RENEWAL: This Discharge Permit is a permit renewal that replaces the permit being renewed. Replacement of a prior permit does not relieve the Permittee of its responsibility to comply with the terms of that prior permit while that permit was in effect.

1.D. DEFINITIONS: Terms not specifically defined in this Discharge Permit shall have the same meanings as those in the Water Quality Act or the rules adopted pursuant to the Act, as the context requires.

1.E. FILING FEES AND PERMIT FEES: Pursuant to 20.6.2.3114 NMAC, every facility that submits a Discharge Permit application for initial approval or renewal shall pay the permit fees specified in Table 1 and the filing fee specified in Table 2 of 20.6.2.3114 NMAC. OCD has already received the required \$100.00 filing fee. The Permittee is now required to submit the \$1,700.00 permit fee for a Class III well. Please remit payment made payable to the Water Quality Management Fund in care of OCD at 1220 South St. Francis Drive in Santa Fe, New Mexico 87505.

1.F. EFFECTIVE DATE, EXPIRATION, RENEWAL CONDITIONS, AND PENALTIES FOR OPERATING WITHOUT A DISCHARGE PERMIT: This Discharge Permit becomes effective 30 days from the date that the Permittee receives this discharge permit or until the permit is terminated or expires. This Discharge Permit will expire on **November 8, 2018**. The Permittee shall submit an application for renewal no later than 120 days before that expiration date, pursuant to 20.6.2.5101F NMAC. If a Permittee submits a renewal application at least 120 days before the Discharge Permit expires and is in compliance with the approved Discharge Permit, then the existing Discharge Permit will not expire until OCD has approved or disapproved the renewal application. A discharge permit continued under this provision remains fully effective and enforceable. Operating with an expired Discharge Permit may subject the Permittee to civil and/or criminal penalties (See Section 74-6-10.1 NMSA 1978 and Section 74-6-10.2 NMSA 1978).

1.G. MODIFICATIONS AND TERMINATIONS: The Permittee shall notify the OCD Director and OCD's Environmental Bureau of any Facility expansion or process modification (See 20.6.2.3107C NMAC). The OCD Director may require the Permittee to submit a Discharge Permit modification application pursuant to 20.6.2.3109E NMAC and may modify or terminate a Discharge Permit pursuant to Sections 74-6-5(M) through (N) NMSA 1978.

1. If data submitted pursuant to any monitoring requirements specified in this Discharge Permit or other information available to the OCD Director indicate that 20.6.2 NMAC is being or may be violated, then the OCD Director may require modification or, if it is determined by the OCD Director that the modification may not be adequate, may terminate this Discharge Permit for a Class III well that was approved pursuant to the requirements of 20.6.2.5000 through 20.6.2.5299 NMAC for the following causes:

a. Noncompliance by Permittee with any condition of this Discharge Permit;
or,

b. The Permittee's failure in the discharge permit application or during the discharge permit review process to disclose fully all relevant facts, or Permittee's misrepresentation of any relevant facts at any time; or,

c. A determination that the permitted activity may cause a hazard to public health or undue risk to property and can only be regulated to acceptable levels by discharge permit modification or termination (See Section 75-6-6 NMSA 1978; 20.6.2.5101I NMAC; and, 20.6.2.3109E NMAC).

2. This Discharge Permit may also be modified or terminated for any of the following causes:

a. Violation of any provisions of the Water Quality Act or any applicable regulations, standard of performance or water quality standards;

b. Violation of any applicable state or federal effluent regulations or limitations; or

c. Change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge (See Section 75-6-5M NMSA 1978).

1.H. TRANSFER OF CLASS III WELL DISCHARGE PERMIT:

1. The transfer provisions of 20.6.2.3111 NMAC do not apply to a discharge permit for a Class III well.

2. Pursuant to 20.6.2.5101H NMAC, the Permittee may request to transfer its Class III well discharge permit if:

a. The OCD Director receives written notice 30 days prior to the transfer date; and,

b. The OCD Director does not object prior to the proposed transfer date. OCD may require modifications to the discharge permit as a condition of transfer, and may require demonstration of adequate financial responsibility.

3. The written notice required in accordance with Permit Condition 1.H.2.a shall:

a. Have been signed by the Permittee and the succeeding Permittee, and shall include an acknowledgement that the succeeding Permittee shall be responsible for compliance with the Class III well discharge permit upon taking possession of the facility; and

b. Set a specific date for transfer of the discharge permit responsibility, coverage and liability; and

c. Include information relating to the succeeding Permittee's financial responsibility required by 20.6.2.5210B(17) NMAC.

1.I. COMPLIANCE AND ENFORCEMENT: If the Permittee violates or is violating a condition of this Discharge Permit, OCD may issue a compliance order that requires compliance immediately or within a specified time period, or assess a civil penalty, or both (See Section 74-6-10 NMSA 1978). The compliance order may also include a suspension or termination of this Discharge Permit. OCD may also commence a civil action in district court for appropriate relief, including injunctive relief (See Section 74-6-10(A)(2) NMSA 1978). The Permittee may be subject to criminal penalties for discharging a water contaminant without a discharge permit or in violation of a condition of a discharge permit; making any false material statement, representation, certification or omission of material fact in a renewal application, record, report, plan or other document filed, submitted or required to be maintained under the Water Quality Act; falsifying, tampering with or rendering inaccurate any monitoring device, method or record required to be maintained under the Water Quality Act; or failing to monitor, sample or report as required by a Discharge Permit issued pursuant to a state or federal law or regulation (See Section 74-6-10.2 NMSA 1978).

2. GENERAL FACILITY OPERATIONS:

2.A. QUARTERLY MONITORING REQUIREMENTS FOR CLASS III WELLS: The Permittee may use either or both fresh water or water from otherwise non-potable sources. Pursuant to 20.6.2.5207C, the Permittee shall provide analysis of the injected fluids at least quarterly to yield data representative of their characteristics. The Permittee shall analyze the injected fluids for the following characteristics:

- pH;
- density;
- concentration of total dissolved solids; and,
- chloride concentration.

The Permittee shall also provide analysis of the produced brine on a quarterly basis. The Permittee shall analyze the produced brine for the following characteristics:

- pH;
- density;
- concentration of total dissolved solids;
- chloride concentration; and,
- sodium concentration.

2.B. SOLUTION CAVERN MONITORING PROGRAM:

1. Surface Subsidence Monitoring Plan: The Permittee shall submit a Surface Subsidence Monitoring Plan to OCD within 180 days of the effective date of this permit. The Surface Subsidence Monitoring Plan shall specify that the Permittee will install at least three survey monuments and shall include a proposal to monitor the elevation of the monuments at least semiannually.

The Permittee shall survey each benchmark at least semiannually to monitor for possible surface subsidence and shall tie each survey to the nearest USGS benchmark. The Permittee shall employ a licensed professional surveyor to conduct the subsidence monitoring program. The Permittee shall submit the results of all subsidence surveys to OCD within 15 days of the survey. If the monitored surface subsidence at any measuring point reaches 0.10 feet compared to its baseline elevation, then the Permittee shall suspend operation of the Class III well. If the Permittee cannot demonstrate the integrity of the cavern and well to the satisfaction of OCD, then it shall cease all brine production and submit a corrective action plan to mitigate the subsidence.

2. Solution Cavern Characterization Program: The Permittee shall submit a Solution Cavern Characterization Plan to characterize the size and shape of the solution cavern using geophysical methods within 180 days of the effective date of this permit. The Permittee shall characterize the size and shape of the solution cavern using a geophysical method approved by OCD at least once before November 8, 2018. The Permittee shall demonstrate that at least 90% of the calculated volume of salt removed based upon injection and production volumes has been accounted for by the approved geophysical method(s) for such testing to be considered truly representative.

a. The Permittee shall provide an estimate of the size and shape of the solution cavern at least annually, based on fluid injection and brine production data.

b. The Permit shall compare the ratio of the volume of injected fluids to the volume of produced brine monthly. If the average ratio of injected fluid to produced brine varies is less than 90% or greater than 110%, the Permittee shall report this to OCD and cease injection and production operations of its Class III well within 24 hours. The Permittee shall begin an investigation to determine the cause of this abnormal ratio within 72 hours. The Permittee shall submit to OCD a report of its investigation within 15 days of cessation of injection and production operations of its Class III well.

3. Annual Certification: The Permittee shall certify annually 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.

If the solution cavern is determined by either OCD or the Permittee to be potentially unstable by either direct or indirect means, then the Permittee shall cease all fluid injection and brine production within 24 hours. If the Permittee ceases operations because it or OCD has determined that the solution cavern is unstable, then it shall submit a plan to stabilize the solution cavern within 30 days. OCD may require the Permittee to implement additional subsidence monitoring and to conduct additional corrective action.

2.C. CONTINGENCY PLANS: The Permittee shall implement its proposed contingency plan(s) included in its Permit Renewal Application to cope with failure of a system(s) in the Discharge Permit.

2.D. CLOSURE: Prior to closure of the facility, the Permittee shall submit for OCD's approval, a closure plan including a completed form C-103 for plugging and abandonment of the Class III well. The Permittee shall plug and abandon its well pursuant to 20.6.2.5209 NMAC and as specified in Permit Condition 2.D.

1. Pre-Closure Notification: Pursuant to 20.6.2.5005A NMAC, the Permittee shall submit a pre-closure notification to OCD's Environmental Bureau at least 30 days prior to the date that it proposes to close or to discontinue operation of its Class III well. Pursuant to 20.6.2.5005B NMAC, OCD's Environmental Bureau must approve all proposed well closure activities before Permittee may implement its proposed closure plan.

2. Required Information: The Permittee shall provide OCD's Environmental Bureau with the following information:

- Name of facility;
- Address of facility;
- Name of Permittee (and owner or operator, if appropriate);
- Address of Permittee (and owner or operator, if appropriate);
- Contact person;
- Phone number;
- Number and type of well(s);

- Year of well construction;
- Well construction details;
- Type of discharge;
- Average flow (gallons per day);
- Proposed well closure activities (*e.g.*, sample fluids/sediment, appropriate disposal of remaining fluids/sediments, remove well and any contaminated soil, clean out well, install permanent plug, conversion to other type of well, ground water and vadose zone investigation, other);
- Proposed date of well closure;
- Name of Preparer; and,
- Date.

2.E. PLUGGING AND ABANDONMENT PLAN: Pursuant to 20.6.2.5209A NMAC, when the Permittee proposes to plug and abandon its Class III well, it shall submit to OCD a plugging and abandonment plan that meets the requirements of 20.6.2.3109C NMAC, 20.6.2.5101C NMAC, and 20.6.2.5005 NMAC for protection of ground water. If requested by OCD, Permittee shall submit for approval prior to closure, a revised or updated plugging and abandonment plan. The obligation to implement the plugging and abandonment plan as well as the requirements of the plan survives the termination or expiration of this Discharge Permit. The Permittee shall comply with 20.6.2.5209 NMAC.

2.F RECORD KEEPING: The Permittee shall maintain records of all inspections, surveys, investigations, *etc.*, required by this Discharge Permit at its Facility office for a minimum of five years and shall make those records available for inspection by OCD.

2.G. RELEASE REPORTING: The Permittee shall comply with the following permit conditions, pursuant to 20.6.2.1203 NMAC, if it determines that a release of oil or other water contaminant, in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property, has occurred. The Permittee shall report unauthorized releases of water contaminants in accordance with any additional commitments made in its approved Contingency Plan. If the Permittee determines that any constituent exceeds the standards specified at 20.6.2.3103 NMAC, then it shall report a release to OCD's Environmental Bureau.

1. Oral Notification: As soon as possible after learning of such a discharge, but in no event more than twenty-four (24) hours thereafter, the Permittee shall notify OCD's Environmental Bureau. The Permittee shall provide the following:

- The name, address, and telephone number of the person or persons in charge of the facility, as well as of the owner and/or operator of the facility;
- The name and location of the facility;
- The date, time, location, and duration of the discharge;
- The source and cause of discharge;
- A description of the discharge, including its chemical composition;
- The estimated volume of the discharge; and,

- Any corrective or abatement actions taken to mitigate immediate damage from the discharge.

2. Written Notification: Within one week after the Permittee has discovered a discharge, the Permittee shall send written notification (may use form C-141 with attachments) to OCD's Environmental Bureau verifying the prior oral notification as to each of the foregoing items and providing any appropriate additions or corrections to the information contained in the prior oral notification.

The Permittee shall provide subsequent written reports as required by OCD's Environmental Bureau.

2.H. OTHER REQUIREMENTS:

1. Inspection and Entry: Pursuant to Section 74-6-9 NMSA 1978 and 20.6.2.3107A NMAC, the Permittee shall allow any authorized representative of the OCD Director, to:

- Upon the presentation of proper credentials, enter the premises at reasonable times;
- Inspect and copy records required by this Discharge Permit;
- Inspect any treatment works, monitoring, and analytical equipment;
- Sample any injection fluid or produced brine; and,
- Use the Permittee's monitoring systems and wells in order to collect samples.

2. Advance Notice: The Permittee shall provide OCD's Environmental Bureau and Hobbs District Office with at least five (5) working days advance notice of any environmental sampling to be performed pursuant to this Discharge Permit, or any well plugging, abandonment or decommissioning of any equipment associated with its Class III well.

3. Environmental Monitoring: The Permittee shall ensure that any environmental sampling and analytical laboratory data collected meets the standards specified in 20.6.2.3107B NMAC. The Permittee shall ensure that all environmental samples are analyzed by an accredited "National Environmental Laboratory Accreditation Conference" (NELAC) Laboratory. The Permittee shall submit data summary tables, all raw analytical data, and laboratory QA/QC.

2.I. BONDING OR FINANCIAL ASSURANCE: Pursuant to 20.6.2.5210B(17) NMAC, the Permittee shall maintain at a minimum, a single well plugging bond in the amount that it shall determine, in accordance with Permit Condition 5.B, to cover potential costs associated with plugging and abandonment of the Class III well, surface restoration, and post-operational monitoring, as may be needed. OCD may require additional financial assurance to ensure adequate funding is available to plug and abandon the well and/or for any required corrective actions.

Methods by which the Permittee shall demonstrate the ability to undertake these measures shall include submission of a surety bond or other adequate assurances, such as financial statements or other materials acceptable to the OCD Director, such as: (1) a surety bond; (2) a trust fund with a New Mexico bank in the name of the State of New Mexico, with the State as Beneficiary; (3) a

non-renewable letter of credit made out to the State of New Mexico; (4) liability insurance specifically covering the contingencies listed in this paragraph; or (5) a performance bond, generally in conjunction with another type of financial assurance. If an adequate bond is posted by the Permittee to a federal or another state agency, and this bond covers all of the measures specified above, the OCD Director shall consider this bond as satisfying the bonding requirements of Sections 20.6.2.5000 through 20.6.2.5299 NMAC wholly or in part, depending upon the extent to which such bond is adequate to ensure that the Permittee will fully perform the measures required hereinabove.

2.J. ANNUAL REPORT: The Permittee shall submit its annual report pursuant to 20.6.2.3107 NMAC to OCD's Environmental Bureau by **June 1st** of the following year. The annual report shall include the following:

- Cover sheet marked as "Annual Class III Well Report, Name of Permittee, Discharge Permit Number, API number of well(s), date of report, and person submitting report;
- Summary of Class III well operations for the year including a description and reason for any remedial or major work on the well with a copy of form C-103;
- Monthly fluid injection and brine production volume, including the cumulative total carried over each year;
- Injection pressure data;
- A copy of the quarterly chemical analyses shall be included with data summary and all QA/QC information;
- Copy of any mechanical integrity test chart, including the type of test, *i.e.*, duration, gauge pressure, etc.;
- Brief explanation describing deviations from the normal operations;
- Results of any leaks and spill reports;
- An Area of Review (AOR) update summary;
- A summary with interpretation of MITs, surface subsidence surveys, cavern volume and geometry measurements with conclusion(s) and recommendation(s);
- A summary of the ratio of the volume of injected fluids to the volume of produced brine;
- A summary of all major Facility activities or events, which occurred during the year with any conclusions and recommendations;
- Annual Certification in accordance with Permit Condition 2.B.3.
- A summary of any new discoveries of ground water contamination with all leaks, spills and releases and corrective actions taken; and,
- The Permittee shall file its Annual Report in an electronic format with a hard copy submittal to OCD's Environmental Bureau.

3. CLASS III WELL OPERATIONS:

3.A. OPERATING REQUIREMENTS: The Permittee shall comply with the operating requirements specified in 20.6.2.5206A NMAC and 20.6.2.5206A NMAC to ensure that:

1. Injection will occur through the innermost tubing string and brine production through the annulus between the casing and tubing string to promote cavern development at depth. Injection and production flow can be reversed as required to achieve optimal cavern shaping, mine salt most efficiently, and to periodically clean the tubing and annulus. Injection must only occur in the intended solution mining interval.

2. Injection between the outermost casing and the well bore is prohibited in a zone other than the authorized injection zone. If the Permittee determines that its Class III well is discharging or suspects that it is discharging fluids into a zone or zones other than the permitted injection zone specified in Permit Condition 3.B.1., then the Permittee shall within 24 hours notify OCD's Environmental Bureau and Hobbs District Office of the circumstances and action(s) taken. The Permittee shall cease operations until proper repairs are made and it has received approval from OCD to re-start injection operations.

3.B. INJECTION OPERATIONS:

1. **Well Injection Pressure Limit:** The Permittee shall ensure that the maximum wellhead or surface injection pressure on its Class III well shall not exceed the fracture pressure of the injection salt formation and will not cause new fractures or propagate any existing fractures of cause damage to the system.

2. **Pressure Limiting Device:** The Permittee shall equip and operate its Class III well or system with a pressure limiting device which shall, at all times, limit surface injection pressure to the maximum allowable pressure for its Class III well. The Permittee shall monitor the pressure-limiting device daily and shall report all pressure exceedances within 24 hours of detecting an exceedance to OCD's Environmental Bureau.

The Permittee shall take all steps necessary to ensure that the injected fluids enter only the proposed injection interval and is not permitted to escape to other formations or onto the ground surface. The Permittee shall report to OCD's Environmental Bureau within 24 hours of discovery any indication that new fractures or existing fractures have been propagated, or that damage to the well, the injection zone, or formation has occurred.

3.C. CONTINUOUS MONITORING DEVICES: The Permittee shall use continuous monitoring devices to provide a record of injection pressure, flow rate, flow volume, and pressure on the annulus between the tubing and the long string of casing.

3.D. MECHANICAL INTEGRITY FOR CLASS III WELLS:

1. Pursuant to 20.6.2.5204 NMAC, the Permittee shall demonstrate mechanical integrity for its Class III well at least once every five years or more frequently as the OCD

Director may require for good cause during the life of the well. The Permittee shall demonstrate mechanical integrity for its Class III well every time it performs a well workover, including when it pulls the tubing. A Class III well has mechanical integrity if there is no detectable leak in the casing or tubing which OCD considers to be significant at maximum operating temperature and pressure; and no detectable conduit for fluid movement out of the injection zone through the well bore or vertical channels adjacent to the well bore which the OCD Director considers to be significant. The Permittee shall conduct a casing Mechanical Integrity Test (MIT) from the surface to the approved injection depth to assess casing integrity. The MIT shall consist of a 30-minute test at a minimum pressure of 300 psig measured at the surface.

The Permittee shall notify OCD's Environmental Bureau 5 days prior to conducting any MIT to allow OCD the opportunity to witness the MIT.

2. The following criteria will determine if the Class III well has passed the MIT:

- a. Passes MIT if zero bleed-off during the test;
- b. Passes MIT if final test pressure is within $\pm 10\%$ of starting pressure, if approved by OCD;
- c. When the MIT is not witnessed by OCD and fails, the Permittee shall notify OCD within 24 hours of the failure of the MIT.

3. Pursuant to 20.6.2.5204C NMAC, the OCD Director may consider the use by the Permittee of equivalent alternative test methods to determine mechanical integrity. The Permittee shall submit information on the proposed test and all technical data supporting its use. The OCD Director may approve the Permittee's request if it will reliably demonstrate the mechanical integrity of the well for which its use is proposed.

4. Pursuant to 20.6.2.5204D NMAC, when conducting and evaluating the MIT(s), the Permittee shall apply methods and standards generally accepted in the oil and gas industry. When the Permittee reports the results of all MIT(s) to the OCD Director, it shall include a description of the test(s), the method(s) used, and the test results.

3.E. WELL WORKOVER OPERATIONS: Pursuant to 20.6.2.5205A(5) NMAC, the Permittee shall provide notice to and shall obtain approval from OCD's District Office in Hobbs and the Environmental Bureau in Santa Fe prior to commencement of any remedial work or any other workover operations to allow OCD the opportunity to witness the operation. The Permittee shall request approval using form C-103 (Sundry Notices and Reports on Wells) with copies sent to OCD's Environmental Bureau and Hobbs District Office. Properly completed Forms C-103 and/or C-105 must be filed with OCD upon completion of workover activities and copies included in that year's Annual Report.

3.K. FLUIDS INJECTION AND BRINE PRODUCTION VOLUMES AND PRESSURES: The Permittee shall continuously monitor the volumes of water injected and brine production. The Permittee shall submit monthly reports of its injection and production volumes on or before the 10th day of the following month. The Permittee shall suspend injection if the monthly injection volume is less than 110% or greater than 120% of associated brine production. If such an event occurs, the Permittee shall notify OCD within 24 hours.

3.L. AREA OF REVIEW (AOR): The Permittee shall report within 72 hours of discovery any new wells, conduits, or any other device that penetrates or may penetrate the injection zone within a 1-mile radius from its Class III well.

4. CLASS V WELLS: Pursuant to 20.6.2.5002B NMAC, leach fields and other waste fluids disposal systems that inject non-hazardous fluid into or above an underground source of drinking water are UIC Class V injection wells. This Discharge Permit does not authorize the use of a Class V injection well for the disposal of industrial waste. Pursuant to 20.6.2.5005 NMAC, the Permittee shall close any Class V industrial waste injection well that injects non-hazardous industrial wastes or a mixture of industrial wastes and domestic wastes (*e.g.*, septic systems, leach fields, dry wells, *etc.*) within 90 calendar days of the issuance of this Discharge Permit. The Permittee shall document the closure of any Class V wells used for the disposal of non-hazardous industrial wastes or a mixture of industrial wastes and domestic wastes other than contaminated ground water in its Annual Report. Other Class V wells, including wells used only for the injection of domestic wastes, shall be permitted by the New Mexico Environment Department.

5. SCHEDULE OF COMPLIANCE:

5.A. ANNUAL REPORT: The Permittee shall submit its annual report to OCD by June 1st of each year.

5.B. BONDING OR FINANCIAL ASSURANCE: The Permittee shall submit an estimate of the minimum cost to properly close, plug and abandon its Class III well, conduct ground water restoration if applicable, and any post-operational monitoring as may be needed (see 20.6.2.5210B(17) NMAC) within 90 days of permit issuance (See 20.6.2.5210B(17) NMAC). The Permittee's cost estimate shall be based on third person estimates. After review, OCD will require the Permittee to submit a single well plugging bond based on the third person cost estimate.

5.C. SURFACE SUBSIDENCE MONITORING PLAN: The Permittee shall submit the Surface Subsidence Monitoring Plan required in accordance with Permit Condition 2.B.1 within 180 days of permit issuance.

5.D. SOLUTION CAVERN CHARACTERIZATION PLAN: The Permittee shall submit the Solution Cavern Characterization Plan required in accordance with Permit Condition 2.B.2 within 180 days of permit issuance.

Appendix “B”

- Injection and Production Volumes/Comparison Charts

2014 Wasserhund Inc OCD BW-04 Annual Production Data						
						Plus numbers represent more fresh injected than brine produced. Neg numbers the opposite.
				Brine-BBLS	Fresh-BBLS	% diff
Jan				67469	67634	0.24%
Feb				58509	58704	0.33%
Mar				74385	74568	0.25%
Apr				45348	45463	0.25%
May				42171	42290	0.28%
Jun				29669	29784	0.39%
Jul				36626	36776	0.41%
Aug				40187	40165	-0.05%
Sept				42350	42513	0.38%
Oct				50114	50399	0.57%
Nov				50837	51032	0.38%
Dec				64531	64696	0.26%
2014 Total				602,196	604,024	0.30%
Total Brine Water Production Carry Over from Years Past BBLs				8,282,699		
Total Production year ending 2014				8,884,895	bbls	

Appendix "C"

- Chemical Analysis Fresh Water
- Chemical Analysis Brine Water

Summary Report

Wayne Price
Wasserhund Inc.
P.O. Box 2140
Lovington, NM 88260

Report Date: April 23, 2014

Work Order: 14040811



Project Location: Buckeye(BW-4) Tatum (BW-22)
Project Name: Annual Report
Project Number: BW-4 & BW-22

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
359859	BW-4 Fresh	water	2014-04-04	11:43	2014-04-08
359860	BW-4 Brine	water	2014-04-04	11:40	2014-04-08
359861	BW-22 Fresh	water	2014-04-04	14:45	2014-04-08
359862	BW-22 Brine	water	2014-04-04	14:49	2014-04-08

Sample: 359859 - BW-4 Fresh

Param	Flag	Result	Units	RL
Chloride		399	mg/L	2.5
pH		7.77	s.u.	2
Specific Gravity		1.00	g/ml	
Total Dissolved Solids		1000	mg/L	2.5

Sample: 359860 - BW-4 Brine

Param	Flag	Result	Units	RL
Chloride		219000	mg/L	2.5
Dissolved Sodium		101000	mg/L	1
pH		6.99	s.u.	2
Specific Gravity		1.19	g/ml	
Total Dissolved Solids		132000	mg/L	2.5

Sample: 359861 - BW-22 Fresh

Param	Flag	Result	Units	RL
Chloride		406	mg/L	2.5
pH		7.99	s.u.	2
Specific Gravity		0.996	g/ml	
Total Dissolved Solids		1240	mg/L	2.5

Sample: 359862 - BW-22 Brine

Param	Flag	Result	Units	RL
Chloride		19300	mg/L	2.5
Dissolved Sodium		10400	mg/L	1
pH		6.41	s.u.	2
Specific Gravity		1.03	g/ml	
Total Dissolved Solids		31900	mg/L	2.5



6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1296 806-794-1296 FAX 806-794-1298
 200 East Sunset Road, Suite E El Paso, Texas 79922 915-585-3443 FAX 915-585-4944
 5002 Basin Street, Suite A1 Midland, Texas 79703 432-689-6301 FAX 432-689-6313
 (BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972-242-7750
 E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Wayne Price
 Wasserhund Inc.
 P.O. Box 2140
 Lovington, NM, 88260

Report Date: April 23, 2014

Work Order: 14040811



Project Location: Buckeye(BW-4) Tatum (BW-22)
 Project Name: Annual Report
 Project Number: BW-4 & BW-22

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
359859	BW-4 Fresh	water	2014-04-04	11:43	2014-04-08
359860	BW-4 Brine	water	2014-04-04	11:40	2014-04-08
359861	BW-22 Fresh	water	2014-04-04	14:45	2014-04-08
359862	BW-22 Brine	water	2014-04-04	14:49	2014-04-08

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 18 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director
 Dr. Michael Abel, Project Manager

Report Contents

Case Narrative	3
Analytical Report	4
Sample 359859 (BW-4 Fresh)	4
Sample 359860 (BW-4 Brine)	5
Sample 359861 (BW-22 Fresh)	6
Sample 359862 (BW-22 Brine)	7
Method Blanks	9
QC Batch 111053 - Method Blank (1)	9
QC Batch 111195 - Method Blank (1)	9
QC Batch 111321 - Method Blank (1)	9
QC Batch 111322 - Method Blank (1)	9
QC Batch 111398 - Method Blank (1)	10
QC Batch 110975 - Duplicate (1)	10
QC Batch 111053 - Duplicate (1)	10
QC Batch 111195 - Duplicate (1)	10
Laboratory Control Spikes	12
QC Batch 111195 - LCS (1)	12
QC Batch 111321 - LCS (1)	12
QC Batch 111322 - LCS (1)	12
QC Batch 111398 - LCS (1)	13
QC Batch 111321 - MS (1)	13
QC Batch 111322 - MS (1)	13
QC Batch 111398 - MS (1)	14
Calibration Standards	15
QC Batch 110975 - ICV (1)	15
QC Batch 110975 - CCV (1)	15
QC Batch 111321 - CCV (1)	15
QC Batch 111321 - CCV (2)	15
QC Batch 111322 - CCV (1)	15
QC Batch 111322 - CCV (2)	16
QC Batch 111398 - ICV (1)	16
QC Batch 111398 - CCV (1)	16
Appendix	17
Report Definitions	17
Laboratory Certifications	17
Standard Flags	17
Attachments	17

Case Narrative

Samples for project Annual Report were received by TraceAnalysis, Inc. on 2014-04-08 and assigned to work order 14040811. Samples for work order 14040811 were received intact at a temperature of 2.9 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (IC)	E 300.0	94115	2014-04-10 at 16:00	111321	2014-04-10 at 17:33
Chloride (IC)	E 300.0	94116	2014-04-10 at 16:00	111322	2014-04-10 at 17:33
Na, Dissolved	S 6010C	94164	2014-04-22 at 18:51	111398	2014-04-23 at 11:10
pH	SM 4500-H+	93825	2014-04-08 at 13:44	110975	2014-04-08 at 13:45
Specific Gravity	ASTM D1429-95	93887	2014-04-10 at 09:20	111053	2014-04-10 at 09:45
TDS	SM 2540C	94005	2014-04-09 at 16:00	111195	2014-04-09 at 16:00

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 14040811 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 359859 - BW-4 Fresh

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 111321 Date Analyzed: 2014-04-10 Analyzed By: RL
Prep Batch: 94115 Sample Preparation: 2014-04-10 Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	399	mg/L	10	2.50

Sample: 359859 - BW-4 Fresh

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 110975 Date Analyzed: 2014-04-08 Analyzed By: AT
Prep Batch: 93825 Sample Preparation: 2014-04-08 Prepared By: AT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1	7.77	s.u.	1	2.00

Sample: 359859 - BW-4 Fresh

Laboratory: Lubbock
Analysis: Specific Gravity Analytical Method: ASTM D1429-95 Prep Method: N/A
QC Batch: 111053 Date Analyzed: 2014-04-10 Analyzed By: CF
Prep Batch: 93887 Sample Preparation: 2014-04-10 Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Specific Gravity			1.00	g/ml	1	0.00

Sample: 359859 - BW-4 Fresh

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 111195 Date Analyzed: 2014-04-09 Analyzed By: RL
Prep Batch: 94005 Sample Preparation: 2014-04-09 Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1	1000	mg/L	20	2.50

Sample: 359860 - BW-4 Brine

Laboratory: Lubbock
 Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
 QC Batch: 111321 Date Analyzed: 2014-04-10 Analyzed By: RL
 Prep Batch: 94115 Sample Preparation: 2014-04-10 Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	219000	mg/L	5000	2.50

Sample: 359860 - BW-4 Brine

Laboratory: Lubbock
 Analysis: Na, Dissolved Analytical Method: S 6010C Prep Method: S 3005A
 QC Batch: 111398 Date Analyzed: 2014-04-23 Analyzed By: LM
 Prep Batch: 94164 Sample Preparation: 2014-04-22 Prepared By: PM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium		1	101000	mg/L	100	1.00

Sample: 359860 - BW-4 Brine

Laboratory: Lubbock
 Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
 QC Batch: 110975 Date Analyzed: 2014-04-08 Analyzed By: AT
 Prep Batch: 93825 Sample Preparation: 2014-04-08 Prepared By: AT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1	6.99	s.u.	1	2.00

Sample: 359860 - BW-4 Brine

Laboratory: Lubbock
Analysis: Specific Gravity Analytical Method: ASTM D1429-95 Prep Method: N/A
QC Batch: 111053 Date Analyzed: 2014-04-10 Analyzed By: CF
Prep Batch: 93887 Sample Preparation: 2014-04-10 Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Specific Gravity			1.19	g/ml	1	0.00

Sample: 359860 - BW-4 Brine

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 111195 Date Analyzed: 2014-04-09 Analyzed By: RL
Prep Batch: 94005 Sample Preparation: 2014-04-09 Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1	132000	mg/L	1000	2.50

Sample: 359861 - BW-22 Fresh

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 111321 Date Analyzed: 2014-04-10 Analyzed By: RL
Prep Batch: 94115 Sample Preparation: 2014-04-10 Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	B	1	406	mg/L	50	2.50

Sample: 359861 - BW-22 Fresh

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 110975 Date Analyzed: 2014-04-08 Analyzed By: AT
Prep Batch: 93825 Sample Preparation: 2014-04-08 Prepared By: AT

continued ...

sample 359861 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1	7.99	s.u.	1	2.00

Sample: 359861 - BW-22 Fresh

Laboratory: Lubbock
 Analysis: Specific Gravity Analytical Method: ASTM D1429-95 Prep Method: N/A
 QC Batch: 111053 Date Analyzed: 2014-04-10 Analyzed By: CF
 Prep Batch: 93887 Sample Preparation: 2014-04-10 Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Specific Gravity			0.996	g/ml	1	0.00

Sample: 359861 - BW-22 Fresh

Laboratory: Lubbock
 Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
 QC Batch: 111195 Date Analyzed: 2014-04-09 Analyzed By: RL
 Prep Batch: 94005 Sample Preparation: 2014-04-09 Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1	1240	mg/L	20	2.50

Sample: 359862 - BW-22 Brine

Laboratory: Lubbock
 Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
 QC Batch: 111322 Date Analyzed: 2014-04-10 Analyzed By: RL
 Prep Batch: 94116 Sample Preparation: 2014-04-10 Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	19300	mg/L	1000	2.50

Sample: 359862 - BW-22 Brine

Laboratory: Lubbock
Analysis: Na, Dissolved Analytical Method: S 6010C Prep Method: S 3005A
QC Batch: 111398 Date Analyzed: 2014-04-23 Analyzed By: LM
Prep Batch: 94164 Sample Preparation: 2014-04-22 Prepared By: PM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium		1	10400	mg/L	100	1.00

Sample: 359862 - BW-22 Brine

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 110975 Date Analyzed: 2014-04-08 Analyzed By: AT
Prep Batch: 93825 Sample Preparation: 2014-04-08 Prepared By: AT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1	6.41	s.u.	1	2.00

Sample: 359862 - BW-22 Brine

Laboratory: Lubbock
Analysis: Specific Gravity Analytical Method: ASTM D1429-95 Prep Method: N/A
QC Batch: 111053 Date Analyzed: 2014-04-10 Analyzed By: CF
Prep Batch: 93887 Sample Preparation: 2014-04-10 Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Specific Gravity			1.03	g/ml	1	0.00

Sample: 359862 - BW-22 Brine

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 111195 Date Analyzed: 2014-04-09 Analyzed By: RL
Prep Batch: 94005 Sample Preparation: 2014-04-09 Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1	31900	mg/L	200	2.50

Method Blanks

Method Blank (1) QC Batch: 111053

QC Batch: 111053 Date Analyzed: 2014-04-10 Analyzed By: CF
Prep Batch: 93887 QC Preparation: 2014-04-10 Prepared By: CF

Parameter	Flag	Cert	MDL Result	Units	RL
Specific Gravity			0.998	g/ml	

Method Blank (1) QC Batch: 111195

QC Batch: 111195 Date Analyzed: 2014-04-09 Analyzed By: RL
Prep Batch: 94005 QC Preparation: 2014-04-09 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Total Dissolved Solids		1	<25.0	mg/L	2.5

Method Blank (1) QC Batch: 111321

QC Batch: 111321 Date Analyzed: 2014-04-10 Analyzed By: RL
Prep Batch: 94115 QC Preparation: 2014-04-10 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1	1.61	mg/L	2.5

Method Blank (1) QC Batch: 111322

QC Batch: 111322 Date Analyzed: 2014-04-10 Analyzed By: RL
Prep Batch: 94116 QC Preparation: 2014-04-10 Prepared By: RL

Report Date: April 23, 2014
BW-4 & BW-22

Work Order: 14040811
Annual Report

Page Number: 10 of 18
Buckeye(BW-4) Tatum (BW-22)

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1	1.23	mg/L	2.5

Method Blank (1) QC Batch: 111398

QC Batch: 111398
Prep Batch: 94164

Date Analyzed: 2014-04-23
QC Preparation: 2014-04-22

Analyzed By: LM
Prepared By: PM

Parameter	Flag	Cert	MDL Result	Units	RL
Dissolved Sodium		1	<0.172	mg/L	1

Duplicates (1) Duplicated Sample: 359865

QC Batch: 110975
Prep Batch: 93825

Date Analyzed: 2014-04-08
QC Preparation: 2014-04-08

Analyzed By: AT
Prepared By: AT

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH	1	8.45	8.46	s.u.	1	0	20

Duplicates (1) Duplicated Sample: 359862

QC Batch: 111053
Prep Batch: 93887

Date Analyzed: 2014-04-10
QC Preparation: 2014-04-10

Analyzed By: CF
Prepared By: CF

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Specific Gravity		1.03	1.03	g/ml	1	0	200

Duplicates (1) Duplicated Sample: 360017

QC Batch: 111195
Prep Batch: 94005

Date Analyzed: 2014-04-09
QC Preparation: 2014-04-09

Analyzed By: RL
Prepared By: RL

Report Date: April 23, 2014
BW-4 & BW-22

Work Order: 14040811
Annual Report

Page Number: 11 of 18
Buckeye(BW-4) Tatum (BW-22)

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	1	1690	1720	mg/L	20	2	10

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 111195
 Prep Batch: 94005

Date Analyzed: 2014-04-09
 QC Preparation: 2014-04-09

Analyzed By: RL
 Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Dissolved Solids		1	1020	mg/L	10	1000	<25.0	102	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Dissolved Solids		1	1010	mg/L	10	1000	<25.0	101	90 - 110	1	10

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 111321
 Prep Batch: 94115

Date Analyzed: 2014-04-10
 QC Preparation: 2014-04-10

Analyzed By: RL
 Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1	26.2	mg/L	1	25.0	1.61	98	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1	26.1	mg/L	1	25.0	1.61	98	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 111322
 Prep Batch: 94116

Date Analyzed: 2014-04-10
 QC Preparation: 2014-04-10

Analyzed By: RL
 Prepared By: RL

Param	F	C	LCS			Spike Amount	Matrix Result	Rec.	Rec. Limit
			Result	Units	Dil.				
Chloride		1	26.0	mg/L	1	25.0	1.23	99	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD			Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
			Result	Units	Dil.						
Chloride		1	26.0	mg/L	1	25.0	1.23	99	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 111398
 Prep Batch: 94164

Date Analyzed: 2014-04-23
 QC Preparation: 2014-04-22

Analyzed By: LM
 Prepared By: PM

Param	F	C	LCS			Spike Amount	Matrix Result	Rec.	Rec. Limit
			Result	Units	Dil.				
Dissolved Sodium		1	53.0	mg/L	1	50.0	<0.172	106	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD			Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
			Result	Units	Dil.						
Dissolved Sodium		1	53.1	mg/L	1	50.0	<0.172	106	85 - 115	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 359861

QC Batch: 111321
 Prep Batch: 94115

Date Analyzed: 2014-04-10
 QC Preparation: 2014-04-10

Analyzed By: RL
 Prepared By: RL

Param	F	C	MS			Spike Amount	Matrix Result	Rec.	Rec. Limit
			Result	Units	Dil.				
Chloride		1	1840	mg/L	50	1250	406	115	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD			Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
			Result	Units	Dil.						
Chloride		1	1850	mg/L	50	1250	406	116	80 - 120	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 360083

QC Batch: 111322
 Prep Batch: 94116

Date Analyzed: 2014-04-10
 QC Preparation: 2014-04-10

Analyzed By: RL
 Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1	19000	mg/L	500	12500	4720	114	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1	19200	mg/L	500	12500	4720	116	80 - 120	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 360135

QC Batch: 111398
 Prep Batch: 94164

Date Analyzed: 2014-04-23
 QC Preparation: 2014-04-22

Analyzed By: LM
 Prepared By: PM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Sodium		1	617	mg/L	1	500	82.16	107	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Dissolved Sodium		1	582	mg/L	1	500	82.16	100	75 - 125	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704219-14-10	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less than ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

Report Date: April 23, 2014
BW-4 & BW-22

Work Order: 14040811
Annual Report

Page Number: 18 of 18
Buckeye(BW-4) Tatum (BW-22)

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

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Tel (972) 242-7700Company Name: WASSER HUDD INC Phone #: 875-399-5721
Address: (Street, City, Zip) Fax #:Contract Party: ZWAYNE PRICE ZWAYNE PRICE 7700 EARTH LINK LUB
Invoice to: (if different from above) WASSER HUDD 1623.5 MAIN LONINGTON NM 89260
Project #: BW-4 + BW-22 Project Name: ANNUAL REPORT
Project Location (including state): BUCKEYE (BW-4) TATUM BW-22 Samples Type: Tapwater

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX				PRESERVATIVE METHOD				SAMPLING TIME
				WATER	SOIL	AIR	SLUDGE	H2O	H2O2	NO3	ICE	
3590A	BW-4 FRESH	1	1000 mL	X				X				9/4/08 11:43 AM
800	BW-4 BRINE	1	1 L	X				X				9/4/08 11:40 AM
801	BW-22 FRESH	1	1 L	X				X				9/4/08 2:45 PM
802	BW-22 BRINE	1	1 L	X				X				9/4/08 2:45 PM

Requisitioned by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
<u>ZWAYNE PRICE</u>	<u>PRICE INC</u>	<u>9/4/08</u>	<u>4:15 PM</u>	<u>TA</u>	<u>PRICE</u>	<u>9/4/08</u>	<u>9:00 AM</u>
Received by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
<u>Wasser</u>	<u>PRICE</u>	<u>9/4/08</u>	<u>9:00 AM</u>	<u>Wasser</u>	<u>PRICE</u>	<u>9/4/08</u>	<u>9:00 AM</u>

Requisitioned by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
<u>ZWAYNE PRICE</u>	<u>PRICE INC</u>	<u>9/4/08</u>	<u>4:15 PM</u>	<u>TA</u>	<u>PRICE</u>	<u>9/4/08</u>	<u>9:00 AM</u>
Received by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
<u>Wasser</u>	<u>PRICE</u>	<u>9/4/08</u>	<u>9:00 AM</u>	<u>Wasser</u>	<u>PRICE</u>	<u>9/4/08</u>	<u>9:00 AM</u>

ANALYSIS REQUEST

(Circle or Specify Method No.)

MTBE 8021 / 602 / 8260 / 624	BTEX 9021 / 602 / 8260 / 624	TPH 418.1 / TX1005 / TX1006 (EMCC20)	TPH 8015 GPO / DRD / TVHC	PAH 8270 / 625	TPM Metals Ag As Ba Cd Cr Pb Se Hg Bi 10120027	TCLP Volatiles	TCLP Semivolatiles	TCLP Pesticides	NCI	GCMS Vol. 8260 / 624	GCMS Semi. Vol. 8270 / 625	PCBs 8082 / 608	PCBs 8082 / 608	Phenols 9081 / 608	BOD TSS pH	Measure Contain	Cl, F, SO ₄ , NO ₃ , H ₂ PO ₄ , Fe, Arsenic	NA, CA, Mg, K, TDS, EC	PH, SG, TDS, Chloride	SO ₄ DIORNA P _A	Turn Around Time if different from standard	
																			X	X	X	
																			X	X	X	
																			X	X	X	

REMARKS:

LAB USE ONLY

INST-0120	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
<u>TA</u>	<u>PRICE</u>	<u>9/4/08</u>	<u>9:00 AM</u>	<u>Wasser</u>	<u>PRICE</u>	<u>9/4/08</u>	<u>9:00 AM</u>

INST-0120	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
<u>TA</u>	<u>PRICE</u>	<u>9/4/08</u>	<u>9:00 AM</u>	<u>Wasser</u>	<u>PRICE</u>	<u>9/4/08</u>	<u>9:00 AM</u>

FRESH + BRINE SAMPLES
FOR BW-4 + BW-22Dry Weight Basis Required
TSS Report Required
Check if Special Reporting
Limits Are Needed

Summary Report

Wayne Price
Price LLC
312 Encantado Ridge Ct. NE
Rio Rancho, NM 87124

Report Date: July 31, 2014

Work Order: 14072110



Project Location: Buckeye, NM-Tatum, NM
Project Name: Quarterly Samples
Project Number: Buckeye Station-Tatum Station

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
368929	BS FW	water	2014-07-17	13:05	2014-07-17
368930	BS BW	water	2014-07-17	13:08	2014-07-17
368931	TS FW	water	2014-07-17	13:59	2014-07-17
368932	TS BW	water	2014-07-17	14:03	2014-07-17

Sample: 368929 - BS FW

Param	Flag	Result	Units	RL
Chloride		341	mg/L	2.5
Density		0.995	g/ml	
pH		7.62	s.u.	2
Total Dissolved Solids	Qr	864	mg/L	2.5

Sample: 368930 - BS BW

Param	Flag	Result	Units	RL
Chloride		200000	mg/L	2.5
Density		1.20	g/ml	
Dissolved Sodium		149000	mg/L	1
pH		6.90	s.u.	2
Total Dissolved Solids		295000	mg/L	2.5

Sample: 368931 - TS FW

Param	Flag	Result	Units	RL
Chloride		76.8	mg/L	2.5
Density		0.994	g/ml	
pH		9.30	s.u.	2
Total Dissolved Solids		639	mg/L	2.5

Sample: 368932 - TS BW

Param	Flag	Result	Units	RL
Chloride		17900	mg/L	2.5
Density		1.02	g/ml	
Dissolved Sodium		11300	mg/L	1
pH		6.21	s.u.	2
Total Dissolved Solids		34600	mg/L	2.5



6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1296 806-794-1296 FAX 806-794-1298
200 East Sunset Road, Suite E El Paso, Texas 79922 915-585-3443 FAX 915-585-4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432-689-6301 FAX 432-689-6313
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972-242-7750
E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Wayne Price
Price LLC
312 Encantado Ridge Ct. NE
Rio Rancho, NM, 87124

Report Date: July 31, 2014

Work Order: 14072110



Project Location: Buckeye, NM-Tatum, NM
Project Name: Quarterly Samples
Project Number: Buckeye Station-Tatum Station

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
368929	BS FW	water	2014-07-17	13:05	2014-07-17
368930	BS BW	water	2014-07-17	13:08	2014-07-17
368931	TS FW	water	2014-07-17	13:59	2014-07-17
368932	TS BW	water	2014-07-17	14:03	2014-07-17

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 19 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director
James Taylor, Assistant Director

Report Contents

Case Narrative	3
Analytical Report	4
Sample 368929 (BS FW)	4
Sample 368930 (BS BW)	5
Sample 368931 (TS FW)	6
Sample 368932 (TS BW)	7
Method Blanks	9
QC Batch 113960 - Method Blank (1)	9
QC Batch 114016 - Method Blank (1)	9
QC Batch 114019 - Method Blank (1)	9
QC Batch 114047 - Method Blank (1)	9
QC Batch 114086 - Method Blank (1)	10
Duplicates	11
QC Batch 113880 - Duplicate (1)	11
QC Batch 113960 - Duplicate (1)	11
QC Batch 114019 - Duplicate (1)	11
QC Batch 114047 - Duplicate (1)	11
Laboratory Control Spikes	13
QC Batch 113960 - LCS (1)	13
QC Batch 114016 - LCS (1)	13
QC Batch 114047 - LCS (1)	13
QC Batch 114086 - LCS (1)	14
Matrix Spikes	15
QC Batch 114016 - MS (1)	15
QC Batch 114086 - MS (1)	15
Calibration Standards	16
QC Batch 113880 - ICV (1)	16
QC Batch 113880 - CCV (1)	16
QC Batch 114016 - ICV (1)	16
QC Batch 114016 - CCV (1)	16
QC Batch 114086 - CCV (1)	16
QC Batch 114086 - CCV (2)	17
QC Batch 114086 - CCV (3)	17
Appendix	18
Report Definitions	18
Laboratory Certifications	18
Standard Flags	18
Attachments	19

Case Narrative

Samples for project Quarterly Samples were received by TraceAnalysis, Inc. on 2014-07-17 and assigned to work order 14072110. Samples for work order 14072110 were received intact at a temperature of 1.0 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (IC)	E 300.0	96480	2014-07-29 at 16:46	114086	2014-07-29 at 16:46
Density	ASTM D854-92	96429	2014-07-28 at 11:00	114019	2014-07-28 at 11:15
Na, Dissolved	S 6010C	96355	2014-07-24 at 13:18	114016	2014-07-25 at 15:56
pH	SM 4500-H+	96321	2014-07-23 at 10:49	113880	2014-07-23 at 10:50
TDS	SM 2540C	96388	2014-07-23 at 11:00	113960	2014-07-23 at 11:00
TDS	SM 2540C	96452	2014-07-25 at 11:40	114047	2014-07-25 at 11:40

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 14072110 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 368929 - BS FW

Laboratory: El Paso
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 114086 Date Analyzed: 2014-07-29 Analyzed By: JR
Prep Batch: 96480 Sample Preparation: 2014-07-29 Prepared By: JR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,4,6	341	mg/L	10	2.50

Sample: 368929 - BS FW

Laboratory: Lubbock
Analysis: Density Analytical Method: ASTM D854-92 Prep Method: N/A
QC Batch: 114019 Date Analyzed: 2014-07-28 Analyzed By: CF
Prep Batch: 96429 Sample Preparation: 2014-07-28 Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Density			0.995	g/ml	1	0.00

Sample: 368929 - BS FW

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 113880 Date Analyzed: 2014-07-23 Analyzed By: AT
Prep Batch: 96321 Sample Preparation: 2014-07-23 Prepared By: AT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		2,3,7,8	7.62	s.u.	1	2.00

Sample: 368929 - BS FW

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 114047 Date Analyzed: 2014-07-25 Analyzed By: CF
Prep Batch: 96452 Sample Preparation: 2014-07-25 Prepared By: CF

Report Date: July 31, 2014
Buckeye Station-Tatum Station

Work Order: 14072110
Quarterly Samples

Page Number: 5 of 19
Buckeye, NM-Tatum, NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids	Qr	2,3,5,7,8	864	mg/L	20	2.50

Sample: 368930 - BS BW

Laboratory: El Paso
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 114086 Date Analyzed: 2014-07-29 Analyzed By: JR
Prep Batch: 96480 Sample Preparation: 2014-07-29 Prepared By: JR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,4,6	200000	mg/L	5000	2.50

Sample: 368930 - BS BW

Laboratory: Lubbock
Analysis: Density Analytical Method: ASTM D854-92 Prep Method: N/A
QC Batch: 114019 Date Analyzed: 2014-07-28 Analyzed By: CF
Prep Batch: 96429 Sample Preparation: 2014-07-28 Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Density			1.20	g/ml	1	0.00

Sample: 368930 - BS BW

Laboratory: Lubbock
Analysis: Na, Dissolved Analytical Method: S 6010C Prep Method: S 3005A
QC Batch: 114016 Date Analyzed: 2014-07-25 Analyzed By: LM
Prep Batch: 96355 Sample Preparation: 2014-07-24 Prepared By: LM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium		3,5,7,8	149000	mg/L	10000	1.00

Sample: 368930 - BS BW

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 113880 Date Analyzed: 2014-07-23 Analyzed By: AT
Prep Batch: 96321 Sample Preparation: 2014-07-23 Prepared By: AT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		2,3,7,8	6.90	s.u.	1	2.00

Sample: 368930 - BS BW

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 113960 Date Analyzed: 2014-07-23 Analyzed By: CF
Prep Batch: 96388 Sample Preparation: 2014-07-23 Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		2,3,5,7,8	295000	mg/L	2000	2.50

Sample: 368931 - TS FW

Laboratory: El Paso
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 114086 Date Analyzed: 2014-07-29 Analyzed By: JR
Prep Batch: 96480 Sample Preparation: 2014-07-29 Prepared By: JR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,4,6	76.8	mg/L	10	2.50

Sample: 368931 - TS FW

Laboratory: Lubbock
Analysis: Density Analytical Method: ASTM D854-92 Prep Method: N/A
QC Batch: 114019 Date Analyzed: 2014-07-28 Analyzed By: CF
Prep Batch: 96429 Sample Preparation: 2014-07-28 Prepared By: CF

continued ...

sample 368931 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Density			0.994	g/ml	1	0.00

Sample: 368931 - TS FW

Laboratory: Lubbock
 Analysis: pH
 QC Batch: 113880
 Prep Batch: 96321

Analytical Method: SM 4500-H+
 Date Analyzed: 2014-07-23
 Sample Preparation: 2014-07-23

Prep Method: N/A
 Analyzed By: AT
 Prepared By: AT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		2,3,7,8	9.30	s.u.	1	2.00

Sample: 368931 - TS FW

Laboratory: Lubbock
 Analysis: TDS
 QC Batch: 113960
 Prep Batch: 96388

Analytical Method: SM 2540C
 Date Analyzed: 2014-07-23
 Sample Preparation: 2014-07-23

Prep Method: N/A
 Analyzed By: CF
 Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		2,3,5,7,8	639	mg/L	10	2.50

Sample: 368932 - TS BW

Laboratory: El Paso
 Analysis: Chloride (IC)
 QC Batch: 114086
 Prep Batch: 96480

Analytical Method: E 300.0
 Date Analyzed: 2014-07-29
 Sample Preparation: 2014-07-29

Prep Method: N/A
 Analyzed By: JR
 Prepared By: JR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,4,6	17900	mg/L	500	2.50

Sample: 368932 - TS BW

Laboratory: Lubbock
Analysis: Density Analytical Method: ASTM D854-92 Prep Method: N/A
QC Batch: 114019 Date Analyzed: 2014-07-28 Analyzed By: CF
Prep Batch: 96429 Sample Preparation: 2014-07-28 Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Density			1.02	g/ml	1	0.00

Sample: 368932 - TS BW

Laboratory: Lubbock
Analysis: Na, Dissolved Analytical Method: S 6010C Prep Method: S 3005A
QC Batch: 114016 Date Analyzed: 2014-07-25 Analyzed By: LM
Prep Batch: 96355 Sample Preparation: 2014-07-24 Prepared By: LM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium		3,5,7,8	11300	mg/L	100	1.00

Sample: 368932 - TS BW

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 113880 Date Analyzed: 2014-07-23 Analyzed By: AT
Prep Batch: 96321 Sample Preparation: 2014-07-23 Prepared By: AT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		2,3,7,8	6.21	s.u.	1	2.00

Sample: 368932 - TS BW

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 113960 Date Analyzed: 2014-07-23 Analyzed By: CF
Prep Batch: 96388 Sample Preparation: 2014-07-23 Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		2,3,5,7,8	34600	mg/L	1000	2.50

Method Blanks

Method Blank (1) QC Batch: 113960

QC Batch: 113960 Date Analyzed: 2014-07-23 Analyzed By: CF
Prep Batch: 96388 QC Preparation: 2014-07-23 Prepared By: CF

Parameter	Flag	Cert	MDL Result	Units	RL
Total Dissolved Solids		2,3,5,7,8	<2.50	mg/L	2.5

Method Blank (1) QC Batch: 114016

QC Batch: 114016 Date Analyzed: 2014-07-25 Analyzed By: LM
Prep Batch: 96355 QC Preparation: 2014-07-24 Prepared By: PM

Parameter	Flag	Cert	MDL Result	Units	RL
Dissolved Sodium		3,5,7,8	<0.0184	mg/L	1

Method Blank (1) QC Batch: 114019

QC Batch: 114019 Date Analyzed: 2014-07-28 Analyzed By: CF
Prep Batch: 96429 QC Preparation: 2014-07-28 Prepared By: CF

Parameter	Flag	Cert	MDL Result	Units	RL
Density			0.995	g/ml	

Method Blank (1) QC Batch: 114047

QC Batch: 114047 Date Analyzed: 2014-07-25 Analyzed By: CF
Prep Batch: 96452 QC Preparation: 2014-07-25 Prepared By: CF

Report Date: July 31, 2014
Buckeye Station-Tatum Station

Work Order: 14072110
Quarterly Samples

Page Number: 10 of 19
Buckeye, NM-Tatum, NM

Parameter	Flag	Cert	MDL Result	Units	RL
Total Dissolved Solids		2,3,5,7,8	<2.50	mg/L	2.5

Method Blank (1) QC Batch: 114086

QC Batch: 114086
Prep Batch: 96480

Date Analyzed: 2014-07-29
QC Preparation: 2014-07-29

Analyzed By: JR
Prepared By: JR

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1,4,6	<0.00680	mg/L	2.5

Duplicates

Duplicates (1) Duplicated Sample: 368940

QC Batch: 113880 Date Analyzed: 2014-07-23 Analyzed By: AT
Prep Batch: 96321 QC Preparation: 2014-07-23 Prepared By: AT

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH	2,3,7,8	8.16	8.20	s.u.	1	0	20

Duplicates (1) Duplicated Sample: 369075

QC Batch: 113960 Date Analyzed: 2014-07-23 Analyzed By: CF
Prep Batch: 96388 QC Preparation: 2014-07-23 Prepared By: CF

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	2,3,5,7,8	381	380	mg/L	10	0	10

Duplicates (1) Duplicated Sample: 368932

QC Batch: 114019 Date Analyzed: 2014-07-28 Analyzed By: CF
Prep Batch: 96429 QC Preparation: 2014-07-28 Prepared By: CF

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Density		1.02	1.02	g/ml	1	0	20

Duplicates (1) Duplicated Sample: 369374

QC Batch: 114047 Date Analyzed: 2014-07-25 Analyzed By: CF
Prep Batch: 96452 QC Preparation: 2014-07-25 Prepared By: CF

Report Date: July 31, 2014
Buckeye Station-Tatum Station

Work Order: 14072110
Quarterly Samples

Page Number: 12 of 19
Buckeye, NM-Tatum, NM

Param				Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	Qr	Qr	2,3,5,7,8	2660	2300	mg/L	50	14	10

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Dissolved Solids		2,3,5,7,8	972	mg/L	1	1000	<2.50	97	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Dissolved Solids		2,3,5,7,8	1020	mg/L	1	1000	<2.50	102	90 - 110	5	10

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 114086
 Prep Batch: 96480

Date Analyzed: 2014-07-29
 QC Preparation: 2014-07-29

Analyzed By: JR
 Prepared By: JR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,4,6	25.2	mg/L	1	25.0	<0.00680	101	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1,4,6	25.1	mg/L	1	25.0	<0.00680	100	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Calibration Standards

Standard (ICV-1)

QC Batch: 113880

Date Analyzed: 2014-07-23

Analyzed By: AT

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		2,3,7,8	s.u.	7.00	7.01	100	98 - 102	2014-07-23

Standard (CCV-1)

QC Batch: 113880

Date Analyzed: 2014-07-23

Analyzed By: AT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		2,3,7,8	s.u.	7.00	7.01	100	98 - 102	2014-07-23

Standard (ICV-1)

QC Batch: 114016

Date Analyzed: 2014-07-25

Analyzed By: LM

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Sodium		3,5,7,8	mg/L	51.0	48.8	96	90 - 110	2014-07-25

Standard (CCV-1)

QC Batch: 114016

Date Analyzed: 2014-07-25

Analyzed By: LM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Sodium		3,5,7,8	mg/L	51.0	49.9	98	90 - 110	2014-07-25

Standard (CCV-1)

QC Batch: 114086

Date Analyzed: 2014-07-29

Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1,4,6	mg/L	25.0	24.8	99	90 - 110	2014-07-29

Standard (CCV-2)

QC Batch: 114086

Date Analyzed: 2014-07-29

Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1,4,6	mg/L	25.0	25.0	100	90 - 110	2014-07-29

Standard (CCV-3)

QC Batch: 114086

Date Analyzed: 2014-07-29

Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1,4,6	mg/L	25.0	25.2	101	90 - 110	2014-07-29

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	PJLA	L14-103	El Paso
2	PJLA	L14-93	Lubbock
3	Kansas	Kansas E-10317	Lubbock
4	LELAP	LELAP-02002	El Paso
5	LELAP	LELAP-02003	Lubbock
6	NELAP	T104704221-12-3	El Paso
7	NELAP	T104704219-14-10	Lubbock
8		2013-083	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less than ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.

F	Description
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

TraceAnalysis, Inc.

email: lab@traceanalysis.com

8771 Alabaster Avenue, Suite 9
Lubbock, Texas 79424
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1 (800) 588-3443

Bio-Analytic Testing
2071 Meyers Rd., Ste 102
Carrollton, Texas 75006
Tel (972) 242-7750

Company Name: **PRICE LLC** Phone #: **505-715-2809**
 Address: **1801 City Blvd** Fax #: **505-898-5543**
218 Eastwood - Ridge Court Me Rio Rancho NM
 Contact Person: **WAYNE PRICE** E-mail: **wayne.price@earthlink.net**
 Invoice to: **Washington 1623 S. Main Lovington NM 88060**
 (if different from above)
 Project #: **Burbage Station Testes Station** Project Name: **Quantity Samples**
 Project Location (including state): **Burbage NM, Tubum NM** Sampler Signature: **LWPER**

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX			PRESERVATIVE METHOD			SAMPLING		
				WATER	SOIL	SLUDGE	1	2	3	4	5	6
34924	BS FW	1	1 Gal	X			X	X	X	7/17/14	1:56 PM	
930	BS BW	1	1 Gal	X			X	X	X	7/17/14	1:58 PM	
931	TS FW	1	1 Gal	X			X	X	X	7/17/14	1:57 PM	
932	TS BW	1	1 Gal	X			X	X	X	7/17/14	2:03 PM	

ANALYSIS REQUEST
(Circle or Specify Method No.)

MTRE 8021 / 602 / 8260 / 624	
TRH 418 1 / TX1005 / TX1005 EX(CDS)	
TRH 8015 GRD / DRD / TRHC	
TRH 8270 / 625	
TRM Metals Ag As Ba Cd Cr Pb Se Hg 68100007	
TRM Metals Ag As Ba Cd Cr Pb Se Hg 68100007	
TCLP Metals	
TCLP Metals Ag As Ba Cd Cr Pb Se Hg 68100007	
TCLP Pesticides	
RCI	
GCMS Vol 6260 / 624	
GCMS Semi Vol 6270 / 625	
PCMA 8082 / 608	
PCMA 8082 / 608	
800, TSS, pH	
Mesure Content	
Cl, F, SO ₄ , NO ₃ , N, NO ₂ , N, PO ₄ , P, Ammonia	
Mn, Ca, Mg, K, Pb, Fe	
PH, SA, TDS, CHLORIDES	X
Sodium No. / Density	X
Turn Around Time if different from standard	

Requisitioned by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	INST	OBS	COR
LWPER	PRICE LLC	7/17/14	4:58 PM	John Cannon	PRICE	7-17-14	4:55			
				AT	TA	7/19/14	9:45			

REMARKS: **NA**

LAB USE ONLY

Dry Weight Basis Required
 TSS Report Required
 Check if Special Reporting
 Limit Are Needed

Summary Report

Wayne Price
Price LLC
312 Encantado Ridge Ct. NE
Rio Rancho, NM 87124

Report Date: October 31, 2014

Work Order: 14102105



Project Location: Buckeye New Mexico
Project Name: Brine Well

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
377442	Fresh	water	2014-10-16	13:19	2014-10-17
377443	Brine	water	2014-10-16	13:39	2014-10-17

Sample: 377442 - Fresh

Param	Flag	Result	Units	RL
Chloride		330	mg/L	2.5
pH		7.46	s.u.	2
Specific Gravity		0.9953	g/ml	
Total Dissolved Solids		938	mg/L	2.5

Sample: 377443 - Brine

Param	Flag	Result	Units	RL
Chloride		132000	mg/L	2.5
Dissolved Sodium	Qs	94600	mg/L	1
pH		7.03	s.u.	2
Specific Gravity		1.154	g/ml	
Total Dissolved Solids		229000	mg/L	2.5



6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1296 806-794-1296 FAX 806-794-1298
 200 East Sunset Road, Suite E El Paso, Texas 79922 915-585-3443 FAX 915-585-4944
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 (BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972-242-7750
 E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Wayne Price
 Price LLC
 312 Encantado Ridge Ct. NE
 Rio Rancho, NM, 87124

Report Date: October 31, 2014

Work Order: 14102105



Project Location: Buckeye New Mexico
 Project Name: Brine Well
 Project Number: Brine Well

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
377442	Fresh	water	2014-10-16	13:19	2014-10-17
377443	Brine	water	2014-10-16	13:39	2014-10-17

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 17 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director
 James Taylor, Assistant Director
 Brian Pellam, Operations Manager

Report Contents

Case Narrative	3
Analytical Report	4
Sample 377442 (Fresh)	4
Sample 377443 (Brine)	5
Method Blanks	7
QC Batch 116586 - Method Blank (1)	7
QC Batch 116734 - Method Blank (1)	7
QC Batch 116735 - Method Blank (1)	7
QC Batch 116755 - Method Blank (1)	7
QC Batch 116834 - Method Blank (1)	8
Duplicates	9
QC Batch 116526 - Duplicate (1)	9
QC Batch 116586 - Duplicate (1)	9
QC Batch 116755 - Duplicate (1)	9
Laboratory Control Spikes	10
QC Batch 116734 - LCS (1)	10
QC Batch 116735 - LCS (1)	10
QC Batch 116755 - LCS (1)	10
QC Batch 116834 - LCS (1)	11
Matrix Spikes	12
QC Batch 116734 - MS (1)	12
QC Batch 116735 - MS (1)	12
QC Batch 116834 - MS (1)	12
Calibration Standards	14
QC Batch 116526 - ICV (1)	14
QC Batch 116526 - CCV (1)	14
QC Batch 116734 - ICV (1)	14
QC Batch 116734 - CCV (1)	14
QC Batch 116735 - CCV (1)	14
QC Batch 116735 - CCV (2)	15
QC Batch 116834 - CCV (1)	15
QC Batch 116834 - CCV (2)	15
Appendix	16
Report Definitions	16
Laboratory Certifications	16
Standard Flags	16
Attachments	17

Case Narrative

Samples for project Brine Well were received by TraceAnalysis, Inc. on 2014-10-17 and assigned to work order 14102105. Samples for work order 14102105 were received intact at a temperature of 1.1 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (IC)	E 300.0	98705	2014-10-28 at 15:00	116735	2014-10-28 at 16:01
Chloride (IC)	E 300.0	98782	2014-10-30 at 10:00	116834	2014-10-30 at 11:59
Na, Dissolved	S 6010C	98605	2014-10-23 at 14:50	116734	2014-10-29 at 10:25
pH	SM 4500-H+	98540	2014-10-21 at 16:30	116526	2014-10-21 at 16:30
Specific Gravity	ASTM D1429-95	98592	2014-10-23 at 10:30	116586	2014-10-23 at 10:45
TDS	SM 2540C	98719	2014-10-23 at 10:00	116755	2014-10-23 at 16:00

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 14102105 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 377442 - Fresh

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 116735 Date Analyzed: 2014-10-28 Analyzed By: RL
Prep Batch: 98705 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,3,4,5	330	mg/L	10	2.50

Sample: 377442 - Fresh

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 116526 Date Analyzed: 2014-10-21 Analyzed By: JP
Prep Batch: 98540 Sample Preparation: Prepared By: JP

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,5	7.46	s.u.	1	2.00

Sample: 377442 - Fresh

Laboratory: Lubbock
Analysis: Specific Gravity Analytical Method: ASTM D1429-95 Prep Method: N/A
QC Batch: 116586 Date Analyzed: 2014-10-23 Analyzed By: CF
Prep Batch: 98592 Sample Preparation: 2014-10-23 Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Specific Gravity			0.9953	g/ml	1	0.00

Sample: 377442 - Fresh

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 116755 Date Analyzed: 2014-10-23 Analyzed By: RL
Prep Batch: 98719 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,5	938	mg/L	20	2.50

Sample: 377443 - Brine

Laboratory: Lubbock
 Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
 QC Batch: 116834 Date Analyzed: 2014-10-30 Analyzed By: RL
 Prep Batch: 98782 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,3,4,5	132000	mg/L	5000	2.50

Sample: 377443 - Brine

Laboratory: Lubbock
 Analysis: Na, Dissolved Analytical Method: S 6010C Prep Method: S 3005A
 QC Batch: 116734 Date Analyzed: 2014-10-29 Analyzed By: LM
 Prep Batch: 98605 Sample Preparation: 2014-10-23 Prepared By: LM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium	Qs	2,3,4,5	94600	mg/L	1000	1.00

Sample: 377443 - Brine

Laboratory: Lubbock
 Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
 QC Batch: 116526 Date Analyzed: 2014-10-21 Analyzed By: JP
 Prep Batch: 98540 Sample Preparation: Prepared By: JP

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,5	7.03	s.u.	1	2.00

Report Date: October 31, 2014
Brine Well

Work Order: 14102105
Brine Well

Page Number: 6 of 17
Buckeye New Mexico

Sample: 377443 - Brine

Laboratory: Lubbock
Analysis: Specific Gravity Analytical Method: ASTM D1429-95 Prep Method: N/A
QC Batch: 116586 Date Analyzed: 2014-10-23 Analyzed By: CF
Prep Batch: 98592 Sample Preparation: 2014-10-23 Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Specific Gravity			1.154	g/ml	1	0.000

Sample: 377443 - Brine

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 116755 Date Analyzed: 2014-10-23 Analyzed By: RL
Prep Batch: 98719 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids			229000	mg/L	2000	2.50

Method Blanks

Method Blank (1) QC Batch: 116586

QC Batch: 116586 Date Analyzed: 2014-10-23 Analyzed By: CF
Prep Batch: 98592 QC Preparation: 2014-10-23 Prepared By: CF

Parameter	Flag	Cert	MDL Result	Units	RL
Specific Gravity			1.002	g/ml	

Method Blank (1) QC Batch: 116734

QC Batch: 116734 Date Analyzed: 2014-10-29 Analyzed By: LM
Prep Batch: 98605 QC Preparation: 2014-10-23 Prepared By: PM

Parameter	Flag	Cert	MDL Result	Units	RL
Dissolved Sodium		2,3,4,5	<0.0184	mg/L	1

Method Blank (1) QC Batch: 116735

QC Batch: 116735 Date Analyzed: 2014-10-28 Analyzed By: RL
Prep Batch: 98705 QC Preparation: 2014-10-28 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1,2,3,4,5	1.11	mg/L	2.5

Method Blank (1) QC Batch: 116755

QC Batch: 116755 Date Analyzed: 2014-10-23 Analyzed By: RL
Prep Batch: 98719 QC Preparation: 2014-10-23 Prepared By: RL

Report Date: October 31, 2014
Brine Well

Work Order: 14102105
Brine Well

Page Number: 8 of 17
Buckeye New Mexico

Parameter	Flag	Cert	MDL Result	Units	RL
Total Dissolved Solids		1,2,3,4,5	<25.0	mg/L	2.5

Method Blank (1) QC Batch: 116834

QC Batch: 116834
Prep Batch: 98782

Date Analyzed: 2014-10-30
QC Preparation: 2014-10-30

Analyzed By: RL
Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1,2,3,4,5	1.26	mg/L	2.5

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 116734
 Prep Batch: 98605

Date Analyzed: 2014-10-29
 QC Preparation: 2014-10-23

Analyzed By: LM
 Prepared By: PM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Sodium		2,3,4,5	54.9	mg/L	1	52.5	<0.0184	104	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Dissolved Sodium		2,3,4,5	53.4	mg/L	1	52.5	<0.0184	102	85 - 115	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 116735
 Prep Batch: 98705

Date Analyzed: 2014-10-28
 QC Preparation: 2014-10-28

Analyzed By: RL
 Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,2,3,4,5	25.4	mg/L	1	25.0	1.11	97	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1,2,3,4,5	25.3	mg/L	1	25.0	1.11	97	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 116755
 Prep Batch: 98719

Date Analyzed: 2014-10-23
 QC Preparation: 2014-10-23

Analyzed By: RL
 Prepared By: RL

Report Date: October 31, 2014
Brine Well

Work Order: 14102105
Brine Well

Page Number: 11 of 17
Buckeye New Mexico

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Dissolved Solids		1,2,3,4,5	986	mg/L	10	1000	<25.0	99	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec. Limit	RPD	RPD Limit
Total Dissolved Solids		1,2,3,4,5	969	mg/L	10	1000	<25.0	97	2	10

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 116834
Prep Batch: 98782

Date Analyzed: 2014-10-30
QC Preparation: 2014-10-30

Analyzed By: RL
Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,2,3,4,5	25.1	mg/L	1	25.0	1.26	95	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec. Limit	RPD	RPD Limit
Chloride		1,2,3,4,5	25.0	mg/L	1	25.0	1.26	95	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 376967

QC Batch: 116734 Date Analyzed: 2014-10-29 Analyzed By: LM
 Prep Batch: 98605 QC Preparation: 2014-10-23 Prepared By: PM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Sodium	Qs	Qs	2,3,4,5	5740	mg/L	100	525	5457	54 75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit	
Dissolved Sodium	Qs	Qs	2,3,4,5	5800	mg/L	100	525	5457	65	75 - 125	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 377451

QC Batch: 116735 Date Analyzed: 2014-10-28 Analyzed By: RL
 Prep Batch: 98705 QC Preparation: 2014-10-28 Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			1,2,3,4,5	340	mg/L	10	250	75.5	106 80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit	
Chloride			1,2,3,4,5	339	mg/L	10	250	75.5	105	80 - 120	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 378037

QC Batch: 116834 Date Analyzed: 2014-10-30 Analyzed By: RL
 Prep Batch: 98782 QC Preparation: 2014-10-30 Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,2,3,4,5	393	mg/L	10	250	110	113	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1,2,3,4,5	377	mg/L	10	250	110	107	80 - 120	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Calibration Standards

Standard (ICV-1)

QC Batch: 116526

Date Analyzed: 2014-10-21

Analyzed By: JP

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		1,2,4,5	s.u.	7.00	7.01	100	98 - 102	2014-10-21

Standard (CCV-1)

QC Batch: 116526

Date Analyzed: 2014-10-21

Analyzed By: JP

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		1,2,4,5	s.u.	7.00	7.01	100	98 - 102	2014-10-21

Standard (ICV-1)

QC Batch: 116734

Date Analyzed: 2014-10-29

Analyzed By: LM

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Sodium		2,3,4,5	mg/L	51.0	51.7	101	90 - 110	2014-10-29

Standard (CCV-1)

QC Batch: 116734

Date Analyzed: 2014-10-29

Analyzed By: LM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Sodium		2,3,4,5	mg/L	51.0	52.5	103	90 - 110	2014-10-29

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	PJLA	L14-93	Lubbock
2	Kansas	Kansas E-10317	Lubbock
3	LELAP	LELAP-02003	Lubbock
4	NELAP	T104704219-14-10	Lubbock
5		2014-018	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less than ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.

F Description

U The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.

Please note, each attachment may consist of more than one page.

TraceAnalysis, Inc.

email: lab@traceanalysis.com

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Biological Testing
2001 Meyers Rd., Box 122
Carrollton, Texas 75006
Tel (972) 242-1700

Company Name: PRICE LLC
Address: (Street, City, Zip) 312 Escalante Ridge Court NE, ALBANY, GA
Contact Person: Lorston Wayne Price
Invoice to: WASSERBUND BARRY
Project #: NA
Project Location (including state): BUCKEYE NM

ANALYSIS REQUEST
(Circle or Specify Method No.)

MTR	9021 / 902 / 909 / 924
BTEX	9021 / 902 / 909 / 924
THM	418.1 / TX1005 / TX1005 ENG/CS
THM	9015 GPO / DRD / THD
PAH	9070 / 925
THM	Meas Ag Ar Ba Cr O T9 Se Hg 907000 / 7
TCP	Volatiles
TCP	Sev. Volatiles
TCP	Pesticides
RO	
OCMS	Vol. 9290 / 924
OCMS	Sev. Vol. 9270 / 925
PCR	9092 / 928
Pesticides	9081 / 908
BOC	155, pH
Mixture	Comment
Cl, F, SO ₄ , NO ₃ , N, NO ₂ , N, PO ₄ , P, Ammonia	
Nit. Ca, Mg, K, TDS, EC	
Distillate, Distillate, TDS	
Distillate, Distillate, TDS	

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX			PRESERVATIVE METHOD			SAMPLING		
				WATER	SOIL	SLUDGE	TO	NO	NO	NO	NO	NO
37742	ERGSH	1	1.0L	X							10/10/11 11:50 AM	11
37743	BRINE	1	1.0L	X							10/10/11 11:30 AM	11

Requisitioned by: Company: PRICE OR PRUCE LLC
Date: 10/11/11
Time: 4:50 PM
Received by: Company: BTC
Date: 10/11/11
Time: 4:10
INST: OBS 0
COR: 0

Requisitioned by: Company: PRICE OR PRUCE LLC
Date: 10/11/11
Time: 4:50 PM
Received by: Company: BTC
Date: 10/11/11
Time: 4:10
INST: OBS 0
COR: 0

Requisitioned by: Company: PRICE OR PRUCE LLC
Date: 10/11/11
Time: 4:50 PM
Received by: Company: BTC
Date: 10/11/11
Time: 4:10
INST: OBS 0
COR: 0

LAB USE ONLY

REMARKS: COC # 1

Carrier # 25 ZR 292510

Summary Report

Lester Wayne Price Jr.
 Price LLC
 312 Encantado Ridge Ct. NE
 Rio Rancho, NM 87124

Report Date: February 17, 2015

Work Order: 15012306



Project Location: Buckeye, NM
 Project Name: Brine Well

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
385130	Fresh	water	2015-01-16	15:51	2015-01-21
385131	Brine	water	2015-01-16	14:10	2015-01-21

Sample: 385130 - Fresh

Param	Flag	Result	Units	RL
Chloride	H	338	mg/L	2.5
Dissolved Sodium	Qs	221	mg/L	1
pH		8.03	s.u.	2
Specific Gravity		0.9918	g/ml	
Total Dissolved Solids		806	mg/L	2.5

Sample: 385131 - Brine

Param	Flag	Result	Units	RL
Chloride	H	106000	mg/L	2.5
Dissolved Sodium	Qs	81300	mg/L	1
pH		7.12	s.u.	2
Specific Gravity		1.124	g/ml	
Total Dissolved Solids		186000	mg/L	2.5



6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1296 806-794-1296 FAX 806-794-1298
 200 East Sunset Road, Suite E El Paso, Texas 79922 915-585-3443 FAX 915-585-4944
 5002 Basin Street, Suite A1 Midland, Texas 79703 432-689-6301 FAX 432-689-6313
 (BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972-242-7750
 E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Lester Wayne Price Jr.
 Price LLC
 312 Encantado Ridge Ct. NE
 Rio Rancho, NM, 87124

Report Date: February 17, 2015

Work Order: 15012306



Project Location: Buckeye, NM
 Project Name: Brine Well
 Project Number: Brine Well-Buckeye

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
385130	Fresh	water	2015-01-16	15:51	2015-01-21
385131	Brine	water	2015-01-16	14:10	2015-01-21

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 16 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director
 James Taylor, Assistant Director
 Brian Pellam, Operations Manager

Report Contents

Case Narrative	3
Analytical Report	4
Sample 385130 (Fresh)	4
Sample 385131 (Brine)	5
Method Blanks	7
QC Batch 118885 - Method Blank (1)	7
QC Batch 118905 - Method Blank (1)	7
QC Batch 119127 - Method Blank (1)	7
QC Batch 119410 - Method Blank (1)	7
Duplicates	9
QC Batch 118885 - Duplicate (1)	9
QC Batch 118893 - Duplicate (1)	9
QC Batch 118905 - Duplicate (1)	9
Laboratory Control Spikes	10
QC Batch 118905 - LCS (1)	10
QC Batch 119127 - LCS (1)	10
QC Batch 119410 - LCS (1)	10
Matrix Spikes	12
QC Batch 119127 - xMS (1)	12
QC Batch 119410 - MS (1)	12
Calibration Standards	13
QC Batch 118893 - ICV (1)	13
QC Batch 118893 - CCV (1)	13
QC Batch 119127 - ICV (1)	13
QC Batch 119127 - CCV (1)	13
QC Batch 119410 - CCV (1)	13
QC Batch 119410 - CCV (2)	14
Appendix	15
Report Definitions	15
Laboratory Certifications	15
Standard Flags	15
Attachments	16

Case Narrative

Samples for project Brine Well were received by TraceAnalysis, Inc. on 2015-01-21 and assigned to work order 15012306. Samples for work order 15012306 were received intact at a temperature of 0.3 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (IC)	E 300.0	100982	2015-02-16 at 12:00	119410	2015-02-16 at 12:53
Na, Dissolved	S 6010C	100546	2015-01-27 at 17:40	119127	2015-02-06 at 09:23
pH	SM 4500-H+	100544	2015-01-27 at 04:00	118893	2015-01-27 at 16:44
Specific Gravity	ASTM D1429-95	100533	2015-01-27 at 13:00	118885	2015-01-27 at 13:10
TDS	SM 2540C	100553	2015-01-26 at 09:00	118905	2015-01-26 at 17:00

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 15012306 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 385130 - Fresh

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 119410 Date Analyzed: 2015-02-16 Analyzed By: RL
Prep Batch: 100982 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	H	1,2,3,4,5	338	mg/L	10	2.50

Sample: 385130 - Fresh

Laboratory: Lubbock
Analysis: Na, Dissolved Analytical Method: S 6010C Prep Method: S 3005A
QC Batch: 119127 Date Analyzed: 2015-02-06 Analyzed By: RR
Prep Batch: 100544 Sample Preparation: 2015-01-27 Prepared By: RR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium	Qs	2,3,4,5	221	mg/L	1	1.00

Sample: 385130 - Fresh

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 118893 Date Analyzed: 2015-01-27 Analyzed By: AT
Prep Batch: 100544 Sample Preparation: 2015-01-27 Prepared By: AT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,5	8.03	s.u.	1	2.00

Sample: 385130 - Fresh

Laboratory: Lubbock
Analysis: Specific Gravity Analytical Method: ASTM D1429-95 Prep Method: N/A
QC Batch: 118885 Date Analyzed: 2015-01-27 Analyzed By: CF
Prep Batch: 100533 Sample Preparation: 2015-01-27 Prepared By: CF

Report Date: February 17, 2015
Brine Well-Buckeye

Work Order: 15012306
Brine Well

Page Number: 5 of 16
Buckeye, NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Specific Gravity			0.9918	g/ml	1	0.000

Sample: 385130 - Fresh

Laboratory: Lubbock
Analysis: TDS
QC Batch: 118905
Prep Batch: 100553

Analytical Method: SM 2540C
Date Analyzed: 2015-01-26
Sample Preparation:

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,5	806	mg/L	20	2.50

Sample: 385131 - Brine

Laboratory: Lubbock
Analysis: Chloride (IC)
QC Batch: 119410
Prep Batch: 100982

Analytical Method: E 300.0
Date Analyzed: 2015-02-16
Sample Preparation:

Prep Method: N/A
Analyzed By: RL
Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	H	1,2,3,4,5	106000	mg/L	5000	2.50

Sample: 385131 - Brine

Laboratory: Lubbock
Analysis: Na, Dissolved
QC Batch: 119127
Prep Batch: 100546

Analytical Method: S 6010C
Date Analyzed: 2015-02-06
Sample Preparation: 2015-01-27

Prep Method: S 3005A
Analyzed By: RR
Prepared By: RR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium	Qs	2,3,4,5	81300	mg/L	1000	1.00

Report Date: February 17, 2015
Brine Well-Buckeye

Work Order: 15012306
Brine Well

Page Number: 6 of 16
Buckeye, NM

Sample: 385131 - Brine

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 118893 Date Analyzed: 2015-01-27 Analyzed By: AT
Prep Batch: 100544 Sample Preparation: 2015-01-27 Prepared By: AT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,5	7.12	s.u.	1	2.00

Sample: 385131 - Brine

Laboratory: Lubbock
Analysis: Specific Gravity Analytical Method: ASTM D1429-95 Prep Method: N/A
QC Batch: 118885 Date Analyzed: 2015-01-27 Analyzed By: CF
Prep Batch: 100533 Sample Preparation: 2015-01-27 Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Specific Gravity			1.124	g/ml	1	0.000

Sample: 385131 - Brine

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 118905 Date Analyzed: 2015-01-26 Analyzed By: RL
Prep Batch: 100553 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,5	186000	mg/L	2000	2.50

Method Blanks

Method Blank (1) QC Batch: 118885

QC Batch: 118885 Date Analyzed: 2015-01-27 Analyzed By: CF
Prep Batch: 100533 QC Preparation: 2015-01-27 Prepared By: CF

Parameter	Flag	Cert	MDL Result	Units	RL
Specific Gravity			0.9916	g/ml	

Method Blank (1) QC Batch: 118905

QC Batch: 118905 Date Analyzed: 2015-01-26 Analyzed By: RL
Prep Batch: 100553 QC Preparation: 2015-01-26 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Total Dissolved Solids		1,2,3,4,5	<25.0	mg/L	2.5

Method Blank (1) QC Batch: 119127

QC Batch: 119127 Date Analyzed: 2015-02-06 Analyzed By: RR
Prep Batch: 100546 QC Preparation: 2015-01-27 Prepared By: PM

Parameter	Flag	Cert	MDL Result	Units	RL
Dissolved Sodium		2,3,4,5	<0.0184	mg/L	1

Method Blank (1) QC Batch: 119410

QC Batch: 119410 Date Analyzed: 2015-02-16 Analyzed By: RL
Prep Batch: 100982 QC Preparation: 2015-02-16 Prepared By: RL

Report Date: February 17, 2015
Brine Well-Buckeye

Work Order: 15012306
Brine Well

Page Number: 8 of 16
Buckeye, NM

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1,2,3,4,5	0.767	mg/L	2.5

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,2,3,4,5	24.0	mg/L	1	25.0	0.767	93	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1,2,3,4,5	23.5	mg/L	1	25.0	0.767	91	90 - 110	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spikes

Matrix Spike (xMS-1) Spiked Sample: 385041

QC Batch: 119127
 Prep Batch: 100546

Date Analyzed: 2015-02-06
 QC Preparation: 2015-01-27

Analyzed By: RR
 Prepared By: PM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Sodium		2,3,4,5	1660	mg/L	1	525	1210	86	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit	
Dissolved Sodium	Qs	Qs	2,3,4,5	1580	mg/L	1	525	1210	70	75 - 125	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 386889

QC Batch: 119410
 Prep Batch: 100982

Date Analyzed: 2015-02-16
 QC Preparation: 2015-02-16

Analyzed By: RL
 Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,2,3,4,5	3350	mg/L	100	2500	812	102	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1,2,3,4,5	3290	mg/L	100	2500	812	99	80 - 120	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (CCV-1)

QC Batch: 119410

Date Analyzed: 2015-02-16

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1,2,3,4,5	mg/L	25.0	23.8	95	90 - 110	2015-02-16

Standard (CCV-2)

QC Batch: 119410

Date Analyzed: 2015-02-16

Analyzed By: RL

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1,2,3,4,5	mg/L	25.0	23.9	96	90 - 110	2015-02-16

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	PJLA	L14-93	Lubbock
2	Kansas	Kansas E-10317	Lubbock
3	LELAP	LELAP-02003	Lubbock
4	NELAP	T104704219-14-10	Lubbock
5		2014-018	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less than ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.

F Description

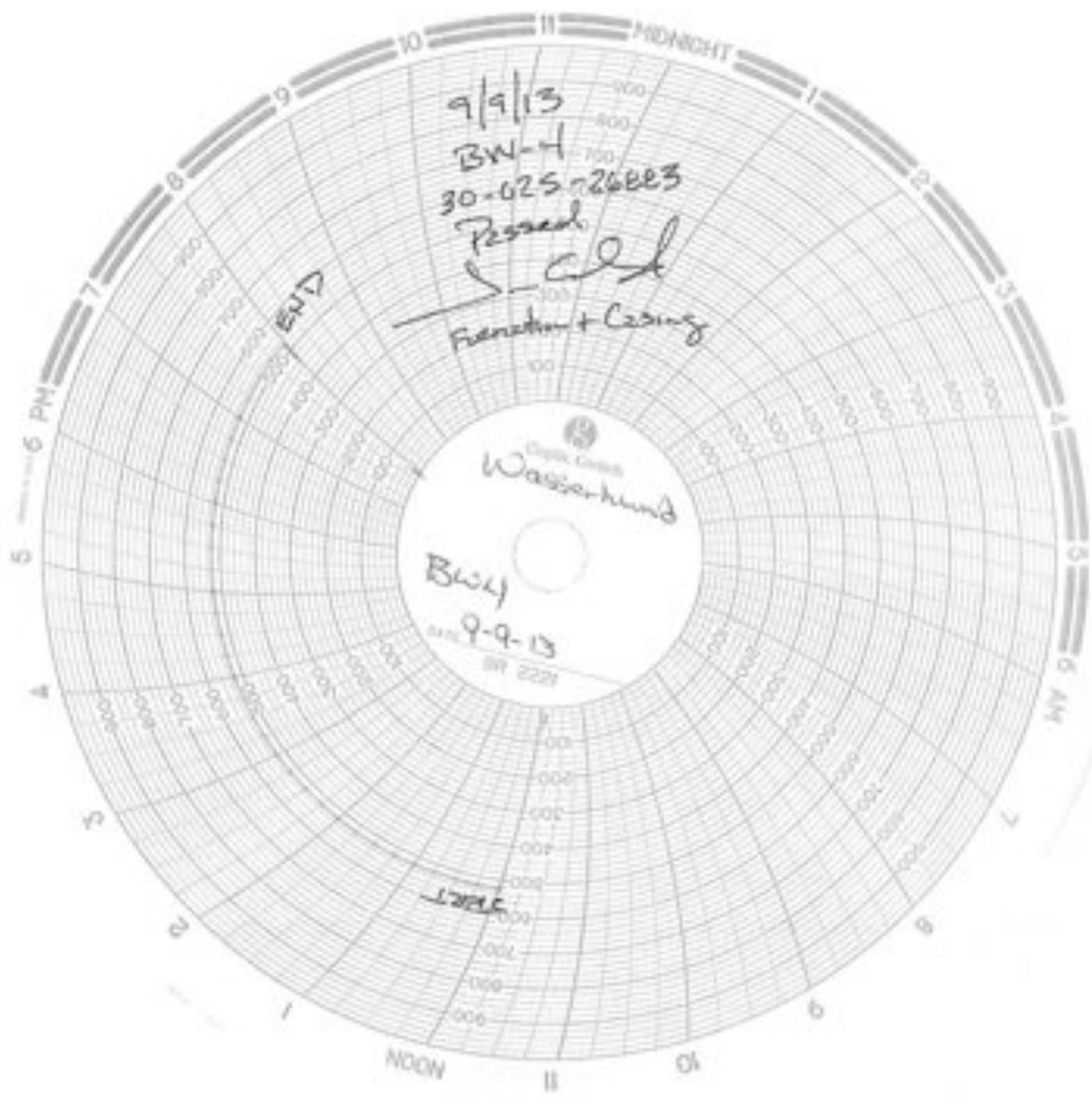
U The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

Appendix “D”

- 2013 MIT Chart



D & L Meters & Instrument Service, Inc.

Lovington, NM 88260
P.O. Box 1621
Office: (575) 396-3715
Fax: (575) 396-5812



Friday, September 06, 2013

Invoice # 100177

Certification of Pressure Recorder Test:

Company: Gandy
Unit: 2
Model: 8" Chartrecorder
Pressure Rating: 1,000#

Serial #:

This Pressure Recorder was tested at midrange for accuracy and verified within +5% and -5% for 1,000# pressure element.

A handwritten signature in black ink, appearing to read "Isaac Luna". The signature is written in a cursive style with large loops.

Isaac Luna

Appendix “E”

- AOR Well Status List
- AOR Plot Plan

2014 BW-04 AOR Review- Well Status List

up-dated Apr 28, 2015

	API#	Well Name	UL	Section	Ts	Rg	Footage	Within 1/4 mi AOR * within 660 ft or Critical AOR	Casing Program Checked	Cased/Cemented across salt section	Corrective Action Required
0	<u>30-025-26883</u>	<u>Wasserhund Eidson #1</u>	<u>M</u>	<u>31</u>	<u>16s</u>	<u>35e</u>	<u>567 FSL & 162 FWI</u>	NA	NA	NA	NA
1	30-025-25146	Sheridan-N Vacumm ABO #1	P	36	16s	34e	460 FSL & 660 FEL	yes*	yes	yes	NO-P&A
1	30-025-35678	Chevron-Chesapeake St.VII #7	A	1	17s	34e	660 FNL & 660 FEL	yes*	yes	no	Under Evaluation by OCD
1	30-025-31621	BTA Oil Producers	L	31	16s	35e	1980 FSL & 660 FWI	Yes*	yes	yes	no

2 2

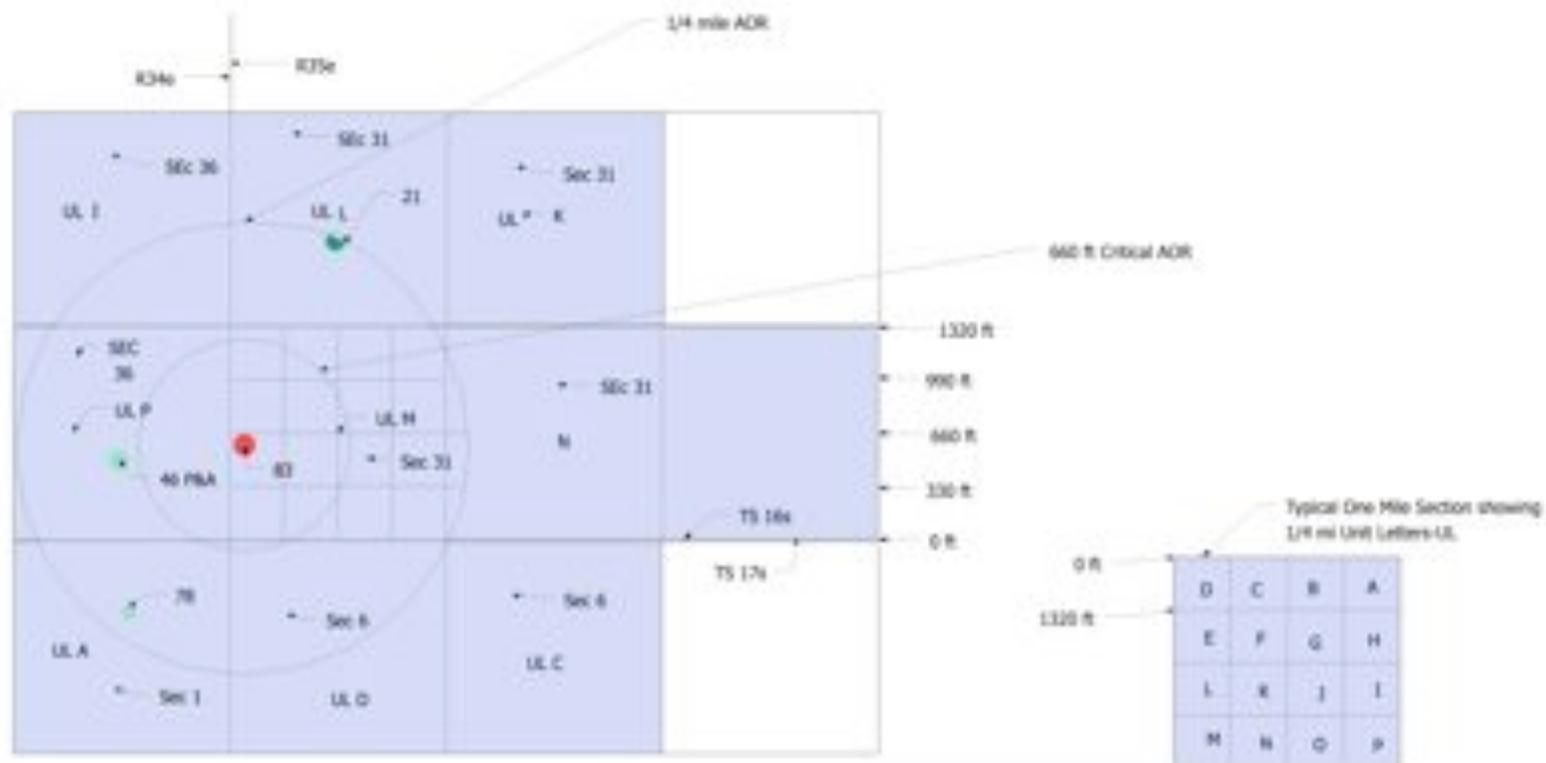
3 Total # of wells in adjacent quarter-sections

3 Total # of wells in 1/4 mile AOR

3 Total # of wells that are within 660 ft or have become within the Critical AOR of the outside radius of the brine well and casing program will be checked Annually.

Notes:

* Means the well is within 660 ft or Critical AOR (1500-1600 ft) of the outside radius of the brine well and casing program will be checked annually.



Brine Well Area of Review (AOR) UL Plot Plan

Well API#: 30-025-26883

Note: Wells are identified by the last 2 digits of the well's API#. API #'s are listed in the well status list.

Operator Name: Wasserhund INC

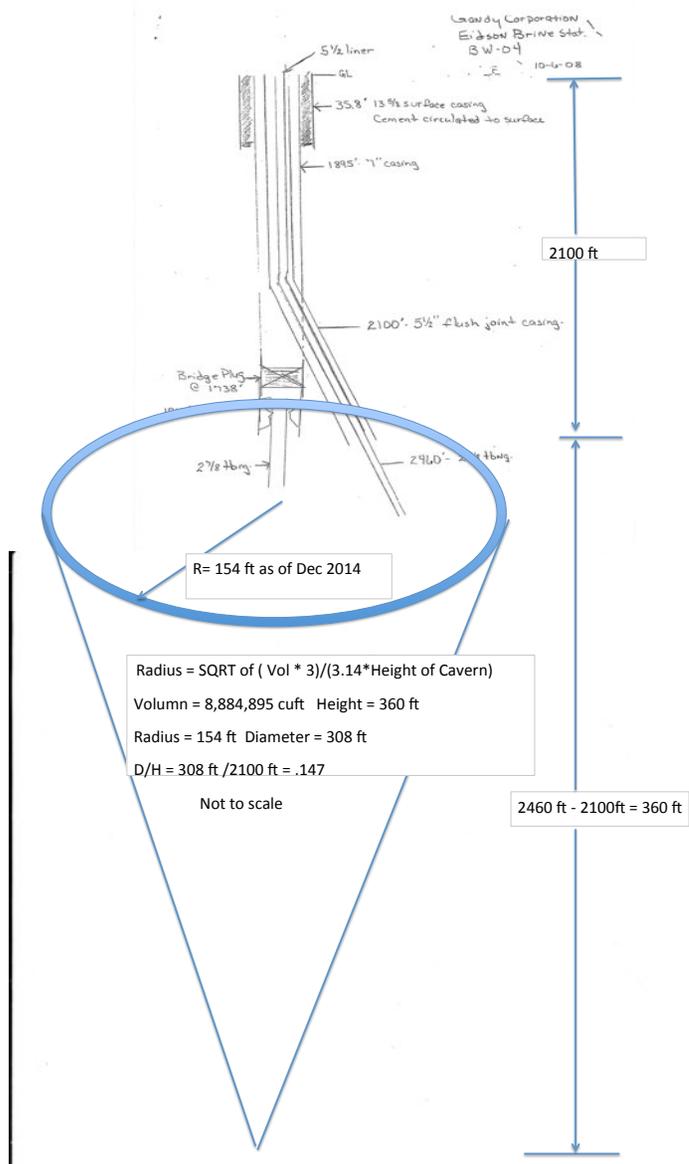
Permit #: BW-04

AOR Year: 2004

Location: UL M-Sec 31-Ts16w-R35e

Appendix “F”

- Wellbore Sketch, Brine Cavity Calculations with new 2014 Radius and D/H calculations.
- Aerial View showing Cavern Radius





Radius of Cavern = 154 ft
As of Dec 2014.

BW-04

© 2015 Google

Google

Feb 14, 2014

32°52'23.15" N 101°10'17.97" W

213

4879 ft

Appendix “G”

- Solution Cavern Monitoring Plan Program

“Solution Cavern Monitoring Plan Program”

Wasserhund Inc.
Buckeye Brine Station
OCD Permit BW-04
API No. 30-025-26883 Eidson #1
Unit Letter M-Section 31-Ts 16s – R35e

Wasserhund Inc. hereby proposes to install a minimum of three National Geodetic Survey (NGS) survey control stations, i.e. survey monuments, around the brine well in a manner that will adequately provide vertical geodetic data to determine if any subsidence is occurring at the aforementioned well site.

A Berntsen Monument Installation Detail is included for reference. An approved Surveying/Contracting company will install the complete system.

A certified surveyed plat will be provided showing the location of the monuments and all significant features of the site.

The monuments will be laid out in a triangulation configuration around the wellhead, and located so as to pick-up any movement related to up-lift or subsidence of the anticipated areas of greatest concern.

The wellhead will also be included in the measurements, along with a known geodetic reference point outside of the possible influence of the well. While the system will focus on vertical movements, lateral movements will be visually noted and will actually impact the vertical readings.

The surveys will be performed semi-annually, evaluated and reported to the agency. All survey readings will be adjusted for and conform to the New Mexico Coordinate System.

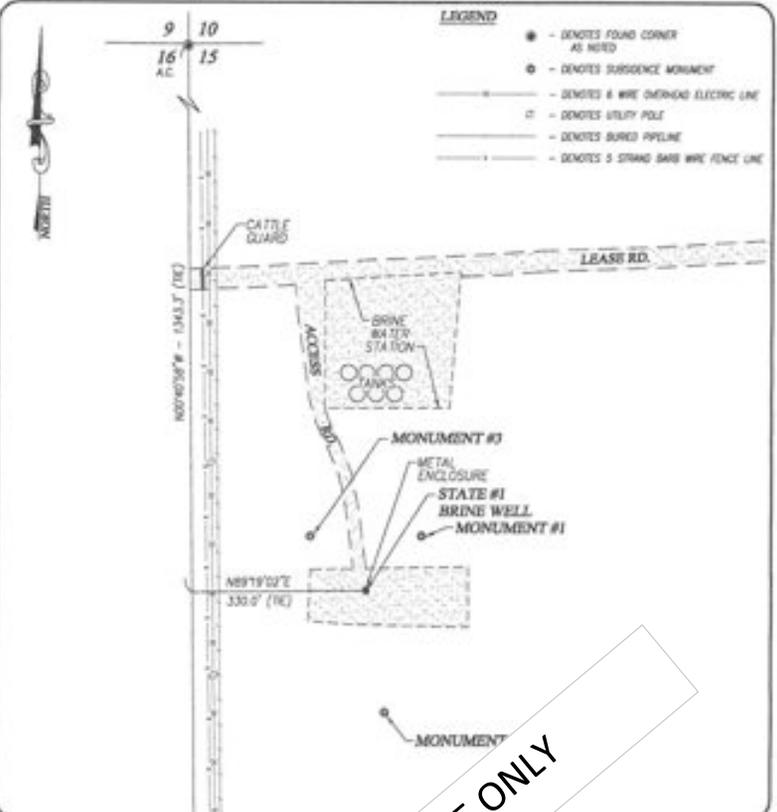
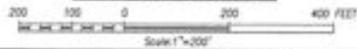
Price LLC will conduct surveys in-house using approved level measuring instruments with a set number of readings collected by a licensed surveyor for quality control.

The data will be tabulated and a graph be maintained for each point over the life of the system.

Attached: Examples Only:
Topographic Map-
Vicinity Map shows Local Benchmarks-Example only
USGS Map-Example only
Susidence Monument Location Map- Example only.
Berntsen Monument Installation Detail-Actual
Data Sheets-Example Only
Graphs-Example Only

TOPOGRAPHIC MAP

Figure 4



- LEGEND**
- - DENOTES FOUND CORNER AS NOTED
 - - DENOTES SUBSIDENCE MONUMENT
 - — — — — DENOTES 8 WIRE OVERHEAD ELECTRIC LINE
 - - DENOTES UTILITY POLE
 - — — — — DENOTES BURIED PIPELINE
 - — — — — DENOTES 5 STRAND BARS WIRE FENCE LINE

NOTE
 BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.

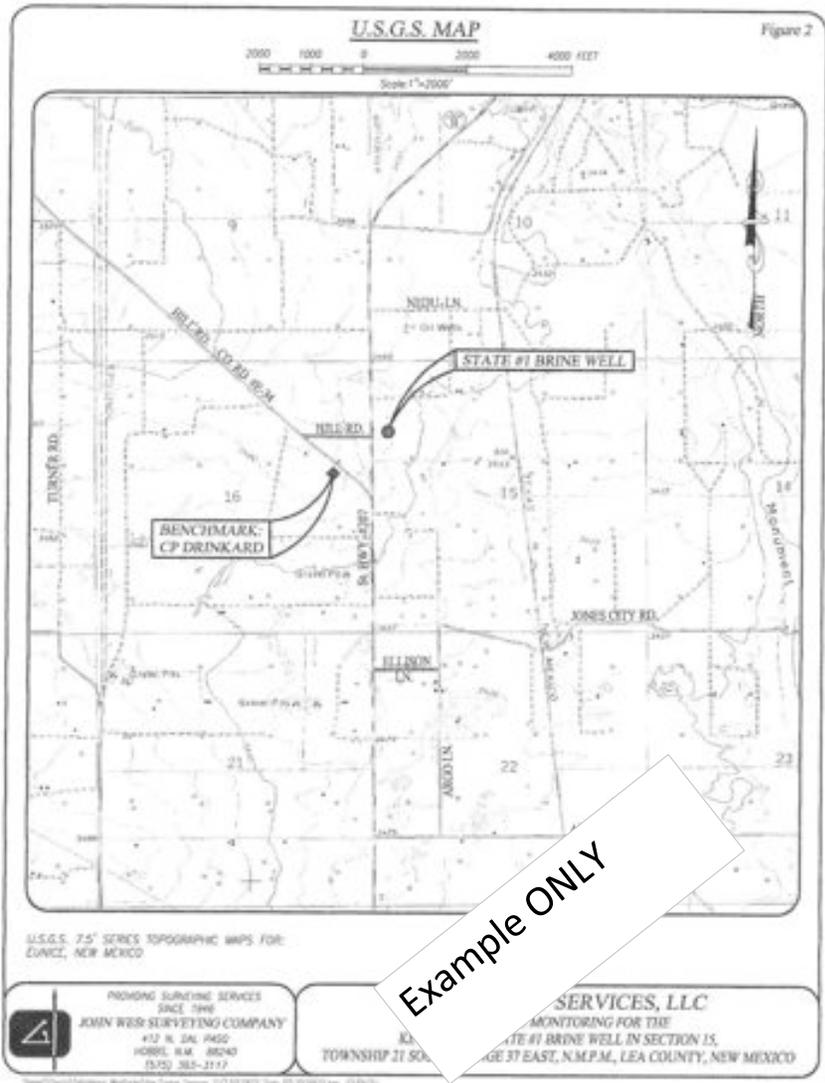
EXAMPLE ONLY

PROVIDING SURVEYING SERVICES SINCE 1946
JOHN WEST SURVEYING COMPANY
 412 N. DUL PASSO
 MORRIS, N.M. 88040
 (505) 383-2117

ENERGY SERVICES, LLC
 SUBSIDENCE MONITORING FOR THE
 ENERGY STATE #1 BRINE WELL IN SECTION 15,
 TOWNSHIP 27 SOUTH, RANGE 37 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO

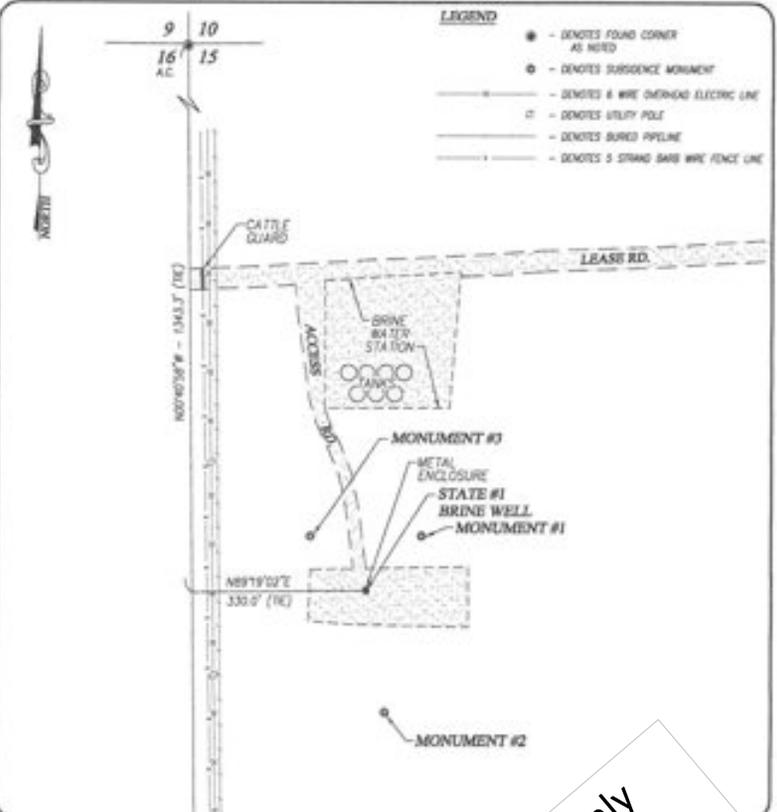
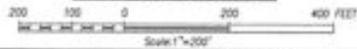
Source: (West) Subsidence Monitoring Energy Services, LLC Date of Issue: Not Later than Survey 08/27/13

Figure 2



TOPOGRAPHIC MAP

Figure 4



NOTE
 BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.

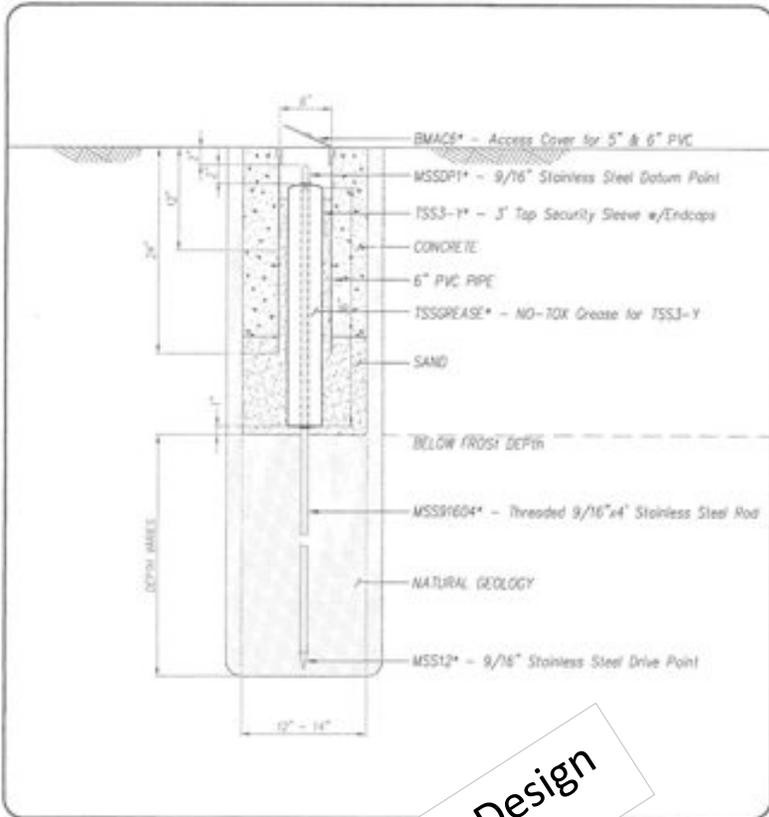
<p>PROVIDING SURVEYING SERVICES SINCE 1946 JOHN WEST SURVEYING COMPANY 412 N. DUL PASSO MORRIS, N.M. 88040 (505) 383-2117</p>	<p>KEY ENGINEERS, LLC FOR THIS PROJECT KEY ENGINEERS, LLC TOWNSHIP 21 SOUTH, RANGE 10 WEST, SECTION 15, LEA COUNTY, NEW MEXICO</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Example Only

Source: (West) (John West) Surveying Services, 12/20/04. © John West Surveying Services, 12/20/04.

BERNTSEN MONUMENT INSTALLATION DETAIL
NOT TO SCALE

Figure 6



Actual Design

REFERENCE:
www.berntsen.com
9/16" STAINLESS STEEL TOP SECURITY SLEEVE MONUMENT

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WESS SURVEYING COMPANY
412 N. DAL 1940
HOBBS, N.M. 88240
(505) 285-3117

ENERGY SERVICES, LLC
EVIDENCE MONITORING FOR THE
ENERGY STATE #1 BRINE WELL IN SECTION 15,
TOWNSHIP 21 SOUTH, RANGE 37 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO

\\na\proj\cadd\cadd\Berntsen\Berntsen.dwg (Sheet 1) 11/19/2013 10:45:11 AM P:\10180.dwg 12/2/13

11	14	-1.5010	427.9000
11	15	-2.6820	222.6000
11	16	-6.0820	384.5400
16	17	-4.3430	464.4600
17	18	-5.5910	384.1600
18	19	-2.5440	424.7600
19	20	-2.6950	398.0200
20	21	-2.8570	385.9600
21	22	-2.1030	267.9000

ADJUSTED ELEVATIONS

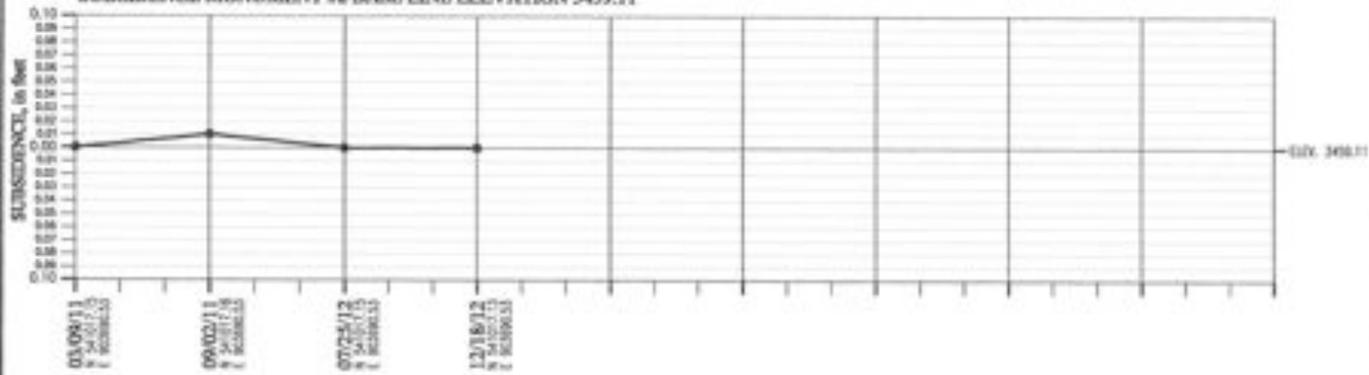
Station	Adjusted Elev	Standard Dev.	
L98	3434.3700	0.00000	NGS MONUMENT L98
22	3434.3700	0.00000	
1	3436.9801	0.01150	
2	3439.3987	0.01639	
3	3442.4091	0.01964	
4	3444.7482	0.02205	
5	3450.5778	0.02338	
6	3455.7212	0.02422	
7	3457.9332	0.02724	MONUMENT #1
8	3459.1092	0.02888	MONUMENT #2
9	3460.4962	0.02863	MONUMENT #3
10	3461.9212	0.02779	STATE #1 WELL
11	3460.6115	0.02450	(AVERAGE)
12	3461.9215	0.02694	STATE #1 WELL 3461.921
13	3460.4925	0.02785	MONUMENT #3 3460.494
14	3459.1105	0.02810	MONUMENT #2 3459.110
15	3457.9295	0.02643	MONUMENT #1 3457.931
16	3454.5260	0.02429	
17	3450.1768	0.02326	
18	3444.5823	0.02181	
19	3442.0345	0.01937	
20	3439.3359	0.01599	
21	3436.4754	0.01061	

From	To	ROUTE SUMMARY Elev. Diff. (adjusted)	Residuals
L98	1	2.6101	-0.0029
1	2	2.4186	-0.0034
2	3	3.0104	-0.0036
3	4	2.3390	-0.0040
4	5	5.8297	-0.0033
5	6	5.1434	-0.0036
6	7	2.2120	-0.0060
6	8	3.3880	-0.0060
6	9	4.7750	-0.0060
6	10	4.2000	-0.0060
6	11	4.8903	-0.0037
11	12	1.3100	-0.0000
12	13	-0.1190	-0.0000
13	14	-1.5010	-0.0000
14	15	-2.6820	0.0000

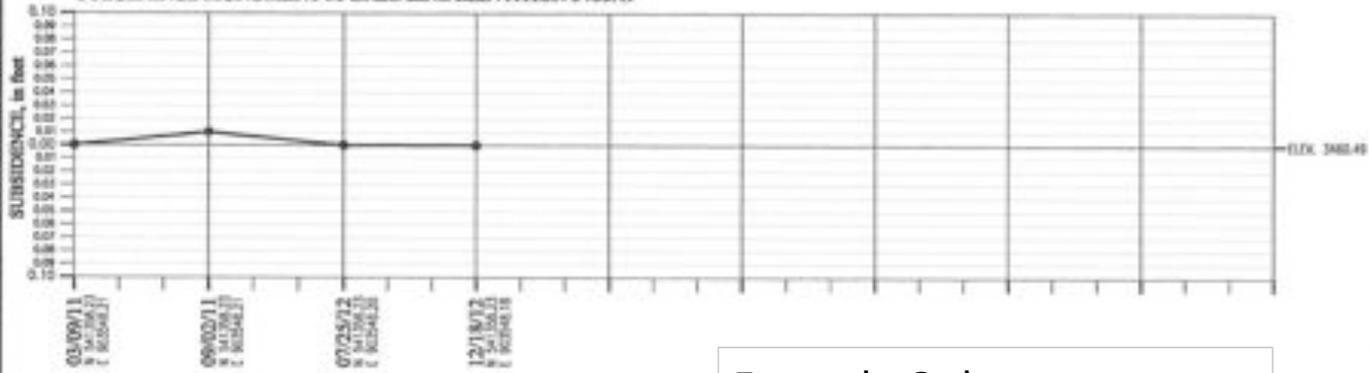
Example
Only

VERTICAL SUBSIDENCE TABLE

SUBSIDENCE MONUMENT #2 BASE LINE ELEVATION 3459.11



SUBSIDENCE MONUMENT #3 BASE LINE ELEVATION 3460.49



Example Only

Figure 7B


 PROVIDING SURVEYING SERVICES
 SINCE 1945
KAMIN WEST SURVEYING COMPANY
 412 N. DUL PASSO
 HOORS, N.M. 88740
 (575) 383-2117

NOTE:
 HORIZONTAL ACCURACY OF EQUIPMENT PER
 MANUFACTURER ±0.02 FT.
 VERTICAL ACCURACY OF EQUIPMENT PER
 MANUFACTURER ±0.01 FT.

UNAPPROVED FOR PUBLICATION
**KEY ENERGY BW-19 CARLSBAD No. 1 WELL IN SECTION 36,
 TOWNSHIP 22 SOUTH, RANGE 26 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO**

Appendix “H”

BW-04 Wasserhund Inc. Closure Cost Estimate.

2014 Annual Report
BW-04 Wasserhund Inc. Closure Cost

Pulling Unit Rig	\$25,000
Halliburton Cement Job	\$8,000.00
Post Subsidence Monitoring 5 years	\$15,000.00
Tank Removal, Pad Clean-Up	\$30,000.00
Consulting fees	\$10,000.00
Total Estimate	\$88,000

Wasserhund Inc.
P.O. Box 2140
575-396-0522
FAX 575-396-0797
Lovington, New Mexico 88260

ANNUAL CLASS III WELL REPORT FOR 2011

Wasserhund Inc.

Buckeye Brine Station

OCD Permit BW-04

API No. 30-025-26883 Eidson #1

Unit Letter M-Section 31-Ts 16s – R35e

April 28, 2012

Section 1- Summary of Operations:

(Permit Condition 21.L.2. "Brief summary of brine wells operations including description and reason for any remedial or major work on the well. Include copy of C-103 if appropriate.")

The brine well was drilled in 1980 and has been in operation for approximately 32 years and is sited on State Highway 08, approximately 12 miles southwest of Lovington, NM. The well is producing out of the Salado "Salt Formation" at a depth of approximately 1900-2460 feet below surface.

A copy of the most recent OCD approved Discharge Plan BW-04 and aerial photo is included for reference in **Appendix A**.

The brine well has been producing for a number of years and may possibly be considered approaching an "end of life" scenario due to its age. This scenario is not due to a safety aspect, i.e. collapse, since the well has produced only about one-half of normal volume compared to similar wells of age. Section 8 (Brine Cavity/Subsidence Information) below discusses the safety aspects of this well in detail.

As with most brine wells of this age, repeated required annual testing which flexes the cavern support, thus causing flexure stress cracking and the required reverse flow issue, has caused these older wells to have pre-mature down-hole problems, such as "sloughing" of the salt-anhydrite layers damaging the tubing and making re-entry virtually impossible and extremely expensive.

This well had to be whip-stocked in 2008 in order to reenter after a severe down-hole problem.

Wasserhund Inc respectfully request a waiver on having to pull the tubing for the next MIT/Braden head test since re-entry will virtually be impossible. We would like to purpose using a Nitrogen "Leak Off" Test instead. These test are considerably more accurate than the OCD standard MIT hydro-test that includes a 10% variance.

On October 13, 2011, the brine well operations were transferred from the Gandy Corporation to Wasserhund Inc. In addition, a brine well renewal application was submitted to OCD with filing fee in June of 2011. **Appendix B** contains the change of operator and renewal application.

During the 2011 year there was no major remedial work on the brine well, other than the annual open to formation mechanical integrity test (MIT). Since the well-head and tubing was not unseated or pulled, a C-103 is normally not required, however a C-103 form was submitted and is included in the MIT Section 3 found in **Appendix E**.

General housekeeping was routinely performed and on-site training and inspections were conducted for awareness of the permit conditions. The loading area has a concrete sump that will be tested in the 2012 year and reported in the annual report. Wasserhund Inc has installed best management practices at the facility pursuant to the permit conditions.

A Pro-active well "Area of Review" has being conducted and will continue to ensure the safety of the well system, including cavern subsidence monitoring as required or directed by OCD.

A yearly cavity size calculation and evaluation of the last sonar test has been conducted to determine cavern stability and is discussed further in Section 8 below.

While this is an older well, it still has not reached its productive end of life and is deemed very safe and an extremely valuable asset for the oil and gas industry.

Section 2- Production Volumes:

(Permit condition 21.L.3. "Production volumes as required from 21.G. including a running total to be carried over to each year. The maximum and average injection pressure.")

(21.G. Requires "The volumes of fluids injected (fresh water) and produced (brine) will be recorded monthly and submitted to the OCD Santa Fe Office in the annual report.")

Sales tickets and flow meters are used to monitor both water injected and brine produced.

Monthly, Yearly and Lifetime Injection and Production Volumes:

The monthly, yearly and lifetime fresh water injection and brine production volumes are attached herein for review. The total 2011 brine production volume was 610,256 bbls and the lifetime production volume is 6,789,258 bbls.

Enclosed in Appendix C is the injection and production and a comparison chart of injected water to produced water with comments.

Maximum and Average Injection Pressure:

The maximum operating injection pressure is approximately 340 psig, which is approximately 35 pounds below the permit maximum pressure of 375 psig.

The average injection pressure as noted by Wasserhund Inc.'s personnel is approximately 280 psig. This reading is taken from a pressure gauge mounted on the pump outlet.

Section 3- Chemical Analysis:

(Permit condition 21.L.4. "A copy of the chemical analysis as required in 21H. "Analysis of injection Fluid and Brine: Provide an analysis of the injection fluid and brine with each annual report. Analysis will be for General Chemistry (method 40 CFR 136.3) using EPA methods.")

Please find attached in **Appendix D** the latest chemical analysis and chain-of-custody of the brine and fresh water injection water samples collected October 18, 2011 and analyzed by Cardinal Laboratory in Hobbs, NM. The sampling process and laboratory used common approved EPA methods to collect, analyze and report for general chemistry i.e. major cations and anions, WQCC metals and cyanide.

The injection water was collected from the fresh water tank load line that is connected directly to the fresh water storage tanks. The fresh water is supplied by a fresh-water well located just west of the site.

The brine water was collected from the brine water tank load line that is connected directly to the brine water storage tanks. This sample point is representative of the brine water at the station.

The analysis revealed that the brine water is predominately sodium chloride with minor constituents of calcium, magnesium, and potassium combined with sulfate and bi-carbonate. This analysis is very representative of Salado "Salt" formation waters found in the area.

The specific gravity of the brine water was 1.186, which equates to 9.88 lb/gal. This is slightly lower than the usual 10 lb/gal normally produced but very acceptable. This lower amount may be attributed to the fact that during the test in October, most of the brine water was sold leaving only fresh water for the MIT "Open to Formation Test."

Section 4- Mechanical Integrity:

(Permit condition 21.L.5. "A copy of any mechanical integrity test chart, including the type of test, i.e. open to formation or casing test.")

The BW-04 discharge permit condition 21.E set forth the criteria for running MIT's for this well. This condition also includes a schedule for which type of test is required to be run during various years of the permit. In 2011, an "open to formation" test was successfully run and witness by Mr. Maxey Brown of the OCD Hobbs office. The MIT test chart is attached in **Appendix E** for review.

Section 5- Deviations from Normal Production Methods:

(Permit condition 21.L.6. "Brief explanation describing deviations from normal production methods.")

In 2008 two OCD permitted brine wells collapsed. As a result of those incidents, the OCD issued a temporary moratorium on new brine well permits. During the moratorium OCD facilitated a work group to determine a proper path forward for current and new brine well operations.

As a result of those proceedings, OCD issued instructions to operators to change OCD's previous requirement of injecting fresh water down the annuals and producing brine up the tubing (i.e reverse-flow); to injecting fresh water down the tubing and producing brine up the annuals, (i.e. conventional-flow).

Wasserhund Inc has attempted to change the flow pattern and as of date, 10# brine cannot be made with conventional-flow. Wasserhund will continue to investigate the reason for this problem.

Section 6- Leak and Spill Reports:

(Permit condition 21.L.7. "A copy of any leaks and spill reports.")

There were no reportable leaks and spills in 2011.

The loading areas are concrete with an integral concrete sump with spill containers under the hose connections, which are designed to catch de-minimis drips from hose connections. Drivers routinely suck out the spill containers, for re-cycling.

The entire facility is bermed to prevent run-on or run-off and all reportable or non-reportable spills are cleaned up pursuant to OCD rules and guidance.

Section 7- Groundwater Monitoring:

(Permit condition 21.L.8. "If applicable, results of any groundwater monitoring.")

The BW-04 facility does not have groundwater monitoring at this site. There are no planned or intentional discharges of water contaminants that may move directly or indirectly into groundwater. Any unintentional discharge, leak, spill, or drip is handled pursuant to the permit conditions.

Section 8- Brine Cavity/Subsidence Information:

(Permit condition 21.L.9. Information required from cavity/subsidence 21.F. "The operator shall provide information on the size and extent of the solution cavern and geologic/engineering data demonstrating that continued brine extraction will not cause surface subsidence, collapse or damage to property, or become a threat to public health and the environment.")

Since the use of sonar tests in other wells has not provided adequate information, the continued use of sonar may be in question until the validity of using sonar test is resolved.

The last cavern survey (2008) for this well did not provide any useful information pertaining to the size and shape of this particular cavern. An alternate method has been discussed with Jim Griswold-OCD and it was mutually decided that an estimated worst-case diameter is to be determined in order to provide maximum protection and ensure the permit conditions are being met.

The Solution Mining Research Institute (SMRI), other state agencies, OCD work-group, along with various studies conducted during the permitting of the WIPP site, has concluded that failures, such as "catastrophic collapses", have a higher probability when the roof diameter of the cavern exceeds a certain value compared to the actual depth of the cavern.

This number is typically called D/H where "D" is the diameter of the cavity and "H" is the depth from surface to the casing shoe. Various reports seem to conclude that when a ratio of D/H reaches or exceeds .66 then the probably of collapse increases to a point that the well may be considered un-safe, thus closing procedures such as proper plugging and abandonment, and possible long term subsidence monitoring should be instituted.

The alternate method mentioned above involves calculating the maximum diameter of the cavern by using a worst-case scenario of an "upright cone". The volume of the cavern is calculated using the lifetime brine production volumes and using a "rule of thumb" conversion factor to determine the volumetric size of the cavern. The rule of thumb conversion factor was taken from the 1982 Wilson Report and equates that every barrel of brine produced will create approximately one cubic foot of cavity.

Please find attached in **Appendix F**, a wellbore sketch, and the calculations for the brine well, and the lifetime brine production tally of approximately 6.79 million barrels of brine produced as of December 2011. The maximum diameter was calculated to be approximately 268 feet with a corresponding D/H ratio of .126 updated for the 2011 year.

Comparing the current D/H ratio of .126 to the .66 value mentioned above, it can be concluded that the current brine well status meets and exceeds the recommended safety value by over five times.

Included in *Appendix F* is an aerial view showing the 134-foot radius superimposed around the brine well and station.

Section 9- Area of Review Update Summary:

(Permit condition 21.L.10. "An Area of Review (AOR) Summary.")

An extensive AOR review was conducted for the Eidson #1 brine well, OCD permit # BW-04, located in UL M of Section 31-Ts16S-R35e. Wasserhund Inc used OCD records and field verification to confirm wells in the AOR.

Using OCD on-line files, a well status list and AOR plot plan was constructed (see *Appendix G*) listing all wells within adjacent quarter sections of the BW-04 location. The list shows API#, Operator well name, UL, Section, Township and Range, footages, Wells within 660 ft (i.e. critical zone) and ¼ mile, casing program status, casing/cementing status, and corrective action required status.

This method was formulated to provide a baseline for future AOR studies. Since any future brine well will certainly be limited in size, a critical AOR of 660 feet was initially established and all wells within that radius will be researched in greater detail.

We used the current estimated diameter of the brine well i.e. 268 feet (R = 134 ft) updated for 2011, and added a 10:1 safety factor which equates to about 1340 ft. As the brine well grows, the critical AOR will be expanded and new wells will be added or existing wells restudied.

The rationale of this approach is the fact that brine wells are non-static in terms of size and configuration and the fact that Wasserhund Inc has no direct control on wells drilled in close proximity. By just initially focusing on the current wells in the ¼ mile AOR and assuming the status of these wells will remain the same, could be a mistake. Therefore, Wasserhund Inc is taking a more dynamic approach and will re-study wells as the brine well grows, especially wells located in a critical zone.

In the 2011 review, there were no new wells added to the list. *Appendix G* contains the check-off list showing the OCD wells in all adjacent quarter sections surrounding the BW-04 brine well.

As in 2010, there are only two wells located within these adjacent units. These two wells are within the ¼ miles radius of the brine well and are now in the 1340 foot critical zone. The critical zone was investigated by checking the OCD on-line well records.

The two wells located in the new critical zone i.e. within 1340 feet, were reinvestigated by checking the OCD on-line well records. There was no well activity for any of these

wells reported since the last 2010 review. Appendix G contains the last recorded file record for the two wells located in the critical AOR. They are identified as API# 30-025-25146 and 30-025-35678.

The Findings are as follows:

API # 30-025-25146: The Sheridan NVANU 12-A well #1, according to OCD records (attached at the end of **Appendix G**), is located 460 FSL & 660 FEL of UL P Section 36-Ts16s-R34e. It is shown to be located approximately 700 ft to the WSW of the BW-04 well. This well was drilled in 1975 with surface casing set at 1680 ft and cemented with 760 sacks. A 4-1/2 inch production casing was set at 8980 feet and cemented with 800 sacks.

According to recent well records there appears to be no cement behind the 4-1/2 casing from 1681 feet to 5500 feet, leaving the salt section exposed to the 4-1/2 casing.

In 2000, a number of casing leaks were noted to be between 4920 feet to 5570 feet. In 2007, a Sheridan well bore schematic noted a water flow up annulus from off-set brine well.

In 2010, a C-103 was submitted to the OCD to P&A the well by setting plugs at the top, top of salt, bottom of salt, and place a cement plug in tubing at 5700 feet.

Conclusions: The OCD records do not show that a subsequent P&A report was filed. So at this time it is undetermined if the well has been P&A.

Corrective Actions: Wasserhund Inc will follow up with the OCD to determine if this well has been properly P&A and approved by OCD.

API # 30-025-35678: The Chesapeake St. VII #7, according to OCD records (attached at the end of Appendix G), is located 660 FNL & 660 FEL of UL A Section 1-Ts17s-R34e. It is shown to be located approximately 1600 ft to the SW of the BW-04 well.

This well was drilled in 2001 with surface casing set at 1610 feet bgl and cemented with 790 sacks circulated to surface. Intermediate casing was set at 5020 feet and cemented with 1190 sacks with top of cement @ 1740 feet (temp survey). A long string was ran and set at 12,732 feet and cemented with 1380 sacks with top of cement at approximately 2000 feet. From this analysis, it appears that maybe some of casing is exposed to the salt section without adequate cement.

Conclusions: It is unclear from the reports filed with OCD how the well was actually completed. The description above was taken from C-103's "Notice of Intent", but no final approved C-103 Subsequent report was found.

Corrective actions: Wasserhund will check with the OCD to determine if the well has been properly completed and approved.

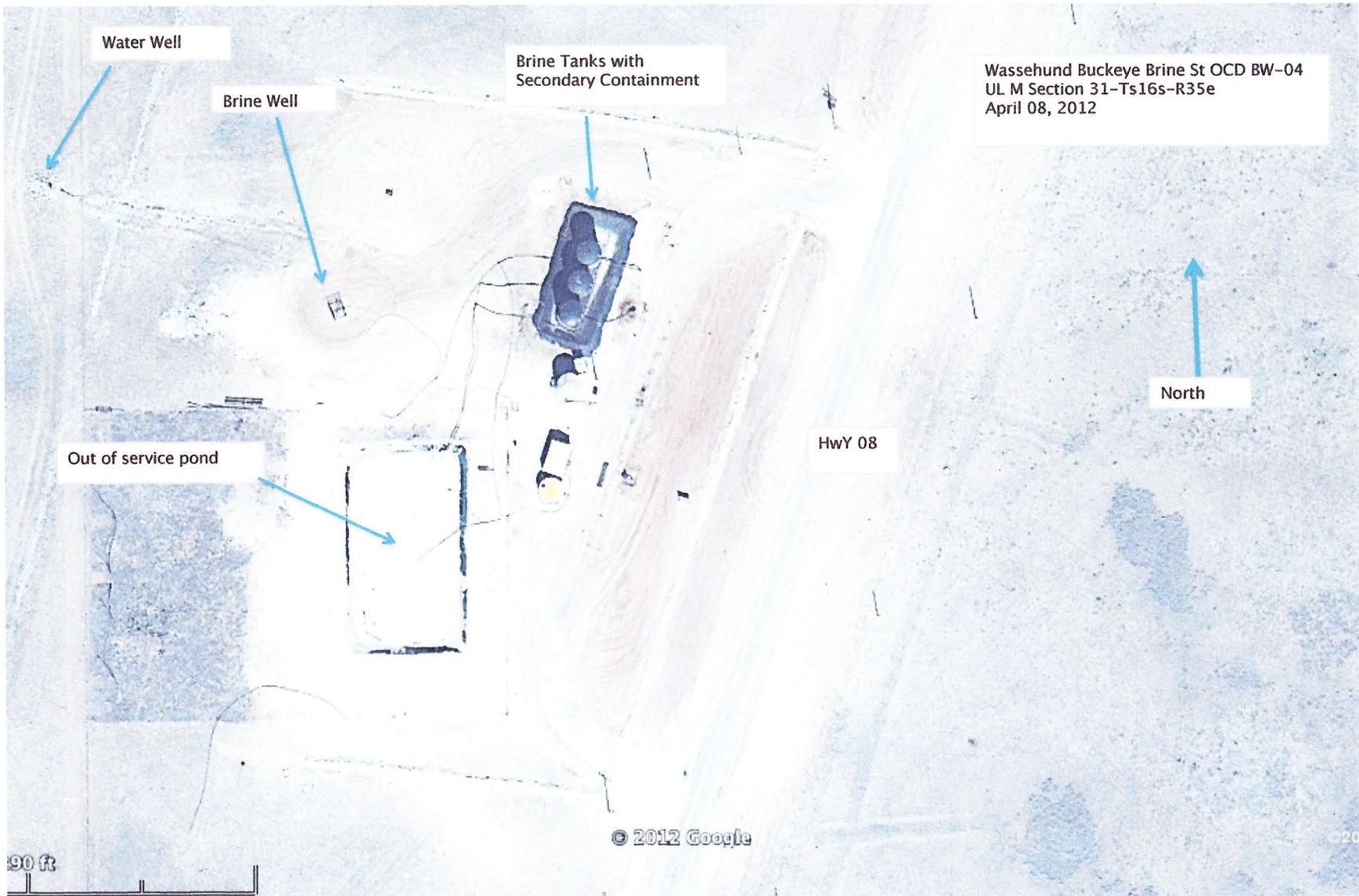
Section 10- Certification (Permit Condition 22.L.11)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Larry Gandy
Principal- Wasserhund Inc.

Appendix "A"

- Aerial Photo
- Discharge Plan BW-22



Water Well

Brine Well

Brine Tanks with Secondary Containment

Out of service pond

HWY 08

North

Wassehund Buckeye Brine St OCD BW-04
UL M Section 31-Ts16s-R35e
April 08, 2012

90 ft

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NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON

Governor

Joanna Prukop

Cabinet Secretary

Mark E. Fesmire, P.E.

Director

Oil Conservation Division

January 24, 2008

Mr. Larry Gandy
Gandy Corporation
P.O. Box 827
Tatum, New Mexico 88267

Re: **Discharge Permit Wasserhund Eidson State Well No. 1 Brine Well (BW-004) Renewal**

Dear Mr. Gandy:

Pursuant to all applicable parts of the Water Quality Control Commission (WQCC) Regulations 20.6.2 NMAC and more specifically 20.6.2.3104 - 20.6.2.3999 discharge permit, and 20.6.2.5000-.5299 Underground Injection Control, the Oil Conservation Division (OCD) hereby approves the discharge permit and authorizes the operation and injection for the Wasserhund Eidson (**Owner/Operator**) brine well BW 004 (API# 30-025-26883) located in the SW/4, SW/4 of Section 31, Township 16 South, and Range 35 East, NMPM, Lea County, New Mexico, under the conditions specified in the enclosed **Attachment To The Discharge Permit**.

Enclosed are two copies of the conditions of approval. **Please sign and return one copy to the New Mexico Oil Conservation Division (OCD) Santa Fe Office within 30 working days of receipt of this Letter including permit fees.**

Please be advised that approval of this permit does not relieve the owner/operator of responsibility should operations result in pollution of surface water, ground water or the environment. Nor does approval of the permit relieve the owner/operator of its responsibility to comply with any other applicable governmental authority's rules and regulations.

If you have any questions, please contact Carl Chavez of my staff at (505-476-3491) or E-mail carlj.chavez@state.nm.us. On behalf of the staff of the OCD, I wish to thank you and your staff for your cooperation during this discharge permit review.

Sincerely,

Wayne Price
Environmental Bureau Chief

LWP/cc
Attachments-1
xc: OCD District Office

2008 FEB 12 PM 12:44
RECEIVED

**ATTACHMENT TO THE DISCHARGE PERMIT
Wasserhund Eidson Brine Well (BW-004)
DISCHARGE PERMIT APPROVAL CONDITIONS**

January 24, 2008

Please remit a check for \$1700.00 made payable to Water Quality Management Fund:

**Water Quality Management Fund
C/o: Oil Conservation Division
1220 S. Saint Francis Drive
Santa Fe, New Mexico 87505**

- 1. Payment of Discharge Plan Fees:** All discharge permits are subject to WQCC Regulations. Every billable facility that submits a discharge permit application will be assessed a filing fee of \$100.00, plus a renewal flat fee (*see* WQCC Regulation 20.6.2.3114 NMAC). The Oil Conservation Division (“OCD”) has received the required \$100.00 filing fee. However, the owner/operator still owes the required \$1700.00 permit fee for a Class III Brine Well.
- 2. Permit Expiration and Renewal:** Pursuant to WQCC Regulation 20.6.2.3109.H.4 NMAC, this permit is valid for a period of five years. **The permit will expire on June 11, 2011** and an application for renewal should be submitted no later than 120 days before that expiration date. Pursuant to WQCC Regulation 20.6.2.3106.F NMAC, if a discharger submits a discharge permit renewal application at least 120 days before the discharge permit expires and is in compliance with the approved permit, then the existing discharge permit will not expire until the application for renewal has been approved or disapproved. *Expired permits are a violation of the Water Quality Act {Chapter 74, Article 6, NMSA1978} and civil penalties may be assessed accordingly.*
- 3. Permit Terms and Conditions:** Pursuant to WQCC Regulation 20.6.2.3104 NMAC, when a permit has been issued, the owner/operator must ensure that all discharges shall be consistent with the terms and conditions of the permit. In addition, all facilities shall abide by the applicable rules and regulations administered by the OCD pursuant to the Oil and Gas Act, NMSA 1978, Sections 70-2-1 through 70-2-38.
- 4. Owner/Operator Commitments:** The owner/operator shall abide by all commitments submitted in its August 2, 2006 discharge permit application, including attachments and subsequent amendments and these conditions for approval. Permit applications that reference previously approved plans on file with the division shall be incorporated in this permit and the owner/operator shall abide by all previous commitments of such plans and these conditions for approval.
- 5. Modifications:** WQCC Regulation 20.6.2.3107.C, 20.6.2.3109 and 20.6.2.5101.I NMAC addresses possible future modifications of a permit. The owner/operator (discharger) shall notify

the OCD of any facility expansion, production increase or process modification that would result in any significant modification in the discharge of water contaminants. The Division Director may require a permit modification if any water quality standard specified at 20.6.2.3103 NMAC is being or will be exceeded, or if a toxic pollutant as defined in WQCC Regulation 20.6.2.7 NMAC is present in ground water at any place of withdrawal for present or reasonably foreseeable future use, or that the Water Quality Standards for Interstate and Intrastate streams as specified in 20.6.4 NMAC are being or may be violated in surface water in New Mexico.

6. Waste Disposal and Storage: The owner/operator shall dispose of all wastes at an OCD-approved facility. Only oil field RCRA-exempt wastes may be disposed of by injection in a Class II well. RCRA non-hazardous, non-exempt oil field wastes may be disposed of at an OCD-approved facility upon proper waste determination pursuant to 40 CFR Part 261. Any waste stream that is not listed in the discharge permit application must be approved by the OCD on a case-by-case basis.

A. OCD Rule 712 Waste: Pursuant to OCD Rule 712 (19.15.9.712 NMAC) disposal of certain non-domestic waste without notification to the OCD is allowed at NMED permitted solid waste facilities if the waste stream has been identified in the discharge permit and existing process knowledge of the waste stream does not change.

B. Waste Storage: The owner/operator shall store all waste in an impermeable bermed area, except waste generated during emergency response operations for up to 72 hours. All waste storage areas shall be identified in the discharge permit application. Any waste storage area not identified in the permit shall be approved on a case-by-case basis only. The owner/operator shall not store oil field waste on-site for more than 180 days unless approved by the OCD.

7. Drum Storage: The owner/operator must store all drums, including empty drums, containing materials other than fresh water on an impermeable pad with curbing. The owner/operator must store empty drums on their sides with the bungs in place and lined up on a horizontal plane. The owner/operator must store chemicals in other containers, such as tote tanks, sacks, or buckets on an impermeable pad with curbing.

8. Process, Maintenance and Yard Areas: The owner/operator shall either pave and curb or have some type of spill collection device incorporated into the design at all process, maintenance, and yard areas which show evidence that water contaminants from releases, leaks and spills have reached the ground surface.

9. Above Ground Tanks: The owner/operator shall ensure that all aboveground tanks have impermeable secondary containment (e.g., liners and berms), which will contain a volume of at least one-third greater than the total volume of the largest tank or all interconnected tanks. The owner/operator shall retrofit all existing tanks before discharge permit renewal. Tanks that contain fresh water or fluids that are gases at atmospheric temperature and pressure are exempt from this condition.

10. Labeling: The owner/operator shall clearly label all tanks, drums, and containers to identify their contents and other emergency notification information. The owner/operator may use a tank code numbering system, which is incorporated into their emergency response plans.

11. Below-Grade Tanks/Sumps and Pits/Ponds.

A. All below-grade tanks and sumps must be approved by the OCD prior to installation and must incorporate secondary containment with leak detection into the design. The owner/operator shall retrofit all existing systems without secondary containment and leak detection before discharge permit renewal. All existing below-grade tanks and sumps without secondary containment and leak detection must be tested annually or as specified herein. Systems that have secondary containment with leak detection shall have a monthly inspection of the leak detection system to determine if the primary containment is leaking. Small sumps or depressions in secondary containment systems used to facilitate fluid removal are exempt from these requirements if fluids are removed within 72 hours.

B. All pits and ponds, including modifications and retrofits, shall be designed by a certified registered professional engineer and approved by the OCD prior to installation. In general, all pits or ponds shall have approved hydrologic and geologic reports, location, foundation, liners, and secondary containment with leak detection, monitoring and closure plans. All pits or ponds shall be designed, constructed and operated so as to contain liquids and solids in a manner that will protect fresh water, public health, safety and the environment for the foreseeable future. The owner/operator shall retrofit all existing systems without secondary containment and leak detection before discharge permit renewal.

C. The owner/operator shall ensure that all exposed pits, including lined pits and open top tanks (8 feet in diameter or larger) shall be fenced, screened, netted, or otherwise rendered non-hazardous to wildlife, including migratory birds.

D. The owner/operator shall maintain the results of tests and inspections at the facility covered by this discharge permit and available for OCD inspection. The owner/operator shall report the discovery of any system which is found to be leaking or has lost integrity to the OCD within 15 days. The owner/operator may propose various methods for testing such as pressure testing to 3 pounds per square inch greater than normal operating pressure and/or visual inspection of cleaned tanks and/or sumps, or other OCD-approved methods. The owner/operator shall notify the OCD at least 72 hours prior to all testing.

12. Underground Process/Wastewater Lines:

A. The owner/operator shall test all underground process/wastewater pipelines at least once every five (5) years to demonstrate their mechanical integrity, except lines containing fresh water or fluids that are gases at atmospheric temperature and pressure. Pressure rated pipe shall be tested by pressuring up to one and one-half times the normal operating pressure, if possible, or for

atmospheric drain systems, to 3 pounds per square inch greater than normal operating pressure, and pressure held for a minimum of 30 minutes with no more than a 1% loss/gain in pressure. The owner/operator may use other methods for testing if approved by the OCD.

B. The owner/operator shall maintain underground process and wastewater pipeline schematic diagrams or plans showing all drains, vents, risers, valves, underground piping, pipe type, rating, size, and approximate location. All new underground piping must be approved by the OCD prior to installation. The owner/operator shall report any leaks or loss of integrity to the OCD within 15 days of discovery. The owner/operator shall maintain the results of all tests at the facility covered by this discharge permit and they shall be available for OCD inspection. The owner/operator shall notify the OCD at least 72 hours prior to all testing.

13. Class V Wells: The owner/operator shall close all Class V wells (e.g., septic systems, leach fields, dry wells, etc.) that inject non-hazardous industrial wastes or a mixture of industrial wastes and domestic wastes unless it can be demonstrated that ground water will not be impacted in the reasonably foreseeable future. Leach fields and other wastewater disposal systems at OCD-regulated facilities that inject non-hazardous fluid into or above an underground source of drinking water are considered Class V injection wells under the EPA UIC program. Class V wells that inject domestic waste only, must be permitted by the New Mexico Environment Department (NMED).

14. Housekeeping: The owner/operator shall inspect all systems designed for spill collection/prevention and leak detection at least monthly to ensure proper operation and to prevent over topping or system failure. All spill collection and/or secondary containment devices shall be emptied of fluids within 72 hours of discovery. The owner/operator shall maintain all records at the facility and available for OCD inspection.

15. Spill Reporting: The owner/operator shall report all unauthorized discharges, spills, leaks and releases and conduct corrective action pursuant to WQCC Regulation 20.5.12.1203 NMAC and OCD Rule 116 (19.15.3.116 NMAC). The owner/operator shall notify both the OCD District Office and the Santa Fe Office within 24 hours and file a written report within 15 days.

16. OCD Inspections: The OCD may place additional requirements on the facility and modify the permit conditions based on OCD inspections.

17. Storm Water: The owner/operator shall implement and maintain run-on and runoff plans and controls. The owner/operator shall not discharge any water contaminant that exceeds the WQCC standards specified in 20.6.2.3101 NMAC or 20.6.4 NMAC (Water Quality Standards for Interstate and Intrastate Streams) including any oil sheen in any storm water run-off. The owner/operator shall notify the OCD within 24 hours of discovery of any releases and shall take immediate corrective action(s) to stop the discharge.

18. Unauthorized Discharges: The owner/operator shall not allow or cause water pollution, discharge or release of any water contaminant that exceeds the WQCC standards listed in

20.6.2.3101 NMAC or 20.6.4 NMAC (Water Quality Standards for Interstate and Intrastate Streams) unless specifically listed in the permit application and approved herein. **An unauthorized discharge is a violation of this permit.**

19. Vadose Zone and Water Pollution: The owner/operator shall address any contamination through the discharge permit process or pursuant to WQCC 20.6.2.4000-.4116 NMAC (Prevention and Abatement of Water Pollution). The OCD may require the owner/operator to modify its permit for investigation, remediation, abatement, and monitoring requirements for any vadose zone or water pollution. Failure to perform any required investigation, remediation, abatement and submit subsequent reports will be a violation of the permit.

20. Additional Site Specific Conditions: N/A

21. Brine Well(s) Identification, Operation, Monitoring, Bonding and Reporting.

A. Well Identification: API # 30-025-26883

B. Well Work Over Operations: OCD approval will be obtained prior to performing remedial work, pressure test or any other work. Approval will be requested on OCD Form C-103 "Sundry Notices and Reports on Wells" (OCD Rule 1103.A.) with appropriate copies sent to the OCD Environmental Bureau and District Office.

C. Production Method: Fresh water will be injected down the casing and brine shall be recovered up the tubing. Reverse flow will be allowed only once a month for up to 24 hours for clean out. Operators may request long term reverse operation if they can demonstrate that additional casing and monitoring systems are installed and approved by OCD. Operating in the reverse mode for more than 24 hours unless approved otherwise is a violation of this permit.

D. Well Pressure Limits: **The maximum operating surface injection and/or test pressure measured at the wellhead shall not exceed 375 psig unless otherwise approved by the OCD.** The operator shall have a working pressure limiting device or controls to prevent overpressure. Any pressure that causes new fractures or propagate existing fractures or causes damage to the system shall be reported to OCD within 24 hours of discovery.

E. Mechanical Integrity Testing: Conduct an annual open to formation pressure test by pressuring up the formation with approved fluids or gas to a minimum of 300 psig measured on the surface casing for four hours. However, no operator may exceed test pressures that may cause formation fracturing (see item 21.D above) or system failures. Systems requiring test pressures less than 300 psig must be approved by OCD prior to testing. At least once every five years and during well work-overs the salt cavern formation will be isolated from the casing/tubing annuals and the casing

pressure tested at 300 psig for 30 minutes. All pressure tests must be performed per the scheduled shown below and witnessed by OCD unless otherwise approved.

Testing Schedule:

2007- 30 minute @ 300 psig casing test only (set packer to isolate formation)
2008- 4 hour @ 300 psig casing open to formation test
2009- 4 hour @ 300 psig casing open to formation test
2010- 4 hour @ 300 psig casing open to formation test
2011- 4 hour @ 300 psig casing open to formation test

- F. Capacity/ Cavity Configuration and Subsidence Survey: The operator shall provide information on the size and extent of the solution cavern and geologic/engineering data demonstrating that continued brine extraction will not cause surface subsidence, collapse or damage to property, or become a threat to public health and the environment. This information shall be supplied in each annual report. OCD may require the operator to perform additional well surveys, test, and install subsidence monitoring in order to demonstrate the integrity of the system. If the operator cannot demonstrate the integrity of the system to the satisfaction of the Division then the operator may be required to shut-down, close the site and properly plug and abandoned the well.

Any subsidence must be reported within 24 hours of discovery.

- G. Production/Injection Volumes: The volumes of fluids injected (fresh water) and produced (brine) will be recorded monthly and submitted to the OCD Santa Fe Office in the annual report.
- H. Analysis of Injection Fluid and Brine: Provide an analysis of the injection fluid and brine with each annual report. Analysis will be for General Chemistry (method 40 CFR 136.3) using EPA methods.
- I. Area of Review (AOR): The operator shall report within 24 hours of discovery of any new wells, conduits, or any other device that penetrates or may penetrate the injection zone within ¼ mile from the brine well.
- J. Loss of Mechanical Integrity: The operator shall report within 24 hours of discovery of any failure of the casing, tubing or packer, or movement of fluids outside of the injection zone. The operator shall cease operations until proper repairs are made and the operator receives OCD approval to re-start injection operations.
- K. Bonding or Financial Assurance: The operator shall maintain at a minimum, a one well plugging bond in the amount of \$50,000.00 to restore the site, plug and abandon

the well by January 1, 2008, pursuant to OCD rules and regulations. If warranted, OCD may require additional financial assurance.

L. **Annual Report:** All operators shall submit an annual report due on January 31 of each year. The report shall include the following information:

1. Cover sheet marked as "Annual Brine Well Report, name of operator, BW permit #, API# of well(s), date of report, and person submitting report.
2. Brief summary of brine wells operations including description and reason for any remedial or major work on the well. Copy of C-103.
3. Production volumes as required above in 21.G. including a running total should be carried over to each year. The maximum and average injection pressure.
4. A copy of the chemical analysis as required above in 21.H.
5. A copy of any mechanical integrity test chart, including the type of test, i.e. open to formation or casing test.
6. Brief explanation describing deviations from normal production methods.
7. A copy of any leaks and spills reports.
8. If applicable, results of any groundwater monitoring.
9. Information required from cavity/subsidence 21.F. above.
10. An Area of Review (AOR) summary.
11. Sign-off requirements pursuant to WQCC Subsection G 20.6.2.5101.

22. Transfer of Discharge Permit: Pursuant to WQCC 20.6.2.5101.H the owner/operator and new owner/operator shall provide written notice of any transfer of the permit. Both parties shall sign the notice 30 days prior to any transfer of ownership, control or possession of a facility with an approved discharge permit. In addition, the purchaser shall include a written commitment to comply with the terms and conditions of the previously approved discharge permit. OCD will not transfer brine well operations until proper bonding or financial assurance is in place and approved by the division. OCD reserves the right to require a modification of the permit during transfer.

23. Closure: The owner/operator shall notify the OCD when operations of the facility are to be discontinued for a period in excess of six months. Prior to closure of the facility, the operator shall submit for OCD approval, a closure plan including a completed C-103 form for plugging and abandonment of the well(s). Closure and waste disposal shall be in accordance with the statutes, rules and regulations in effect at the time of closure.

24. Certification: Gandy Corporation (Owner/Operator), by the officer whose signature appears below, accepts this permit and agrees to comply with all submitted commitments, including these terms and conditions contained here. **Owner/Operator** further acknowledges that the OCD may, for good cause shown, as necessary to protect fresh water, public health, safety, and the environment, change the conditions and requirements of this permit administratively.

Mr. Larry Gandy
Eidson State Well No. 1 (BW-004)
January 24, 2008
Page 9 of 9

Conditions accepted by: "I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment."

Gandy Corporation
Company Name- print name above

Larry Gandy
Company Representative- print name

Larry Gandy
Company Representative- signature

Title sec/treas

Date: 2-18-08

Appendix "B"

- Change of Operator
- Permit Renewal Application

District I
 1025 N. Lincoln Dr., Hobbs, NM 88201
 Phone: (505) 893-6161 Fax: (505) 393-0720

District II
 111 S. Tenth St., Artesia, NM 88210
 Phone: (505) 738-4283 Fax: (505) 748-9720

District III
 1000 Rio Grande Rd., Artesia, NM 88210
 Phone: (505) 334-6178 Fax: (505) 334-6170

District IV
 1220 S. St. Francis Dr., Santa Fe, NM 87508
 Phone: (505) 476-3470 Fax: (505) 476-4462

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

Form C-145
 August 1, 2011
 Permit 138088

HOBBS OCD

OCT 1 2 2011

RECEIVED

Change of Operator

Previous Operator Information

New Operator Information

OGRID: 8426
 Name: GANDY CORP
 Address: P.O. Box 2140
 City, State, Zip: Lovington, NM 88260

Effective Date: Effective on the date of approval by the OCD
 OGRID: 130851
 Name: WASSERHUND INC
 Address: P.O. Box 2140
 City, State, Zip: Lovington, NM 88260

I hereby certify that the rules of the Oil Conservation Division have been complied with and that the information on this form and the certified list of wells is true to the best of my knowledge and belief

Additionally, by signing below, WASSERHUND INC certifies that it has read and understands the following synopsis of applicable rules

PREVIOUS OPERATOR certifies that all below-grade tanks constructed and installed prior to June 16, 2008 associated with the selected wells being transferred are either (1) in compliance with 19.15.17 NMAC, (2) have been closed pursuant to 19.15.17.13 NMAC or (3) have been retrofitted to comply with Paragraphs 1 through 4 of 19.15.17.11.(f) NMAC

WASSERHUND INC understands that the OCD's approval of this operator change:

1. constitutes approval of the transfer of the permit for any permitted pit, below-grade tank or closed-loop system associated with the selected wells; and
2. constitutes approval of the transfer of any below-grade tanks constructed and installed prior to June 16, 2008 associated with the selected wells, regardless of whether the transferor has disclosed the existence of those below-grade tanks to the transferee or to the OCD, and regardless of whether the below-grade tanks are in compliance with 19.15.17 NMAC.

Appendix “C”

- Injection and Production Volumes/Comparison Charts
- Monthly/Quarterly Data Sheets

2011 Wasserhund Inc OCD BW-04 Annual Production Data

	Brine-BBLS	Fresh-BBLS	% diff	Plus numbers represent more fresh injected than brine produced. Neg numbers the opposite.
Jan	51764	51888	0.24%	
Feb	32383	32514	0.40%	
Mar	39860	39975	0.29%	
Apr	43421	43537	0.27%	
May	60807	60921	0.19%	
Jun	45645	45766	0.27%	
Jul	53719	53534	-0.34%	
Aug	60035	60125	0.15%	
Sep	50941	51116	0.34%	
Oct	60060	60160	0.17%	
Nov	58349	58464	0.20%	
Dec	53272	53357	0.16%	
2011 Total	610,256	611357	0.18%	
Total Brine Water Production Carry Over from Years Past BBLS	6,179,002			
Total Production year ending 2011	6,789,258			

WASSERHUND, INC.
P.O. Box 2140
Lovington, NM 88260-2140

July 15, 2011

NM Oil Conservation Division
1220 S. Saint Francis
Santa Fe, NM 87505

Fresh Water injected at the Wasserhund Brine Station (BW-004)

April 2011	43537
May 2011	60921
July 2011	45766

Brine Water sold at the Wasserhund Brine Station (BW-004)

April 2011	43421
May 2011	60807
July 2011	45645

Sincerely Yours:



Donny Collins

**GANDY CORPORATION
OILFIELD SERVICES**

P.O. Box 2140
Lovington, New Mexico 88260
575-396-0522
FAX 575-396-0797

April 15, 2011

NM Oil Conservation Division
1220 S. Saint Francis
Santa Fe, NM 87505

Fresh Water injected at the Wasserhund Brine Station (BW-004)

January 2011	51888
February 2011	32514
March 2011	39975

Brine Water sold at the Wasserhund Brine Station (BW-004)

January 2011	51764
February 2011	32383
March 2011	39860

Sincerely Yours:



Donny Collins

WASSERHUND, INC.
P.O. Box 2140
Lovington, NM 88260-2140

October 15, 2011

NM Oil Conservation Division
1220 S. Saint Francis
Santa Fe, NM 87505

Fresh Water injected at the Wasserhund Brine Station (BW-004)

July 2011	53534
August 2011	60125
September 2011	51116

Brine Water sold at the Wasserhund Brine Station (BW-004)

July 2011	53719
August 2011	60035
September 2011	50941

Sincerely Yours:


Donny Collins

WASSERHUND, INC.
P.O. Box 2140
Lovington, NM 88260-2140

January 16, 2012

NM Oil Conservation Division
1220 S. Saint Francis
Santa Fe, NM 87505

Fresh Water injected at the Wasserhund Brine Station (BW-004)

October 2011	60160
November 2011	58464
December 2011	53357

Brine Water sold at the Wasserhund Brine Station (BW-004)

October 2011	60060
November 2011	58349
December 2011	53272

Sincerely Yours:


Donny Collins

Appendix “D”

- Chemical Analysis Fresh Water
- Chemical Analysis Brine Water



April 10, 2012

LESTER WAYNE PRICE, JR
PRICE LLC
312 ENCANTADO RIDGE COURT, NE
RIO RANCHO, NM 87124

RE: BUCKEYE BRINE WELL *BW-04 AMENDED qd*

Enclosed are the results of analyses for samples received by the laboratory on 10/18/11 16:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list on accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

- Method EPA 552.2 Haloacetic Acids (HAA-5)
- Method EPA 524.2 Total Trihalomethanes (TTHM)
- Method EPA 524.4 Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene
Lab Director/Quality Manager

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: BUCKEYE BRINE WELL Project Number: NONE GIVEN Project Manager: LESTER WAYNE PRICE, JR Fax To: UNK-NOWN	Reported: 10-Apr-12 10:55
--------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------	------------------------------

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FRESHWATER	H102247-01	Water	18-Oct-11 12:30	18-Oct-11 16:30
BRINE WATER	H102247-02	Water	18-Oct-11 12:40	18-Oct-11 16:30

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 PRICE LLC
 312 ENCANTADO RIDGE COURT, NE
 RIO RANCHO NM, 87124

 Project: BUCKEYE BRINE WELL
 Project Number: NONE GIVEN
 Project Manager: LESTER WAYNE PRICE, JR
 Fax To: UNK-NOWN

 Reported:
 10-Apr-12 10:55

FRESHWATER
H102247-01 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Total Metals by ICPMS

Arsenic	0.0060	0.0005	mg/L	1	1111412	JM	02-Nov-11	200.8	GAL
Barium	0.100	0.000500	mg/L	1	1111412	JM	02-Nov-11	200.8	GAL
Cadmium	ND	0.00010	mg/L	1	1111412	JM	02-Nov-11	200.8	GAL
Chromium	ND	0.001	mg/L	1	1111412	JM	02-Nov-11	200.8	GAL
Cobalt	0.00020	0.00010	mg/L	1	1111412	JM	02-Nov-11	200.8	GAL
Copper	0.0036	0.0001	mg/L	1	1111412	JM	02-Nov-11	200.8	GAL
Lead	0.0010	0.0005	mg/L	1	1111412	JM	02-Nov-11	200.8	GAL
Manganese	ND	0.0050	mg/L	10	1111412	JM	11-Nov-11	200.8	GAL
Molybdenum	0.0035	0.0005	mg/L	1	1111412	JM	02-Nov-11	200.8	GAL
Nickel	0.0055	0.0005	mg/L	1	1111412	JM	02-Nov-11	200.8	GAL
Selenium	0.006	0.001	mg/L	1	1111412	JM	02-Nov-11	200.8	GAL
Silver	ND	0.00010	mg/L	1	1111412	JM	02-Nov-11	200.8	GAL
Uranium	0.00150	0.000100	mg/L	1	1111412	JM	02-Nov-11	200.8	GAL
Zinc	ND	0.010	mg/L	10	1111412	JM	11-Nov-11	200.8	GAL

Mercury (Total) by CVAA

Mercury	ND	0.0002	mg/L	1	1111411	JM	27-Oct-11	245.1	GAL
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Inorganic Compounds

Alkalinity, Bicarbonate	195	5.00	mg/L	1	1083007	HM	20-Oct-11	310.1M	
Alkalinity, Carbonate	ND	0.00	mg/L	1	1083007	HM	20-Oct-11	310.1M	
Chloride	364	4.00	mg/L	1	1101905	HM	21-Oct-11	4500-Cl-B	
Conductivity	1410	1.00	uS/cm	1	1102705	HM	20-Oct-11	120.1	
Cyanide (total)	ND	0.005	mg/L	1	1111413	CK	26-Oct-11	335.4	GAL
Fluoride	0.753	0.200	mg/L	1	1111414	CK	01-Nov-11	4500F C	GAL
pH	7.73	0.100	pH Units	1	1102705	HM	20-Oct-11	150.1	
Specific Gravity @ 60° F	0.9969	0.000	[blank]	1	1110307	HM	28-Oct-11	SM 2710F	
Sulfate	67.5	10.0	mg/L	1	1103102	HM	28-Oct-11	375.4	
TDS	788	5.00	mg/L	1	1102605	HM	26-Oct-11	160.1	
Alkalinity, Total	160	4.00	mg/L	1	1083007	HM	20-Oct-11	310.1M	

Cardinal Laboratories

* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 PRICE LLC
 312 ENCANTADO RIDGE COURT, NE
 RIO RANCHO NM, 87124

 Project: BUCKEYE BRINE WELL
 Project Number: NONE GIVEN
 Project Manager: LESTER WAYNE PRICE, JR
 Fax To: UNK-NOWN

 Reported:
 10-Apr-12 10:55

FRESHWATER
H102247-01 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

TSS	11.0	2.00	mg/L	1	1102505	HM	20-Oct-11	160.2	
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TOTAL METALS BY ICP

Aluminum	0.316	0.0500	mg/L	1	1111410	JM	26-Oct-11	200.7	GAL
Boron	ND	0.300	mg/L	1	1111410	JM	26-Oct-11	200.7	GAL
Calcium	91.9	1.00	mg/L	1	1111410	CK	26-Oct-11	200.7	GAL
Iron	2.55	0.060	mg/L	1	1111410	JM	26-Oct-11	200.7	GAL
Magnesium	20.1	1.00	mg/L	1	1111410	CK	26-Oct-11	200.7	GAL
Potassium	4.25	1.00	mg/L	1	1111410	CK	26-Oct-11	200.7	GAL
Sodium	151	1.00	mg/L	1	1111410	CK	26-Oct-11	200.7	GAL

Cardinal Laboratories

* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: BUCKEYE BRINE WELL Project Number: NONE GIVEN Project Manager: LESTER WAYNE PRICE, JR Fax To: UNK-NOWN	Reported: 10-Apr-12 10:55
--------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------	------------------------------

BRINE WATER
H102247-02 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Total Metals by ICPMS

Arsenic	ND	0.0500	mg/L	100	1111412	JM	02-Nov-11	200.8	GAL
Barium	0.366	0.0500	mg/L	100	1111412	JM	02-Nov-11	200.8	GAL
Cadmium	ND	0.0100	mg/L	100	1111412	JM	02-Nov-11	200.8	GAL
Chromium	ND	0.100	mg/L	100	1111412	JM	02-Nov-11	200.8	GAL
Cobalt	ND	0.0100	mg/L	100	1111412	JM	02-Nov-11	200.8	GAL
Copper	0.501	0.0100	mg/L	100	1111412	JM	02-Nov-11	200.8	GAL
Lead	ND	0.0500	mg/L	100	1111412	JM	02-Nov-11	200.8	GAL
Manganese	1.41	0.0050	mg/L	10	1111412	JM	11-Nov-11	200.8	GAL
Molybdenum	ND	0.0500	mg/L	100	1111412	JM	02-Nov-11	200.8	GAL
Nickel	ND	0.0500	mg/L	100	1111412	JM	02-Nov-11	200.8	GAL
Selenium	ND	0.100	mg/L	100	1111412	JM	02-Nov-11	200.8	GAL
Silver	ND	0.0100	mg/L	100	1111412	JM	02-Nov-11	200.8	GAL
Uranium	ND	0.0100	mg/L	100	1111412	JM	02-Nov-11	200.8	GAL
Zinc	0.416	0.010	mg/L	10	1111412	JM	11-Nov-11	200.8	GAL

Mercury (Total) by CVAA

Mercury	ND	0.0002	mg/L	1	1111411	JM	27-Oct-11	245.1	GAL
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Inorganic Compounds

Alkalinity, Bicarbonate	161	5.00	mg/L	1	1083007	HM	20-Oct-11	310.1M	
Alkalinity, Carbonate	ND	0.00	mg/L	1	1083007	HM	20-Oct-11	310.1M	
Chloride	196000	4.00	mg/L	1	1101905	HM	21-Oct-11	4500-Cl-B	
Conductivity	532000	1.00	uS/cm	1	1102705	HM	20-Oct-11	120.1	
Cyanide (total)	ND	0.005	mg/L	1	1111413	CK	26-Oct-11	335.4	GAL
Fluoride	ND	0.200	mg/L	1	1111414	CK	01-Nov-11	4500F C	GAL
pH	6.79	0.100	pH Units	1	1102705	HM	20-Oct-11	150.1	
Specific Gravity @ 60° F	1.186	0.000	[blank]	1	1110307	HM	28-Oct-11	SM 2710F	
Sulfate	8160	10.0	mg/L	1	1103102	HM	28-Oct-11	375.4	
TDS	291000	5.00	mg/L	1	1102605	HM	26-Oct-11	160.1	
Alkalinity, Total	132	4.00	mg/L	1	1083007	HM	20-Oct-11	310.1M	

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: BUCKEYE BRINE WELL Project Number: NONE GIVEN Project Manager: LESTER WAYNE PRICE, JR Fax To: UNK-NOWN	Reported: 10-Apr-12 10:55
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BRINE WATER
H102247-02 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

TSS	260	2.00	mg/L	1	1102505	HM	20-Oct-11	160.2	
TOTAL METALS BY ICP									
Aluminum	2.57	0.500	mg/L	10	1111410	JM	26-Oct-11	200.7	GAL
Boron	14.0	3.00	mg/L	10	1111410	JM	26-Oct-11	200.7	GAL
Calcium	759	10.0	mg/L	10	1111410	CK	26-Oct-11	200.7	GAL
Iron	6.14	0.600	mg/L	10	1111410	JM	26-Oct-11	200.7	GAL
Magnesium	2250	10.0	mg/L	10	1111410	CK	26-Oct-11	200.7	GAL
Potassium	2290	10.0	mg/L	10	1111410	CK	26-Oct-11	200.7	GAL
Sodium	124000	1.00	mg/L	1	1111410	CK	26-Oct-11	Calculation	
Sodium	Saturated >25000	10.0	mg/L	10	1111410	CK	26-Oct-11	200.7	GAL

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: BUCKEYE BRINE WELL Project Number: NONE GIVEN Project Manager: LESTER WAYNE PRICE, JR Fax To: UNK-NOWN	Reported: 10-Apr-12 10:55
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Total Metals by ICPMS - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1111412 - EPA 3005
Blank (1111412-BLK1)

Prepared: 01-Nov-11 Analyzed: 02-Nov-11

Molybdenum	ND	0.0005	mg/L							
Manganese	0.0035	0.0005	mg/L							B1
Cobalt	ND	0.00010	mg/L							
Cadmium	ND	0.00010	mg/L							
Selenium	ND	0.001	mg/L							
Nickel	ND	0.0005	mg/L							
Copper	ND	0.0001	mg/L							
Silver	ND	0.00010	mg/L							
Lead	ND	0.0005	mg/L							
Chromium	ND	0.001	mg/L							
Uranium	ND	0.000100	mg/L							
Barium	ND	0.000500	mg/L							
Zinc	0.018	0.001	mg/L							B1
Arsenic	ND	0.0005	mg/L							

LCS (1111412-BS1)

Prepared: 01-Nov-11 Analyzed: 02-Nov-11

Cobalt	0.0515		mg/L	0.0500		103	85-115			
Lead	0.0503		mg/L	0.0500		101	85-115			
Chromium	0.049		mg/L	0.0500		98.6	85-115			
Arsenic	0.0529		mg/L	0.0500		106	85-115			
Cadmium	0.0507		mg/L	0.0500		101	85-115			
Barium	0.0503		mg/L	0.0500		101	85-115			
Copper	0.0502		mg/L	0.0500		100	85-115			
Nickel	0.0504		mg/L	0.0500		101	85-115			
Manganese	0.0429		mg/L	0.0500		85.8	85-115			
Molybdenum	0.0542		mg/L	0.0500		108	85-115			
Selenium	0.273		mg/L	0.250		109	85-115			
Zinc	0.059		mg/L	0.0500		118	85-115			BS1
Silver	0.0521		mg/L	0.0500		104	85-115			
Uranium	0.0490		mg/L	0.0500		98.0	85-115			

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 PRICE LLC
 312 ENCANTADO RIDGE COURT, NE
 RIO RANCHO NM, 87124

 Project: BUCKEYE BRINE WELL
 Project Number: NONE GIVEN
 Project Manager: LESTER WAYNE PRICE, JR
 Fax To: UNK-NOWN

 Reported:
 10-Apr-12 10:55

Total Metals by ICPMS - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1111412 - EPA 3005
LCS Dup (1111412-BSD1)

Prepared: 01-Nov-11 Analyzed: 02-Nov-11

Nickel	0.0493		mg/L	0.0500		98.6	85-115	2.21	20	
Uranium	0.0485		mg/L	0.0500		97.0	85-115	1.03	20	
Zinc	0.065		mg/L	0.0500		130	85-115	9.52	20	BS1
Barium	0.0492		mg/L	0.0500		98.4	85-115	2.21	20	
Manganese	0.0443		mg/L	0.0500		88.6	85-115	3.21	20	
Cobalt	0.0503		mg/L	0.0500		101	85-115	2.36	20	
Lead	0.0498		mg/L	0.0500		99.6	85-115	0.999	20	
Arsenic	0.0505		mg/L	0.0500		101	85-115	4.64	20	
Silver	0.0483		mg/L	0.0500		96.6	85-115	7.57	20	
Cadmium	0.0501		mg/L	0.0500		100	85-115	1.19	20	
Selenium	0.256		mg/L	0.250		102	85-115	6.43	20	
Chromium	0.049		mg/L	0.0500		98.2	85-115	0.407	20	
Copper	0.0487		mg/L	0.0500		97.4	85-115	3.03	20	
Molybdenum	0.0523		mg/L	0.0500		105	85-115	3.57	20	

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 PRICE LLC
 312 ENCANTADO RIDGE COURT, NE
 RIO RANCHO NM, 87124

 Project: BUCKEYE BRINE WELL
 Project Number: NONE GIVEN
 Project Manager: LESTER WAYNE PRICE, JR
 Fax To: UNK-NOWN

 Reported:
 10-Apr-12 10:55

Mercury (Total) by CVAA - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1111411 - EPA 245.1										
Blank (1111411-BLK1)										
				Prepared & Analyzed: 27-Oct-11						
Mercury	ND	0.0002	mg/L							
LCS (1111411-BS1)										
				Prepared & Analyzed: 27-Oct-11						
Mercury	0.0022		mg/L	0.00200		110	85-115			
LCS Dup (1111411-BSD1)										
				Prepared & Analyzed: 27-Oct-11						
Mercury	0.0021		mg/L	0.00200		105	85-115	4.65	20	

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 PRICE LLC
 312 ENCANTADO RIDGE COURT, NE
 RIO RANCHO NM, 87124

 Project: BUCKEYE BRINE WELL
 Project Number: NONE GIVEN
 Project Manager: LESTER WAYNE PRICE, JR
 Fax To: UNK-NOWN

 Reported:
 10-Apr-12 10:55

Inorganic Compounds - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1083007 - General Prep - Wet Chem
Blank (1083007-BLK1)

Prepared: 25-Aug-11 Analyzed: 14-Sep-11

Alkalinity, Carbonate	ND	0.00	mg/L							
Alkalinity, Bicarbonate	ND	5.00	mg/L							
Alkalinity, Total	ND	4.00	mg/L							

LCS (1083007-BS1)

Prepared: 25-Aug-11 Analyzed: 14-Sep-11

Alkalinity, Carbonate	ND	0.00	mg/L				80-120			
Alkalinity, Bicarbonate	ND	5.00	mg/L				80-120			
Alkalinity, Total	112	4.00	mg/L	100		112	80-120			

LCS Dup (1083007-BSD1)

Prepared: 25-Aug-11 Analyzed: 14-Sep-11

Alkalinity, Carbonate	ND	0.00	mg/L				80-120		20	
Alkalinity, Bicarbonate	ND	5.00	mg/L				80-120		20	
Alkalinity, Total	116	4.00	mg/L	100		116	80-120	3.51	20	

Duplicate (1083007-DUP1)

Source: H101772-01

Prepared & Analyzed: 25-Aug-11

Alkalinity, Carbonate	ND	0.00	mg/L		0.00				20	
Alkalinity, Bicarbonate	259	5.00	mg/L		244			5.96	20	
Alkalinity, Total	212	4.00	mg/L		200			5.83	20	

Batch 1101905 - SPLP 1312
Blank (1101905-BLK1)

Prepared: 17-Oct-11 Analyzed: 20-Oct-11

Chloride	ND	4.00	mg/L							
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LCS (1101905-BS1)

Prepared: 17-Oct-11 Analyzed: 20-Oct-11

Chloride	112	4.00	mg/L	100		112	80-120			
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: BUCKEYE BRINE WELL Project Number: NONE GIVEN Project Manager: LESTER WAYNE PRICE, JR Fax To: UNK-NOWN	Reported: 10-Apr-12 10:55
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Inorganic Compounds - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1101905 - SPLP 1312
LCS Dup (1101905-BSD1)

Prepared: 17-Oct-11 Analyzed: 20-Oct-11

Chloride	108	4.00	mg/L	100		108	80-120	3.64	20	
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Batch 1102505 - Filtration
Blank (1102505-BLK1)

Prepared & Analyzed: 20-Oct-11

TSS	ND	2.00	mg/L							
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Duplicate (1102505-DUP1)

Source: H102247-01

Prepared & Analyzed: 20-Oct-11

TSS	12.0	2.00	mg/L		11.0			8.70	20	
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Batch 1102605 - * DEFAULT PREP *****
Blank (1102605-BLK1)

Prepared: 26-Oct-11 Analyzed: 28-Oct-11

TDS	ND	5.00	mg/L							
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LCS (1102605-BS1)

Prepared: 26-Oct-11 Analyzed: 28-Oct-11

TDS	244		mg/L	240		102	80-120			
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Duplicate (1102605-DUP1)

Source: H102306-02

Prepared: 26-Oct-11 Analyzed: 28-Oct-11

TDS	975	5.00	mg/L		1010			3.53	20	
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Batch 1102705 - General Prep - Wet Chem
LCS (1102705-BS1)

Prepared & Analyzed: 20-Oct-11

pH	7.11		pH Units	7.00		102	90-110			
Conductivity	509		uS/cm	500		102	80-120			

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 PRICE LLC
 312 ENCANTADO RIDGE COURT, NE
 RIO RANCHO NM, 87124

 Project: BUCKEYE BRINE WELL
 Project Number: NONE GIVEN
 Project Manager: LESTER WAYNE PRICE, JR
 Fax To: UNK-NOWN

 Reported:
 10-Apr-12 10:55

Inorganic Compounds - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1102705 - General Prep - Wet Chem

Duplicate (1102705-DUP1)		Source: H102247-01			Prepared & Analyzed: 20-Oct-11					
pH	7.75	0.100	pH Units		7.73			0.258	20	
Conductivity	1410	1.00	uS/cm		1410			0.00	20	

Batch 1103102 - General Prep - Wet Chem

Blank (1103102-BLK1)		Prepared & Analyzed: 28-Oct-11								
Sulfate	ND	10.0	mg/L							

LCS (1103102-BS1)		Prepared & Analyzed: 28-Oct-11								
Sulfate	20.9	10.0	mg/L	20.0		104	80-120			

LCS Dup (1103102-BSD1)		Prepared & Analyzed: 28-Oct-11								
Sulfate	18.2	10.0	mg/L	20.0		91.0	80-120	13.8	20	

Duplicate (1103102-DUP1)		Source: H102247-01			Prepared & Analyzed: 28-Oct-11					
Sulfate	70.1	10.0	mg/L		67.5			3.78	20	

Batch 1110307 - General Prep - Wet Chem

Duplicate (1110307-DUP1)		Source: H102247-01			Prepared & Analyzed: 28-Oct-11					
Specific Gravity @ 60° F	0.9950	0.000	[blank]		0.9969			0.194	200	

Batch 1111413 - General Prep

Blank (1111413-BLK1)		Prepared: 25-Oct-11 Analyzed: 26-Oct-11								
Cyanide (total)	ND	0.005	mg/L							

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PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: BUCKEYE BRINE WELL Project Number: NONE GIVEN Project Manager: LESTER WAYNE PRICE, JR Fax To: UNK-NOWN	Reported: 10-Apr-12 10:55
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Inorganic Compounds - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1111413 - General Prep

LCS (1111413-BS1)	Prepared: 25-Oct-11 Analyzed: 26-Oct-11									
Cyanide (total)	0.042		mg/L	0.0500		85.0	85-115			

LCS Dup (1111413-BS1)	Prepared: 25-Oct-11 Analyzed: 26-Oct-11									
Cyanide (total)	0.047		mg/L	0.0500		94.8	85-115	10.9	20	

Batch 1111414 - General Prep

Blank (1111414-BLK1)	Prepared & Analyzed: 01-Nov-11									
Fluoride	ND	0.200	mg/L							

LCS (1111414-BS1)	Prepared & Analyzed: 01-Nov-11									
Fluoride	1.09		mg/L	1.00		109	80-120			

LCS Dup (1111414-BS1)	Prepared & Analyzed: 01-Nov-11									
Fluoride	1.09		mg/L	1.00		109	80-120	0.00	20	

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Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: BUCKEYE BRINE WELL Project Number: NONE GIVEN Project Manager: LESTER WAYNE PRICE, JR Fax To: UNK-NOWN	Reported: 10-Apr-12 10:55
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Dissolved Metals - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1111410 - EPA 3005
Blank (1111410-BLK1)

Prepared: 25-Oct-11 Analyzed: 26-Oct-11

Boron	ND	0.300	mg/L							
Calcium	ND	1.00	mg/L							
Magnesium	ND	1.00	mg/L							
Sodium	ND	1.00	mg/L							
Aluminum	ND	0.0500	mg/L							
Iron	ND	0.060	mg/L							
Potassium	ND	1.00	mg/L							

LCS (1111410-BS1)

Prepared: 25-Oct-11 Analyzed: 26-Oct-11

Calcium	3.90		mg/L	4.00		97.5	85-115			
Magnesium	19.9		mg/L	20.0		99.5	85-115			
Potassium	7.71		mg/L	8.00		96.4	85-115			
Sodium	6.34		mg/L	6.48		97.8	85-115			
Aluminum	3.94		mg/L	4.00		98.5	85-115			
Boron	3.86		mg/L	4.00		96.5	85-115			
Iron	3.89		mg/L	4.00		97.2	85-115			

LCS Dup (1111410-BSD1)

Prepared: 25-Oct-11 Analyzed: 26-Oct-11

Aluminum	3.95		mg/L	4.00		98.8	85-115	0.253	20	
Calcium	3.91		mg/L	4.00		97.8	85-115	0.256	20	
Potassium	8.08		mg/L	8.00		101	85-115	4.69	20	
Boron	3.89		mg/L	4.00		97.2	85-115	0.774	20	
Iron	3.92		mg/L	4.00		98.0	85-115	0.768	20	
Magnesium	20.1		mg/L	20.0		100	85-115	1.00	20	
Sodium	6.40		mg/L	6.48		98.8	85-115	0.942	20	

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

Z-01	Saturated >25000
GAL	Analysis subcontracted to Green Analytical Laboratories, a subsidiary of Cardinal Laboratories.
BS1	Blank spike recovery above laboratory acceptance criteria. Results for analyte potentially biased high.
B1	Target analyte detected in method blank at or above method reporting limit. Sample concentration found to be 10 times above the concentration found in the method blank or less than the reporting limit.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report



Celey D. Keene, Lab Director/Quality Manager

Appendix "E"

- C-103 for Annual Test
- MIT Test Results-Chart
- Well Bore Sketch

Submit 1 Copy To Appropriate District Office

State of New Mexico Energy, Minerals and Natural Resources

Form C-103 Revised August 1, 2011

District I - (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II - (575) 748-1283
811 S. First St., Artesia, NM 88210
District III - (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV - (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

HOBBS OGD

OIL CONSERVATION DIVISION

1220 South St. Francis Dr. Santa Fe, NM 87505

RECEIVED

NOV 09 2011

WELL API NO. 30-025-26883
5. Indicate Type of Lease STATE [X] FEE []
6. State Oil & Gas Lease No. 25-26883
7. Lease Name or Unit Agreement Name Eidson Brine Station, BW-004
8. Well Number 1
9. OGRID Number 130851
10. Pool name or Wildcat BSW Salado

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)
1. Type of Well: Oil Well [] Gas Well [] Other Brine Well []
2. Name of Operator Wasserhund, Inc.
3. Address of Operator P.O. Box 2140, Lovington, NM 88260
4. Well Location Unit Letter M : 567.4 feet from the South line and 162.7 feet from the West line
Section 31 Township 16s Range 35e NMPM County Lea
11. Elevation (Show whether DR, RKB, RT, GR, etc.)

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:

- PERFORM REMEDIAL WORK [X] PLUG AND ABANDON []
TEMPORARILY ABANDON [] CHANGE PLANS []
PULL OR ALTER CASING [] MULTIPLE COMPL []
DOWNHOLE COMMINGLE []

SUBSEQUENT REPORT OF:

- REMEDIAL WORK [] ALTERING CASING []
COMMENCE DRILLING OPNS. [] P AND A []
CASING/CEMENT JOB []

OTHER: integrity test []

OTHER: []

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Please see attached:
Chart
Well Bore Diagram

Last time pulled packer test - 10/06/08

* ORIGINAL CHART MAILED TO SANTA FE. (JIM GRISWOLD)

Spud Date: []

Rig Release Date: []

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

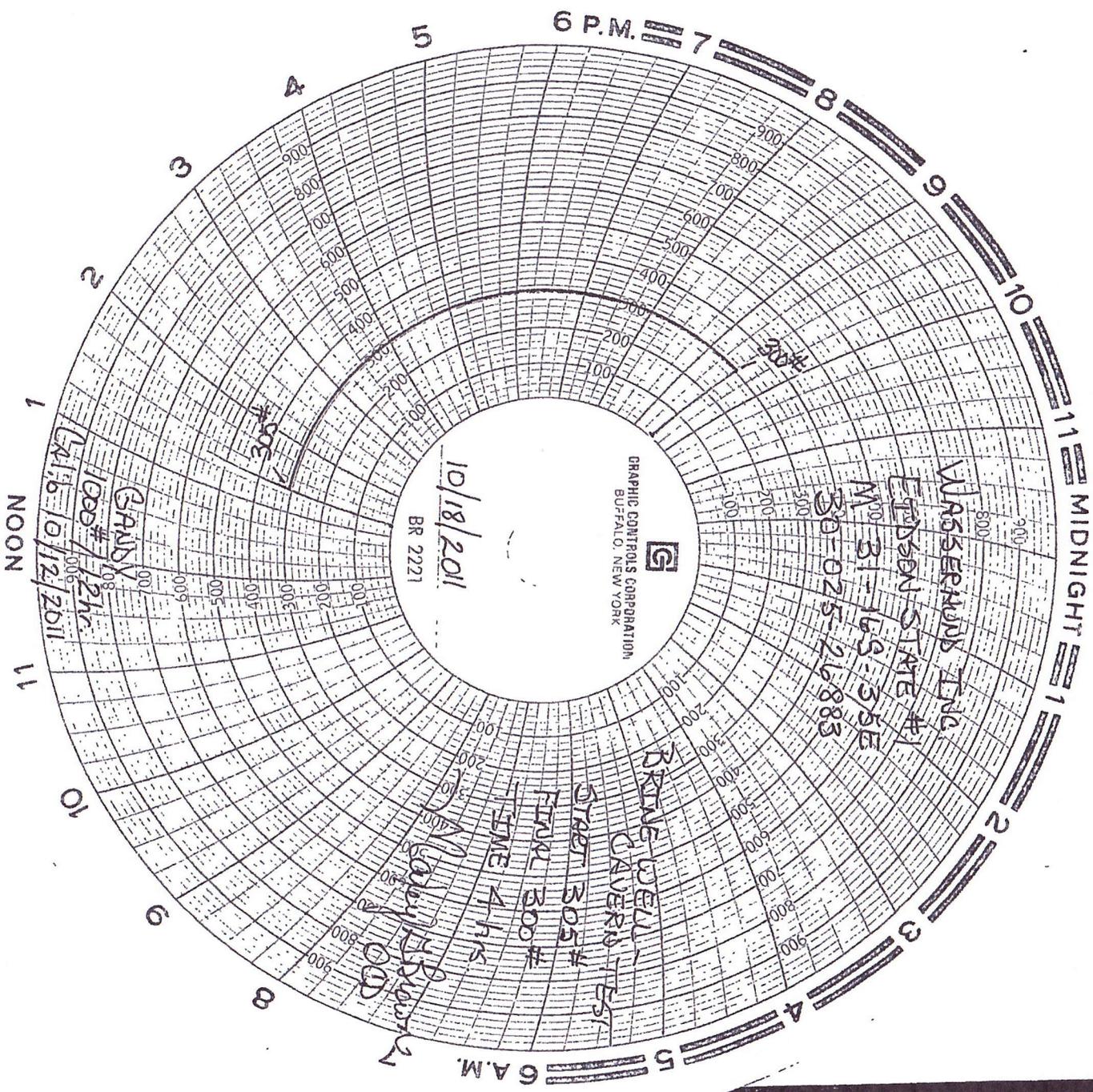
SIGNATURE Larry Gandy TITLE Secretary/Treasurer DATE 11/04/11

Type or print name Larry Gandy E-mail address: lgandy@gandycorporation.com PHONE: 575-396-0522

For State Use Only

APPROVED BY: Mary Brown TITLE Compliance Officer DATE 11/10/2011

Conditions of Approval (if any):



WASSERKORB INC.

EDISON STATE #1

M 31-169-55E

30-025-26883

GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK



10/18/2011

BR 2221

RINE WELLS
CIVIL ENGINEER

STREET 302 #

FIVE 300 #

TIME 4 HR

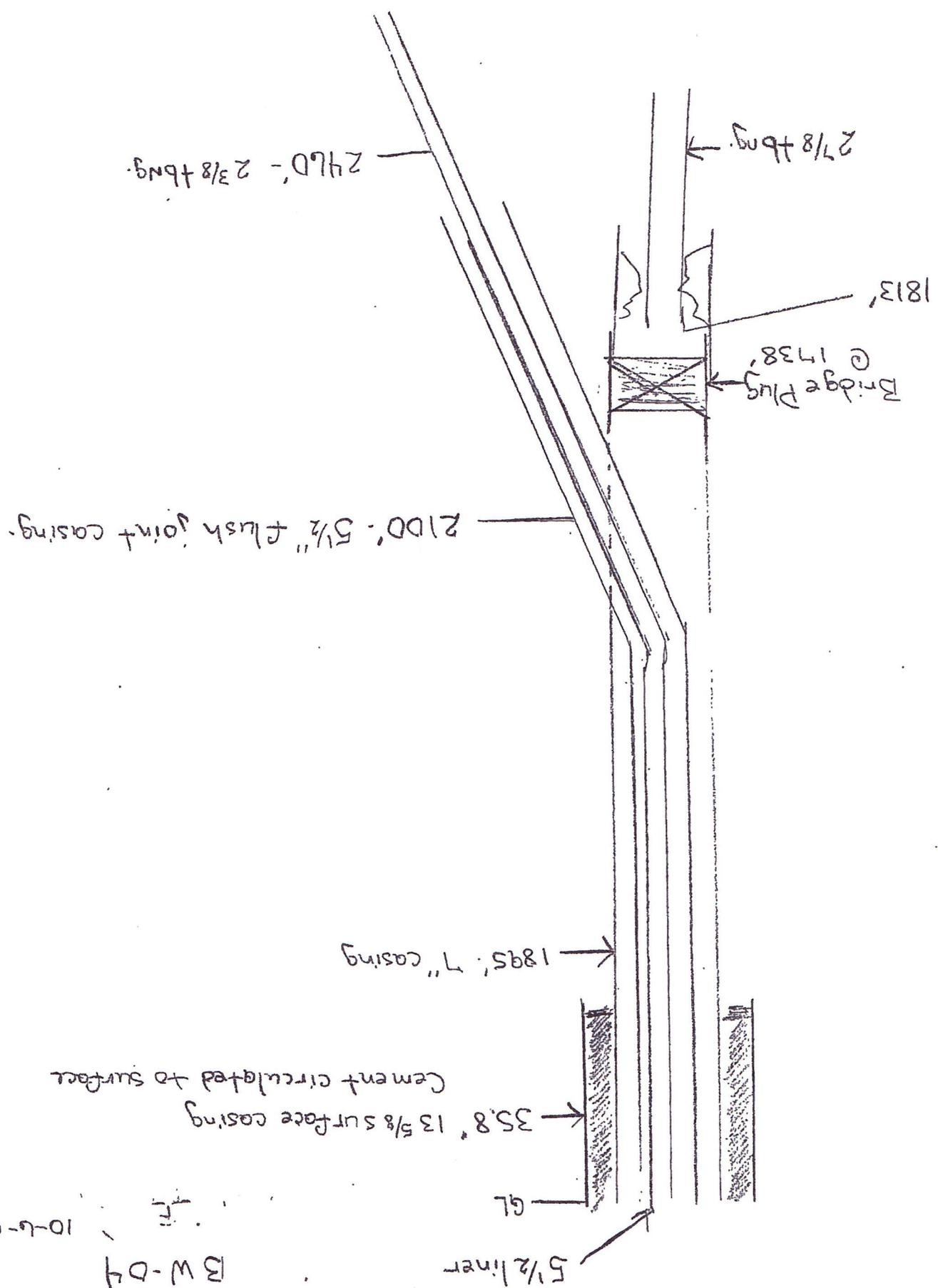
MASSACHUSETTS
BOSTON

GAUB # 12hr

1005 # 12hr

NOON

Gandy Corporation
Eidson Bmine Stat.
BW-04
10-6-08

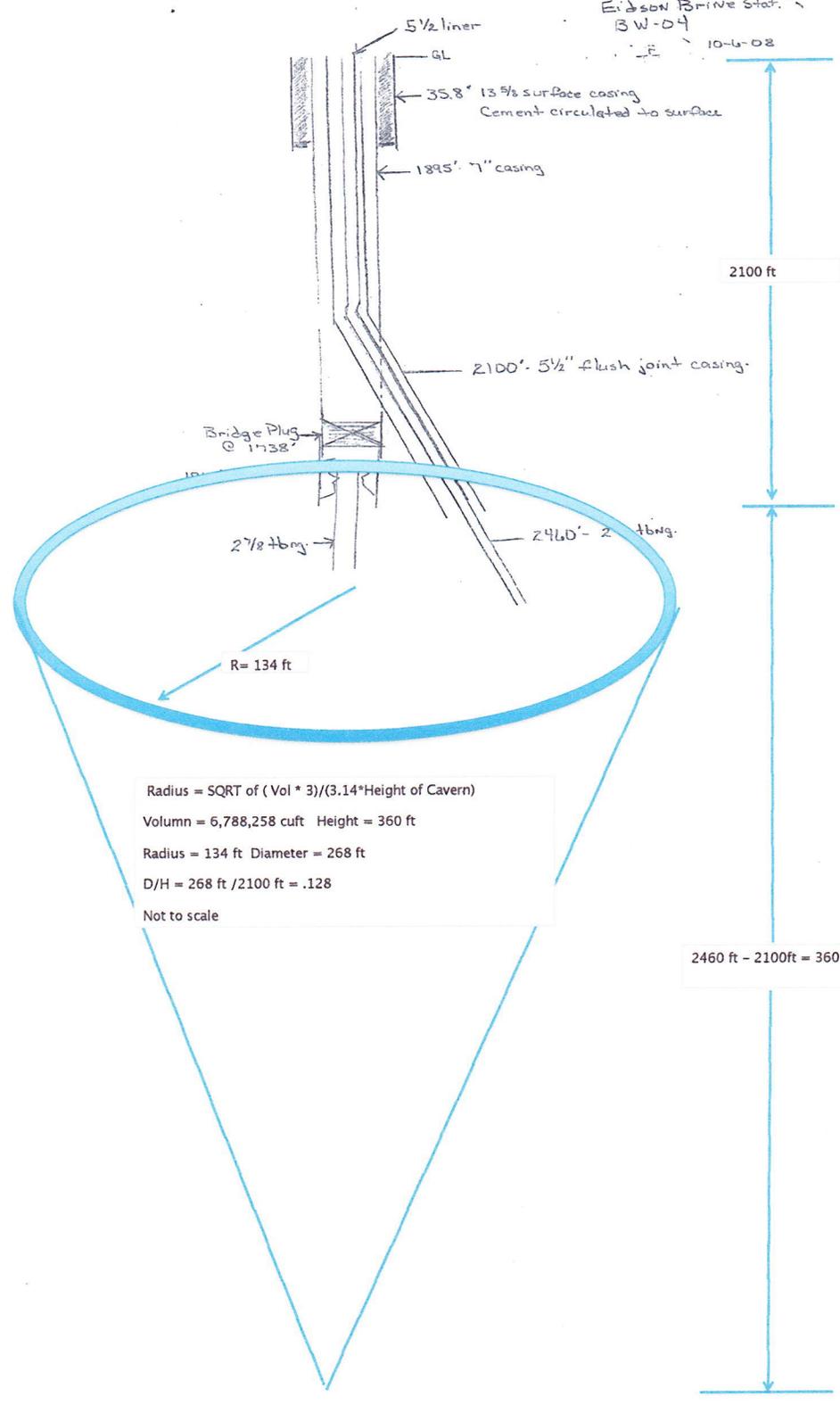


2460' - 2 3/8 tubing
1813'
Bridge Plug @ 1738'
2100' - 5 1/2" flush joint casing
1895' - 7" casing
35.8' 13 5/8" surface casing
Cement circulated to surface
GL
5 1/2" liner

Appendix “F”

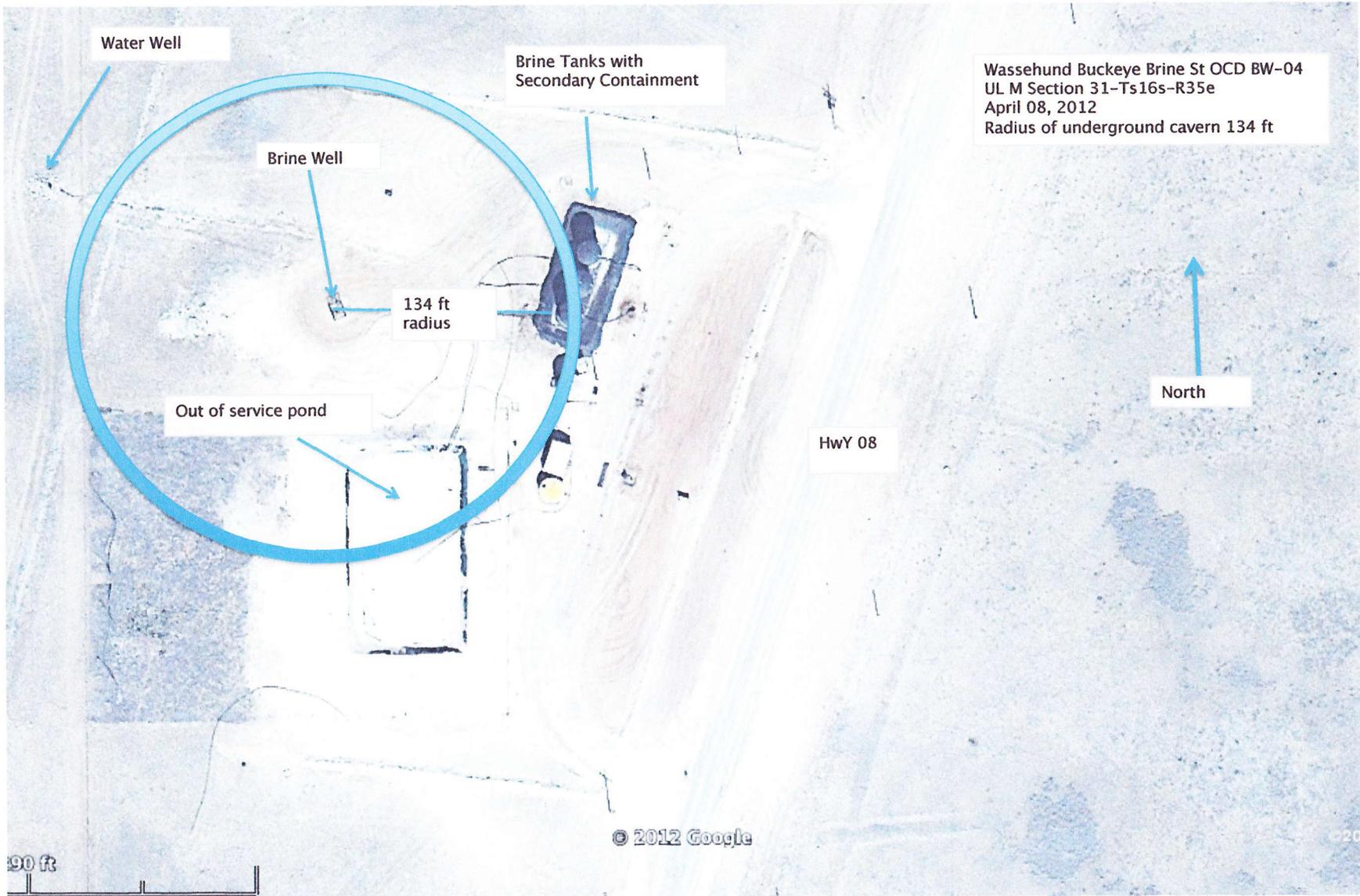
- Brine Cavity Calculations with Wellbore Sketch
- D/H Calculations
- Aerial View showing Cavern Radius

Sandy Corporation
 Edison Brine Strat.
 BW-04
 10-6-08



Radius = SQRT of (Vol * 3)/(3.14*Height of Cavern)
 Volumn = 6,788,258 cuft Height = 360 ft
 Radius = 134 ft Diameter = 268 ft
 D/H = 268 ft /2100 ft = .128
 Not to scale

2460 ft - 2100ft = 360 ft



Appendix "G"

- AOR Well Status List
- AOR Plot Plan
- OCD Well Records Search
- OCD Well Records for Wells In Critical AOR

2011 BW-04 AOR Review-- Well Status List

up-dated Jan 01, 2012

	API#	Well Name	UL	Section	Ts	Rg	Footage	Within 1/4 mi AOR * within 660 ft or Critical AOR	Casing Program Checked	Cased/Cemented across salt section	Corrective Action Required	
0	<u>30-025-26883</u>	<u>Wasserhund Eidson #1</u>	<u>M</u>	<u>31</u>	<u>16s</u>	<u>35e</u>	<u>567 FSL & 162 FWL</u>	NA	NA	NA	NA	
1	30-025-25146	Sheridan-N Vacumm ABO #1	P	36	16s	34e	460 FSL & 660 FEL	yes*	1 1	yes	no	yes
1	30-025-35678	Chesapeake St.VII #7	A	1	17s	34e	660 FNL & 660 FEL	yes*	1 1	yes	no	yes

2 2

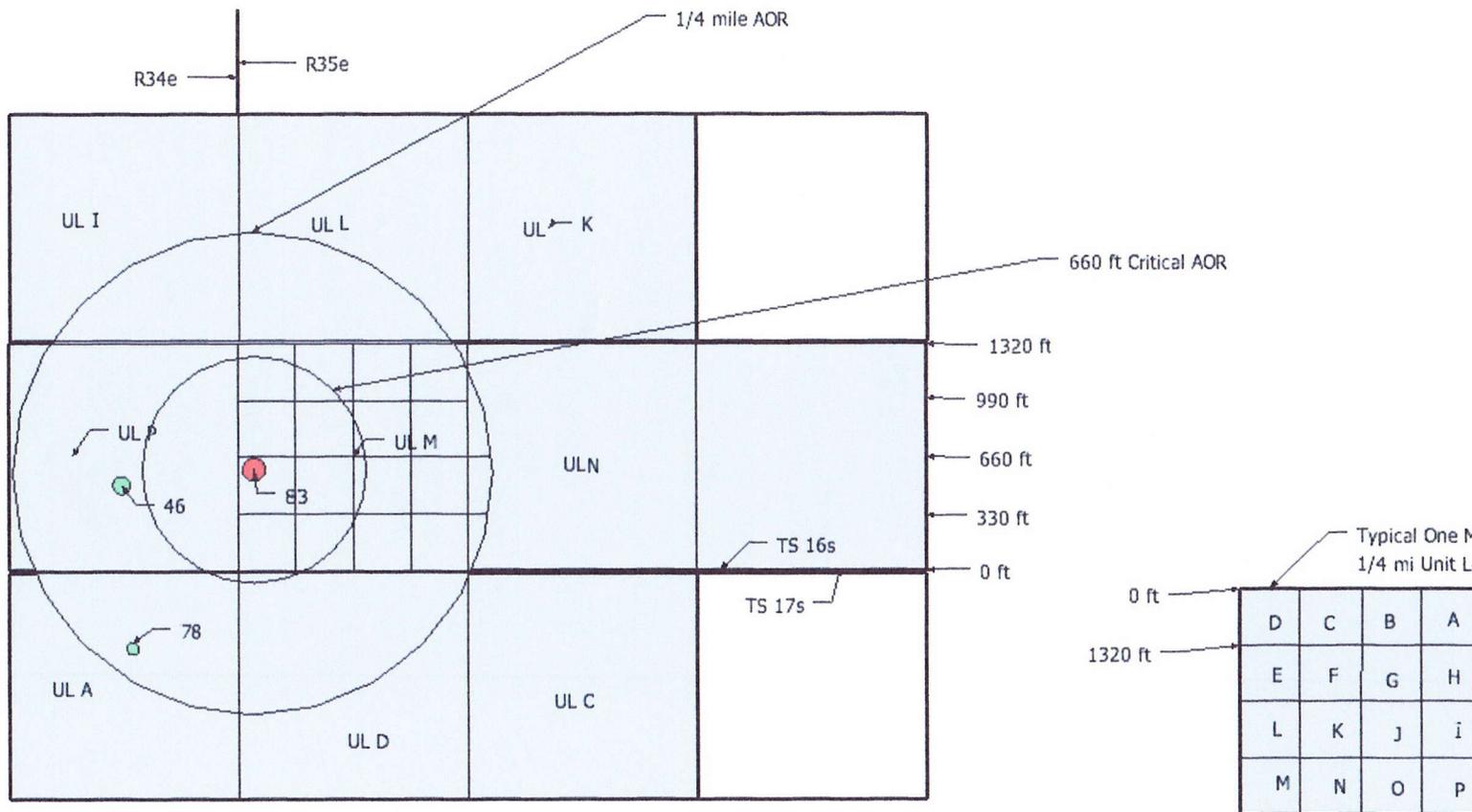
2 Total # of wells in adjacent quarter-sections

2 Total # of wells in 1/4 mile AOR

2 Total # of wells that are within 660 ft or have become within the Critical AOR of the outside radius of the brine well and casing program will be checked Annually.

Notes:

* Means the well is within 660 ft or Critical AOR of the outside radius of the brine well and casing program will be checked annually.



Brine Well Area of Review (AOR) UL Plot Plan	Well API#: 30-025-26883	Note: Wells are identified by the last 2 digits of the well's API#. API #'s are listed in the well status list.
Operator Name: Wasserhund INC	Permit # BW-04	
AOR Year: 2011	Location: UL M-Sec 31-Ts16s-R35e	

WASSERHUND BW-A
2012 APR
N

Well File Search - Select API Number to View

Please select the API Number you wish to view from the list below by clicking the radio button next to the API Number. Then click the "Continue" button to see the thumbnails for the API you selected. The search results are broken out by groups of 25 on each page. Switching pages can be done by clicking the "Next 25" or "Previous 25" links.

3 Records Found

Displaying Screen 1 of 1

- | API Number | ULSTR | Footages | |
|---------------------------------------------------------|---------------|--------------------|---|
| <input type="radio"/> 3002526883 | M -31-16S-35E | 567 FSL & 162 FWL | ✓ |
| Well Name & Number: EIDSON STATE No. 001 | | | |
| Operator: WASSERHUND INC | | | |
| <input type="radio"/> 3002531621 | L -31-16S-35E | 1980 FSL & 660 FWL | ✓ |
| Well Name & Number: VACUUM 9205 JV-P No. 001 | | | |
| Operator: BTA OIL PRODUCERS, LLC | | | |
| <input type="radio"/> 3002532958 | O -31-16S-35E | 660 FSL & 1980 FEL | |
| Well Name & Number: VACUUM 31 No. 001 | | | |
| Operator: MERIT ENERGY COMPANY, LLC | | | |

3 Records Found

Displaying Screen 1 of 1

[Continue](#)

[Go Back](#)

BW-4
2012 AOR
J

Well File Search - Select API Number to View

Please select the API Number you wish to view from the list below by clicking the radio button next to the API Number. Then click the "Continue" button to see the thumbnails for the API you selected. The search results are broken out by groups of 25 on each page. Switching pages can be done by clicking the "Next 25" or "Previous 25" links.

10 Records Found

Displaying Screen 1 of 1

- | API Number | ULSTR | Footages |
|--------------------------------------------------------------------|---------------|---------------------|
| <input type="radio"/> 3002524594 | N -36-16S-34E | 460 FSL & 1980 FWL |
| Well Name & Number: NORTH VACUUM ABO NORTH UNIT No. 001 | | |
| Operator: SHERIDAN PRODUCTION COMPANY, LLC | | |
| <input type="radio"/> 3002524648 | L -36-16S-34E | 1780 FSL & 460 FWL |
| Well Name & Number: NORTH VACUUM ABO NORTH UNIT No. 162 | | |
| Operator: SHERIDAN PRODUCTION COMPANY, LLC | | |
| <input type="radio"/> 3002525146 | P -36-16S-34E | 460 FSL & 660 FEL ✓ |
| Well Name & Number: NORTH VACUUM ABO NORTH UNIT No. 001 | | |
| Operator: SHERIDAN PRODUCTION COMPANY, LLC | | |
| <input type="radio"/> 3002525170 | O -36-16S-34E | 460 FSL & 1980 FEL |
| Well Name & Number: NORTH VACUUM ABO NORTH UNIT No. 002 | | |
| Operator: SHERIDAN PRODUCTION COMPANY, LLC | | |
| <input type="radio"/> 3002533184 | F -36-16S-34E | 1980 FNL & 1650 FWL |
| Well Name & Number: EUREKA 36 STATE No. 001 | | |
| Operator: CIMAREX ENERGY CO. OF COLORADO | | |
| <input type="radio"/> 3002534356 | M -36-16S-34E | 660 FSL & 660 FWL |
| Well Name & Number: NORTH VACUUM ABO NORTH UNIT No. 163 | | |
| Operator: SHERIDAN PRODUCTION COMPANY, LLC | | |
| <input type="radio"/> 3002536389 | N -36-16S-34E | 810 FSL & 1860 FWL |
| Well Name & Number: EUREKA 36 STATE No. 002 | | |
| Operator: CIMAREX ENERGY CO. OF COLORADO | | |
| <input type="radio"/> 3002537018 | O -36-16S-34E | 608 FSL & 1777 FEL |
| Well Name & Number: NORTH VACUUM ABO NORTH UNIT No. 123 | | |
| Operator: SHERIDAN PRODUCTION COMPANY, LLC | | |
| <input type="radio"/> 3002537993 | J -36-16S-34E | 1330 FSL & 1750 FEL |
| Well Name & Number: ENCORE 36 STATE No. 001 | | |
| Operator: QUANTUM RESOURCES MANAGEMENT, LLC | | |
| <input type="radio"/> 3002539149 | A -36-16S-34E | 1311 FNL & 1101 FEL |
| Well Name & Number: ENCORE 36 STATE No. 002A | | |
| Operator: QUANTUM RESOURCES MANAGEMENT, LLC | | |

10 Records Found

Displaying Screen 1 of 1

Continue

Go Back

BW-4
2012 AOR
JP

- Well Name & Number:** STATE VI No. 001
Operator: CHESAPEAKE OPERATING, INC.
3002529037 C -1-17S-34E 1320 FNL & 1980 FWL
Well Name & Number: PRE-ONGARD WELL No. 001
Operator: PRE-ONGARD WELL OPERATOR
- 3002531341 O -1-17S-34E 660 FSL & 1980 FEL
Well Name & Number: NORTH VACUUM ABO NORTH UNIT No. 002
Operator: SHERIDAN PRODUCTION COMPANY, LLC
- 3002531342 M -1-17S-34E 760 FSL & 660 FWL
Well Name & Number: NORTH VACUUM ABO NORTH UNIT No. 002
Operator: SHERIDAN PRODUCTION COMPANY, LLC
- 3002532243 K -1-17S-34E 1980 FSL & 1980 FWL
Well Name & Number: NORTH VACUUM ABO NORTH UNIT No. 002
Operator: SHERIDAN PRODUCTION COMPANY, LLC
- 3002532244 I -1-17S-34E 1980 FSL & 660 FEL
Well Name & Number: NORTH VACUUM ABO NORTH UNIT No. 002
Operator: SHERIDAN PRODUCTION COMPANY, LLC
- 3002532721 G -1-17S-34E 1980 FNL & 1980 FEL
Well Name & Number: NORTH VACUUM ABO NORTH UNIT No. 073
Operator: SHERIDAN PRODUCTION COMPANY, LLC
- 3002535678 A -1-17S-34E 660 FNL & 660 FEL ✓
Well Name & Number: STATE VII No. 007
Operator: CHESAPEAKE OPERATING, INC.
- 3002536333 D -1-17S-34E 820 FNL & 1310 FWL
Well Name & Number: BUCKEYE 1 STATE No. 001
Operator: FASKEN OIL & RANCH LTD
- 3002536889 F -1-17S-34E 1830 FNL & 1830 FWL
Well Name & Number: BUCKEYE 1 STATE No. 002
Operator: FASKEN OIL & RANCH LTD
- 3002539295 N -1-17S-34E 1136 FSL & 2503 FWL
Well Name & Number: NORTH VACUUM ABO NORTH UNIT No. 023
Operator: SHERIDAN PRODUCTION COMPANY, LLC
- 3002539524 M -1-17S-34E 1200 FSL & 1310 FWL
Well Name & Number: NORTH VACUUM ABO NORTH UNIT No. 024
Operator: SHERIDAN PRODUCTION COMPANY, LLC
- 3002539662 F -1-17S-34E 2490 FNL & 1481 FWL
Well Name & Number: NORTH VACUUM ABO NORTH UNIT No. 012
Operator: SHERIDAN PRODUCTION COMPANY, LLC

Well File Search - Select API Number to View

Please select the API Number you wish to view from the list below by clicking the radio button next to the API Number. Then click the "Continue" button to see the thumbnails for the API you selected. The search results are broken out by groups of 25 on each page. Switching pages can be done by clicking the "Next 25" or "Previous 25" links.

BW-4
2012 AOR
JD

28 Records Found

Displaying Screen 1 of 2

[▶ ▶]

- | API Number | ULSTR | Footages |
|--------------------------------------------------------------------|--------------|---------------------|
| <input type="radio"/> 3002501948 | M -1-17S-34E | 330 FSL & 330 FWL |
| Well Name & Number: PRE-ONGARD WELL No. 001 | | |
| Operator: PRE-ONGARD WELL OPERATOR | | |
| <input type="radio"/> 3002501949 | N -1-17S-34E | 330 FSL & 1650 FWL |
| Well Name & Number: PRE-ONGARD WELL No. 002 | | |
| Operator: PRE-ONGARD WELL OPERATOR | | |
| <input type="radio"/> 3002501950 | P -1-17S-34E | 330 FSL & 330 FEL |
| Well Name & Number: PRE-ONGARD WELL No. 001 | | |
| Operator: PRE-ONGARD WELL OPERATOR | | |
| <input type="radio"/> 3002523945 | N -1-17S-34E | 460 FSL & 1980 FWL |
| Well Name & Number: NORTH VACUUM ABO NORTH UNIT No. 001 | | |
| Operator: SHERIDAN PRODUCTION COMPANY, LLC | | |
| <input type="radio"/> 3002524176 | J -1-17S-34E | 1780 FSL & 2000 FEL |
| Well Name & Number: NORTH VACUUM ABO NORTH UNIT No. 001 | | |
| Operator: SHERIDAN PRODUCTION COMPANY, LLC | | |
| <input type="radio"/> 3002524302 | L -1-17S-34E | 1980 FSL & 860 FWL |
| Well Name & Number: NORTH VACUUM ABO NORTH UNIT No. 001 | | |
| Operator: SHERIDAN PRODUCTION COMPANY, LLC | | |
| <input type="radio"/> 3002524341 | P -1-17S-34E | 660 FSL & 860 FEL |
| Well Name & Number: NORTH VACUUM ABO NORTH UNIT No. 001 | | |
| Operator: SHERIDAN PRODUCTION COMPANY, LLC | | |
| <input type="radio"/> 3002524487 | F -1-17S-34E | 2180 FNL & 1980 FWL |
| Well Name & Number: NORTH VACUUM ABO NORTH UNIT No. 001 | | |
| Operator: SHERIDAN PRODUCTION COMPANY, LLC | | |
| <input type="radio"/> 3002524631 | B -1-17S-34E | 800 FNL & 2120 FEL |
| Well Name & Number: NORTH VACUUM ABO NORTH UNIT No. 001 | | |
| Operator: SHERIDAN PRODUCTION COMPANY, LLC | | |
| <input type="radio"/> 3002524645 | H -1-17S-34E | 1980 FNL & 860 FEL |
| Well Name & Number: NORTH VACUUM ABO NORTH UNIT No. 002 | | |
| Operator: SHERIDAN PRODUCTION COMPANY, LLC | | |
| <input type="radio"/> 3002525059 | D -1-17S-34E | 860 FNL & 660 FWL |
| Well Name & Number: NORTH VACUUM ABO NORTH UNIT No. 001 | | |
| Operator: SHERIDAN PRODUCTION COMPANY, LLC | | |
| <input type="radio"/> 3002525206 | E -1-17S-34E | 1980 FNL & 860 FWL |
| Well Name & Number: NORTH VACUUM ABO NORTH UNIT No. 002 | | |
| Operator: SHERIDAN PRODUCTION COMPANY, LLC | | |
| <input type="radio"/> 3002527953 | P -1-17S-34E | 990 FSL & 990 FEL |

~~X~~ NO

BW-4
2012 ADR
JA

Well File Search - Select API Number to View

Please select the API Number you wish to view from the list below by clicking the radio button next to the API Number. Then click the "Continue" button to see the thumbnails for the API you selected. The search results are broken out by groups of 25 on each page. Switching pages can be done by clicking the "Next 25" or "Previous 25" links.

8 Records Found

Displaying Screen 1 of 1

- | API Number | ULSTR | Footages |
|-----------------------------------------------------------|--------------|---------------------|
| <input type="radio"/> 3002502814 | L -6-17S-35E | 1650 FSL & 330 FWL |
| Well Name & Number: PRE-ONGARD WELL No. 001 | | |
| Operator: PRE-ONGARD WELL OPERATOR | | |
| <input type="radio"/> 3002525032 | N -6-17S-35E | 660 FSL & 1980 FWL |
| Well Name & Number: STATE SECTION 6 No. 001 | | |
| Operator: SOUTHWEST ROYALTIES INC | | |
| <input type="radio"/> 3002525282 | L -6-17S-35E | 1980 FSL & 660 FWL |
| Well Name & Number: STATE K 6119 COM No. 001 | | |
| Operator: SOUTHWEST ROYALTIES INC | | |
| <input type="radio"/> 3002535513 | F -6-17S-35E | 1650 FNL & 1650 FWL |
| Well Name & Number: KAGEBRUSH No. 001 | | |
| Operator: SAGE ENERGY CO | | |
| <input type="radio"/> 3002536166 | E -6-17S-35E | 2286 FNL & 660 FWL |
| Well Name & Number: SAGEBRUSH No. 001 | | |
| Operator: SHERIDAN PRODUCTION COMPANY, LLC | | |
| <input type="radio"/> 3002536358 | J -6-17S-35E | 1980 FSL & 1780 FEL |
| Well Name & Number: STATE SECTION 6 No. 002 | | |
| Operator: SOUTHWEST ROYALTIES INC | | |
| <input type="radio"/> 3002538000 | F -6-17S-35E | 1650 FNL & 1650 FWL |
| Well Name & Number: ENCORE 6 STATE COM No. 001 | | |
| Operator: QUANTUM RESOURCES MANAGEMENT, LLC | | |
| <input type="radio"/> 3002538368 | A -6-17S-35E | 1190 FNL & 790 FEL |
| Well Name & Number: ENCORE 6 STATE COM No. 002 | | |
| Operator: QUANTUM RESOURCES MANAGEMENT, LLC | | |

8 Records Found

Displaying Screen 1 of 1

[Continue](#)

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Submit 3 Copies To Appropriate District Office
 District I
 1625 N. French Dr., Hobbs, NM 88240
 District II
 1301 W. Grand Ave., Artesia, NM 88210
 District III
 1000 Rio Brazos Rd., Aztec, NM 87410
 District IV
 1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
 Energy, Minerals and Natural Resources

Form C-103
 June 19, 2008

RECEIVED
CONSERVATION DIVISION
 1220 South St. Francis Dr.
 Santa Fe, NM 87505
HOBBSOCD

SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)	
1. Type of Well: Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/>	7. Lease Name or Unit Agreement Name NORTH VACUUM ABO NORTH UNIT 12-A
2. Name of Operator SHERIDAN PRODUCTION COMPANY, LLC	8. Well Number 1
3. Address of Operator 9 GREENWAY PLAZA, SUITE 1300, HOUSTON, TX 77046	9. OGRID Number 252496
4. Well Location Unit Letter <u>P</u> : <u>460</u> feet from the <u>SOUTH</u> line and <u>660</u> feet from the <u>EAST</u> line Section <u>36</u> Township <u>16S</u> Range <u>34E</u> NMPM County <u>LEA</u>	10. Pool name or Wildcat VACUUM; ABO NORTH
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 4037'GR	

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO: PERFORM REMEDIAL WORK <input type="checkbox"/> PLUG AND ABANDON <input checked="" type="checkbox"/> TEMPORARILY ABANDON <input type="checkbox"/> CHANGE PLANS <input type="checkbox"/> PULL OR ALTER CASING <input type="checkbox"/> MULTIPLE COMPL <input type="checkbox"/> DOWNHOLE COMMINGLE <input type="checkbox"/> OTHER: <input type="checkbox"/>		SUBSEQUENT REPORT OF: REMEDIAL WORK <input type="checkbox"/> ALTERING CASING <input type="checkbox"/> COMMENCE DRILLING OPNS. <input type="checkbox"/> P AND A <input type="checkbox"/> CASING/CEMENT JOB <input type="checkbox"/> OTHER: <input type="checkbox"/>	
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Sheridan Production Company proposes to plug and abandon the NVANU 12A #1 API 30-025-25146. The 2-3/8" tubing has been cemented inside the 4-1/2" casing. The procedure includes the following:

1. ND Wellhead.
2. PU 1-1/4" workstring and tapered mill. Mill thru tight spot in 2-3/8" tubing from 1872'-1895'.
3. Set CIBP in tubing at 5700'. Test plug to 500 psi. Spot 5 sacks cement on top of plug.
4. Perf thru tubing, cement & casing at 2675'. Squeeze 10 sacks of cement.
5. Perf thru tubing, cement & casing at 1700'. Squeeze 15 sacks of cement.
6. Perf thru tubing and casing at 575' circulating cement to surface.
7. Cut wellhead & anchors. Install dry hole marker and remediate location.

Spud Date: 10/19/75 Rig Release Date: 11/13/75

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Joyce A. Williams TITLE OPERATIONS TECH DATE 05/25/10

Type or print name JOYCE A WILLIAMS E-mail address: jwilliams@sheridanproduction.com PHONE: 713-548-1070

For State Use Only

APPROVED BY: [Signature] TITLE STAFF MGR DATE 6-1-10

Conditions of Approval (if any):

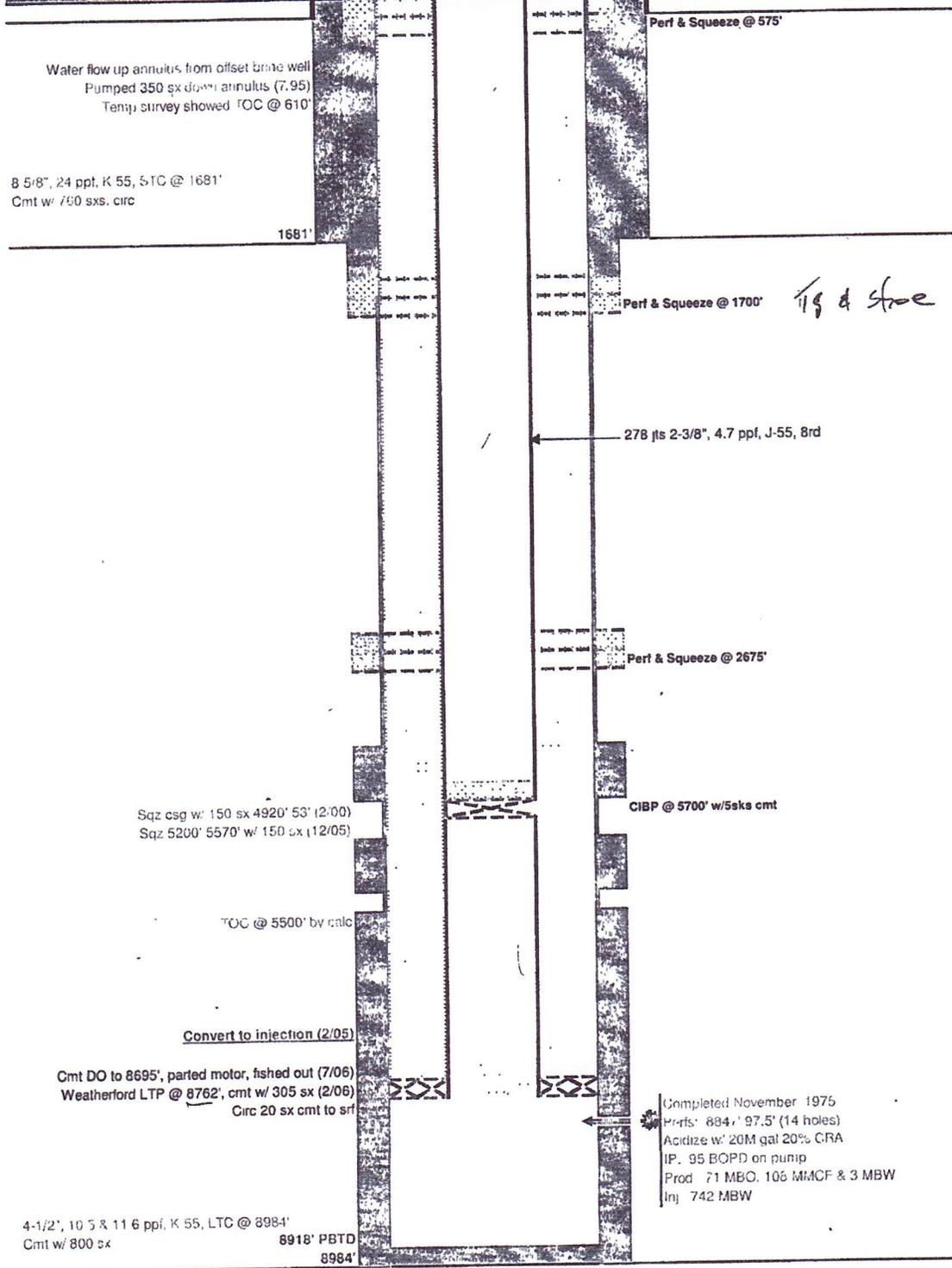
THE OIL CONSERVATION DIVISION MUST BE NOTIFIED 24 HOURS PRIOR TO THE BEGINNING OF PLUGGING OPERATIONS

SHERIDAN PRODUCTION PARTNERS

PROPOSED WELLBORE SCHEMATIC

OPERATOR:	Sheridan Production Partners		REV DATE:	9/12/2007	
WELL NAME:	NVANU 12A-1		TD:	DRILL DATE	
FIELD / PROSPECT:	NVANU	CO: Lea	STATE:	New Mexico	GL: 4037' KB: 4049'
SURFACE LOCATION:			BHL:		
COMPLETED ZONE(S):			PB ZONE(S):		
RECOMP ZONE(S):			TAG DEPTH:	RC	TAG DATE:
TBG/TAC/RODS/PUMP:			MISC:	30-025-25146	
WELLBORE:	<input type="checkbox"/> Original Completion	<input checked="" type="checkbox"/> Proposed Completion	<input type="checkbox"/> Current Completion		

DRILLING & MECHANICAL	PRODUCTION
(Casing, tubing, cement, fish, pkr)	(perfs, stim, zone info)

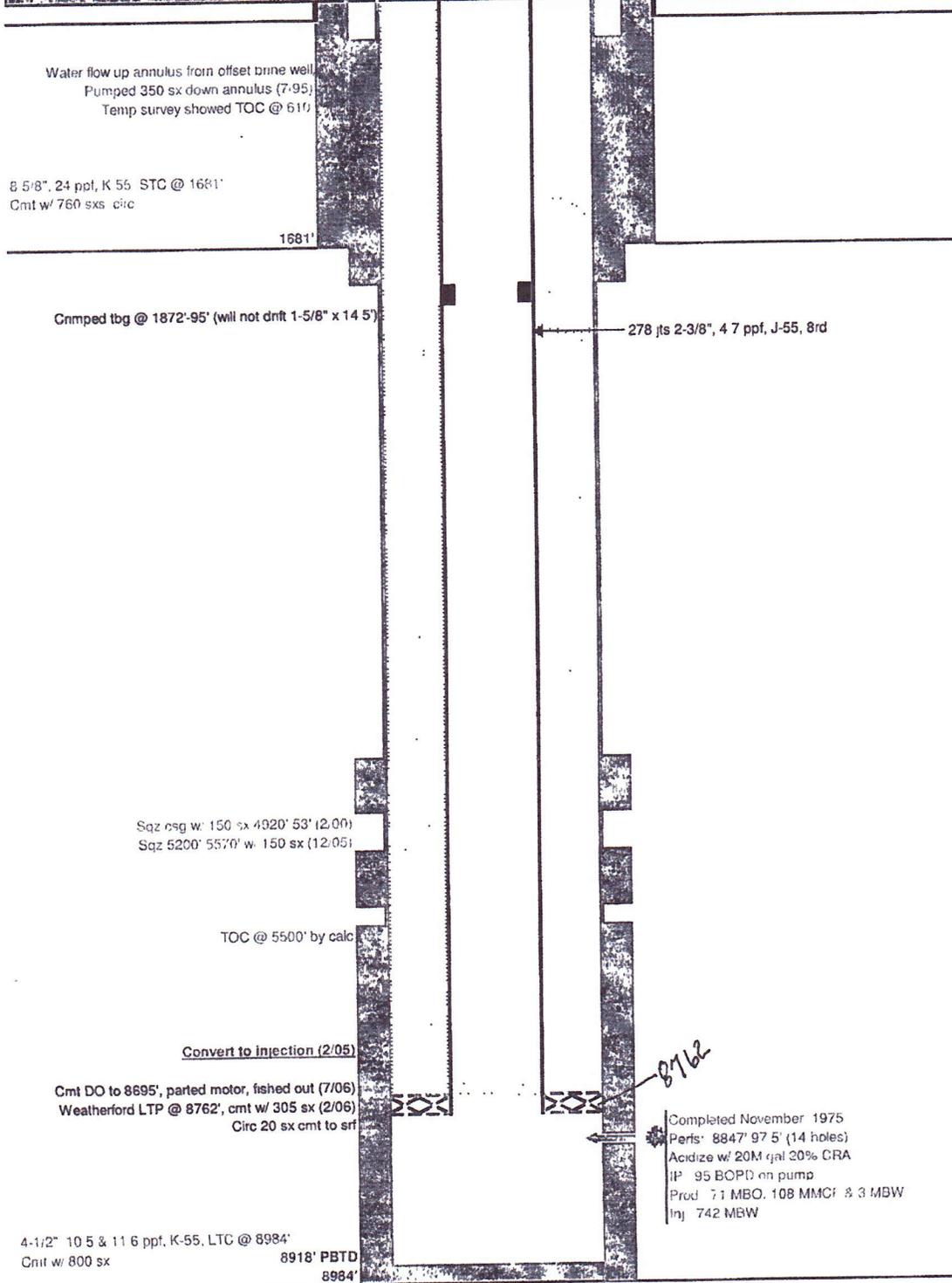


SHERIDAN PRODUCTION PARTNERS

WELLBORE SCHEMATIC

OPERATOR: Sheridan Production Partners	REV DATE: 9/12/2007
WELL NAME: NVANU 12A-1	TD: _____ DRILL DATE: _____
FIELD / PROSPECT: NVU CO Lea	STATE: New Mexico GL: 4037 KB: 4049'
SURFACE LOCATION: _____	BHL: _____
COMPLETED ZONE(S): _____	PB ZONE(S): _____
RECOMP ZONE(S): _____	TAG DEPTH: _____ RC: _____ TAG DATE: _____
TBG/TAC/RODS/PUMP: _____	MISC: 30-025-25146
WELLBORE: <input type="checkbox"/> Original Completion <input type="checkbox"/> Proposed Completion <input checked="" type="checkbox"/> Current Completion	

DRILLING & MECHANICAL	PRODUCTION
(Casing, tubing, cement, fish, pkr)	(perfs, stim, zone info)



Submit 3 Copies To Appropriate District Office
 District I
 1625 N. French Dr., Hobbs, NM 88240
 District II
 1301 W. Grand Ave., Artesia, NM 88210
 District III
 1000 Rio Brazos Rd., Aztec, NM 87410
 District IV
 1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
 Energy, Minerals and Natural Resources

Form C-103
 May 27, 2004

OIL CONSERVATION DIVISION
 1220 South St. Francis Dr.
 Santa Fe, NM 87505

WELL API NO. 30-025-25146
5. Indicate Type of Lease STATE <input checked="" type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No. S B-936
7. Lease Name or Unit Agreement Name NORTH VACUUM ABO NORTH UNIT '12A'
8. Well Number 1
9. OGRID Number 20054
10. Pool name or Wildcat NORTH VACUUM ABO

SUNDRY NOTICES AND REPORTS ON WELLS
 (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG-BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well: Oil Well Gas Well Other **WATER INJECTION**

2. Name of Operator **SAGE ENERGY COMPANY**

3. Address of Operator
P.O. Box 3068, Midland, TX, 79702

4. Well Location
 Unit Letter **P** : **460** feet from the **SOUTH** line and **660** feet from the **EAST** line
 Section **36** Township **16-S** Range **34-E** NMPM County **LEA**

11. Elevation (Show whether DR, RKB, RT, GR etc.)
4,037'

Pit or Below-grade Tank Application or Closure

Pit type _____ Depth to Groundwater _____ Distance from nearest fresh water well _____ Distance from nearest surface water _____

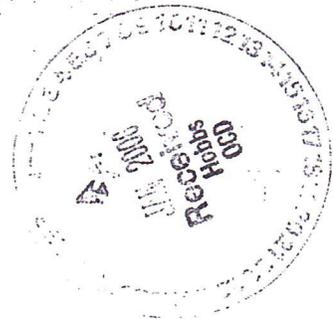
Pit Liner Thickness: _____ mll Below-Grade Tank: Volume _____ bbls; Construction Material _____

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>	P AND A <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	MULTIPLE COMPL <input type="checkbox"/>	CASING/CEMENT JOB <input type="checkbox"/>	
OTHER: SLIM HOLE COMPLETION <input type="checkbox"/>		OTHER: <input type="checkbox"/>	

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

PLEASE SEE ATTACHMENT.



I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that any pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines , a general permit or an (attached) alternative OCD-approved plan .

SIGNATURE George M. Harris Jr. TITLE DIST. ENG. DATE 1/26/04
 Type or print name GEORGE M. HARRIS JR E-mail address: gharris@sagemid.com Telephone No. 432 688-5271
For State Use Only OC FIELD REPRESENTATIVE II/STAFF MANAGER

APPROVED BY: Mary W. Wink TITLE _____ DATE FEB 01 2006

**Sage Energy Company
Attachment To C-103
NVANU 12A#1**

Item #13:

This well was drilled and completed with 4-1/2" casing in 1975. In 2000 a casing leak was located between 4920'-53' and successfully squeezed with 150 sacks of cement. In January, 2005 a leak was suspected between 5522'-57' however we were unable to pump into it. We came back to this well in September and shot squeeze holes at 5570' and were able to circulate through the squeeze holes and around to the casing tubing annulus. Further packer testing revealed bad pipe up the hole to about 5250'. We rigged back up on this well and squeezed it in December from 5200' down to 5584' with 150 sacks and obtained a good squeeze. Upon drilling the squeeze out, the well continued to leak off between 5422' to 5570'. Based on our past experience in this field we do not believe we can successfully squeeze this wellbore.

At this point, Sage would like to cement 2-7/8" tubing in the hole in order to convert this well to water injection service (previously approved under Administrative Order WFX-810, January 20, 2005). The injection interval is 8847' to 8898'. We would like to set a packer at 8775' on 2-7/8" tubing. The mandrel on this packer would be filled with cement so that once set, circulation would be established above the packer to the tubing/casing annulus. We would then pump approximately 125 sacks of 'Lite' cement followed by 150 sacks of Class 'C' cement. These volumes would place the Class 'C' cement top at about 4400' with the 'Lite' cement all the way to surface. The cement filled mandrel would then be drilled out and the well put into water injection service.

*Jan 26, 2006
George M. Harris Jr.
SAGE ENERGY Co.*

U

Form C-105
Revised 1-1-65

NO. OF COPIES RECEIVED	
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SANTA FE	
FILE	
U.S.G.S.	
LAND OFFICE	
OPERATOR	

NEW MEXICO OIL CONSERVATION COMMISSION
WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5a. Indicate Type of Lease
State Fee

5. State Oil & Gas Lease No.
B-936

14. TYPE OF WELL
OIL WELL GAS WELL DRY OTHER _____

b. TYPE OF COMPLETION
NEW WELL WORK OVER DEEPEN PLUG BACK DIFF. RESRV. OTHER _____

6. Name of Operator
K. K. Amini

7. Unit Agreement Name

8. Farm or Lease Name
Exxon "A" State

9. Well No.
1

10. Field and Pool, or Wildcat
North Vacuum Abo

3. Address of Operator
P. O. Drawer 3068, Midland, Texas 79701

4. Location of Well
UNIT LETTER P LOCATED 460 FEET FROM THE South LINE AND 660 FEET FROM _____

12. County
Lea

THE East LINE OF SEC. 36 TWP. 16S RGE. 34E NMPM

15. Date Spudded
10/19/75

16. Date T.D. Reached
11/13/75

17. Date Compl. (Ready to Prod.)
12/1/75

18. Elevations (DF, RKB, RT, GR, etc.)
4036.7 GL

19. Elev. Casinghead

20. Total Depth
8980'

21. Plug Back T.D.

22. If Multiple Compl., How Many

23. Intervals Drilled By
Rotary Tools Cable Tools _____

24. Producing Interval(s), of this completion -- Top, Bottom, Name
8847' - 8897.5'

25. Was Directional Survey Made
No

26. Type Electric and Other Logs Run
Sidewall Neutron Porosity Log

27. Was Well Cored
No

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
8 5/8"	24#	1680'	12 1/4"	760	-0-
4 1/2"	10.5# & 11.6#	8980'	7 7/8"	800	-0-

29. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN

30. TUBING RECORD

SIZE	DEPTH SET	PACKER SET
2 3/8"	8837	

31. Perforation Record (Interval, size and number)
17 shots Select Fire .46
8847, 8848, 8849, 8850, 8851, 8852, 8877, 8878, 8879, 8880, 8881, 8882, 8883, 8884, 8885, 8896.5, 8897.5

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
8847 - 8897.5	20,000 gals. acid

33. PRODUCTION

Date First Production: 12/1/75
Production Method (Flowing, gas lift, pumping - Size and type pump): Pumping 2" x 1 1/4" x 18' RHBC
Well Status (Prod. or Shut-in): Producing

Date of Test	Hours Tested	Choke Size	Prod'n. For Test Period	Oil - Bbl.	Gas - MCF	Water - Bbl.	Gas - Oil Ratio
12/2/75	24			95	93	TSM	975-1

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate	Oil - Bbl.	Gas - MCF	Water - Bbl.	Oil Gravity - API (Corr.)
	35		95	93	TSM	36

34. Disposition of Gas (Sold, used for fuel, vented, etc.)
Vented

Test Witnessed By
Joel Lawhorn

35. List of Attachments
Sidewall Neutron Porosity Log

36. I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief.

SIGNED  TITLE Comptroller DATE 12/3/75

STATE	
FILE	
U.S.G.S.	
LAND OFFICE	
TRANSPORTER	OIL GAS
OPERATOR	
PRODUCTION OFFICE	

**REQUEST FOR ALLOWABLE
AND
AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS**

Form No. 1
Supersedes OIL-100 and OIL-10
Effective 1-1-65

Operator
K. K. Amini

Address
P. O. Drawer 3068, Midland, Texas 79701

Reason(s) for filing (Check proper box)

New Well <input checked="" type="checkbox"/>	Change In Transporter of:	Other (Please explain)
Recompletion <input type="checkbox"/>	Oil <input type="checkbox"/>	CASINGHEAD GAS MUST NOT BE USED AFTER <u>2/1/76</u> UNLESS AN EXCEPTION TO R-4070 IS OBTAINED.
Change In Ownership <input type="checkbox"/>	Casinghead Gas <input type="checkbox"/>	
	Dry Gas <input type="checkbox"/>	
	Condensate <input type="checkbox"/>	

If change of ownership give name and address of previous owner _____

**THIS WELL HAS BEEN PLACED IN THE POOL
DESIGNATED BELOW. IF YOU DO NOT CONCUR
NOTIFY THIS OFFICE. R-5162**

I. DESCRIPTION OF WELL AND LEASE

Lease Name Exxon "A" State	Well No. 1	Pool Name, Including Formation North Vacuum Abo	Kind of Lease State, Federal or Fee State	Lease No. B-936
Location				
Unit Letter P	460 Feet From The South Line and 660 Feet From The East			
Line of Section 36	Township 16S	Range 34E	, NMPM, Lea County	

I. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil <input checked="" type="checkbox"/> or Condensate <input type="checkbox"/>	Address (Give address to which approved copy of this form is to be sent)
The Permian Corporation	P. O. Box 3119, Midland, Texas 79701
Name of Authorized Transporter of Casinghead Gas <input type="checkbox"/> or Dry Gas <input type="checkbox"/>	Address (Give address to which approved copy of this form is to be sent)
If well produces oil or liquids, give location of tanks.	Unit Sec. Twp. Rge. Is gas actually connected? When
	P 36 16S 34E No

If this production is commingled with that from any other lease or pool, give commingling order number: _____

II. COMPLETION DATA

Designate Type of Completion - (X)	Oil Well <input checked="" type="checkbox"/>	Gas Well <input type="checkbox"/>	New Well <input checked="" type="checkbox"/>	Workover <input type="checkbox"/>	Deepen <input type="checkbox"/>	Plug Back <input type="checkbox"/>	Same Resv. <input type="checkbox"/>	Diff. Resv. <input type="checkbox"/>
Date Spudded 10/19/75	Date Compl. Ready to Prod. 12/1/75	Total Depth 8980'		P.B.T.D.				
Elevations (DF, RKB, RT, GR, etc.) 4036.7 GL	Name of Producing Formation Abo	Top Oil/Gas Pay 8847'		Tubing Depth 8837'				
Perforations 8847 - 8897.5'		Depth Casing Shoe						
TUBING, CASING, AND CEMENTING RECORD								
HOLE SIZE	CASING & TUBING SIZE	DEPTH SET		SACKS CEMENT				
12 1/4"	8 5/8"	1680'		760				
7 7/8"	4 1/2"	8980'		800				
	2 3/8"	8837'		-0-				

III. TEST DATA AND REQUEST FOR ALLOWABLE OIL WELL

(Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours)

Date First New Oil Run To Tanks 12/1/75	Date of Test 12/2/75	Producing Method (Flow, pump, gas lift, etc.) Pumping	
Length of Test 24 hours	Tubing Pressure	Casing Pressure 35	Choke Size
Actual Prod. During Test 95	Oil-Bbls. 95	Water-Bbls. TSM	Gas-MCF 93

GAS WELL

Actual Prod. Test-MCF/D	Length of Test	Bbls. Condensate/MMCF	Gravity of Condensate
Testing Method (pilot, back pr.)	Tubing Pressure (Shut-in)	Casing Pressure (Shut-in)	Choke Size

IV. CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Commission have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

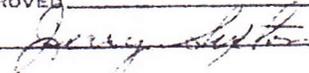


(Signature)
Comptroller

(Title)
12/3/75

(Date)

OIL CONSERVATION COMMISSION

APPROVED _____, 19____
BY 
TITLE _____

This form is to be filed in compliance with RULE 1104.
If this is a request for allowable for a newly drilled or deepened well, this form must be accompanied by a tabulation of the deviation tests taken on the well in accordance with RULE 111.
All portions of this form must be filled out completely for allowables on new and recompleted wells.
Fill out only sections I, II, III, and VI for changes of owner, well name or number, or transporter or other such change of condition.

DEVIATION REPORT

Exxon "A" State No. 1
Section 36, T16S, R34E,
Lea County, New Mexico

<u>DEPTH</u>	<u>DEVIATION</u>
530'	1/4°
975'	3/4°
1458'	1°
2075'	3/4°
2578'	1 1/4°
2890'	1 1/2°
3142'	1°
3488'	3/4°
3679'	3/4°
4140'	1°
4703'	3/4°
5225'	1°
5731'	1°
6240'	3/4°
6711'	1°
7212'	1°
7716'	3/4°
8183'	1 1/2°
8520'	1°

K. K. AMINI



By. W. Glenn Burton
Comptroller

STATE OF TEXAS |
COUNTY OF MIDLAND |

The foregoing instrument was acknowledged before me this 3rd day of
December, 1975, by W. Glenn Burton on behalf of
K. K. Amini.

My Commission Expires
September 10, 1977

Pauline Stover
Notary Public in and for
Midland County, Texas

Staples
DISTRICT I
 P.O. Box 1980, Hobbs, NM 88240
DISTRICT II
 P.O. Drawer DD, Artesia, NM 88210
DISTRICT III
 1000 Rio Brazos Rd., Aztec, NM 87410

OIL CONSERVATION DIVISION
 2040 Pacheco St.
 Santa Fe, NM 87505

WELL API NO.
 30-025-35678
 5. Indicate Type of Lease
 STATE FEE
 6. State Oil & Gas Lease No. 28798

SUNDRY NOTICES AND REPORTS ON WELLS
 (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well:
 OIL WELL GAS WELL OTHER

2. Name of Operator
 Ricks Exploration, Inc.

3. Address of Operator
 210 Park Ave., Suite 3000

4. Well Location
 Unit Letter A : 660' Feet From The North Line and 660' Feet From The East Line
 Section 1 Township 17S Range 34E NMPM Lea County

7. Lease Name or Unit Agreement Name
 STATE VII

8. Well No. 7

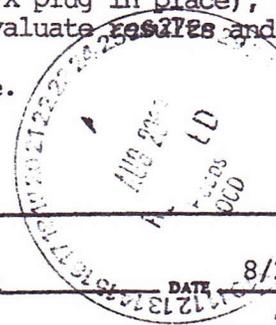
9. Pool name or Wildcat
 Vacuum - Atoka, Morrow North

10. Elevation (Show whether DF, RKB, RT, CR, etc.)
 GL: 4033'

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>	PLUG AND ABANDONMENT <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>		CASING TEST AND CEMENT JOB <input type="checkbox"/>	
OTHER: Add perforations <input type="checkbox"/>		OTHER: <input type="checkbox"/>	

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.
 RU S/L Unit. Run in hole w/GR and tag TOF to verify W/L fish is still @12070' in the 2-3/8" tbg string. Set collar stop and W/L plug @12000'. RU W/L and perforate 4 holes in 2-3/8" tbg., 1 jt above W/L plug @12000'. Swab FL to 4000'. Release Retrievable Packer & TOH w/2-3/8" production string. RU W/L, tag Profile Nipple in 2-3/8" tailpipe below permanent Packer @12446', set W/L plug just above Nipple. TIH w/Model R Retrievable Packer on 2-3/8" tbg to 12298', & circ. Set Packer and pressure test plug in permanent Packer. Release Packer, spot acid from 12298-9200'. TOH w/tbg & Packer. RU W/L and perforate interval from 12280-12298', w/3-1/8" csg guns, 4 SPF, 90 deg phasing. TIH w/X-Nipple (PX plug in place), 10' Sub, AS1X Retrievable Packer, set @12200'+/-. Acidize, swab, & test. Evaluate ~~results~~ and frac if necessary. Return well to production. Procedure to be completed in September, 2002, or as soon as possible.



I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Lynne Suchy TITLE Drilling Asstnt DATE 8/21/02
 TYPE OR PRINT NAME Lynne Suchy TELEPHONE NO. 405/516-1100

(This space for State Use)

APPROVED BY _____ TITLE _____ DATE AUG 26 2002

CONDITIONS OF APPROVAL, IF ANY:

3
C

Submit 3 Copies To Appropriate District Office
 District I
 1625 N. French Dr., Hobbs, NM 88240
 District II
 1301 W. Grand Ave., Artesia, NM 88210
 District III
 1000 Rio Brazos Rd., Aztec, NM 87410
 District IV
 1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
 Energy, Minerals and Natural Resources

Form C-103
 Revised March 25, 1999

OIL CONSERVATION DIVISION
 1220 South St. Francis Dr.
 Santa Fe, NM 87505

WELL API NO.
 30-025-35678

5. Indicate Type of Lease
 STATE FEE

6. State Oil & Gas Lease No.

7. Lease Name or Unit Agreement Name:
 State VII

8. Well No. ~~VI~~ 7

9. Pool name or Wildcat
 Vacuum-Atoka, Morrow North

SUNDRY NOTICES AND REPORTS ON WELLS
 (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well:
 Oil Well Gas Well Other

2. Name of Operator
 Ricks Exploration, Inc

3. Address of Operator
 210 Park Ave, STE 3000 Oklahoma City, OK 73102

4. Well Location
 Unit Letter A : 660 feet from the North line and 660 feet from the East line
 Section 1 Township 17S Range 34E NMPM Lea County

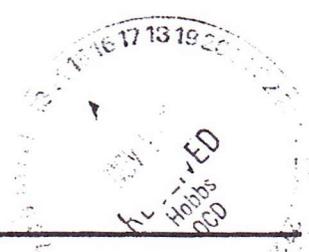
10. Elevation (Show whether DR, RKB, RT, GR, etc.)
 4033' GR

11. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO: PERFORM REMEDIAL WORK <input checked="" type="checkbox"/> PLUG AND ABANDON <input type="checkbox"/> TEMPORARILY ABANDON <input type="checkbox"/> CHANGE PLANS <input type="checkbox"/> PULL OR ALTER CASING <input type="checkbox"/> MULTIPLE COMPLETION <input type="checkbox"/> OTHER: <input type="checkbox"/>		SUBSEQUENT REPORT OF: REMEDIAL WORK <input type="checkbox"/> ALTERING CASING <input type="checkbox"/> COMMENCE DRILLING OPNS. <input type="checkbox"/> PLUG AND ABANDONMENT <input type="checkbox"/> CASING TEST AND CEMENT JOB <input type="checkbox"/> OTHER: <input type="checkbox"/>	
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--

12. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompilation.

1. RU BJ Services. RU to accept returns via 11 3/4" X 8 5/8" annulus. Establish circulation dn 4 1/2" X 8 5/8" annulus. Pump Cl C cement (14.8 ppg Yield 1.34 ft3/sx) until cement is circulated to surface (Estimated 300 sx). RD BJ.



I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE [Signature] TITLE Engineer DATE 11/12/01

Type or print name Bryan Rother Telephone No. 405/516/1100
 (This space for State use)

APPROVED BY _____ TITLE _____ DATE _____

Conditions of approval, if any:

ORIGINAL FILED IN PETROLEUM

RICKS EXPLORATION INC.

State VII #1

Sec. 1-17S-34E

Lea Co., NM

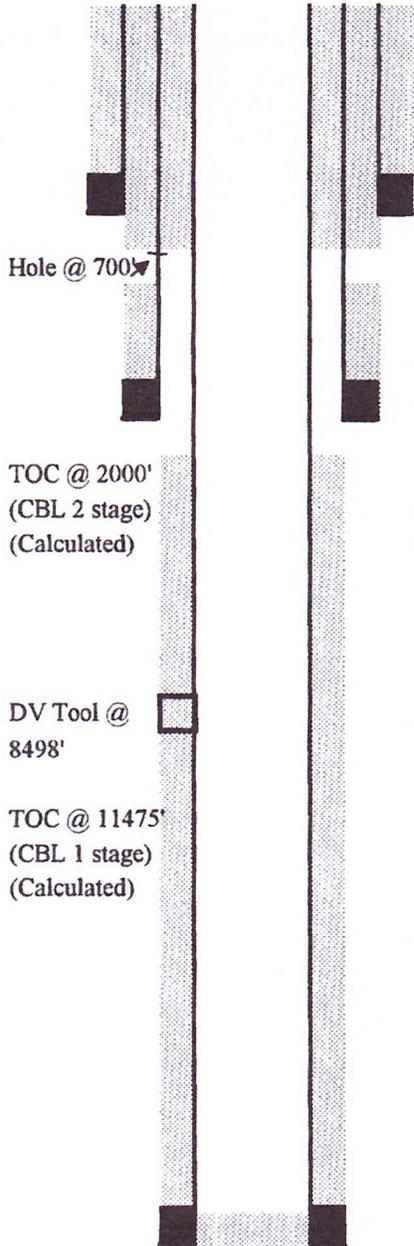
Spud Date: 9/02/01

Proposed 8 5/8" casing repair

GL: 4033'

DF: 4052'

KB: 4053'



SURFACE CASING:

11-3/4" 42# H40 set @ 1610'

CMT w/ 790 sxs to surf

INTERMEDIATE CASING:

8-5/8" 32# K-55 set @ 5020'

CMT w/ 1190 sxs. Did not circ to surf.

TOC @ 1740' (Temp Survey)

Hole indicated in 8 5/8" @ 700'

Pump CI C neat cmt dn 4 1/2" X 8 5/8" annulus until cmt returns to sfc
Est 300 sx

ATOKA PERFORATIONS

11528' - 11553' 4/SPF (1/93)

Loc set Pkr @ 11682' w/ on/off tool & plug set in R nipple @ 11750'

(4" TCP gun in hole)

11902' - 11914' 4/SPF (2/83)

PRODUCTION CASING:

4-1/2" 11.6# P110 LT&C @ 12732'

Cement w/ 1380 sx



PBTD: 12722'

TD: 12750'

BJR 11/12/01

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resou. :
Oil Conservation Division
2040 South Pacheco
Santa Fe, NM 87505

Form C-101
Revised March 17, 1999

Submit to appropriate District Office
State Lease - 6 Copies
Fee Lease - 5 Copies

AMENDED REPORT

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

Operator Name and Address RICKS EXPLORATION, INC. 210 PARK AVE OKLAHOMA CITY, OKLAHOMA 73102		LYNN SUCHY 405-516-1130	OGRID Number 168489
Property Code 28798	STATE VII	Primary Name	API Number 30-025-35678
			Well No. 7

Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A/1	1	17S	34E		660'	NORTH	660'	EAST	LEA

Proposed Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
Proposed Pool 1 VACUUM-ATOKA, MORROW NORTH (86800)					Proposed Pool 2				

Work Type Code N	Well Type Code G	Cable/Rotary ROTARY	Lease Type Code P5	Ground Level Elevation 4033'
Multiple NO	Proposed Depth 13,000'	Formation Atoka - Morrow	Contractor PATERSON	Spud Date WHEN APPROVED

Proposed Casing and Cement Program

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC
25"	20"	Conductor	40'	Redi-mix	surface
14 3/4"	11 3/4"	42	1600'	780 Sx	surface
12 1/2"	8 5/8"	24	5000'	1190 Sx.	1100' FS
7 7/8"	5 1/2"	17	13,000'	670	7500' FS

²² Describe the proposed program. If this application is to DEEPEN or PLUG BACK, give the data on the present productive zone and proposed new productive zone.

Describe the blowout prevention program, if any. Use additional sheets if necessary.

1. Drill 25" hole to 40'. Set 40' of 20" conductor and cement to surface with Redi-mix.
2. Drill 14 3/4" hole to 1600'. Run and set 1600' of 11 3/4" J-55 42# ST&C casing. Cement with 1190 Sx. of Class "C" cement + 2% CaCl + 1/4# Flocele/Sx. circulate cement to surface.
3. Drill 12 1/2" hole to 5000'. Run and set 5000' of 8 5/8" 24&32# J-55 ST&C casing. Cement with 1190 Sx. of Class "C" cement + 2% CaCl + 1/4# Flocele/Sx. estimate top of cement 1100'.
4. Drill 7 7/8" hole to 13,000'. Run and set 13,000' of 5 1/2" 17# N-80 LT&C casing. Cement with 670 Sx. of Class "H" Premium Plus cement + additives. Top of cement at least 500' above upper most Perforation.

Permit Expires 1 Year From Approval Date Unless Drilling Underway

²³ I hereby certify that the information given above is true and complete to the best of my knowledge and belief.

Signature: *Joe T. Janica*

Printed name: Joe T. Janica

Title: Agent

Date: 08/28/01

Phone: 505-391-8503

OIL CONSERVATION DIVISION

Approved by: *[Signature]*

Title: *AUG 28 2001*

Approval Date: Expiration Date:

Conditions of Approval:

J
C
A

B
MP