BW - 28

ANNUAL REPORT

2018

Performance *is* Key

ANNUAL CLASS III WELL REPORT FOR 2018

Key Energy Services, Inc. (Key)
State S Brine Station
Permit BW-028
API No. 30-025-33547
May 20, 2019

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1.0 Introduction

Price LLC on behalf of Key Energy Services, LLC. (Key) prepared this Annual Class III Well Report for 2018 report to document activities associated with Discharge Permit BW-28 for Well #1 (API #30-025-33547) which is located at the State S Brine Station, 1,340 FNL and 330 FWL (SW/4, NW/4, Unit Letter E) in Section 15, Township 21 South, Range 37 East, NMPM, Lea County, New Mexico (the Site). The Site is located approximately two miles north of Eunice, New Mexico along the east side of NM 207/CR18. This Annual Class III Well Report has been prepared pursuant to 20.6.2.3107 of the New Mexico Administrative Code and addresses all required content detailed in Section 2.J of the renewed permit dated November 8, 2013.

2.0 2.J. Bullet 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")

There was no major or remedial well work during the 2018 year.

Key Energy has a web-based monitoring and automation system at this site. This system monitors all equipment, fluid levels, and driver access. The integrated Control System (ICS) system also sends out alarms to personnel via text or Email, as well as, allows users to monitor and control remotely via the internet.

3.0 2.J. Bullet 3 – Production Volumes

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

Key has an electronic card system that tracks sales of both fresh and brine water. In addition, Key has Halliburton flow meters on the well to monitor both water injected and brine produced. The operator reads these flow meters daily. The meters are not currently connected to the ICS system.

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 as tables in ***Appendix A*****.** The total 2018 brine production volume was 248,472 barrels (bbl) and the lifetime production volume is 5,762,936 bbl.

4.0 2.J. Bullet 4 – Injection Pressure Data

(Permit condition 2.J.4 "Injection Pressure Data"

A new submersible centrifugal injection pump was installed in the fresh water storage tank in 2014. The system has an automatic shut-down switch set at 224 pounds per square inch in gas pressure (psig). For this reason, permit condition 3.B.2. Pressure Limiting Device, *"The operator shall have a working pressure limiting device or controls to prevent overpressure."*, is conditionally met.

The average injection pressure is taken either from a pressure gauge mounted on the wellhead inlet,

and/or can be from the ICS and is noted by Key's personnel. The reported injection pressures ranged from 182 psig to 195 psig during 2018.

5.0 2.J. Bullet 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")

Per Permit condition 2.A. "Quarterly Monitoring Requirements for Class III Wells", injection fluid and brine fluid samples were collected quarterly. All samples were submitted to a State of New Mexico Environment Department certified lab for drinking water analysis, either Hall Environmental Analysis Laboratory in Albuquerque, New Mexico, or Cardinal Laboratories in Hobbs, New Mexico. The quarterly injection fluid samples were analyzed for pH, density (or specific gravity), total dissolved solids, and chlorides. The quarterly brine fluid samples were analyzed for pH, density, total dissolved solids, chloride, and sodium. The laboratory used common approved United States Environmental Protection Agency (EPA) methods to analyze samples and the laboratory reports include quality assurance / quality control (QA/QC) samples. Please find attached in ***Appendix B*** the quarterly laboratory analytical results and chain-of-custodies for the brine and fresh water injection water samples.

Special Note for 2018: Chloride concentrations have been detected in the fresh water load lines. It was identified that a cross-connecting valve located in the pump house was leaking. Key is in the process of getting this repaired.

6.0 2.J. Bullet 6 – Mechanical Integrity

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

A 4-hour Cavern Mechanical Integrity Test (MIT) was successfully ran and passed on February 02, 2017 and subsequently approved by OCD.

The next five-year test will be scheduled for November of 2021, unless otherwise required by OCD for good cause shown, or permit condition requirements.

Please find in ***Appendix C*** a copy of the approved C-103s, test charts with meter calibration notes.

7.0 2.J. Bullet 7 – Deviations from Normal Production Methods

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

Key operates the brine well using "conventional flow" i.e. fresh water down the tubing and producing brine up the casing annulus and only reverses for maintenance only. There were no deviations from normal operation in 2018.

8.0 2.J. Bullet 8 – Leak & Spill Reports

(Permit condition 2.J.8 "Results of any leaks and spill reports")

The brine station is designed with an impermeable liner under the brine tanks and loading pads. The entire facility is bermed to prevent run-on or run-off. The concrete loading pads are designed to catch *de minimus* drips from hose connections and are piped to two 250-bbl fiberglass tanks. This liquid material is routinely recycled or disposed of at a New Mexico Oil Conservation Division (OCD)-approved facility.

Rainwater that collects inside the lined and bermed area is routinely pumped out and recycled or disposed of at an OCD-approved facility. Small quantities of rainwater, which cannot be pumped are left to evaporate.

Any reportable or non-reportable spill is cleaned up pursuant to OCD rules and guidance.

During the 2018 year, there was a *de minimus* drip from the east loading pad line at the east loading pad fiberglass tank. It has been repaired and the salt residue has been removed and recycled back in to the tank.

9.0 2.J. Bullet 9 – Area of Review Update Summary

(Permit condition 2.J.9 "An Area of Review (AOR) update summary")

An extensive Area of Review (AOR) was conducted for the Key State S or Eunice "Old GoldStar" brine well, OCD permit # BW-28, located in Unit Letter E, (1340 FNL & 330 FWL) of Section 15, Township 21S, Range 37E. Key used OCD records and field verification to confirm wells in the AOR. This comprehensive list was compiled to provide a baseline for future AOR studies. Since any future brine wells may be limited in size, a critical radius AOR was established at 810 feet from brine well, BW-28, and all wells within that radius will be researched in greater detail.

The rational of this approach is the fact that brine wells are non-static in terms of size and configuration and the fact that Key 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, Key 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 which is 162 ft or 81 ft for the radius, updated for 2018, and added a 10:1 safety factor which equates to 810 ft. As the brine well grows, the critical AOR will be expanded and new wells will be added.

Using OCD on-line files, a well status list and aerial AOR plot plan has been constructed (see ***Appendix D***) listing all wells within adjacent quarter sections of the BW-28 location. The list includes API#, Operator well name, UL, Section, Township and Range, and footages, for wells within the 810-foot critical radius and within a ¼-mile radius from the brine well, BW-28. All listed wells were checked for casing program status, casing/cementing status, and corrective action required status.

There are 44 wells located within these adjacent units, with no new wells added in 2018. Within a ¼ mile radius of the brine well there are 18 wells, and 4 wells are actually within the 810-foot critical

radius.

All four wells located in the critical zone were verified in May 2019 by reviewing the OCD on-line well records. They are identified as

- API# 30-025-09914 is for a proposed well by Apache Corporation to become an injection well. This well is close or at the 810 feet critical range as determine by Key.
- API# 30-025-09913 well has been plugged and abandoned.
- API# 30-025-06586 well has been previously checked and no change was noted in the 2018 review.
- API# 30-025-39277 well has been previously checked and no change was noted in the 2018 review.

Based on a review of the records, it has been determined that Apache plans on drilling an injection well (API# 30-025-45456) located just outside of the Brine well ¼-mile AOR. This new location has been included on the updated AOR in ***Appendix D***.

Therefore, Key will notify OCD and Apache concerning these injection wells.

10.0 2.J. Bullet 10 – Subsidence/Cavern Volumes/Geometric Measurements

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

10.1. Cavern Volumes

Cavern surveys did not provide adequate information pertaining to the size of the cavern. This has been an issue with many brine wells and until the validity of using sonar test is resolved, an alternate method will be employed. The alternate method involves calculating the maximum diameter of the cavern by using a worst-case scenario of an "inverted cone" with the cone base located at the top.

The Solution Mining Research Institute (SMRI), other state agencies, OCD work-group, along with various studies conducted during the permitting of the USDOE Waste Isolation Pilot Plant (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. OCD concluded that when a ratio of D/H reaches or exceeds 0.66 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 considered.

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

The cavern volume is calculated using the lifetime brine production volume and multiplying it by 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, which equates that every barrel of brine produced, will create approximately one cubic foot of cavity.

A wellbore sketch depicting the volume calculations for the brine well, and the lifetime brine production tally of approximately 5.762 million barrels of brine produced as of December 2018, has been included in ***Appendix E***. The maximum diameter was calculated to be approximately 162 feet with a corresponding D/H ratio of 0.12, updated for the 2018 year.

The current brine well status meets and exceeds the recommended safety value by five times when the current D/H ratio of 0.12 is compared to the 0.66 value mentioned above.

10.2. 2.B.1 Surface Subsidence Monitoring Plan

(Permit Condition 2.B.1 "The Permittee shall submit a Surface Subsidence Monitoring Plan to OCD within 180 days of the effective data 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.")

There were no significant changes to the survey monuments in 2018. Key will continue to monitor, and if any trend is noted, Key will notify OCD. A copy of the 2018 subsidence monitoring report is included in ***Appendix F***.

10.3. Solution Cavern Characterization Plan

(Permit Condition 2.B.2 "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.")

Key proposed 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 annual report.

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

Since the BW-28 well never had any logs run, a well log was obtained from a nearby well and annotated to reflect the geophysical characterization of the area lithology. In addition, a mass balance has been calculated and the results are included in ***Appendix E***. The mass balance compares the measured salt removed to the calculated salt removed. The comparison was within 8%, which satisfies permit condition 2.

11.0 2.J. Bullet 11 – Ratio of Injection & Produced Fluids

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

Enclosed in ***Appendix A*** are the report tables documenting the injection and production data and the comparison chart of injected water to produced water with comments. The 2018 results indicate a 103.54% variance, while the total variance during the lifetime of the well has been 105.73%.

Special Note: Key Energy requests a minor modification of the permit condition 3.K. which states *"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."*

Whereas the permit condition 2.B.2.b has similar language to above, but sets a variance between 90% to 110%. This requirement seems to fit the Key BW-28 better and generally the annual variance calculation falls into the 90%-110% range. However, there are still instances where the monthly variance is outside of this range but it does not appear to present an immediate issue to BW-28. Severally discussions have occurred with the OCD regarding the permit requirements for variances between injected fluids and produced fluids. These correspondences are summarized in in ***Appendix G***. Given two decades worth of data, the range of variances observed within the past year appear to be consistent with historical data and not an indicator of complications or integrity issues with the well.

12.0 2.J. Bullet 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)

There was no major or remedial well work during the 2018 year.

Key Energy has a web-based monitoring and automation system at this site. This system monitors all equipment, fluid levels, and driver access. The integrated Control System (ICS) system also sends out alarms to personnel via text or Email, as well as, allows users to monitor and control remotely via the internet.

13.0 2.J. Bullet 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.")

Based on all current information and on-site observance, the operator of record herby certifies that the current operations pose no threat to public health and the environment at the time of report submission. 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 the operator hereby certifies this condition of the permit as well as permit condition 2.J. Bullet 1.

14.0 2.J. Bullet 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 site does not have any groundwater monitoring wells associated with BW-28. 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.

15.0 2.J. Bullet 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 will submit a hard copy to the OCD's Environmental Bureau upon request.

Appendix A – Injection & Production Fluids Tables and Comparison Chart

TABLE 1

TABLE 1 BW-28 Annual Report Brine Well Production Volumes and Lifetime History Volumes

Year	Month	Reported Monthly Brine Production	Quarterly Brine Production (bbls)	Annual Brine Production (bbls)	Reported Monthly Freshwater Injection (bbls)	Quarterly Freshwater Injection (bbls)	Annual Freshwater Injection (bbls)	Comments	Operator
1996	October	10,588			10,588				Goldstar SWD
	November	17,770			17,743				
	December	32,223	60,581	60,581	33,004	61,335	61,335		
1997	January	20,194			20,445			estimate (1)	
	February	20,194			20,445			estimate (1)	
	March	20,194	60,582		20,445	61,335		estimate (1)	
	April	48,226			47,714				
	May	38,000			36,571				
	June	47,970	134,196		42,264	126,549			
	July	24,711			24,271				
	August	31,817			31,559				
	September	38,120	94,648		38,697	94,527			
	October	27,462			25,512				
	November	26,618			26,261				
	December	16,137	70,217	359,643	15,850	67,623	350,034		
1998	January	13,301			13,614				
	February	47,212			49,552				
	March	42,337	102,850		44,964	108,130			
	April	27,072			27,519				
	May	18,084			18,161				
	June	26,699	71,855		26,976	72,656			
	July	16,535			15,929				
	August	8,287			7,488				
	September	9,994	34,816		9,021	32,438			
	October	13,312			17,302				
	November	9,822			9,873				
	December	8,287	31,421	240,942	9,497	36,672	249,896		
1999	January	4,026			4,607				
	February	6,867			8,138				
	March	5,641	16,534		6,030	18,775			
	April	7,873			7,338				
	May	34,100			32,461				
	June	20,708	62,681		20,171	59,970			
	July	35,278			34,566				
	August	35,876			35,995				
	September	43,196	114,350		42,724	113,285			
	October	9,700			10,097				
	November	8,383			9,080				
	December	28,662	46,745	240,310	29,721	48,898	240,928		
2000	January	65,492			65,028				
	February	37,709			36,909				
	March	40,409	143,610		40,414	142,351			
	April	20,181			20,404				
	May	52,092			50,373				
	June	41,371	113,644		37,776	108,553			
	July	33,860			31,757				
	August	37,535			35,492				
	September	58,042	129,437		53,288	120,537			
	October	28,777			27,216				
	November	22,677			24,130				
	December	17,670	69,124	455,815	17,369	68,715	440,156		
2001	January	32,427			37,083				
	February	17,493			23,076				
	March	34,050	83,970		33,216	93,375			
	April	32,900			36,064				Change to Yale E. Key
	May	66,724			52,555				
	June	37,607	137,231		42,347	130,966			
	July	16,399			15,588				
	August	10,173			33,664				
	September	16,185	42,757		16,200	65,452			
	October	25,184			24,147				
	November	10,447			8,666				
	December	21,061	56,692	320,650	18,733	51,546	341,339		
2002	January	11,809			10,135				
	February	22,700			23,733				
	March	4,693	39,202		4,369	38,237			
	April	15,160			16,776				
	May	16,321			17,283				
	June	13,938	45,419		15,276	49,335			
	July	8,301			10,688				
	August	7,079			6,842				
	September	18,560	33,940		17,240	34,770			
	October	7,040			7,823				
	November	9,788			10,950				
	December	11,666	28,494	147,055	19,667	38,440	160,782		
2003	January	20,278			23,526				
	February	8,603			5,310				
	March	37,680	66,561		35,548	64,384			
	April	31,782			31,619				
	May	17,767			13,305				
	June	10,733	60,282		9,260	54,184			
	July	27,104			13,927				
	August	9,555			7,197				
	September	7,945	44,604		5,056	26,180			
	October	12,014			10,394				
	November	26,100			12,438				
	December	38,748	76,862	248,309	18,218	41,050	185,798		
2004	January	7,980			8,539				
	February	8,130			8,797				
	March	8,220	24,330		8,894	26,230			
	April	29,898			31,931				
	May	14,233			15,428				
	June	28,716	72,847		30,410	77,769			
	July	1,840			2,060				
	August	29,898			30,201				
	September	20,277	52,015		20,266	52,527			
	October	24,436			23,784				
	November	21,925			22,430				
	December	32,225	78,586	227,778	33,630	79,844	236,370		
2005	January	17,873			19,160				
	February	23,929			24,958				
	March	37,896	79,698		40,435	84,553			
	April	29,882			31,794				
	May	39,575			42,385				
	June	22,766	92,223		23,995	98,174			
	July	7,593			7,640				
	August	31,573			29,316				
	September	47,305	86,471		48,230	85,186			
	October	38,571			51,232				
	November	31,533			27,670				
	December	36,430	106,534	364,926	36,412	115,314	383,227		
2006	January	18,480			19,977				
	February	33,250			35,511				
	March	39,492	91,222		38,630	94,118			
	April	40,194			43,605				
	May	51,009			54,630				
	June	22,374	113,577		24,832	123,067			
	July	38,208			37,613				
	August	35,627			36,201				
	September	48,784	122,619		47,312	121,126			
	October	50,375			51,232				
	November	26,084			27,670				
	December	8,224	84,683	412,101	10,202	89,104	427,415		

TABLE 1

TABLE 1 BW-28 Annual Report Brine Well Production Volumes and Lifetime History Volumes

Year	Month	Reported Monthly Brine Production	Quarterly Brine Production (bbls)	Annual Brine Production (bbls)	Reported Monthly Freshwater Injection (bbls)	Quarterly Freshwater Injection (bbls)	Annual Freshwater Injection (bbls)	Comments	Operator
2007	January	31,540			33,320				
	February	24,313			25,260				Change to Key Energy Services
	March	40,514	96,367		38,412	96,992			
	April	34,095			35,120				
	May	19,308			23,130				
	June	9,170	62,573		11,009	69,259			
	July	30,857			28,468				
	August	12,394			18,884				
	September	25,970	69,221		23,360	70,712			
	October	7,882			7,643				
	November	2,476			2,630				
	December	3,933	14,291	242,452	4,528	14,801	251,764		
2008	January	1,706			1,982				
	February	5,845			6,203				
	March	21,386	28,937		21,673	29,858			
	April	25,787			22,704				
	May	17,100			19,842				
	June	16,598	59,485		17,479	60,025			
	July	32,458			36,448				
	August	37,458			38,377				
	September	39,945	109,861		37,203	112,028			
	October	25,572			26,551				
	November	27,325			25,792				
	December	26,825	79,722	278,005	28,694	81,037	282,948		
2009	January	20,990			21,310				
	February	650			1,306				
	March	3,249	24,889		3,420	26,036			
	April	5,428			5,360				
	May	1,343			1,762				
	June	630	7,401		1,232	8,354			
	July	1,546			1,673				
	August	881			1,031				
	September	2,672	5,099		2,930	5,634			
	October	9,898			8,861				
	November	3,716			3,618				
	December	1,474	15,088	52,477	2,035	14,514	54,538		
2010	January	0			0				
	February	1,650			1,810				
	March	4,092	5,742		4,789	6,599			
	April	5,092			6,150				
	May	12,256			14,953				
	June	2,099	19,447		2,033	23,136			
	July	5,068			6,322				
	August	10,270			15,126				
	September	11,281	26,619		10,334	31,782			
	October	7,575			8,802				
	November	20,304			24,494				
	December	36,765	64,644	116,452	44,153	77,449	138,966		
2011	January	44,126			52,975				
	February	24,388			29,666				
	March	19,421	87,935		23,284	105,925			
	April	18,356			22,365				
	May	9,828			11,754				
	June	15,661	43,845		18,902	53,021			
	July	17,503			20,961				
	August	14,401			17,273				
	September	5,430	37,334		16,000	54,234			
	October	11,359			8,284				
	November	18,585			19,662				
	December	23,228	53,172	222,286	27,806	55,752	268,932		
2012	January	21,570			25,897				
	February	12,230			14,854				
	March	10,124	43,924		12,190	52,941			
	April	18,185			22,110				
	May	23,761			28,667				
	June	31,207	73,153		37,707	88,484			
	July	20,931			25,225				
	August	31,025			35,837				
	September	29,414	81,370		34,226	95,288			
	October	17,507			21,138				
	November	28,038			33,360				
	December	23,015	68,560	267,007	25,205	79,703	316,416		
2013	January	16,097			21,395				
	February	17,379			20,812				
	March	14,816	48,292		21,978	64,185			
	April	19,374			23,799				
	May	23,932			25,979				
	June	34,926	78,232		38,500	88,278			
	July	18,446			22,414				
	August	29,958			35,877				
	September	16,923	65,327		20,230	78,521			
	October	22,409			25,868				
	November	14,139			16,972				
	December	24,920	61,468	253,319	29,762	72,602	303,586		
2014	January	31,460			35,865				
	February	38,614			45,444				
	March	43,210	113,284		50,710	132,019			
	April	36,217			44,597				
	May	45,170			54,007				
	June	24,524	105,911		23,748	122,352			
	July	19,428			20,442				
	August	15,545			24,683				
	September	23,652	58,625		26,341	71,466			
	October	5,692			7,057				
	November	10,914			13,136				
	December	15,966	32,572	310,392	17,466	37,659	363,496		
2015	January	28,665			30,266				
	February	26,229			29,541				
	March	24,106	79,000		29,666	89,473			
	April	19,087			24,034				
	May	19,573			22,921				
	June	27,070	65,730		32,555	79,510			
	July	34,975			39,132				
	August	19,234			23,879				
	September	16,952	71,161		20,455	83,466			
	October	23,972			25,739				
	November	18,722			21,557				
	December	13,942	56,636	272,527	17,412	64,708	317,157		
2016	January	15,897			18,182				
	February	15,649			17,434				
	March	10,759	42,305		12,095	47,711			
	April	8,608			9,575				
	May	12,202			14,032				
	June	19,354	40,164		20,745	44,352			
	July	20,725			23,809				
	August	20,410			22,859				
	September	18,278	59,413		21,020	67,688			
	October	24,944			28,521				
	November	22,899			25,928				
	December	11,516	59,359	201,241	13,940	68,389	228,140	Ratio FW/BW	
2017	January	21,709			23,795			109.61%	
	February	11,551			14,531			125.80%	

TABLE 1

TABLE 1 BW-28 Annual Report Brine Well Production Volumes and Lifetime History Volumes

Year	Month	Reported Monthly Brine Production	Quarterly Brine Production (bbls)	Annual Brine Production (bbls)	Reported Monthly Freshwater Injection (bbls)	Quarterly Freshwater Injection (bbls)	Annual Freshwater Injection (bbls)	Comments	Operator
	March	20,673	53,933		21,931	60,257		106.09%	
	April	29,467			30,958			105.06%	
	May	26,817			27,209			101.46%	
	June	15,463	71,747		18,156	76,323		117.42%	
	July	800			1,428			178.50%	* System Shut Down to Check Water Quality
	August	7,743			6,228			80.43%	*
	September	6,279	14,822		4,357	12,013		69.39%	*
	October	23,253			24,108			103.68%	
	November	24,204			27,380			113.12%	
	December	32,237	79,694	220,196	32,445	83,933	232,526	105.60%	Monthly/Year End Average Average
2018	January	27,325			30,717			112.41%	
	February	30,315			26,203			86.44%	
	March	14,616	72,256		18,419	75,339		126.02%	
	April	15,198			15,669			103.10%	
	May	18,492			22,230			120.21%	
	June	14,296	47,986		17,296	55,195		120.98%	
	July	22,568			25,597			113.42%	
	August	32,500			27,635			85.03%	
	September	17,381	72,449		15,153	68,385		87.18%	
	October	19,346			18,009			93.09%	
	November	14,575			16,993			116.59%	
	December	21,860	55,781	248,472	23,352	58,354	257,273	103.54%	Monthly/Year End Average Average
	Total			5,762,936			6,093,022	105.73%	Total Average

Appendix B – Quarterly Laboratory Analytical Reports

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

April 25, 2018

Wayne Price

Price LLC
312 Encantado Rd Ct NE
Rio Rancho, NM 87124
TEL: (505) 715-2809
FAX

RE: Key Brine Well BW 28 OrderNo.: 1804646

Dear Wayne Price:

Hall Environmental Analysis Laboratory received 3 sample(s) on 4/11/2018 for the analyses presented in the following report.

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

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

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1804646**
Date Reported: **4/25/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Price LLC
Client Sample ID: FW*
Project: Key Brine Well BW 28
Collection Date: 4/9/2018 1:55:00 PM
Lab ID: 1804646-001
Matrix: AQUEOUS
Received Date: 4/11/2018 2:03:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	44	5.0		mg/L	10	4/13/2018 11:55:44 AM
SM4500-H+B / 9040C: PH						Analyst: **JRR**
pH	7.88		H	pH units	1	4/12/2018 6:09:40 PM
SPECIFIC GRAVITY						Analyst: **JRR**
Specific Gravity	0.9956	0			1	4/13/2018 1:57:00 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	391	20.0		mg/L	1	4/16/2018 2:42:00 PM

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Price LLC
Client Sample ID: BW**
Project: Key Brine Well BW 28
Collection Date: 4/9/2018 2:00:00 PM
Lab ID: 1804646-002
Matrix: AQUEOUS
Received Date: 4/11/2018 2:03:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	110000	10000	*	mg/L	20000	4/19/2018 11:08:01 PM
EPA METHOD 200.7: METALS						Analyst: **pmf**
Sodium	92000	1000		mg/L	1000	4/23/2018 6:24:56 PM
SM4500-H+B / 9040C: PH						Analyst: **JRR**
pH	7.12		H	pH units	1	4/12/2018 6:13:41 PM
SPECIFIC GRAVITY						Analyst: **JRR**
Specific Gravity	1.173	0			1	4/13/2018 1:57:00 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	279000	2000	*D	mg/L	1	4/16/2018 2:42:00 PM

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Price LLC
Client Sample ID: FW***
Project: Key Brine Well BW 28
Collection Date: 4/10/2018 12:45:00 PM
Lab ID: 1804646-003
Matrix: AQUEOUS
Received Date: 4/11/2018 2:03:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	21000	1000	*	mg/L	2000	4/19/2018 11:20:26 PM
SM4500-H+B / 9040C: PH						Analyst: **JRR**
pH	7.72		H	pH units	1	4/12/2018 6:17:51 PM
SPECIFIC GRAVITY						Analyst: **JRR**
Specific Gravity	1.028	0			1	4/13/2018 1:57:00 PM
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**
Total Dissolved Solids	47400	2000	*D	mg/L	1	4/16/2018 2:42:00 PM

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1804646**

25-Apr-18

Client: Price LLC

Project: Key Brine Well BW 28

Sample ID	**MB-B**	SampType:	**MBLK**	TestCode:	**EPA Method 200.7: Metals**					
Client ID:	**PBW**	Batch ID:	**B50779**	RunNo:	**50779**					
Prep Date:		Analysis Date:	**4/23/2018**	SeqNo:	**1647131**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0								

Sample ID	**LLLCS-B**	SampType:	**LCSLL**	TestCode:	**EPA Method 200.7: Metals**					
Client ID:	**BatchQC**	Batch ID:	**B50779**	RunNo:	**50779**					
Prep Date:		Analysis Date:	**4/23/2018**	SeqNo:	**1647132**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0	0.5000	0	115	50	150			

Sample ID	**LCS-B**	SampType:	**LCS**	TestCode:	**EPA Method 200.7: Metals**					
Client ID:	**LCSW**	Batch ID:	**B50779**	RunNo:	**50779**					
Prep Date:		Analysis Date:	**4/23/2018**	SeqNo:	**1647133**	Units:	**mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	50	1.0	50.00	0	101	85	115			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1804646**

25-Apr-18

Client: Price LLC

Project: Key Brine Well BW 28

Sample ID **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R50592**	RunNo: **50592**
Prep Date:	Analysis Date: **4/13/2018**	SeqNo: **1640798** Units: **mg/L**

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

Sample ID **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R50592**	RunNo: **50592**
Prep Date:	Analysis Date: **4/13/2018**	SeqNo: **1640799** Units: **mg/L**

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

Sample ID **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **A50719**	RunNo: **50719**
Prep Date:	Analysis Date: **4/19/2018**	SeqNo: **1645253** Units: **mg/L**

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

Sample ID **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **A50719**	RunNo: **50719**
Prep Date:	Analysis Date: **4/19/2018**	SeqNo: **1645254** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.9	0.50	5.000	0	98.9	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1804646**

25-Apr-18

Client: Price LLC

Project: Key Brine Well BW 28

Sample ID	**1804646-002ADUP**	SampType:	**DUP**	TestCode:	**Specific Gravity**					
Client ID:	**BW****	Batch ID:	**R50558**	RunNo:	**50558**					
Prep Date:		Analysis Date:	**4/13/2018**	SeqNo:	**1639641**	Units:				

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	1.167	0						0.462	20	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1804646**

25-Apr-18

Client: Price LLC

Project: Key Brine Well BW 28

Sample ID	**MB-37596**	SampType:	**MBLK**	TestCode:	**SM2540C MOD: Total Dissolved Solids**					
Client ID:	**PBW**	Batch ID:	**37596**	RunNo:	**50597**					
Prep Date:	**4/13/2018**	Analysis Date:	**4/16/2018**	SeqNo:	**1640939**	Units:	**mg/L**			

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

Sample ID	**LCS-37596**	SampType:	**LCS**	TestCode:	**SM2540C MOD: Total Dissolved Solids**					
Client ID:	**LCSW**	Batch ID:	**37596**	RunNo:	**50597**					
Prep Date:	**4/13/2018**	Analysis Date:	**4/16/2018**	SeqNo:	**1640940**	Units:	**mg/L**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1020	20.0	1000	0	102	80	120			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: PRICE LLC | Work Order Number: 1804646 | RcptNo: 1

Received By: Michelle Garcia | 4/11/2018 2:03:00 PM | Michelle Garcia

Completed By: Sophia Campuzano | 4/12/2018 11:34:54 AM

Reviewed By: SRE 04/12/18

Labeled By: ENM

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	~~Yes ☑~~	No ☑	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	ENM 4/12/18
7. Are samples (except VOA and ONG) properly preserved?	~~Yes ☑~~	No ☑	
8. Was preservative added to bottles?	~~Yes ☑~~	~~No ☑~~	NA ☐
9. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: 1 (<2 or >12 unless noted)
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted? yes
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: ENM

Special Handling (if applicable)

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

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: ____

16. Additional remarks: For metals analysis, poured off from provided 1L into 250mL HDP. Added appr. 0.5mL HNO_3 for acceptable pH for metals analysis. Sample held for 24hrs. prior to analy.
-ENM 4/12/18 @1200

17. Cooler Information

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

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

July 31, 2018

WAYNE PRICE

PRICE LLC

312 ENCANTADO RIDGE COURT, NE

RIO RANCHO, NM 87124

RE: QUARTERLY SAMPLES

Enclosed are the results of analyses for samples received by the laboratory on 07/19/18 14:35.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. 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 of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Total Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

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

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: QUARTERLY SAMPLES Project Number: 2ND QTR - BW-028 Project Manager: WAYNE PRICE Fax To: UNK-NOWN	Reported: 31-Jul-18 09:36

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
#1 - BRINE - E LOAD LINE	H801976-01	Water	18-Jul-18 09:15	19-Jul-18 14:35
#2 - FRESH - W LOAD LINE	H801976-02	Water	18-Jul-18 09:30	19-Jul-18 14:35
#3 - FRESH WATER TANK - TOP	H801976-03	Water	18-Jul-18 09:45	19-Jul-18 14:35
#4 - FRESH - CITY WATER	H801976-04	Water	18-Jul-18 10:05	19-Jul-18 14:35

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: QUARTERLY SAMPLES Project Number: 2ND QTR - BW-028 Project Manager: WAYNE PRICE Fax To: UNK-NOWN	Reported: 31-Jul-18 09:36

#1 - BRINE - E LOAD LINE

H801976-01 (Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride*	**172000**		4.00	mg/L	1	8071802	AC	23-Jul-18	4500-Cl-B	
pH*	**6.86**		0.100	pH Units	1	8072003	AC	20-Jul-18	150.1	
Specific Gravity @ 60° F	**1.167**		0.000	[blank]	1	8072308	AC	23-Jul-18	SM 2710F	
TDS*	**266000**		5.00	mg/L	1	8071306	AC	23-Jul-18	160.1	
Green Analytical Laboratories										
Total Recoverable Metals by ICP (E200.7)										
Sodium*	**90000**		1000	mg/L	1000	B807184	AES	25-Jul-18	EPA200.7	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: QUARTERLY SAMPLES Project Number: 2ND QTR - BW-028 Project Manager: WAYNE PRICE Fax To: UNK-NOWN	Reported: 31-Jul-18 09:36

#2 - FRESH - W LOAD LINE

H801976-02 (Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride*	**5800**		4.00	mg/L	1	8071802	AC	23-Jul-18	4500-Cl-B	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: QUARTERLY SAMPLES Project Number: 2ND QTR - BW-028 Project Manager: WAYNE PRICE Fax To: UNK-NOWN	Reported: 31-Jul-18 09:36

#3 - FRESH WATER TANK - TOP

H801976-03 (Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride*	**360**		4.00	mg/L	1	8071802	AC	23-Jul-18	4500-Cl-B	
pH*	**7.83**		0.100	pH Units	1	8072003	AC	20-Jul-18	150.1	
Specific Gravity @ 60° F	**1.004**		0.000	[blank]	1	8072308	AC	23-Jul-18	SM 2710F	
TDS*	**924**		5.00	mg/L	1	8072312	AC	24-Jul-18	160.1	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: QUARTERLY SAMPLES Project Number: 2ND QTR - BW-028 Project Manager: WAYNE PRICE Fax To: UNK-NOWN	Reported: 31-Jul-18 09:36

#4 - FRESH - CITY WATER

H801976-04 (Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride*	**60.0**		4.00	mg/L	1	8071802	AC	23-Jul-18	4500-Cl-B	

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: QUARTERLY SAMPLES Project Number: 2ND QTR - BW-028 Project Manager: WAYNE PRICE Fax To: UNK-NOWN	Reported: 31-Jul-18 09:36

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8071306 - Filtration										
Blank (8071306-BLK1)				Prepared: 13-Jul-18 Analyzed: 16-Jul-18						
TDS	ND	5.00	mg/L							
LCS (8071306-BS1)				Prepared: 13-Jul-18 Analyzed: 17-Jul-18						
TDS	516	5.00	mg/L	527		97.9	80-120			
Duplicate (8071306-DUP1)		**Source: H801909-01**		Prepared: 13-Jul-18 Analyzed: 16-Jul-18						
TDS	332	5.00	mg/L		310			6.85	20	
Batch 8071802 - General Prep - Wet Chem										
Blank (8071802-BLK1)				Prepared & Analyzed: 18-Jul-18						
Chloride	ND	4.00	mg/L							
LCS (8071802-BS1)				Prepared & Analyzed: 18-Jul-18						
Chloride	104	4.00	mg/L	100		104	80-120			
LCS Dup (8071802-BSD1)				Prepared & Analyzed: 18-Jul-18						
Chloride	100	4.00	mg/L	100		100	80-120	3.92	20	
Batch 8072003 - General Prep - Wet Chem										
LCS (8072003-BS1)				Prepared & Analyzed: 20-Jul-18						
pH	7.08		pH Units	7.00		101	90-110			
Duplicate (8072003-DUP1)		**Source: H801976-01**		Prepared & Analyzed: 20-Jul-18						
pH	6.88	0.100	pH Units		6.86			0.291	20	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: QUARTERLY SAMPLES Project Number: 2ND QTR - BW-028 Project Manager: WAYNE PRICE Fax To: UNK-NOWN	Reported: 31-Jul-18 09:36

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8072308 - General Prep - Wet Chem										
Duplicate (8072308-DUP1)		**Source: H801976-01**		Prepared & Analyzed: 23-Jul-18						
Specific Gravity @ 60° F	1.174	0.000	[blank]		1.167			0.564	20	
Batch 8072312 - Filtration										
Blank (8072312-BLK1)				Prepared: 23-Jul-18 Analyzed: 24-Jul-18						
TDS	ND	5.00	mg/L							
LCS (8072312-BS1)				Prepared: 23-Jul-18 Analyzed: 24-Jul-18						
TDS	536	5.00	mg/L	527		102	80-120			
Duplicate (8072312-DUP1)		**Source: H801976-03**		Prepared: 23-Jul-18 Analyzed: 24-Jul-18						
TDS	932	5.00	mg/L		924			0.862	20	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: QUARTERLY SAMPLES Project Number: 2ND QTR - BW-028 Project Manager: WAYNE PRICE Fax To: UNK-NOWN	Reported: 31-Jul-18 09:36

Total Recoverable Metals by ICP (E200.7) - Quality Control

Green Analytical Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B807184 - Total Rec. 200.7/200.8/200.2										
Blank (B807184-BLK1)				Prepared: 23-Jul-18 Analyzed: 25-Jul-18						
Sodium	ND	1.00	mg/L							
LCS (B807184-BS1)				Prepared: 23-Jul-18 Analyzed: 25-Jul-18						
Sodium	3.17	1.00	mg/L	3.24		97.8	85-115			
LCS Dup (B807184-BSD1)				Prepared: 23-Jul-18 Analyzed: 25-Jul-18						
Sodium	3.20	1.00	mg/L	3.24		98.9	85-115	1.11	20	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

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

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

Company Name:	KEY ENERGY	**BILL TO**	
Project Manager:	WAYNE PRICE - PRICE LLC	P.O. #:	
Address:	312 ENCANTADO	Company:	PRICE LLC
City:	RIO RANCHO State: NM Zip: 87124	Attn:	WAYNE PRICE
Phone #:	505-715-2809 Fax #:	Address:	312 ENCANTADO
Project #:	BW-028 Project Owner: KEY	City:	RIO RANCHO
Project Name:	2 NO @ TR SAMPLES	State:	NM Zip: 87124
Project Location:	EUNICE BRINE ST	Phone #:	505-715-2809
Sampler Name:	WAYNE PRICE-WAYNEPRICE@q.com	Fax #:	

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		ANALYSIS REQUEST			
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	ACID/BASE:	ICE / COOL	OTHER:	DATE	TIME	TDS, SG, PH, CL's + Na	TDS, SG, PH, CL's	CL (CHLORIDES)	
H801976																		
1	#1-BRINE-E LOAD LINE	G	1L						✓		✓		7-18-18	0915	✓			
2	#2-FRESH-W " "	"	"						✓		✓		"	0930			✓	
3	#3-FRESH WATER TK-TOP	"	"						✓		✓		"	0945		✓		
4*	#4-FRESH-CITY WATER	"	"						✓		✓		"	10:05			✓	

Relinquished By: WAYNE PRICE	Date: 7-19-18	Received By:	
	Time: 8:35		
Relinquished By:	Date:	Received By:	
	Time:		
Delivered By: (Circle One)	0.7°	Sample Condition Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials) TO #5
Sampler - UPS - Bus - Other:	Corrected 0.6°		

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☐ Yes ☐ No Add'l Fax #:

REMARKS:
* TAKEN BELOW AIR BREAK
#2 - FIELD SAMPLE LOW QUANTab > 642 PPM CL
#3 - " " " " " ≈ 343 " "
#4 - " " " " " ≈ 50 " "
FW PUMP TO BW " " ≈ 350 " "

+ Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

October 25, 2018

WAYNE PRICE

PRICE LLC

312 ENCANTADO RIDGE COURT, NE

RIO RANCHO, NM 87124

RE: QUARTERLY SAMPLES

Enclosed are the results of analyses for samples received by the laboratory on 10/16/18 13:20.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. 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 of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Total Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

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

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: QUARTERLY SAMPLES Project Number: 3RD QTR - BW-028 Project Manager: WAYNE PRICE Fax To: UNK-NOWN	Reported: 25-Oct-18 14:53

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FRESH WATER	H802963-01	Water	16-Oct-18 12:45	16-Oct-18 13:20
BRINE WATER	H802963-02	Water	16-Oct-18 12:40	16-Oct-18 13:20

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: QUARTERLY SAMPLES Project Number: 3RD QTR - BW-028 Project Manager: WAYNE PRICE Fax To: UNK-NOWN	Reported: 25-Oct-18 14:53

FRESH WATER

H802963-01 (Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride*	**54500**		4.00	mg/L	1	8101118	AC	17-Oct-18	4500-Cl-B	
pH*	**7.38**		0.100	pH Units	1	8101709	AC	17-Oct-18	150.1	
Specific Gravity @ 60° F	**1.057**		0.000	[blank]	1	8101705	AC	17-Oct-18	SM 2710F	
TDS*	**85700**		5.00	mg/L	1	8101206	AC	18-Oct-18	160.1	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: QUARTERLY SAMPLES Project Number: 3RD QTR - BW-028 Project Manager: WAYNE PRICE Fax To: UNK-NOWN	Reported: 25-Oct-18 14:53

BRINE WATER

H802963-02 (Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride*	**176000**		4.00	mg/L	1	8101118	AC	17-Oct-18	4500-Cl-B	
pH*	**6.92**		0.100	pH Units	1	8101709	AC	17-Oct-18	150.1	
Specific Gravity @ 60° F	**1.181**		0.000	[blank]	1	8101705	AC	17-Oct-18	SM 2710F	
TDS*	**288000**		5.00	mg/L	1	8101206	AC	18-Oct-18	160.1	
Green Analytical Laboratories										
Total Recoverable Metals by ICP (E200.7)										
Sodium*	**85800**		500	mg/L	500	B810170	AES	24-Oct-18	EPA200.7	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: QUARTERLY SAMPLES Project Number: 3RD QTR - BW-028 Project Manager: WAYNE PRICE Fax To: UNK-NOWN	Reported: 25-Oct-18 14:53

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8101118 - General Prep - Wet Chem										
Blank (8101118-BLK1)				Prepared: 11-Oct-18 Analyzed: 12-Oct-18						
Chloride	ND	4.00	mg/L							
LCS (8101118-BS1)				Prepared: 11-Oct-18 Analyzed: 12-Oct-18						
Chloride	104	4.00	mg/L	100		104	80-120			
LCS Dup (8101118-BSD1)				Prepared: 11-Oct-18 Analyzed: 12-Oct-18						
Chloride	104	4.00	mg/L	100		104	80-120	0.00	20	
Batch 8101206 - Filtration										
Blank (8101206-BLK1)				Prepared: 15-Oct-18 Analyzed: 17-Oct-18						
TDS	ND	5.00	mg/L							
LCS (8101206-BS1)				Prepared: 15-Oct-18 Analyzed: 17-Oct-18						
TDS	558		mg/L	527		106	80-120			
Duplicate (8101206-DUP1)		**Source: H802920-01**		Prepared: 15-Oct-18 Analyzed: 17-Oct-18						
TDS	1080	5.00	mg/L		1080			0.186	20	
Batch 8101705 - General Prep - Wet Chem										
Duplicate (8101705-DUP1)		**Source: H802963-01**		Prepared & Analyzed: 17-Oct-18						
Specific Gravity @ 60° F	1.056	0.000	[blank]		1.057			0.117	20	
Batch 8101709 - General Prep - Wet Chem										
LCS (8101709-BS1)				Prepared & Analyzed: 17-Oct-18						
pH	7.07		pH Units	7.00		101	90-110			

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: QUARTERLY SAMPLES Project Number: 3RD QTR - BW-028 Project Manager: WAYNE PRICE Fax To: UNK-NOWN	Reported: 25-Oct-18 14:53

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8101709 - General Prep - Wet Chem										
Duplicate (8101709-DUP1)		**Source: H802963-01**		Prepared & Analyzed: 17-Oct-18						
pH	7.41	0.100	pH Units		7.38			0.406	20	

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: QUARTERLY SAMPLES Project Number: 3RD QTR - BW-028 Project Manager: WAYNE PRICE Fax To: UNK-NOWN	Reported: 25-Oct-18 14:53

Total Recoverable Metals by ICP (E200.7) - Quality Control

Green Analytical Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B810170 - Total Rec. 200.7/200.8/200.2										
Blank (B810170-BLK1)				Prepared: 22-Oct-18 Analyzed: 24-Oct-18						
Sodium	ND	1.00	mg/L							
LCS (B810170-BS1)				Prepared: 22-Oct-18 Analyzed: 24-Oct-18						
Sodium	3.31	1.00	mg/L	3.24		102	85-115			
LCS Dup (B810170-BSD1)				Prepared: 22-Oct-18 Analyzed: 24-Oct-18						
Sodium	3.25	1.00	mg/L	3.24		100	85-115	1.79	20	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

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

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

Company Name:	KEY ENERGY	**BILL TO**	
Project Manager:	WAYNE PRICE - PRICE LLC	P.O. #:	
Address:	312 ENCANTADO RIDGE CT NE	Company:	
City:	RIO RANCHO State: NM Zip: 87124	Attn:	
Phone #:	505-715-2809 Fax #:	Address:	
Project #:	BW-028 Project Owner:	City:	
Project Name:	~~EUNICE BRINE STATION~~ 3RD QTR SAMPLES	State: Zip:	
Project Location:	EUNICE BRINE STATION	Phone #:	
Sampler Name:	WAYNE PRICE - WAYNEPRICE@Q.COM	Fax #:	

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		ANALYSIS REQUEST											
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	TDS, SO4, PH, Cl's	TDS, SO4, PH, Cl's + Na										
H8039963																										
1	FRESH WATER	G	1						✓		✓		10-16-18	12:45	✓											
2	BRINE "	G	1						✓		✓		"	12:40		✓										

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 the client for the 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 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequental 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.

Relinquished By:	Date: 10-14-18	Received By:	Phone Result: ☐ Yes ☐ No Add'l Phone #:
WAYNE PRICE	Time: 1327		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS: TAKEN FROM WEST LOAD LINE
	Time:		BW → 0 ← FW

Delivered By: (Circle One)
Sampler - UPS - Bus - Other: 3.4° #97

Sample Condition: Cool: Yes / No; Intact: Yes / No

CHECKED BY: (Initials) TO

+ Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

February 07, 2019

WAYNE PRICE

PRICE LLC

312 ENCANTADO RIDGE COURT, NE

RIO RANCHO, NM 87124

RE: QUARTERLY SAMPLES

Enclosed are the results of analyses for samples received by the laboratory on 01/30/19 8:15.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. 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 of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Total Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

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

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: QUARTERLY SAMPLES Project Number: 2018-19 4TH QT - KEY EUNICE BR Project Manager: WAYNE PRICE Fax To: UNK-NOWN	Reported: 07-Feb-19 09:35

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FRESH WATER - W LOAD LINE	H900314-01	Water	28-Jan-19 15:05	30-Jan-19 08:15
BRINEWATER - W LOAD LINE	H900314-02	Water	28-Jan-19 15:10	30-Jan-19 08:15
FRESH WATER TANK	H900314-03	Water	28-Jan-19 15:40	30-Jan-19 08:15
CITY WATER INLET TO TK	H900314-04	Water	28-Jan-19 15:55	30-Jan-19 08:15

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: QUARTERLY SAMPLES Project Number: 2018-19 4TH QT - KEY EUNICE BR Project Manager: WAYNE PRICE Fax To: UNK-NOWN	Reported: 07-Feb-19 09:35

FRESH WATER - W LOAD LINE

H900314-01 (Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride*	**130000**		4.00	mg/L	1	9012811	AC	31-Jan-19	4500-Cl-B	

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: QUARTERLY SAMPLES Project Number: 2018-19 4TH QT - KEY EUNICE BR Project Manager: WAYNE PRICE Fax To: UNK-NOWN	Reported: 07-Feb-19 09:35

BRINEWATER - W LOAD LINE

H900314-02 (Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride*	**182000**		4.00	mg/L	1	9012811	AC	31-Jan-19	4500-Cl-B	
pH*	**6.90**		0.100	pH Units	1	9013002	AC	30-Jan-19	150.1	
Specific Gravity @ 60° F	**1.184**		0.000	[blank]	1	9013007	AC	30-Jan-19	SM 2710F	
TDS*	**275000**		5.00	mg/L	1	9013005	AC	01-Feb-19	160.1	
Green Analytical Laboratories										
Total Recoverable Metals by ICP (E200.7)										
Sodium*	**101000**		300	mg/L	300	B902012	AES	04-Feb-19	EPA200.7	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: QUARTERLY SAMPLES Project Number: 2018-19 4TH QT - KEY EUNICE BR Project Manager: WAYNE PRICE Fax To: UNK-NOWN	Reported: 07-Feb-19 09:35

FRESH WATER TANK

H900314-03 (Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride*	**440**		4.00	mg/L	1	9012811	AC	31-Jan-19	4500-Cl-B	
pH*	**7.95**		0.100	pH Units	1	9013002	AC	30-Jan-19	150.1	
Specific Gravity @ 60° F	**0.9990**		0.000	[blank]	1	9013007	AC	30-Jan-19	SM 2710F	
TDS*	**762**		5.00	mg/L	1	9013005	AC	01-Feb-19	160.1	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: QUARTERLY SAMPLES Project Number: 2018-19 4TH QT - KEY EUNICE BR Project Manager: WAYNE PRICE Fax To: UNK-NOWN	Reported: 07-Feb-19 09:35

CITY WATER INLET TO TK

H900314-04 (Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
Cardinal Laboratories										
Inorganic Compounds										
Chloride*	**60.0**		4.00	mg/L	1	9012811	AC	31-Jan-19	4500-Cl-B	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: QUARTERLY SAMPLES Project Number: 2018-19 4TH QT - KEY EUNICE BR Project Manager: WAYNE PRICE Fax To: UNK-NOWN	Reported: 07-Feb-19 09:35

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9012811 - General Prep - Wet Chem										
Blank (9012811-BLK1)				Prepared & Analyzed: 28-Jan-19						
Chloride	ND	4.00	mg/L							
LCS (9012811-BS1)				Prepared & Analyzed: 28-Jan-19						
Chloride	104	4.00	mg/L	100		104	80-120			
LCS Dup (9012811-BSD1)				Prepared & Analyzed: 28-Jan-19						
Chloride	104	4.00	mg/L	100		104	80-120	0.00	20	
Batch 9013002 - General Prep - Wet Chem										
LCS (9013002-BS1)				Prepared & Analyzed: 30-Jan-19						
pH	7.10		pH Units	7.00		101	90-110			
Duplicate (9013002-DUP1)		**Source: H900304-01**		Prepared & Analyzed: 30-Jan-19						
pH	6.62	0.100	pH Units		6.61			0.151	20	
Batch 9013005 - Filtration										
Blank (9013005-BLK1)				Prepared: 30-Jan-19 Analyzed: 01-Feb-19						
TDS	ND	5.00	mg/L							
LCS (9013005-BS1)				Prepared: 30-Jan-19 Analyzed: 05-Feb-19						
TDS	191		mg/L	204		93.6	80-120			
Duplicate (9013005-DUP1)		**Source: H900304-07**		Prepared: 30-Jan-19 Analyzed: 01-Feb-19						
TDS	474	5.00	mg/L		394			18.4	20	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: QUARTERLY SAMPLES Project Number: 2018-19 4TH QT - KEY EUNICE BR Project Manager: WAYNE PRICE Fax To: UNK-NOWN	Reported: 07-Feb-19 09:35

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9013007 - General Prep - Wet Chem										
Duplicate (9013007-DUP1)		**Source: H900304-01**		Prepared & Analyzed: 30-Jan-19						
Specific Gravity @ 60° F	1.013	0.000	[blank]		1.014			0.168	20	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

PRICE LLC 312 ENCANTADO RIDGE COURT, NE RIO RANCHO NM, 87124	Project: QUARTERLY SAMPLES Project Number: 2018-19 4TH QT - KEY EUNICE BR Project Manager: WAYNE PRICE Fax To: UNK-NOWN	Reported: 07-Feb-19 09:35

Total Recoverable Metals by ICP (E200.7) - Quality Control

Green Analytical Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B902012 - Total Rec. 200.7/200.8/200.2										
Blank (B902012-BLK1)				Prepared & Analyzed: 04-Feb-19						
Sodium	ND	1.00	mg/L							
LCS (B902012-BS1)				Prepared & Analyzed: 04-Feb-19						
Sodium	3.17	1.00	mg/L	3.24		97.9	85-115			
LCS Dup (B902012-BSD1)				Prepared & Analyzed: 04-Feb-19						
Sodium	3.21	1.00	mg/L	3.24		99.2	85-115	1.27	20	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

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

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

Send Results to wayneprice@q.com

Company Name:	Key Energy	**BILL TO**	
Project Manager:	Wayne Price-Price LLC	P.O. #:	
Address:	312 Encantado Rd CT NE	Company:	Price LLC
City:	Rio Rancho State: NM Zip: 87124	Attn:	Wayne Price
Phone #:	505-715-2809 Fax #:	Address:	Same
Project #:	2018-19 4th qtr Project Owner: Key Energy	City:	Same
Project Name:	Key Eunice Brine Station BW-28	State: NM Zip:	Same
Project Location:	UL E of Section I5-Township 21 South-Range 37 East.	Phone #:	505-715-2809
Sampler Name:	W.Price-PriceLLC 505-715-2809 wayneprice@q.com	Fax #:	

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		ANALYSIS REQUEST										
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER : Water	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	Chlorides	Chlorides TDS, SG, Ph + Na	Chlorides TDS, SG, Ph								
H900314																									
1	Fresh Water- W load line	G	1						✓		✓		1-28-19	3:05 pm	XX										
2	Brine Water-W load line	G	1						✓		✓		↓	3:10 pm		XX									
3	Fresh Water Tank **	G	1						✓		✓			3:40 pm			XX								
4	City Fresh Inlet to TK	G	1						✓		✓			3:55 pm	XX										

Relinquished By: wayne Price-Price LLC	Date: 1-30-19	Received By: Tamara Oldaker	Phone Result: ☐ Yes ☐ No Add'l Phone #:
	Time: 0815		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS: Send results to wayneprice@q.com
	Time:		** Fresh Water tank supply water to brine well injection tubing

Delivered By: (Circle One) Sampler - UPS - Bus - Other: -0.8c #67	Sample Condition Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials) TO

Appendix C – Mechanical Integrity Tests

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

State of New Mexico
Energy, Minerals and Natural Resources

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

Form C-103
Revised July 18, 2013

WELL API NO. 30-025-33547
5. Indicate Type of Lease STATE ☑ FEE ☐
6. State Oil & Gas Lease No. 28411

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.)

7. Lease Name or Unit Agreement Name: State S
1. Type of Well: Oil Well ☐ Gas Well ☑ Other
8. Well Number 001
2. Name of Operator: Key Energy Services, LLC
9. OGRID Number
3. Address of Operator: 6 Desta Dr. Ste 4300 Midland, TX 79705
10. Pool name or Wildcat
4. Well Location
Unit Letter E : 1340 feet from the North line and 330 feet from the West line
Section 15 Township 21S Range 37E NMPM County LEA
11. Elevation (Show whether DR, RKB, RT, GR, etc.) GL Elevation 3458

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

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	P AND A	☐
PULL OR ALTER CASING	☐	MULTIPLE COMPL	☐	CASING/CEMENT JOB	☐		
DOWNHOLE COMMINGLE	☐						
CLOSED-LOOP SYSTEM	☐						
OTHER:	☐			OTHER: Cavern MIT OCD Condition of Approval	☑		

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.

Spud Date: | Rig Release Date:

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

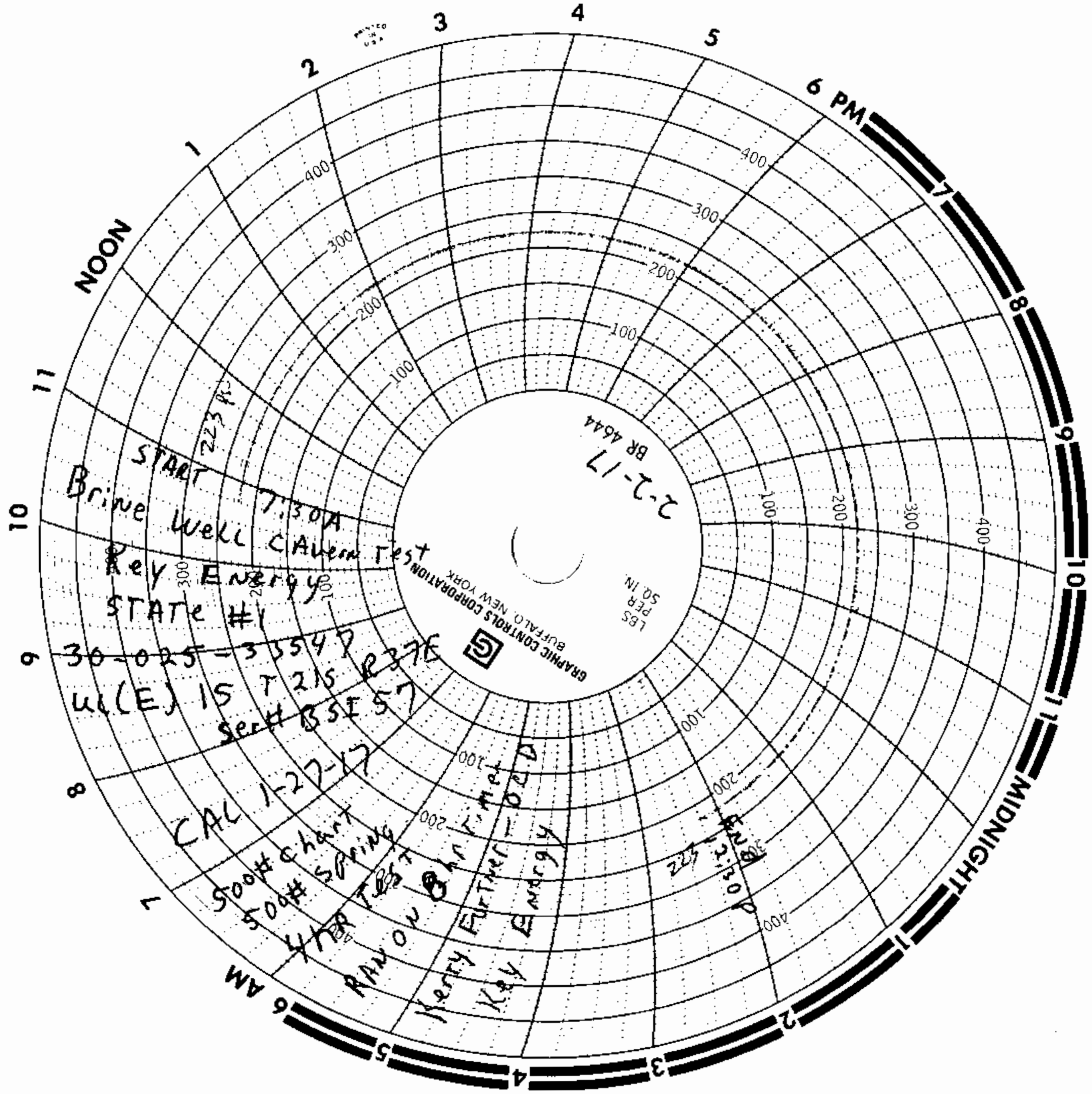
SIGNATURE Jerry Waylon Jackson TITLE Prod. Serv. Sup. DATE 2-3-17

Type or print name Jerry Waylon Jackson E-mail address: jjackson@keyenergy.com PHONE: (806) 637-3507

For State Use Only

APPROVED BY: [signature] TITLE Environmental Engineer DATE 2/7/2017

Conditions of Approval (if any):


NOON
6 PM
MIDNIGHT
6 AM
GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK
BR 4644
LBS PER SQ. IN.
2-2-17
START 7:30A
Brine Well Cavern Test
Key Energy
STATE #1
30-025-33547
CAL 1-27-17
500# chart
500# spring
4HR Test
Key Energy
END 11:30P

OCD Condition of Approval

Mr. Houston, et al.:

OCD hereby requires that Key Energy Services, LLC (Key) conduct within 30-days of receipt of this Form, a *Cavern MIT with pressure* up to at least 200 psig for at least 4 hrs. recorded on a *calibrated chart* (within past 90 days) recorder with not greater than a 500 lb. spring. The start of the MIT shall be witnessed by OCD Hobb Field Staff. The intent of this test is to verify that the cavern has healed or whether there may be an external MIT problem with the well.

You may contact Mr. Mark A. Whitaker at the OCD Hobbs District Office at (575) 393-6161 Ext. #120 or Cell at (575) 399-3202.

Please acknowledge receipt of this message and provide Key's schedule for completing the above.

OCD appreciates Key's cooperation in this matter.

Please contact Mark A. Whitaker if you have questions. Thank you.

B S I Big Spring Instrument, Inc.

5409 N. Service Road
Big Spring, TX 79720
(432) 267-7185

CALIBRATION REPORT

Type Instrument: 2024 BARTON SINGLE PEN

Manufacturer: BARTON

Model Number: BSI #47

Serial Number: BSI #47

Measurement Range: 0-500 PSI CAMBO CLOCK

Equipment Used: PRESSURE RECORDER

	Measured Variable In Percent				
	0%	25%	50%	75%	100%
Flow (Indicated)					
Flow (Corrected)					
Pressure (Indicated)	0	200	400	600	500
Pressure (Corrected)	100	150	350	400	500
Temperature (Indicated)					
Temperature (Corrected)					

Inspected By: [signature] Date: 1-07 Recall Date: 2017

REMARKS: [signature]

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

State of New Mexico
Energy, Minerals and Natural Resources

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

Form C-103
Revised July 18, 2013

WELL API NO. 30-025-33547
5. Indicate Type of Lease STATE ☑ FEE ☐
6. State Oil & Gas Lease No. 28411

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.)

7. Lease Name or Unit Agreement Name: State S
8. Well Number: 001
1. Type of Well: Oil Well ☐ Gas Well ☑ Other
9. OGRID Number
2. Name of Operator: Key Energy Services, LLC
10. Pool name or Wildcat
3. Address of Operator: 6 Desta Drive Suite 4300 Midland, TX 79705
4. Well Location
Unit Letter E : 1340 feet from the N line and 330 feet from the W line
Section 15 Township 21S Range 37E NMPM County Lea
11. Elevation (Show whether DR, RKB, RT, GR, etc.) GL 3458

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

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐	CHANGE PLANS ☐	COMMENCE DRILLING OPNS. ☐	P AND A ☐
PULL OR ALTER CASING ☐	MULTIPLE COMPL ☐	CASING/CEMENT JOB ☐	
DOWNHOLE COMMINGLE ☐			
CLOSED-LOOP SYSTEM ☐			
OTHER: Casing MIT ☑		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.

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 Jerry Waylon Jackson TITLE Production Service Supervisor DATE 1-3-17

Type or print name Jerry Waylon Jackson E-mail address: jjackson75@keyenergy.com PHONE: (806) 637-3607

For State Use Only

APPROVED BY: Carl J. Chavez TITLE Environmental Engineer DATE 1/10/2017
Conditions of Approval (if any):

See attached Conditions of Approval.

OCD Condition of Approval

Mr. Houston, et al.:

OCD hereby requires that Key Energy Services, LLC (Key) conduct within 30-days of receipt of this Form, a Cavern MIT with pressure up to at least 200 psig for at least 4 hrs. recorded on a calibrated chart (within past 90 days) recorder with not greater than a 500 lb. spring. The start of the MIT shall be witnessed by OCD Hobb Field Staff. The intent of this test is to verify that the cavern has healed or whether there may be an external MIT problem with the well.

You may contact Mr. Mark A. Whitaker at the OCD Hobbs District Office at (575) 393-6161 Ext. #120 or Cell at (575) 399-3202.

Please acknowledge receipt of this message and provide Key's schedule for completing the above.

OCD appreciates Key's cooperation in this matter.

Please contact Mark A. Whitaker if you have questions. Thank you.

MIDNIGHT
NOON
6 AM
6 PM
Graphic Controls
Casing MT
DATE 12-27-16
BR 2221

American Valve & Meter, Inc.

1113 W. BROADWAY

P.O. BOX 166 HOBBS,
NM 88240

T0: Key Energy **DATE:07/20/16**

This is to certify that:

I, Tony Flores, Technician for American Valve & Meter Inc. has checked the calibration of the following instrument.

8 "_Pressure recorder **Ser# 1G53214**

at these points.

Pressure #			* Pressure #		
Test	**Found**	**Left**	**Test**	**Found**	**Left**
- 0	-	- 0	-	-	-
- 500	- S	- 500	-	-	-
- 700	- A	- 700	-	-	-
- 1000	- M	- 1000	-	-	-
- 200	- E	- 200	-	-	-
- 0	-	- 0	-	-	-

Remarks:_____

_____

_____

Signature: Tony Flores

Appendix D – Area of Review Data

2018 BW-28 AOR Review-- Well Status List

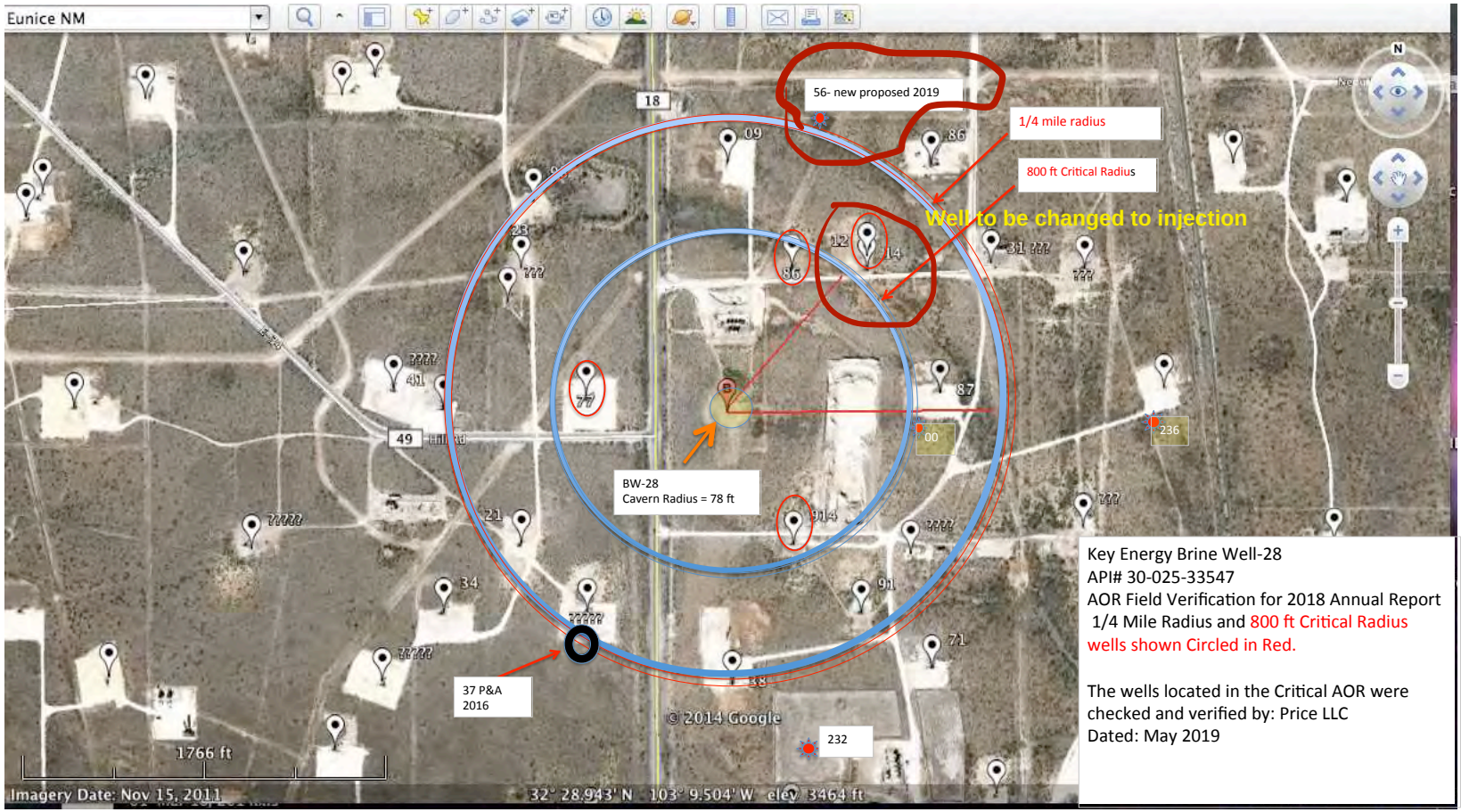
up-dated May 21, 2019

	API #	Well Name	UL	Section	Ts	Rg	Footage	Within 1/4 mi AOR * within 800 ft			Casing Program Checked	Cased/Cemented across salt section	Corrective Action Required
1	30-025-33547	Key-State no.001	E	15	21s	37e	1340 FNL & 330 FWL	NA			NA		
1	30-025-06591	Apache NEDU 604	E	15	21s	37e	2310 FNL & 990 FWL	yes		1	no	Will check if critical radius approaches	Will check if critical radius approaches
1	30-025-09913 (P&A)	Shell NEDU 603	E	15	21s	37e	3390 FSL & 4520 FEL	Yes*	1	1	yes	yes	no
1	30-025-09914	Apache NEDU 602	E	15	21s	37e	1980 FNL & 660 FWL	Yes*	1	1	yes	yes	no
1	30-025-35271	Apache NEDU 602625	E	15	21s	37e	2580 FNL & 1300 FWL	no			na	na	na
0	30-025-37223 Never Drilled **	Apache NEDU 628	E	15	21s	37e	1410 FNL & 380 FWL	Never Drilled	0	0	na	na	na
1	30-025-41600 (in Production 2014)	Apache NEDU 544	E	15	21s	37e	1355 FNL &1190 FWL	yes	0	1	Yes	yes	no
0	30-025-42237 (Withdrawn)	Apache NEDU 648	E	15	21s	37e	1640 FNL & 1300 FWL	yes	0	1	na	na	na
1	30-025-06609	Chevron St. 002	C	15	21s	37e	660 FNL & 1980 FWL	no			na	na	na
1	30-025-06611	Chevron St. 004	C	15	21s	37e	660 FNL & 2080 FWL	no			na	na	na
1	30-025-06613	Apache NEDU 605	C	15	21s	37e	760 FNL & 1980 FWL	no			na	na	na
1	30-025-34649	Apache NEDU 622	C	15	21s	37e	1229 FNL & 2498 FWL	no			na	na	na
1	30-025-34886	Apache NEDU 524	C	15	21s	37e	160 FNL & 1350 FWL	no			na	na	na
1	30-025-39831(added 2010)	Chevron State S no. 2	C	15	21s	37e	990 FNL & 1330 FWL	yes		1	no	Will check if critical radius approaches	Will check if critical radius approaches
1	30-025-34887	Apache NEDU 624	C	15	21s	37e	1250 FNL & 1368 FWL	yes		1	no	Will check if critical radius approaches	Will check if critical radius approaches
1	30-025-41485	Brammer Engr. St No 12	C	15	21s	37e	990 FNL & 1330 FWL	yes		1	yes+++	yes	no
1	30-025-41583	Apache NEDU 661	C	15	21s	37e	1240 FNL & 1930 FWL	no			na	na	na
1	30-025-41598	Apache NEDU 558	C	15	21s	37e	150 FNL & 2295 FWL	no			na	na	na
1	30-025-06586	Chevron St. 001	D	15	21s	37e	660 FNL & 660 FWL	yes*	1	1	yes	yes	no
1	30-025-06612	Chevron St. 005	D	15	21s	37e	660 FNL & 990 FWL	yes		1	yes	yes	no
1	30-025-06614	Apache NEDU 601	D	15	21s	37e	600 FNL & 990 FWL	yes		1	yes	yes	no
1	30-025-36809	Apache NEDU 526	D	15	21s	37e	130 FNL & 330 FWL	yes		1	no	Will check if critical radius approaches	Will check if critical radius approaches
0	30-025-45456	Apache NEDU 649	D	15	21s	37e	870 FNL & 800 FWL	no (proposed)	0	0	Yes	Not drilled-OK as proposed	Not drilled
1	30-025-06585	Apache St. 002	F	15	21s	37e	1980 FNL & 1980 FWL	no			na	na	na
1	30-025-06587	Apache NEDU 606	F	15	21s	37e	3375 FSL & 3225 FEL	no			na	na	na
1	30-025-06590	Apache NEDU 608	F	15	21s	37e	1980 FNL & 1880 FWL	no			na	na	na
1	30-025-41275	Apache NEDU 650	F	15	21s	37e	2550 FNL & 1925 FWL	no			na	na	na
0	30-025-42236 (Withdrawn)	Apache NEDU 647	F	15	21s	37e	1710 FNL & 2360 FWL	no			na	na	na
1	30-025-06603	Apache Argo 006	K	15	21s	37e	1650 FSL & 2310 FWL	no			na	na	na
1	30-025-06607(added 2010)	Apache Argo 011	K	15	21s	37e	2080 FSL & 1650 FWL	no			na	na	na
1	30-025-09918	Apache NEDU 703	K	15	21s	37e	1980 FSL & 1980 FWL	no			na	na	na
1	30-025-39828	Apache Argo 14	K	15	21s	37e	2190 FSL & 2130 FWL	no			na	na	na
1	30-025-34657	Apache NEDU 623	K	15	21s	37e	2540 FSL & 2482 FWL	no			na	na	na
1	30-025-06606	Apache Argo 010	L	15	21s	37e	1880 FSL & 760 FWL	no			na	na	na
1	30-025-09915	Apache Argo 007	L	15	21s	37e	2310 FSL & 990 FWL	no			na	na	na
1	30-025-09916	Apache NEDU 701	L	15	21s	37e	1980 FSL & 660 FWL	no			na	na	na
1	30-025-34888	Apache NEDU 713	L	15	21s	37e	1330 FSL & 1142 FWL	no			na	na	na
1	30-025-37238	Apache NEDU 629	L	15	21s	37e	2630 FSL & 330 FWL	yes		1	no	Will check if critical radius approaches	Will check if critical radius approaches
0	30-025-42232 (Withdrawn)	Apache NEDU 639	L	15	21s	37e	1960 FSL & 740 FWL	no			na	na	na
1	30-025-06623	Apache WBDU 057	A	16	21s	37e	660 FNL & 660 FEL	yes		1	no	Will check if critical radius approaches	Will check if critical radius approaches
1	30-025-25198	Chevron HLNCT 006	A	16	21s	37e	330 FNL & 600 FEL	no			no	na	na
1	30-025-39277	Apache WBDU 113	A	16	21s	37e	1290 FNL & 330 FEL	yes*	1	1	yes	yes	no
1	30-025-06621	Apache WBDU 056	H	16	21s	37e	1980 FNL & 660 FEL	yes		1	no	Will check if critical radius approaches	Will check if critical radius approaches
1	30-025-06624	Chevron HLNCT 005	H	16	21s	37e	2310 FNL & 330 FEL	yes		1	no	Will check if critical radius approaches	Will check if critical radius approaches
1	30-025-36741	Chevron HLNCT 007	H	16	21s	37e	1330 FNL & 1070 FEL	no			na	na	na
1	30-025-37834	Chevron HLNCT 008	H	16	21s	37e	2310 FNL & 030 FEL	yes		1	no	Will check if critical radius approaches	Will check if critical radius approaches
0	30-025-42537 (Proposed)	Apache WBDU 164	H	17	21s	37e	2610 FNL & 300 FEL	Yes	0	0	yes	Well P&A	Well P&A
1	30-025-06617	Apache St. DA 005	I	16	21s	37e	1980 FSL & 330 FEL	no			na	na	na
1	30-025-06619	Apache WBDU078	I	16	21s	37e	1980 FSL & 660 FEL	no			na	na	na
1	30-025-37916	Apache St. DA 013	I	16	21s	37e	1650 FSL & 780 FEL	no			na	na	na
									4	18			

44 Total # of wells in adjacent quarter-sections
18 Total # of wells in 1/4 mile AOR
4 Total # of wells that are or have become within 800 ft of the outside radius of the brine well.

Notes:

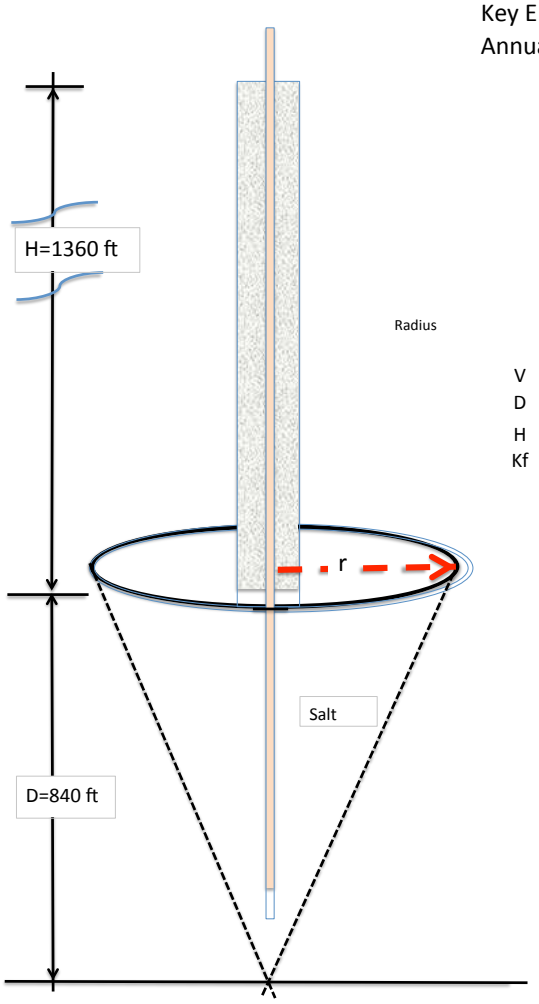
* Means the well is within the calculated Critical outside radius of the brine well and casing program will be checked annually.
The Critical Radius of Review is 10x the calucated brine well radius.
** API # 30-025-37223 not drilled too close to Brine Well
"+++checked casing 1000 sks for 714 ft3 ok between 7-5/8 and 5.5 covers salt section



Field Notes: Last two or three well digits are the last number for the Well API#.

Appendix E – Well Bore Sketch with Cavity Calculations, Radius, Diameter & D/H values

Key Energy Eunice BW-28
Annual Cavity Calculation

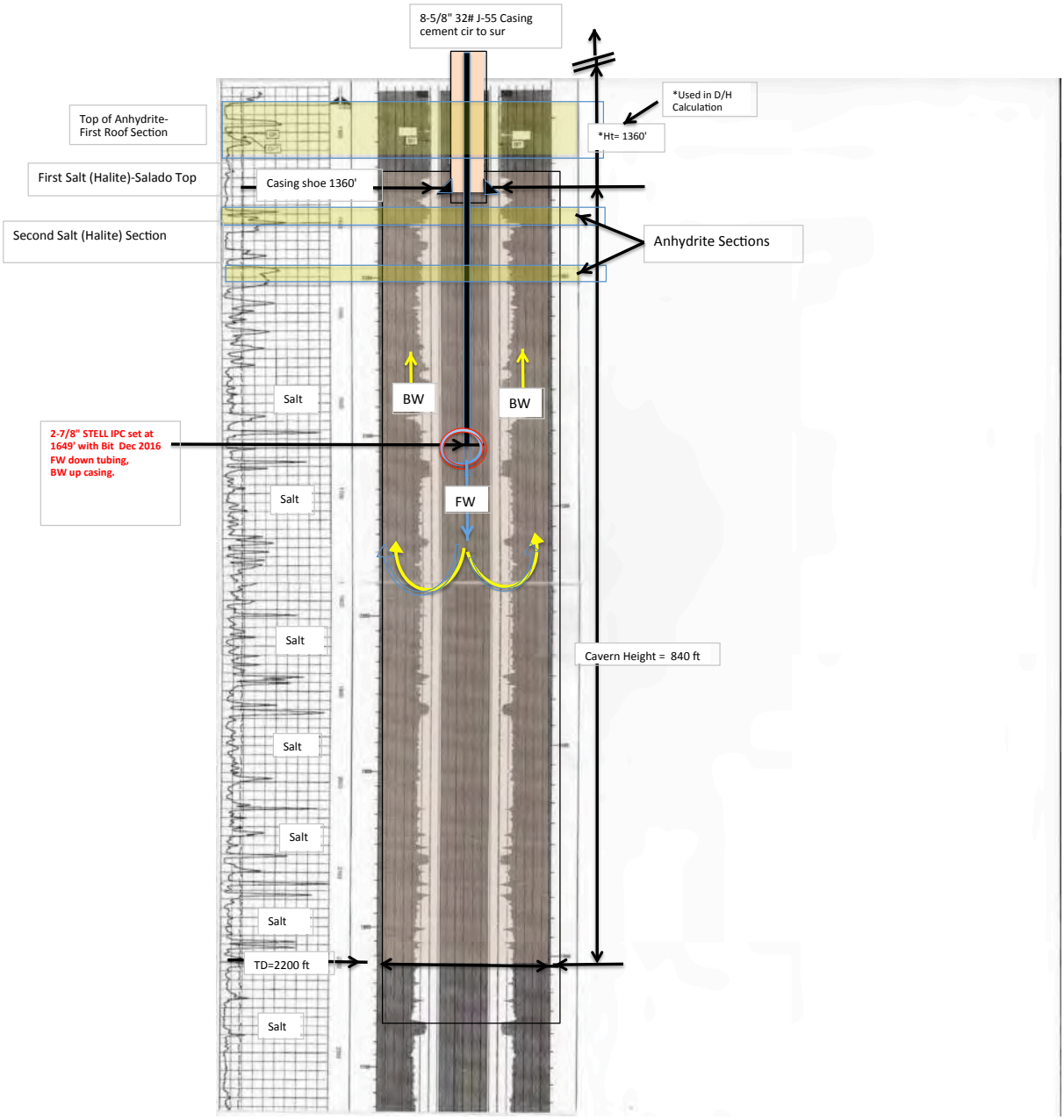


2018 Calculations

Radius r=SqRtV(V*3/π*D)

V	Volume	=	5,762,936	bbls	Inputs
D	Depth	=	840	ft	
H	Height	=	1360	ft	
Kf	ft3 salt/bbl		1	est	
	r	=	81	ft	formula
	Diameter		162	ft	formula
	D/H=		0.12		formula

Key BW-28 Cavern Superimposed on the Apache
NEDU 544D well Log Located 600 ft west of Brine Well.
BW-28 orginally Completed w 2074' of 2-7/8" FG Tubing Aug 96.
Last Completed w 2-7/8" STELL IPC set at 1649' with Bit Dec 2016.
Last Radius Calculation = 159 ft. D/ht = .24
Annotated by Price LLC March 12, 2019



BW-28 Mass Balance

Measured Salt Removed vs Calculated Salt Removed

Independent Inputs

Formulas — Dependent Variables

2018 year End total Production Volume	5,762,396	BBls	Independent variable
Average Density #/gal produced water measured	9.92	lbs/gal	Independent variable — Seven year Average
Average Salt Density-Est	80	lbs/ft3	Independent variable — Used OCD number for salt density
FT3/bbl	7.35	ft3/bbl	Independent variable
LBs of salt per gal	1.586	Lbs/gal	Dependent Variable
LBs of Salt per BBL	87.23	Lbs/bbl	Dependent Variable
Total LBs of Salt Removed	502,653,803	LBS	Dependent Variable
Ft3 of salt removed	6,283,173	Ft3	Estimated Cavern Size calculated from Production Numbers

Geo-Physical Worst Case Cone Calculation

V= ∏R2h / 3

Radius	Radius	81 ft	Dependent Variable
	Height from Log	840 ft	Independent Variable
Volume of Worst Case Cone		5,768,431 Ft3	Calculated using "Worst Case Cone"

8% Within 10 % Passes

" Plus % = Means Cone Calulation is less than measured salt removed

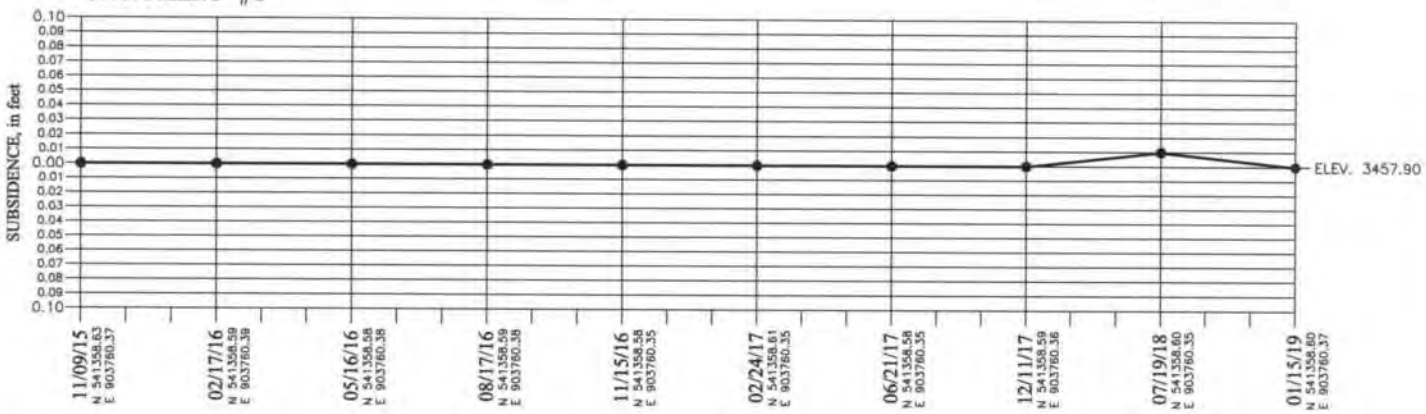
" Neg % = Means Cone Calculaton is more than measured salt remove

Appendix F – Subsidence Reports

VERTICAL SUBSIDENCE TABLE
KEY ENERGY SERVICES, LLC. – STATE #1

NEW MEXICO EAST NAD 83

MONUMENT #1



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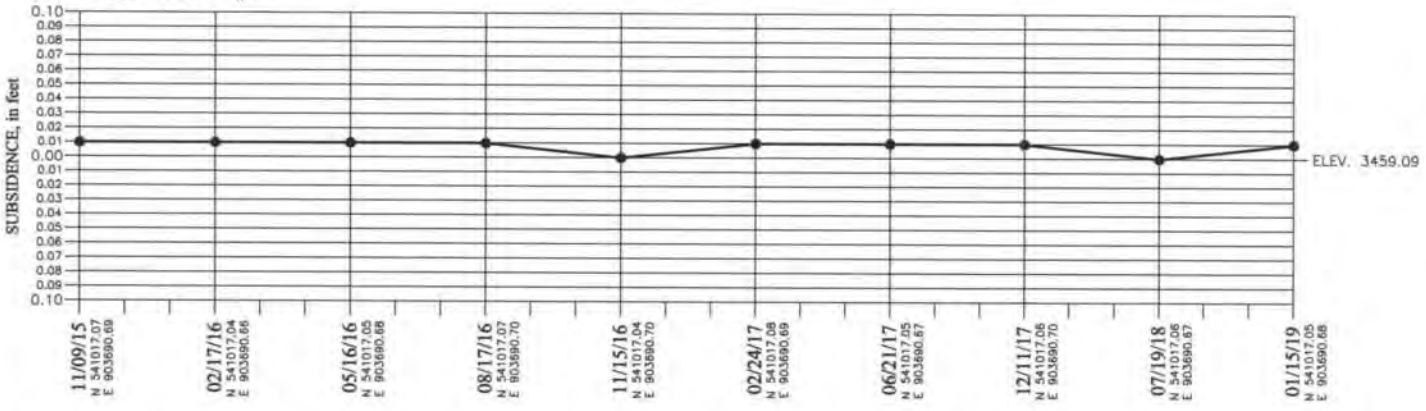

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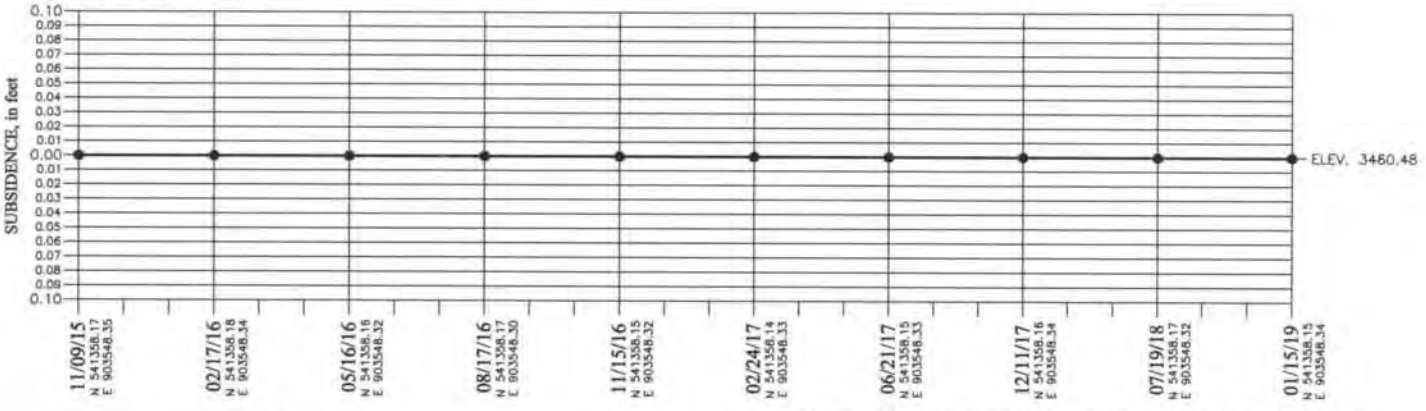


SURVEYORS CERTIFICATE

I, TERRY J. ASEL, NEW MEXICO PROFESSIONAL SURVEYOR NO. 15079, DO HEREBY CERTIFY THAT I CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND MEETS THE "MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO" AS ADOPTED BY THE NEW MEXICO STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND SURVEYORS.

Terry J. Asel 1/16/2019

Terry J. Asel N.M. R.P.L.S. No. 15079

TERRY J ASEL NEW MEXICO 15079 REGISTERED PROFESSIONAL LAND SURVEYOR

BASIS OF ELEVATIONS: US C & GS BENCH MARK "L-98 1935" – CVO320 ELEV. = 3434.37

Asel Surveying

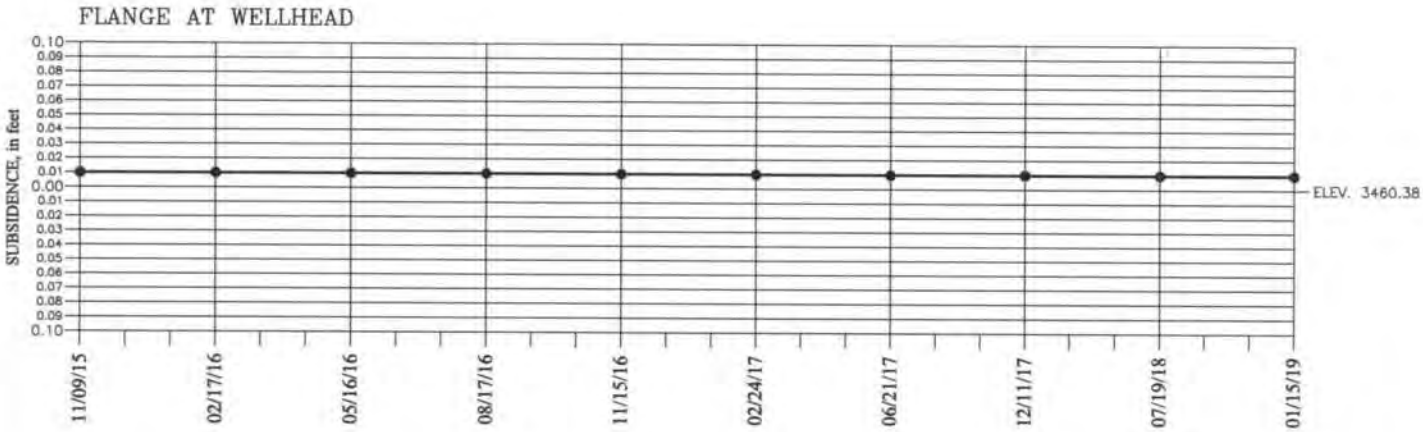
P.O. BOX 393 – 310 W. TAYLOR
HOBBS, NEW MEXICO – 575-393-9146

KEY ENERGY SERVICES, LLC.

SUBSIDENCE MONITORING FOR THE KEY ENERGY SERVICES, LLC. – EUNICE STATE #1 WELL IN SECTION 15, TOWNSHIP 21 SOUTH, RANGE 37 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO

Survey Date: 01/15/19	Sheet 1 of 2 Sheets	
W.O. Number: 190115MS	Drawn By: KA	Rev:
Date: 01/16/19	190115MS	Scale:1"=1000'

VERTICAL ELEVATION TABLE
KEY ENERGY SERVICES, LLC. – STATE #1



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NEW MEXICO EAST NAD 83

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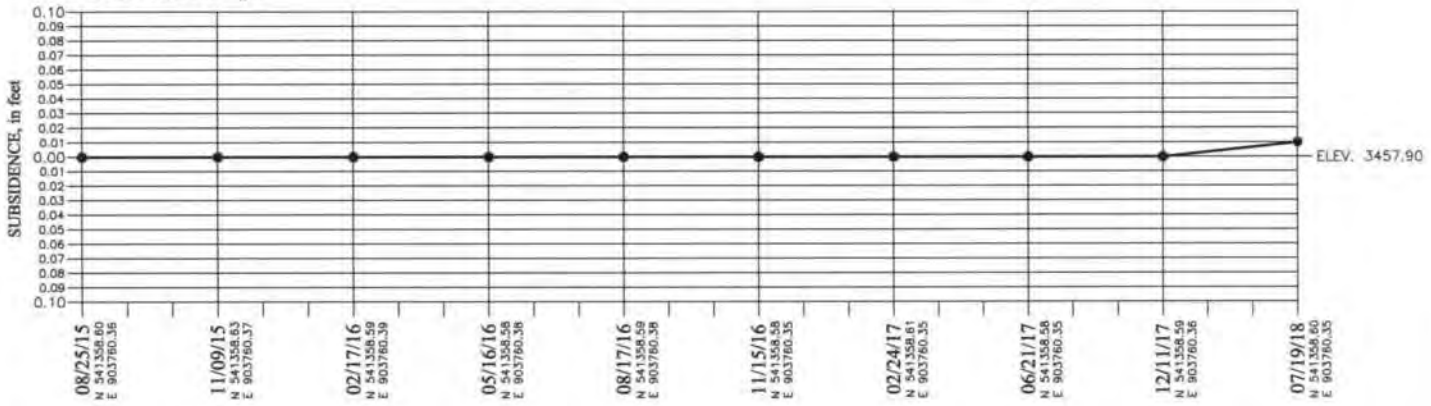

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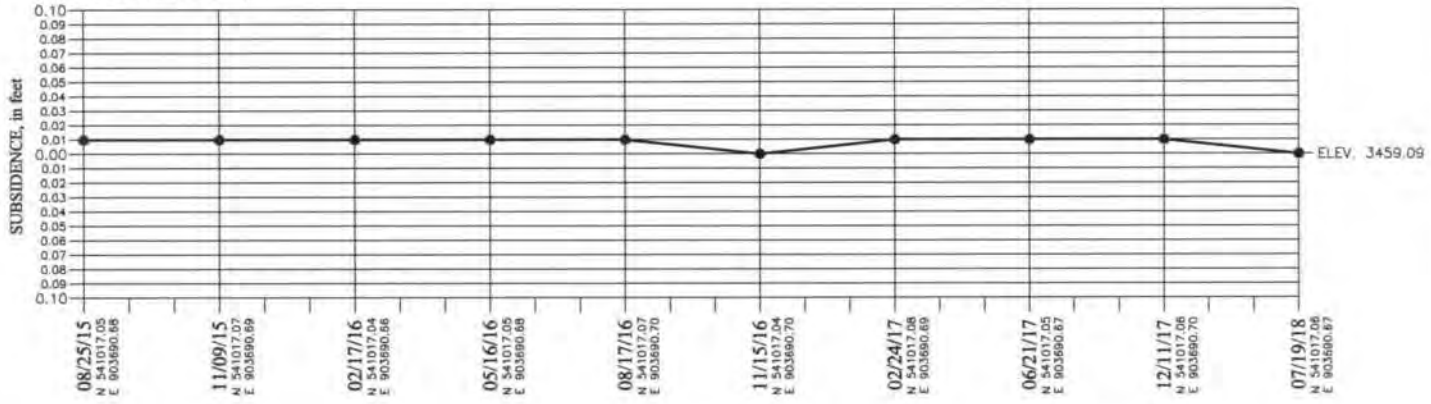

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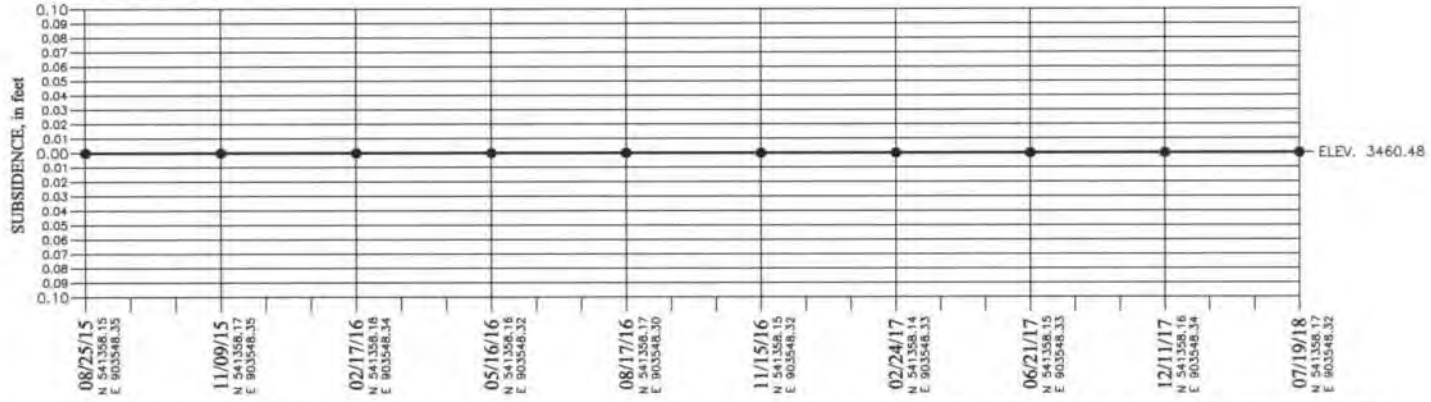

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Date: 07/19/18	180719MS	Scale:1"=1000'

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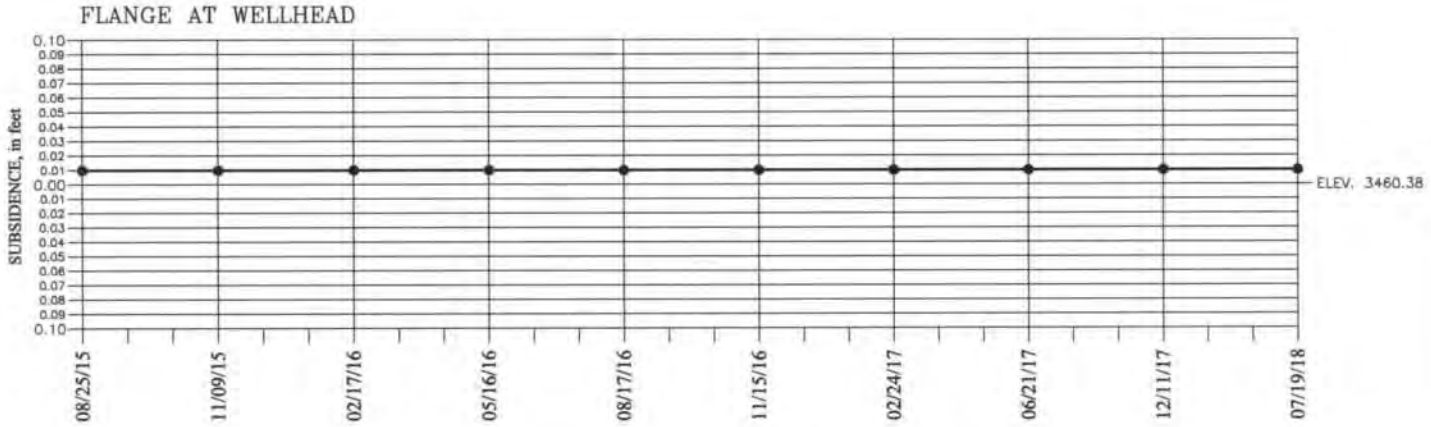

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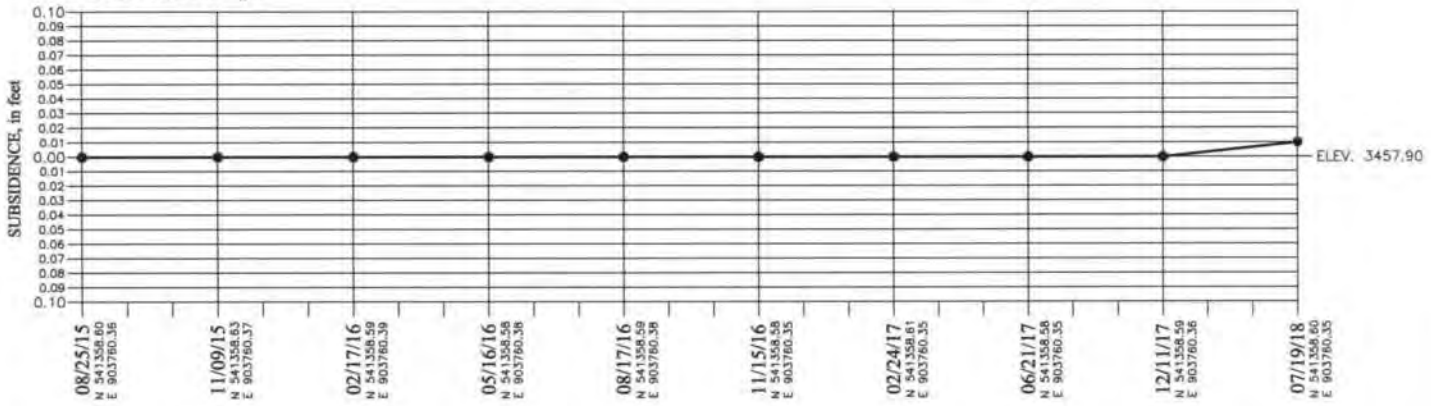

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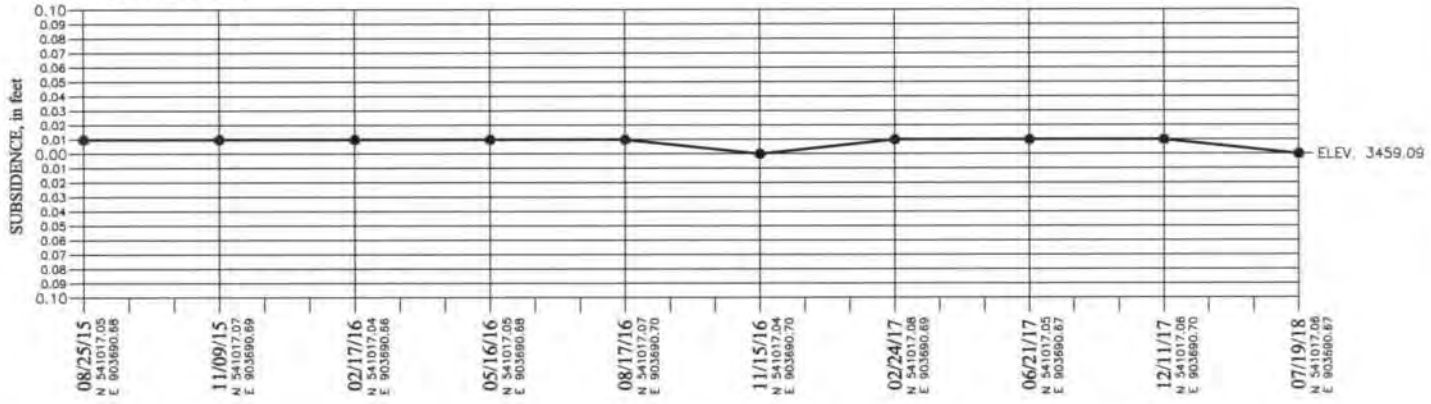

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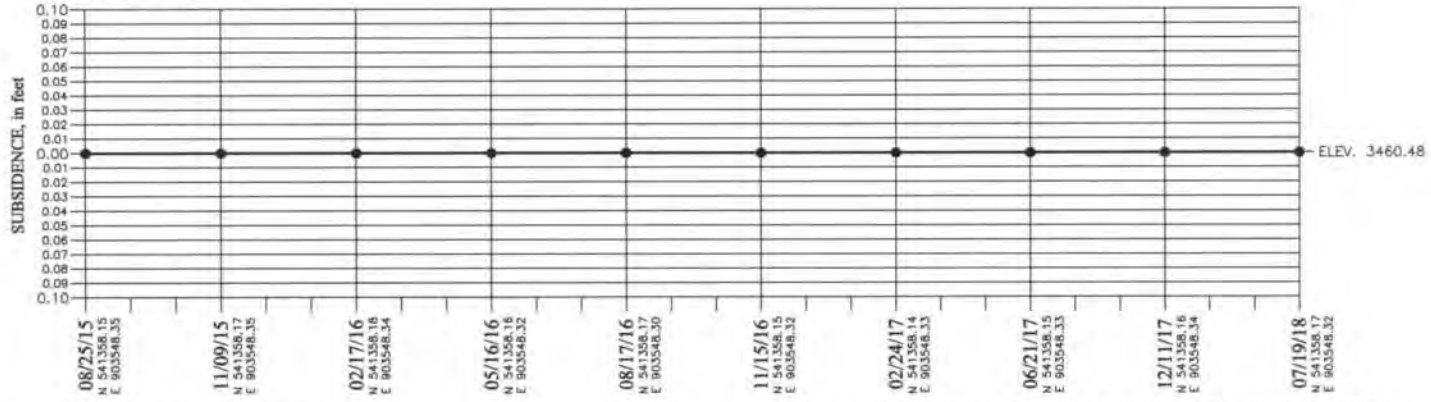

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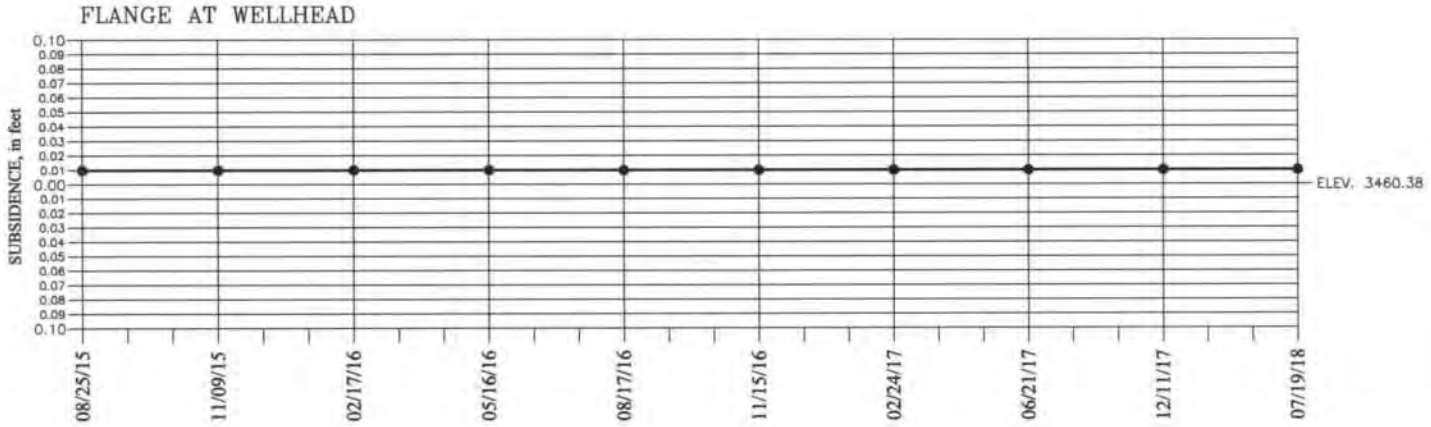

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W.O. Number: 180719MS	Drawn By: KA	Rev:
Date: 07/19/18	180719MS	Scale: 1"=1000'

Appendix G – Summary of OCD Correspondences Regarding Variances

Key Energy Services, LLC
State S Brine Station
Annual Class III Well Report for 2018
Permit BW-28

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

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

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

Many deeper brine wells such as the Key BW-28 will probably have a higher salt density, possibly even up to 100-120 lbs./ft3. Thus, it requires less fresh water to make 10 lb. brine water, which lowers the Fresh Water/Brine Water ratio.

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

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

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

Currently the permit could read 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 normal ratio of Fresh Water input and Brine Water output) will not cause harm to Fresh Water, Public Health or the Environment.

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