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**ANNUAL
REPORTS**

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.

Tatum Brine Station

OCD Permit BW-22

Expiration Date: Nov 08, 2018

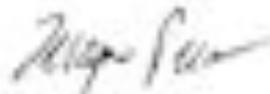
API No. 30-025-28162 Watson #1

Unit Letter M-Section 20-Ts 12s – R 35e

May 30, 2015

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

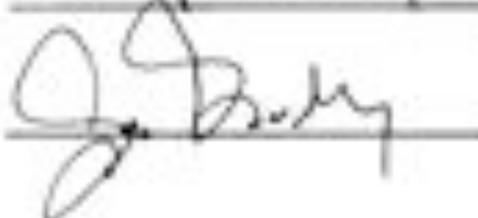
Wayne Price-LLC



Larry Gandy



Jon Gandy



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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 Expiration Date November 08, 2018.

During the 2014 year, there was no major or remedial work performed on the brine well. Due to brine quality issues experienced during the past two years, Wasserhund Inc. submitted a C-103 to OCD in late December of 2012 to investigate why the well is not producing high quality brine water. (C-103 included in **Appendix “A”**)

Due to the demand for cut-brine, Wasserhund Inc. decided to forego any well work during the 2014 calendar year.

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 1983 and has been in operation for approximately 31 years and is sited on the west side of Tatum, NM, just north of highway 380. The well is producing out of the Salado “Salt Formation” at a depth of approximately 2200-2850 feet below surface.

A copy of the most recent OCD approved Discharge Plan BW-22 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 been a relative low producer and the size of the cavity is quite small compared to similar wells of age. **Bullet Point 10** (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.

As will be discussed in **Bullet Point 5** (Chemical Analysis) ever since the last open-hole formation-test, the well has not been able to produce 10# brine, either with reverse or conventional flow. In addition, an off color brine water has been noted from time to time.

General housekeeping was routinely performed and on-site training and inspections were conducted for awareness of the permit conditions. The brine tanks currently do not have secondary containment and Wasserhund Inc respectfully requests a waiver of those conditions unless unusual operating conditions warrant such.

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 **Bullet Point 10** below.

Depending upon OCD requirements and local economics, Wasserhund Inc. will have to evaluate whether future operations of this well is warranted as a concentrated brine producing well.

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"

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 2014 brine production volume was 11,042 bbls and the lifetime production volume is 2,712,147 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: Maximum and Average Injection Pressure:

The maximum operating injection pressure is approximately 380 psig, which is approximately 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 260 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 chemical analysis and chain-of-custody of the brine and fresh water injection water samples collected and analyzed by Trace Analysis in Lubbock, Texas, for the 2014 year. 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 north 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 specific gravity of the brine water was noted to be a good 10# brine in the first half of the year. Production actually picked up in the second half of the year and the specific gravity (Density) fell back to a very low of 1.03 or 8.58 #/gal. As previously reported, from time to time, an off red color of the produced brine has been noted, possibly caused by injected fresh water interacting with the upper Salado/Rustler formation where the salt has been dissolved.

Wasserhund Inc., will continue to monitor the density-quality issue and will report to OCD once the system recovers, or if for some reason it doesn't recover, then some remedial action may be taken, including the possibility of plugging the well, reversing the flow, or deepening the well.

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, but due to some down-hole geological-physical characteristics, is only able to make a cut-brine ranging in density of 1.20 to 1.03 lb/gal.

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 have 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 Quality Watson #1 brine well, OCD permit # BW-22, located in UL M of Section 20-Ts12S-R36E. Wasserhund Inc used OCD records and field verification to confirm wells in the AOR.

Using OCD on-line files and actual on-site field verification, a well status list and AOR plot plan was constructed (see **Appendix “E”**) listing all wells within adjacent quarter sections of the BW-22 location. The list shows API#, Operator well name, UL, Section, Township and Range, footages, Wells within 660 ft and ¼ mile, casing program status, casing/ cementing status, and corrective action required status.

In the 2014 review, there were no new wells added to the list. **Appendix “E”** contains the check-off list showing the OCD wells in all adjacent quarter sections surrounding the BW-22 brine well.

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 i.e. 123.0 ft (r= 61.5 ft) up-dated for 2014, a 10:1 safety factor is applied that equates to about 615 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.

The critical zone was investigated by checking the OCD on-line well records. There was no well activity in the AOR.

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 provide some useful information pertaining to the size and shape of this particular cavern, but at a very limited depth. 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 2.712 million barrels of brine produced as of December 2014. The maximum diameter was calculated to be approximately 123.0 feet with a corresponding D/H ratio of .057 updated for the 2014 year.

While the sonar failed to provide information deeper in the cavern, it did show with some degree of accuracy, that the upper portion of the cavern had a maximum center-line radius of approximately 60 feet with a corresponding diameter of approximately 110 feet over all, which correlates with the worst case calculated value. Attached in **Appendix “F”** is a copy of the MaxPlot of the last sonar test showing the sonar results.

Comparing the current D/H ratio of .057 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 11.5 times.

Included in **Appendix “F”** is an aerial view showing the 61.5-foot radius superimposed around the brine well and station.

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.

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.

However, in order to meet the new permit requirements, 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 Request: 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-22 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-22 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.

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"

- C-103
- Aerial Photo
- Discharge Plan BW-22

Submit 1 Copy To Appropriate District Office
District - (505) 293-4140
1423 N. French Dr., Hobbs, NM 88240
District - (505) 748-1283
811 S. First St., Artesia, NM 88210
District - (505) 334-6178
1000 Rio Brazos Rd., Azusa, NM 87410
District - (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87501

State of New Mexico
HOBBS OGD, Minerals and Natural Resources
CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505
RECEIVED
DEC 14 2012

Form C-103
Revised August 1, 2011

WELL API NO. 30-025-00007 28162
5. Indicate Type of Lease STATE <input type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No.
7. Lease Name or Unit Agreement Name Quality Brine
8. Well Number 1
9. OGRID Number 130851
10. Pool name or Widdow
11. Elevation (Show whether DR, AR, 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-100 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 : 593 feet from the South line and 639 feet from the West line
Section 20 Township 13N Range 36E 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 checked="" 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"/>			
OTHER: <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.

1. Pull tubing because of light brine weight.
2. Run packer, test casing.
3. Drill to approximately 2850'.
4. Return to making brine.

Begin work as soon as we have OCD approval.

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 President DATE 12/05/12

Type or print name Larry Gandy Email address: lgandy@gandyincorporation.com PHONE: 575-396-0522

APPROVED BY: Maureen White TITLE Compliance Officer DATE 12-21-2012

Conditions of Approval (if any):

JAN 9 8 2013

dm



BW-22

**Wasserhund/Tatum
Watson #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-22 for the Watson #1 Brine Well in Unit M of Section 20, Township 12 South, Range 36 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-22 (API# 30-025-28162) 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".

Jami Bailey
Director

JB/JG/jg
Attachment – Discharge Permit Approval Conditions

DISCHARGE PERMIT BW-22

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-22 (Discharge Permit) to Wasserhund, Inc. (Permittee) to operate its Underground Injection Control (UIC) Class III well for the in situ extraction of salt (Watson #1 - API No. 30-025-28162) located 593 feet FSL and 639 feet FWL (SW/4 SW/4, Unit Letter M) in Section 20, Township 12 South, Range 36 East, NMPM, Lea County, New Mexico at its Brine Production Facility (Facility). The Facility is located within Tatum, New Mexico to the north of US 380.

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 30 feet below ground surface and has a total dissolved solids concentration of approximately 700 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.

- 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.

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-22 Annual Production Data						
						Plus numbers represent more fresh injected than brine produced. Neg numbers the opposite.
			Brine-BBLS	Fresh-BBLS		% diff
Jan			100	110		10.00%
Feb			160	175		9.38%
Mar			916	937		2.29%
Apr			1225	1275		4.08%
May			763	776		1.70%
Jun			1020	1055		3.43%
Jul			1735	1755		1.15%
Aug			960	995		3.65%
Sep			2323	2350		1.16%
Oct			810	830		2.47%
Nov			320	335		4.69%
Dec			710	725		2.11%
2014 Total			11042	11318		2.50%
			2,701,105			
Total Brine Water Production Carry Over from Years Past BBLs						
Total Production year ending	2014		2,712,147	BBL's		

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

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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
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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
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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 Date Analyzed: 2014-04-10 Analyzed By: RL
 Prep Batch: 94116 QC Preparation: 2014-04-10 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 Date Analyzed: 2014-04-23 Analyzed By: LM
 Prep Batch: 94164 QC Preparation: 2014-04-22 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

C	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
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Buckeye(BW-4) Tatum (BW-22)

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 17, 2015

Work Order: 15012304



Project Location: Tatum, NM
 Project Name: Brine Well-Tatum

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
385127	Fresh	water	2015-01-16	06:17	2015-01-21
385128	Brine	water	2015-01-16	06:25	2015-01-21

Sample: 385127 - Fresh

Param	Flag	Result	Units	RL
Chloride		71.6	mg/L	2.5
Dissolved Sodium	Qs	75.9	mg/L	1
pH		8.20	s.u.	2
Specific Gravity		0.9861	g/ml	
Total Dissolved Solids		642	mg/L	2.5

Sample: 385128 - Brine

Param	Flag	Result	Units	RL
Chloride	H	16000	mg/L	2.5
Dissolved Sodium	Qs	11400	mg/L	1
pH		6.16	s.u.	2
Specific Gravity		1.027	g/ml	
Total Dissolved Solids		31000	mg/L	2.5



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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: 15012304



Project Location: Tatum, NM
 Project Name: Brine Well-Tatum
 Project Number: Brine Well-Tatum

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
385127	Fresh	water	2015-01-16	06:17	2015-01-21
385128	Brine	water	2015-01-16	06:25	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 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

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Case Narrative

Samples for project Brine Well-Tatum were received by TraceAnalysis, Inc. on 2015-01-21 and assigned to work order 15012304. Samples for work order 15012304 were received intact at a temperature of 2.0 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	100958	2015-02-13 at 15:00	119384	2015-02-13 at 18:06
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 15012304 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: 385127 - Fresh

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 119384 Date Analyzed: 2015-02-13 Analyzed By: RL
Prep Batch: 100958 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	B	1,2,3,4,5	71.6	mg/L	10	2.50

Sample: 385127 - 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: 100546 Sample Preparation: 2015-01-27 Prepared By: RR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium	Qs	2,3,4,5	75.9	mg/L	1	1.00

Sample: 385127 - 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	8.20	s.u.	1	2.00

Sample: 385127 - 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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Specific Gravity			0.9861	g/ml	1	0.000

Sample: 385127 - Fresh

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	642	mg/L	20	2.50

Sample: 385128 - Brine

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	16000	mg/L	1000	2.50

Sample: 385128 - Brine

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: 100546 Sample Preparation: 2015-01-27 Prepared By: RR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium	Qs	2,3,4,5	11400	mg/L	100	1.00

Sample: 385128 - 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	6.16	s.u.	1	2.00

Sample: 385128 - 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			1.027	g/ml	1	0.000

Sample: 385128 - 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	31000	mg/L	1000	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: 119384

QC Batch: 119384 Date Analyzed: 2015-02-13 Analyzed By: RL
Prep Batch: 100958 QC Preparation: 2015-02-13 Prepared By: RL

Report Date: February 17, 2015
Brine Well-Tatum

Work Order: 15012304
Brine Well-Tatum

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Tatum, NM

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1,2,3,4,5	0.826	mg/L	2.5

Method Blank (1) QC Batch: 119410

QC Batch: 119410
Prep Batch: 100982

Date Analyzed: 2015-02-16
QC Preparation: 2015-02-16

Analyzed By: RL
Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1,2,3,4,5	0.767	mg/L	2.5

Duplicates

Duplicates (1) Duplicated Sample: 385269

QC Batch: 118885 Date Analyzed: 2015-01-27 Analyzed By: CF
Prep Batch: 100533 QC Preparation: 2015-01-27 Prepared By: CF

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Specific Gravity	1.074	1.072	g/ml	1	0	200

Duplicates (1) Duplicated Sample: 385269

QC Batch: 118893 Date Analyzed: 2015-01-27 Analyzed By: AT
Prep Batch: 100544 QC Preparation: 2015-01-27 Prepared By: AT

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH	6.79	6.78	s.u.	1	0	20

Duplicates (1) Duplicated Sample: 385130

QC Batch: 118905 Date Analyzed: 2015-01-26 Analyzed By: RL
Prep Batch: 100553 QC Preparation: 2015-01-26 Prepared By: RL

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	850	806	mg/L	20	5	10

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,2,3,4,5	24.1	mg/L	1	25.0	0.826	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	24.3	mg/L	1	25.0	0.826	94	90 - 110	1	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: 119410
 Prep Batch: 100982

Date Analyzed: 2015-02-16
 QC Preparation: 2015-02-16

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	24.0	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 Date Analyzed: 2015-02-06 Analyzed By: RR
 Prep Batch: 100546 QC Preparation: 2015-01-27 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: 385127

QC Batch: 119384 Date Analyzed: 2015-02-13 Analyzed By: RL
 Prep Batch: 100958 QC Preparation: 2015-02-13 Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,2,3,4,5	319	mg/L	10	250	71.6	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	312	mg/L	10	250	71.6	96	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: 386889

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-Tatum

Work Order: 15012304
Brine Well-Tatum

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Tatum, NM

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.

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.

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Environmental Testing
2503 Meyers Rd., Box 522
Carrington, Texas 75008
Tel (972) 242-7750

email: lab@traceanalysis.com

Company Name: PRICE LLC
Address: 312 CRAWFORD RIDGE COURT NE 8712
Contact Person: LESTER WAYNE PRICE JR
Invoice to: (if different from above)
Project #: NA
Project Location (including state): LATUM NM

Phone #: 505 892 6643
FAX #: 505 892 6643
E-mail: AMPRICE@3DINITIAL.COM
Project Name: BRINE WELL
Sampler Signature: LUPOR

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	VOLUME / AMOUNT	MATRIX			PRESERVATIVE METHOD			SAMPLING		TIME
				WATER	SLURRY	SLUDGE	TOX	PH	ORP	DATE	TIME	
38574	FRESH	1	100ml X									6:17PM
128	BRINE	1	100ml X									6:35PM

ANALYSIS REQUEST

(Circle or Specify Method No.)

<input type="checkbox"/>	MTRE: 8021 / 802 / 8260 / 624
<input type="checkbox"/>	BTEX: 8021 / 802 / 8260 / 624
<input type="checkbox"/>	TPH 418.1 / TX1005 / TX1005 EXC351
<input type="checkbox"/>	TPH 8015 GRO / GRO / TXC
<input type="checkbox"/>	PAH 8270 / 625
<input type="checkbox"/>	TOX Metals Ag As Ba Cd Cr Pb Se Hg Bi 820202
<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"/>	NO
<input type="checkbox"/>	OCMS Vol 8290 / 624
<input type="checkbox"/>	OCMS SWAL Vol 8270 / 625
<input type="checkbox"/>	PCB 8082 / 608
<input type="checkbox"/>	PCBMS 8081 / 608
<input type="checkbox"/>	BOD, TSS, pH
<input type="checkbox"/>	Mercury Content
<input type="checkbox"/>	Cl, F, SO ₄ , NO ₃ , N, PO ₄ , P, Ammonia
<input type="checkbox"/>	MA, CA, Mg, K, TDS, EC
<input checked="" type="checkbox"/>	CHLORIDES, PH, SULFIDES
<input checked="" type="checkbox"/>	DISSOLVED SODIUM
<input type="checkbox"/>	Turn Around Time 2 different from standard

Relinquished by: LESTER WAYNE PRICE JR
Company: PRICE OR PRICE LLC
Date: 11-21-15
Time: 11:15 AM

Received by: Billy Brasher
Company: Brasher Truck
Date: 1-21-16
Time: 4:56 PM

Relinquished by: Sigda
Company: Sigda
Date: 1-21-16
Time: 8:30 AM

Received by: Sigda
Company: Sigda
Date: 1-21-16
Time: 8:30 AM

LAB USE ONLY

REMARKS: NA

Other: 25 Z5041345

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



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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

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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

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 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	9.30	s.u.	1	2.00

Sample: 368931 - TS FW

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	639	mg/L	10	2.50

Sample: 368932 - TS 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	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

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.

Summary Report

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

Report Date: October 29, 2014

Work Order: 14102108



Project Location: Tatum, NM
 Project Name: Wasserhund

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
377451	Fresh	water	2014-10-16	15:56	2014-10-21
377452	Brine	water	2014-10-16	15:43	2014-10-21

Sample: 377451 - Fresh

Param	Flag	Result	Units	RL
Chloride		75.5	mg/L	2.5
pH		8.02	s.u.	2
Specific Gravity		1.004	g/ml	
Total Dissolved Solids		672	mg/L	2.5

Sample: 377452 - Brine

Param	Flag	Result	Units	RL
Chloride		16800	mg/L	2.5
Dissolved Sodium	Qs	14100	mg/L	1
pH		6.34	s.u.	2
Specific Gravity		1.035	g/ml	
Total Dissolved Solids		32400	mg/L	2.5



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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: October 29, 2014

Work Order: 14102108



Project Location: Tatum, NM
Project Name: Wasserhund
Project Number: Wasserhund-Tatum

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
377451	Fresh	water	2014-10-16	15:56	2014-10-21
377452	Brine	water	2014-10-16	15:43	2014-10-21

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

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Case Narrative

Samples for project Wasserhund were received by TraceAnalysis, Inc. on 2014-10-21 and assigned to work order 14102108. Samples for work order 14102108 were received intact at a temperature of 1.9 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	98705	2014-10-28 at 15:00	116735	2014-10-28 at 16:01
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 14102108 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: 377451 - 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	B	1,2,3,4,5	75.5	mg/L	10	2.50

Sample: 377451 - 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	8.02	s.u.	1	2.00

Sample: 377451 - 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			1.004	g/ml	1	0.000

Sample: 377451 - 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	672	mg/L	20	2.50

Sample: 377452 - Brine

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	16800	mg/L	500	2.50

Sample: 377452 - 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	14100	mg/L	100	1.00

Sample: 377452 - 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	6.34	s.u.	1	2.00

Sample: 377452 - 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			1.035	g/ml	1	0.000

Sample: 377452 - 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		1,2,3,4,5	32400	mg/L	200	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 29, 2014
Wasserhund-Tatum

Work Order: 14102108
Wasserhund

Page Number: 8 of 16
Tatum, NM

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

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.	Rec. Limit	RPD	RPD Limit
Total Dissolved Solids		1,2,3,4,5	969	mg/L	10	1000	<25.0	97	90 - 110	2	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: 376967

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	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
 Prep Batch: 98705

Date Analyzed: 2014-10-28
 QC Preparation: 2014-10-28

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	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.

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

Standard (CCV-1)

QC Batch: 116735

Date Analyzed: 2014-10-28

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	25.5	102	90 - 110	2014-10-28

Standard (CCV-2)

QC Batch: 116735

Date Analyzed: 2014-10-28

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	25.4	102	90 - 110	2014-10-28

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.

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Carrizo, Texas 79508
Tel (915) 243-1700

Company Name: PRICE LLC
 Address: (Street City, State Zip) 312. EXCO. Sub Kelly Court NE, NA, 87131
 Contact Person: Loston Waynes Price
 Invoice to: WASSERHUND YARDH
 Project #: NA
 Project Location (including state): TATUM, NA
 Project Name: BRINE WELL
 Sampler Signature: LUPFER

ANALYSIS REQUEST
(Circle or Specify Method No.)

ARTB	6021 / 602 / 6290 / 624	
BTEX	6021 / 602 / 6290 / 624	
TPH 418.1	/ TX1005 / TX1005 EMERG351	
TPH 8015 GMD	/ DMO / TVHC	
MH	6270 / 625	
304 Metals	Ag Al Ba Bi Cd Cr Pb Se Sn Sg Sr Tl Zn	
TCLP Metals	Ag Al Ba Bi Cd Cr Pb Se Sn Sg Sr Tl Zn	
TCLP	Volatiles	
TCLP	304 Metals	
TCLP	Volatiles	
HCl		
OCMS	Vol. 6290 / 624	
OCMS	504M Vol. 6270 / 625	
PCAs	6082 / 608	
Phenols	6081 / 608	
BOD	155, pH	
Measure	Conduct	
CL	801, NO ₃ , N, NO ₂ , N, PO ₄ , P, Ammonia	
Na	Cl, Mg, K, TDS, EC	
CL	801, PA, SR, TDS	X
CL	801, PA, SR, TDS	X
CL	801, PA, SR, TDS	X

LAB #	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX			PRESERVATIVE METHOD			SAMPLING				
				WATER	SOIL	SLUDGE	TO	TH	TR	TS	TE	TIME	TYPE	
377451	FRESH	1	1 GAL	X								10/16/04	3:50P	
377452	BRINE	1	1 GAL	X								10/16/04	3:13P	

Received by: LOSTON WAYNE PRICE LLC
 Received by: PRICE GR
 Received by: WASSERHUND YARDH
 Received by: TATUM

Company: PRICE LLC
 Company: PRICE GR
 Company: WASSERHUND YARDH
 Company: TATUM

Date: 10/11/14 4:00PM
 Date: 10/11/14 4:00PM
 Date: 10/11/14 8:00
 Date: 10/11/14 8:00

Time: 4:00PM
 Time: 4:00PM
 Time: 8:00
 Time: 8:00

INST: OBS
 INST: OBS
 INST: OBS
 INST: OBS

REMARKS: COC 402

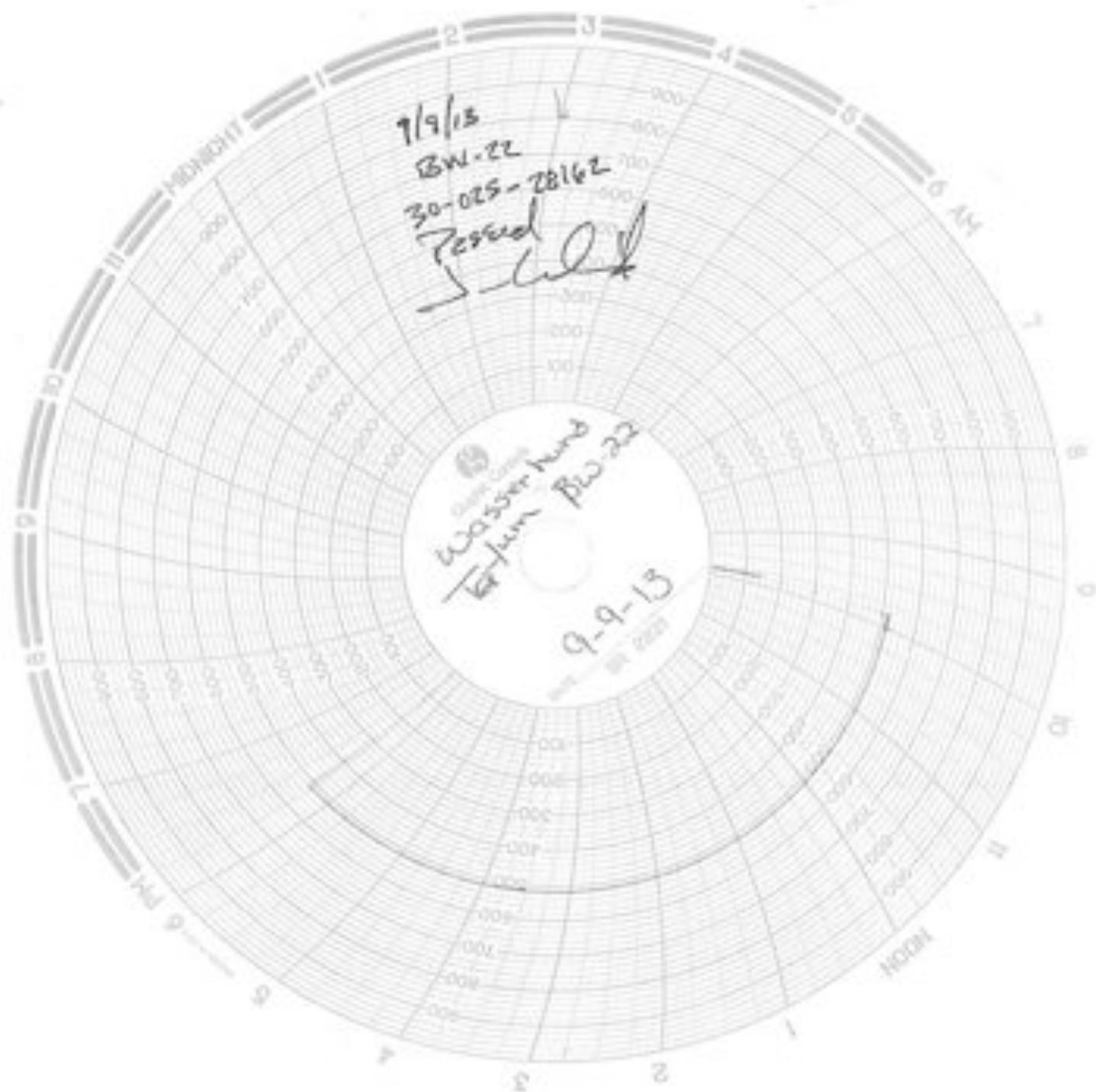
LAB USE: ONLY

DRY WEIGHT BASIS REQUIRED
 100% REPORT REQUIRED
 CHECK IF SPECIAL REPORTING
 LIMITS ARE NEEDED

Customer # 2512R 292511

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, June 28, 2013

Certification of Pressure Recorder Test:

Company: Celero Energy
Unit: N/A
Model: 8" Bristols
Pressure Rating: 1,000#
Serial #: 3914

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



Jesse Arcevas, Technician

BLOW-OUT PREVENTERS
WELL CONTAINMENT SYSTEMS

Appendix “E”

- AOR Well Status List
- AOR Plot Plan

2014 BW-22 AOR Review-- Well Status List
up-dated Apr 28, 2015

	API#	Well Name	UL	ectic	Ts	Rg	Footage	Within 1/4 mi AOR * within 660 ft or Critical AOR	Casing Progra Checked	Cased/Cemented across salt section	Corrective Action Required
1	<u>30-025-28162</u>	<u>Wasserhund Quality Watson #1</u>	<u>M</u>	<u>20</u>	<u>12s</u>	<u>36e</u>	<u>593 FSL & 639 FWL</u>	NA	NA	Na	NA

0 0

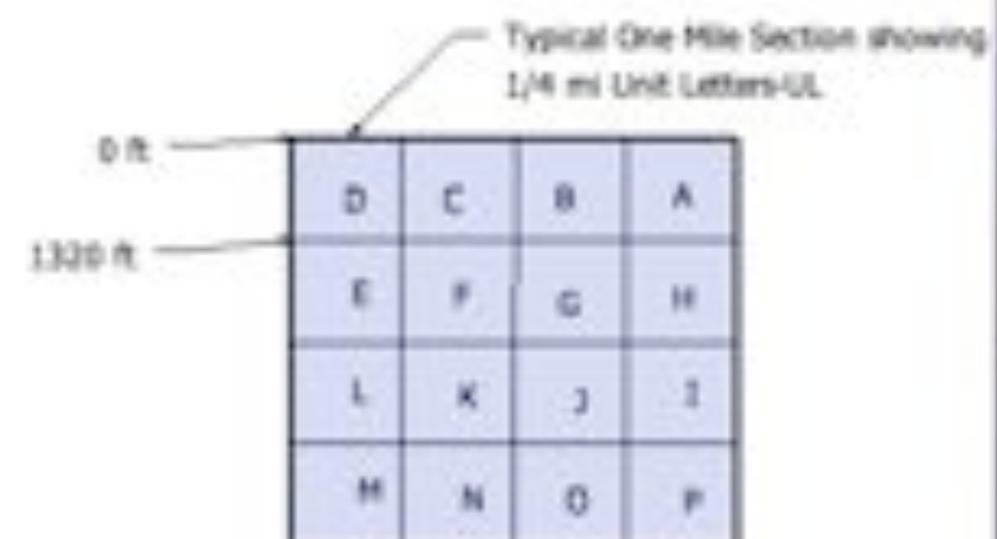
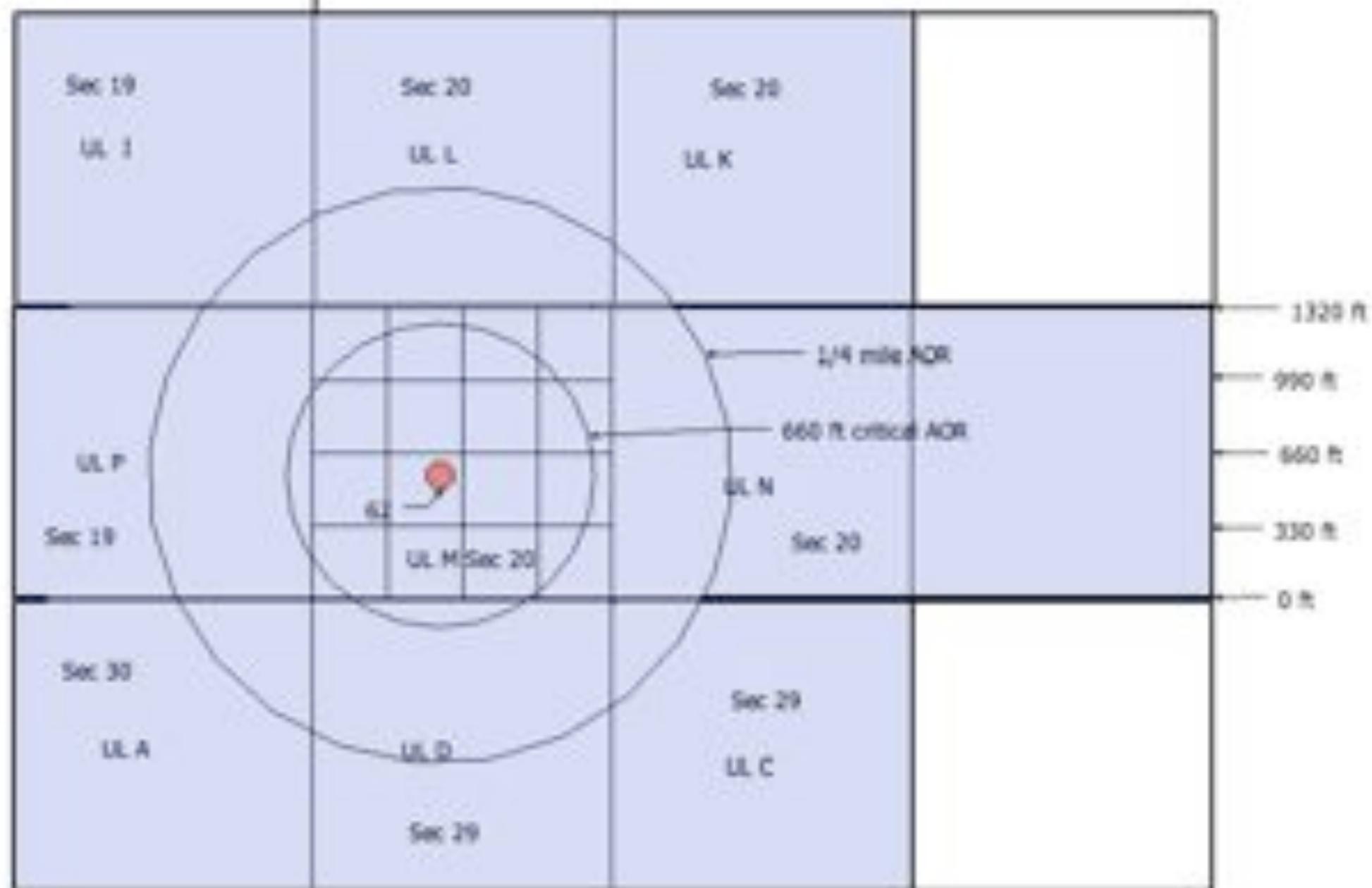
1 Total # of wells in adjacent quarter-sections

0 Total # of wells in 1/4 mile AOR

0 Total # of wells that within 660 ft or the Critical AOR of the outside radius of the brine well and casing program will be checked and reported annually.

Notes:

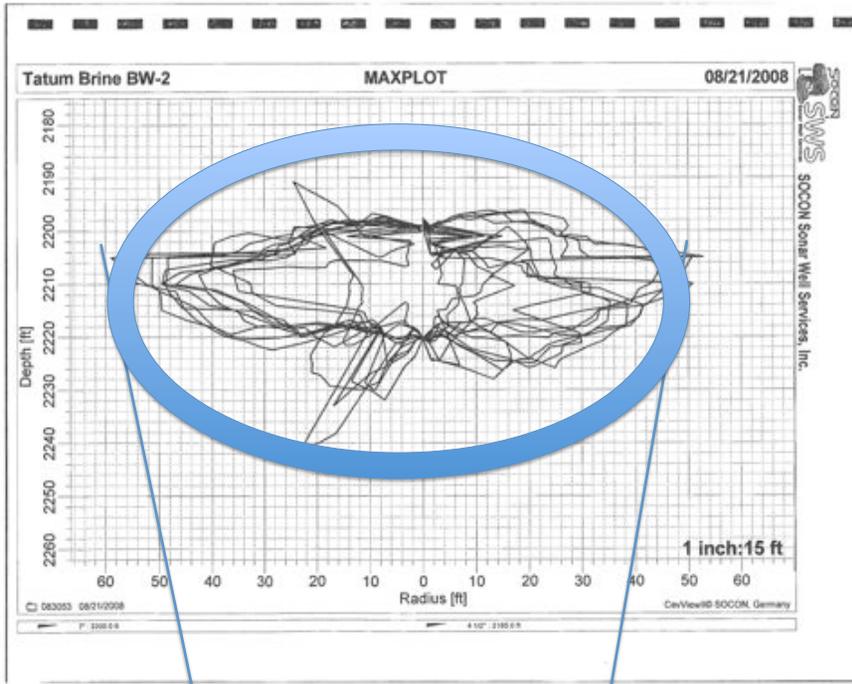
* Means the well is within 660 ft or the Critical AOR of the outside radius of the brine well and casing program will be checked annually.



Wessohund INC 2014	Well APID: 4- 30-025-28162	Note: Wells are identified by the last 2 digits of the well's APID. APID #'s are listed in the well status list.
	Permit # BW-22	
	Location: UL M-Sec 20-Tx12y-R36e	

Appendix “F”

- Wellbore Sketch, Brine Cavity Calculations with new 2014 Radius and D/H calculations.
- Aerial View showing Cavern Radius



$$R = \text{SQRT of } V / 3.14 * H$$

Vol = 2.712 million cuft
Height = 685 ft from casing shoe to bottom

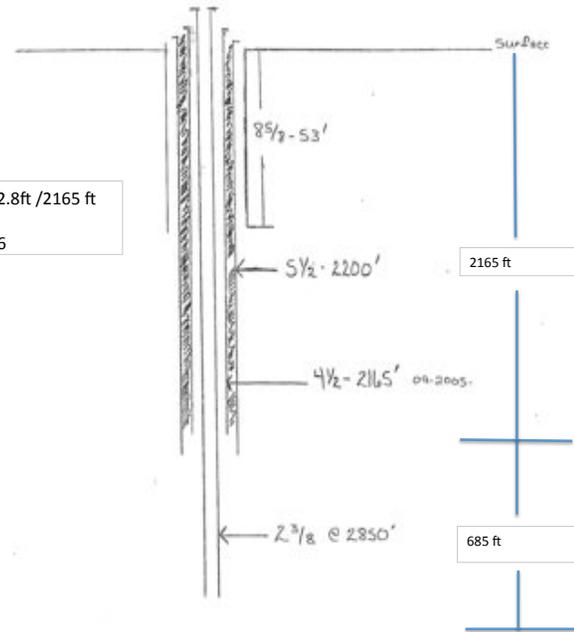
Radius = 61.5 feet
Dia = 123.0 ft
2014 year

2,701,105

Wasserhund Inc.
Quality Brine
Watson #1
H 20-12s-36e
30-025-28162

$$D/H = 122.8\text{ft} / 2165\text{ ft}$$

$$D/H = .056$$



Wasserhund Brine Station Located on the west side of Tatum, NM. Aerial view shows 61.4 foot radius of calculated and measured cavern. May 14, 2014. For the 2013 annual report.



Appendix “G”

- Solution Cavern Monitoring Plan Program

“Solution Cavern Monitoring Plan Program”

Wasserhund Inc. Brine Station
Tatum Brine Station
OCD Permit BW-22
API No. 30-025-28162 Watson #1
Unit Letter M-Section 20-Ts 12s – R 35e

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.

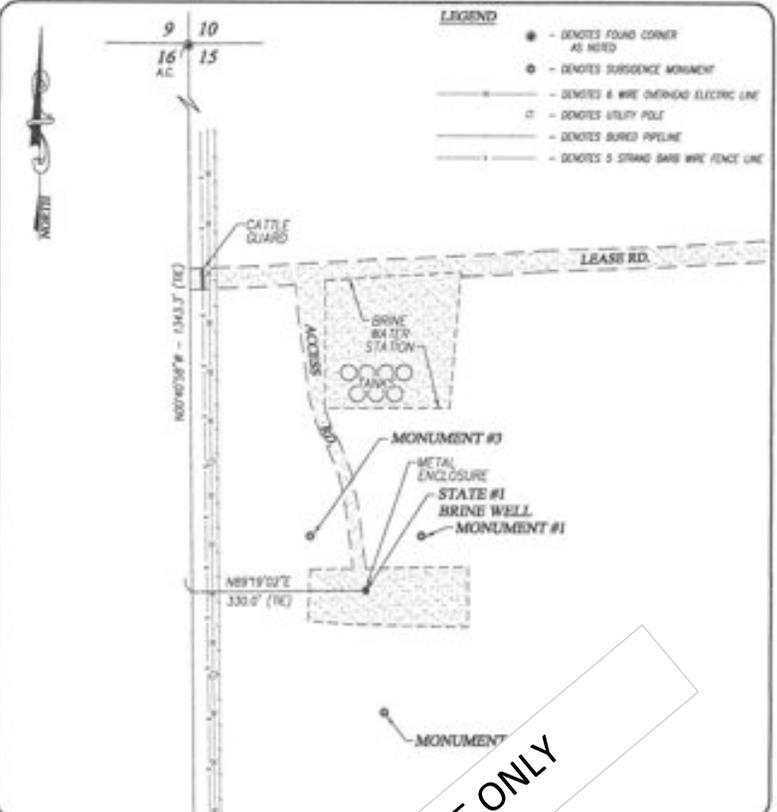
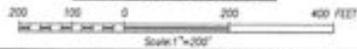
The data will be tabulated and a graph be maintained for each point over the life of the system.

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

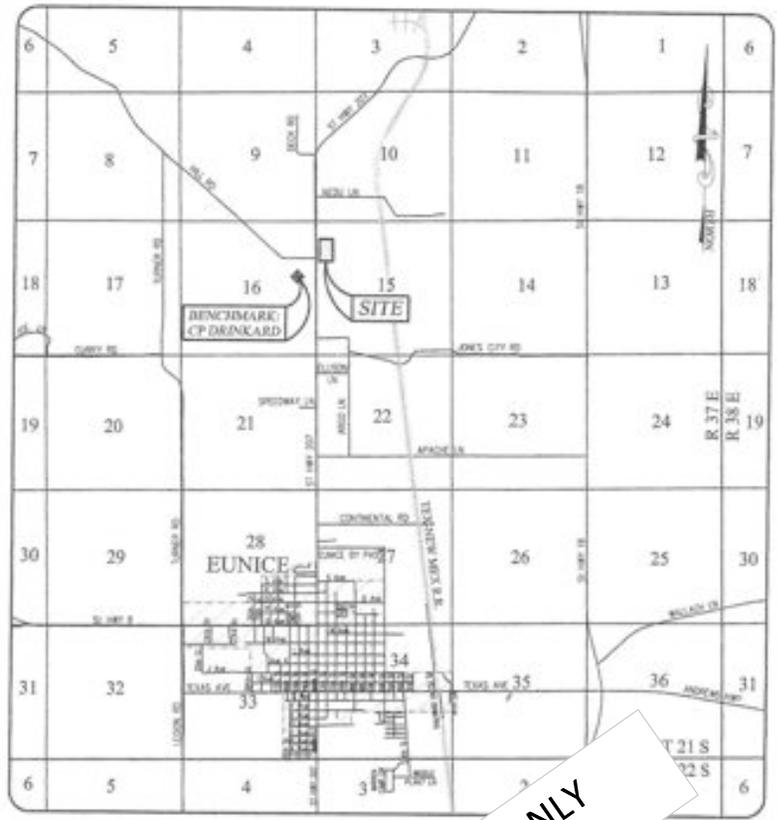
PROVIDING SURVEYING SERVICES SINCE 1946
JOHN WEST SURVEYING COMPANY
 412 N. DUL PASSO
 MORRIS, N.M. 88040
 (505) 383-2117

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: 07/2010) (P. 004) (Not for Construction) (07/2010)

VICINITY MAP
NOT TO SCALE

Figure 1



EUNICE, NEW MEXICO AND SURROUNDING AREAS

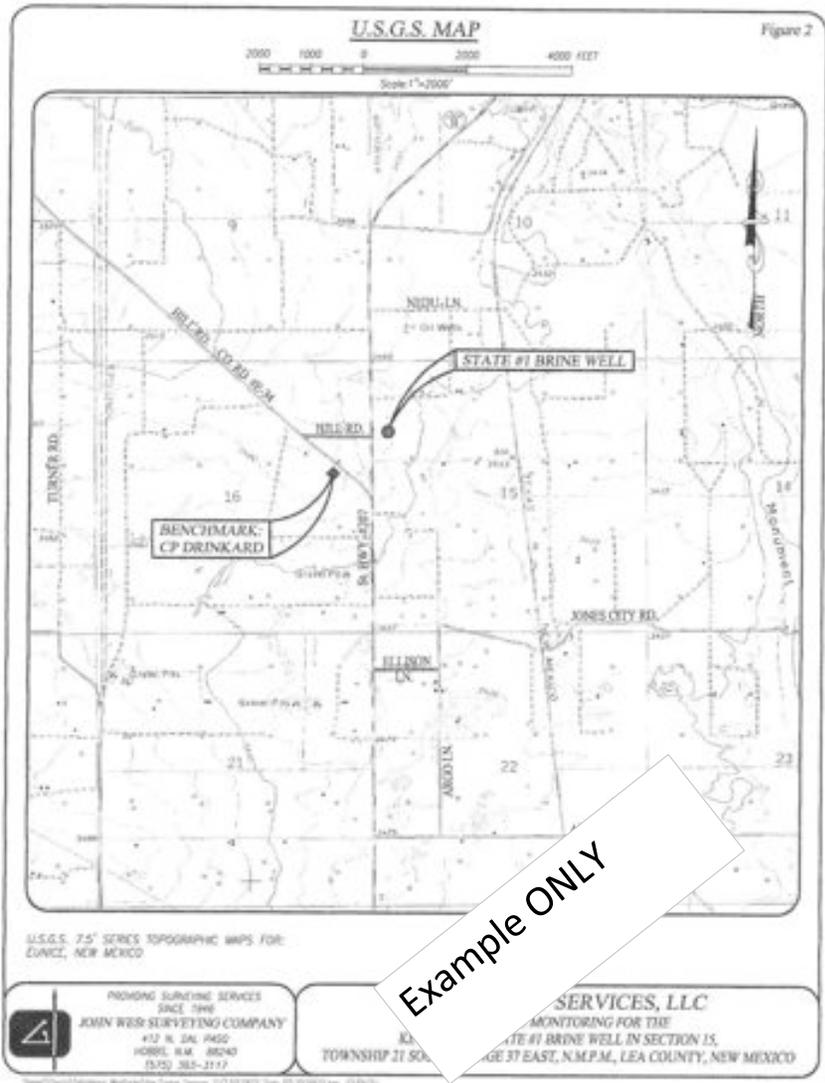
EXAMPLE ONLY

PROVIDING SURVEYING SERVICES SINCE 1946
JOHN WEBB SURVEYING COMPANY
412 N. GULF PKWY
HOODS, N.M. 88040
(505) 383-2117

SURVEYING SERVICES, LLC
MONITORING FOR THE
#1 BRINE WELL IN SECTION 15,
TOWNSHIP 19E, RANGE 37 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO

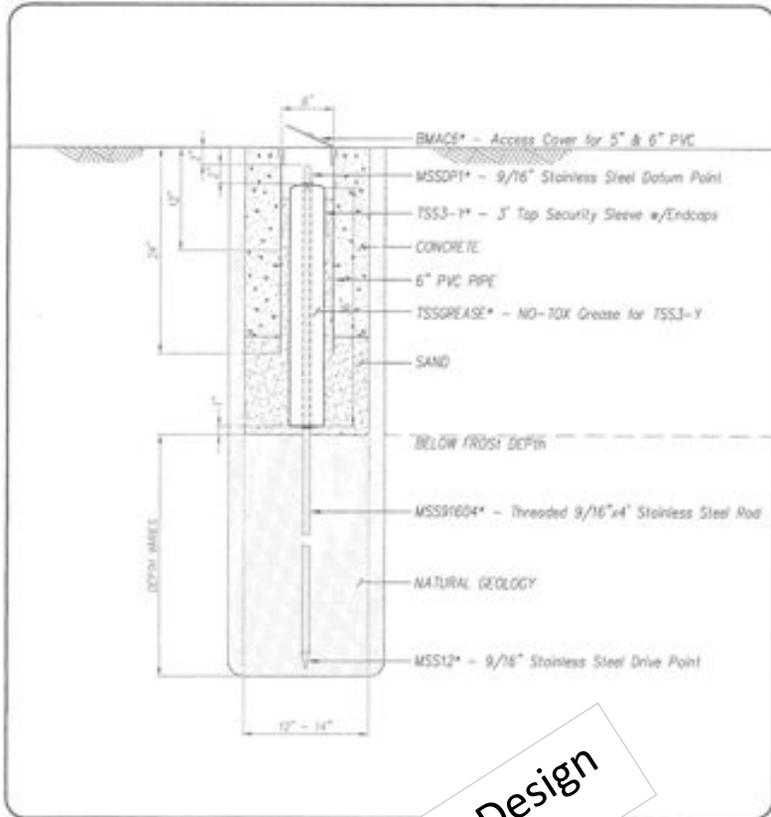
Small print text at the bottom left corner.

Figure 2



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 WEST 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

Drawn: [unclear] Modified: [unclear] Date: [unclear] Title: [unclear]

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

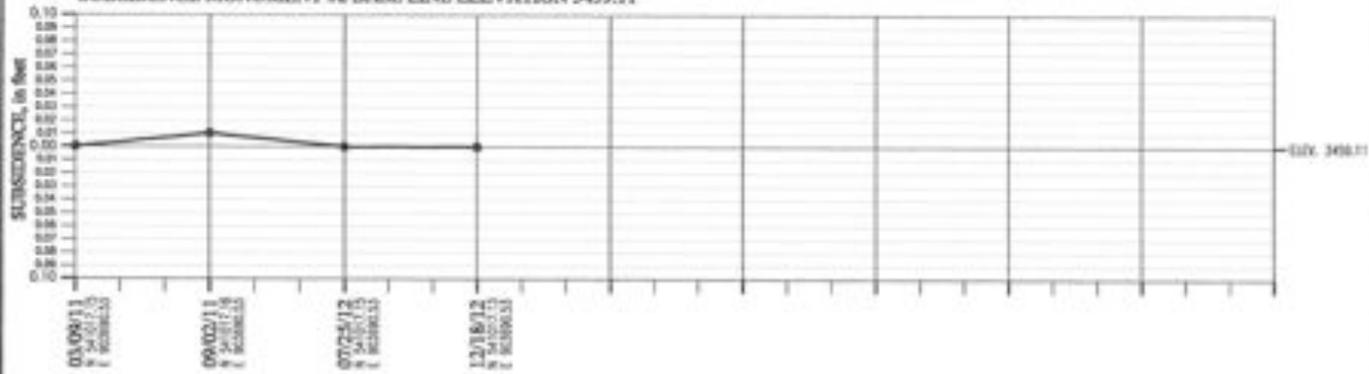
Station	Adjusted Elev	Standard Dev.	
L98	3434.3700	0.00000	NGS MONUMENT L98
22	3434.3700	0.00000	
1	3436.9801	0.01150	
2	3439.3987	0.01639	
3	3442.4091	0.01964	
4	3444.7482	0.02205	
5	3450.5778	0.02338	
6	3455.7212	0.02422	
7	3457.9332	0.02724	MONUMENT #1
8	3459.1092	0.02888	MONUMENT #2
9	3460.4962	0.02863	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
7	8	3.3880	-0.0060
8	9	4.7750	-0.0060
9	10	4.2000	-0.0060
10	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

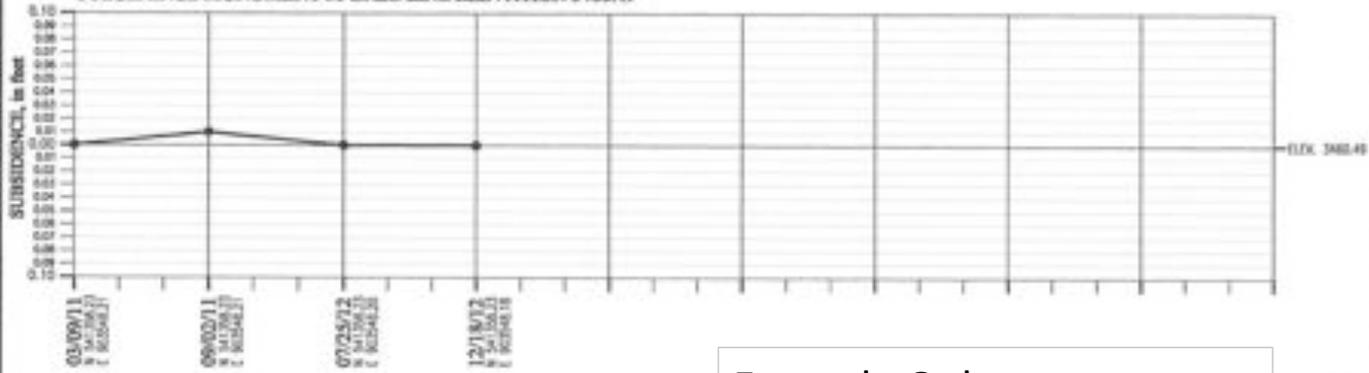
Example
Only

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
 HOBBE, N.M. 86240
 (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 BY THE BOARD OF SURVEYING AND MAPPING
**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”

Wasserhund Inc. Closure Cost Estimate.

2014 Annual Report
BW-22 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.

Tatum Brine Station

OCD Permit BW-22

API No. 30-025-28162 Watson #1

Unit Letter M-Section 20-Ts 12s – R 35e

April 28, 2012

Submitted By: Price LLC on behalf of Wasserhund Inc Principal Mr. Larry Gandy.

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 1983 and has been in operation for approximately 29 years and is sited on the west side of Tatum, NM, just north of highway 380. The well is producing out of the Salado "Salt Formation" at a depth of approximately 2200-2850 feet below surface.

A copy of the most recent OCD approved Discharge Plan BW-22 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 been a relative low producer and the size of the cavity is quite small 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 premature down-hole problems, such as "sloughing" of the salt-anhydrite layers damaging the tubing and making re-entry virtually impossible and extremely expensive.

As will be discussed in Section 3 (Chemical Analysis) ever since the last open-hole formation test the well has not been able to produce 10# brine, either with reverse or conventional flow.

In addition, 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 on October 27, 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 brine tanks currently do not have secondary containment and Wasserhund Inc respectfully requests a waiver of those conditions until the next permit is negotiated and approved.

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.

Depending upon OCD requirements and local economics, Wasserhund Inc will have to evaluate whether future operations of this well is warranted.

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 23,350 bbls and the lifetime production volume is 2,650,595 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 380 psig, which is approximately 70 pounds below the permit maximum pressure of 450 psig.

The average injection pressure as noted by Wasserhund Inc.'s personnel is approximately 260 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 north of the site and is of high quality that meets EPA's Safe Drinking Water Standards.

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 1.054, which equates to 8.77 lb/gal. This is lower than the usual 10 lb/gal normally produced. This was 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." This loaded the hole with a large amount of fresh water and the well had not recovered from this event.

Wasserhund Inc will continue to monitor the density issue and will report to OCD once the system recovers, or if for some reason it doesn't recover, then some remedial action may be taken, including the possibility of plugging the well.

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-22 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 have 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-22 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 provide some useful information pertaining to the size and shape of this particular cavern, but at a very limited depth. 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 2.68 million barrels of brine produced as of December 2011. The maximum diameter was calculated to be approximately 122 feet with a corresponding D/H ratio of .055 updated for the 2011 year.

While the sonar failed to provide information deeper in the cavern, it did show with some degree of accuracy, that the upper portion of the cavern

had a maximum center-line radius of approximately 60 feet with a corresponding diameter of approximately 110 feet over all, which correlates with the worst case calculated value. Attached in Appendix F is a copy of the MaxPlot of the last sonar test showing the sonar results.

Comparing the current D/H ratio of .055 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 twelve times.

Included in *Appendix F* is an aerial view showing the 60-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 Quality Watson #1 brine well, OCD permit # BW-22, located in UL M of Section 20-Ts12S-R36E. 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-22 location. The list shows API#, Operator well name, UL, Section, Township and Range, footages, Wells within 660 ft and ¼ mile, casing program status, casing/ cementing status, and corrective action required status.

In the 2011 review, there were no wells included in the list. *Appendix G* contains the check-off list showing the OCD wells in all adjacent quarter sections surrounding the BW-22 brine well.

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 established and all wells within that radius will be researched in greater detail.

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 study wells as the brine well grows, especially wells in the critical zone.

We used the current estimated diameter of the brine well i.e. 120 ft (r = 60 ft) up-dated for 2011, and added a 10:1 safety factor which equates to about 600 ft. As the brine well grows, the critical AOR will be expanded and new wells will be added.

The critical zone was investigated by checking the OCD on-line well records. There was no well activity in the AOR.

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



Wasserhund Brine Station Located on the west side of Tatum, NM.
Aerial view shows 60 foot radius of calculated and measured cavern.
April 08, 2012.

676 ft

© 2012 Google
Image USDA Farm Service Agency
© 2012 Europa Technologies

©2010 Google



NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON

Governor

Joanna Prukop

Cabinet Secretary

Mark E. Fesmire, P.E.

Director

Oil Conservation Division

March 28, 2007

Mr. Larry Gandy
Gandy Corporation
PO Box 827
Tatum, New Mexico 88267

Re: Discharge Permit BW-022 Renewal

Dear Mr. Gandy:

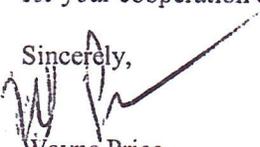
Pursuant to all applicable parts of the Water Quality Control Commission (WQCC) Regulations 20.6.2.3104 - 20.6.2.3999 discharge permit, and 20.6.2.5000-.5299 Underground Injection Control, the Oil Conservation Division (OCD) hereby approves the discharge permit and authorizes the operation and injection for Gandy Corporation's Tatum Brine Station (*Owner/operator*) brine well BW-022 located in the SW/4, SW/4 of Section 20, Township 12 South, Range 36 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 Brad A. Jones of my staff at (505) 476-3487 or E-mail brad.a.jones@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/baj

Attachments-1
xc: OCD District Office

2007 SEP 28 AM 11:20
RECEIVED

**ATTACHMENT TO THE DISCHARGE PERMIT
GANDY CORPORATION'S TATUM BRINE STATION BRINE WELL (BW-022)
DISCHARGE PERMIT APPROVAL CONDITIONS
MARCH 28, 2007**

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 March 11, 2012** 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.
- 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 February 9, 2007 discharge permit renewal 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 stormwater 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 # 30-025-28162 Quality Brine Watson #1
- 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 450 psig unless otherwise approved. 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:

2006- 30 minute @ 300 psig casing test only (set packer to isolate formation)
2007- 4 hour @ 300 psig casing open to formation test
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

- 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 receive OCD approval to re-start injection operations.
- K. **Bonding or Financial Assurance:** The operator shall maintain at a minimum, a one well plugging bond 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
BW-022
March 28, 2007
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 / trees.

Date: 9-24-07

Appendix "B"

- Change of Operator
- Permit Renewal Application

From Operator GANDY CORP OGRID 8426
To Operator WASSERHUND INC OGRID 130851
Wells Selected for Transfer, Permit 138088
Permit Status: APPROVED

OCD District Hobbs

Property Well

16527 EIDSON STATE #001
309588 QUALITY BRINE WATSON #001

Lease Type	ULSTR	OCD Unit	API	Well Type	Pool ID	Pool Name
S	4-31-16S-35E	M	30-025-26883	M	96173	BSW;SALADO
F	M-20-12S-36E	M	30-025-28162	M	96173	BSW;SALADO

District I
 1625 N. French Dr. Hobbs, NM 88201
 Phone (575) 833-6161 Fax (575) 893-0720

District II
 311 N. 1st St. Artesia, NM 88210
 Phone (575) 748-4283 Fax (575) 748-9720

District III
 1000 Rio Brazos Rd. Aztec, NM 87410
 Phone (505) 334-6178 Fax (505) 334-6170

District IV
 1220 S. St. Francis Dr. Santa Fe, NM 87505
 Phone (505) 476-3170 Fax (505) 476-3462

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

Form C-145
 August 1, 2011
 Permit 138088

HOBBS OCD
OCT 12 2011
RECEIVED

Change of Operator

Previous Operator Information

New Operator Information

OGRID	8426	OGRID	130851
Name	GANDY CORP	Name	WASSERHUND INC
Address	P.O. Box 2140	Address	P.O. Box 2140
City, State, Zip	Livingston, NM 88260	City, State, Zip	Livingston, 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(i) NMAC

WASSERHUND INC understands that the OCD's approval of this operator change:

- 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
- 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.

I hereby 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.

Name: Wayne Price-Price LLC

Title: Agent for Wasserhund Inc.

Signature: 

Date: October 27, 2011

E-mailAddress:wayneprice77@earthlink.net_____

Appendix “C”

- Injection and Production Volumes/Comparison Charts
- Monthly/Quarterly Data Sheets

2011 Wasserhund Inc OCD BW-22 Annual Production Data

							Plus numbers represent more fresh injected than brine produced. Neg numbers the opposite.
				Brine-BBLS	Fresh-BBLS		% diff
Jan				5694	5809		2.02%
Feb				3075	3190		3.74%
Mar				1280	1455		13.67%
Apr				2595	2688		3.58%
May				2585	2668		3.21%
Jun				840	895		6.55%
Jul				1930	2015		4.40%
Aug				440	495		12.50%
Sep				1520	1605		5.59%
Oct				1800	1930		7.22%
Nov				2090	440		-78.95%
Dec				3430	1520		-55.69%
2011 Total				27279	24710		-9.42%
Total Brine Water Production Carry Over from Years Past Bt				2,650,595			
Total Production year ending 2011				2,677,874			

GANDY CORPORATION
OILFIELD SERVICES

RECEIVED OOD

2011 APR 18 P 1:35

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 Drive
Santa Fe, NM 87505

Fresh Water injected at the Tatum Brine Station (BW-022)

January 2011	5809
February 2011	3190
March 2011	1455

Brine Water Sold at the Tatum Brine Station (BW-022)

January 2011	5694
February 2011	3075
March 2011	1280

Sincerely Yours;



Donny Collins

WASSERHUND, INC.
P.O. Box 2140
Lovington, NM 88260-2140

RECEIVED OCD
2011 JUL 18 A 11:40

July 15, 2011

NM Oil Conservation Division
1220 S. Saint Francis Drive
Santa Fe, NM 87505

Fresh Water injected at the Tatum Brine Station (BW-022)

April 2011	2688
May 2011	2668
June 2011	895

Brine Water Sold at the Tatum Brine Station (BW-022)

April 2011	2595
May 2011	2585
June 2011	840

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 Drive
Santa Fe, NM 87505

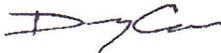
Fresh Water injected at the Tatum Brine Station (BW-022)

October 2011	1875
November 2011	2115
December 2011	3495

Brine Water Sold at the Tatum Brine Station (BW-022)

October 2011	1800
November 2011	2090
December 2011	3430

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: TATUM BRINE WELL

BCW-22 AMENDED NJ

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: TATUM BRINE WELL Project Number: NONE GIVEN Project Manager: LESTER WAYNE PRICE, JR Fax To: UNK-NOWN	Reported: 10-Apr-12 11:05
--	--	------------------------------

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FRESHWATER	H102248-01	Water	18-Oct-11 09:50	18-Oct-11 16:30
BRINE WATER	H102248-02	Water	18-Oct-11 10:00	18-Oct-11 16:30



Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

PRICE LLC
312 ENCANTADO RIDGE COURT, NE
RIO RANCHO NM, 87124

Project: TATUM BRINE WELL
Project Number: NONE GIVEN
Project Manager: LESTER WAYNE PRICE, JR
Fax To: UNK-NOWN

Reported:
10-Apr-12 11:05

FRESHWATER
H102248-01 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
---------	--------	-----------------	-------	----------	-------	---------	----------	--------	-------

Cardinal Laboratories

Total Metals by ICPMS

Arsenic	0.0073	0.0005	mg/L	1	1111412	JM	02-Nov-11	200.8	GAL
Barium	0.0316	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	ND	0.00010	mg/L	1	1111412	JM	02-Nov-11	200.8	GAL
Copper	0.0004	0.0001	mg/L	1	1111412	JM	02-Nov-11	200.8	GAL
Lead	ND	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	0.0038	0.0005	mg/L	1	1111412	JM	02-Nov-11	200.8	GAL
Nickel	0.0017	0.0005	mg/L	1	1111412	JM	02-Nov-11	200.8	GAL
Selenium	0.008	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	0.00410	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	205	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	84.0	16.0	mg/L	4	1101905	HM	21-Oct-11	4500-Cl-B	
Conductivity	1020	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	1.04	0.200	mg/L	1	1111414	CK	01-Nov-11	4500F C	GAL
pH	8.03	0.100	pH Units	1	1102705	HM	20-Oct-11	150.1	
Specific Gravity @ 60° F	0.9935	0.000	[blank]	1	1110307	HM	28-Oct-11	SM 2710F	
Sulfate	244	10.0	mg/L	1	1103102	HM	28-Oct-11	375.4	
TDS	639	5.00	mg/L	1	1102603	HM	22-Oct-11	160.1	
Alkalinity, Total	168	4.00	mg/L	1	1083007	HM	20-Oct-11	310.1M	

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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: TATUM BRINE WELL Project Number: NONE GIVEN Project Manager: LESTER WAYNE PRICE, JR Fax To: UNK-NOWN	Reported: 10-Apr-12 11:05
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FRESHWATER
H102248-01 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

TSS	6.00	2.00	mg/L	1	1111105	HM	25-Oct-11	160.2	
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TOTAL METALS BY ICP

Aluminum	0.0580	0.0500	mg/L	1	1111410	JM	26-Oct-11	200.7	GAL
Boron	0.351	0.300	mg/L	1	1111410	JM	26-Oct-11	200.7	GAL
Calcium	94.6	1.00	mg/L	1	1111410	CK	26-Oct-11	200.7	GAL
Iron	0.251	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	2.49	1.00	mg/L	1	1111410	CK	26-Oct-11	200.7	GAL
Sodium	76.5	1.00	mg/L	1	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: TATUM BRINE WELL
 Project Number: NONE GIVEN
 Project Manager: LESTER WAYNE PRICE, JR
 Fax To: UNK-NOWN

 Reported:
 10-Apr-12 11:05

BRINE WATER
H102248-02 (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	0.0518	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	0.354	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	0.317	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	0.0116	0.0100	mg/L	100	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	161	5.00	mg/L	1	1102105	HM	21-Oct-11	310.1M	
Alkalinity, Carbonate	ND	0.00	mg/L	1	1102105	HM	21-Oct-11	310.1M	
Chloride	47500	16.0	mg/L	4	1101905	HM	21-Oct-11	4500-Cl-B	
Conductivity	155000	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	0.480	0.200	mg/L	1	1111414	CK	01-Nov-11	4500F C	GAL
pH	7.24	0.100	pH Units	1	1102705	HM	20-Oct-11	150.1	
Specific Gravity @ 60° F	1.054	0.000	[blank]	1	1110307	HM	28-Oct-11	SM 2710F	
Sulfate	6180	10.0	mg/L	1	1103102	HM	28-Oct-11	375.4	
TDS	79400	5.00	mg/L	1	1102603	HM	22-Oct-11	160.1	
Alkalinity, Total	132	4.00	mg/L	1	1102105	HM	21-Oct-11	310.1M	

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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: TATUM BRINE WELL Project Number: NONE GIVEN Project Manager: LESTER WAYNE PRICE, JR Fax To: UNK-NOWN	Reported: 10-Apr-12 11:05
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BRINE WATER
H102248-02 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories
Inorganic Compounds

TSS	42.0	2.00	mg/L	1	1111105	HM	25-Oct-11	160.2	
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TOTAL METALS BY ICP

Aluminum	1.51	0.500	mg/L	10	1111410	JM	26-Oct-11	200.7	GAL
Boron	7.86	3.00	mg/L	10	1111410	JM	26-Oct-11	200.7	GAL
Calcium	1450	10.0	mg/L	10	1111410	CK	26-Oct-11	200.7	GAL
Iron	4.40	0.600	mg/L	10	1111410	JM	26-Oct-11	200.7	GAL
Magnesium	731	10.0	mg/L	10	1111410	CK	26-Oct-11	200.7	GAL
Potassium	509	10.0	mg/L	10	1111410	CK	26-Oct-11	200.7	GAL
Sodium	24400	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: TATUM BRINE WELL Project Number: NONE GIVEN Project Manager: LESTER WAYNE PRICE, JR Fax To: UNK-NOWN	Reported: 10-Apr-12 11:05
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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

Barium	ND	0.000500	mg/L							
Selenium	ND	0.001	mg/L							
Lead	ND	0.0005	mg/L							
Uranium	ND	0.000100	mg/L							
Zinc	0.018	0.001	mg/L							B1
Chromium	ND	0.001	mg/L							
Manganese	0.0035	0.0005	mg/L							B1
Molybdenum	ND	0.0005	mg/L							
Arsenic	ND	0.0005	mg/L							
Copper	ND	0.0001	mg/L							
Nickel	ND	0.0005	mg/L							
Silver	ND	0.00010	mg/L							
Cobalt	ND	0.00010	mg/L							
Cadmium	ND	0.00010	mg/L							

LCS (1111412-BS1)

Prepared: 01-Nov-11 Analyzed: 02-Nov-11

Barium	0.0503		mg/L	0.0500		101	85-115			
Copper	0.0502		mg/L	0.0500		100	85-115			
Cobalt	0.0515		mg/L	0.0500		103	85-115			
Lead	0.0503		mg/L	0.0500		101	85-115			
Cadmium	0.0507		mg/L	0.0500		101	85-115			
Arsenic	0.0529		mg/L	0.0500		106	85-115			
Manganese	0.0429		mg/L	0.0500		85.8	85-115			
Chromium	0.049		mg/L	0.0500		98.6	85-115			
Nickel	0.0504		mg/L	0.0500		101	85-115			
Molybdenum	0.0542		mg/L	0.0500		108	85-115			
Uranium	0.0490		mg/L	0.0500		98.0	85-115			
Silver	0.0521		mg/L	0.0500		104	85-115			
Zinc	0.059		mg/L	0.0500		118	85-115			BS1
Selenium	0.273		mg/L	0.250		109	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: TATUM BRINE WELL Project Number: NONE GIVEN Project Manager: LESTER WAYNE PRICE, JR Fax To: UNK-NOWN	Reported: 10-Apr-12 11:05
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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

LCS Dup (1111412-BSD1)		Prepared: 01-Nov-11 Analyzed: 02-Nov-11								
Barium	0.0492		mg/L	0.0500		98.4	85-115	2.21	20	
Molybdenum	0.0523		mg/L	0.0500		105	85-115	3.57	20	
Uranium	0.0485		mg/L	0.0500		97.0	85-115	1.03	20	
Copper	0.0487		mg/L	0.0500		97.4	85-115	3.03	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	
Cadmium	0.0501		mg/L	0.0500		100	85-115	1.19	20	
Nickel	0.0493		mg/L	0.0500		98.6	85-115	2.21	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	
Cobalt	0.0503		mg/L	0.0500		101	85-115	2.36	20	
Manganese	0.0443		mg/L	0.0500		88.6	85-115	3.21	20	
Lead	0.0498		mg/L	0.0500		99.6	85-115	0.999	20	
Zinc	0.065		mg/L	0.0500		130	85-115	9.52	20	BS1

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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: TATUM BRINE WELL
 Project Number: NONE GIVEN
 Project Manager: LESTER WAYNE PRICE, JR
 Fax To: UNK-NOWN

 Reported:
 10-Apr-12 11:05

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: TATUM BRINE WELL
 Project Number: NONE GIVEN
 Project Manager: LESTER WAYNE PRICE, JR
 Fax To: UNK-NOWN

 Reported:
 10-Apr-12 11:05

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: TATUM BRINE WELL
 Project Number: NONE GIVEN
 Project Manager: LESTER WAYNE PRICE, JR
 Fax To: UNK-NOWN

 Reported:
 10-Apr-12 11:05

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 1102105 - General Prep - Wet Chem
Blank (1102105-BLK1)

Prepared & Analyzed: 21-Oct-11

Alkalinity, Carbonate	ND	0.00	mg/L							
Alkalinity, Bicarbonate	ND	5.00	mg/L							
Alkalinity, Total	ND	4.00	mg/L							

LCS (1102105-BS1)

Prepared & Analyzed: 21-Oct-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 (1102105-BSD1)

Prepared & Analyzed: 21-Oct-11

Alkalinity, Carbonate	ND	0.00	mg/L				80-120		20	
Alkalinity, Bicarbonate	ND	5.00	mg/L				80-120		20	
Alkalinity, Total	120	4.00	mg/L	100		120	80-120	6.90	20	

Duplicate (1102105-DUP1)

Source: H102248-02

Prepared & Analyzed: 21-Oct-11

Alkalinity, Carbonate	ND	0.00	mg/L		0.00				20	
Alkalinity, Bicarbonate	156	5.00	mg/L		161			3.15	20	
Alkalinity, Total	128	4.00	mg/L		132			3.08	20	

Batch 1102603 - * DEFAULT PREP *****
Blank (1102603-BLK1)

Prepared: 22-Oct-11 Analyzed: 26-Oct-11

TDS	ND	5.00	mg/L							
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* = 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: TATUM BRINE WELL
 Project Number: NONE GIVEN
 Project Manager: LESTER WAYNE PRICE, JR
 Fax To: UNK-NOWN

 Reported:
 10-Apr-12 11:05

Inorganic Compounds - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 1102603 - * DEFAULT PREP *****
LCS (1102603-BS1)

Prepared: 22-Oct-11 Analyzed: 26-Oct-11

TDS 235 mg/L 240 97.9 80-120

Duplicate (1102603-DUP1)

Source: H102277-01

Prepared: 22-Oct-11 Analyzed: 26-Oct-11

TDS 3260 5.00 mg/L 3260 0.00 20

Batch 1102705 - General Prep - Wet Chem
LCS (1102705-BS1)

Prepared & Analyzed: 20-Oct-11

Conductivity 509 uS/cm 500 102 80-120

pH 7.11 pH Units 7.00 102 90-110

Duplicate (1102705-DUP1)

Source: H102247-01

Prepared & Analyzed: 20-Oct-11

Conductivity 1410 1.00 uS/cm 1410 0.00 20

pH 7.75 0.100 pH Units 7.73 0.258 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

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Celestine D. Keene, Lab Director/Quality Manager

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: TATUM BRINE WELL Project Number: NONE GIVEN Project Manager: LESTER WAYNE PRICE, JR Fax To: UNK-NOWN	Reported: 10-Apr-12 11:05
--	--	------------------------------

Inorganic Compounds - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 1103102 - General Prep - Wet Chem

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 1111105 - Filtration

Blank (1111105-BLK1)	Prepared & Analyzed: 25-Oct-11									
TSS	ND	2.00	mg/L							

Duplicate (1111105-DUP1)	Source: H102248-01		Prepared & Analyzed: 25-Oct-11							
TSS	6.00	2.00	mg/L		6.00			0.00	20	

Batch 1111413 - General Prep

Blank (1111413-BLK1)	Prepared: 25-Oct-11 Analyzed: 26-Oct-11									
Cyanide (total)	ND	0.005	mg/L							

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-BSD1)	Prepared: 25-Oct-11 Analyzed: 26-Oct-11									
Cyanide (total)	0.047		mg/L	0.0500		94.8	85-115	10.9	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: TATUM BRINE WELL
 Project Number: NONE GIVEN
 Project Manager: LESTER WAYNE PRICE, JR
 Fax To: UNK-NOWN

 Reported:
 10-Apr-12 11:05

Inorganic Compounds - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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-BSD1)										
Prepared & Analyzed: 01-Nov-11										
Fluoride	1.09		mg/L	1.00		109	80-120	0.00	20	

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: TATUM BRINE WELL
 Project Number: NONE GIVEN
 Project Manager: LESTER WAYNE PRICE, JR
 Fax To: UNK-NOWN

 Reported:
 10-Apr-12 11:05

TOTAL METALS BY ICP - Quality Control
Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 1111410 - EPA 3005
Blank (1111410-BLK1)

Prepared: 25-Oct-11 Analyzed: 26-Oct-11

Aluminum	ND	0.0500	mg/L							
Iron	ND	0.060	mg/L							
Sodium	ND	1.00	mg/L							
Calcium	ND	1.00	mg/L							
Potassium	ND	1.00	mg/L							
Magnesium	ND	1.00	mg/L							
Boron	ND	0.300	mg/L							

LCS (1111410-BS1)

Prepared: 25-Oct-11 Analyzed: 26-Oct-11

Sodium	6.34		mg/L	6.48		97.8	85-115			
Magnesium	19.9		mg/L	20.0		99.5	85-115			
Iron	3.89		mg/L	4.00		97.2	85-115			
Boron	3.86		mg/L	4.00		96.5	85-115			
Calcium	3.90		mg/L	4.00		97.5	85-115			
Aluminum	3.94		mg/L	4.00		98.5	85-115			
Potassium	7.71		mg/L	8.00		96.4	85-115			

LCS Dup (1111410-BSD1)

Prepared: 25-Oct-11 Analyzed: 26-Oct-11

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	
Calcium	3.91		mg/L	4.00		97.8	85-115	0.256	20	
Iron	3.92		mg/L	4.00		98.0	85-115	0.768	20	
Potassium	8.08		mg/L	8.00		101	85-115	4.69	20	
Aluminum	3.95		mg/L	4.00		98.8	85-115	0.253	20	
Boron	3.89		mg/L	4.00		97.2	85-115	0.774	20	

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

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

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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 87401
District IV - (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

HOBBS OCD
NOV 09 2011
RECEIVED

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

WELL API NO. 30-025-28162
5. Indicate Type of Lease STATE [X] FEE [] Fed []
6. State Oil & Gas Lease No. 25-28162
7. Lease Name or Unit Agreement Name Quality Watson
8. Well Number 1
9. OGRID Number 130851
10. Pool name or Wildcat BSW Salado
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 ; 593 feet from the South line and 639 feet from the West line
Section 20 Township 12s Range 36e 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 []
OTHER: integrity test []
SUBSEQUENT REPORT OF:
REMEDIAL WORK [] ALTERING CASING []
COMMENCE DRILLING OPNS. [] P AND A []
CASING/CEMENT JOB []
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 - 10/21/08

* ORIGINAL CHART MAILED TO SANTA FE. (JIM GRISWOLD)

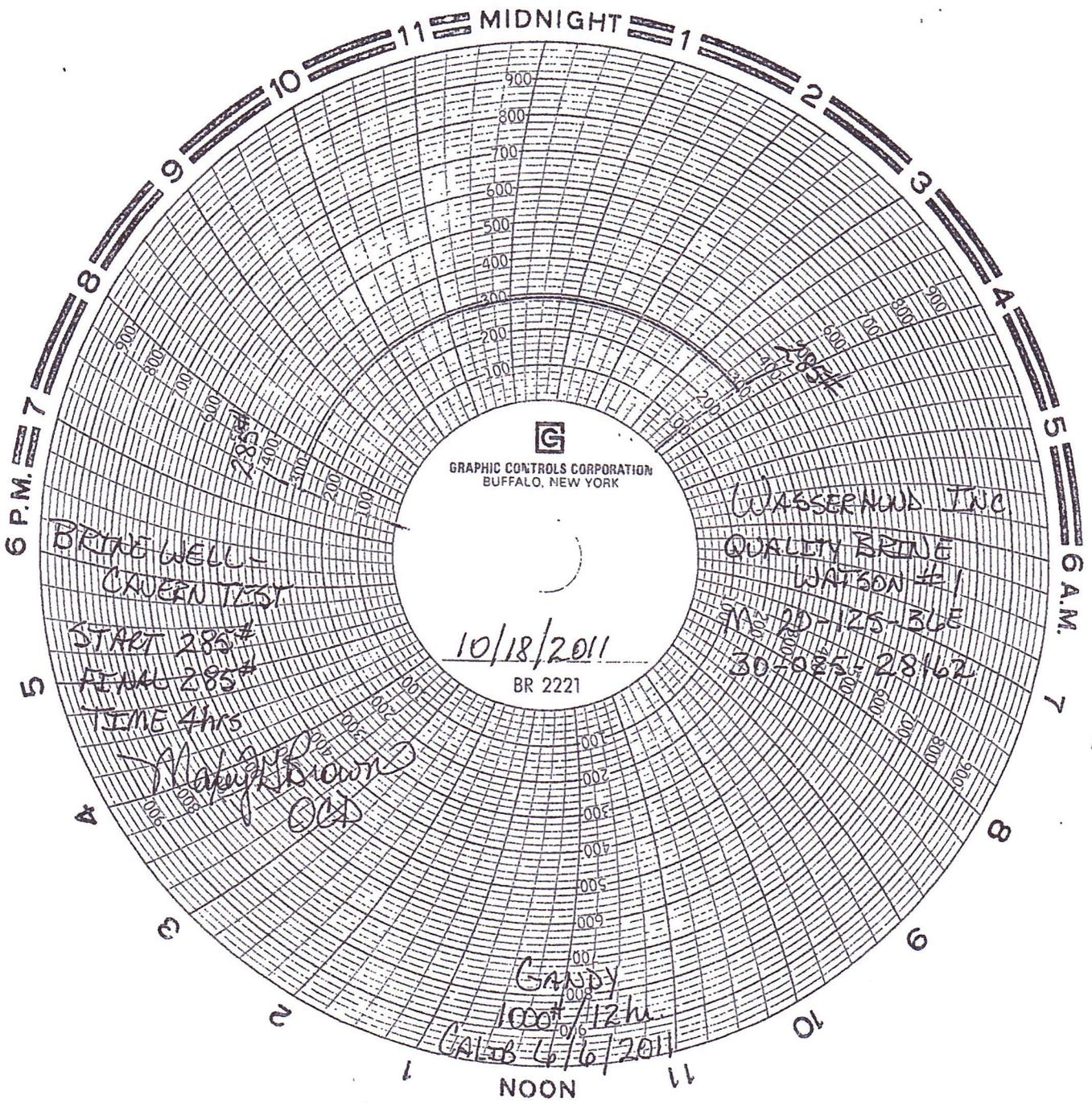
Spud Date: [] Rig Release Date: []

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

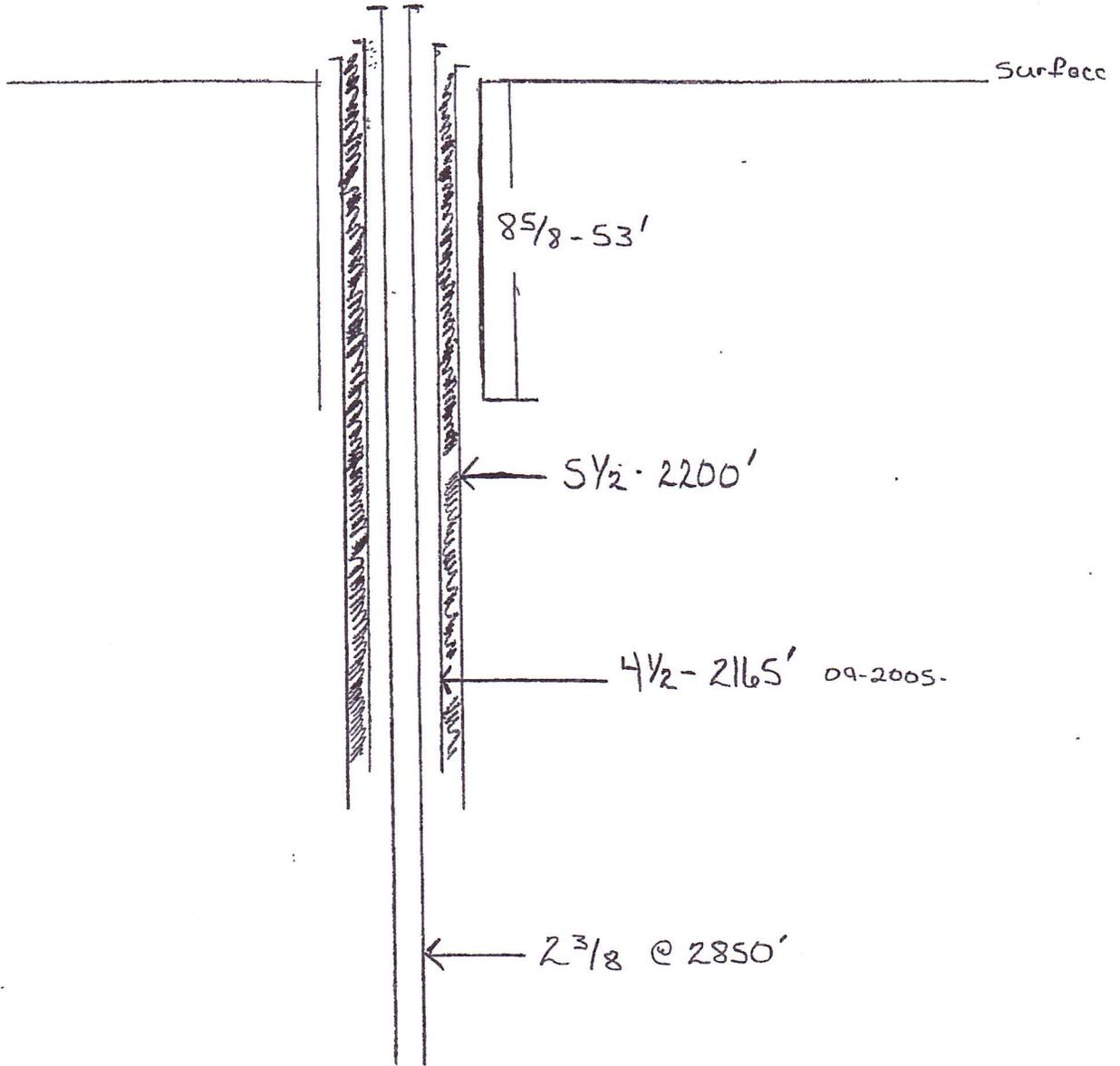
SIGNATURE Larry Gandy TITLE Secretary/Treasurer DATE 11/04/11

Type or print name Larry Gandy E-mail address: lgandy@gandycorporation.com PHONE: 575-396-0522

APPROVED BY: Mark Brown TITLE Compliance Officer DATE 11/10/2011
Conditions of Approval (if any)

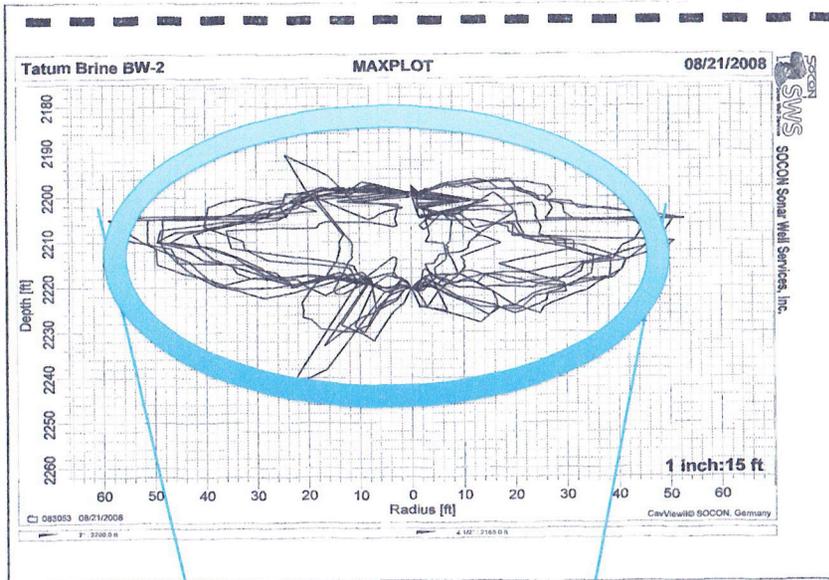


Wasserhund Inc.
Quality Brine
Watson #1
M 20-12s-36e
30-025-28162



Appendix “F”

- Brine Cavity Calculations with Wellbore Sketch
- D/H Calculations
- Aerial View showing Cavern Radius

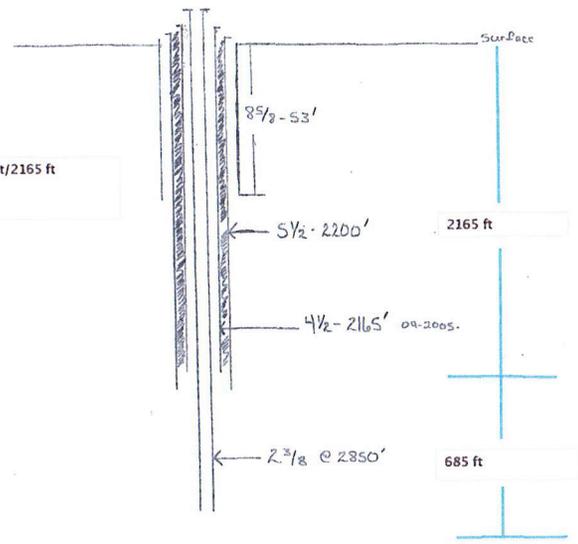


SMS
SOCON Solar Well Services, Inc.

$R = \text{SQRT of } V^3 / 3.14 * H$
 Vol = 2.68 million cuft
 Height = 685 ft from casing shoe to bottom
 Radius = 61.1 feet Dia = 122ft

Wasserhund Inc.
 Quality Brine
 Watson #1
 M 20-12s-36e
 30-025-28162

D/H = 122ft/2165 ft
 D/H = .055



Wasserhund Brine Station Located on the west side of Tatum, NM.
Aerial view shows 60 foot radius of calculated and measured cavern.
April 08, 2012.



Appendix "G"

- AOR Well Status List
- AOR Plot Plan
- OCD Well Records Search

2011 BW-22 AOR Review-- Well Status List
 up-dated Jan 01, 2012

API#	Well Name	UL	ectic	Ts	Rg	Footage	Within 1/4 mi AOR * within 660 ft or Critical AOR	Casing Progra Checked	Cased/Cemented across salt section	Corrective Action Required
1	<u>30-025-28162</u>	<u>Wasserhund Quality Watson #1</u>	<u>M</u>	<u>20</u>	<u>12s</u>	<u>36e 593 FSL & 639 FWL</u>	NA	NA	Na	NA

0 0

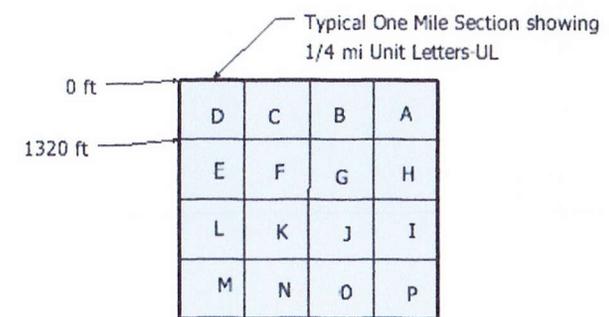
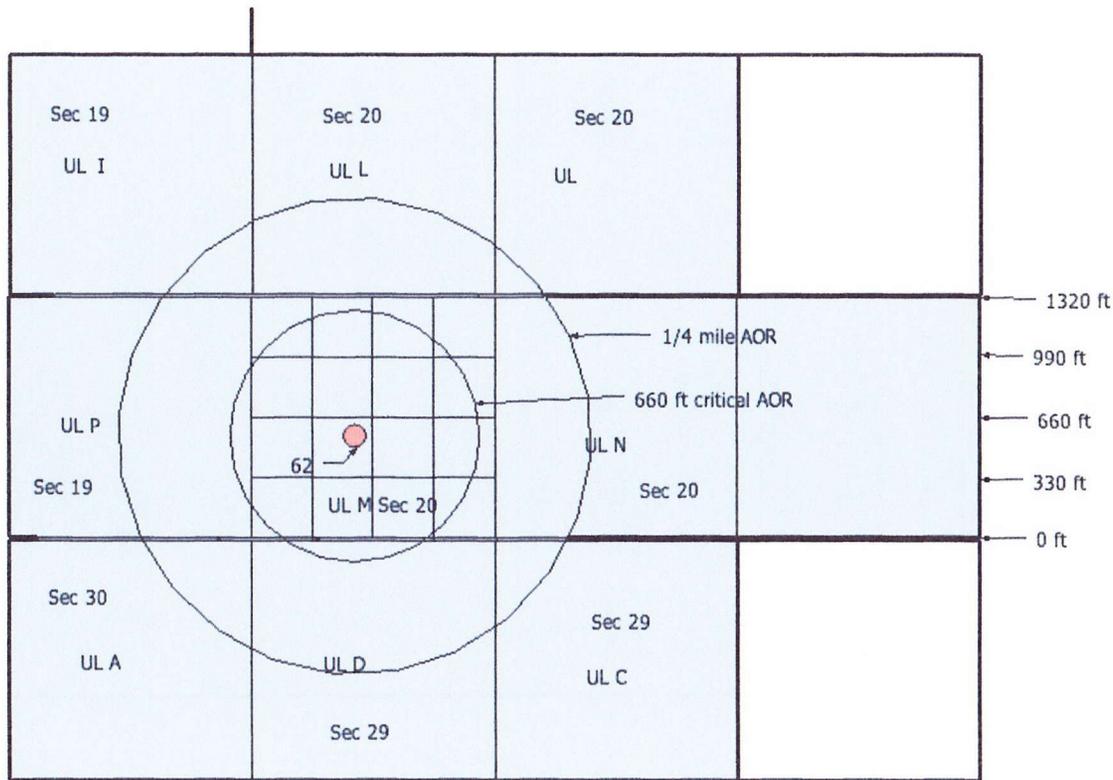
1 Total # of wells in adjacent quarter-sections

0 Total # of wells in 1/4 mile AOR

0 Total # of wells that within 660 ft or the Critical AOR of the outside radius of the brine well and casing program will be checked and reported annually.

Notes:

* Means the well is within 660 ft or the 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#: 30-025-28162	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-22	
AOR Year: 2011	Location: UL M-Sec 20-Ts12s-R36e	

Well File Search - Select Documents to View

Please click on any thumbnail below in order to view the document. **Access to the OCD Internet images does not grant permission to reproduce, disseminate, disclose, or otherwise utilize materials subject to protection of United States copyright or trademark laws. Contact the copyright owner for specific permission to utilize any such materials.** Image size and approximate download times are shown below each thumbnail. Download times are based upon a 28.8Kb modem speed.

Clicking the "View All" button below will download a single file containing all documents. "View All" will select only those thumbnails shown in the currently selected API Number. If you wish to select a different API Number, please use the "Go Back" button. "View All" may take several minutes.

Sort Order: Ascending Descending

API Number ULSTR Footages
3002528162 M-20-12S-36E 593 FSL & 639 FWL

Well Name & Number: QUALITY BRINE WATSON No. 001

Operator: WASSERHUND INC

Note: If you are using Microsoft Internet Explorer and your system does not allow you to open TIFF images from the Internet without saving them first, please contact your administrator. You may be experiencing a problem with the Internet Explorer Cumulative Patch. Please refer to the Microsoft Knowledge Base Article, Q319829, "Cannot Open a Tagged Information File Format (TIFF) File in Internet Explorer", located [here](#).



(53 Kb ~1 min.)



(62 Kb ~1 min.)



(19 Kb ~1 min.)



(192 Kb ~1 min.)



(63 Kb ~1 min.)



(51 Kb ~1 min.)



(123 Kb ~1 min.)



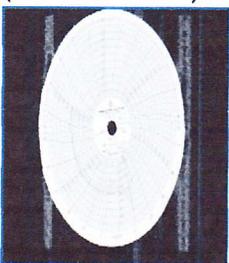
(121 Kb ~1 min.)



(42 Kb ~1 min.)



(72 Kb ~1 min.)



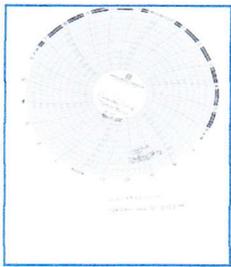
(389 Kb ~2 min.)



(71 Kb ~1 min.)



(66 Kb ~1 min.)



(144 Kb ~1 min.)



(187 Kb ~1 min.)



(1047 Kb ~6 min.)



(61 Kb ~1 min.)



(225 Kb ~1 min.)

[View All](#)

[Go Back](#)

2WASSERHUND BU-22
AOR SEC 29-T125-R35E

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.

0 Records Found

API Number

ULSTR

Footages

[Go Back](#)

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.

0 Records Found

API Number

ULSTR

Footages

[Go Back](#)

WASSERHUND BW-22

ADR- SEC19-T125-R36E

J 2012

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

ANNUAL CLASS III WELL REPORT FOR 2015

Wasserhund Inc.

Tatum Brine Station

OCD Permit BW-22

Expiration Date: Nov 08, 2018

API No. 30-025-28162 Watson #1

Unit Letter M-Section 20-Ts 12s – R 35e

April 30, 2016

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

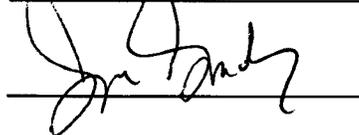


Wayne Price-LLC

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 Expiration Date November 08, 2018.

During the 2015 year, there was no major or remedial work performed on the brine well. Due to brine quality issues experienced during the past years, Wasserhund Inc. submitted a C-103 to OCD in late December of 2012 to investigate why the well is not producing high quality brine water. (C-103 included in **Appendix “A”**)

Even though the oilfield has slowed down, there still is some demand for cut-brine, Wasserhund Inc. decided to forego any well work during the 2015 calendar year.

The brine well was drilled in 1983 and has been in operation for approximately 32 years and is sited on the west side of Tatum, NM, just north of highway 380. The well is producing out of the Salado “Salt Formation” at a depth of approximately 2200-2850 feet below surface.

A copy of the most recent OCD approved Discharge Plan BW-22, aerial photo and recent site inspection report 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 been a relative low producer and the size of the cavity is quite small compared to similar wells of age. **Bullet Point 10** (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.

As will be discussed in **Bullet Point 5** (Chemical Analysis) ever since the last open-hole formation-test, the well has not been able to produce 10# brine, either with reverse or conventional flow. In addition, an off color brine water has been noted from time to time.

General housekeeping was routinely performed and on-site training and inspections were conducted for awareness of the permit conditions. The brine tanks currently do not have secondary containment and Wasserhund Inc respectfully requests a waiver of those conditions unless unusual operating conditions warrant such.

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 **Bullet Point 10** below.

Depending upon OCD requirements and local economics, Wasserhund Inc. will have to evaluate whether future operations of this well is warranted as a concentrated brine producing well.

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”

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 2015 brine production volume was 6,225 bbls and the lifetime production volume is 2,718,372 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: Maximum and Average Injection Pressure:

The maximum operating injection pressure is approximately 380 psig, which is approximately 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 260 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 chemical analysis and chain-of-custody of the brine and fresh water injection water samples collected and analyzed by Trace Analysis in Lubbock, Texas, for the 2015 year. 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 north 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.

As reported in the production volumes, the Tatum Brine Station saw very little action and the specific gravity (Density) was reported to fall between .996 to 1.027. As previously reported, from time to time, an off red color of the produced brine has been noted, possibly caused by injected fresh water interacting with the upper Salado/Rustler formation where the salt has been dissolved.

Wasserhund Inc., will continue to monitor the density-quality issue and will report to OCD once the system recovers, or if for some reason it doesn’t recover, then some remedial action may be taken, including the possibility of running a tubing plug with wire-line to determine integrity, reversing the flow, deepening the well or plugging the well.

The sodium-chloride average ratio was .632, and varied from a low of .60 to a high of .71, where the theoretical average for Sodium Chloride salt is .648. These ratios were compared to production volumes, but no correlation was apparent at this time.

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, but due to some down-hole geological-physical characteristics, is only able to make a cut-brine ranging in specific gravity of .996 to 1.027 .

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 2015.

The loading areas have 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 Quality Watson #1 brine well, OCD permit # BW-22, located in UL M of Section 20-Ts12S-R36E. Wasserhund Inc used OCD records and field verification to confirm wells in the AOR.

Using OCD on-line files and actual on-site field verification, a well status list and AOR plot plan was constructed (see **Appendix “E”**) listing all wells within adjacent quarter sections of the BW-22 location. The list shows API#, Operator well name, UL, Section, Township and Range, footages, Wells within 660 ft and ¼ mile, casing program status, casing/ cementing status, and corrective action required status.

In the 2015 review, there were no new wells added to the list. **Appendix “E”** contains the check-off list showing the OCD wells in all adjacent quarter sections surrounding the BW-22 brine well.

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 i.e. 123.0 ft (r= 61.5 ft) up-dated for 2015, a 10:1 safety factor is applied that equates to about 615 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.

The critical zone was investigated by checking the OCD on-line well records. There was no well activity in the AOR.

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 provide some useful information pertaining to the size and shape of this particular cavern, but at a very limited depth. 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 probability 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 2.71 million barrels of brine produced as of December 2015. The maximum diameter was calculated to be approximately 123.0 feet with a corresponding D/H ratio of .057 updated for the 2015 year.

While the sonar failed to provide information deeper in the cavern, it did show with some degree of accuracy, that the upper portion of the cavern had a maximum center-line radius of approximately 60 feet with a corresponding diameter of approximately 110 feet over all, which correlates with the worst case calculated value. Attached in **Appendix “F”** is a copy of the MaxPlot of the last sonar test showing the sonar results.

Comparing the current D/H ratio of .057 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 11.5 times.

Included in **Appendix “F”** is an aerial view showing the 61.5-foot radius superimposed around the brine well and station.

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.

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.

However, in order to meet the new permit requirements, 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 Request: 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-22 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-22 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.

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"

- C-103
- Aerial Photo
- Discharge Plan BW-22
- Inspection Sheet & Photos

Submit 1 Copy To Appropriate District Office

State of New Mexico

Form C-103

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 Energy, Minerals and Natural Resources

Revised August 1, 2011

DEC 14 2012

CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

RECEIVED

WELL API NO. 30-025-26883 28162
5. Indicate Type of Lease STATE <input type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No.
7. Lease Name or Unit Agreement Name Quality Brine
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 : 593 feet from the South line and 639 feet from the West line
Section 20 Township 12s Range 36e NMPM County Lea

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

NOTICE OF INTENTION TO:

- PERFORM REMEDIAL WORK 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:

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.

1. Pull tubing because of light brine weight.
2. Run packer, test casing.
3. Drill to approximately 2850'.
4. Return to making brine.

Begin work as soon as we have OCD approval.

Spud Date:

[Empty box for Spud Date]

Rig Release Date:

[Empty box for 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 President

DATE 12/05/12

Type or print name Larry Gandy

E-mail address: lgandy@gandycorporation.com PHONE: 575-396-0522

For State Use Only

APPROVED BY:

Maal Whitaker

TITLE Compliance Officer

DATE 12-21-2012

Conditions of Approval (if any):

JAN 8 2013

dm



BW-22

**Wasserhund/Tatum
Watson #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-22 for the Watson #1 Brine Well in Unit M of Section 20, Township 12 South, Range 36 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-22 (API# 30-025-28162) 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".

Jami Bailey
Director

JB/JG/jg
Attachment – Discharge Permit Approval Conditions

DISCHARGE PERMIT BW-22

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-22 (Discharge Permit) to Wasserhund, Inc. (Permittee) to operate its Underground Injection Control (UIC) Class III well for the in situ extraction of salt (Watson #1 - API No. 30-025-28162) located 593 feet FSL and 639 feet FWL (SW/4 SW/4, Unit Letter M) in Section 20, Township 12 South, Range 36 East, NMPM, Lea County, New Mexico at its Brine Production Facility (Facility). The Facility is located within Tatum, New Mexico to the north of US 380.

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 30 feet below ground surface and has a total dissolved solids concentration of approximately 700 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.

Brine Well Inspection Sheet:

Permit # BW-22
API# 30-025-28162 Watson #1
Operator: Wasserhund Inc.
Location: Unit Letter M-Section 20-Ts 12s - R 35e

	Yes	No
1 Any reportable leaks or spills noted at time of inspection?		X
2 Any observed radial cracks or any evidence of subsidence?		X
3 Load/unload pots in place?	X	
4 Any New Wells IN AOR?		X
5 Observed Injection Pressure on Well?	X	120 psig
6 Is operator experiencing any downhole issues?	X	Difficult to Produce 10 lb brine
7 Do brine Tanks have secondary containment?		X
8 Samples Collected?	X	Fresh + Brine
9 Brine well Operated Normal or Reverse Flow?	Normal	
10 Checked Sumps?	NA	
11 Groundwater Monitor Wells on-site?		X
12 Subsidence Monitors on-site?		X
13 Equipment failures?		X
Photos Taken:	2 see attached	

Date of Inspection:

2/17/16

Inspector: Wayne Price Jr. Price LLC

Inspector Signature:

WR



Wasserhund BW-22 Brine Station
Feb 17, 2016-Photo by Price LLC
Looking NW

Wasserhund BW-22 Well Head Pressure Gage
Feb 17, 2016-Photo by Price LLC



Appendix “B”

- Injection and Production Volumes/Comparison Charts

Appendix "C"

- Chemical Analysis Fresh Water
- Chemical Analysis Brine Water



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: 15012304



Project Location: Tatum, NM
Project Name: Brine Well-Tatum
Project Number: Brine Well-Tatum

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
385127	Fresh	water	2015-01-16	06:17	2015-01-21
385128	Brine	water	2015-01-16	06:25	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 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

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Case Narrative

Samples for project Brine Well-Tatum were received by TraceAnalysis, Inc. on 2015-01-21 and assigned to work order 15012304. Samples for work order 15012304 were received intact at a temperature of 2.0 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	100958	2015-02-13 at 15:00	119384	2015-02-13 at 18:06
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 15012304 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: 385127 - Fresh

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 119384 Date Analyzed: 2015-02-13 Analyzed By: RL
Prep Batch: 100958 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	B	1,2,3,4,5	71.6	mg/L	10	2.50

Sample: 385127 - 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	75.9	mg/L	1	1.00

Sample: 385127 - 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	8.20	s.u.	1	2.00

Sample: 385127 - 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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Specific Gravity			0.9861	g/ml	1	0.000

Sample: 385127 - Fresh

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	642	mg/L	20	2.50

Sample: 385128 - Brine

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	16000	mg/L	1000	2.50

Sample: 385128 - Brine

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: 100546 Sample Preparation: 2015-01-27 Prepared By: RR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium	Qs	2,3,4,5	11400	mg/L	100	1.00

Report Date: February 17, 2015
Brine Well-Tatum

Work Order: 15012304
Brine Well-Tatum

Page Number: 6 of 17
Tatum, NM

Sample: 385128 - 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	6.16	s.u.	1	2.00

Sample: 385128 - 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			1.027	g/ml	1	0.000

Sample: 385128 - 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	31000	mg/L	1000	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: 119384

QC Batch: 119384 Date Analyzed: 2015-02-13 Analyzed By: RL
Prep Batch: 100958 QC Preparation: 2015-02-13 Prepared By: RL

Report Date: February 17, 2015
Brine Well-Tatum

Work Order: 15012304
Brine Well-Tatum

Page Number: 8 of 17
Tatum, NM

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1,2,3,4,5	0.826	mg/L	2.5

Method Blank (1) QC Batch: 119410

QC Batch: 119410
Prep Batch: 100982

Date Analyzed: 2015-02-16
QC Preparation: 2015-02-16

Analyzed By: RL
Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1,2,3,4,5	0.767	mg/L	2.5

Duplicates

Duplicates (1) Duplicated Sample: 385269

QC Batch: 118885 Date Analyzed: 2015-01-27 Analyzed By: CF
Prep Batch: 100533 QC Preparation: 2015-01-27 Prepared By: CF

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Specific Gravity	1.074	1.072	g/ml	1	0	200

Duplicates (1) Duplicated Sample: 385269

QC Batch: 118893 Date Analyzed: 2015-01-27 Analyzed By: AT
Prep Batch: 100544 QC Preparation: 2015-01-27 Prepared By: AT

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH	6.79	6.78	s.u.	1	0	20

Duplicates (1) Duplicated Sample: 385130

QC Batch: 118905 Date Analyzed: 2015-01-26 Analyzed By: RL
Prep Batch: 100553 QC Preparation: 2015-01-26 Prepared By: RL

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	850	806	mg/L	20	5	10

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,2,3,4,5	24.1	mg/L	1	25.0	0.826	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	24.3	mg/L	1	25.0	0.826	94	90 - 110	1	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: 119410
 Prep Batch: 100982

Date Analyzed: 2015-02-16
 QC Preparation: 2015-02-16

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	24.0	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.

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.

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.

Summary Report

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

Report Date: June 5, 2015

Work Order: 15050506



Project Location: Tatum NM
Project Name: Tatum Fresh & Brine Well

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
392449	Fresh	water	2015-04-27	14:10	2015-05-01
392450	Brine	water	2015-04-27	14:20	2015-05-01

Sample: 392449 - Fresh

Param	Flag	Result	Units	RL
Chloride		82.8	mg/L	2.5
pH		8.32	s.u.	2
Specific Gravity		0.9923	g/ml	
Total Dissolved Solids		633	mg/L	2.5

Sample: 392450 - Brine

Param	Flag	Result	Units	RL
Chloride		20500	mg/L	2.5
Dissolved Sodium		12500	mg/L	1
pH		6.05	s.u.	2
Specific Gravity		1.018	g/ml	
Total Dissolved Solids		34100	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: June 5, 2015

Work Order: 15050506



Project Location: Tatum NM
Project Name: Tatum Fresh & Brine Well
Project Number: Tatum Fresh & 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
392449	Fresh	water	2015-04-27	14:10	2015-05-01
392450	Brine	water	2015-04-27	14:20	2015-05-01

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 18 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

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Case Narrative

Samples for project Tatum Fresh & Brine Well were received by TraceAnalysis, Inc. on 2015-05-01 and assigned to work order 15050506. Samples for work order 15050506 were received intact at a temperature of 1.4 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	102846	2015-05-14 at 09:30	121554	2015-05-14 at 10:32
Na, Dissolved	S 6010C	103232	2015-06-04 at 14:09	122047	2015-06-05 at 13:17
pH	SM 4500-H+	102649	2015-05-06 at 16:48	121318	2015-05-06 at 16:51
Specific Gravity	ASTM D1429-95	102660	2015-05-07 at 10:00	121329	2015-05-07 at 10:10
TDS	SM 2540C	102686	2015-05-07 at 17:44	121355	2015-05-07 at 17:46
TDS	SM 2540C	102742	2015-05-11 at 19:20	121420	2015-05-11 at 19:21

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 15050506 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: 392449 - Fresh

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 121554 Date Analyzed: 2015-05-14 Analyzed By: RL
Prep Batch: 102846 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,3,4,5	82.8	mg/L	5	2.50

Sample: 392449 - Fresh

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 121318 Date Analyzed: 2015-05-06 Analyzed By: HJ
Prep Batch: 102649 Sample Preparation: Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,5	8.32	s.u.	1	2.00

Sample: 392449 - Fresh

Laboratory: Lubbock
Analysis: Specific Gravity Analytical Method: ASTM D1429-95 Prep Method: N/A
QC Batch: 121329 Date Analyzed: 2015-05-07 Analyzed By: CF
Prep Batch: 102660 Sample Preparation: 2015-05-07 Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Specific Gravity			0.9923	g/ml	1	0.000

Sample: 392449 - Fresh

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 121420 Date Analyzed: 2015-05-11 Analyzed By: HJ
Prep Batch: 102742 Sample Preparation: Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,5	633	mg/L	10	2.50

Sample: 392450 - Brine

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 121554 Date Analyzed: 2015-05-14 Analyzed By: RL
Prep Batch: 102846 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,3,4,5	20500	mg/L	500	2.50

Sample: 392450 - Brine

Laboratory: Lubbock
Analysis: Na, Dissolved Analytical Method: S 6010C Prep Method: S 3005A
QC Batch: 122047 Date Analyzed: 2015-06-05 Analyzed By: RR
Prep Batch: 103232 Sample Preparation: 2015-06-04 Prepared By: RR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium		2,3,4,5	12500	mg/L	100	1.00

Sample: 392450 - Brine

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 121318 Date Analyzed: 2015-05-06 Analyzed By: HJ
Prep Batch: 102649 Sample Preparation: Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,5	6.05	s.u.	1	2.00

Report Date: June 5, 2015
Tatum Fresh & Brine Well

Work Order: 15050506
Tatum Fresh & Brine Well

Page Number: 7 of 18
Tatum NM

Sample: 392450 - Brine

Laboratory: Lubbock
Analysis: Specific Gravity Analytical Method: ASTM D1429-95 Prep Method: N/A
QC Batch: 121329 Date Analyzed: 2015-05-07 Analyzed By: CF
Prep Batch: 102660 Sample Preparation: 2015-05-07 Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Specific Gravity			1.018	g/ml	1	0.000

Sample: 392450 - Brine

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 121355 Date Analyzed: 2015-05-07 Analyzed By: HJ
Prep Batch: 102686 Sample Preparation: Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,5	34100	mg/L	1000	2.50

Method Blanks

Method Blank (1) QC Batch: 121329

QC Batch: 121329 Date Analyzed: 2015-05-07 Analyzed By: CF
Prep Batch: 102660 QC Preparation: 2015-05-07 Prepared By: CF

Parameter	Flag	Cert	MDL Result	Units	RL
Specific Gravity			0.9884	g/ml	

Method Blank (1) QC Batch: 121355

QC Batch: 121355 Date Analyzed: 2015-05-07 Analyzed By: HJ
Prep Batch: 102686 QC Preparation: 2015-05-07 Prepared By: HJ

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: 121420

QC Batch: 121420 Date Analyzed: 2015-05-11 Analyzed By: HJ
Prep Batch: 102742 QC Preparation: 2015-05-11 Prepared By: HJ

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: 121554

QC Batch: 121554 Date Analyzed: 2015-05-14 Analyzed By: RL
Prep Batch: 102846 QC Preparation: 2015-05-14 Prepared By: RL

Report Date: June 5, 2015
Tatum Fresh & Brine Well

Work Order: 15050506
Tatum Fresh & Brine Well

Page Number: 9 of 18
Tatum NM

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1,2,3,4,5	0.973	mg/L	2.5

Method Blank (1) QC Batch: 122047

QC Batch: 122047
Prep Batch: 103232

Date Analyzed: 2015-06-05
QC Preparation: 2015-06-04

Analyzed By: RR
Prepared By: PM

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

Duplicates

Duplicates (1) Duplicated Sample: 392489

QC Batch: 121318 Date Analyzed: 2015-05-06 Analyzed By: HJ
Prep Batch: 102649 QC Preparation: 2015-05-06 Prepared By: HJ

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH	1,2,4,5	9.09	9.19	s.u.	1	1	20

Duplicates (1) Duplicated Sample: 392450

QC Batch: 121329 Date Analyzed: 2015-05-07 Analyzed By: CF
Prep Batch: 102660 QC Preparation: 2015-05-07 Prepared By: CF

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Specific Gravity		1.008	1.018	g/ml	1	1	200

Duplicates (1) Duplicated Sample: 392450

QC Batch: 121355 Date Analyzed: 2015-05-07 Analyzed By: HJ
Prep Batch: 102686 QC Preparation: 2015-05-07 Prepared By: HJ

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	1,2,3,4,5	32400	34100	mg/L	1000	5	10

Duplicates (1) Duplicated Sample: 392783

QC Batch: 121420 Date Analyzed: 2015-05-11 Analyzed By: HJ
Prep Batch: 102742 QC Preparation: 2015-05-11 Prepared By: HJ

Report Date: June 5, 2015
Tatum Fresh & Brine Well

Work Order: 15050506
Tatum Fresh & Brine Well

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Tatum NM

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	1,2,3,4,5	38.0	39.0	mg/L	10	3	10

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,2,3,4,5	25.3	mg/L	1	25.0	0.973	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	0.973	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: 122047
 Prep Batch: 103232

Date Analyzed: 2015-06-05
 QC Preparation: 2015-06-04

Analyzed By: RR
 Prepared By: PM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Sodium		2,3,4,5	56.8	mg/L	1	52.5	<0.0197	108	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	54.4	mg/L	1	52.5	<0.0197	104	85 - 115	4	20

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

Report Date: June 5, 2015
Tatum Fresh & Brine Well

Work Order: 15050506
Tatum Fresh & Brine Well

Page Number: 16 of 18
Tatum NM

Standard (ICV-1)

QC Batch: 122047

Date Analyzed: 2015-06-05

Analyzed By: RR

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	52.5	103	90 - 110	2015-06-05

Standard (CCV-1)

QC Batch: 122047

Date Analyzed: 2015-06-05

Analyzed By: RR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Sodium		2,3,4,5	mg/L	51.0	50.5	99	90 - 110	2015-06-05

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
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-	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		2014-018	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
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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.

LAB Order ID # 15050506

TraceAnalysis, Inc.

6701 Aberdeen Avenue, Suite 9
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Tel (806) 794-1296
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Fax (915) 585-4944
1 (888) 588-3443

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

email: lab@traceanalysis.com

Company Name: PRICE LLC
 Address: (Street, City, Zip) 312 Encanto Rd, Ridge County, NM 87124
 Contact Person: LESTER WAYNE PRICE JR
 Invoice to: (if different from above) WASSERHUND INC. P.O. 2140 Lovington, NM 88260
 Project #: NA
 Project Location (including state): TATUM NM
 Project Name: TATUM FRESH & BRINE WELL
 Sampler Signature: LWPBR

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
392449	FRESH	1	1 PLASTIC	X						X			4/27/15	12:10PM
450	BRINE	1	1 PLASTIC	X						X			4/27/15	2:20PM

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	
CHLORIDES PH, SR, TOS	X
DISSOLVED SODIUM	X
Turn Around Time if different from standard	Hold

Relinquished by: Lester Wayne Price Jr
 Company: PRICE CELL
 Date: 5/11/15 4:00PM
 Received by: Billy Bender
 Company: B+C
 Date: 5-1-15
 Time: 4:17 PM
 INST: 4C
 OBS: 0
 COR: 0

Relinquished by: Lester Wayne Price Jr
 Company: PRICE CELL
 Date: 5/11/15 4:00PM
 Received by: Billy Bender
 Company: B+C
 Date: 5-1-15
 Time: 4:17 PM
 INST: 4C
 OBS: 0
 COR: 0

Relinquished by: Lester Wayne Price Jr
 Company: PRICE CELL
 Date: 5/11/15 4:00PM
 Received by: Billy Bender
 Company: B+C
 Date: 5-1-15
 Time: 4:17 PM
 INST: 4C
 OBS: 0
 COR: 0

REMARKS: COC #1

LAB USE ONLY

Log-in-Review
 Dry Weight Basis Required
 TRRP Report Required
 Check if Special Reporting Limits Are Needed

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O. C. Carrier # LS 25437999

Summary Report

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

Report Date: August 19, 2015

Work Order: 15081114



Project Location: Tatum NM
 Project Name: Tatum Fresh & Brine Well

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
401722	Fresh	water	2015-07-08	17:30	2015-08-09
401723	Brine	water	2015-07-08	17:40	2015-08-09

Sample: 401722 - Fresh

Param	Flag	Result	Units	RL
Chloride	B,H	73.5	mg/L	2.5
Dissolved Sodium		120	mg/L	1
pH		8.04	s.u.	2
Specific Gravity		1.000	g/ml	
Total Dissolved Solids		669	mg/L	2.5

Sample: 401723 - Brine

Param	Flag	Result	Units	RL
Dissolved Sodium		9700	mg/L	1

Summary Report

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

Report Date: August 19, 2015

Work Order: 15081114



Project Location: Tatum NM
Project Name: Tatum Fresh & Brine Well

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
401722	Fresh	water	2015-07-08	17:30	2015-08-09
401723	Brine	water	2015-07-08	17:40	2015-08-09

Sample: 401722 - Fresh

Param	Flag	Result	Units	RL
Chloride	B,H	73.5	mg/L	2.5
Dissolved Sodium		120	mg/L	1
pH		8.04	s.u.	2
Specific Gravity		1.000	g/ml	
Total Dissolved Solids		669	mg/L	2.5

Sample: 401723 - Brine

Param	Flag	Result	Units	RL
Dissolved Sodium		9700	mg/L	1

Summary Report

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

Report Date: November 12, 2015

Work Order: 15102712



Project Location: Buckeye & Tatum NM
 Project Name: Brine Well 3rd QT. Sample
 Project Number: BW-4 & BW-22

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
407093	BW-22 Tatum Fresh	water	2015-10-23	13:15	2015-10-26
407094	BW-22 Tatum Brine	water	2015-10-23	13:20	2015-10-26
407095	BW-4 Buckeye Fresh	water	2015-10-23	17:55	2015-10-26
407096	BW-4 Buckeye Brine	water	2015-10-23	18:00	2015-10-26

Sample: 407093 - BW-22 Tatum Fresh

Param	Flag	Result	Units	RL
Chloride		76.6	mg/L	2.5
Density		0.978	g/ml	
pH		7.79	s.u.	2
Total Dissolved Solids		659	mg/L	2.5

Sample: 407094 - BW-22 Tatum Brine

Param	Flag	Result	Units	RL
Chloride		18000	mg/L	2.5
Density		1.02	g/ml	
Dissolved Sodium		12500	mg/L	1
pH		6.99	s.u.	2
Total Dissolved Solids		37000	mg/L	2.5

Sample: 407095 - BW-4 Buckeye Fresh

Param	Flag	Result	Units	RL
Chloride		280	mg/L	2.5
Density		0.997	g/ml	
pH		7.61	s.u.	2
Total Dissolved Solids		868	mg/L	2.5

Sample: 407096 - BW-4 Buckeye Brine

Param	Flag	Result	Units	RL
Chloride		176000	mg/L	2.5
Density		1.18	g/ml	
Dissolved Sodium		108000	mg/L	1
pH		6.76	s.u.	2
Total Dissolved Solids		310000	mg/L	2.5



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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

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

Report Date: November 12, 2015

Work Order: 15102712



Project Location: Buckeye & Tatum NM
Project Name: Brine Well 3rd QT. Sample
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
407093	BW-22 Tatum Fresh	water	2015-10-23	13:15	2015-10-26
407094	BW-22 Tatum Brine	water	2015-10-23	13:20	2015-10-26
407095	BW-4 Buckeye Fresh	water	2015-10-23	17:55	2015-10-26
407096	BW-4 Buckeye Brine	water	2015-10-23	18:00	2015-10-26

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
Brian Pellam, Operations Manager

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Case Narrative

Samples for project Brine Well 3rd QT. Sample were received by TraceAnalysis, Inc. on 2015-10-26 and assigned to work order 15102712. Samples for work order 15102712 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	106703	2015-11-04 at 13:00	126115	2015-11-04 at 13:45
Density	ASTM D854-92	106620	2015-11-02 at 13:10	126018	2015-11-02 at 13:15
Na, Dissolved	S 6010C	106726	2015-11-06 at 12:43	126288	2015-11-12 at 10:10
pH	SM 4500-H+	106519	2015-10-27 at 17:30	125907	2015-10-27 at 17:31
TDS	SM 2540C	106564	2015-10-29 at 12:04	126012	2015-10-29 at 12:00
TDS	SM 2540C	106671	2015-11-03 at 16:30	126079	2015-11-03 at 16:31

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 15102712 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: 407093 - BW-22 Tatum Fresh

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 126115 Date Analyzed: 2015-11-04 Analyzed By: RL
Prep Batch: 106703 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,3,4,6	76.6	mg/L	5	2.50

Sample: 407093 - BW-22 Tatum Fresh

Laboratory: Lubbock
Analysis: Density Analytical Method: ASTM D854-92 Prep Method: N/A
QC Batch: 126018 Date Analyzed: 2015-11-02 Analyzed By: CF
Prep Batch: 106620 Sample Preparation: Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Density			0.978	g/ml	1	0.00

Sample: 407093 - BW-22 Tatum Fresh

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 125907 Date Analyzed: 2015-10-27 Analyzed By: LQ
Prep Batch: 106519 Sample Preparation: Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,6	7.79	s.u.	1	2.00

Sample: 407093 - BW-22 Tatum Fresh

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 126012 Date Analyzed: 2015-10-29 Analyzed By: LQ
Prep Batch: 106564 Sample Preparation: Prepared By: LQ

Report Date: November 12, 2015
BW-4 & BW-22

Work Order: 15102712
Brine Well 3rd QT. Sample

Page Number: 6 of 20
Buckeye & Tatum NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,6	659	mg/L	10	2.50

Sample: 407094 - BW-22 Tatum Brine

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 126115 Date Analyzed: 2015-11-04 Analyzed By: RL
Prep Batch: 106703 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,3,4,6	18000	mg/L	500	2.50

Sample: 407094 - BW-22 Tatum Brine

Laboratory: Lubbock
Analysis: Density Analytical Method: ASTM D854-92 Prep Method: N/A
QC Batch: 126018 Date Analyzed: 2015-11-02 Analyzed By: CF
Prep Batch: 106620 Sample Preparation: Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Density			1.02	g/ml	1	0.00

Sample: 407094 - BW-22 Tatum Brine

Laboratory: Lubbock
Analysis: Na, Dissolved Analytical Method: S 6010C Prep Method: S 3005A
QC Batch: 126288 Date Analyzed: 2015-11-12 Analyzed By: RR
Prep Batch: 106726 Sample Preparation: 2015-11-06 Prepared By: RR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium		2,3,4,6	12500	mg/L	100	1.00

Sample: 407094 - BW-22 Tatum Brine

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 125907 Date Analyzed: 2015-10-27 Analyzed By: LQ
Prep Batch: 106519 Sample Preparation: Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,6	6.99	s.u.	1	2.00

Sample: 407094 - BW-22 Tatum Brine

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 126012 Date Analyzed: 2015-10-29 Analyzed By: LQ
Prep Batch: 106564 Sample Preparation: Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,6	37000	mg/L	1000	2.50

Sample: 407095 - BW-4 Buckeye Fresh

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 126115 Date Analyzed: 2015-11-04 Analyzed By: RL
Prep Batch: 106703 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,3,4,6	280	mg/L	10	2.50

Sample: 407095 - BW-4 Buckeye Fresh

Laboratory: Lubbock
Analysis: Density Analytical Method: ASTM D854-92 Prep Method: N/A
QC Batch: 126018 Date Analyzed: 2015-11-02 Analyzed By: CF
Prep Batch: 106620 Sample Preparation: Prepared By: CF

continued . . .

sample 407095 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Density			0.997	g/ml	1	0.00

Sample: 407095 - BW-4 Buckeye Fresh

Laboratory: Lubbock
 Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
 QC Batch: 125907 Date Analyzed: 2015-10-27 Analyzed By: LQ
 Prep Batch: 106519 Sample Preparation: Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,6	7.61	s.u.	1	2.00

Sample: 407095 - BW-4 Buckeye Fresh

Laboratory: Lubbock
 Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
 QC Batch: 126012 Date Analyzed: 2015-10-29 Analyzed By: LQ
 Prep Batch: 106564 Sample Preparation: Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,6	868	mg/L	20	2.50

Sample: 407096 - BW-4 Buckeye Brine

Laboratory: Lubbock
 Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
 QC Batch: 126115 Date Analyzed: 2015-11-04 Analyzed By: RL
 Prep Batch: 106703 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,3,4,6	176000	mg/L	5000	2.50

Sample: 407096 - BW-4 Buckeye Brine

Laboratory: Lubbock
Analysis: Density Analytical Method: ASTM D854-92 Prep Method: N/A
QC Batch: 126018 Date Analyzed: 2015-11-02 Analyzed By: CF
Prep Batch: 106620 Sample Preparation: Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Density			1.18	g/ml	1	0.00

Sample: 407096 - BW-4 Buckeye Brine

Laboratory: Lubbock
Analysis: Na, Dissolved Analytical Method: S 6010C Prep Method: S 3005A
QC Batch: 126288 Date Analyzed: 2015-11-12 Analyzed By: RR
Prep Batch: 106726 Sample Preparation: 2015-11-06 Prepared By: RR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium		2,3,4,6	108000	mg/L	1000	1.00

Sample: 407096 - BW-4 Buckeye Brine

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 125907 Date Analyzed: 2015-10-27 Analyzed By: LQ
Prep Batch: 106519 Sample Preparation: Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,6	6.76	s.u.	1	2.00

Sample: 407096 - BW-4 Buckeye Brine

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 126079 Date Analyzed: 2015-11-03 Analyzed By: LQ
Prep Batch: 106671 Sample Preparation: Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,6	310000	mg/L	2000	2.50

Method Blanks

Method Blank (1) QC Batch: 126012

QC Batch: 126012 Date Analyzed: 2015-10-29 Analyzed By: LQ
Prep Batch: 106564 QC Preparation: 2015-10-29 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: 126018

QC Batch: 126018 Date Analyzed: 2015-11-02 Analyzed By: CF
Prep Batch: 106620 QC Preparation: 2015-11-02 Prepared By: CF

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

Method Blank (1) QC Batch: 126079

QC Batch: 126079 Date Analyzed: 2015-11-03 Analyzed By: LQ
Prep Batch: 106671 QC Preparation: 2015-11-03 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: 126115

QC Batch: 126115 Date Analyzed: 2015-11-04 Analyzed By: RL
Prep Batch: 106703 QC Preparation: 2015-11-04 Prepared By: RL

Report Date: November 12, 2015
BW-4 & BW-22

Work Order: 15102712
Brine Well 3rd QT. Sample

Page Number: 11 of 20
Buckeye & Tatum NM

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

Method Blank (1) QC Batch: 126288

QC Batch: 126288
Prep Batch: 106726

Date Analyzed: 2015-11-12
QC Preparation: 2015-11-06

Analyzed By: RR
Prepared By: PM

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

Duplicates

Duplicates (1) Duplicated Sample: 406966

QC Batch: 125907 Date Analyzed: 2015-10-27 Analyzed By: LQ
Prep Batch: 106519 QC Preparation: 2015-10-27 Prepared By: LQ

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH	1,2,4,6	6.95	6.79	s.u.	1	2	20

Duplicates (1) Duplicated Sample: 407191

QC Batch: 126012 Date Analyzed: 2015-10-29 Analyzed By: LQ
Prep Batch: 106564 QC Preparation: 2015-10-29 Prepared By: LQ

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	1,2,3,4,6	3320	3180	mg/L	50	4	10

Duplicates (1) Duplicated Sample: 407096

QC Batch: 126018 Date Analyzed: 2015-11-02 Analyzed By: CF
Prep Batch: 106620 QC Preparation: 2015-11-02 Prepared By: CF

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Density		1.19	1.18	g/ml	1	1	20

Duplicates (1) Duplicated Sample: 407287

QC Batch: 126079 Date Analyzed: 2015-11-03 Analyzed By: LQ
Prep Batch: 106671 QC Preparation: 2015-11-03 Prepared By: LQ

Report Date: November 12, 2015
BW-4 & BW-22

Work Order: 15102712
Brine Well 3rd QT. Sample

Page Number: 13 of 20
Buckeye & Tatum NM

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	1,2,3,4,6	1190	1180	mg/L	20	1	10

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,2,3,4,6	24.7	mg/L	1	25.0	<0.323	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.	Rec. Limit	RPD	RPD Limit
Chloride		1,2,3,4,6	24.9	mg/L	1	25.0	<0.323	100	90 - 110	1	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: 126288
 Prep Batch: 106726

Date Analyzed: 2015-11-12
 QC Preparation: 2015-11-06

Analyzed By: RR
 Prepared By: PM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Sodium		2,3,4,6	53.0	mg/L	1	52.5	<0.0197	101	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	53.2	mg/L	1	52.5	<0.0197	101	85 - 115	0	20

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

Report Date: November 12, 2015
BW-4 & BW-22

Work Order: 15102712
Brine Well 3rd QT. Sample

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Buckeye & Tatum NM

Standard (CCV-1)

QC Batch: 126288

Date Analyzed: 2015-11-12

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	27.5	27.8	101	90 - 110	2015-11-12

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.



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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

(Corrected Report)

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

Report Date: March 24, 2016

Work Order: 16022211



Project Location: Tatum, NM
 Project Name: Brine Well-Tatum
 Project Number: Brine Well-Tatum

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
414780	Fresh Water	water	2016-02-17	17:55	2016-02-18
414781	Brine Water	water	2016-02-17	18:00	2016-02-18

Report Corrections (Work Order 16022211)

- 3/24/16: Added Chloride, pH, TDS and Density to sample 414781.

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

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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
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QC Batch 128463 - Duplicate (1)	11
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Case Narrative

Samples for project Brine Well-Tatum were received by TraceAnalysis, Inc. on 2016-02-18 and assigned to work order 16022211. Samples for work order 16022211 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 16022211 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: 414780 - 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	76.6	mg/L	10	2.50

Sample: 414780 - 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			0.985	g/ml	1	0.00

Sample: 414780 - 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	7.93	s.u.	1	2.00

Sample: 414780 - 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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,5	662	mg/L	10	2.50

Sample: 414781 - 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	12600	mg/L	500	2.50

Sample: 414781 - 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	0.996	g/ml	1	0.00

Sample: 414781 - 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	6760	mg/L	1000	1.00

Report Date: March 24, 2016
Brine Well-Tatum

Work Order: 16022211
Brine Well-Tatum

Page Number: 8 of 20
Tatum, NM

Sample: 414781 - Brine Water

Laboratory:	Lubbock	Analytical Method:	SM 4500-H+	Prep Method:	N/A
Analysis:	pH	Date Analyzed:	2016-03-23	Analyzed By:	LQ
QC Batch:	129028	Sample Preparation:	2016-03-23	Prepared By:	LQ
Prep Batch:	109282				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,5	7.29	s.u.	1	2.00

Sample: 414781 - Brine Water

Laboratory:	Lubbock	Analytical Method:	SM 2540C	Prep Method:	N/A
Analysis:	TDS	Date Analyzed:	2016-03-23	Analyzed By:	LQ
QC Batch:	129044	Sample Preparation:	2016-03-23	Prepared By:	LQ
Prep Batch:	109281				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,5	26700	mg/L	1000	2.50

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-Tatum

Work Order: 16022211
Brine Well-Tatum

Page Number: 10 of 20
Tatum, NM

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

Report Date: March 24, 2016
Brine Well-Tatum

Work Order: 16022211
Brine Well-Tatum

Page Number: 12 of 20
Tatum, NM

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

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 128362
 Prep Batch: 108686

Date Analyzed: 2016-02-22
 QC Preparation: 2016-02-22

Analyzed By: RR
 Prepared By: PM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Sodium		2,3,4,5	55.1	mg/L	1	52.5	<0.0197	105	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	52.7	mg/L	1	52.5	<0.0197	100	85 - 115	4	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: 128419
 Prep Batch: 108743

Date Analyzed: 2016-02-23
 QC Preparation: 2016-02-23

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	25.8	mg/L	1	25.0	<0.323	103	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	25.7	mg/L	1	25.0	<0.323	103	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: 128463
 Prep Batch: 108734

Date Analyzed: 2016-02-23
 QC Preparation: 2016-02-23

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	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.

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.

Calibration Standards

Standard (ICV-1)

QC Batch: 128362

Date Analyzed: 2016-02-22

Analyzed By: RR

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	26.0	24.9	96	90 - 110	2016-02-22

Standard (CCV-1)

QC Batch: 128362

Date Analyzed: 2016-02-22

Analyzed By: RR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Sodium		2,3,4,5	mg/L	26.0	25.3	97	90 - 110	2016-02-22

Standard (CCV-1)

QC Batch: 128366

Date Analyzed: 2016-02-22

Analyzed By: LQ

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	7.00	100	98.6 - 101.4	2016-02-22

Standard (CCV-1)

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		1,2,3,4,5	mg/L	25.0	25.7	103	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		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 # 1602221

Page

Trace Analysis, Inc.

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200 East Sunset Rd., Suite E
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Tel (915) 585-3443
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1 (888) 588-3443

BioAquatic Testing
2501 Mayes Rd., Ste 100
Carrollton, Texas 75006
Tel (575) 392-
Fax (575) 392-4-

email: lab@traceanalysis.com

Company Name: PRICE LLC Phone #: 832 657 4873
 Address: (Street, City, Zip) R-10 FARM ROAD MALFAx #: 805 842 6643
 312 ENCANTADO RIDGE CT NE 87124
 Contact Person: LESTER WAYNE PRICE JR E-mail: wnprice23@hotmail.com
 Invoice to: (if different from above) JOAN DY CORP ORATION
 Project #: NA Project Name: BRINE WELL
 Sampler Signature: LWPBR

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX			PRESERVATIVE METHOD					SAMPLING TIME
				WATER	SOIL	AIR	SLUDGE	HCl	HNO ₃	H ₂ SO ₄	NaOH	
44790	FRESH WATER	1	1 PLASTIC									2/17/16 5:55PM
781	BRINE WATER	1	1 PLASTIC									2/17/16 6:00PM

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"/>	PCBs 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, PH, TDS
<input checked="" type="checkbox"/>	Dissolved Sodium

Turn Around Time if different from standard

Relinquished by: PRICE LLC Date: 2/18/16 10:30AM
 LESTER W PRICE JR
 Received by: BFC Date: 2-18-16 1:02
 INST OBS COR
 17 17 17

Relinquished by: PRICE LLC Date: 2-20-16 10:00
 Received by: Marzell TA Date: 2-20-16 10:00
 INST OBS COR
 17 17 17

Relinquished by: PRICE LLC Date: _____
 Received by: _____
 INST OBS COR

REMARKS: COC #2

LAB USE ONLY

Intact Y/L/N
 Headspace Y/N/NA

Log-In-Review

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

Carrier # 25 IT 41103

Summary 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: 16022211



Project Location: Tatum, NM
Project Name: Brine Well-Tatum

Report Corrections (Work Order 16022211)

- 3/24/16: Added Chloride, pH, TDS and Density to sample 414781.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
414780	Fresh Water	water	2016-02-17	17:55	2016-02-18
414781	Brine Water	water	2016-02-17	18:00	2016-02-18

Sample: 414780 - Fresh Water

Param	Flag	Result	Units	RL
Chloride		76.6	mg/L	2.5
Density		0.985	g/ml	
pH		7.93	s.u.	2
Total Dissolved Solids		662	mg/L	2.5

Sample: 414781 - Brine Water

Param	Flag	Result	Units	RL
Chloride	H	12600	mg/L	2.5
Density	I	0.996	g/ml	
Dissolved Sodium		6760	mg/L	1
pH		7.29	s.u.	2

continued ...

¹Analyzed out of hold time.

sample 414781 continued ...

Param	Flag	Result	Units	RL
Total Dissolved Solids		26700	mg/L	2.5

Summary Report

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

Report Date: June 5, 2015

Work Order: 15050506



Project Location: Tatum NM
Project Name: Tatum Fresh & Brine Well

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
392449	Fresh	water	2015-04-27	14:10	2015-05-01
392450	Brine	water	2015-04-27	14:20	2015-05-01

Sample: 392449 - Fresh

Param	Flag	Result	Units	RL
Chloride		82.8	mg/L	2.5
pH		8.32	s.u.	2
Specific Gravity		0.9923	g/ml	
Total Dissolved Solids		633	mg/L	2.5

Sample: 392450 - Brine

Param	Flag	Result	Units	RL
Chloride		20500	mg/L	2.5
Dissolved Sodium		12500	mg/L	1
pH		6.05	s.u.	2
Specific Gravity		1.018	g/ml	
Total Dissolved Solids		34100	mg/L	2.5



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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: June 5, 2015

Work Order: 15050506



Project Location: Tatum NM
Project Name: Tatum Fresh & Brine Well
Project Number: Tatum Fresh & 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
392449	Fresh	water	2015-04-27	14:10	2015-05-01
392450	Brine	water	2015-04-27	14:20	2015-05-01

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 18 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

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Case Narrative

Samples for project Tatum Fresh & Brine Well were received by TraceAnalysis, Inc. on 2015-05-01 and assigned to work order 15050506. Samples for work order 15050506 were received intact at a temperature of 1.4 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	102846	2015-05-14 at 09:30	121554	2015-05-14 at 10:32
Na, Dissolved	S 6010C	103232	2015-06-04 at 14:09	122047	2015-06-05 at 13:17
pH	SM 4500-H+	102649	2015-05-06 at 16:48	121318	2015-05-06 at 16:51
Specific Gravity	ASTM D1429-95	102660	2015-05-07 at 10:00	121329	2015-05-07 at 10:10
TDS	SM 2540C	102686	2015-05-07 at 17:44	121355	2015-05-07 at 17:46
TDS	SM 2540C	102742	2015-05-11 at 19:20	121420	2015-05-11 at 19:21

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 15050506 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: 392449 - Fresh

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 121554 Date Analyzed: 2015-05-14 Analyzed By: RL
Prep Batch: 102846 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,3,4,5	82.8	mg/L	5	2.50

Sample: 392449 - Fresh

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 121318 Date Analyzed: 2015-05-06 Analyzed By: HJ
Prep Batch: 102649 Sample Preparation: Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,5	8.32	s.u.	1	2.00

Sample: 392449 - Fresh

Laboratory: Lubbock
Analysis: Specific Gravity Analytical Method: ASTM D1429-95 Prep Method: N/A
QC Batch: 121329 Date Analyzed: 2015-05-07 Analyzed By: CF
Prep Batch: 102660 Sample Preparation: 2015-05-07 Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Specific Gravity			0.9923	g/ml	1	0.000

Sample: 392449 - Fresh

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 121420 Date Analyzed: 2015-05-11 Analyzed By: HJ
Prep Batch: 102742 Sample Preparation: Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,5	633	mg/L	10	2.50

Sample: 392450 - Brine

Laboratory: Lubbock
 Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
 QC Batch: 121554 Date Analyzed: 2015-05-14 Analyzed By: RL
 Prep Batch: 102846 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,3,4,5	20500	mg/L	500	2.50

Sample: 392450 - Brine

Laboratory: Lubbock
 Analysis: Na, Dissolved Analytical Method: S 6010C Prep Method: S 3005A
 QC Batch: 122047 Date Analyzed: 2015-06-05 Analyzed By: RR
 Prep Batch: 103232 Sample Preparation: 2015-06-04 Prepared By: RR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium		2,3,4,5	12500	mg/L	100	1.00

Sample: 392450 - Brine

Laboratory: Lubbock
 Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
 QC Batch: 121318 Date Analyzed: 2015-05-06 Analyzed By: HJ
 Prep Batch: 102649 Sample Preparation: Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,5	6.05	s.u.	1	2.00

Report Date: June 5, 2015
Tatum Fresh & Brine Well

Work Order: 15050506
Tatum Fresh & Brine Well

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Tatum NM

Sample: 392450 - Brine

Laboratory: Lubbock
Analysis: Specific Gravity Analytical Method: ASTM D1429-95 Prep Method: N/A
QC Batch: 121329 Date Analyzed: 2015-05-07 Analyzed By: CF
Prep Batch: 102660 Sample Preparation: 2015-05-07 Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Specific Gravity			1.018	g/ml	1	0.000

Sample: 392450 - Brine

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 121355 Date Analyzed: 2015-05-07 Analyzed By: HJ
Prep Batch: 102686 Sample Preparation: Prepared By: HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,5	34100	mg/L	1000	2.50

Method Blanks

Method Blank (1) QC Batch: 121329

QC Batch: 121329 Date Analyzed: 2015-05-07 Analyzed By: CF
Prep Batch: 102660 QC Preparation: 2015-05-07 Prepared By: CF

Parameter	Flag	Cert	MDL Result	Units	RL
Specific Gravity			0.9884	g/ml	

Method Blank (1) QC Batch: 121355

QC Batch: 121355 Date Analyzed: 2015-05-07 Analyzed By: HJ
Prep Batch: 102686 QC Preparation: 2015-05-07 Prepared By: HJ

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: 121420

QC Batch: 121420 Date Analyzed: 2015-05-11 Analyzed By: HJ
Prep Batch: 102742 QC Preparation: 2015-05-11 Prepared By: HJ

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: 121554

QC Batch: 121554 Date Analyzed: 2015-05-14 Analyzed By: RL
Prep Batch: 102846 QC Preparation: 2015-05-14 Prepared By: RL

Report Date: June 5, 2015
Tatum Fresh & Brine Well

Work Order: 15050506
Tatum Fresh & Brine Well

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Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1,2,3,4,5	0.973	mg/L	2.5

Method Blank (1) QC Batch: 122047

QC Batch: 122047
Prep Batch: 103232

Date Analyzed: 2015-06-05
QC Preparation: 2015-06-04

Analyzed By: RR
Prepared By: PM

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

Duplicates

Duplicates (1) Duplicated Sample: 392489

QC Batch: 121318 Date Analyzed: 2015-05-06 Analyzed By: HJ
Prep Batch: 102649 QC Preparation: 2015-05-06 Prepared By: HJ

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH	1,2,4,5	9.09	9.19	s.u.	1	1	20

Duplicates (1) Duplicated Sample: 392450

QC Batch: 121329 Date Analyzed: 2015-05-07 Analyzed By: CF
Prep Batch: 102660 QC Preparation: 2015-05-07 Prepared By: CF

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Specific Gravity		1.008	1.018	g/ml	1	1	200

Duplicates (1) Duplicated Sample: 392450

QC Batch: 121355 Date Analyzed: 2015-05-07 Analyzed By: HJ
Prep Batch: 102686 QC Preparation: 2015-05-07 Prepared By: HJ

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	1,2,3,4,5	32400	34100	mg/L	1000	5	10

Duplicates (1) Duplicated Sample: 392783

QC Batch: 121420 Date Analyzed: 2015-05-11 Analyzed By: HJ
Prep Batch: 102742 QC Preparation: 2015-05-11 Prepared By: HJ

Report Date: June 5, 2015
Tatum Fresh & Brine Well

Work Order: 15050506
Tatum Fresh & Brine Well

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Tatum NM

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	1,2,3,4,5	38.0	39.0	mg/L	10	3	10

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,2,3,4,5	25.3	mg/L	1	25.0	0.973	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	0.973	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: 122047
 Prep Batch: 103232

Date Analyzed: 2015-06-05
 QC Preparation: 2015-06-04

Analyzed By: RR
 Prepared By: PM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Sodium		2,3,4,5	56.8	mg/L	1	52.5	<0.0197	108	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	54.4	mg/L	1	52.5	<0.0197	104	85 - 115	4	20

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

Report Date: June 5, 2015
Tatum Fresh & Brine Well

Work Order: 15050506
Tatum Fresh & Brine Well

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Standard (ICV-1)

QC Batch: 122047

Date Analyzed: 2015-06-05

Analyzed By: RR

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	52.5	103	90 - 110	2015-06-05

Standard (CCV-1)

QC Batch: 122047

Date Analyzed: 2015-06-05

Analyzed By: RR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Sodium		2,3,4,5	mg/L	51.0	50.5	99	90 - 110	2015-06-05

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		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.

LAB Order ID # 15050506

TraceAnalysis, Inc.

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

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

email: lab@traceanalysis.com

Company Name: PRICE LLC		Phone #: 505-892-6643	
Address: 312 Encanto Rd, Ridge County NE		Fax #: 505-892-6643	
Contact Person: LESTER WAYNE PRICE JR		E-mail: waynice23@hotmail.com	
Invoice to: (if different from above) WASSERHUND INC. P.O. 2140 Lovington NM 88260			
Project #: NA		Project Name: TATUM FRESH & BRINE WELL	
Project Location (including state): TATUM NM		Sampler Signature: LUPPER	

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
392449	FRESH	1	1 PLASTIC	X						X				4/27/15	2:10PM
450	BRINE	1	1 PLASTIC	X						X				4/27/15	2:20PM

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 Volatiles	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	CHLORIDES PH, SR, TOS	DISSOLVED SODIUM	
																					X	X

Relinquished by: Lester Wayne Price Jr	Company: PRICE LLC	Date: 5/11/15	Time: 4:00PM	Received by: Billy Bender	Company: B+C	Date: 5-1-15	Time: 4:17PM	INST: 4C	OBS: 0	COR: 0
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	INST:	OBS:	COR:
Relinquished by:	Company:	Date:	Time:	Received by: BC TA	Company:	Date: 5/5/15	Time: 9:15	INST: 139	OBS: 139	COR: 139

REMARKS: COC #1

LAB USE ONLY

Inst: Y, N
Headspace: Y, N, (NA)

Log-in-Review:

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

Carrier # LS 25437999



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: August 19, 2015

Work Order: 15081114



Project Location: Tatum NM
 Project Name: Tatum Fresh & Brine Well
 Project Number: Tatum Fresh & 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
401722	Fresh	water	2015-07-08	17:30	2015-08-09
401723	Brine	water	2015-07-08	17:40	2015-08-09

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

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QC Batch 123992 - Duplicate (1)	9
QC Batch 124118 - Duplicate (1)	9
Laboratory Control Spikes	10
QC Batch 124020 - LCS (1)	10
QC Batch 124118 - LCS (1)	10
QC Batch 124129 - LCS (1)	10
Matrix Spikes	12
QC Batch 124020 - MS (1)	12
QC Batch 124129 - MS (1)	12
Calibration Standards	13
QC Batch 123931 - CCV (1)	13
QC Batch 124020 - ICV (1)	13
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Case Narrative

Samples for project Tatum Fresh & Brine Well were received by TraceAnalysis, Inc. on 2015-08-09 and assigned to work order 15081114. Samples for work order 15081114 were received intact at a temperature of 30.0 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	104957	2015-08-17 at 11:00	124129	2015-08-17 at 12:10
Na, Dissolved	S 6010C	104805	2015-08-12 at 14:05	124020	2015-08-13 at 16:07
pH	SM 4500-H+	104784	2015-08-11 at 17:18	123931	2015-08-11 at 17:19
Specific Gravity	ASTM D1429-95	104834	2015-08-13 at 10:45	123992	2015-08-13 at 10:50
TDS	SM 2540C	104944	2015-08-17 at 16:36	124118	2015-08-17 at 16:37

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 15081114 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: 401722 - Fresh

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 124129 Date Analyzed: 2015-08-17 Analyzed By: RL
Prep Batch: 104957 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	B,H	1,2,3,4,5	73.5	mg/L	5	2.50

Sample: 401722 - Fresh

Laboratory: Lubbock
Analysis: Na, Dissolved Analytical Method: S 6010C Prep Method: S 3005A
QC Batch: 124020 Date Analyzed: 2015-08-13 Analyzed By: RR
Prep Batch: 104805 Sample Preparation: 2015-08-12 Prepared By: RR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium		2,3,4,5	120	mg/L	1	1.00

Sample: 401722 - Fresh

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,5	8.04	s.u.	1	2.00

Sample: 401722 - Fresh

Laboratory: Lubbock
Analysis: Specific Gravity Analytical Method: ASTM D1429-95 Prep Method: N/A
QC Batch: 123992 Date Analyzed: 2015-08-13 Analyzed By: CF
Prep Batch: 104834 Sample Preparation: Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Specific Gravity			1.000	g/ml	1	0.000

Report Date: August 19, 2015
Tatum Fresh & Brine Well

Work Order: 15081114
Tatum Fresh & Brine Well

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Tatum NM

Sample: 401722 - Fresh

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,5	669	mg/L	10	2.50

Sample: 401723 - Brine

Laboratory: Lubbock
Analysis: Na, Dissolved
QC Batch: 124020
Prep Batch: 104805

Analytical Method: S 6010C
Date Analyzed: 2015-08-13
Sample Preparation: 2015-08-12

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium		2,3,4,5	9700	mg/L	1	1.00

Method Blanks

Method Blank (1) QC Batch: 123992

QC Batch: 123992 Date Analyzed: 2015-08-13 Analyzed By: CF
Prep Batch: 104834 QC Preparation: 2015-08-13 Prepared By: CF

Parameter	Flag	Cert	MDL Result	Units	RL
Specific Gravity			0.9856	g/ml	

Method Blank (1) QC Batch: 124020

QC Batch: 124020 Date Analyzed: 2015-08-13 Analyzed By: RR
Prep Batch: 104805 QC Preparation: 2015-08-12 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: 124118

QC Batch: 124118 Date Analyzed: Analyzed By:
Prep Batch: QC Preparation: Prepared By:

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: 124129

QC Batch: 124129 Date Analyzed: 2015-08-17 Analyzed By: RL
Prep Batch: 104957 QC Preparation: 2015-08-17 Prepared By: RL

Report Date: August 19, 2015
Tatum Fresh & Brine Well

Work Order: 15081114
Tatum Fresh & Brine Well

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Tatum NM

Parameter		Flag	Cert	MDL Result	Units	RL
Chloride	B	B	1,2,3,4,5	0.971	mg/L	2.5

Duplicates

Duplicates (1) Duplicated Sample: 401722

QC Batch: 123931
Prep Batch:

Date Analyzed:
QC Preparation:

Analyzed By:
Prepared By:

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH	1,2,4,5	8.05	8.04	s.u.	1	0	20

Duplicates (1) Duplicated Sample: 401722

QC Batch: 123992
Prep Batch: 104834

Date Analyzed: 2015-08-13
QC Preparation: 2015-08-13

Analyzed By: CF
Prepared By: CF

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Specific Gravity		0.9743	1.000	g/ml	1	3	200

Duplicates (1) Duplicated Sample: 401720

QC Batch: 124118
Prep Batch:

Date Analyzed:
QC Preparation:

Analyzed By:
Prepared By:

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	1,2,3,4,5	804	804	mg/L	20	0	10

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 124020
Prep Batch: 104805

Date Analyzed: 2015-08-13
QC Preparation: 2015-08-12

Analyzed By: RR
Prepared By: PM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Sodium		2,3,4,5	51.4	mg/L	1	50.0	<0.0197	103	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	51.0	mg/L	1	50.0	<0.0197	102	85 - 115	1	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: 124118
Prep Batch:

Date Analyzed:
QC Preparation:

Analyzed By:
Prepared By:

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Dissolved Solids		1,2,3,4,5	999	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.	Rec. Limit	RPD	RPD Limit
Total Dissolved Solids		1,2,3,4,5	987	mg/L	10	1000	<25.0	99	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: 124129
Prep Batch: 104957

Date Analyzed: 2015-08-17
QC Preparation: 2015-08-17

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	24.9	mg/L	1	25.0	0.971	96	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	25.1	mg/L	1	25.0	0.971	96	90 - 110	1	20

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

Calibration Standards

Standard (CCV-1)

QC Batch: 123931

Date Analyzed:

Analyzed By:

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	7.06	101	98.6 - 101.4	2015-08-11

Standard (ICV-1)

QC Batch: 124020

Date Analyzed: 2015-08-13

Analyzed By: RR

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	25.5	26.1	102	90 - 110	2015-08-13

Standard (CCV-1)

QC Batch: 124020

Date Analyzed: 2015-08-13

Analyzed By: RR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Sodium		2,3,4,5	mg/L	25.0	23.5	94	90 - 110	2015-08-13

Standard (CCV-1)

QC Batch: 124129

Date Analyzed: 2015-08-17

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	24.5	98	90 - 110	2015-08-17

Report Date: August 19, 2015
Tatum Fresh & Brine Well

Work Order: 15081114
Tatum Fresh & Brine Well

Page Number: 14 of 16
Tatum NM

Standard (CCV-2)

QC Batch: 124129

Date Analyzed: 2015-08-17

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	25.1	100	90 - 110	2015-08-17

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	T104704219-15-11	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.

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 El Paso, Texas 79922
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 1 (800) 378-1296

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

email: lab@traceanalysis.com

Company Name: PRICE LLC
 Address: (Street, City, Zip) RIO RANCHO NM 87124
 312 ENCANTADO RIDGE COUNTY NM
 Contact Person: LESTER WAYNE PRICE JR
 Invoice to: LESTER WAYNE PRICE JR
 (If different from above) WASSERHUND INC. P.O. 2140 LOVINGTON NM 88260
 Project #: NA
 Project Location (including state): TATUM NM LEA COUNTY LUPAK

Phone #: 505-892-6643
 Fax #: 505-892-6643
 E-mail: waprince23@hotmail.com

Project Name: TATUM BRINE WELL
 Sampler Signature: LUPAK

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX			PRESERVATIVE METHOD				SAMPLING TIME	Turn Around Time if different from standard	
				WATER	SOIL	AIR	SLUDGE	HCl	HNO ₃	H ₂ SO ₄			NaOH
40722	FRESH	1	1L PLASTIC	X						X			
723	BRINE	1	1L PLASTIC	X						X			

Relinquished by: LESTER WAYNE PRICE JR
 Company: PRICE LLC
 Date: 7/11/15
 Time: 4:50 PM
 Received by: Dylan Barry
 Company: Brandon Clark
 Date: 8/11/15
 Time: 5:57 PM
 INST: 30
 OBS: 5:57
 COR: 11:30

Relinquished by: PRICE JR
 Company: PRICE LLC
 Date: 7/11/15
 Time: 4:50 PM
 Received by: Dylan Barry
 Company: Brandon Clark
 Date: 8/11/15
 Time: 5:57 PM
 INST: 30
 OBS: 5:57
 COR: 11:30

Relinquished by: PRICE JR
 Company: PRICE LLC
 Date: 7/11/15
 Time: 4:50 PM
 Received by: Dylan Barry
 Company: Brandon Clark
 Date: 8/11/15
 Time: 5:57 PM
 INST: 30
 OBS: 5:57
 COR: 11:30

LAB USE ONLY
 Infect Y/N
 Headspace Y/N/NA
 Log-in-Review

REMARKS:
 COC # 1
 8/13/15 - NOTIFIED WAYNE. ALL TESTS ARE BEYOND THE HOLD TIME EXCEPT THE DRY WEIGHT BASIS REQUIRED TRRP REPORT REQUIRED CHECK IF SPECIAL REPORTING LIMITS ARE NEEDED AT 150 CONFIRMED THE SAMPLING DATE: 8/29/15

Summary Report

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

Report Date: August 19, 2015

Work Order: 15081114



Project Location: Tatum NM
Project Name: Tatum Fresh & Brine Well

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
401722	Fresh	water	2015-07-08	17:30	2015-08-09
401723	Brine	water	2015-07-08	17:40	2015-08-09

Sample: 401722 - Fresh

Param	Flag	Result	Units	RL
Chloride	B,H	73.5	mg/L	2.5
Dissolved Sodium		120	mg/L	1
pH		8.04	s.u.	2
Specific Gravity		1.000	g/ml	
Total Dissolved Solids		669	mg/L	2.5

Sample: 401723 - Brine

Param	Flag	Result	Units	RL
Dissolved Sodium		9700	mg/L	1



6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1296 806-794-1296 FAX 806-794-1298
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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: November 12, 2015

Work Order: 15102712



Project Location: Buckeye & Tatum NM
Project Name: Brine Well 3rd QT. Sample
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
407093	BW-22 Tatum Fresh	water	2015-10-23	13:15	2015-10-26
407094	BW-22 Tatum Brine	water	2015-10-23	13:20	2015-10-26
407095	BW-4 Buckeye Fresh	water	2015-10-23	17:55	2015-10-26
407096	BW-4 Buckeye Brine	water	2015-10-23	18:00	2015-10-26

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
Brian Pellam, Operations Manager

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Case Narrative

Samples for project Brine Well 3rd QT. Sample were received by TraceAnalysis, Inc. on 2015-10-26 and assigned to work order 15102712. Samples for work order 15102712 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	106703	2015-11-04 at 13:00	126115	2015-11-04 at 13:45
Density	ASTM D854-92	106620	2015-11-02 at 13:10	126018	2015-11-02 at 13:15
Na, Dissolved	S 6010C	106726	2015-11-06 at 12:43	126288	2015-11-12 at 10:10
pH	SM 4500-H+	106519	2015-10-27 at 17:30	125907	2015-10-27 at 17:31
TDS	SM 2540C	106564	2015-10-29 at 12:04	126012	2015-10-29 at 12:00
TDS	SM 2540C	106671	2015-11-03 at 16:30	126079	2015-11-03 at 16:31

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 15102712 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: 407093 - BW-22 Tatum Fresh

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 126115 Date Analyzed: 2015-11-04 Analyzed By: RL
Prep Batch: 106703 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,3,4,6	76.6	mg/L	5	2.50

Sample: 407093 - BW-22 Tatum Fresh

Laboratory: Lubbock
Analysis: Density Analytical Method: ASTM D854-92 Prep Method: N/A
QC Batch: 126018 Date Analyzed: 2015-11-02 Analyzed By: CF
Prep Batch: 106620 Sample Preparation: Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Density			0.978	g/ml	1	0.00

Sample: 407093 - BW-22 Tatum Fresh

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 125907 Date Analyzed: 2015-10-27 Analyzed By: LQ
Prep Batch: 106519 Sample Preparation: Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,6	7.79	s.u.	1	2.00

Sample: 407093 - BW-22 Tatum Fresh

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 126012 Date Analyzed: 2015-10-29 Analyzed By: LQ
Prep Batch: 106564 Sample Preparation: Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,6	659	mg/L	10	2.50

Sample: 407094 - BW-22 Tatum Brine

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 126115 Date Analyzed: 2015-11-04 Analyzed By: RL
Prep Batch: 106703 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,3,4,6	18000	mg/L	500	2.50

Sample: 407094 - BW-22 Tatum Brine

Laboratory: Lubbock
Analysis: Density Analytical Method: ASTM D854-92 Prep Method: N/A
QC Batch: 126018 Date Analyzed: 2015-11-02 Analyzed By: CF
Prep Batch: 106620 Sample Preparation: Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Density			1.02	g/ml	1	0.00

Sample: 407094 - BW-22 Tatum Brine

Laboratory: Lubbock
Analysis: Na, Dissolved Analytical Method: S 6010C Prep Method: S 3005A
QC Batch: 126288 Date Analyzed: 2015-11-12 Analyzed By: RR
Prep Batch: 106726 Sample Preparation: 2015-11-06 Prepared By: RR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium		2,3,4,6	12500	mg/L	100	1.00

Report Date: November 12, 2015
BW-4 & BW-22

Work Order: 15102712
Brine Well 3rd QT. Sample

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Buckeye & Tatum NM

Sample: 407094 - BW-22 Tatum Brine

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 125907 Date Analyzed: 2015-10-27 Analyzed By: LQ
Prep Batch: 106519 Sample Preparation: Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,6	6.99	s.u.	1	2.00

Sample: 407094 - BW-22 Tatum Brine

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 126012 Date Analyzed: 2015-10-29 Analyzed By: LQ
Prep Batch: 106564 Sample Preparation: Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,6	37000	mg/L	1000	2.50

Sample: 407095 - BW-4 Buckeye Fresh

Laboratory: Lubbock
Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 126115 Date Analyzed: 2015-11-04 Analyzed By: RL
Prep Batch: 106703 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,3,4,6	280	mg/L	10	2.50

Sample: 407095 - BW-4 Buckeye Fresh

Laboratory: Lubbock
Analysis: Density Analytical Method: ASTM D854-92 Prep Method: N/A
QC Batch: 126018 Date Analyzed: 2015-11-02 Analyzed By: CF
Prep Batch: 106620 Sample Preparation: Prepared By: CF

continued . . .

sample 407095 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Density			0.997	g/ml	1	0.00

Sample: 407095 - BW-4 Buckeye Fresh

Laboratory: Lubbock
 Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
 QC Batch: 125907 Date Analyzed: 2015-10-27 Analyzed By: LQ
 Prep Batch: 106519 Sample Preparation: Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,6	7.61	s.u.	1	2.00

Sample: 407095 - BW-4 Buckeye Fresh

Laboratory: Lubbock
 Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
 QC Batch: 126012 Date Analyzed: 2015-10-29 Analyzed By: LQ
 Prep Batch: 106564 Sample Preparation: Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,6	868	mg/L	20	2.50

Sample: 407096 - BW-4 Buckeye Brine

Laboratory: Lubbock
 Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
 QC Batch: 126115 Date Analyzed: 2015-11-04 Analyzed By: RL
 Prep Batch: 106703 Sample Preparation: Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,3,4,6	176000	mg/L	5000	2.50

Report Date: November 12, 2015
BW-4 & BW-22

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Brine Well 3rd QT. Sample

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Buckeye & Tatum NM

Sample: 407096 - BW-4 Buckeye Brine

Laboratory: Lubbock
Analysis: Density Analytical Method: ASTM D854-92 Prep Method: N/A
QC Batch: 126018 Date Analyzed: 2015-11-02 Analyzed By: CF
Prep Batch: 106620 Sample Preparation: Prepared By: CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Density			1.18	g/ml	1	0.00

Sample: 407096 - BW-4 Buckeye Brine

Laboratory: Lubbock
Analysis: Na, Dissolved Analytical Method: S 6010C Prep Method: S 3005A
QC Batch: 126288 Date Analyzed: 2015-11-12 Analyzed By: RR
Prep Batch: 106726 Sample Preparation: 2015-11-06 Prepared By: RR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium		2,3,4,6	108000	mg/L	1000	1.00

Sample: 407096 - BW-4 Buckeye Brine

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 125907 Date Analyzed: 2015-10-27 Analyzed By: LQ
Prep Batch: 106519 Sample Preparation: Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,6	6.76	s.u.	1	2.00

Sample: 407096 - BW-4 Buckeye Brine

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 126079 Date Analyzed: 2015-11-03 Analyzed By: LQ
Prep Batch: 106671 Sample Preparation: Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,6	310000	mg/L	2000	2.50

Method Blanks

Method Blank (1) QC Batch: 126012

QC Batch: 126012 Date Analyzed: 2015-10-29 Analyzed By: LQ
Prep Batch: 106564 QC Preparation: 2015-10-29 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: 126018

QC Batch: 126018 Date Analyzed: 2015-11-02 Analyzed By: CF
Prep Batch: 106620 QC Preparation: 2015-11-02 Prepared By: CF

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

Method Blank (1) QC Batch: 126079

QC Batch: 126079 Date Analyzed: 2015-11-03 Analyzed By: LQ
Prep Batch: 106671 QC Preparation: 2015-11-03 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: 126115

QC Batch: 126115 Date Analyzed: 2015-11-04 Analyzed By: RL
Prep Batch: 106703 QC Preparation: 2015-11-04 Prepared By: RL

Report Date: November 12, 2015
BW-4 & BW-22

Work Order: 15102712
Brine Well 3rd QT. Sample

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Buckeye & Tatum NM

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

Method Blank (1) QC Batch: 126288

QC Batch: 126288
Prep Batch: 106726

Date Analyzed: 2015-11-12
QC Preparation: 2015-11-06

Analyzed By: RR
Prepared By: PM

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

Duplicates

Duplicates (1) Duplicated Sample: 406966

QC Batch: 125907 Date Analyzed: 2015-10-27 Analyzed By: LQ
Prep Batch: 106519 QC Preparation: 2015-10-27 Prepared By: LQ

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH	1,2,4,6	6.95	6.79	s.u.	1	2	20

Duplicates (1) Duplicated Sample: 407191

QC Batch: 126012 Date Analyzed: 2015-10-29 Analyzed By: LQ
Prep Batch: 106564 QC Preparation: 2015-10-29 Prepared By: LQ

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	1,2,3,4,6	3320	3180	mg/L	50	4	10

Duplicates (1) Duplicated Sample: 407096

QC Batch: 126018 Date Analyzed: 2015-11-02 Analyzed By: CF
Prep Batch: 106620 QC Preparation: 2015-11-02 Prepared By: CF

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Density		1.19	1.18	g/ml	1	1	20

Duplicates (1) Duplicated Sample: 407287

QC Batch: 126079 Date Analyzed: 2015-11-03 Analyzed By: LQ
Prep Batch: 106671 QC Preparation: 2015-11-03 Prepared By: LQ

Report Date: November 12, 2015
BW-4 & BW-22

Work Order: 15102712
Brine Well 3rd QT. Sample

Page Number: 13 of 20
Buckeye & Tatum NM

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	1,2,3,4,6	1190	1180	mg/L	20	1	10

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,2,3,4,6	24.7	mg/L	1	25.0	<0.323	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.	Rec. Limit	RPD	RPD Limit
Chloride		1,2,3,4,6	24.9	mg/L	1	25.0	<0.323	100	90 - 110	1	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: 126288
 Prep Batch: 106726

Date Analyzed: 2015-11-12
 QC Preparation: 2015-11-06

Analyzed By: RR
 Prepared By: PM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Sodium		2,3,4,6	53.0	mg/L	1	52.5	<0.0197	101	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	53.2	mg/L	1	52.5	<0.0197	101	85 - 115	0	20

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

Report Date: November 12, 2015
BW-4 & BW-22

Work Order: 15102712
Brine Well 3rd QT. Sample

Page Number: 18 of 20
Buckeye & Tatum NM

Standard (CCV-1)

QC Batch: 126288

Date Analyzed: 2015-11-12

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	27.5	27.8	101	90 - 110	2015-11-12

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.

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 Carrollton, Texas 75006
 Tel (972) 242-7750
 Fax (575) 392-7561
 Brandon & Clark
 3403 Industrial Blvd.
 Hobbs, NM 88240
 Tel (575) 392-7561
 Fax (575) 392-4508

Company Name: **WASSERHUND c/o GANDY CORP** Phone #: **575-398-9860**
 Address: **PO 2140 LOUINGTON NM 88260** Fax #:
 Contact Person: **WAYNE PRICE - PRICE LLC 505-715-2809** E-mail: **WAYNE PRICE@EARTHLINK.NET**
 Invoice to: **BRINE WELL 3 RGT SAMPLE**
 Project #: **BW-4 + BW-22** Project Name:
 Project Location (including state): **BUCKEYE & TATUM NM** Sampler Signature:

ANALYSIS REQUEST
 (Circle or Specify Method No.)

LAB #	FIELD CODE	# CONTAINERS	VOLUME / AMOUNT	MATRIX	PRESERVATIVE METHOD	SAMPLING DATE	SAMPLING TIME	MTBE 8021 / 602 / 8260 / 624	BTEX 8021 / 602 / 8260 / 624	TPH 418.1 / TX1005 / TX1005 EX(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	RCI	GC/MS Vol. 8260 / 624	GC/MS Semi. Vol. 8270 / 625	PCBs 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	CHLORIDE	DENSITY	PH	705	Turn Around Time if different from standard				
097013	BW-22 TATUM	1	1000 mL	WATER	X	10-23-15	1:15A																											
0944	" - BRINE	1	"	WATER	X	"	1:30P																											
0955	BW-4 BUCKEYE	1	"	WATER	X	"	5:55P																											
095096	BUCKEYE - FRESH	1	"	WATER	X	"	6:00P																											
0946	" - BRINE	1	"	WATER	X	"																												

LAB USE ONLY

Received by: **PLS BTC** Company: **BTC** Date: **10-26-15** Time: **8:30 AM**
 INST: **04** OBS: **0** COR: **0**
 Inlet: **Y** N: **N**

Received by: **PLS** Company: **PLS** Date: **10-27-15** Time: **9:57 AM**
 INST: **123** OBS: **0** COR: **0**

Received by: **PLS** Company: **PLS** Date: **10-27-15** Time: **9:57 AM**
 INST: **123** OBS: **0** COR: **0**

HeadSpace: **Y** / **N** / **N/A**
 Log-in-Review: **Y** / **N** / **N/A**

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

Carrier # **SZS853803**

Summary Report

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

Report Date: November 12, 2015

Work Order: 15102712



Project Location: Buckeye & Tatum NM
 Project Name: Brine Well 3rd QT. Sample
 Project Number: BW-4 & BW-22

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
407093	BW-22 Tatum Fresh	water	2015-10-23	13:15	2015-10-26
407094	BW-22 Tatum Brine	water	2015-10-23	13:20	2015-10-26
407095	BW-4 Buckeye Fresh	water	2015-10-23	17:55	2015-10-26
407096	BW-4 Buckeye Brine	water	2015-10-23	18:00	2015-10-26

Sample: 407093 - BW-22 Tatum Fresh

Param	Flag	Result	Units	RL
Chloride		76.6	mg/L	2.5
Density		0.978	g/ml	
pH		7.79	s.u.	2
Total Dissolved Solids		659	mg/L	2.5

Sample: 407094 - BW-22 Tatum Brine

Param	Flag	Result	Units	RL
Chloride		18000	mg/L	2.5
Density		1.02	g/ml	
Dissolved Sodium		12500	mg/L	1
pH		6.99	s.u.	2
Total Dissolved Solids		37000	mg/L	2.5

Sample: 407095 - BW-4 Buckeye Fresh

Param	Flag	Result	Units	RL
Chloride		280	mg/L	2.5
Density		0.997	g/ml	
pH		7.61	s.u.	2
Total Dissolved Solids		868	mg/L	2.5

Sample: 407096 - BW-4 Buckeye Brine

Param	Flag	Result	Units	RL
Chloride		176000	mg/L	2.5
Density		1.18	g/ml	
Dissolved Sodium		108000	mg/L	1
pH		6.76	s.u.	2
Total Dissolved Solids		310000	mg/L	2.5



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 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

(Corrected Report)

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

Report Date: March 24, 2016

Work Order: 16022211



Project Location: Tatum, NM
 Project Name: Brine Well-Tatum
 Project Number: Brine Well-Tatum

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
414780	Fresh Water	water	2016-02-17	17:55	2016-02-18
414781	Brine Water	water	2016-02-17	18:00	2016-02-18

Report Corrections (Work Order 16022211)

- 3/24/16: Added Chloride, pH, TDS and Density to sample 414781.

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

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Case Narrative

Samples for project Brine Well-Tatum were received by TraceAnalysis, Inc. on 2016-02-18 and assigned to work order 16022211. Samples for work order 16022211 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 16022211 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: 414780 - 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	76.6	mg/L	10	2.50

Sample: 414780 - 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			0.985	g/ml	1	0.00

Sample: 414780 - 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	7.93	s.u.	1	2.00

Sample: 414780 - 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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,5	662	mg/L	10	2.50

Sample: 414781 - 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	12600	mg/L	500	2.50

Sample: 414781 - 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	0.996	g/ml	1	0.00

Sample: 414781 - 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	6760	mg/L	1000	1.00

Report Date: March 24, 2016
Brine Well-Tatum

Work Order: 16022211
Brine Well-Tatum

Page Number: 8 of 20
Tatum, NM

Sample: 414781 - Brine Water

Laboratory: Lubbock
Analysis: pH Analytical Method: SM 4500-H+ Prep Method: N/A
QC Batch: 129028 Date Analyzed: 2016-03-23 Analyzed By: LQ
Prep Batch: 109282 Sample Preparation: 2016-03-23 Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,5	7.29	s.u.	1	2.00

Sample: 414781 - Brine Water

Laboratory: Lubbock
Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 129044 Date Analyzed: 2016-03-23 Analyzed By: LQ
Prep Batch: 109281 Sample Preparation: 2016-03-23 Prepared By: LQ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,5	26700	mg/L	1000	2.50

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-Tatum

Work Order: 16022211
Brine Well-Tatum

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Tatum, NM

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-Tatum

Work Order: 16022211
Brine Well-Tatum

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Tatum, NM

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

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 128362
 Prep Batch: 108686

Date Analyzed: 2016-02-22
 QC Preparation: 2016-02-22

Analyzed By: RR
 Prepared By: PM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Sodium		2,3,4,5	55.1	mg/L	1	52.5	<0.0197	105	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	52.7	mg/L	1	52.5	<0.0197	100	85 - 115	4	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: 128419
 Prep Batch: 108743

Date Analyzed: 2016-02-23
 QC Preparation: 2016-02-23

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	25.8	mg/L	1	25.0	<0.323	103	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	25.7	mg/L	1	25.0	<0.323	103	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: 128463
 Prep Batch: 108734

Date Analyzed: 2016-02-23
 QC Preparation: 2016-02-23

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	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.

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 # 1602221

Page

Trace Analysis, Inc.

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
Fax (432) 689-6313

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 (575) 392-
Fax (575) 392-4-

email: lab@traceanalysis.com

Company Name: PRICE LLC Phone #: 832 657 4873
 Address: (Street, City, Zip) R-10 TATUM NM
 312 ENCANTADO RIDGE CT NE 87124
 Contact Person: LESTER WAYNE PRICE JR E-mail: wnprice23@hotmail.com
 Invoice to: (if different from above) JOAN DY CORP ORATION
 Project #: NA Project Name: BRINE WELL
 Sampler Signature: LWPJR

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX			PRESERVATIVE METHOD					SAMPLING TIME
				WATER	SOIL	AIR	SLUDGE	HCl	HNO ₃	H ₂ SO ₄	NaOH	
44790	FRESH WATER	1	1 plastic									2/17/16 5:55PM
781	BRINE WATER	1	1 plastic									2/17/16 6:00PM

ANALYSIS REQUEST (Circle or Specify Method No.)

MTBE 8021 / 602 / 8260 / 624	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	PCBs 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	Na Chloride, Density, pH, TDS	Dissolved Sodium
------------------------------	---------------------------	----------------	---	-------------------------------------	----------------	---------------------	-----------------	-----	-----------------------	-----------------------------	-----------------	-----------------------	--------------	------------------	---	------------------------	-------------------------------	------------------

Relinquished by: PRICE LLC Date: 2/18/16 10:30AM
 LESTER W PRICE JR
 Received by: BFC Date: 2-18-16 1:02
 Received by: Marzell TA Date: 2-20-16 10:00

INST: 17
OBS: 17
COR: 17

REMARKS: COC #2

LAB USE ONLY

Intact Y/L/N
Headspace Y/N/NA

Log-In-Review
 Dry Weight Basis Required
 TRRP Report Required
 Check if Special Reporting Limits Are Needed

Summary 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: 16022211



Project Location: Tatum, NM
Project Name: Brine Well-Tatum

Report Corrections (Work Order 16022211)

- 3/24/16: Added Chloride, pH, TDS and Density to sample 414781.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
414780	Fresh Water	water	2016-02-17	17:55	2016-02-18
414781	Brine Water	water	2016-02-17	18:00	2016-02-18

Sample: 414780 - Fresh Water

Param	Flag	Result	Units	RL
Chloride		76.6	mg/L	2.5
Density		0.985	g/ml	
pH		7.93	s.u.	2
Total Dissolved Solids		662	mg/L	2.5

Sample: 414781 - Brine Water

Param	Flag	Result	Units	RL
Chloride	H	12600	mg/L	2.5
Density	I	0.996	g/ml	
Dissolved Sodium		6760	mg/L	1
pH		7.29	s.u.	2

continued ...

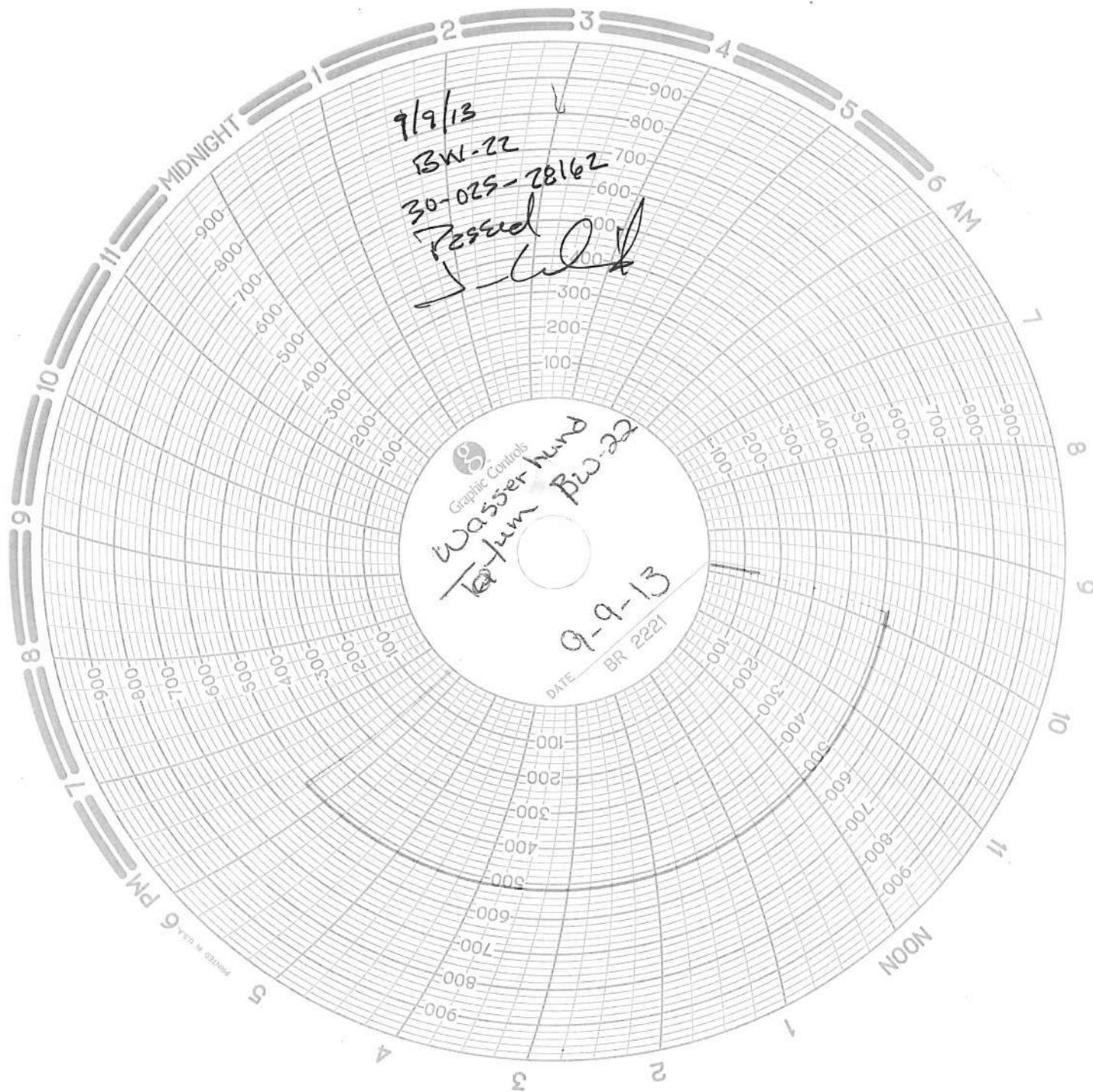
¹Analyzed out of hold time.

sample 414781 continued ...

Param	Flag	Result	Units	RL
Total Dissolved Solids		26700	mg/L	2.5

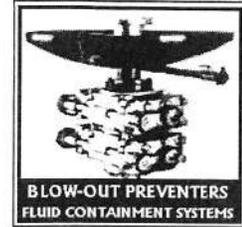
Appendix “D”

- 2013 MIT Chart



D & L Meters & Instrument Service, Inc.

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

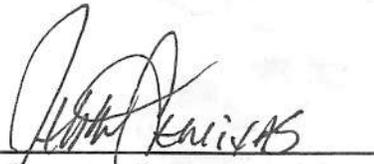


Friday, June 28, 2013

Certification of Pressure Recorder Test:

Company: Celero Energy
Unit: N/A
Model: 8" Bristols
Pressure Rating: 1,000#
Serial #: 3914

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



Jesse Arenivas, Technician

BLOW-OUT PREVENTERS
FLUID CONTAINMENT SYSTEMS

Appendix “E”

- AOR Well Status List
- AOR Plot Plan

2015 BW-22 AOR Review-- Well Status List
 up-dated Apr 5, 2016

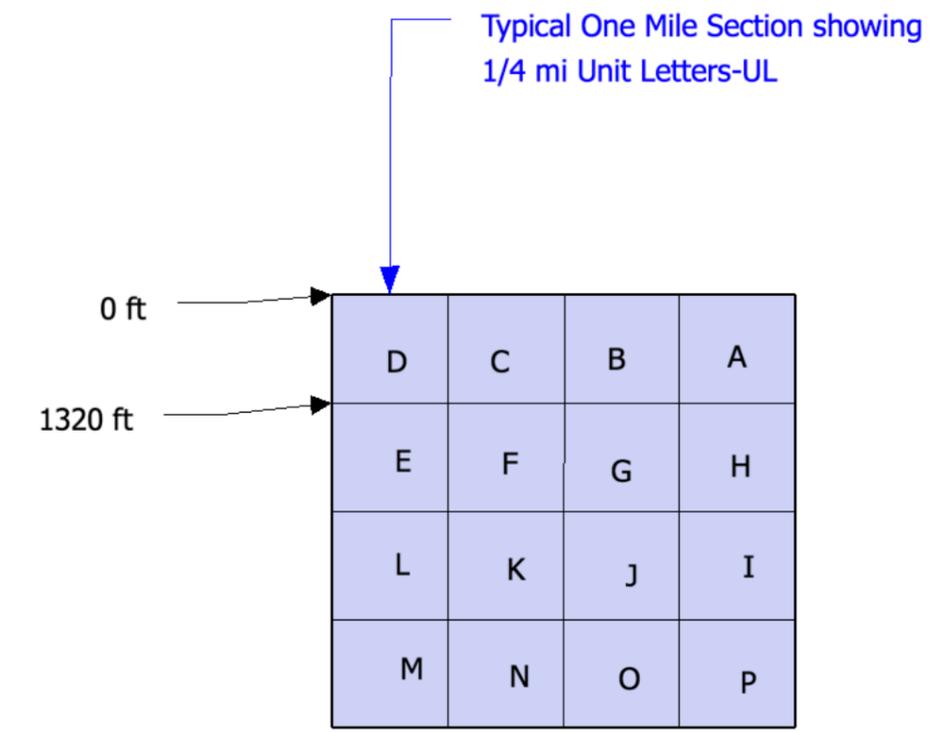
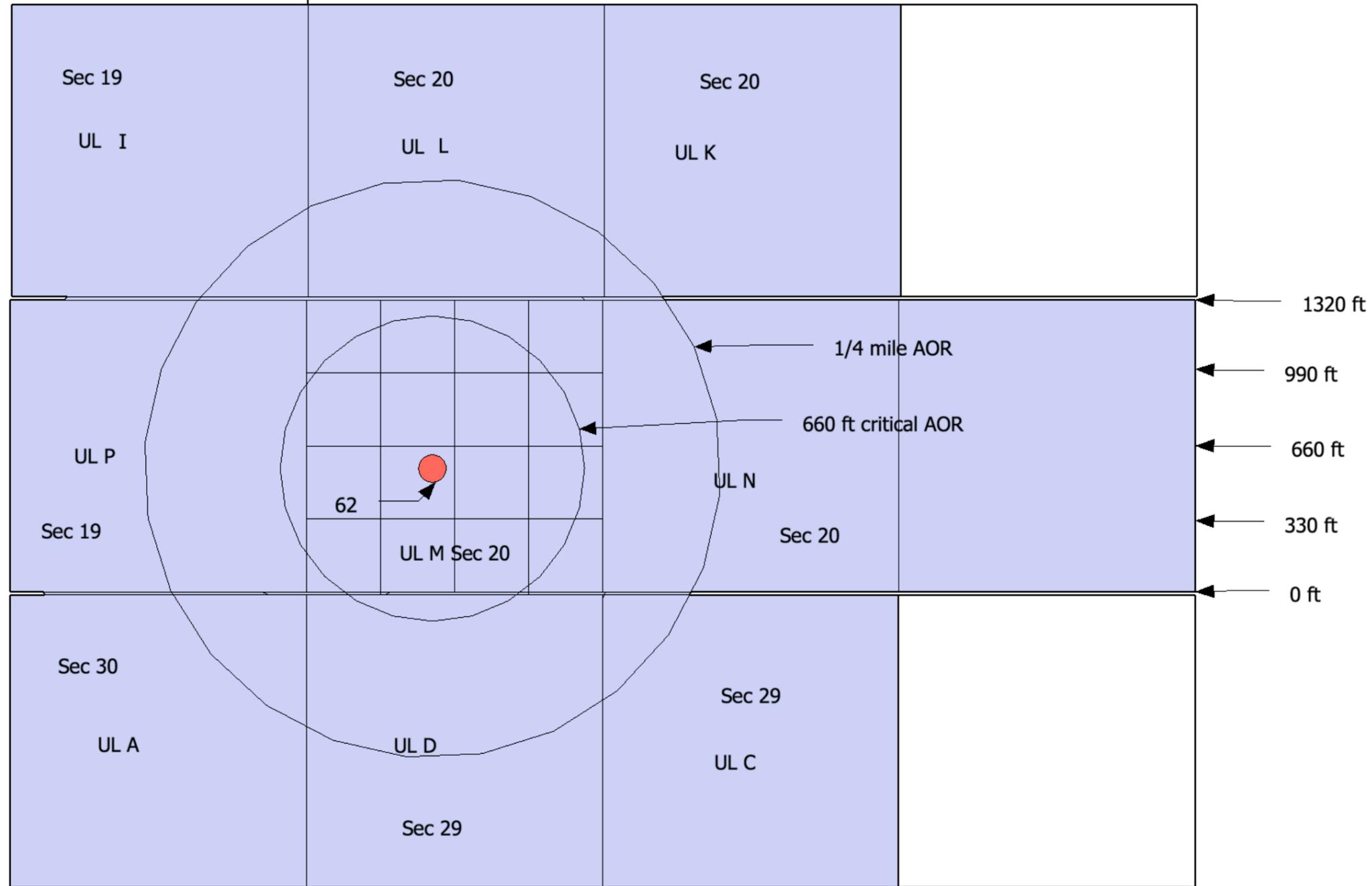
	API#	Well Name	UL	ectio	Ts	Rg	Footage	Within 1/4 mi AOR * within 660 ft or Critical AOR	Casing Progra Checked	Cased/Cemented across salt section	Corrective Action Required
1	<u>30-025-28162</u>	<u>Wasserhund Quality Watson #1</u>	<u>M</u>	<u>20</u>	<u>12s</u>	<u>36e</u>	<u>593 FSL & 639 FWL</u>	NA	NA	Na	NA

0 0

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

Notes:

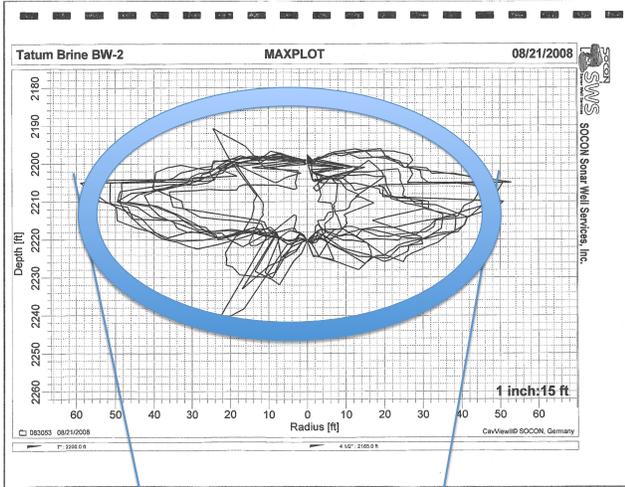
* Means the well is within 660 ft or the Critical AOR of the outside radius of the brine well and casing program will be checked annually.



Brine Well Area of Review (AOR) UL Plot Plan	Well API#: 30-025-28162	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-22	
AOR Year: 2015	Location: UL M-Sec 20-Ts12s-R36e	

Appendix “F”

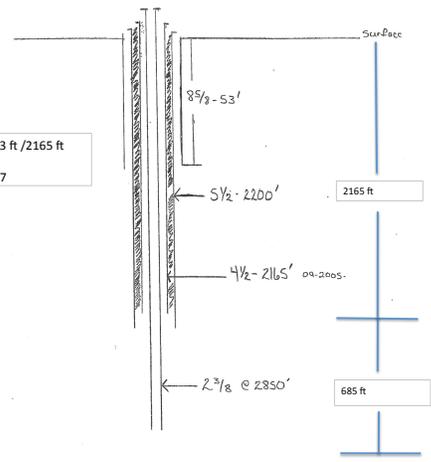
- Wellbore Sketch, Brine Cavity Calculations with new 2015 Radius and D/H calculations.
- Aerial View showing Cavern Radius



$R = \text{SQRT of } V * 3 / 3.14 * H$
 Vol = 2.71 million cuft
 Height = 685 ft from casing shoe to bottom
 Radius = 61.5 feet
 Dia = 123.0 ft
 2015 year

Wasserhund Inc.
 Quality Brine
 Wellson #1
 N 20-12a-36e
 30-025-28162

D/H = 123 ft / 2165 ft
 D/H = .057



2015 Wasserhund BW-22 AOR R=61.5 ft



162

167

400 ft

W Broadway St

© 2016 Google

Google earth

1996

Imagery Date: 9/30/2014 33°15'29.86" N 103°19'57.78" W elev 4012 ft eye alt 5750 ft

Appendix “G”

- Solution Cavern Monitoring Plan Program

“Solution Cavern Monitoring Plan Program”

Wasserhund Inc. Brine Station
Tatum Brine Station
OCD Permit BW-22
API No. 30-025-28162 Watson #1
Unit Letter M-Section 20-Ts 12s – R 35e

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.

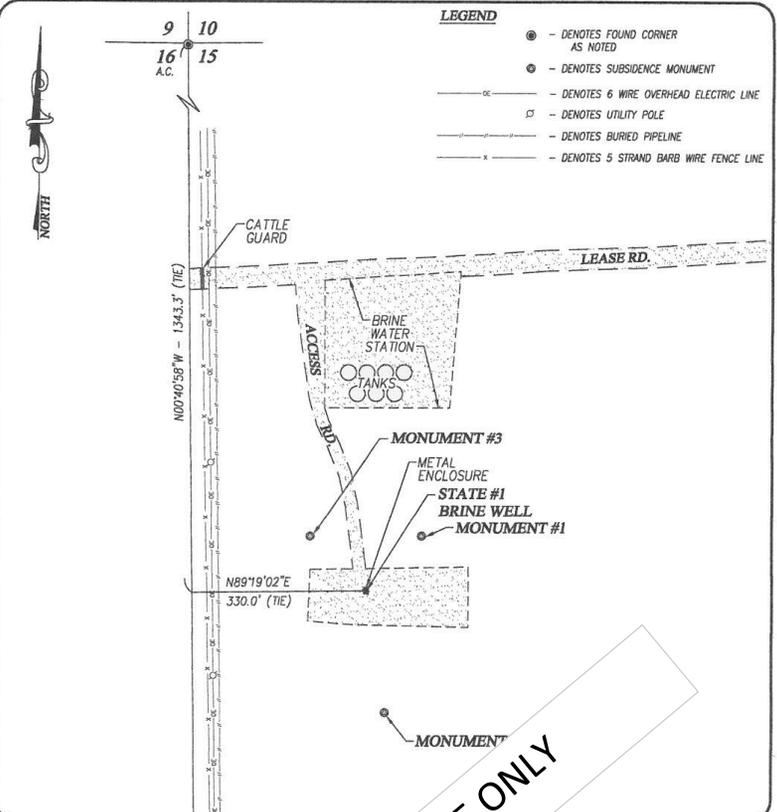
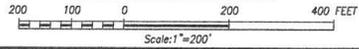
The data will be tabulated and a graph be maintained for each point over the life of the system.

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 6 WIRE OVERHEAD ELECTRIC LINE
- - DENOTES UTILITY POLE
- |—|—| - DENOTES BURIED PIPELINE
- x— - DENOTES 5 STRAND BARB 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 VALU...

EXAMPLE ONLY

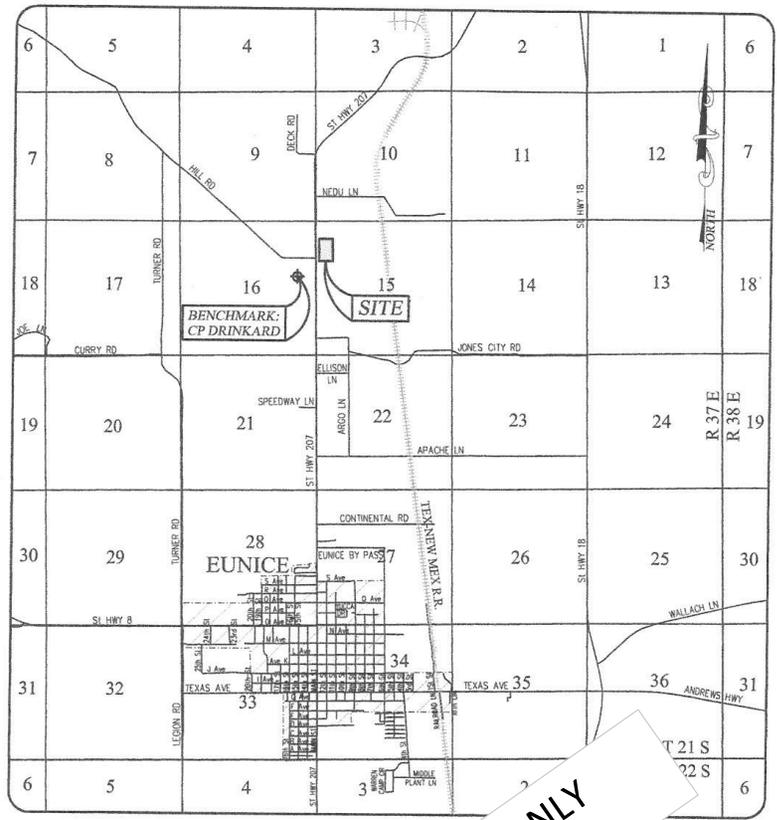
PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(575) 393-3117

ENERGY SERVICES, LLC
SUBSIDENCE MONITORING FOR THE
ENERGY STATE #1 BRINE WELL IN SECTION 15,
TOWNSHIP 24 SOUTH, RANGE 37 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO

D:\nms\Projects\Subsidence Monitoring\Key Energy Services, LLC\State #1 Brine Well Eunice Lea County NM\12111724

VICINITY MAP
NOT TO SCALE

Figure 1



EUNICE, NEW MEXICO AND SURROUNDING AREAS

EXAMPLE ONLY

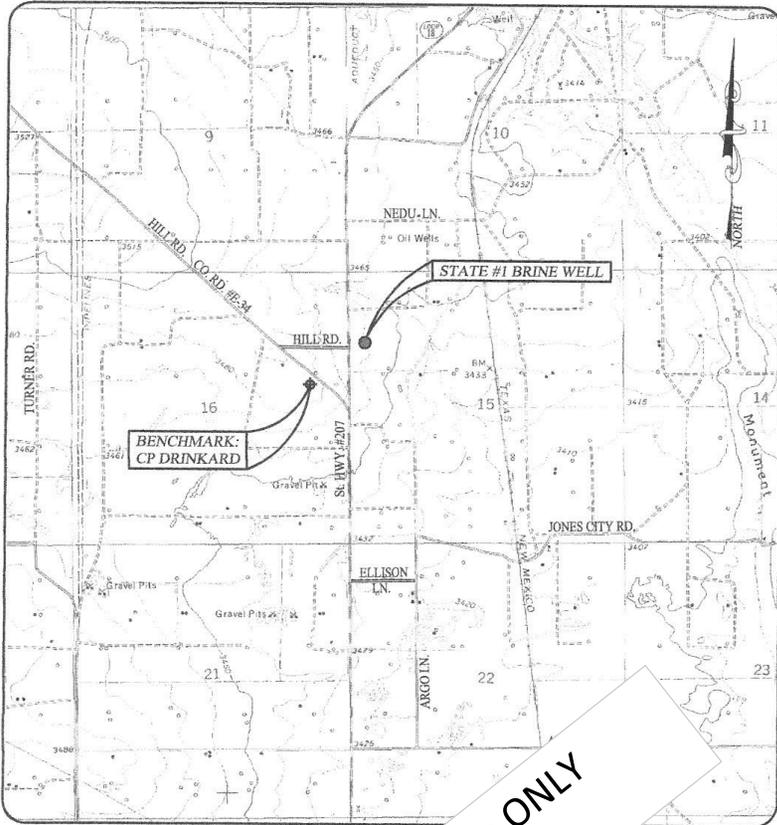
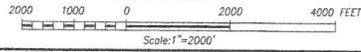
PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WESI SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(575) 393-3117

SURVEYING SERVICES, LLC
MONITORING FOR THE
#1 BRINE WELL IN SECTION 15,
TOWNSHIP 21 S, RANGE 37 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO

D:\msd51\projects\Substance Monitoring\Key Energy Services, LLC\10110622 State #1\10110622.dwg 01/09/11

U.S.G.S. MAP

Figure 2



U.S.G.S. 7.5' SERIES TOPOGRAPHIC MAPS FOR:
EUNICE, NEW MEXICO

Example ONLY

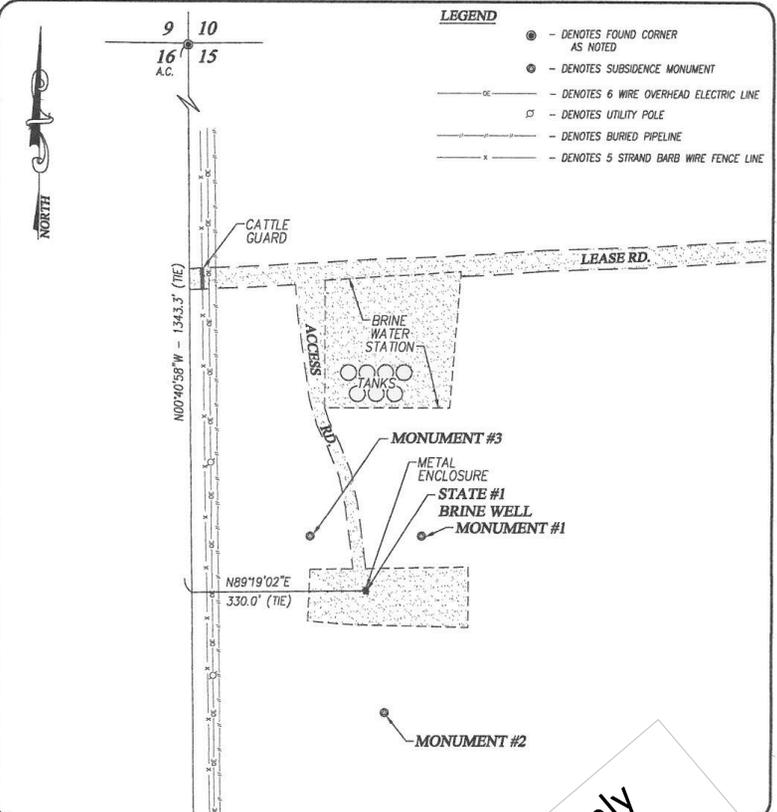
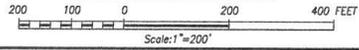


PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(575) 393-3117

SURVEYING SERVICES, LLC
MONITORING FOR THE
STATE #1 BRINE WELL IN SECTION 15,
TOWNSHIP 21 SOUTH, RANGE 37 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO

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.

PROVIDING SURVEYING SERVICES SINCE 1946
JOHN WEST SURVEYING COMPANY
 412 N. DAL PASO
 HOBBS, N.M. 88240
 (575) 393-3117

KEY ENERGY SERVICES, LLC
 FOR THE
 KEY ENERGY SERVICES, LLC
 TOWNSHIP 21 SOUTH, RANGE 10 EAST, SECTION 15, LEA COUNTY, NEW MEXICO

D:\maps\Projects\Subsidence Monitoring\Key Energy Services, LLC\State #1 Brine Well Enclosure Lea County NM\12111724

Example Only

11	14	-1.5010	427.9000
11	15	-2.6820	222.6000
11	16	-6.0820	384.5400
16	17	-4.3450	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	0.02775	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	0.02425	
17	3450.1768	0.02326	
18	3444.5823	0.02181	
19	3442.0345	0.01937	
20	3439.3359	0.01595	
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	-0.0000
6	8	3.3880	-0.0000
6	9	4.7750	-0.0000
6	10	6.2000	-0.0000
6	11	4.8903	-0.0037
11	12	1.3100	-0.0000
11	13	-0.1190	-0.0000
11	14	-1.5010	-0.0000
11	15	-2.6820	0.0000

Example
Only

Appendix “H”

Wasserhund Inc. Closure Cost Estimate.

2015 Annual Report
BW-22 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

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, February 12, 2010 4:32 PM
To: 'gandy2@leaco.net'
Subject: BW-004 and 022 Annual Reports

Larry:

The OCD is in receipt of your annual reports and will get back with you soon.

Please contact me if you have questions.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/oed/index.htm>
(Pollution Prevention Guidance is under "Publications")

RECEIVED OGD

2010 FEB 12 PM 1:01

Annual Brine Well Report
Gandy Corporation
Tatum Brine Station
BW Permit #BW-022
API #30-025-26883
January 31, 2010
Larry Gandy

2. Summary:
Fresh water injected down tubing producing brine water through casing into storage tanks.

Remedial:
No remedial or major work done in 2009.

3. Production Volumes:

Beginning balance	2,619,285
2009 total	<u>7,960</u>
Ending balance	<u><u>2,627,245</u></u>

Maximum Pressure	380#
Average Pressure	260#

4. Chemical Analysis:
See attached.

5. MIT, Casing Test:
Chart attached.

6. Deviation:
None

7. Leaks or Spills:
None

8. Groundwater Monitoring:
None required.

9. Cavity Information:
See attached.

10. AOR Summary:
No wells within a quarter of a mile.

11. Sign-Off Requirements:
See attached.



ARDINAL
LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603

PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
EDDIE SEAY CONSULTING
ATTN: EDDIE SEAY
601 W. ILLINOIS
HOBBS, NM 88242
FAX TO: (505) 392-6949

Receiving Date: 02/05/07
Reporting Date: 02/07/07
Project Owner: GANDY CORP.
Project Name: TATUM BRINE FACILITY
Project Location: TATUM, NM

Sampling Date: 02/02/07
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: HM
Analyzed By: HM

LAB NUMBER	SAMPLE ID	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (μ S/cm)	T-Alkalinity (mgCaCO ₃ /L)
ANALYSIS DATE:		02/06/07	02/06/07	02/06/07	02/06/07	02/05/07	02/06/07
H12143-1	BRINE WATER #1	#VALUE!	1164	3923	6900	277600	68
H12143-2	FRESH WATER #2	147	92	15	1.87	1154	144
Quality Control		NR	53.2	51.6	1.94	1380	NR
True Value QC		NR	50.0	50.0	2.00	1413	NR
% Recovery		NR	106	103	97	98	NR
Relative Percent Difference		NR	7.8	1.6	4.2	0.3	NR

METHODS:	SM3500-Ca-D	3500-Mg E	8049	120.1	310.1
----------	-------------	-----------	------	-------	-------

Cl⁻ SO₄ CO₃ HCO₃ pH TDS
(mg/L) (mg/L) (mg/L) (mg/L) (s.u.) (mg/L)

LAB NUMBER	SAMPLE ID	Cl ⁻ (mg/L)	SO ₄ (mg/L)	CO ₃ (mg/L)	HCO ₃ (mg/L)	pH (s.u.)	TDS (mg/L)
ANALYSIS DATE:		02/05/07	02/06/07	02/06/07	02/06/07	02/05/07	02/06/07
H12143-1	BRINE WATER #1	138957	13665	0		6.91	239980
H12143-2	FRESH WATER #2	208	169	0	176	7.57	693
Quality Control		510	20.8	NR	915	6.88	NR
True Value QC		500	20.0	NR	1000	7.00	NR
% Recovery		102	104	NR	92	98	NR
Relative Percent Difference		1	4.4	NR	2.7	0.7	NR

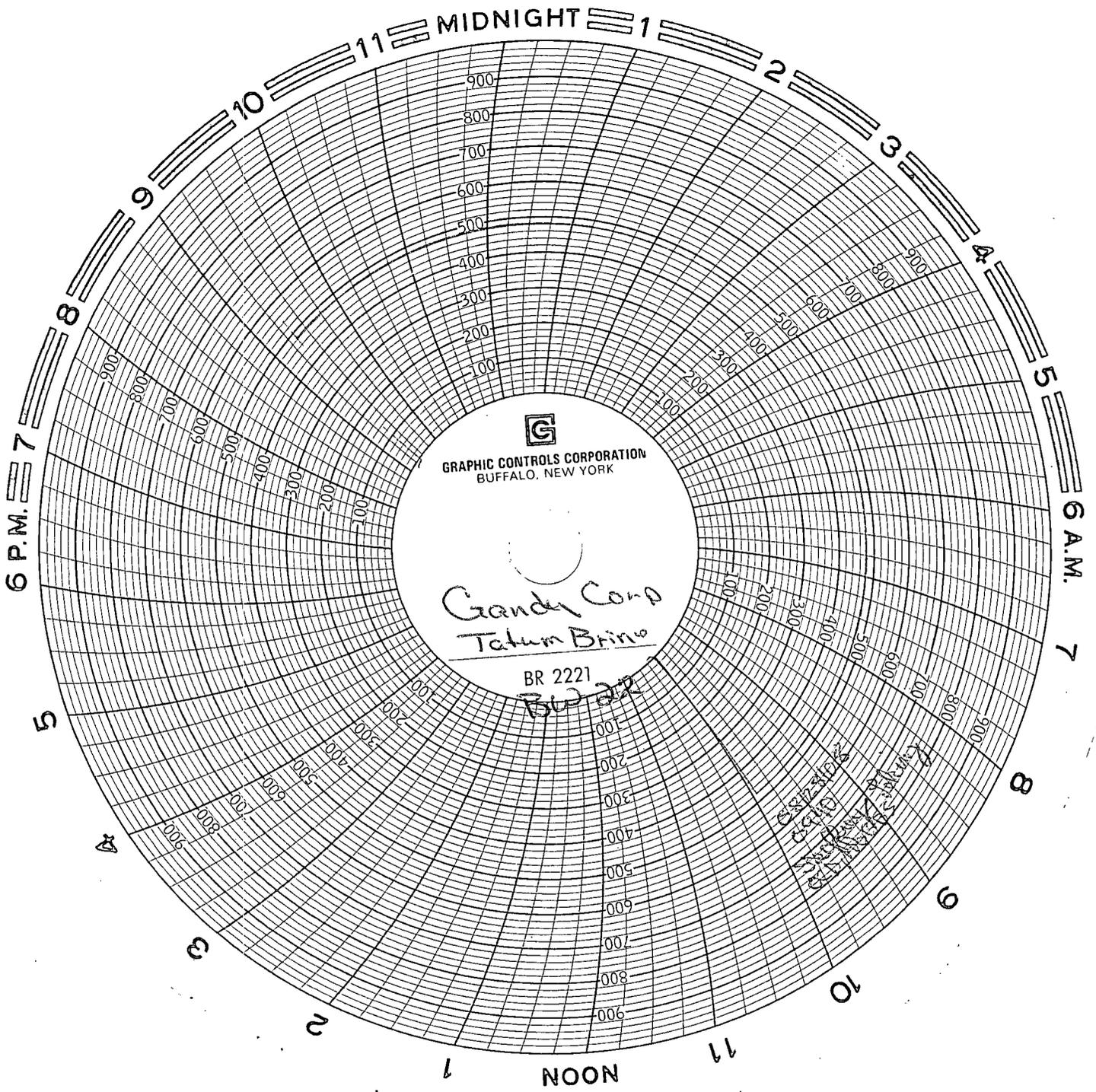
METHODS:	SM4500-Cl-B	375.4	310.1	310.1	150.1	160.1
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Chemist

Date

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. Cardinal shall not be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise.

(5)





SOCON Sonar Well Services, Inc.

ECHO - LOG

Gandy Corporation

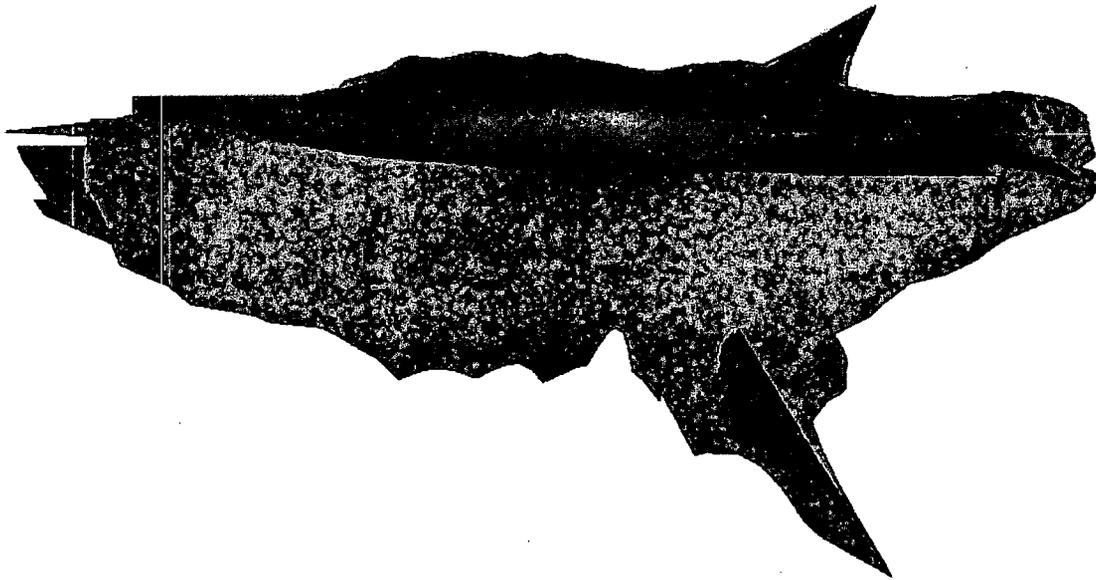
Tatum Brine BW-2

Tatum, New Mexico

1st. Survey

08/21/2008

083053



SOCON Sonar Well Services, Inc.

11133 I-45 South, Ste. E

Conroe, Texas 77302

Phone (936) 441-5801

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e-mail: soconusa@socon.com



SOCON Sonar Well Services, Inc.

Tatum Brine BW-2

083053

08/21/2008

Results of the Cavern Survey

By means of Echo-Sounding

In the cavern

Tatum Brine BW-2

Date: 08/21/2008

083053

Customer: Gandy Corporation

Tatum, New Mexico

Responsible for the survey:

Surveyor:	Richard Lawrence
Leadership:	Larry Gandy
Interpreter:	Richard Lawrence
Control:	Jason McCartney



Contents

Summary of results

Legend

Enclosures:

Volume (diagrams and lists)

Diameter and radii (diagrams and lists)

Perspective views

Maximum plots (top view)

Horizontal sections

Maximum plot (side view)

Vertical sections



Summary of results

Well details

All depths are given as:	MD
Datum level for all depths:	BHF
Shoe of the cemented 7"-casing:	2200 ft
Shoe of the 4 1/2"- casing during the surveying:	2165 ft
Reference depth for ECHO-LOG:	2200 ft
Depth correction:	-29 ft
Pressure at the well head:	0 psi

Details of survey equipment

Measuring vehicle used:	Portable
Tools used:	Echo tool BSF 39, BSF 39

General details

Number of runs:	1
Measured horizontal sections:	13
Measured tilted sections:	41
Lowest survey depth:	2220 ft



Maximum and minimum dimensions with ref. to the measuring axis

Reference direction: magnetic north

Determination out of 12 vertical sections derived from horizontally and tilted measured data at 5/15 degree intervals:

Minimum radius: 0.0 ft
Depth: 2220.3 ft
Direction: 0°

Maximum radius: 58.9 ft
Depth: 2205.0 ft
Direction: 330°

Highest point of cavern: 2190.7 ft
Horizontal distance: 24.4 ft
Direction: 195°

Lowest point of cavern: 2242.1 ft
Horizontal distance: 23.5 ft
Direction: 225°

Lowest point in the measuring axis: 2220.3 ft

Determination out of 29 horizontal sections in the depths between 2201 ft and 2241 ft at 5/15 degree intervals:

Maximum radius: 59.4 ft
Depth: 2205.0 ft
Direction: 331°

Maximum diameter: 83.8 ft
Depth: 2206.0 ft
Direction: 45 - 225°

Volume

Volume: 11,289 bbls

Depth range: 2191 ft <--> 2241 ft



Interpretation

Supposing a rectilinear propagation of ultrasonic waves all recorded echo travel times were converted into distances by using the subsequent speeds of sound:

1810.0 m/s (5938.3 ft/s) in brine (measured)

In the case of recording several echoes along one trace of echo signals, the representative echo signal was selected according to the level of amplitude, transmission time, and density of measured points and the shape of the cavern.

Horizontal sections

13 horizontal sections at following measured depths are included as graphical plots in this report:

2201.0 ft	2202.0 ft	2204.0 ft	2205.0 ft	2206.0 ft	2208.0 ft	2210.0 ft
2212.0 ft	2214.0 ft	2215.0 ft	2216.0 ft	2218.0 ft	2220.0 ft	

The following 16 sections are constructed:

2191.0 ft	2193.0 ft	2195.0 ft	2197.0 ft	2199.0 ft	2221.0 ft	2223.0 ft
2225.0 ft	2227.0 ft	2229.0 ft	2231.0 ft	2233.0 ft	2235.0 ft	2237.0 ft
2239.0 ft	2241.0 ft					

Tilted sections

41 sections recorded with tilted echo-transducer at following measured depths are presented in the vertical sections:

20 sections of these with upwards-tilted echo-transducer:

Depth / Tilting Angle

2215.0 / 6	2215.0 / 9	2215.0 / 12	2215.0 / 15	2215.0 / 18	2215.0 / 21
2215.0 / 24	2215.0 / 27	2215.0 / 30	2215.0 / 33	2215.0 / 39	2215.0 / 45
2215.0 / 51	2215.0 / 57	2215.0 / 63	2215.0 / 69	2215.0 / 74	2215.0 / 81
2215.0 / 84	2215.0 / 87				



21 sections of these with downwards-tilted echo-transducer:

Depth / Tilting Angle

2210.0 / 6	2210.0 / 12	2210.0 / 18	2210.0 / 24	2210.0 / 30	2210.0 / 36
2210.0 / 42	2210.0 / 48	2210.0 / 51	2210.0 / 54	2210.0 / 57	2210.0 / 60
2210.0 / 63	2210.0 / 66	2210.0 / 69	2210.0 / 72	2210.0 / 75	2210.0 / 78
2210.0 / 81	2210.0 / 84	2210.0 / 88			

Vertical sections

The shape of the cavern was determined by interpretation of all horizontally and tilted measured data and is presented by 36 vertical sections in this report.

Maximum plots (top view)

The maximum plot presents the largest extension of the cavern in a top view. The first picture shows the areas of all horizontal sections and the area resulting out of the vertical sections (hatched). The resulting total area is shown in the second picture (cross hatching) together with the largest single area.

In both pictures the total centre of gravity of the cavern is shown with its distance and its direction referring to the measuring axis.

The total centre of gravity is derived out of the envelope, which is the connection line of the largest cavern extension in every direction

Perspective views

Several perspective drawings are included in this report to give a quick review of detailed relations.

Pockets in the cavern wall

Pockets in the cavern wall, which have been identified by the tilted echo-transducer, were transferred from the vertical sections to the respective horizontal sections. The resulting additional areas have been added to the calculated areas.



LEGEND

- Measured point recorded with horizontal adjusted ultrasonic transducer
- Measured point recorded with tilted or vertical orientated ultrasonic transducer
- △ Interpolated point derived from the vertical sections

- Connection line between two measured points in order to calculate the volume
- Assumed connection line (in areas which are not sufficiently covered by measured points)

- N Magnetic north determined with compass inside the tool
(Magnetic compass in areas without tubing)
(Fibre gyro compass in areas with tubing)

- (N) Assumed north direction (for sections in magnetic disturbed surroundings without fibre gyro compass)

- a Longest extension in section
(Without considering of hidden leached pockets)

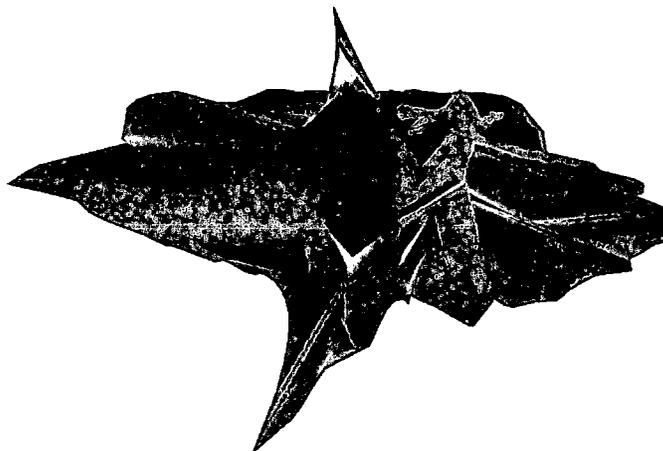
- b Longest extension in section perpendicular to a
(Without considering of hidden leached pockets)

- a/b Ratio of longest extensions in section which are perpendicular to each other

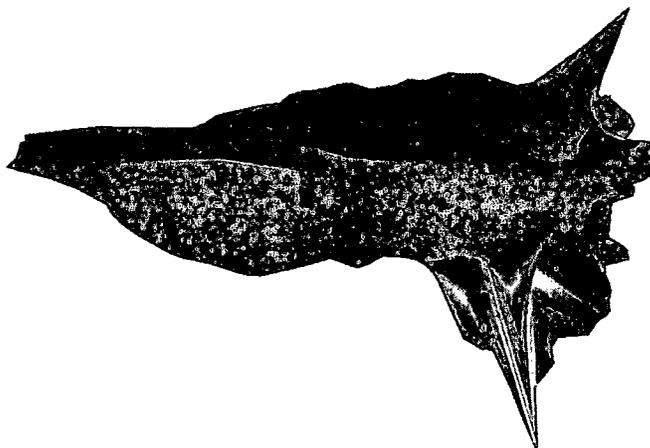
- (xx m²) Area in actual section resulting from hidden leached pockets

- r~ Average radius

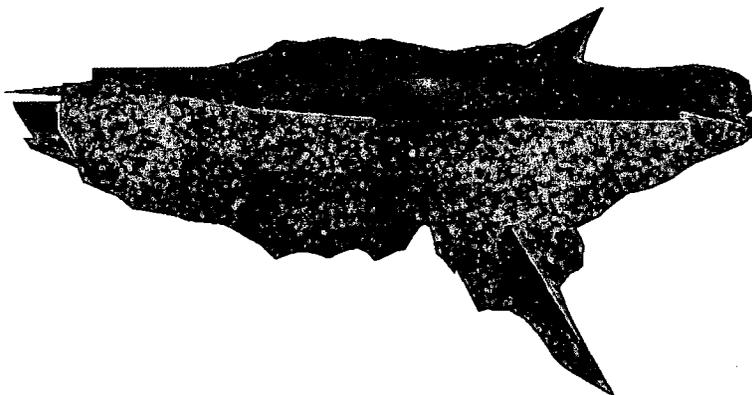
- ☐ 021835 29.04 2002 Job number and survey date



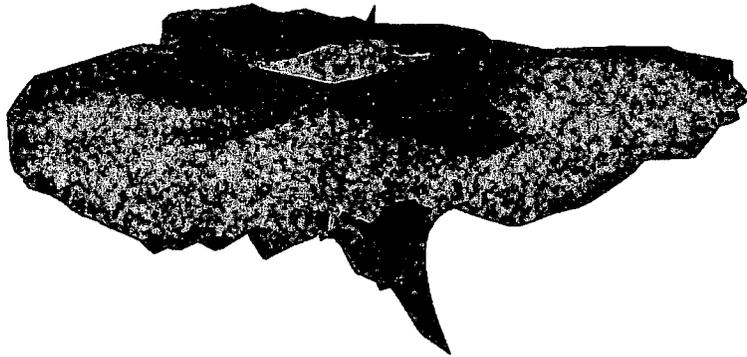
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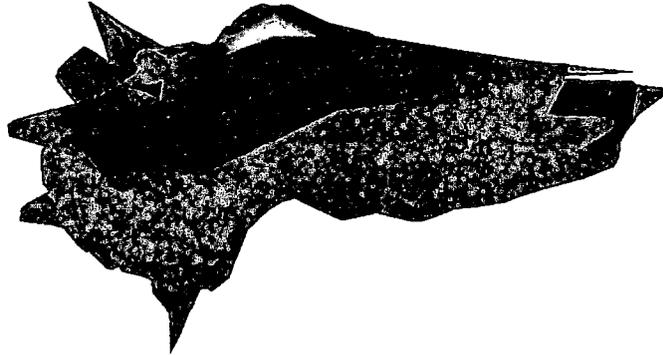
Tatum Brine BW-2 --> 60° <--



Tatum Brine BW-2 --> 120° <--



Tatum Brine BW-2 --> 180° <--



Tatum Brine BW-2 --> 240° <--



Tatum Brine BW-2 --> 300° <--

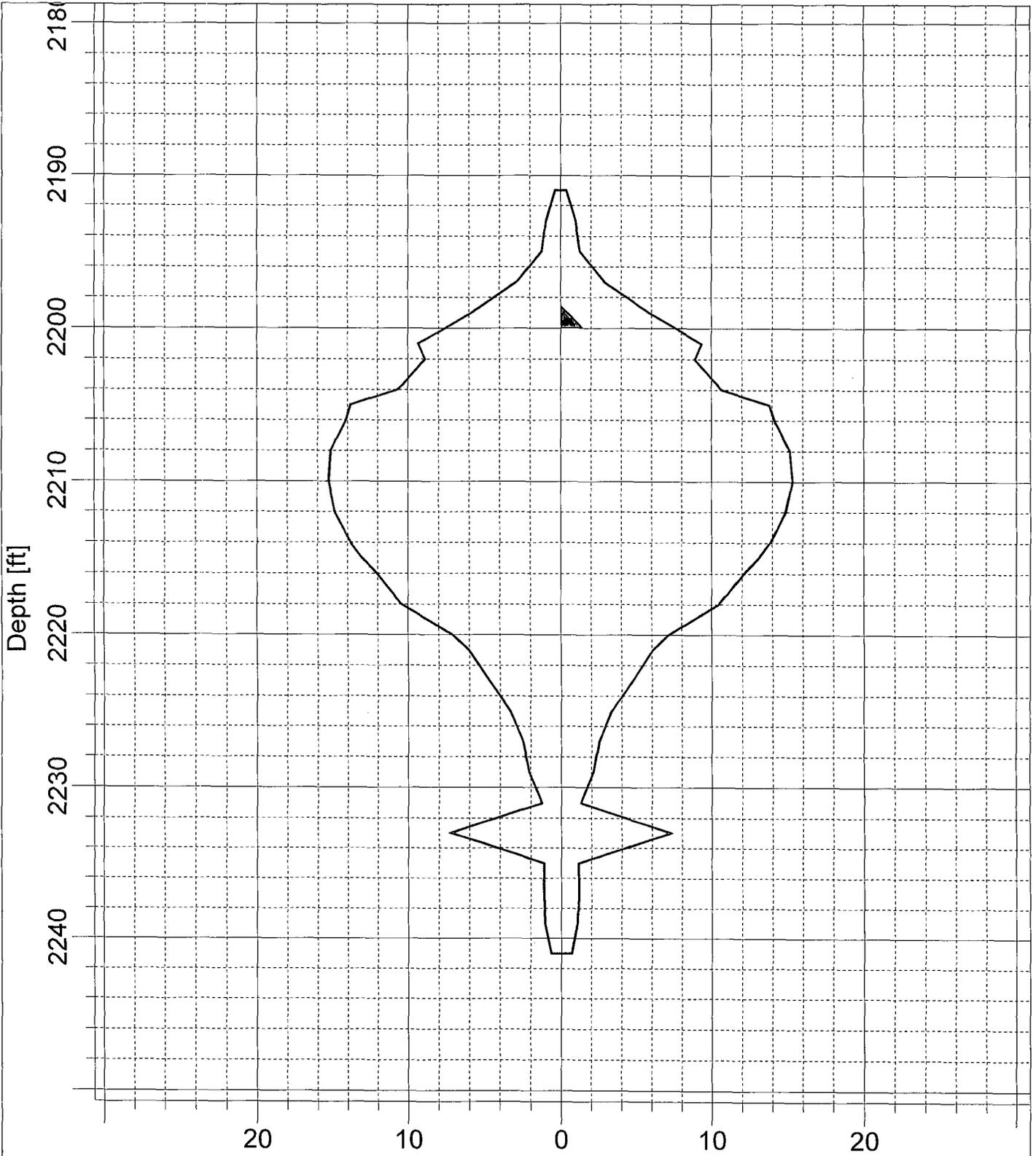


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Tatum Brine BW-2

AVERAGE RADIUS

08/21/2008



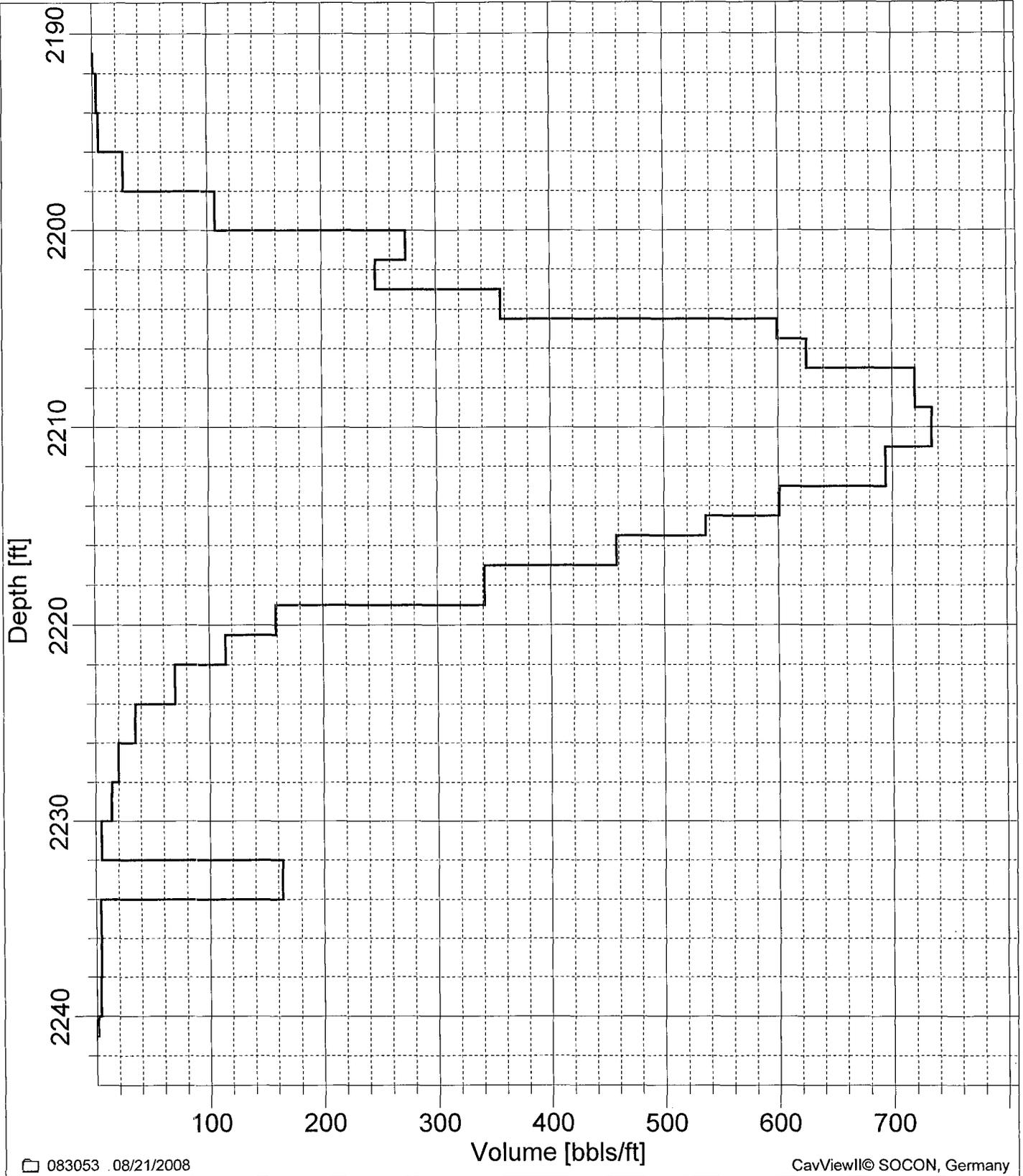
083053 08/21/2008

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7" : 2200.0 ft

4 1/2" : 2165.0 ft

— Average radius (08/21/2008)



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Partial volume



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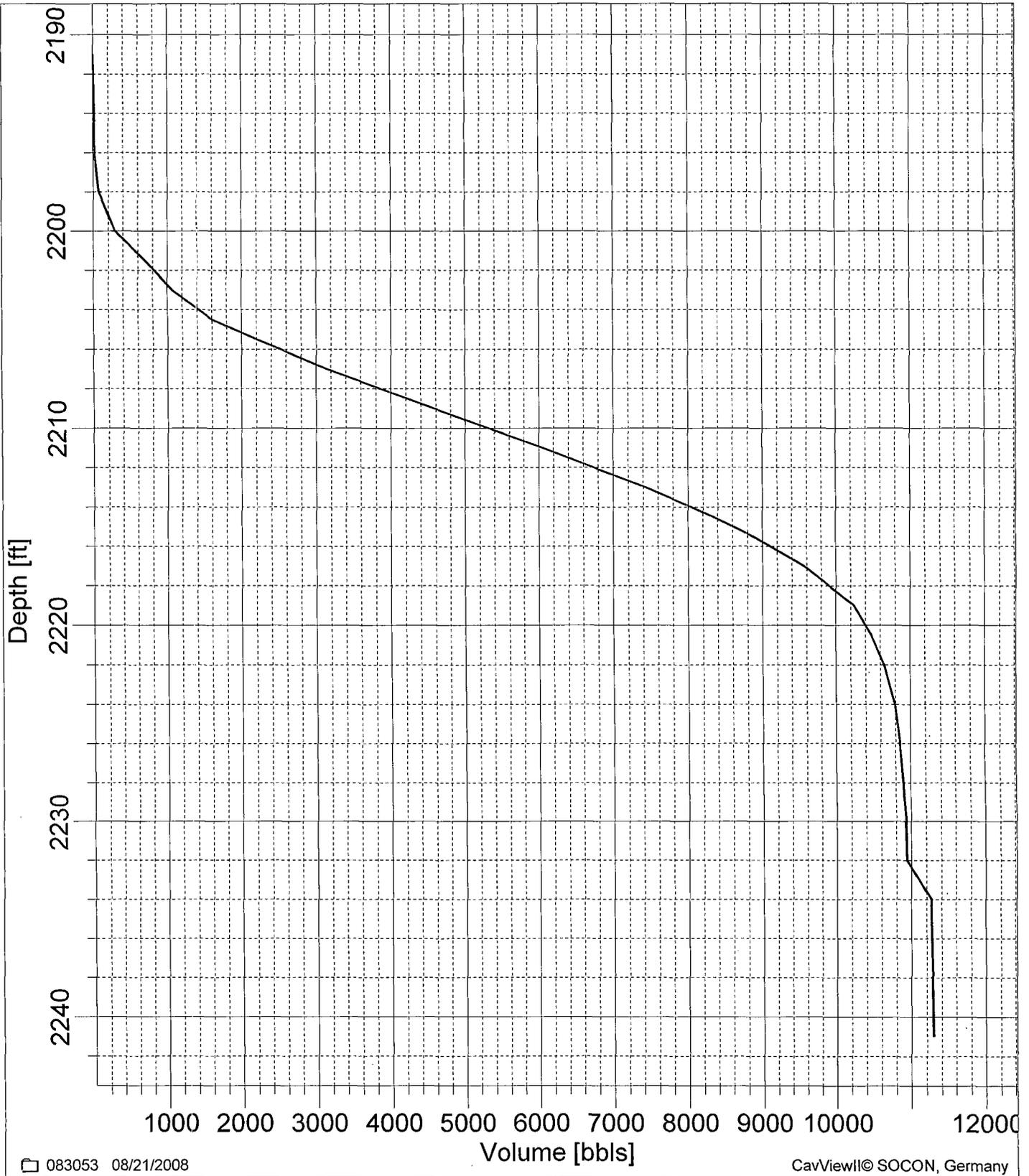
Volume list

Cavern: Tatum Brine BW-2

083053

08/21/2008

Depth [ft]	Radius [ft]	Area [ft ²]	Depth range [ft]		Volume [bbls]	
			from	to	partial	total
2191.0	0.9	2	2191.0	2192.0	0	0
2193.0	2.3	17	2192.0	2194.0	6	6
2195.0	3.0	28	2194.0	2196.0	10	16
2197.0	6.8	147	2196.0	2198.0	52	69
2199.0	13.8	600	2198.0	2200.0	214	283
2201.0	22.1	1537	2200.0	2201.5	411	693
2202.0	21.0	1389	2201.5	2203.0	371	1064
2204.0	25.2	2002	2203.0	2204.5	535	1599
2205.0	32.7	3363	2204.5	2205.5	599	2198
2206.0	33.4	3510	2205.5	2207.0	938	3136
2208.0	35.9	4041	2207.0	2209.0	1440	4575
2210.0	36.2	4124	2209.0	2211.0	1469	6044
2212.0	35.2	3898	2211.0	2213.0	1388	7432
2214.0	32.8	3374	2213.0	2214.5	901	8334
2215.0	31.0	3010	2214.5	2215.5	536	8870
2216.0	28.6	2573	2215.5	2217.0	687	9557
2218.0	24.7	1918	2217.0	2219.0	683	10240
2220.0	16.8	891	2219.0	2220.5	238	10479
2221.0	14.3	642	2220.5	2222.0	172	10650
2223.0	11.2	391	2222.0	2224.0	139	10789
2225.0	7.9	195	2224.0	2226.0	69	10859
2227.0	5.9	111	2226.0	2228.0	39	10898
2229.0	5.0	78	2228.0	2230.0	28	10926
2231.0	3.0	29	2230.0	2232.0	10	10937
2233.0	17.1	919	2232.0	2234.0	327	11264
2235.0	2.7	23	2234.0	2236.0	8	11272
2237.0	2.7	24	2236.0	2238.0	8	11281
2239.0	2.5	20	2238.0	2240.0	7	11288
2241.0	1.6	8	2240.0	2241.0	1	11289



083053 08/21/2008

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Total volume = 11289.1 bbls



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Table of volumes (foot by foot)

Job-No.: 083053, Name: Tatum Brine BW-2, Date: 08/21/2008

depth [ft]	volume [bbls]								
		2191	0	2192	0	2193	3	2194	6
2195	11	2196	16	2197	43	2198	69	2199	176
2200	283	2201	556	2202	817	2203	1064	2204	1421
2205	1899	2206	2511	2207	3136	2208	3856	2209	4575
2210	5310	2211	6044	2212	6738	2213	7432	2214	8033
2215	8602	2216	9099	2217	9557	2218	9899	2219	10240
2220	10399	2221	10536	2222	10650	2223	10720	2224	10789
2225	10824	2226	10859	2227	10879	2228	10898	2229	10912
2230	10926	2231	10931	2232	10937	2233	11100	2234	11264
2235	11268	2236	11272	2237	11276	2238	11281	2239	11284
2240	11288	2241	11289						

Cavity: Tatum Brine BW-2 Report number: 083053 Date: 08/21/2008

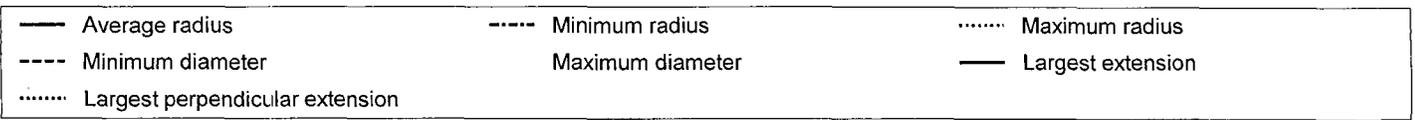
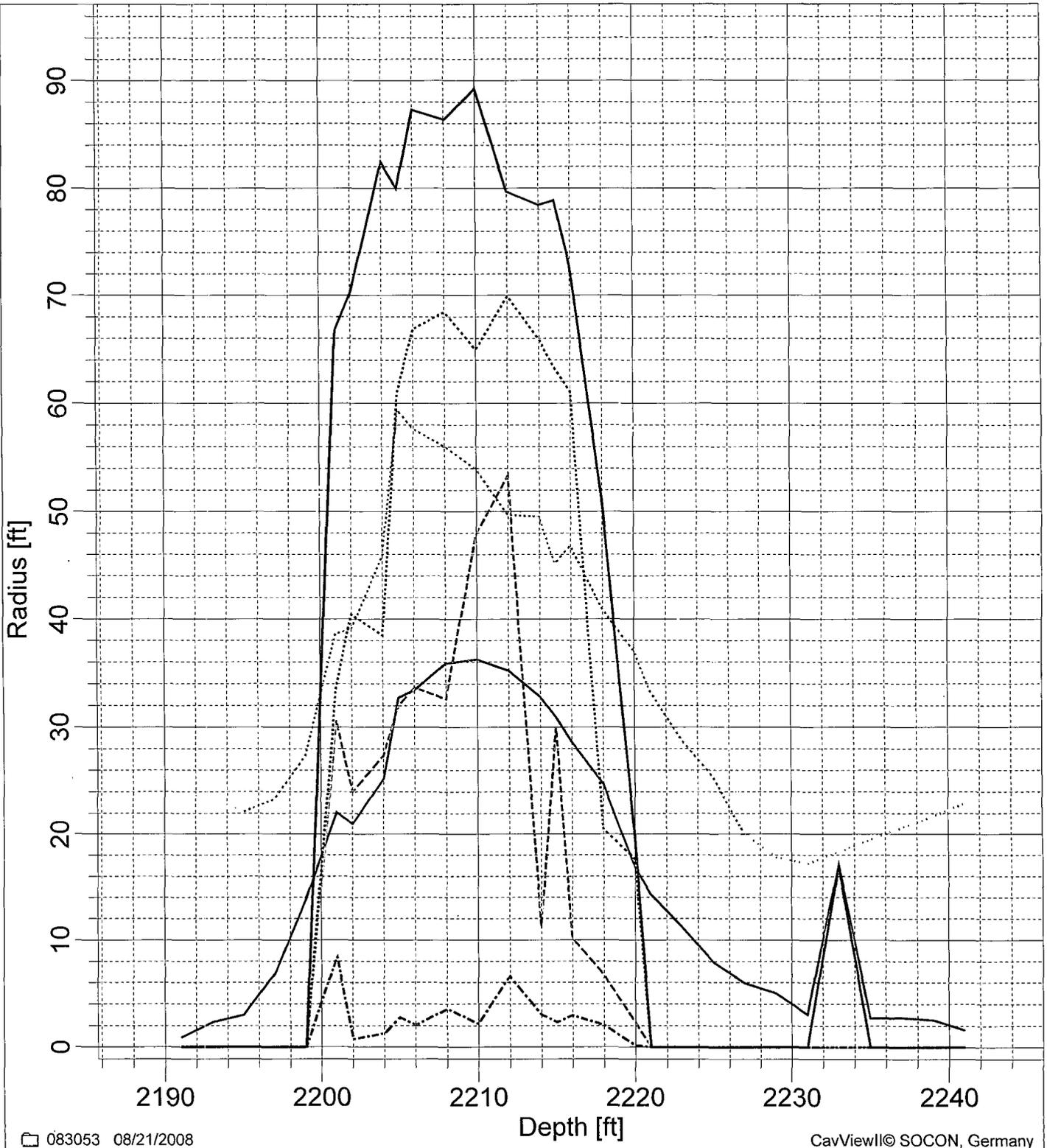




Table of radii and diameters

Cavern: Tatum Brine BW-2

083053

08/21/2008

Depth [ft]	Radius [MIN]		Radius [MAX]		Diameter [MIN]		Diameter [MAX]	
	[ft]	[°]	[ft]	[°]	[ft]	[°]	[ft]	[°]
2191.0	0.0	0	24.2	195	0.0	0 <-> 180	24.2	15 <-> 195
2193.0	0.0	0	23.2	195	0.0	0 <-> 180	23.2	15 <-> 195
2195.0	0.0	0	22.1	195	0.0	0 <-> 180	22.1	15 <-> 195
2197.0	0.0	1	23.3	45	0.0	1 <-> 181	36.3	15 <-> 195
2199.0	0.0	1	27.3	45	0.0	1 <-> 181	41.2	15 <-> 195
2201.0	8.4	144	38.6	259	30.6	144 <-> 324	62.3	79 <-> 259
2202.0	0.8	61	39.0	225	24.0	79 <-> 259	68.4	45 <-> 225
2204.0	1.3	62	45.9	0	27.4	151 <-> 331	69.8	45 <-> 225
2205.0	2.7	121	59.4	331	32.0	81 <-> 261	76.7	150 <-> 330
2206.0	2.1	149	57.6	330	33.6	0 <-> 180	83.8	45 <-> 225
2208.0	3.5	120	56.0	315	32.6	0 <-> 180	82.1	45 <-> 225
2210.0	2.1	130	53.9	325	48.0	25 <-> 205	80.9	105 <-> 285
2212.0	6.6	120	49.7	345	53.4	130 <-> 310	74.1	45 <-> 225
2214.0	3.0	329	49.5	345	11.3	155 <-> 335	74.7	60 <-> 240
2215.0	2.3	154	45.1	81	30.0	151 <-> 331	78.0	71 <-> 251
2216.0	2.9	59	46.8	345	10.2	156 <-> 336	70.5	60 <-> 240
2218.0	2.0	59	40.9	315	6.7	164 <-> 344	62.8	60 <-> 240
2220.0	0.2	301	37.1	315	2.3	72 <-> 252	58.0	60 <-> 240
2221.0	0.0	0	33.3	60	0.0	1 <-> 181	48.5	135 <-> 315
2223.0	0.0	0	28.8	60	0.0	1 <-> 181	39.3	60 <-> 240
2225.0	0.0	0	25.4	60	0.0	0 <-> 180	37.0	60 <-> 240
2227.0	0.0	0	20.0	195	0.0	0 <-> 180	20.0	15 <-> 195
2229.0	0.0	0	17.8	195	0.0	0 <-> 180	17.8	15 <-> 195
2231.0	0.0	0	17.2	225	0.0	0 <-> 180	17.2	45 <-> 225
2233.0	0.0	0	18.3	225	0.0	0 <-> 180	18.3	45 <-> 225
2235.0	0.0	0	19.5	225	0.0	0 <-> 180	19.5	45 <-> 225
2237.0	0.0	0	20.6	225	0.0	0 <-> 180	20.6	45 <-> 225
2239.0	0.0	0	21.7	225	0.0	0 <-> 180	21.7	45 <-> 225
2241.0	0.0	0	22.9	225	0.0	0 <-> 180	22.9	45 <-> 225



SOCON Sonar Well Services, Inc.

Table of radii in N-E-S-W-NE-SE-SW-NW presentation

Cavern: Tatum Brine BW-2

083053

08/21/2008

Depth [ft]	<R> [ft]	N [ft]	E [ft]	S [ft]	W [ft]	NE [ft]	SE [ft]	SW [ft]	NW [ft]
2191.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2193.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2195.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2197.0	6.8	10.1	0.0	0.0	0.0	23.3	0.0	0.0	0.0
2199.0	13.8	22.2	0.0	0.0	14.5	27.3	0.0	2.7	20.6
2201.0	22.1	25.0	14.9	17.8	25.0	25.7	9.4	36.5	22.5
2202.0	21.0	31.9	11.1	17.2	21.5	29.4	4.9	39.0	31.2
2204.0	25.2	45.9	9.5	15.9	27.2	30.1	6.5	39.7	35.9
2205.0	32.7	52.8	3.3	15.2	30.0	31.4	4.7	9.6	54.8
2206.0	33.4	19.2	18.6	14.5	34.1	43.6	7.8	40.2	54.6
2208.0	35.9	19.5	20.8	13.1	46.3	45.3	7.6	36.8	56.0
2210.0	36.2	50.8	27.5	2.4	49.8	46.7	7.4	21.8	53.3
2212.0	35.2	47.6	31.8	11.4	40.3	42.6	7.1	31.6	46.5
2214.0	32.8	41.7	35.1	11.8	37.9	36.1	7.9	27.8	45.6
2215.0	31.0	28.3	42.5	3.8	31.8	33.1	8.2	35.6	31.6
2216.0	28.6	40.7	34.9	12.8	32.9	32.2	8.6	11.8	43.8
2218.0	24.7	38.9	33.3	13.7	27.7	29.2	10.6	10.9	40.9
2220.0	16.8	0.3	29.4	14.7	6.6	23.8	13.9	10.9	37.1
2221.0	14.3	0.0	24.9	14.9	0.0	0.0	15.5	11.5	33.0
2223.0	11.2	0.0	21.5	7.0	0.0	0.0	16.4	12.6	0.0
2225.0	7.9	0.0	16.6	0.0	0.0	0.0	16.3	13.8	0.0
2227.0	5.9	0.0	0.0	0.0	0.0	0.0	14.3	14.9	0.0
2229.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	16.0	0.0
2231.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	17.2	0.0
2233.0	17.1	0.0	0.0	0.0	0.0	0.0	0.0	18.3	0.0
2235.0	2.7	0.0	0.0	0.0	0.0	0.0	0.0	19.5	0.0
2237.0	2.7	0.0	0.0	0.0	0.0	0.0	0.0	20.6	0.0
2239.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	21.7	0.0
2241.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	22.9	0.0

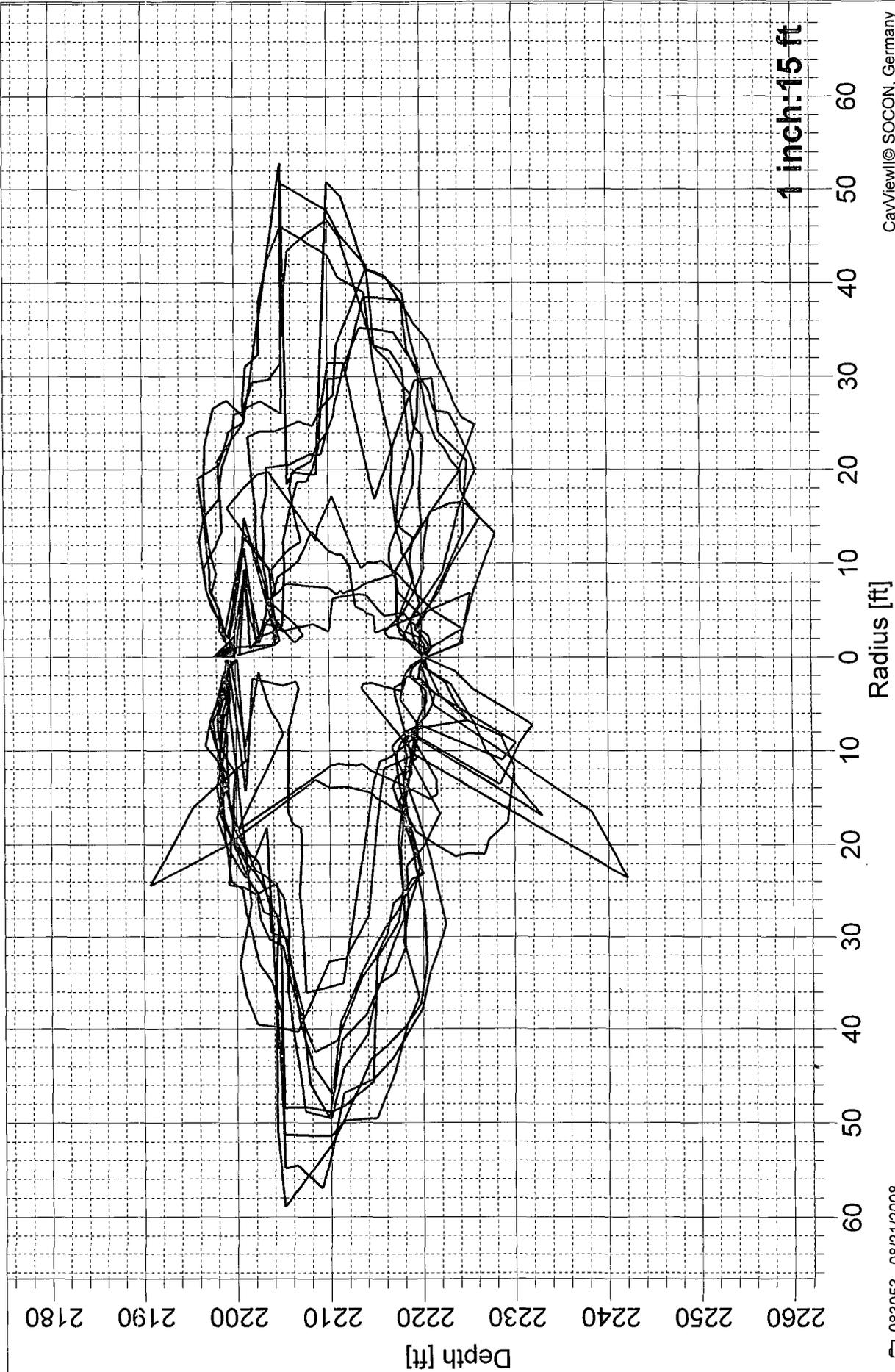


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08/21/2008

MAXPLOT

Tatum Brine BW-2



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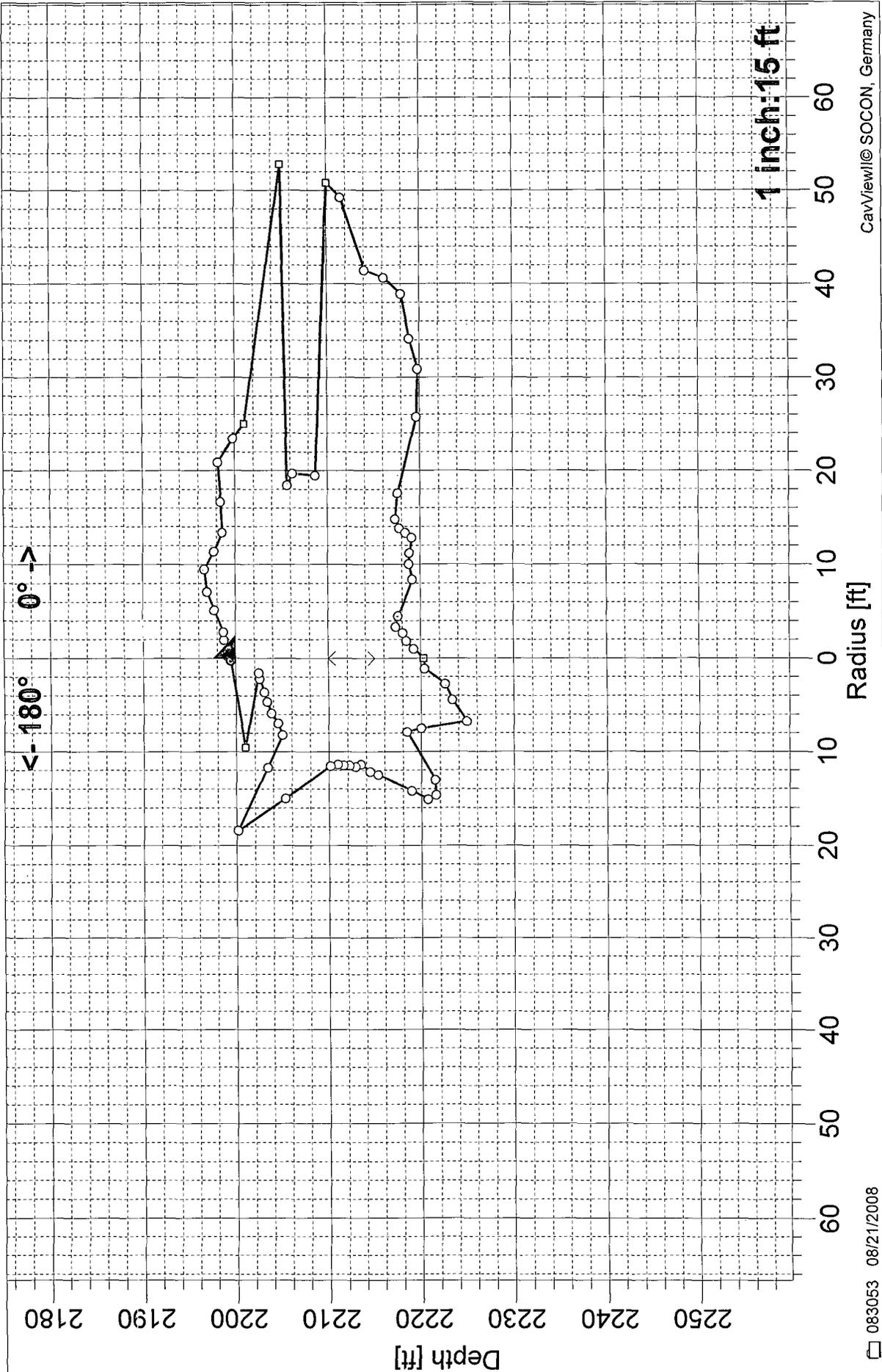
083053 08/21/2008

4 1/2" : 2165.0 ft

7" : 2200.0 ft

08/21/2008

Tatum Brine BW-2



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□ 083053 08/21/2008

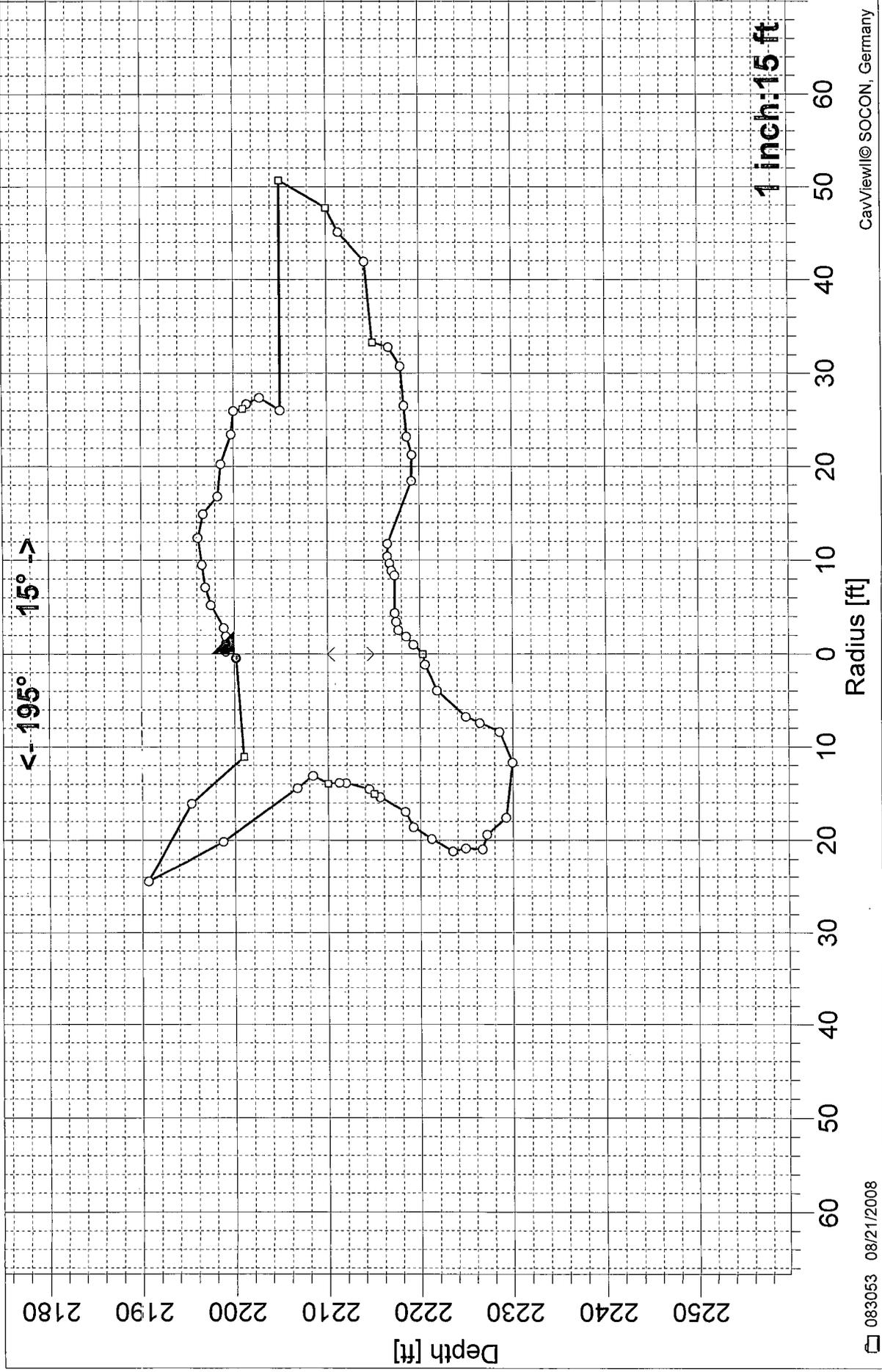
4 1/2" : 2165.0 ft

7" : 2200.0 ft

— (08/21/2008)
--- Tilting position

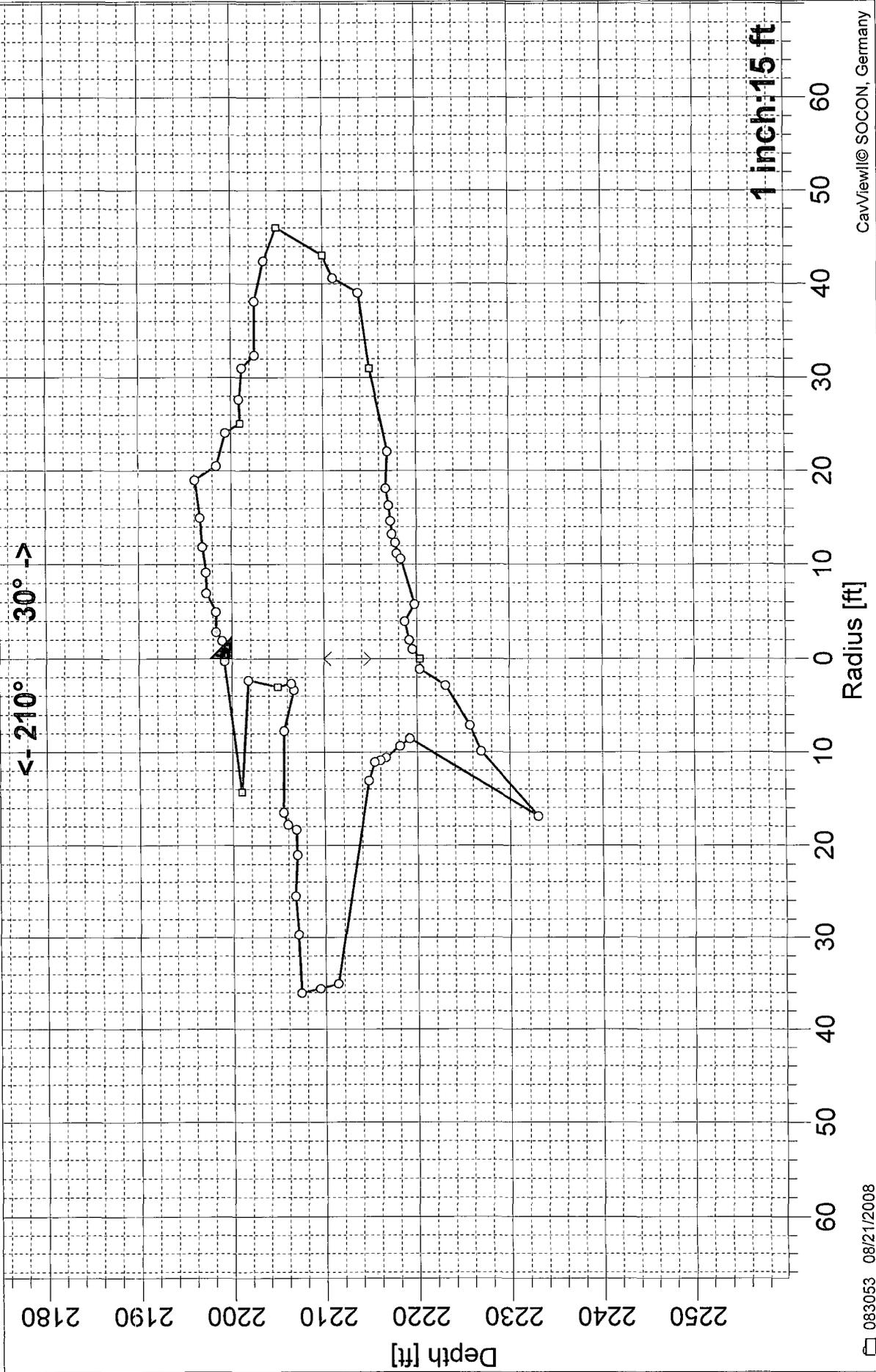
08/21/2008

Tatum Brine BW-2



08/21/2008

Tatum Brine BW-2



□ 083053 08/21/2008

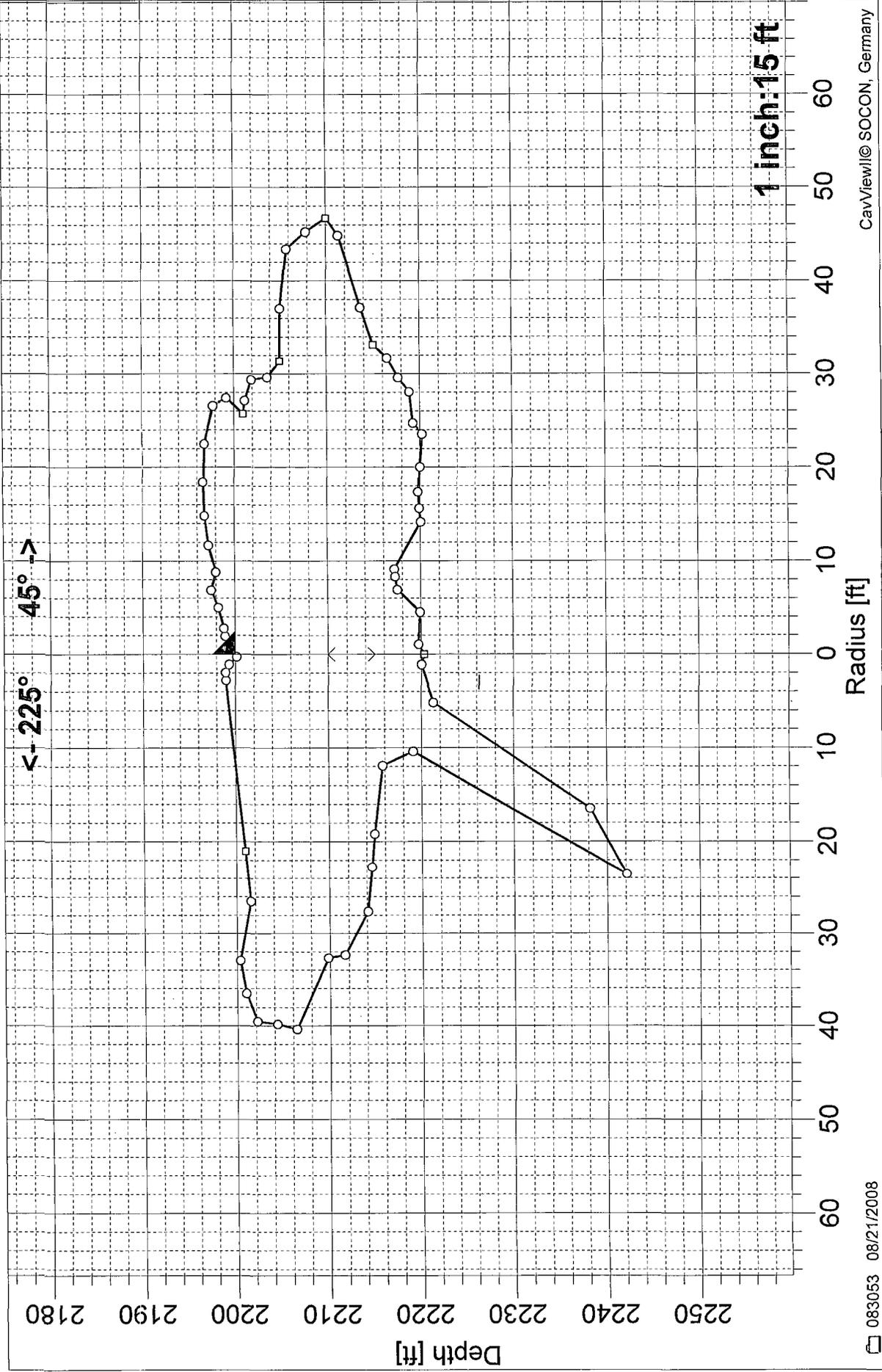
○ (08/21/2008)
— Tilting position

— 7" : 2200.0 ft

— 4 1/2" : 2165.0 ft

08/21/2008

Tatum Brine BW-2



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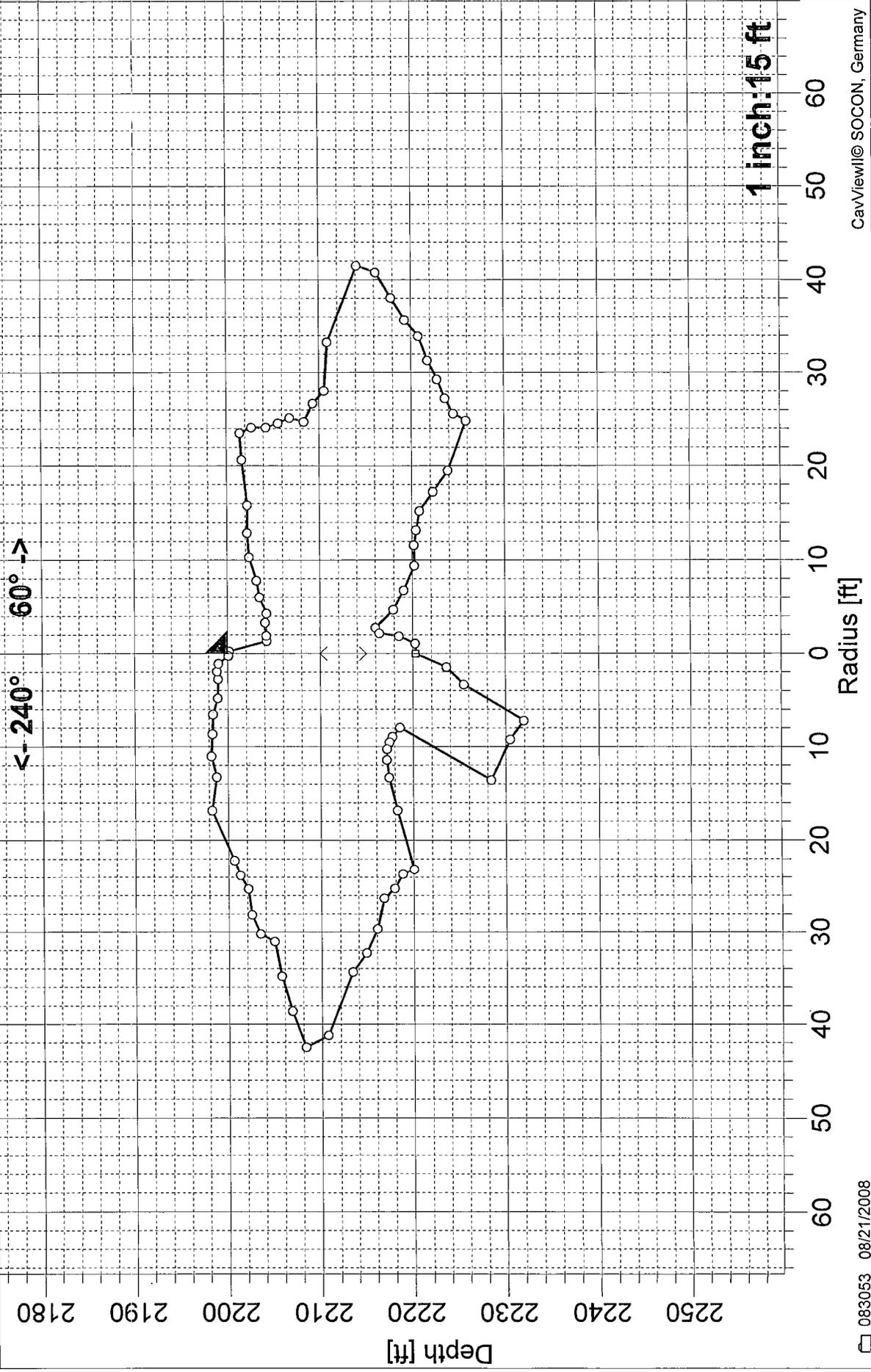
4 1/2" : 2165.0 ft

7" : 2200.0 ft

— (08/21/2008)
--- Tilting position

08/21/2008

Tatum Brine BW-2



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4 1/2" : 2165.0 ft

7" : 2200.0 ft

(08/21/2008)

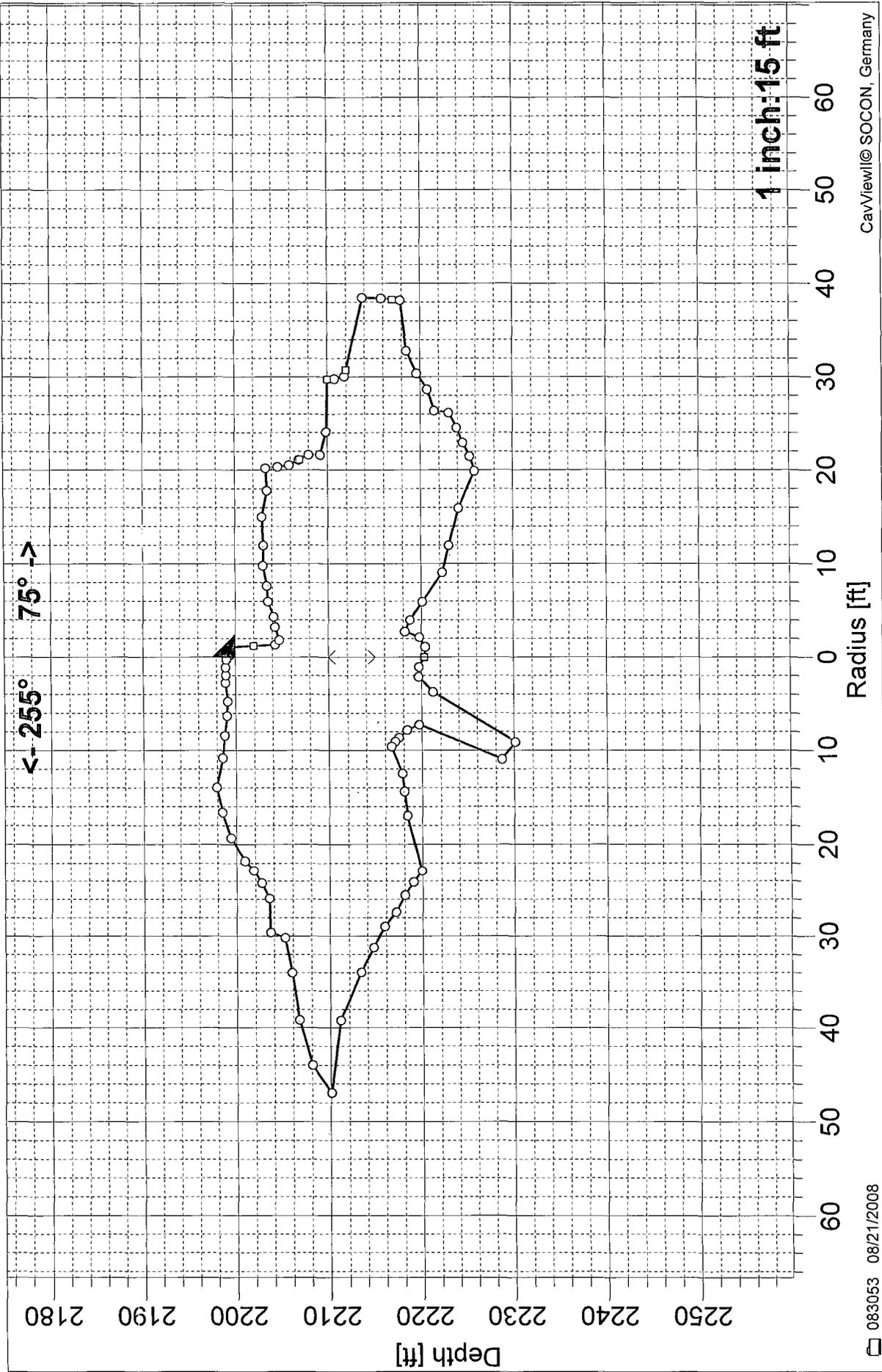
Tilting position



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08/21/2008

Tatum Brine BW-2



083053 08/21/2008

08/21/2008

7" : 200.0 ft

4 1/2" : 2165.0 ft

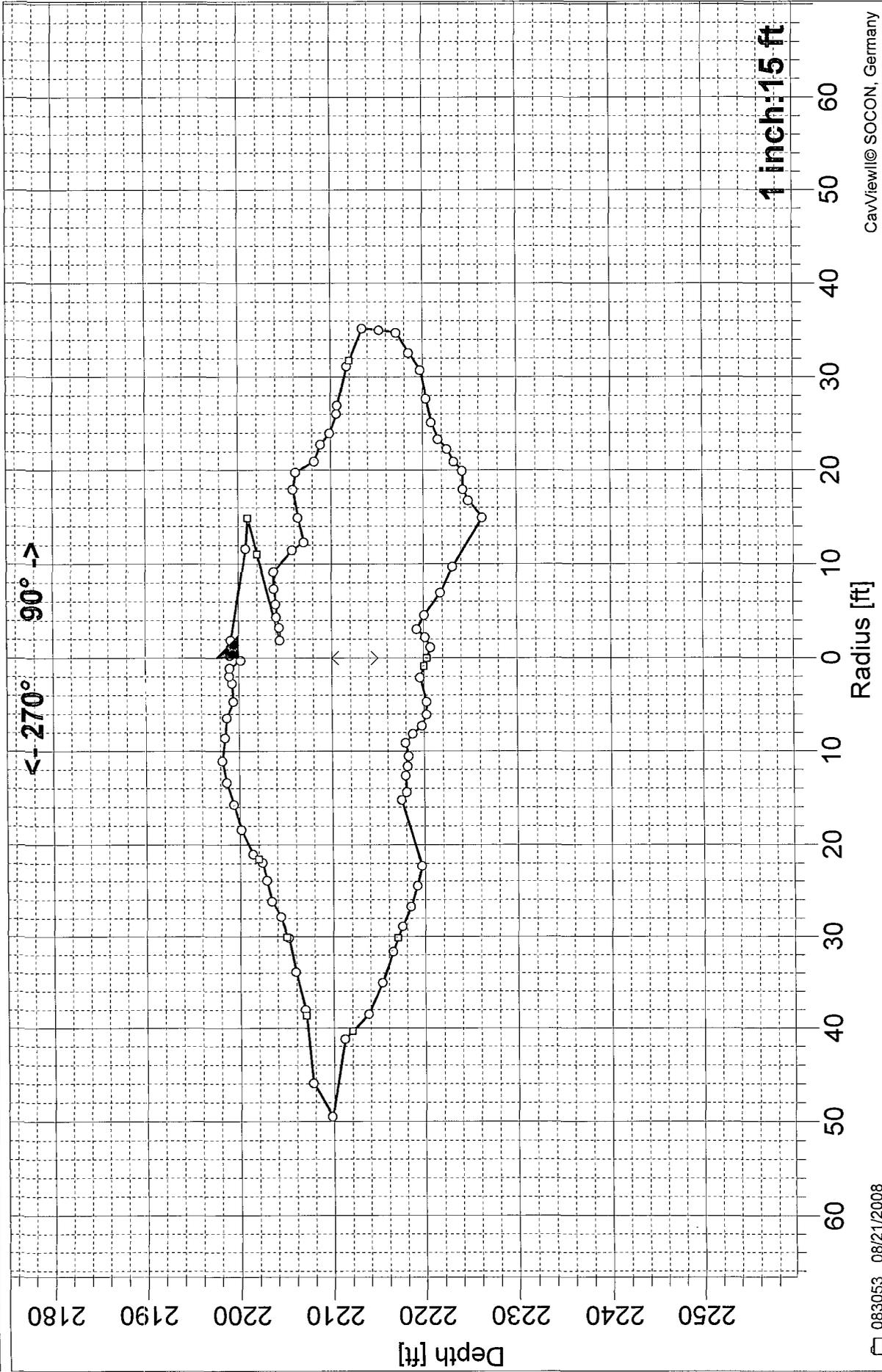
SOCON, Germany

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Tilting position

08/21/2008

Tatum Brine BW-2



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4 1/2" : 2165.0 ft

7" : 2200.0 ft

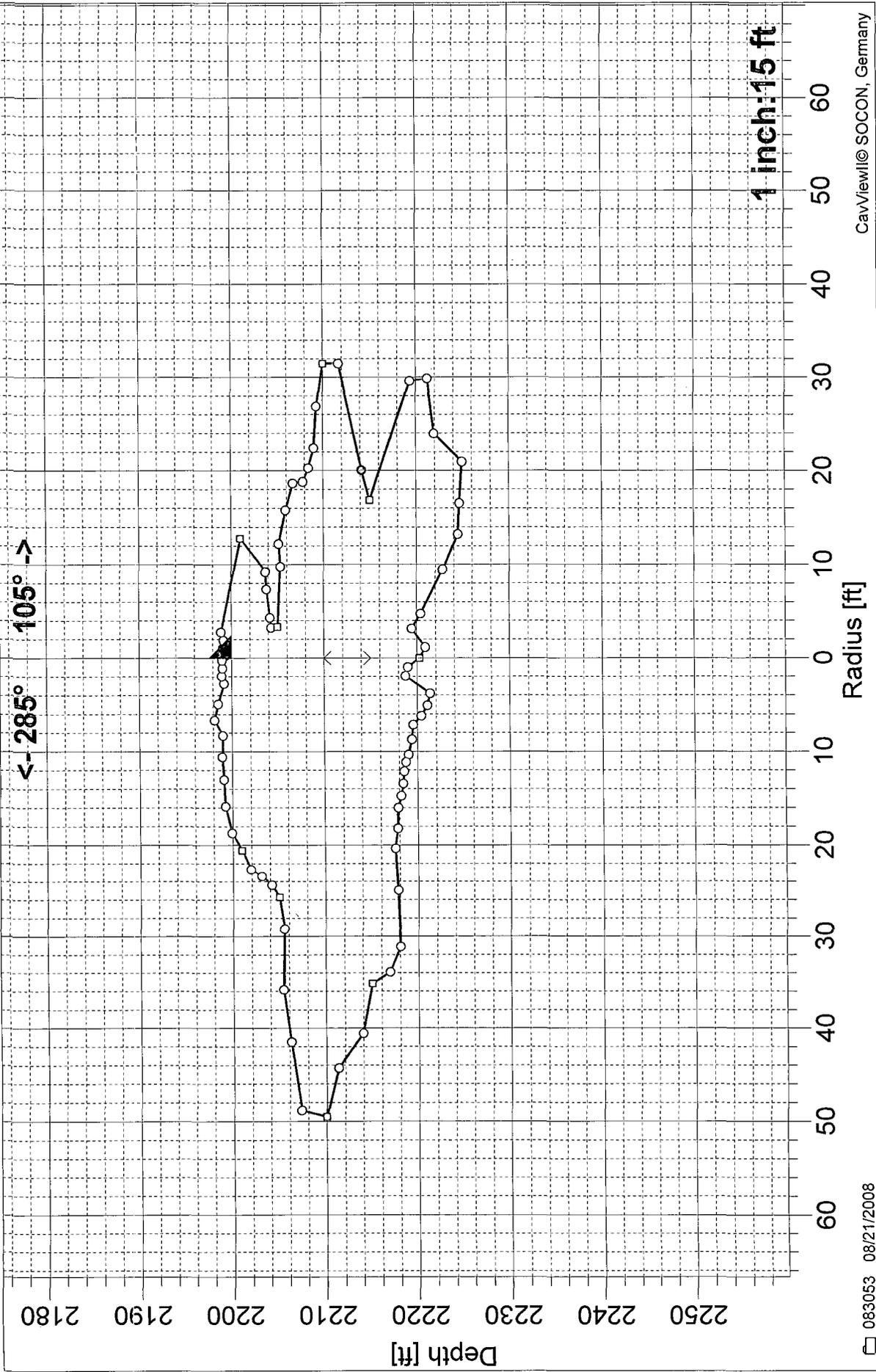
○ (08/21/2008)
 — Tiltting position



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□ (08/21/2008)
— Tilting position

7" : 2200.0 ft

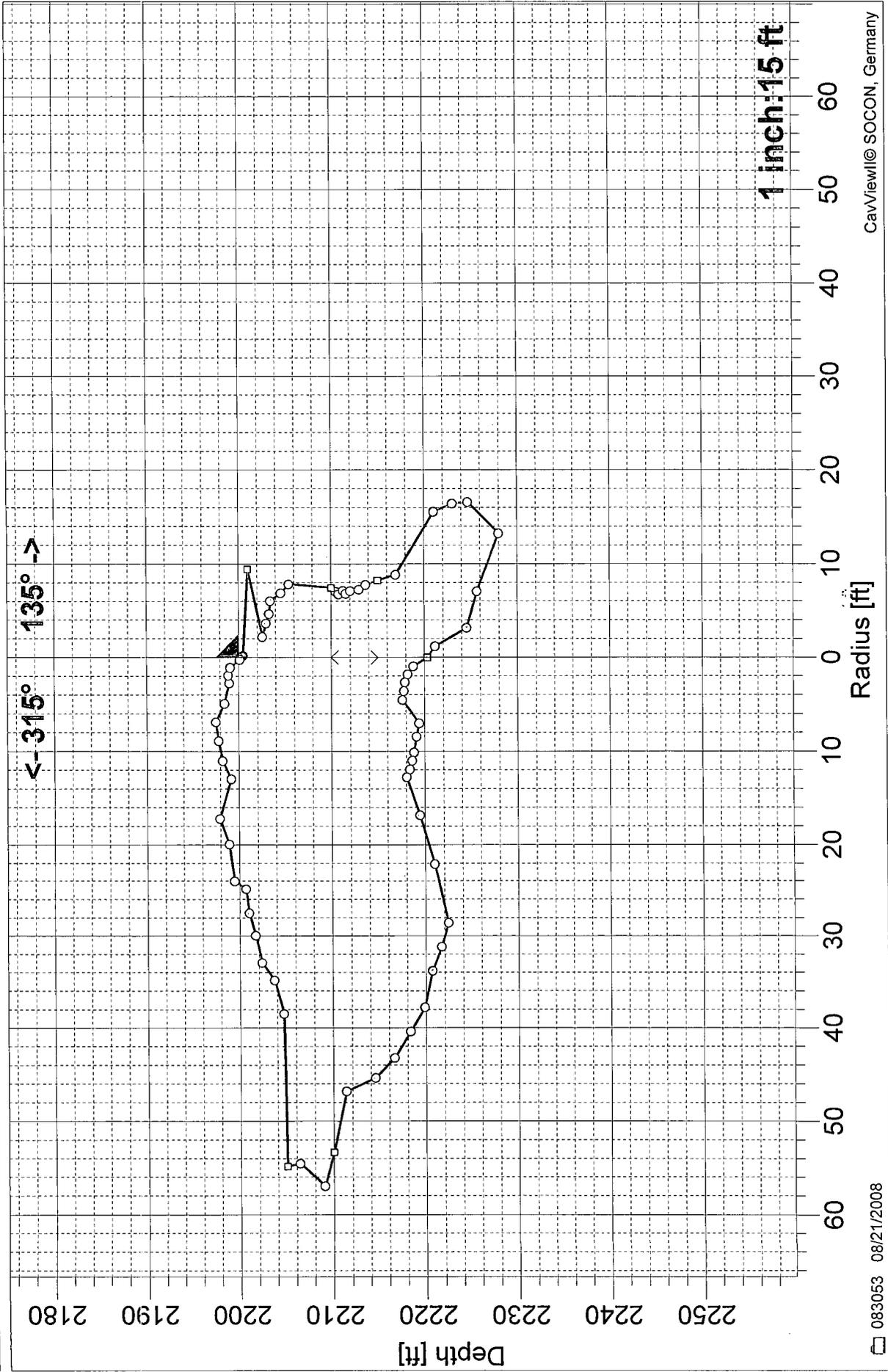
4 1/2" : 2165.0 ft



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7" : 2200.0 ft

4 1/2" : 2165.0 ft

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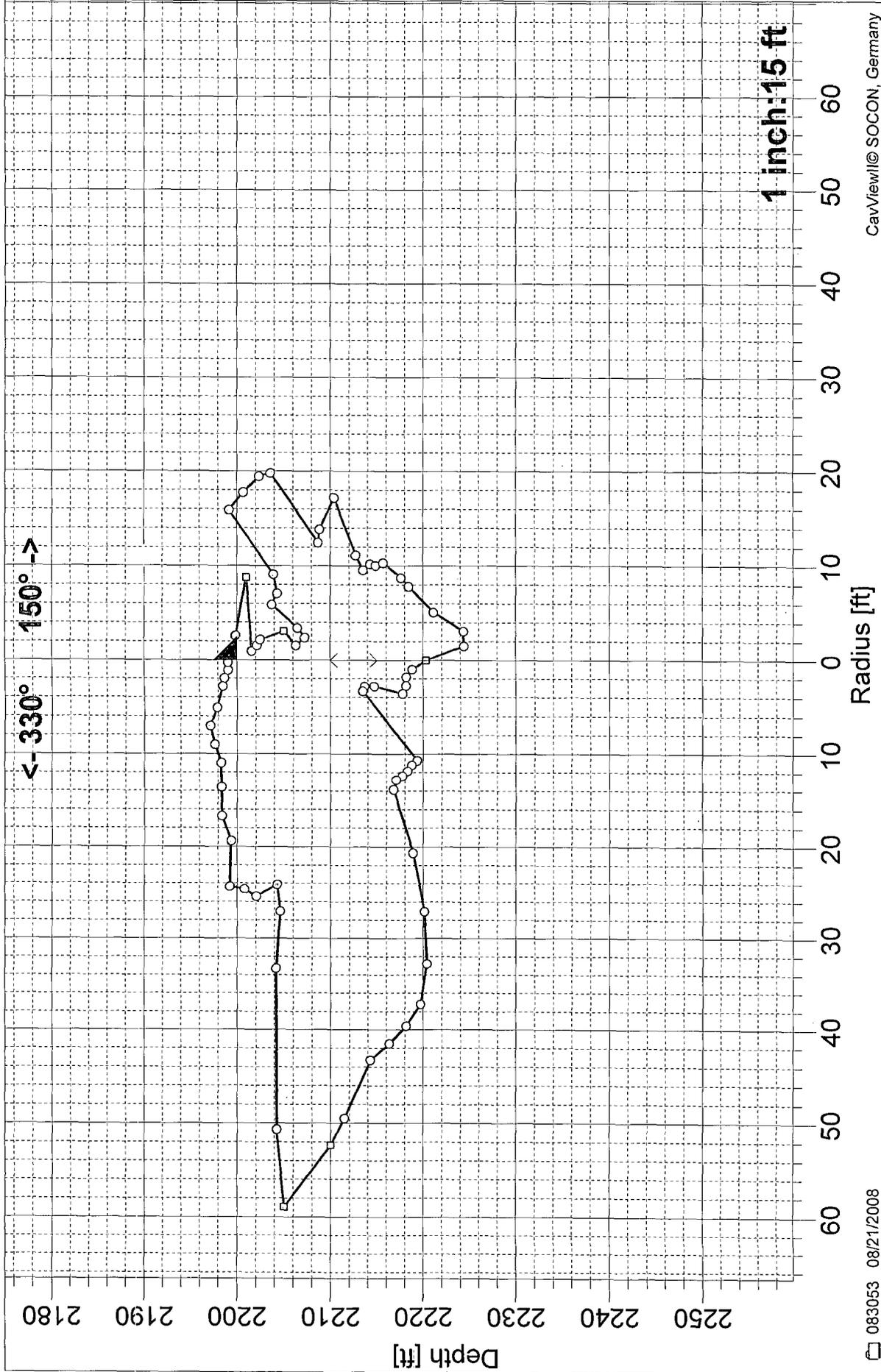
□ (08/21/2008)
— Tilting position



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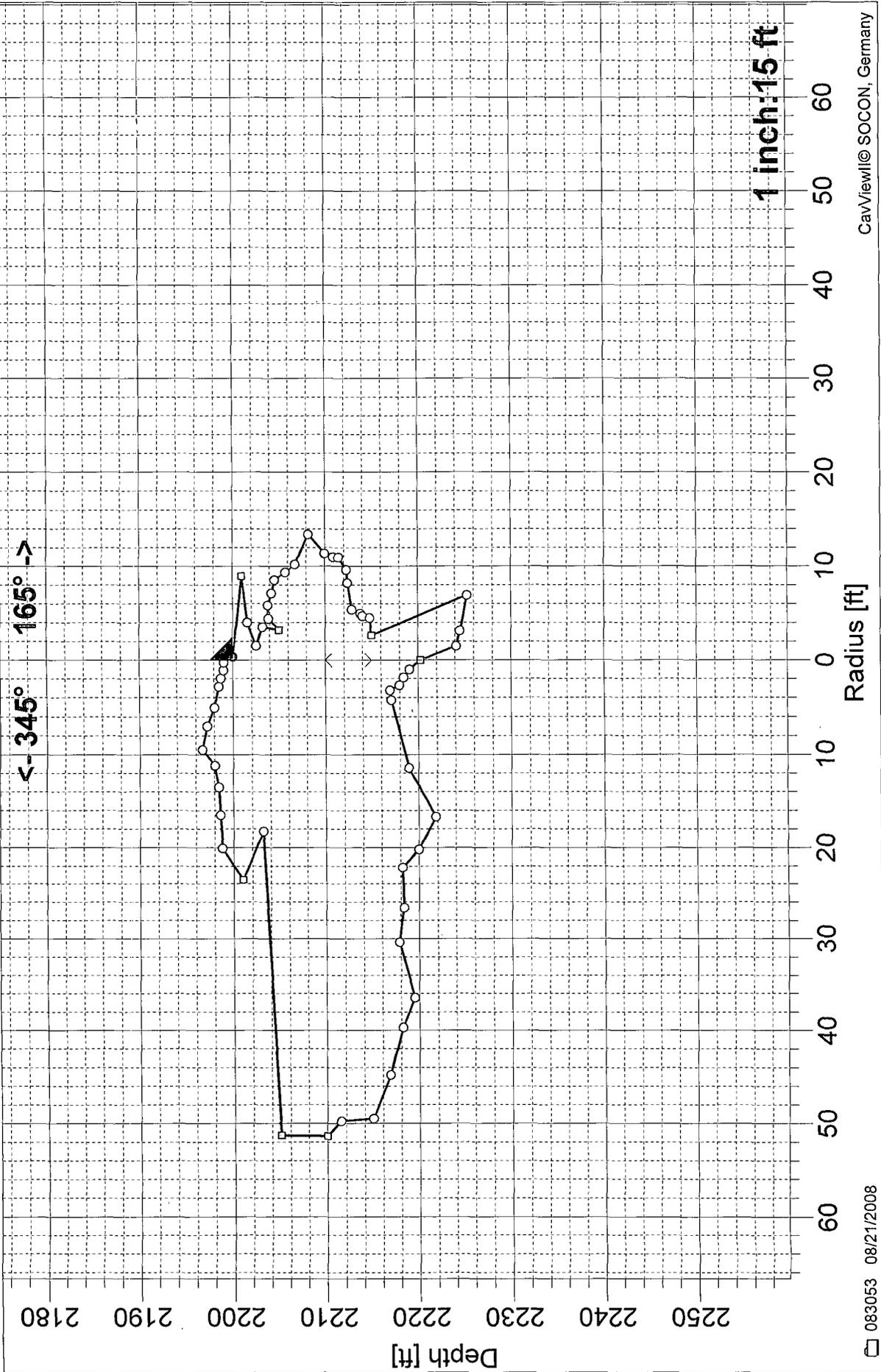
4 1/2" : 2165.0 ft

7" : 2200.0 ft

(08/21/2008)
Tiling position

08/21/2008

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Legend:
 -○- (08/21/2008)
 - - - Tilting position



HORIZONTAL SECTIONS

Cavern: Tatum Brine BW-2

Report No.: 083053

Utilized speed of sound: 1810.0 m/s (5938.3 ft/s)

Measuring date: 08/21/2008

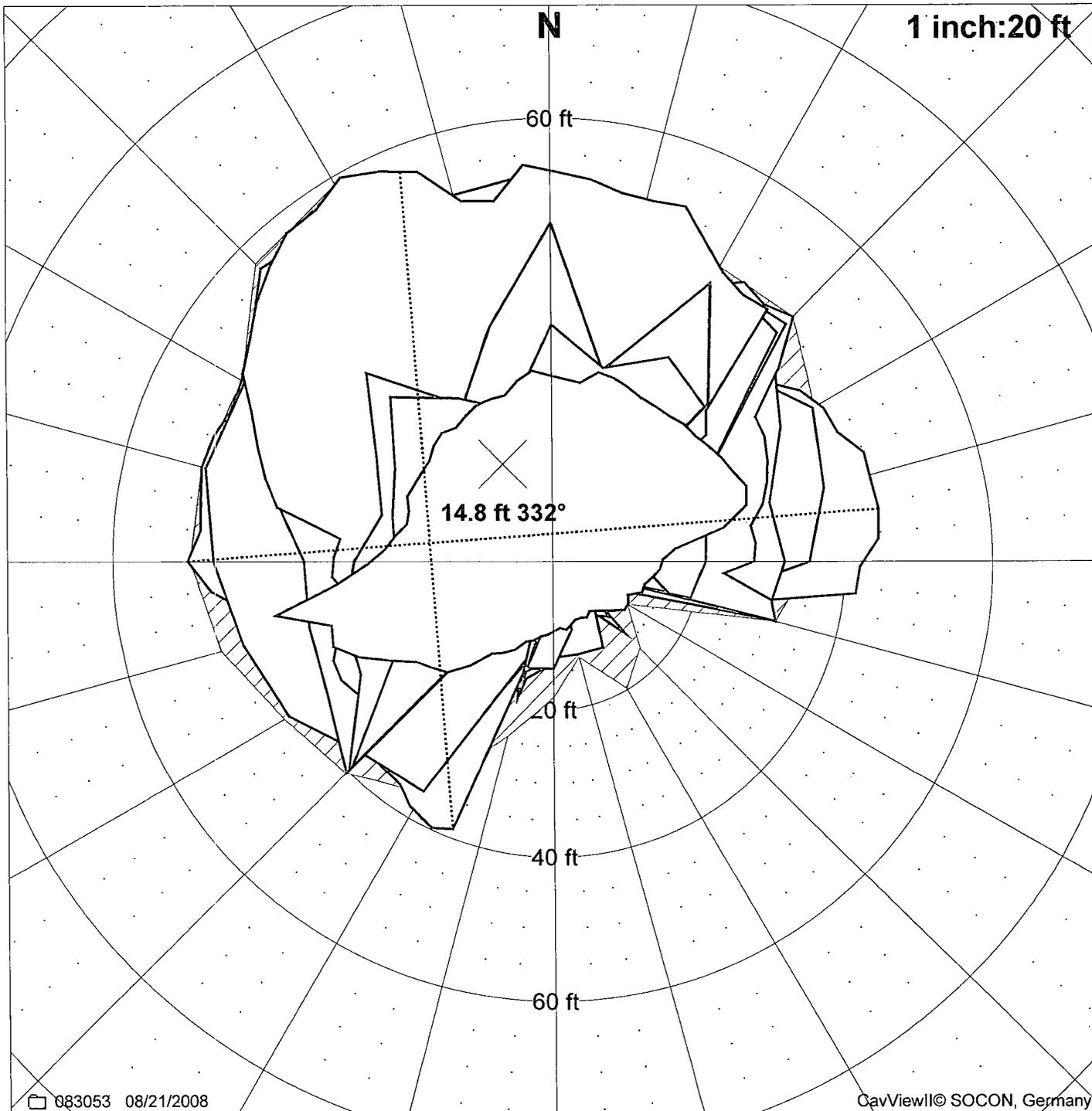
Scale: 1: 20

Horizontal sections measured at following depths:

2201.0 ft	2202.0 ft	2204.0 ft	2205.0 ft	2206.0 ft	2208.0 ft	2210.0 ft
2212.0 ft	2214.0 ft	2215.0 ft	2216.0 ft	2218.0 ft	2220.0 ft	

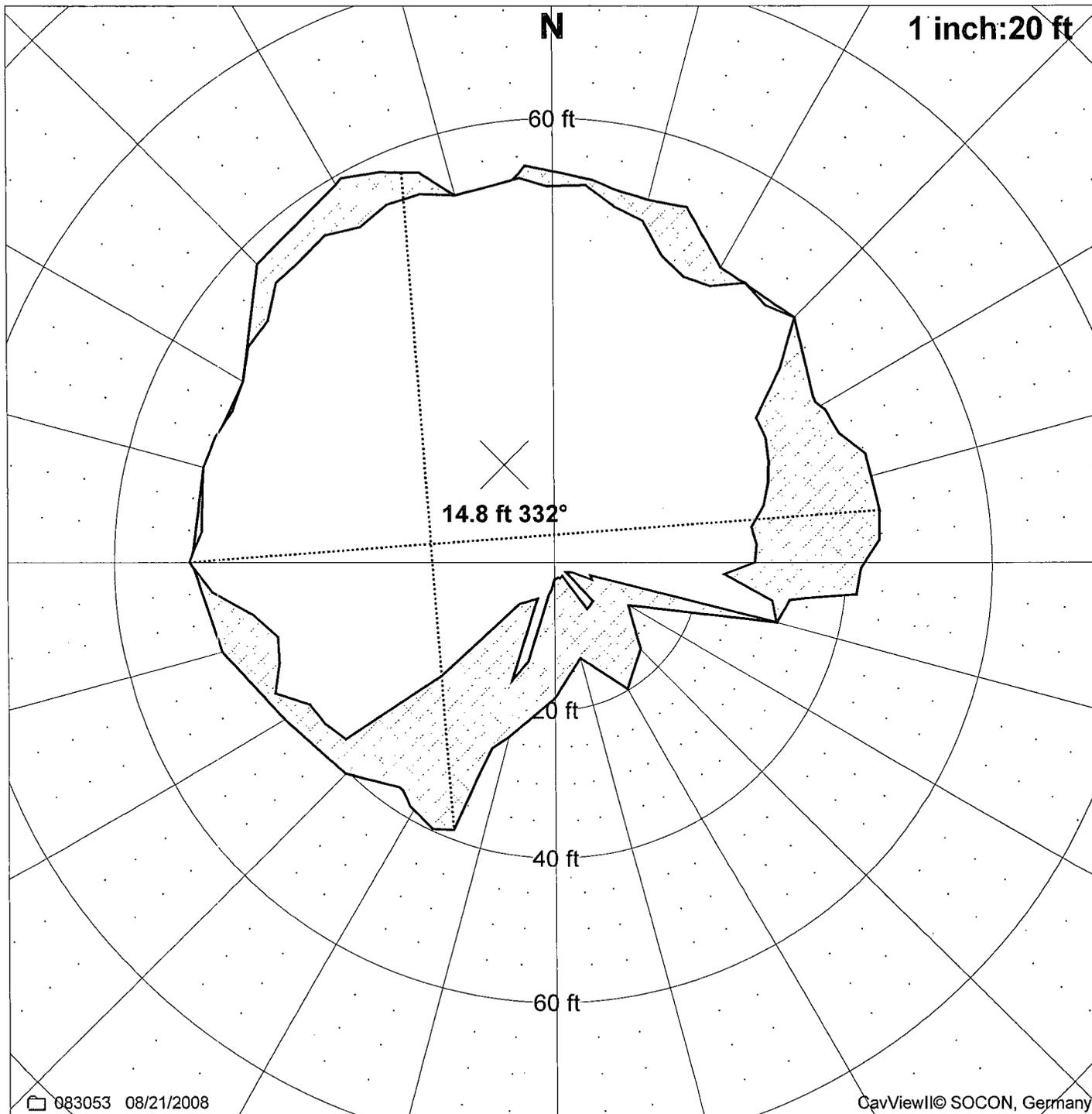
The following 16 sections are constructed:

2191.0 ft	2193.0 ft	2195.0 ft	2197.0 ft	2199.0 ft	2221.0 ft	2223.0 ft
2225.0 ft	2227.0 ft	2229.0 ft	2231.0 ft	2233.0 ft	2235.0 ft	2237.0 ft
2239.0 ft	2241.0 ft					



Vertical maximum plot	Horizontal sections	a/b
Center of gravity		

d_{max} : 93.1 ft 86° \leftrightarrow 266° r_{min} : 11.6 ft \rightarrow 120° r_{\sim} : 41.7 ft r_{max} : 59.4 ft \rightarrow 331°
 $a/b = 1.063$ $a = 94.7$ ft (80°-270°) $b = 89.1$ ft (201°-338°)
 Area from vertical sections: 5192 ft², Area from horizontal and vertical sections: 5463 ft²



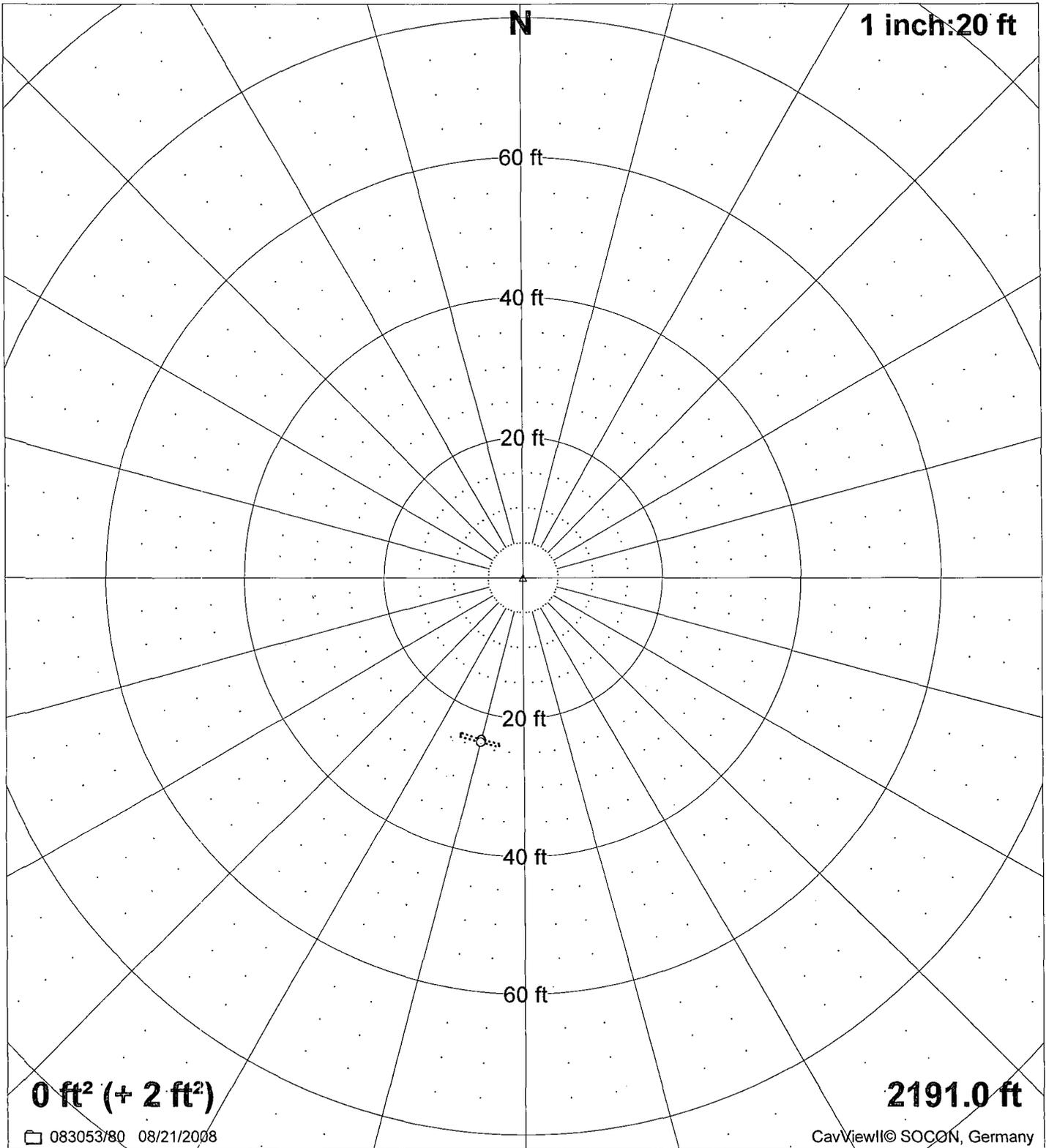
a/b
 Center of gravity
 Horizontal/vertical maximum plot
 Largest single area

$d_{max}: 93.1 \text{ ft } 86^\circ \leftrightarrow 266^\circ$ $r_{min}: 11.6 \text{ ft } \rightarrow 120^\circ$ $r_{\sim}: 41.7 \text{ ft}$ $r_{max}: 59.4 \text{ ft } \rightarrow 331^\circ$
 $a/b = 1.063$ $a = 94.7 \text{ ft } (80^\circ-270^\circ)$ $b = 89.1 \text{ ft } (201^\circ-338^\circ)$
 Largest single area: 4124 ft² in depth: 2210.0 ft, Area from horizontal and vertical sections: 5463 ft²

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1 inch:20 ft



0 ft² (+ 2 ft²)

2191.0 ft

083053/80 08/21/2008

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—○— (08/21/2008)

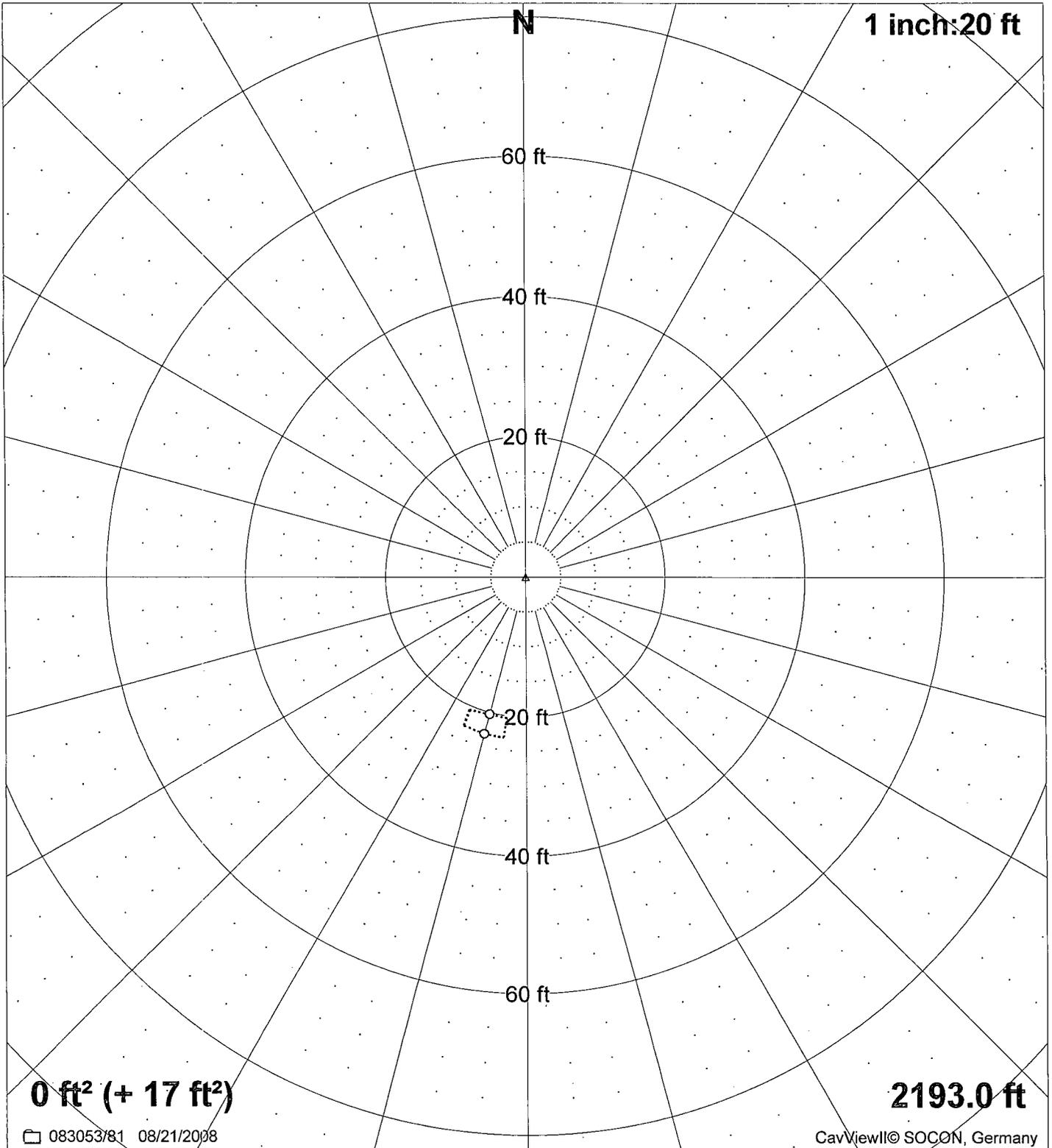
—○— Leached pocket (08/21/2008)

d_{max} : 24.2 ft 195° <--> 15° r_{min} : 0.0 ft -> 0° $r_{~}$: 0.9 ft r_{max} : 24.2 ft -> 195°



Tatum Brine BW-2

08/21/2008

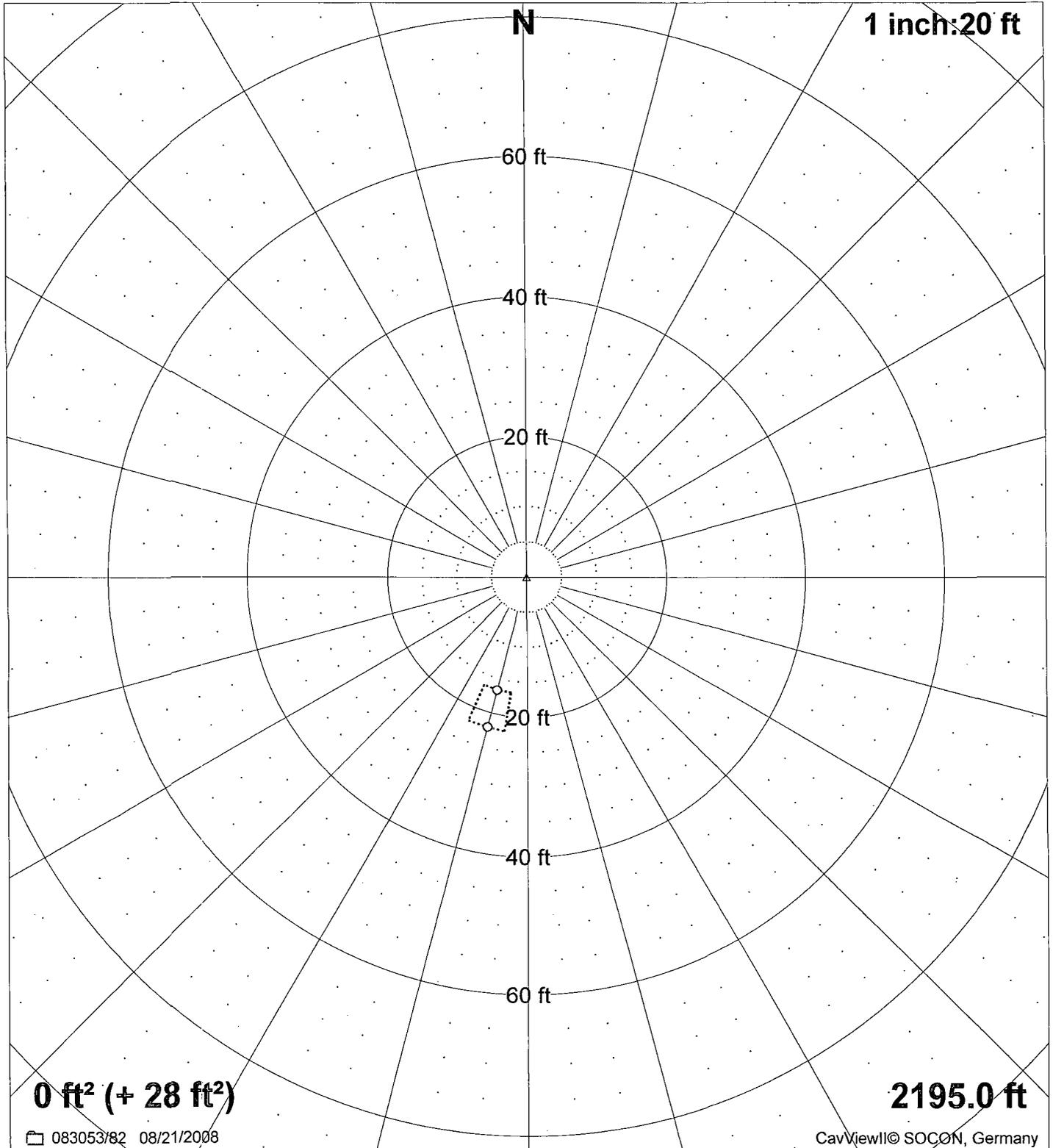


(08/21/2008)
 Leached pocket (08/21/2008)

d_{max} : 23.2 ft 195° <--> 15°
 r_{min} : 0.0 ft -> 0°
 r_{\sim} : 2.3 ft
 r_{max} : 23.2 ft -> 195°

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08/21/2008



0 ft² (+ 28 ft²)

2195.0 ft

083053/82 08/21/2008

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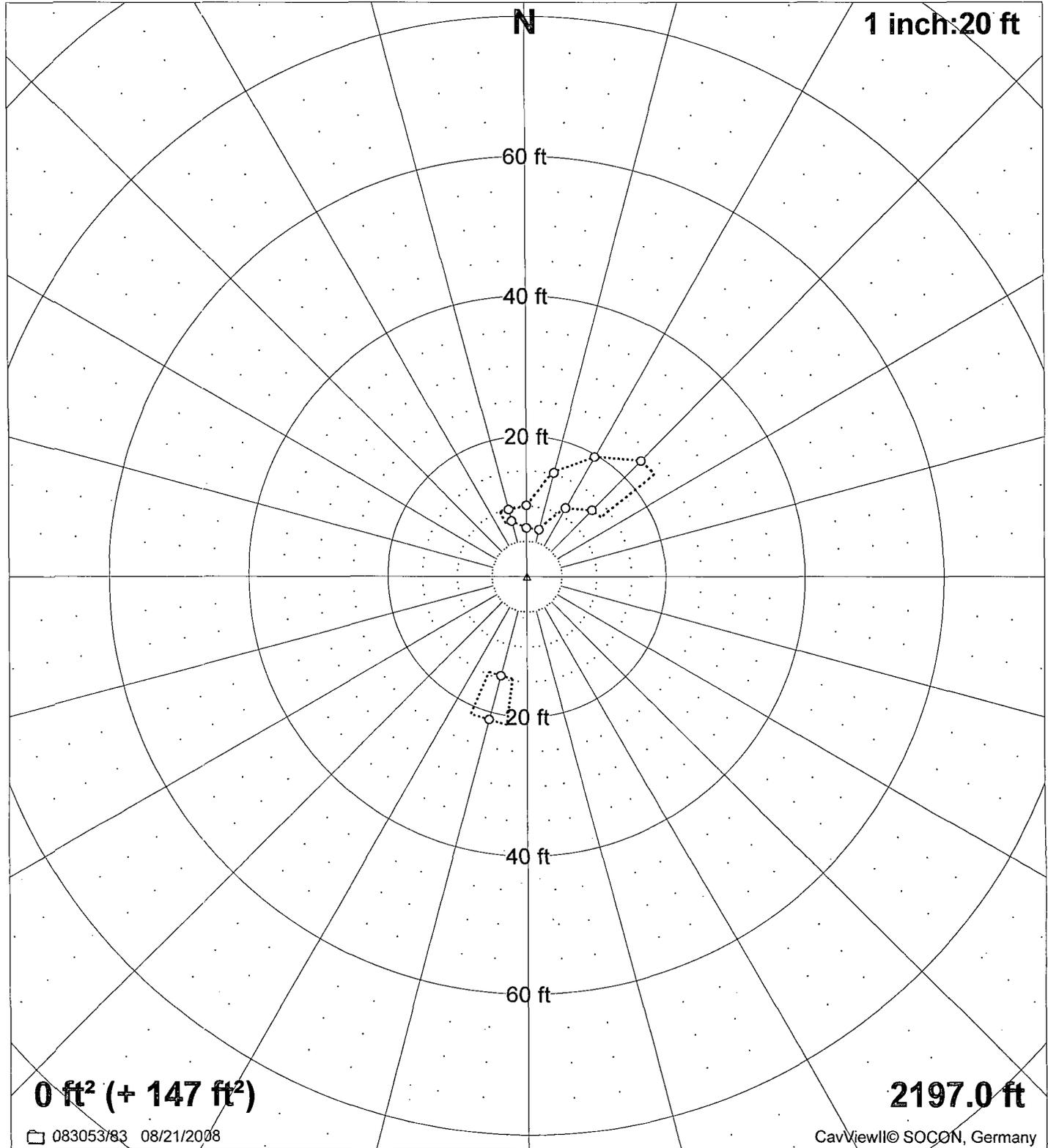
—□— (08/21/2008)

—○— Leached pocket (08/21/2008)

d_{max}: 22.1 ft 195° <--> 15° r_{min}: 0.0 ft -> 0° r~: 3.0 ft r_{max}: 22.1 ft -> 195°

Tatum Brine BW-2

08/21/2008

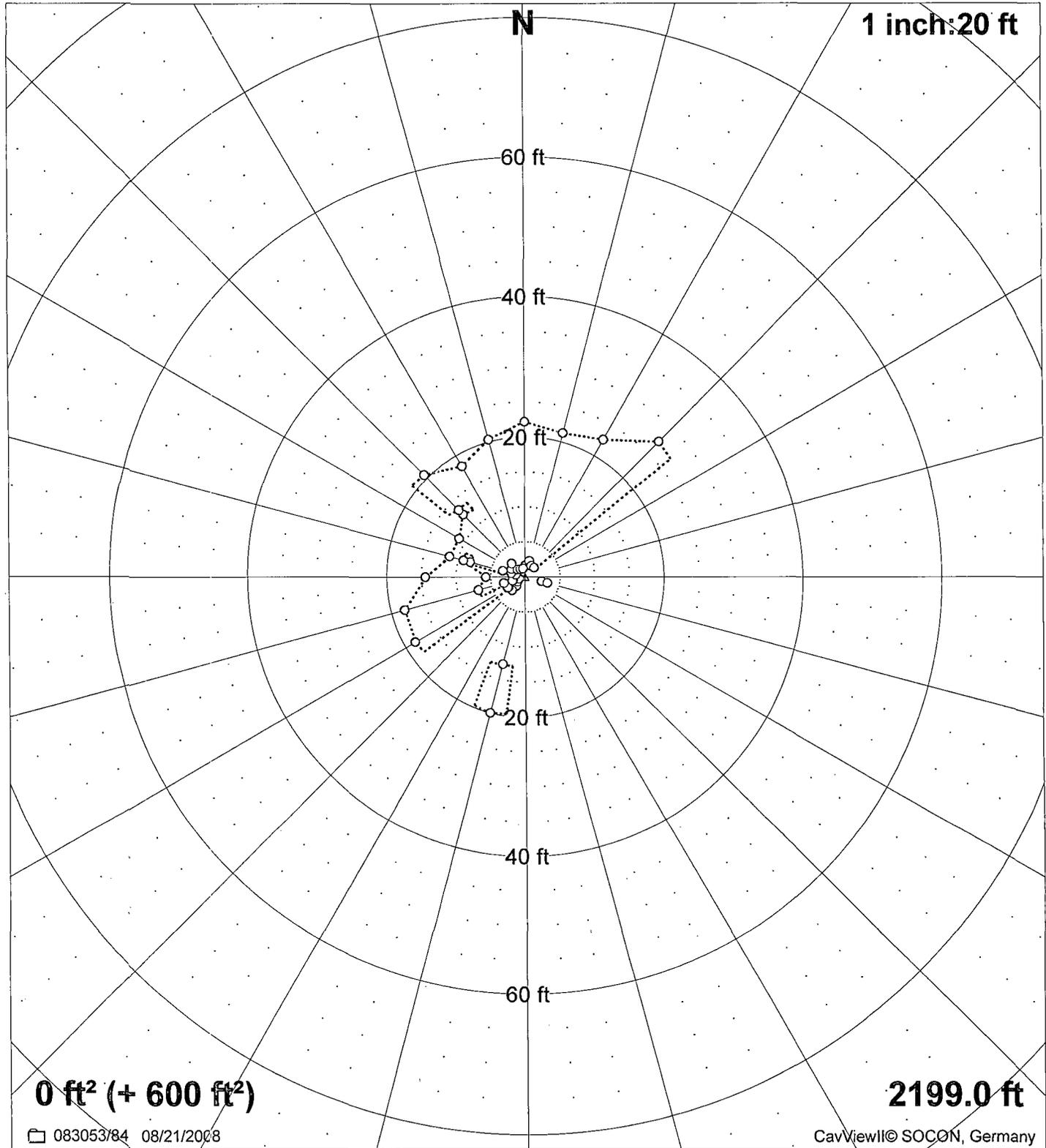


—□— (08/21/2008) —○— Leached pocket (08/21/2008)

d_{max} : 36.3 ft 15° <--> 195° r_{min} : 0.0 ft -> 1° r_{\sim} : 6.8 ft r_{max} : 23.3 ft -> 45°

Tatum Brine BW-2

08/21/2008



0 ft² (+ 600 ft²)

2199.0 ft

083053/84 08/21/2008

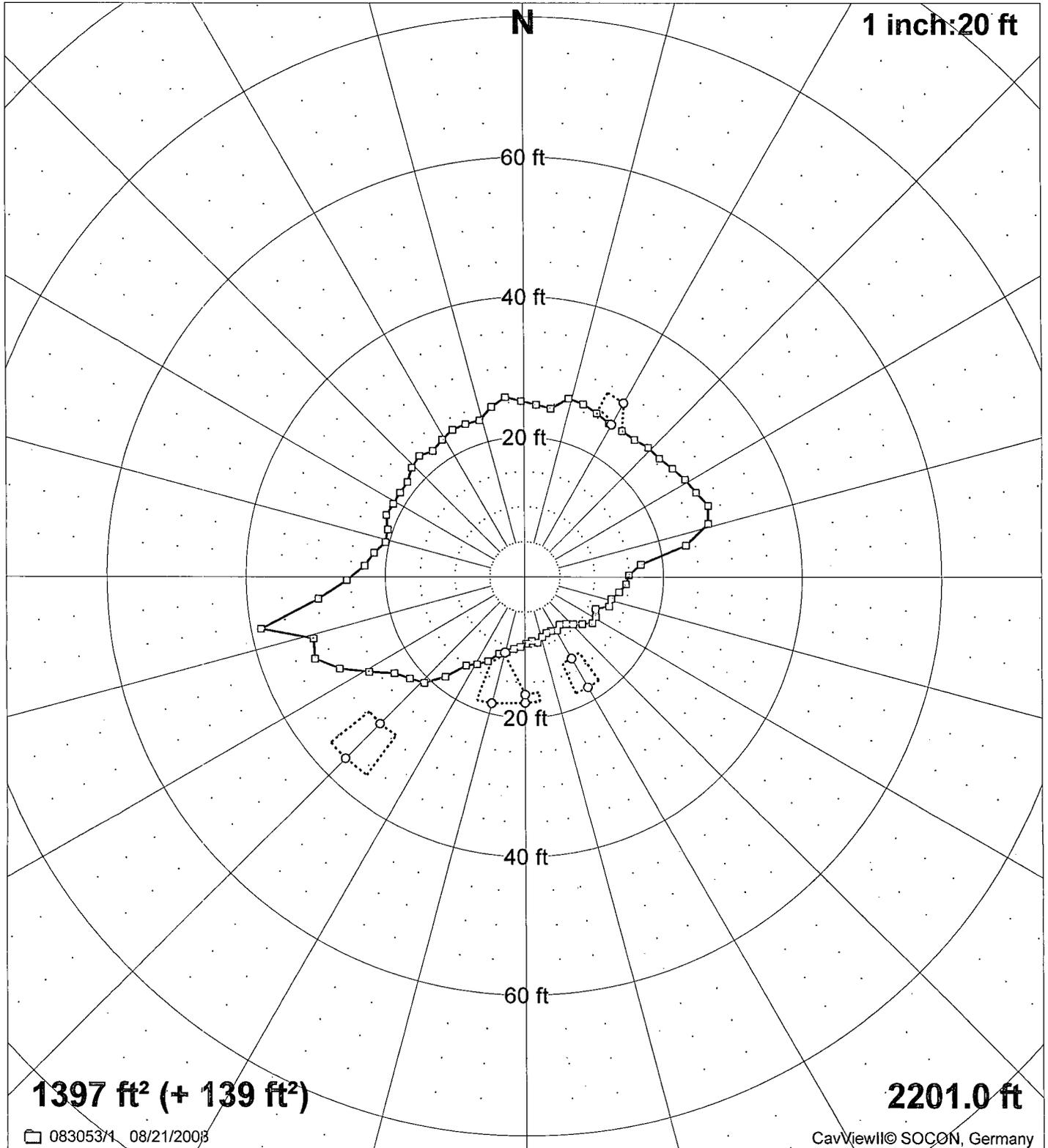
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—○— (08/21/2008) —○— Leached pocket (08/21/2008)

d_{max} : 41.2 ft 15° <--> 195° r_{min} : 0.0 ft -> 1° r_{\sim} : 13.8 ft r_{max} : 27.3 ft -> 45°

Tatum Brine BW-2

08/21/2008



1397 ft² (+ 139 ft²)

2201.0 ft

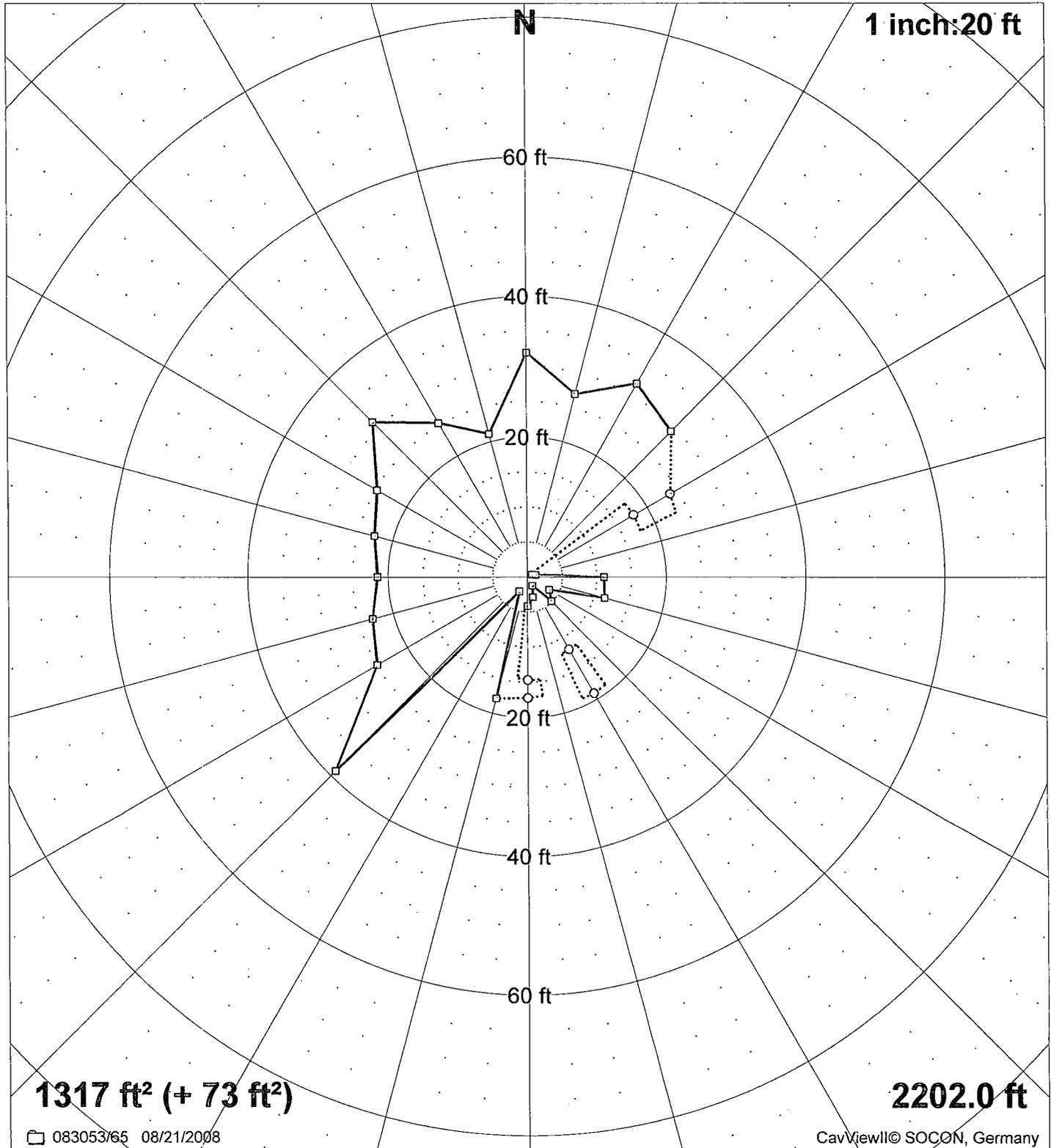
08305371 08/21/2008

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—□— (08/21/2008)

—○— Leached pocket (08/21/2008)

d_{max} : 62.3 ft 259° <--> 79° r_{min} : 8.4 ft -> 144° r_{\sim} : 22.1 ft r_{max} : 38.6 ft -> 259°



1317 ft² (+ 73 ft²)

2202.0 ft

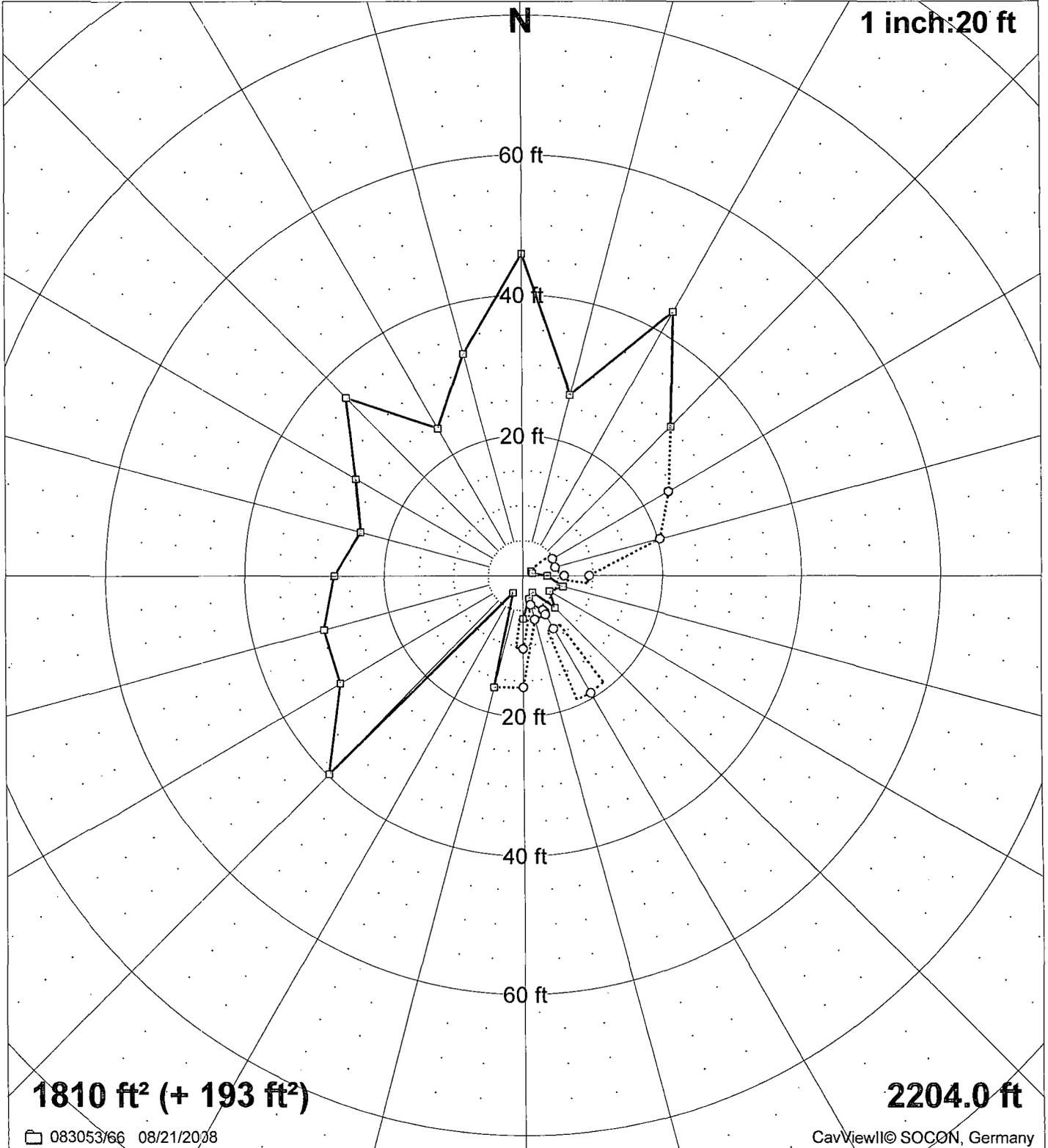
083053/65 08/21/2008

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—□— (08/21/2008)

—○— Leached pocket (08/21/2008)

d_{max} : 68.4 ft 225° <--> 45° r_{min} : 0.8 ft -> 61° r_{\sim} : 21.0 ft r_{max} : 39.0 ft -> 225°



1810 ft² (+ 193 ft²)

2204.0 ft

083053/66 08/21/2008

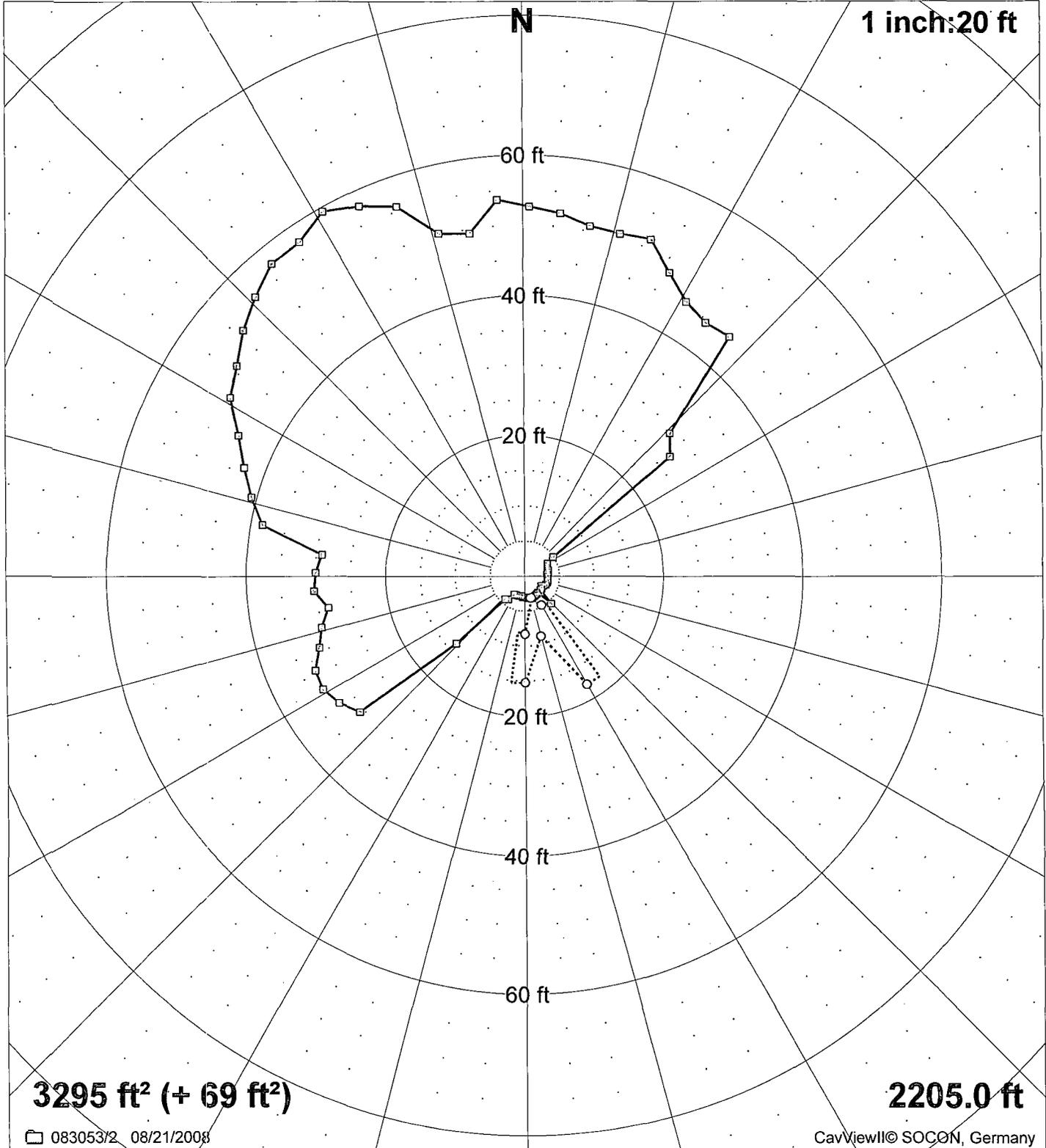
CavViewII© SOCON, Germany

—□— (08/21/2008)

—○— Leached pocket (08/21/2008)

d_{max} : 69.8 ft 45° <--> 225° r_{min} : 1.3 ft -> 62° r_{\sim} : 25.2 ft r_{max} : 45.9 ft -> 360°

1 inch:20 ft



3295 ft² (+ 69 ft²)

2205.0 ft

083053/2 08/21/2008

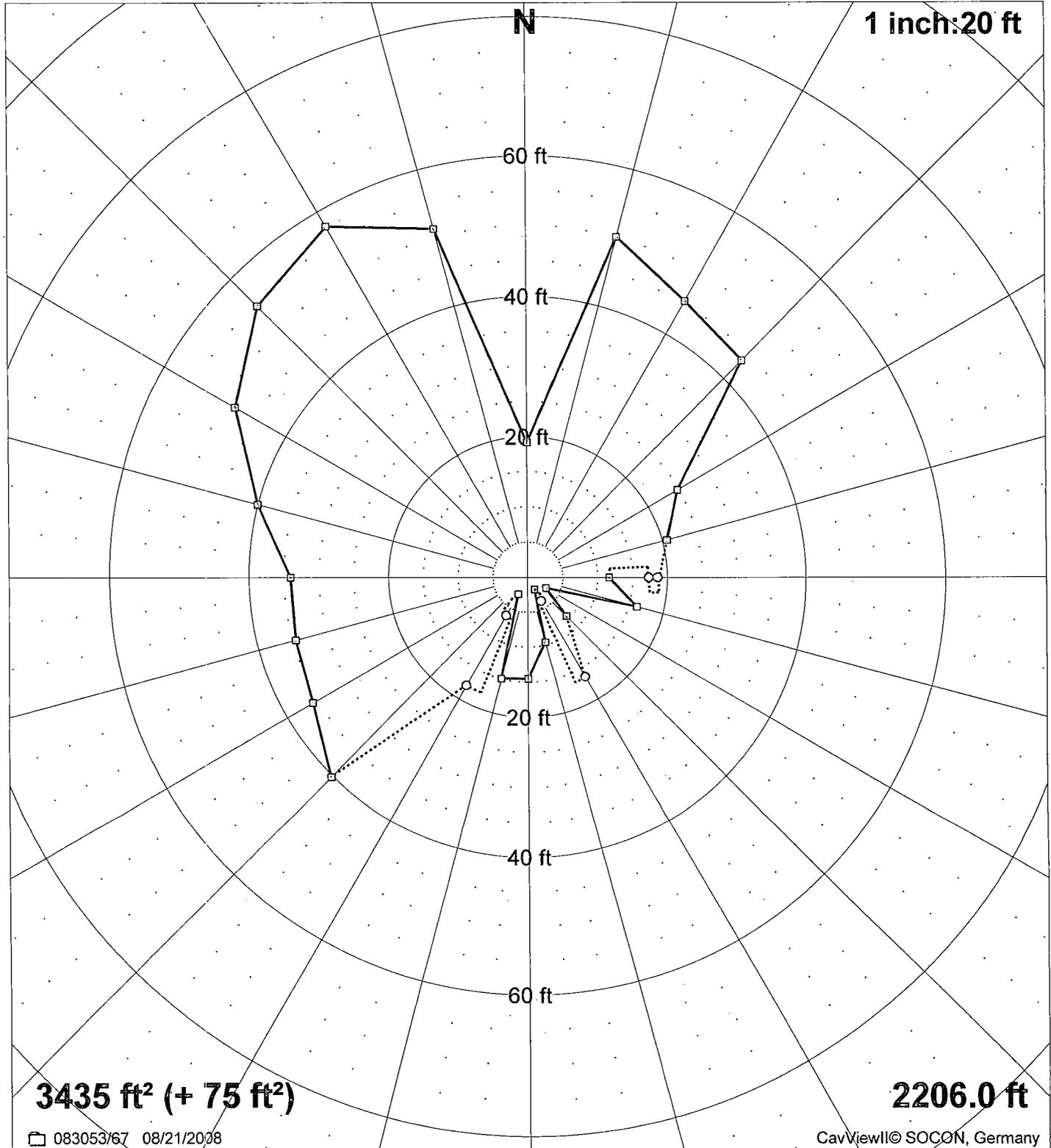
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—□— (08/21/2008) —○— Leached pocket (08/21/2008)

d_{max} : 76.7 ft 330° <--> 150° r_{min} : 2.7 ft -> 121° r_{\sim} : 32.7 ft r_{max} : 59.4 ft -> 331°

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08/21/2008



3435 ft² (+ 75 ft²)

2206.0 ft

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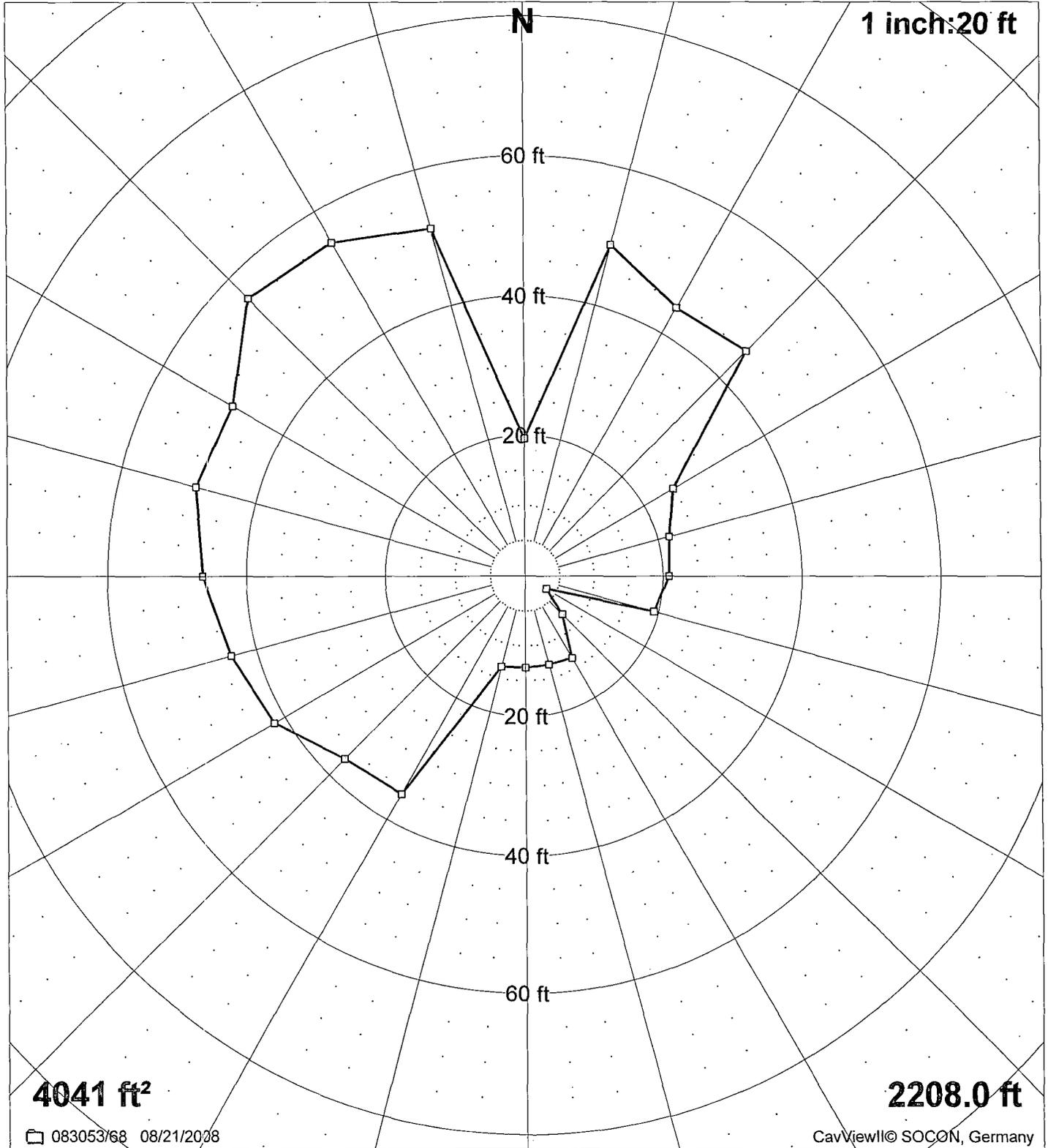
—□— (08/21/2008)

—○— Leached pocket (08/21/2008)

d_{max} : 83.8 ft 45° <--> 225° r_{min} : 2.1 ft -> 149° r_{\sim} : 33.4 ft r_{max} : 57.6 ft -> 330°

Tatum Brine BW-2

08/21/2008

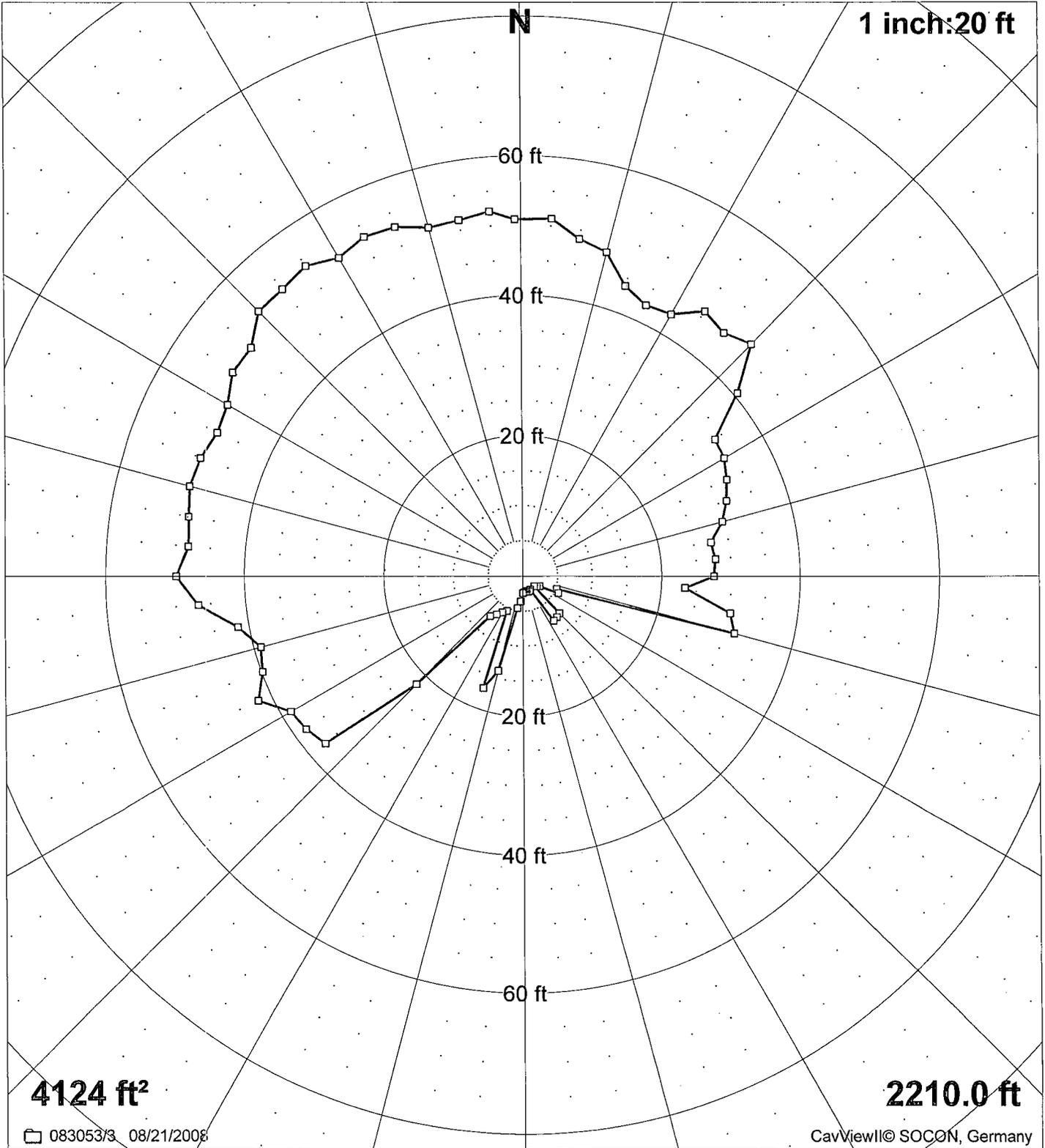


—□— (08/21/2008)

d_{max} : 82.1 ft 45° <--> 225° r_{min} : 3.5 ft -> 120° r_{\sim} : 35.9 ft r_{max} : 56.0 ft -> 315°

Tatum Brine BW-2

08/21/2008

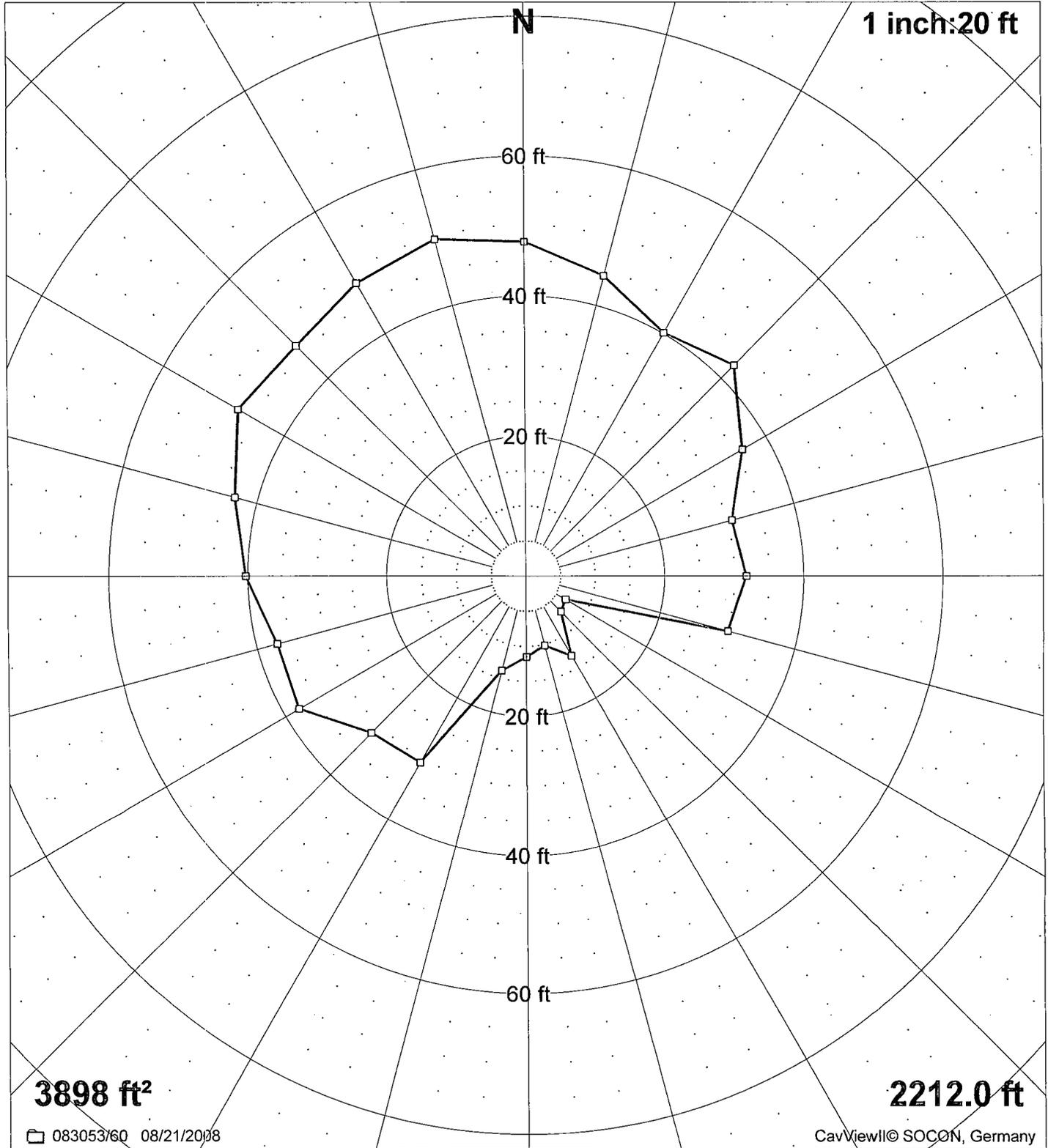


(08/21/2008)

d_{max} : 80.9 ft 105° <--> 285° r_{min} : 2.1 ft -> 130° r_{\sim} : 36.2 ft r_{max} : 53.9 ft -> 325°

Tatum Brine BW-2

08/21/2008



3898 ft²

2212.0 ft

083053/60 08/21/2008

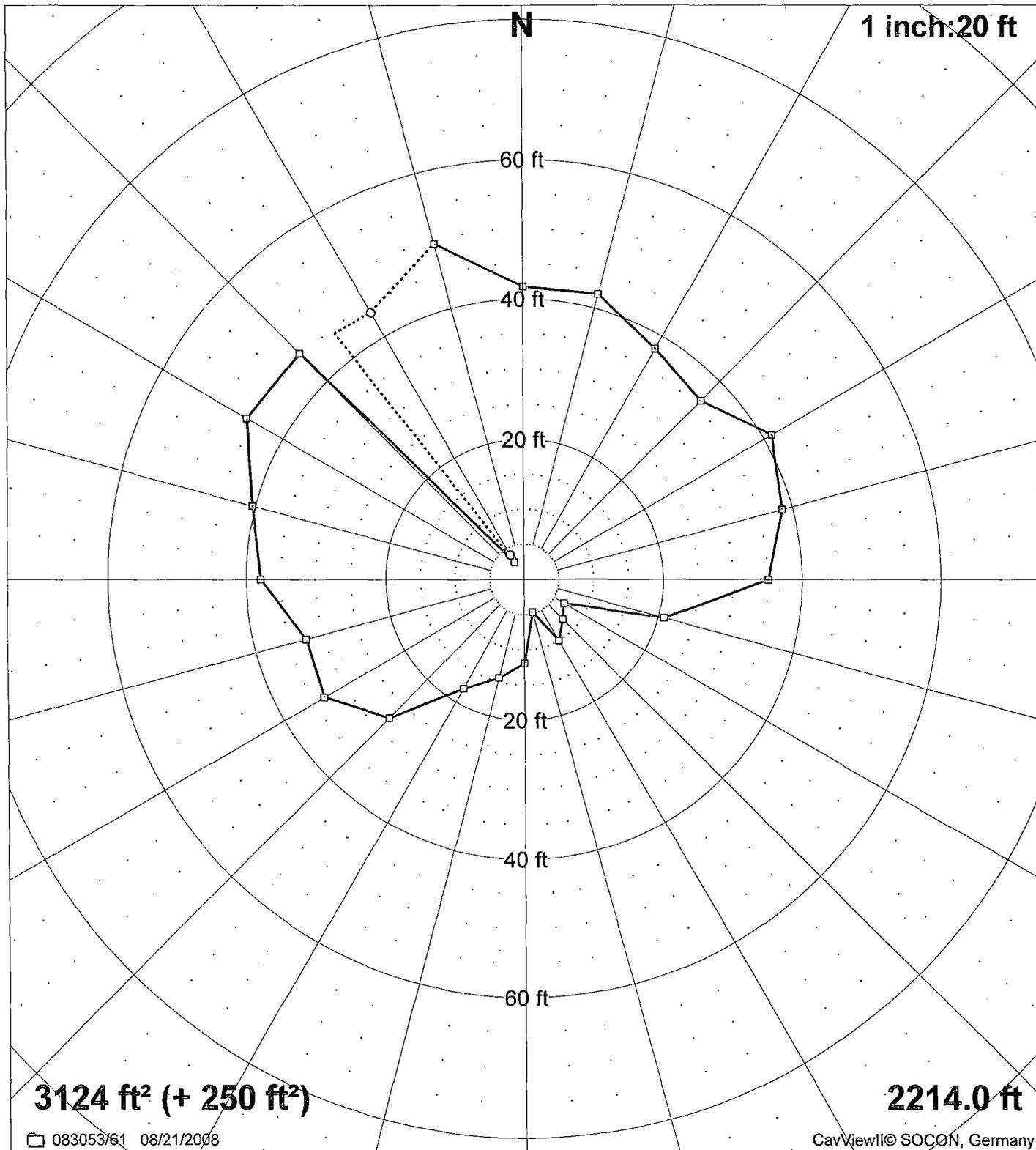
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(08/21/2008)

d_{max} : 74.1 ft 45° <--> 225° r_{min} : 6.6 ft -> 120° r_{\sim} : 35.2 ft r_{max} : 49.7 ft -> 345°



1 inch:20 ft

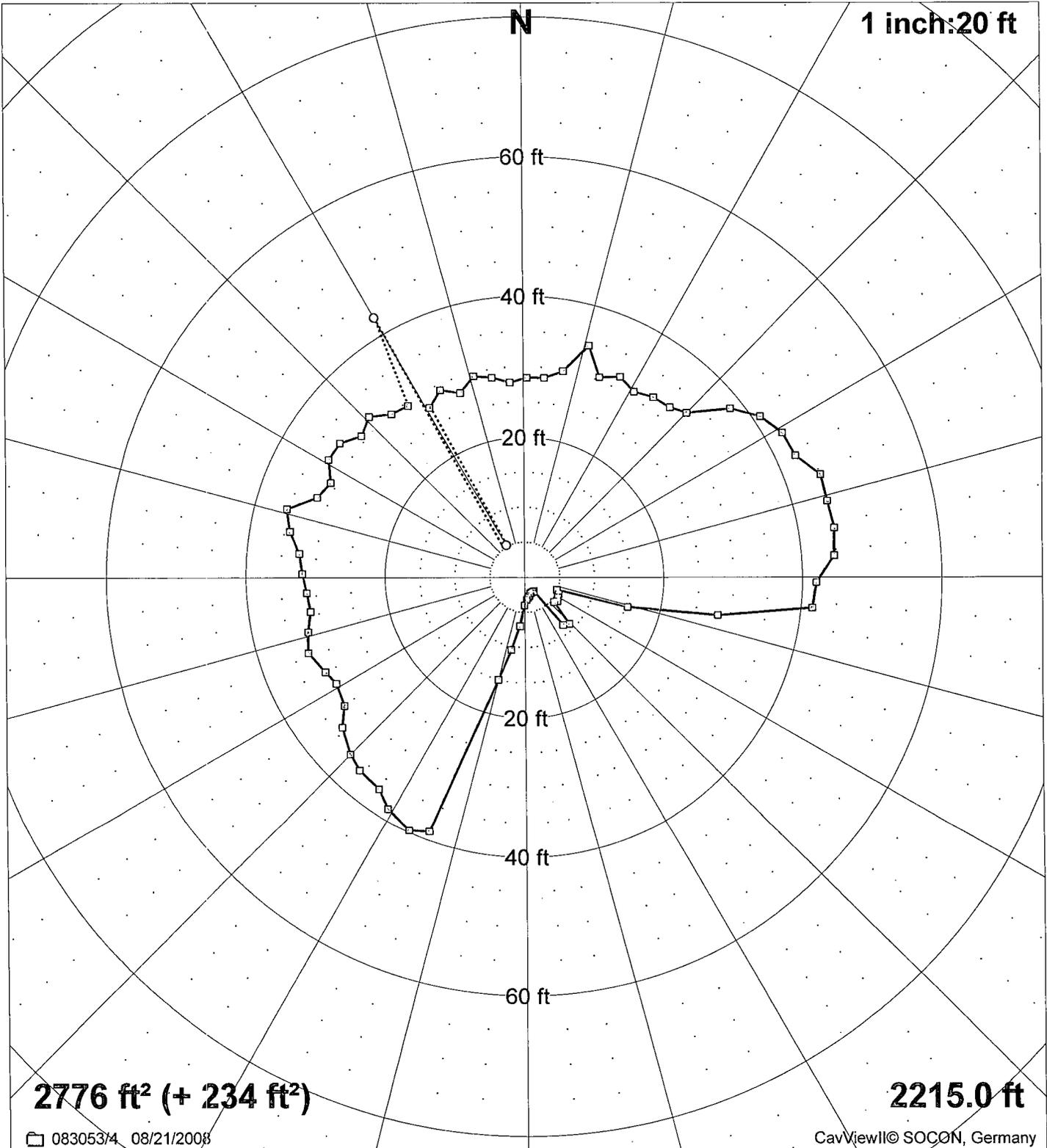


—□— (08/21/2008)

—○— Leached pocket (08/21/2008)

d_{max} : 74.7 ft 240° <--> 60° r_{min} : 3.0 ft -> 329° r_{\sim} : 32.8 ft r_{max} : 49.5 ft -> 345°

1 inch:20 ft



2776 ft² (+ 234 ft²)

2215.0 ft

083053/4 08/21/2008

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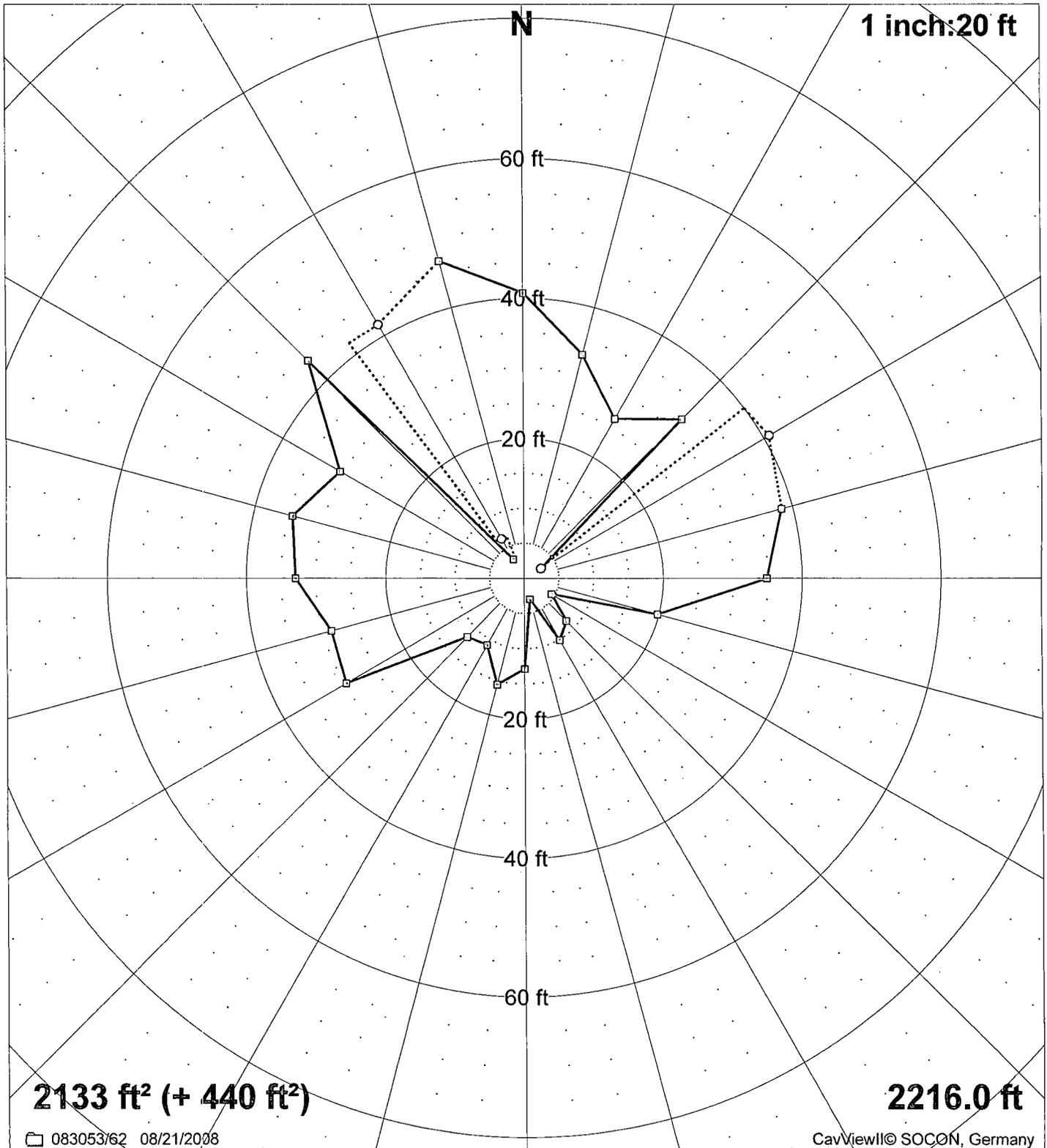
—□— (08/21/2008)	—○— Leached pocket (08/21/2008)
$d_{max}: 78.0 \text{ ft } 251^\circ \leftrightarrow 71^\circ$ $r_{min}: 2.3 \text{ ft } \rightarrow 154^\circ$ $r_{\sim}: 31.0 \text{ ft}$ $r_{max}: 45.1 \text{ ft } \rightarrow 81^\circ$	



Tatum Brine BW-2

08/21/2008

1 inch:20 ft



2133 ft² (+ 440 ft²)

2216.0 ft

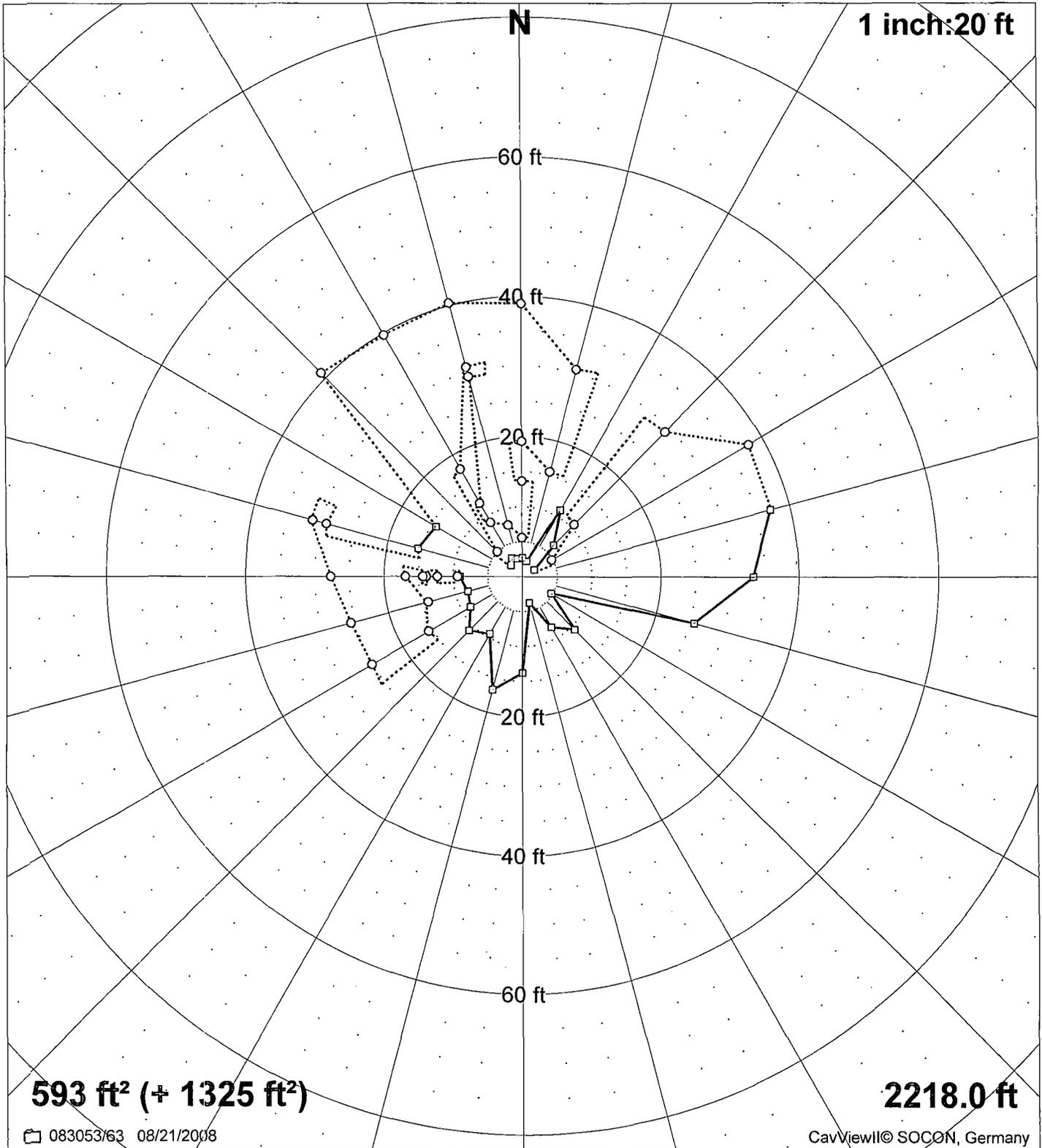
083053/62 08/21/2008

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—□— (08/21/2008)

—○— Leached pocket (08/21/2008)

d_{max} : 70.5 ft 240° <--> 60° r_{min} : 2.9 ft -> 59° r_{\sim} : 28.6 ft r_{max} : 46.8 ft -> 345°



593 ft² (+ 1325 ft²)

2218.0 ft²

083053/63 08/21/2008

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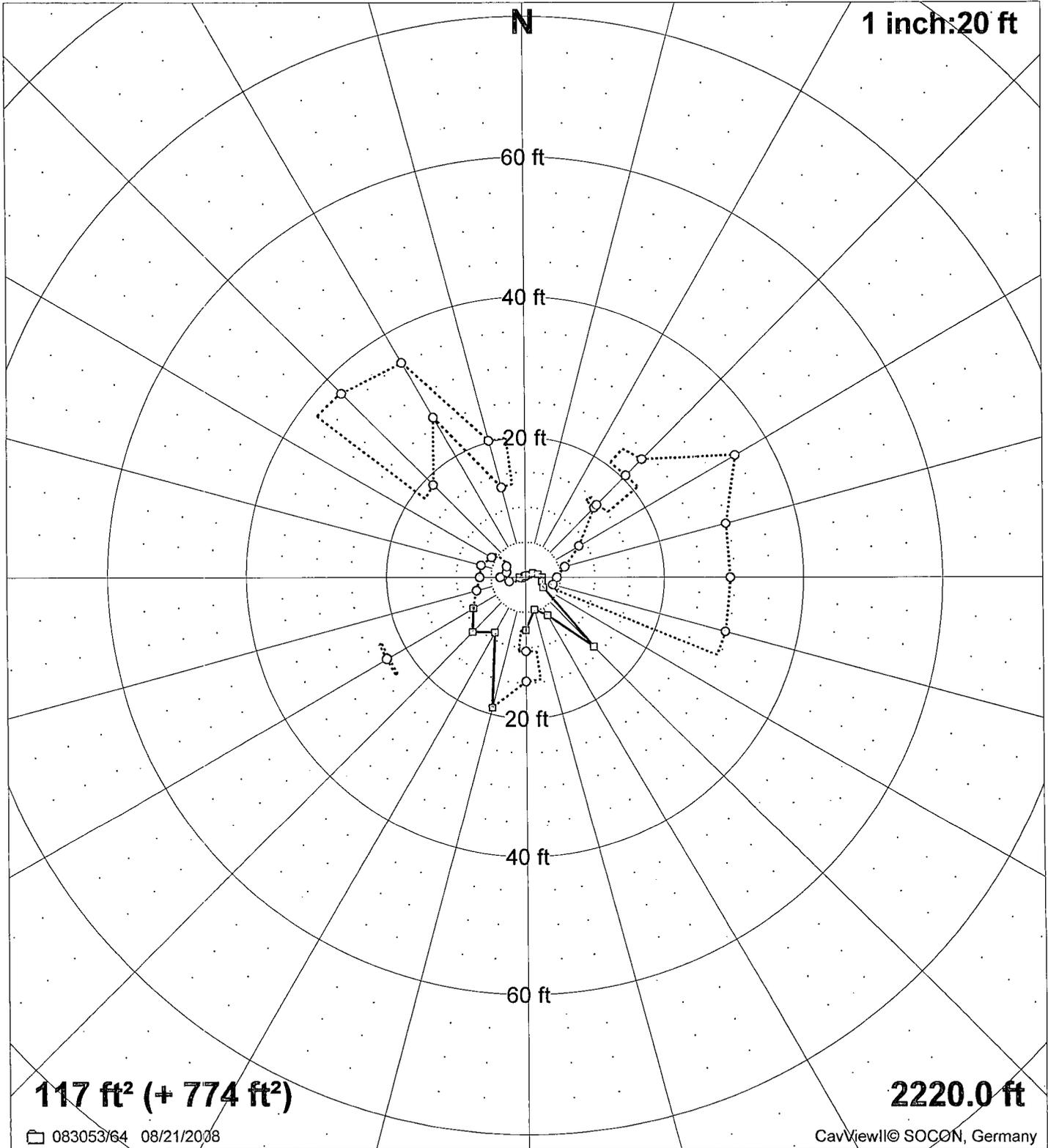
—□— (08/21/2008)

—○— Leached pocket (08/21/2008)

d_{max} : 62.8 ft 240° <--> 60° r_{min} : 2.0 ft -> 59° r_{\sim} : 24.7 ft r_{max} : 40.9 ft -> 315°

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08/21/2008



117 ft² (+ 774 ft²)

2220.0 ft

083053/64 08/21/2008

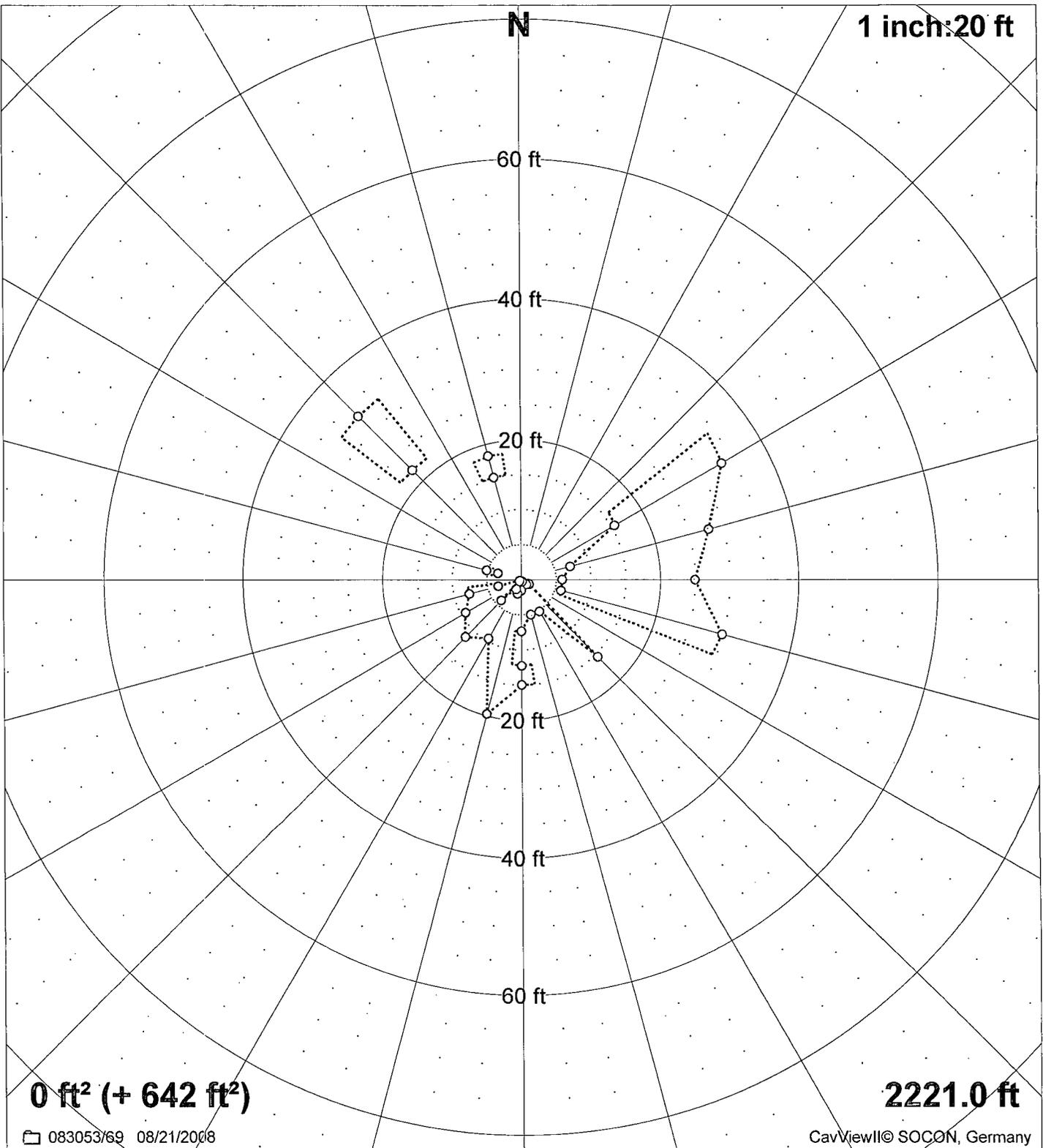
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—□— (08/21/2008) —○— Leached pocket (08/21/2008)

d_{max} : 58.0 ft 60° <--> 240° r_{min} : 0.2 ft -> 301° r_{\sim} : 16.8 ft r_{max} : 37.1 ft -> 315°

Tatum Brine BW-2

08/21/2008



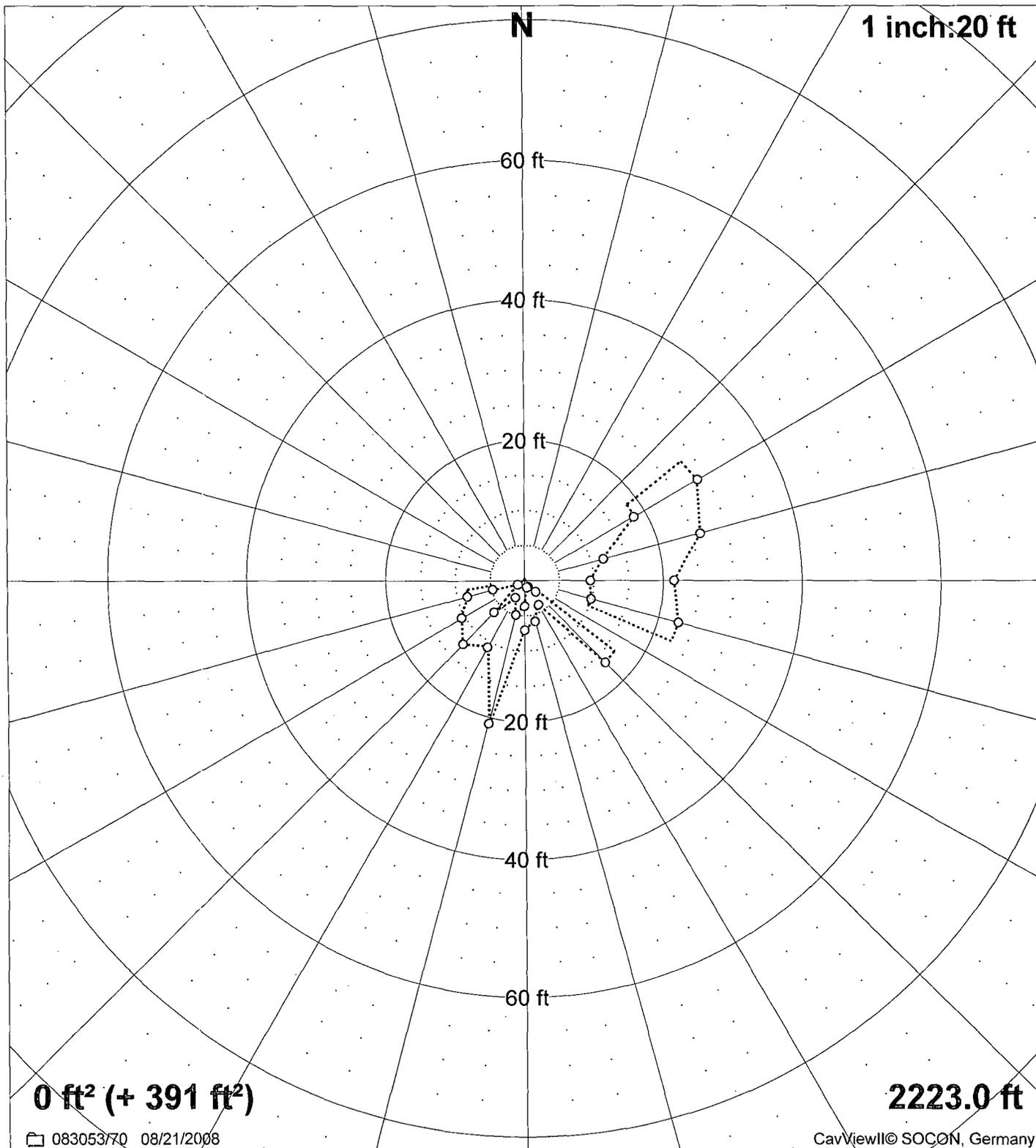
—○— (08/21/2008)

—○— Leached pocket (08/21/2008)

d_{max} : 48.5 ft 315° <--> 135° r_{min} : 0.0 ft -> 0° r_{\sim} : 14.3 ft r_{max} : 33.3 ft -> 60°

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08/21/2008



0 ft² (+ 391 ft²)

2223.0 ft

083053/70 08/21/2008

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—□— (08/21/2008)

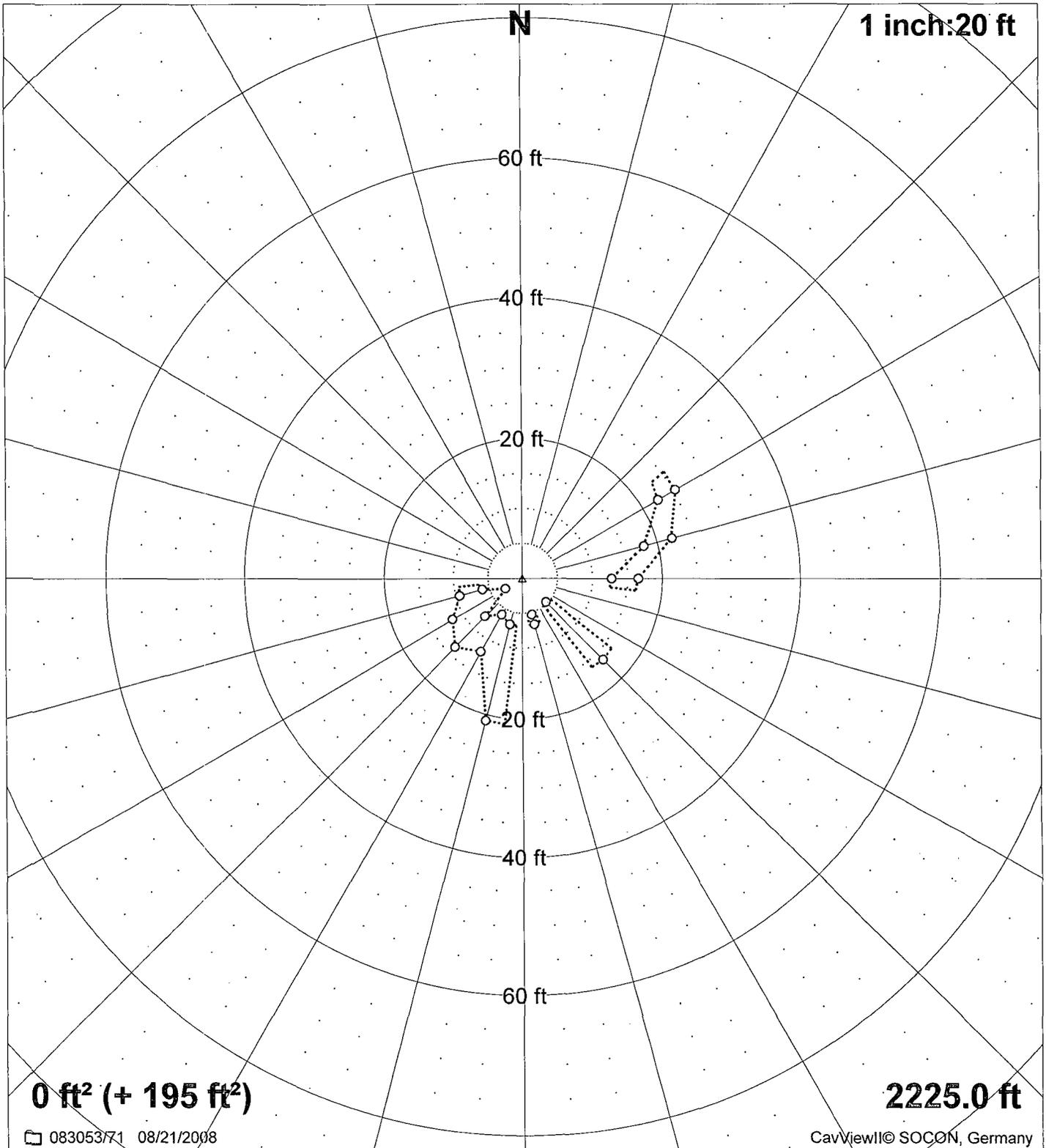
—○— Leached pocket (08/21/2008)

d_{max}: 39.3 ft 60° <--> 240° r_{min}: 0.0 ft -> 0° r~: 11.2 ft r_{max}: 28.8 ft -> 60°

Tatum Brine BW-2

08/21/2008

1 inch:20 ft



0 ft² (+ 195 ft²)

2225.0 ft

083053/71 08/21/2008

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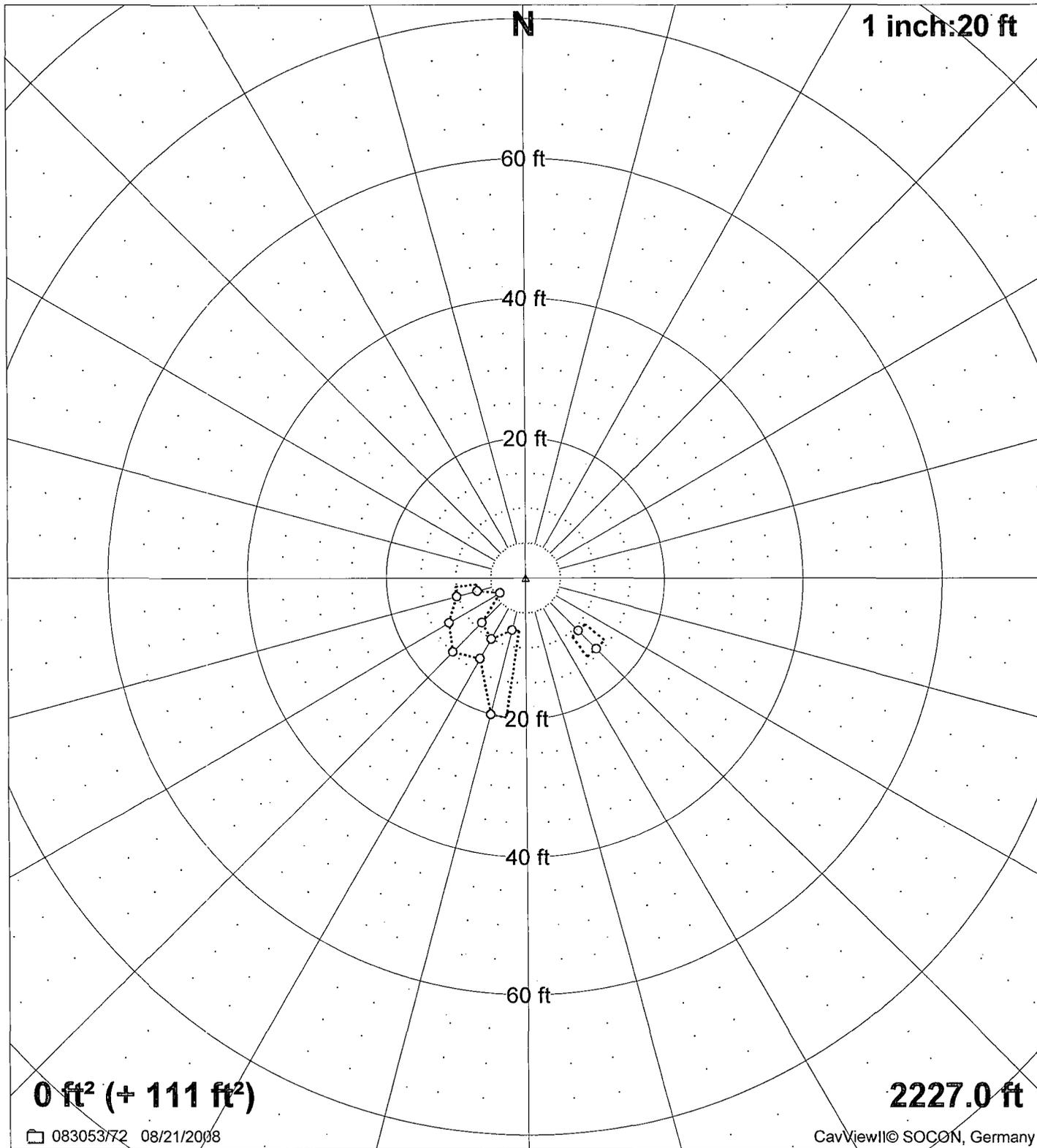
—○— (08/21/2008)

—○— Leached pocket (08/21/2008)

d_{max} : 37.0 ft 240° <--> 60° r_{min} : 0.0 ft -> 0° r_{\sim} : 7.9 ft r_{max} : 25.4 ft -> 60°

Tatum Brine BW-2

08/21/2008



0 ft² (+ 111 ft²)

2227.0 ft²

08305372 08/21/2008

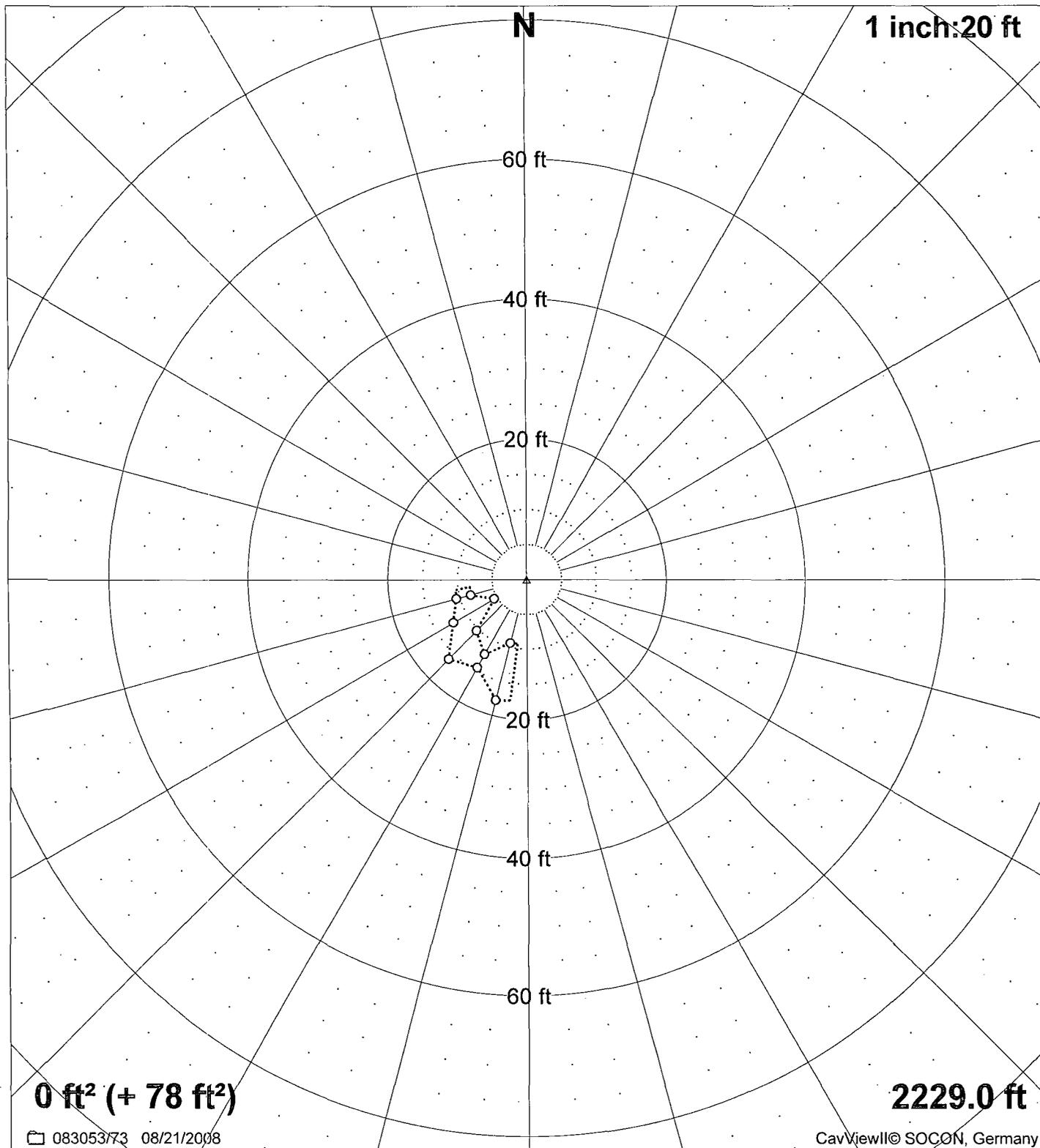
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—○— (08/21/2008) —○— Leached pocket (08/21/2008)

d_{max} : 20.0 ft 15° <--> 195° r_{min} : 0.0 ft -> 0° r_{\sim} : 5.9 ft r_{max} : 20.0 ft -> 195°

Tatum Brine BW-2

08/21/2008



0 ft² (+ 78 ft²)

2229.0 ft²

083053773 08/21/2008

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—○— (08/21/2008)

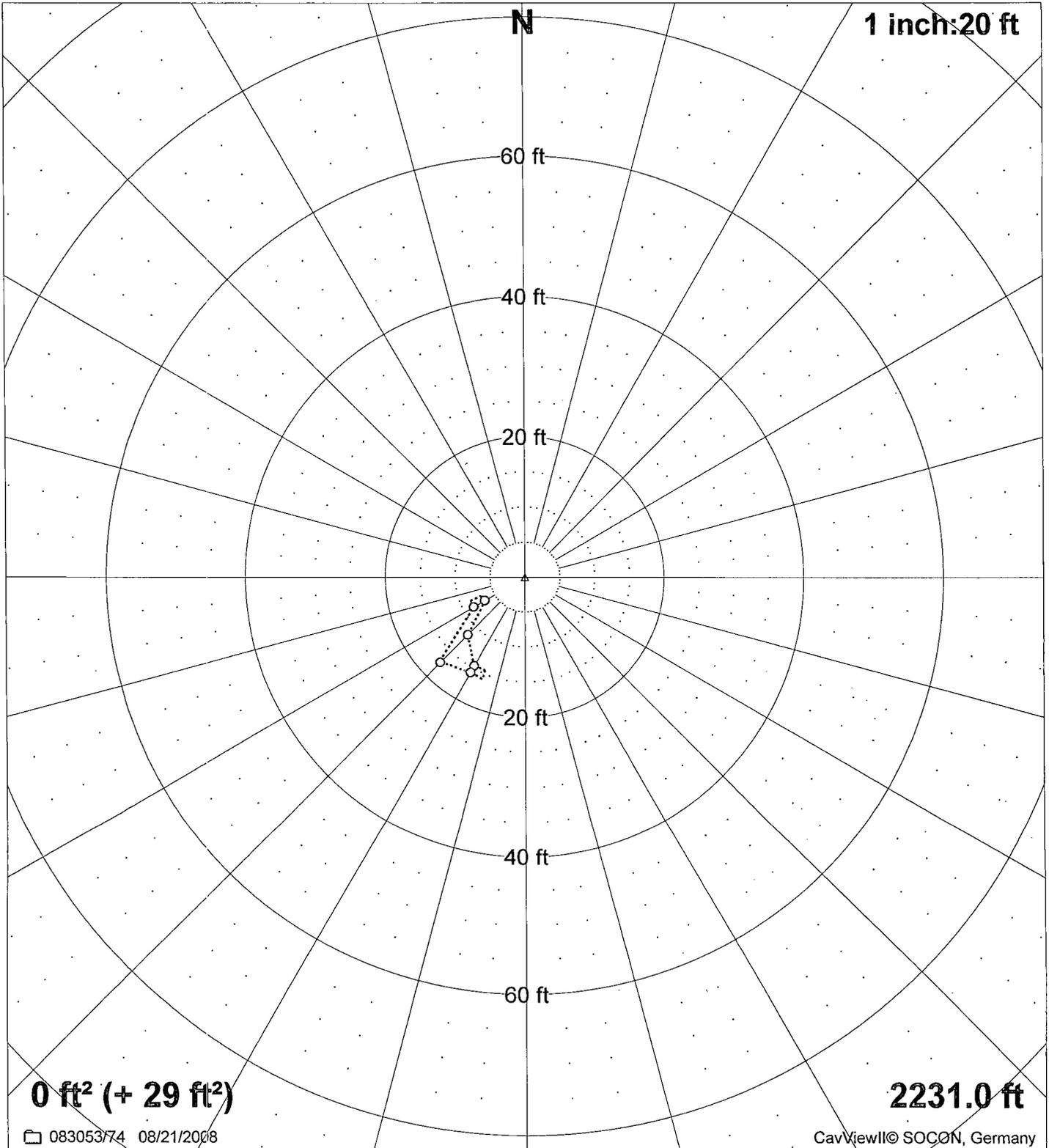
—○— Leached pocket (08/21/2008)

d_{max} : 17.8 ft 15° <--> 195° r_{min} : 0.0 ft -> 0° r_{\sim} : 5.0 ft r_{max} : 17.8 ft -> 195°



Tatum Brine BW-2

08/21/2008

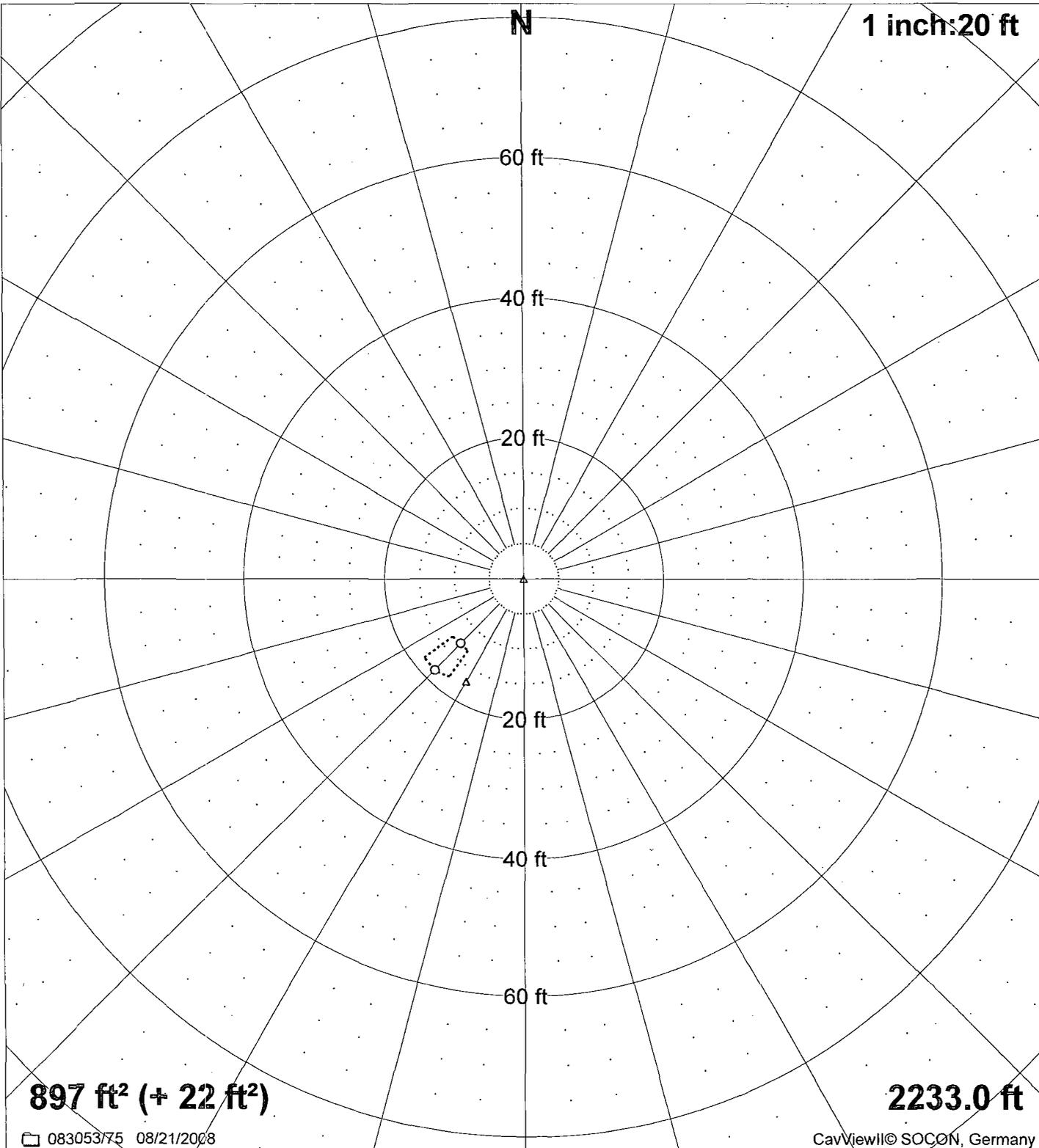


(08/21/2008)
 Leached pocket (08/21/2008)

d_{max} : 17.2 ft 225° <--> 45° r_{min} : 0.0 ft -> 0° r_{\sim} : 3.0 ft r_{max} : 17.2 ft -> 225°

Tatum Brine BW-2

08/21/2008



897 ft² (+ 22 ft²)

2233.0 ft²

083053/75 08/21/2008

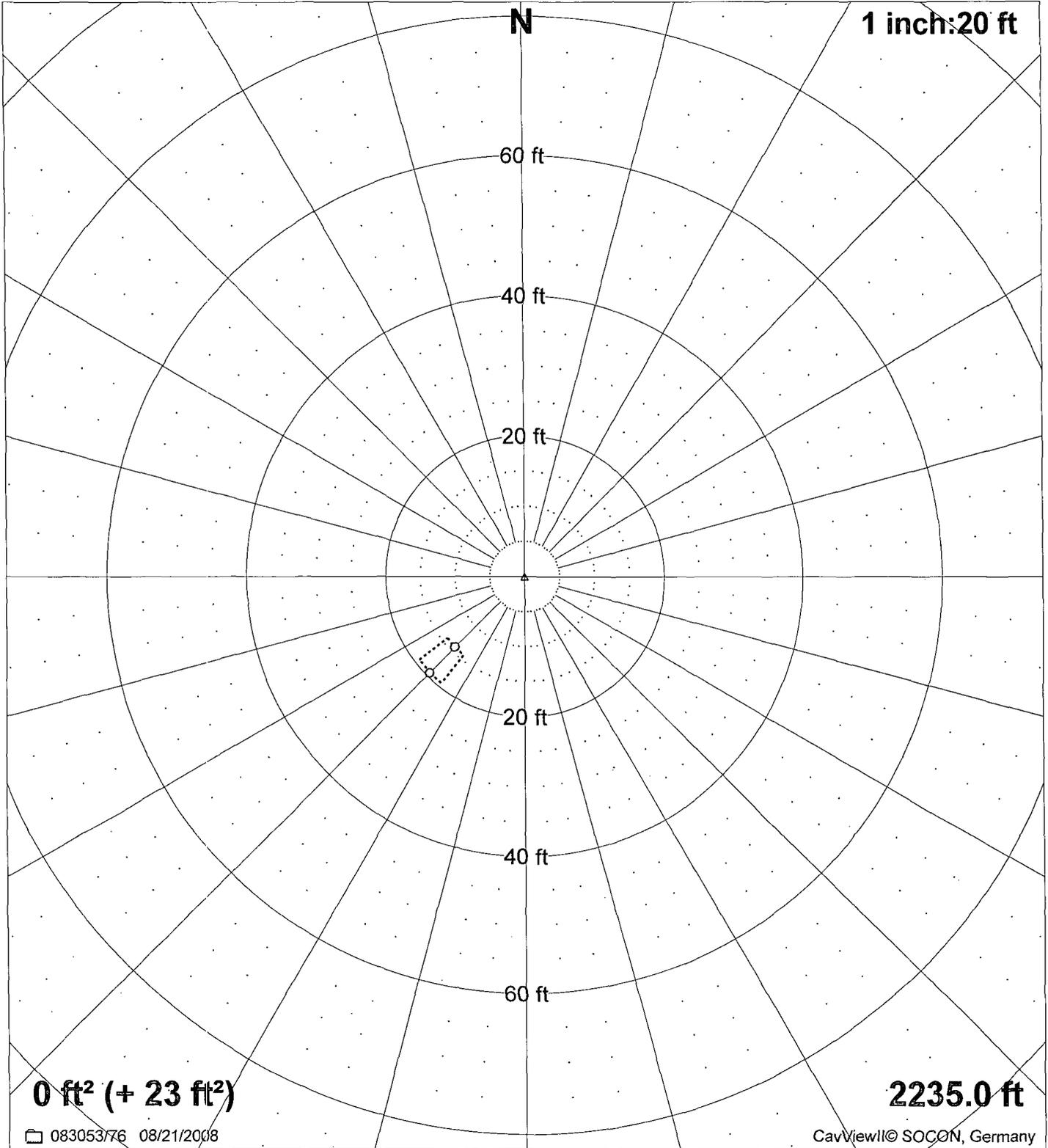
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—○— (08/21/2008) —○— Leached pocket (08/21/2008)

d_{max} : 18.3 ft 45° <--> 225° r_{min} : 0.0 ft -> 0° r_{\sim} : 17.1 ft r_{max} : 18.3 ft -> 225°

Tatum Brine BW-2

08/21/2008



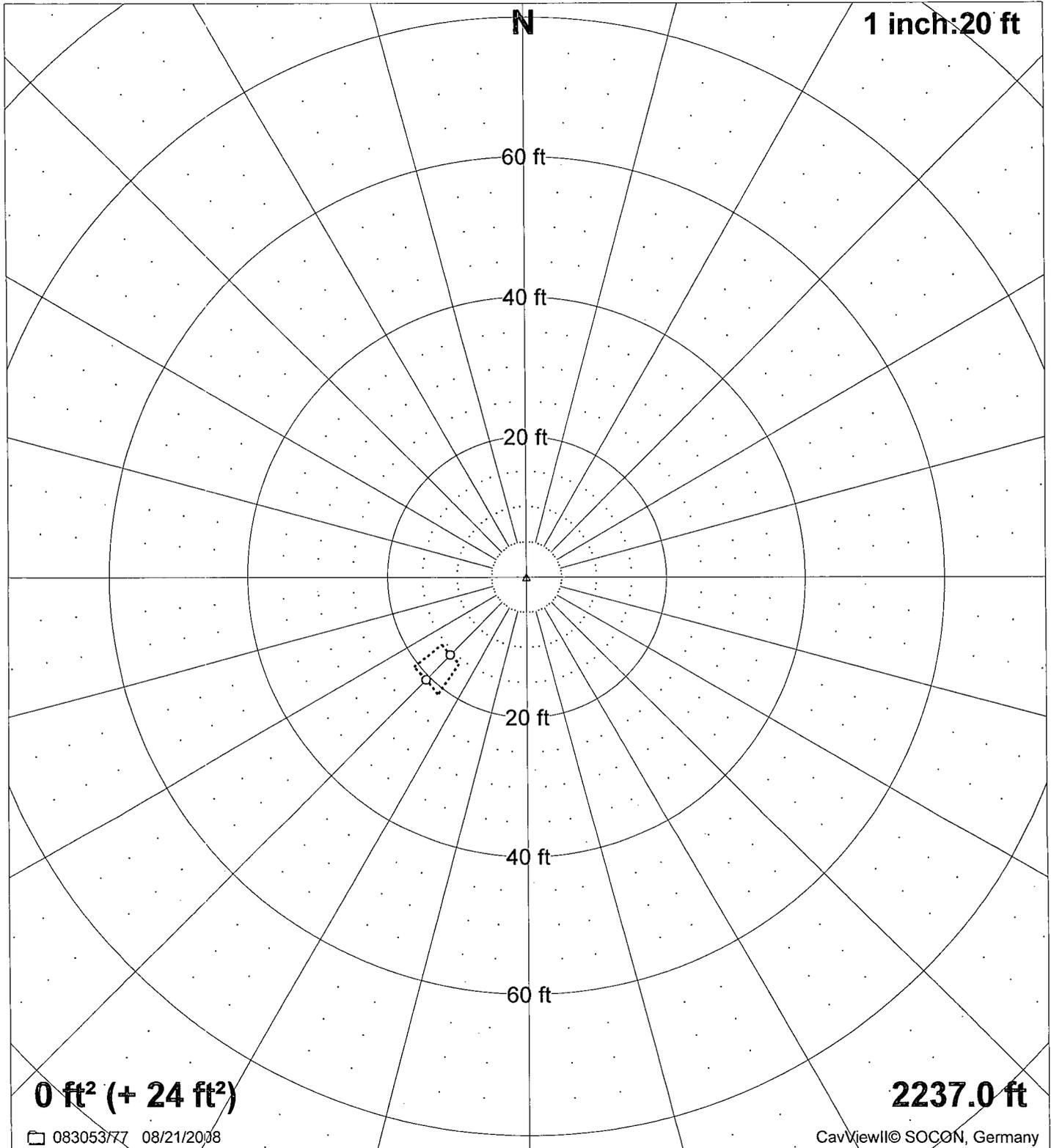
—○— (08/21/2008)

—○— Leached pocket (08/21/2008)

d_{max} : 19.5 ft 225° <--> 45° r_{min} : 0.0 ft -> 0° r_{\sim} : 2.7 ft r_{max} : 19.5 ft -> 225°

Tatum Brine BW-2

08/21/2008



0 ft² (+ 24 ft²)

2237.0 ft²

08305377 08/21/2008

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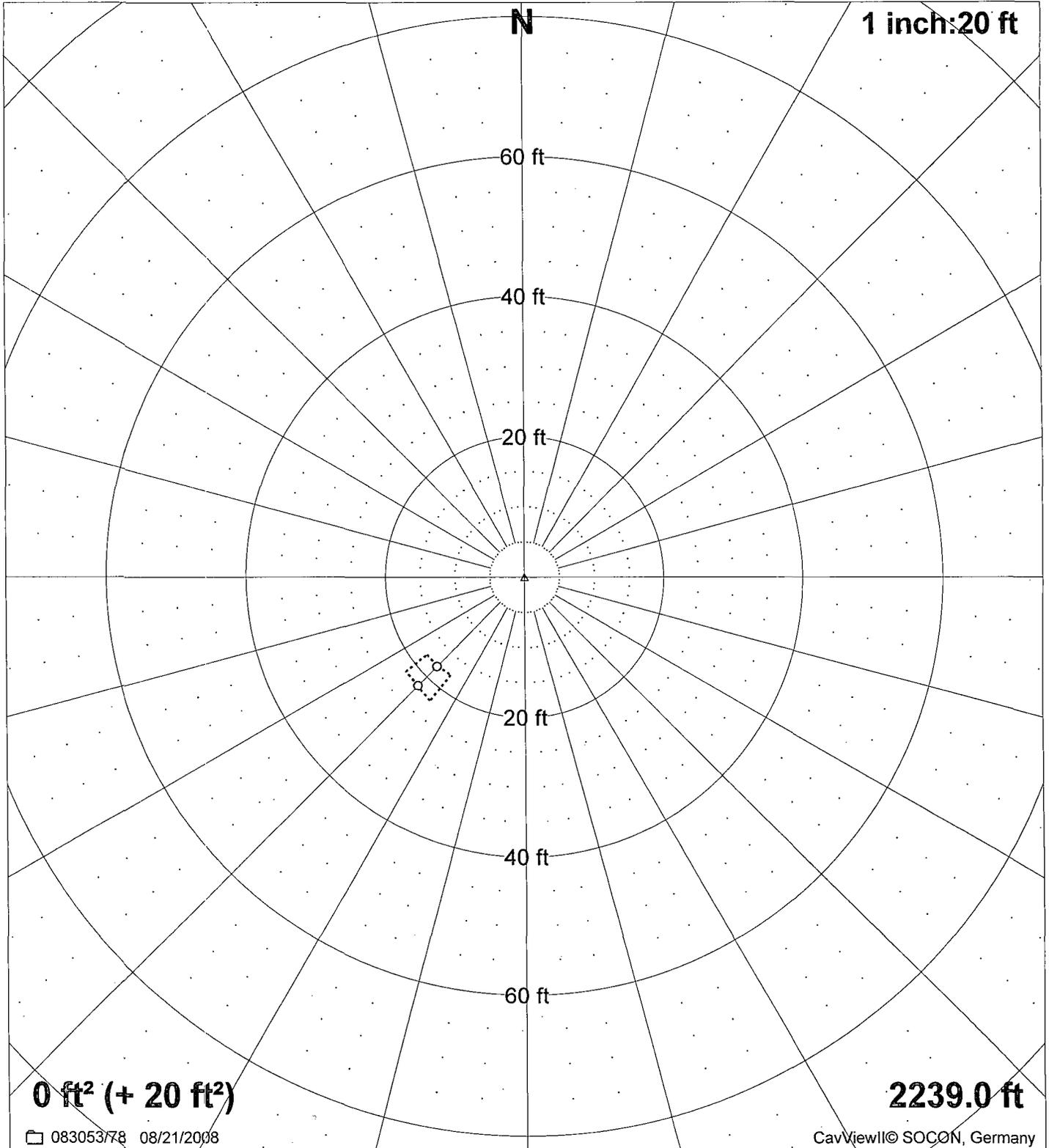
—○— (08/21/2008)

—○— Leached pocket (08/21/2008)

d_{max} : 20.6 ft 45° <--> 225° r_{min} : 0.0 ft -> 0° r_{\sim} : 2.7 ft r_{max} : 20.6 ft -> 225°

Tatum Brine BW-2

08/21/2008



0 ft² (+ 20 ft²)

2239.0 ft

083053/78 08/21/2008

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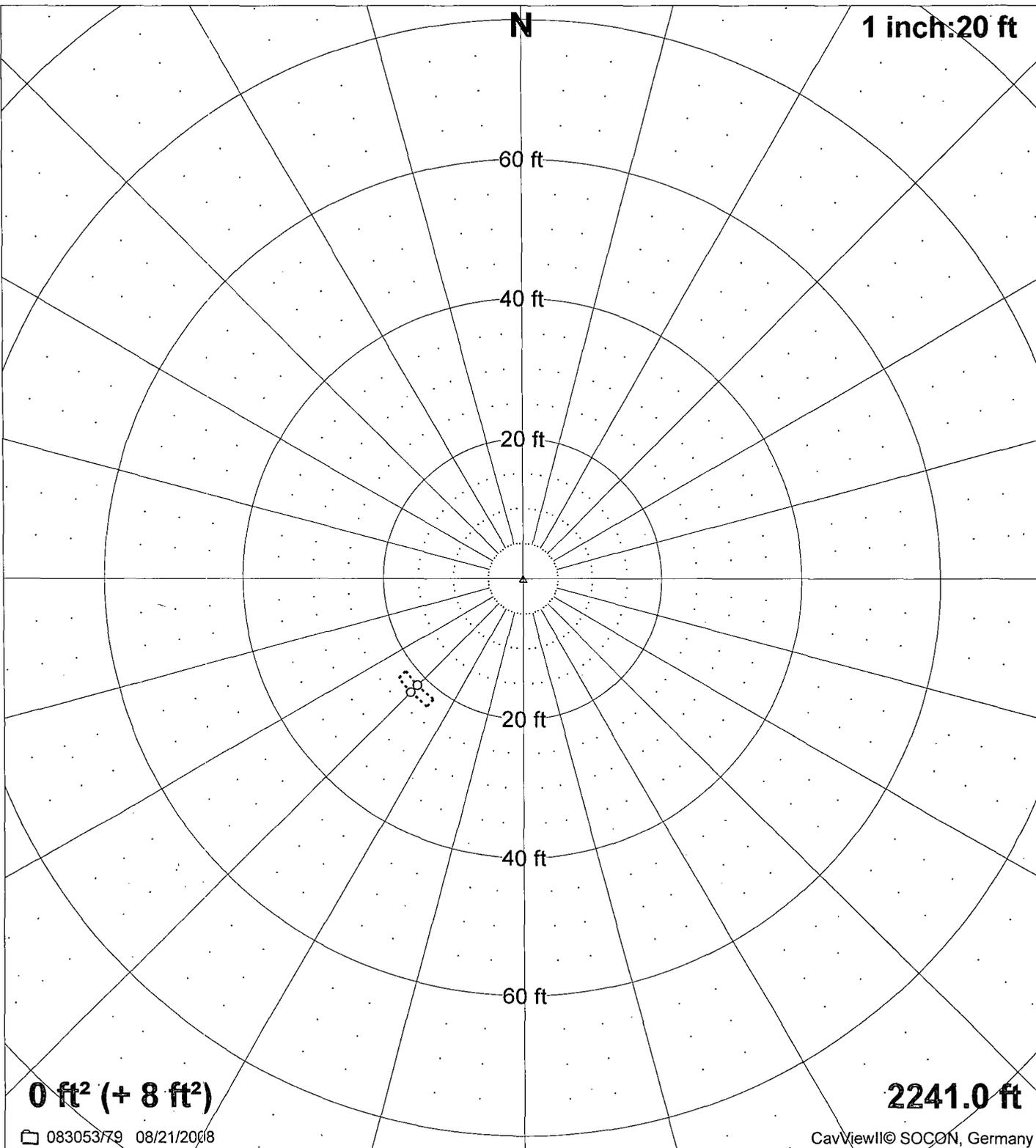
—○— (08/21/2008)

—○— Leached pocket (08/21/2008)

d_{max} : 21.7 ft 45° <--> 225° r_{min} : 0.0 ft -> 0° r_{\sim} : 2.5 ft r_{max} : 21.7 ft -> 225°

Tatum Brine BW-2

08/21/2008



—□— (08/21/2008) —○— Leached pocket (08/21/2008)

d_{max} : 22.9 ft 45° <--> 225° r_{min} : 0.0 ft -> 0° r_{\sim} : 1.6 ft r_{max} : 22.9 ft -> 225°

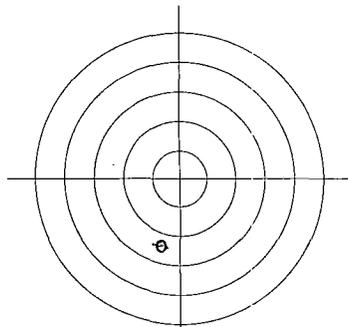


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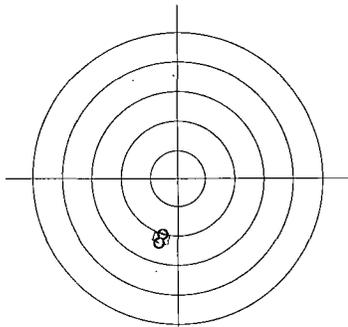
Horizontal slices 1 - 12



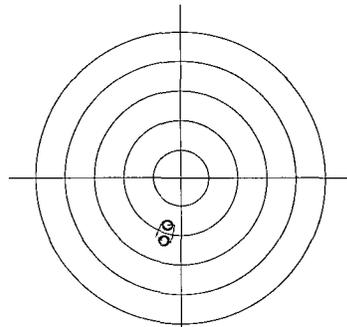
Cavity: Tatum Brine BW-2 Report number: 083053 Date: 08/21/2008



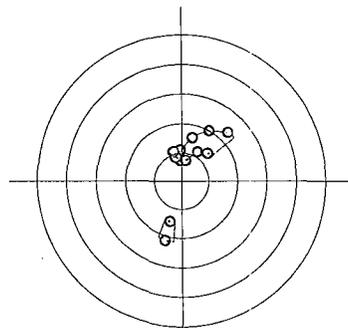
2191.0 ft / 0 ft²



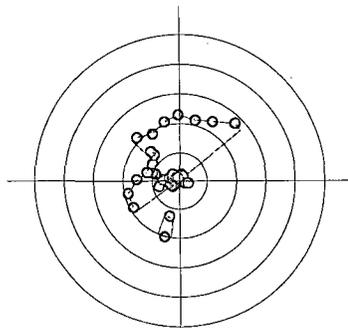
2193.0 ft / 0 ft²



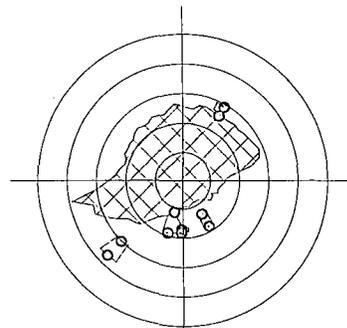
2195.0 ft / 0 ft²



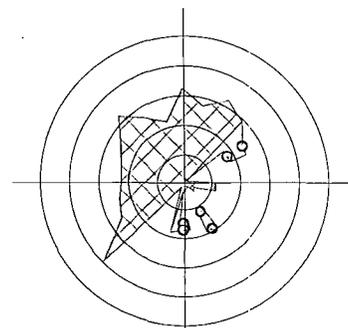
2197.0 ft / 0 ft²



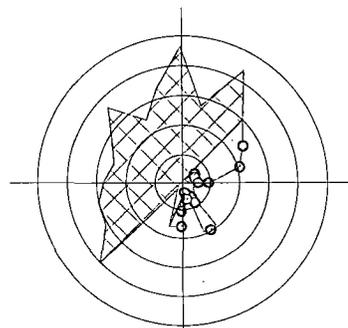
2199.0 ft / 0 ft²



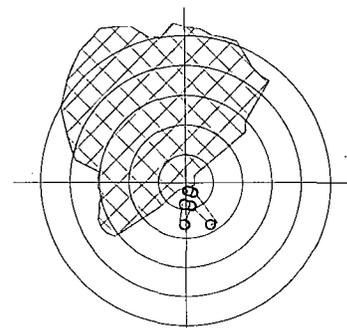
2201.0 ft / 1397 ft²



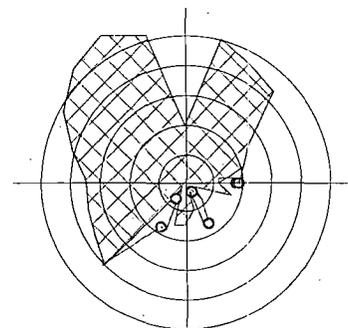
2202.0 ft / 1317 ft²



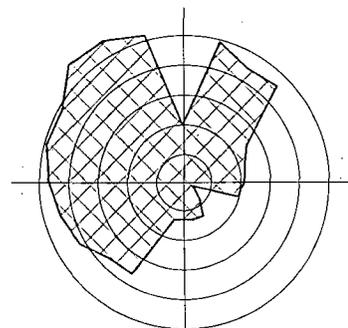
2204.0 ft / 1810 ft²



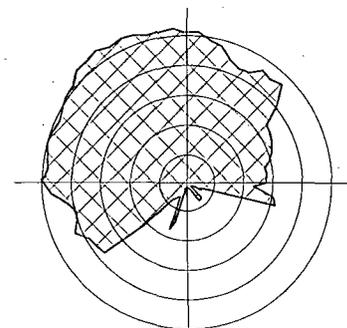
2205.0 ft / 3295 ft²



2206.0 ft / 3435 ft²



2208.0 ft / 4041 ft²



2210.0 ft / 4124 ft² (max)

The distance between 2 circles equals 10 ft

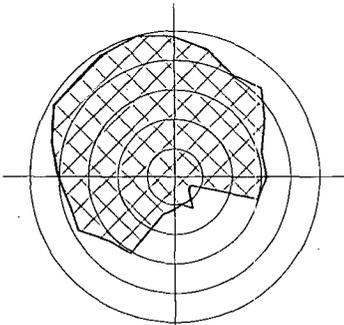


SOCON Sonar Well Services, Inc.

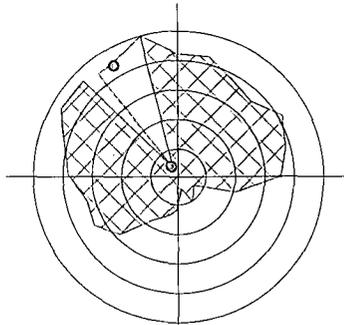
Horizontal slices 13 - 24



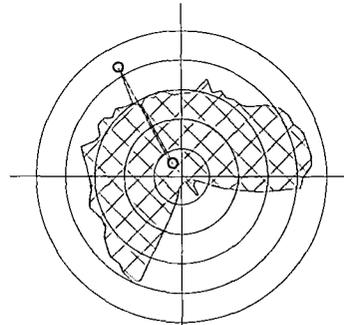
Cavity: Tatum Brine BW-2 Report number: 083053 Date: 08/21/2008



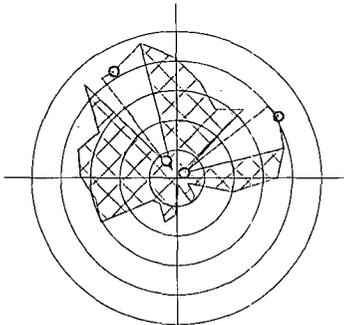
2212.0 ft / 3898 ft²



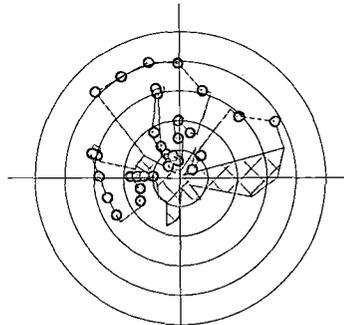
2214.0 ft / 3124 ft²



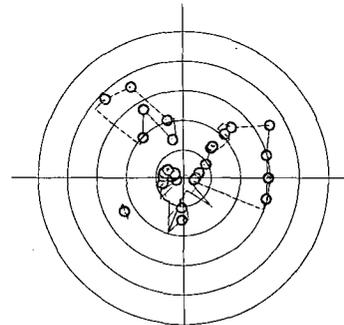
2215.0 ft / 2776 ft²



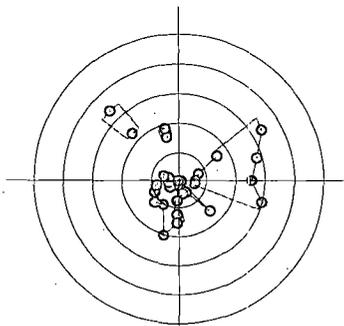
2216.0 ft / 2133 ft²



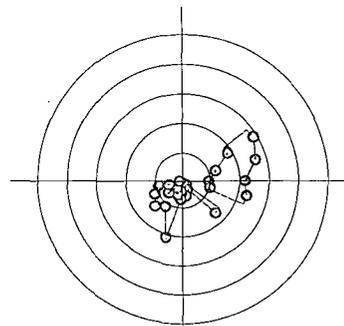
2218.0 ft / 593 ft²



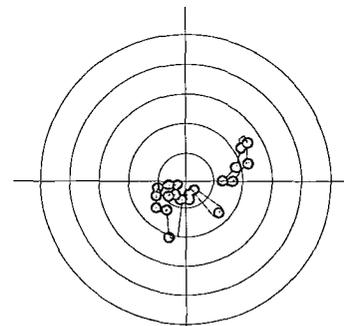
2220.0 ft / 117 ft²



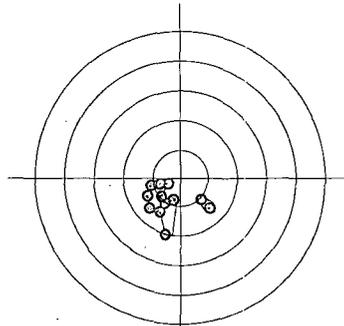
2221.0 ft / 0 ft²



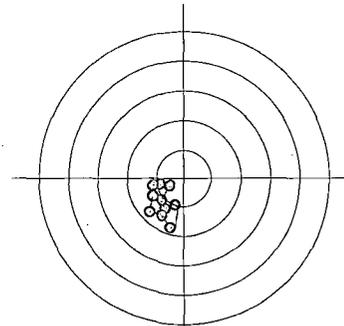
2223.0 ft / 0 ft²



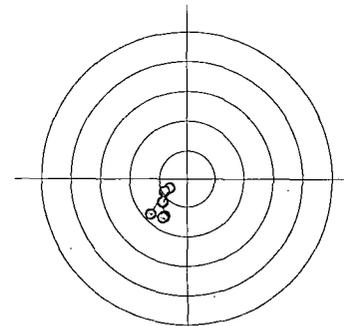
2225.0 ft / 0 ft²



2227.0 ft / 0 ft²



2229.0 ft / 0 ft²



2231.0 ft / 0 ft²

The distance between 2 circles equals 10 ft

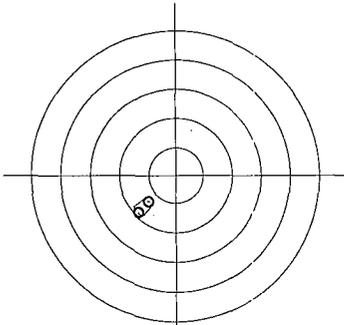


SOCON Sonar Well Services, Inc.

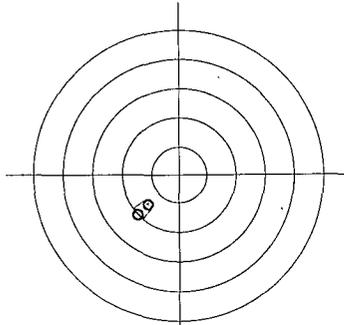
Horizontal slices 25 - 29



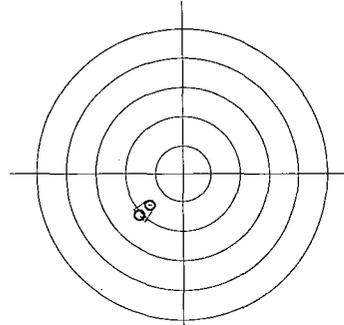
Cavity: Tatum Brine BW-2 Report number: 083053 Date: 08/21/2008



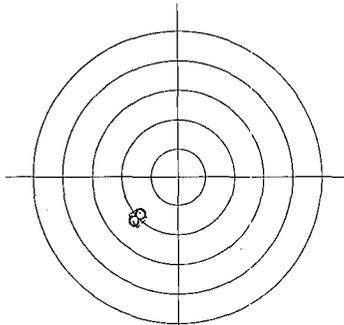
2233.0 ft / 897 ft²



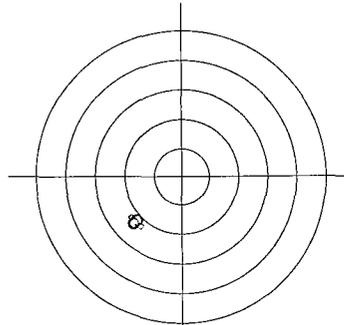
2235.0 ft / 0 ft²



2237.0 ft / 0 ft²



2239.0 ft / 0 ft²



2241.0 ft / 0 ft²

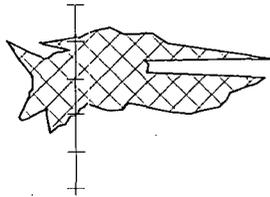


SOCON Sonar Well Services, Inc.

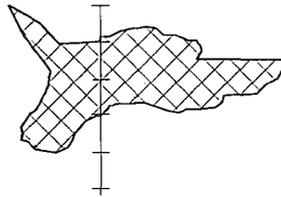
Vertical slices 1 - 12



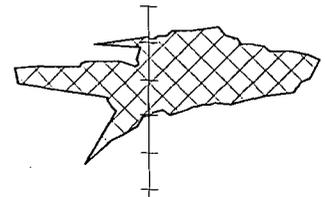
Cavity: Tatum Brine BW-2 Report number: 083053 Date: 08/21/2008



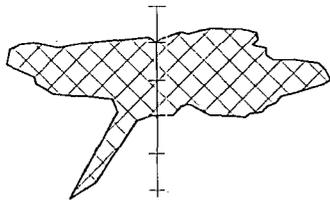
180° 0°



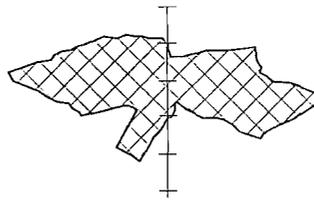
195° 15°



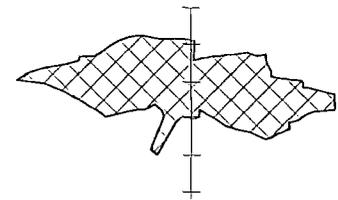
210° 30°



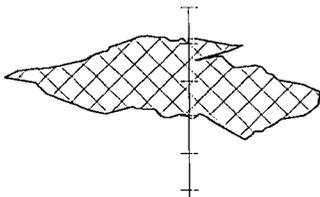
225° 45°



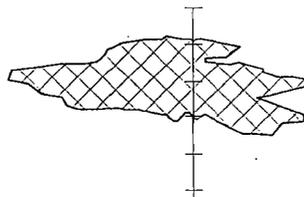
240° 60°



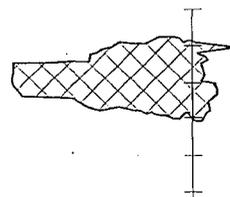
255° 75°



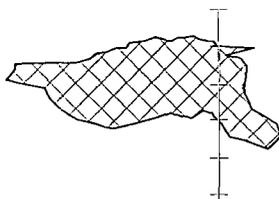
270° 90°



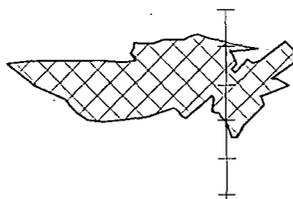
285° 105°



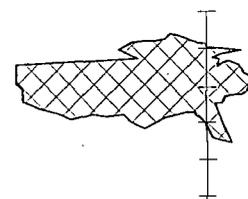
300° 120°



315° 135°



330° 150°



345° 165°

Range from 2190 ft to 2242 ft, step 10 ft

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

Larry Gandy
Company Representative-Printed

Larry Gandy
Company Representative-Signed

Secretary/Treasurer
Title

02/11/10
Date

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Wednesday, November 18, 2009 7:02 AM
To: 'Prather, Steve'; 'gandy2@leaco.net'; 'James Millett'; 'Clay Wilson'; 'Bob Patterson'; 'David Pyeatt'; 'garymschubert@aol.com'; 'Gary Schubert'
Cc: Griswold, Jim, EMNRD; VonGonten, Glenn, EMNRD; Sanchez, Daniel J., EMNRD
Subject: UIC Class III Well Annual Report Schedule for Submittal & Content REMINDER- 2010
Attachments: Annual Reports 2010.xls

Gentlemen:

Good morning. You may recall an e-mail message from me this past Summer alerting you to the reporting provision of your current discharge permit (permit) and how the New Mexico Oil Conservation Division (OCD) is stepping up its efforts to track reporting under issued permits.

Please find attached a spreadsheet listing the dates that OCD expects to receive your Annual Reports and/or any reporting requirements from your permit. If you are an operator with limited reporting requirements based on your permit, you are welcome to follow the format and content required from more recent permit renewals issued by the OCD, which are more comprehensive and constitute a report. Any renewed permits will likely require similar content anyway.

Please plan on meeting the Annual Report submittal dates in January of 2010 as failure to submit the report will constitute a violation under the Federal Underground Injection Control (UIC) Program and reporting to the United States Environmental Protection Agency, which could result in the shut-in and/or plug and abandonment of your brine production well.

Please contact me if you have questions. Thank you in advance for your cooperation in this matter.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

CC: Brine Well File "Annual Reporting"

NMOCDD UIC Annual Reports

11/18/09

Permit ID	Operator	Annual Rpt. Due Date	Submitted	Annual Report Contents
BW-2	Basic Energy	01/31/10		

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, 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 .1-1.
5. A copy of any mechanical integrity test chart, including the type of test, i.e.
 - open to formation or easing test.
 - Brief explanation describing deviations from normal production methods.
 - A copy of any leaks and spills reports.
 - If applicable, results of any groundwater monitoring.
 - Information required from cavity/subsidence 21 .F. above.
 - An Area of Review (AOR) summary.
 - Sign-off requirements pursuant to WQCC Subsection G 20.6.2.5101.

BW-4 Gandy Corp. 01/31/10
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 . 1-l.
5. A copy of any mechanical integrity test chart, including the type of test, i.e. open to formation or easing 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.

BW-8 PAB- Salty Dog Mo. w/ Quly Rpts.

BW-27 Mesquite 01/01/10

7. Production/Injection Volumes: The volumes of fluids injected (fresh water) and produced (brine) will be recorded monthly and submitted to the OCD Sanla Fe Office in an annual report due on the first day of January of each year.

BW-28 ey Ernergy Services LJ 01/31/10

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.

BW-30 Liquid Resources 01/31/10

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, 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 20.6.2.5 101.

BW-31 HRC- Schubert 01/31/10

6. Production/Injection Volumes/Annual Report: The volumes of fluids injected (fresh water) and produced (brine) will be recorded monthly and submitted to the OCD Santa Fe Office in an annual report due on the thirty-first (31) day of January of each year.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, September 25, 2009 1:48 PM
To: 'Prather, Steve'; 'gandy2@leaco.net'; 'James Millett'; 'Clay Wilson'; 'Bob Patterson'; 'Blevins, Sam'; 'David Pyeatt'; 'garymschubert@aol.com'
Cc: Sanchez, Daniel J., EMNRD; VonGonten, Glenn, EMNRD; Griswold, Jim, EMNRD; Jones, William V., EMNRD
Subject: New Mexico Oil Conservation Division Class III Solution Mining Well Operator Notice-- ANNUAL REPORTS

Gentlemen:

Re: Annual Reporting

You are receiving this message because you are currently operating a Underground Injection Control (UIC) Class III Solution Mining Well in New Mexico under an Oil Conservation Division (OCD) Discharge Permit. You may be aware of the most recent events related to OCD Class III Wells in New Mexico and can find out more by visiting the OCD's Website at <http://www.emnrd.state.nm.us/OCD/brinewells.htm> and OCD Brine Well Work Group Website at <http://ocdimage.emnrd.state.nm.us/imaging/AEOrderFileView.aspx?appNo=pCJC0906359521>.

The OCD is writing to inform you that it will be monitoring the receipt of your "Annual Reports" under the applicable section of your OCD discharge permit. The OCD has been deficient in tracking reporting obligations in the past; however, the OCD has recently upgraded our online system to track operators who are not meeting the reporting requirements specified in OCD Discharge Permits. Please plan on submitting the report with the required information by the date required in your discharge permit.

To access your OCD Discharge Permit Online for the date of submittal and contents of the report, please go to OCD Online at <http://ocdimage.emnrd.state.nm.us/imaging/AEOrderCriteria.aspx> (enter "Order Type" as BW and your "Order Number"). If you have not submitted an Annual Report (report) for your well, a historical review of your injection and production records will be required in order to provide cumulative injection and production information in this year's report.

Please contact me if you have questions or need assistance.

Thank you in advance for your cooperation in this matter.

Copy: Brine Well Files BWs 2, 4, 8, 22, 25, 27, 28, 30 & 31

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")