



# RAILROAD COMMISSION OF TEXAS

## HEARINGS DIVISION

### PROPOSAL FOR DECISION

**OIL AND GAS DOCKET NO. 02-0302219**

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**THE APPLICATION OF BLACK BUCK DISPOSAL SERVICES, LLC PURSUANT TO STATEWIDE RULE 9 FOR A COMMERCIAL PERMIT TO DISPOSE OF OIL AND GAS WASTE BY INJECTION INTO A POROUS FORMATION NOT PRODUCTIVE OF OIL OR GAS FOR THE HENNING SWD LEASE, WELL NO. 2, EAGLEVILLE (EAGLE FORD-2) FIELD, KARNES COUNTY, TEXAS**

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**HEARD BY:** Karl Caldwell – Technical Examiner  
Jennifer Cook – Administrative Law Judge

### **PROCEDURAL HISTORY**

Application Filed:	July 12, 2016
Protest Received:	July 13, 2016
Request for Hearing:	October 11, 2016
Notice of Hearing:	November 2, 2016
Hearing Held:	November 16-18, 2016
Transcript Received:	December 12, 2016
Record Closed:	January 24, 2017
Proposal for Decision Issued:	April 24, 2017

### **APPEARANCES:**

#### **APPLICANT:**

Mickey Olmstead, Attorney  
Clark Jobe, Attorney  
Eno Peters, Attorney  
Michael Choate, Attorney  
Trace Hight  
McCabe Turner  
Will Powers  
Justin Holliday  
Todd Reynolds  
James Clark, P.E.

### **REPRESENTING:**

**Black Buck Disposal Services, LLC**

**PROTESTANTS:**

Rob Hargrove, Attorney  
John Torres  
Gary and Susan Powers  
Thomas and Dinah Perez  
Danny and Suzanne Polinard  
Patrick and Leslie Malloy  
Delton and Donna Hahn  
BBDL Property/Bruce Anderson

**Protestants Torres**

John Torres  
Gary and Susan Powers  
Thomas and Dinah Perez  
Danny and Suzanne Polinard  
Patrick and Leslie Malloy  
Delton and Donna Hahn  
BBDL Property/Bruce Anderson

**PROTESTANT:**

Jay Stewart, Attorney  
Wesley McGuffey, Attorney  
Amanda Biediger  
Stephen Johnson  
Tim Jurco

**Protestant Steven Johnson****PROTESTANT:**

Tim Jurco  
Joseph Vargo

**NGL Water Solutions Eagle Ford LLC****CASE SUMMARY**

Black Buck Disposal Services, LLC (Black Buck) is requesting to drill a new well for commercial disposal, the Henning SWD Lease, Well No. 2, on a 30.8-acre tract located approximately 5.3 miles northeast of Ecletto, Karnes County, Texas. The Applicant proposes to inject a maximum volume of 25,000 barrels per day (bpd) of saltwater and RCRA-exempt waste into the Wilcox Formation in the depth interval from 5,300 feet to 7,950 feet. The subject application is protested by adjacent landowners. The Protestants concerns include potential groundwater and surface water contamination, increased seismicity, a lack of need for another saltwater disposal well in the area, traffic, dust, interference with any future drilling operations in the area, and diminishing property value. NGL Water Solutions Eagle Ford LLC (NGL) also protested the application, and an NGL employee provided testimony as a witness for Protestant Johnson. Based on the evidence, the Technical Examiner and Administrative Law Judge (collectively, "Examiners") recommend approval of the application.

**APPLICABLE LAW**

Any person who disposes of saltwater or other oil and gas waste by injection into a porous formation not productive of oil, gas, or geothermal resources shall be responsible for complying with 16 Tex. Admin. Code §3.9, Texas Water Code, Chapter 27, and Title 3 of the

Natural Resources Code. Pursuant to Texas Water Code § 27.051(b), the Commission has authority to permit disposal and injection wells if it finds:

- 1) that the use or installation of the injection well is in the public interest;
- 2) that the use or installation of the injection well will not endanger or injure any oil, gas, or other mineral formation;
- 3) that, with proper safeguards, both ground and surface fresh water can be adequately protected from pollution; and
- 4) that the applicant has made a satisfactory showing of financial responsibility if required by Section 27.073 of this code.

### **DISCUSSION OF THE EVIDENCE**

#### **Applicant's Evidence (Black Buck Disposal Services, LLC)**

##### **Application**

Black Buck requests commercial disposal authority pursuant to Statewide Rule 9 for the Henning SWD Lease, Well No. 2 (Henning SWD No. 2), Eagleville (Eagle Ford-2) Field, Karnes County, Texas. Notice of the application was published in the *Karnes Countywide*, a newspaper having general circulation in Karnes County Texas, on Wednesday, September 28, 2016. Notice of the application (Form W-14) was mailed to the surface owner of the well tract, to the County Clerk of Karnes County, to offset surface owners of the well tract, to operators with active wells within one-half mile of the proposed disposal well location, Encana Oil & Gas (USA) Inc. (Encana), and Devon Energy Production Co., L.P. (Devon), and to the Evergreen Underground Water Conservation District (Evergreen). Evergreen initially protested the proposed well, but withdrew its protest before the hearing due to an agreement reached between Evergreen and Black Buck. The application is protested by adjacent surface owners. The Commission also received a protest from NGL.

##### **Proposed Disposal Well Location**

The proposed disposal well will be drilled and completed on a 30.8-acre tract, located along Highway 119, approximately 5.3 miles northeast of Ecletto, in Karnes County. The Henning tract and several adjoining tracts are triangular-shaped, and the tracts converge at a common point, as shown in Attachment A.

##### **Injection Interval**

Black Buck is requesting to inject a maximum volume of 25,000 bpd of saltwater and RCRA-exempt waste into the Wilcox Formation at the depth interval from 5,300 feet to 7,950 feet. Black Buck is also requesting a maximum surface injection pressure of 2,650 psi. Todd Reynolds, Black Buck's geology and geophysics expert witness, examined numerous well logs in

the area and prepared several cross-sections. Based on his review, Mr. Reynolds estimates the Wilcox Formation to be approximately 3,500 feet thick in this area. According to Mr. Reynolds, the Wilcox Formation is predominantly sand, and the sands are "very porous and permeable."<sup>1</sup> Within the Wilcox Formation there are numerous alternating layers of sand and shale that are isolated from one another. Mr. Reynolds concluded that the Wilcox Formation is very correlative across a hundred square mile area and is a relatively constant thickness.

On cross-examination Mr. Reynolds stated that although the proposed injection interval from 5,300 feet to 7,950 at the Henning No. 2 location may appear to extend into the top of the Midway Formation, a shale, below the Wilcox Formation on the log-cross sections he prepared, the intent would not be to inject into a shale. The intent would be to inject into the Wilcox Formation and it is common when designating an interval before a well is drilled to have a buffer above and below the estimated injection interval to account for how the well drills. Until the well is actually drilled the exact depth to the base of the Wilcox at the Henning No. 2 location is unknown.<sup>2</sup>

#### *Fresh Water and Confining Intervals to Protect Fresh Water*

At this location, the Commission's Groundwater Advisory Unit (GAU) estimates the base of usable-quality water (BUQW) occurs at a depth of 750 feet, and base of the Underground Source of Drinking Water (USDW) is estimated at 2,200 feet. The GAU also estimates geologic isolation occurs at 2,500 feet. Black Buck provided a letter from the GAU of the Oil and Gas Division that stated if otherwise compliant with Railroad Commission rules and guidance, drilling and using this disposal well and injecting oil and gas waste into the subsurface stratum in the depth interval from 5,100 feet<sup>3</sup> to 7,950 feet will not endanger the freshwater strata in that area.

The proposed Henning SWD No. 2 is not yet drilled. The Belco Petroleum Corp. H. Branscomb No. 1, API No. 42-255-30178, (type-log) is a well located approximately one mile from the proposed Henning No. 2 location. Mr. Reynolds considers the well log for the Branscomb No. 1 to be a good type log for the proposed Henning No. 2 because it goes deep into the Edwards Formation. The well log indicates that from approximately 2,600 feet to 3,200 feet there is a 600-foot shale interval to provide geological isolation between the injection interval and both the BUQW and USDW. There is another shale interval immediately above the Wilcox Formation from about 4,050 feet to approximately 4,450 feet that shows an additional 400 feet of continuous shale to provide additional isolation between injection interval and BUQW. Mr. Reynolds estimates the the top of the Wilcox Formation to be at a depth of approximately 4,580 feet on Branscomb No. 1 well log.

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<sup>1</sup> Tr. Vol. I, pg. 139, ln 24-25.

<sup>2</sup> Tr. Vol. II, pg. 39, ln 2-9

<sup>3</sup> Black Buck has amended its application to lower the top of the injection interval from 5,100 feet to 5,300 feet.

*Productive Formations and Confining Intervals to Protect Productive Formations*

The Eagle Ford and Austin Chalk Formations are the productive intervals within two miles of the proposed Henning No. 2. These formations are 3,000 feet deeper than the proposed disposal interval within the Wilcox Formation. Mr. Reynolds estimates at least a couple of thousand feet of shale below the base of the Wilcox that would separate the disposal interval from the deeper horizons. These shale intervals are the Midway shale and the Taylor shale. Mr. Reynolds stated "...in general, you're looking at predominantly shale from the base of the Wilcox to the top of the Austin Chalk, with the exception of an occasional thin Olmos sand in there."<sup>4</sup> The Olmos Formation is not productive in this area.

**Well Construction**

The well construction plan is to set 9 5/8-inch surface casing at a depth a 2,300 feet and cement the casing to surface. The surface casing will be set below both the BUQW and USDW. Statewide Rule 13 requires surface casing to be set at a depth to protect the BUQW but does not require surface casing to be set below the USDW. Black Buck intends to set the surface casing 100 feet below the USDW per an agreement reached with Evergreen. Mr. Clark noted that the nearby Korth C Unit, Well No. 1H (API No. 42-255-32841) has surface casing set at a depth of 3,525 feet. In Mr. Clark's opinion, the surface casing for this well was set substantially deeper than the BUQW.

After the 9 5/8-inch surface casing is set at 2,300 feet and cement circulated to surface, the proposed disposal well will be drilled to a total depth (TD) of approximately 8,050 feet, and 7-inch casing will be set. Black Buck will attempt to circulate cement to the surface on the 7-inch casing. Mr. Clark stated that the well will be constructed in compliance with Statewide Rule 13. The perforated interval will be the Wilcox interval from 5,300 feet to 7,950 feet at this location. Four-and-a-half-inch tubing will be set on a packer no shallower than a hundred feet above the top of the permitted disposal interval.

**Nearby Wellbores**

A review of all wellbores within one-quarter mile of the proposed Henning No. 2 reveals a total of six active horizontal wells. All six wells are operated by Encana and completed in the Eagleville (Eagle Ford-2) Field. None of these active wells penetrate the Wilcox Formation within a quarter-mile of the proposed Henning No. 2. The wells are completed in the Eagle Ford, so the horizontal lateral is 3,000 feet or deeper than the base of the Wilcox Formation within a quarter-mile area. The surface locations of these six wells are between three-quarters of a mile and a mile away.

Drilling permits have been issued for seven wells to be completed in either the Sugarkane (Austin Chalk) Field or the Eagleville (Eagle Ford-2) Field within a quarter-mile radius. These wells have not yet been drilled.

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<sup>4</sup> Tr. Vol. I, pg. 210, ln 18-21.

There are no unplugged or plugged and abandoned wellbores within a quarter mile of the proposed Henning No. 2. There is one plugged and abandoned wellbore between a quarter-mile and a half-mile away. The Zink and His, Paul A. Seidel Lease, Well No. 1, API No. 42-255-30061 (Seidel well) is located about 1,670 feet southeast of the proposed Henning SWD No. 2. This well was plugged and abandoned in November of 1969. The well was a dry hole drilled to a TD of 4,807 feet. The plugging report (Form W-3) shows a cement plug was set from 900 feet to 1,000 feet using 45 sacks of cement, and the well was also plugged with 10.1 lb. per gallon (ppg) mud in the hole. Thus, there is a cement plug between the BUQW at 750 feet and the proposed injection interval in the Henning SWD No. 2.

The top of the proposed injection interval for the Henning SWD No. 2 is 5,300 feet. Mr. Reynolds estimates the top of the Wilcox Formation at the Seidel well to be 4,555 feet. Since the Seidel well was drilled to a TD of 4,807 feet, the Seidel well penetrates the top of the Wilcox Formation. Mr. Reynolds constructed a stratigraphic cross section that indicates there are several shale intervals in the Upper Wilcox that are isolating intervals between the proposed injection interval at 5,300 feet and the TD of the Seidel well. Evergreen withdrew its protest of the Henning SWD No. 2 after reaching an agreement with Black Buck, which included lowering the top of the injection interval for the Henning SWD No. 2 to 5,300 feet.<sup>5</sup>

In Mr. Reynolds opinion, the proposed injection interval is geologically isolated from the Seidel well.<sup>6</sup> Mr. Reynolds identified a shale interval on the type log that is approximately 20 to 25 feet in thickness at a depth of approximately 5,220 feet. In lowering the top of the injection interval, from 5,100 feet to 5,300 feet, the shale interval at approximately 5,220 feet provides an additional geologic barrier between the top on the injection interval and the TD of the Seidel well.

In Mr. Clark's opinion, the Seidel well is not a conduit for water injected into the proposed Henning No. 2. Mr. Clark's opinion is based on the evidence of geologic isolation between the top of the injection interval and the TD of the Seidel well, in addition to the plugging of the Seidel well.

According to Mr. Clark, if injected fluids were to somehow get through the shale barrier, the Seidel well still would not act as a conduit because the well was plugged with 10.1 ppg mud and a 100-foot cement plug. Since the Protestants consider the Seidel well to be a possible issue, Mr. Clark performed a pressure front calculation for the proposed Henning SWD No. 2 and the Seidel well. Mr. Clark's calculation shows that even if there was not geological isolation between the top of the injection interval and the TD Seidel well, the Seidel well still would not be a conduit for injected fluids to escape the permitted injection interval. Mr. Clark's pressure front calculation shows a pressure increase of only 24 psi after injecting water at a rate of 25,000 bpd after 25 years. Mr. Clark calculated that it would take a 270 psi increase in reservoir pressure at the location of the Seidel well for injected fluids to enter the Seidel wellbore. Mr. Clark stated "...therefore, I conclude that this wellbore is not a conduit

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<sup>5</sup> Black Buck Exhibit Nos. 16 and 17.

<sup>6</sup> Tr. Vol. I, pg. 151, ln 4-21.

for fluids to escape the permitted Wilcox Formation. And that's true even if it were to make it past the shale barrier at 5,300 feet."<sup>7</sup>

### Oil and Gas Activity in the Area

In the vicinity of the proposed Henning SWD No. 2 are multiple wells permitted on Protestant Johnson's tract. On the 641.36 acre Korth C Unit, Encana originally permitted seven wells as Eagle Ford wells. Encana has since amended the drilling permits and five of the wells have been changed from Eagle Ford to Austin Chalk completions. The Korth C Unit, Well No. 1H was drilled and completed in the Eagle Ford. This well was hydraulically fracture stimulated with almost 6.7 million pounds of proppant and 107,658 barrels of water. Mr. Clark stated "So this well is going to produce quite a bit of frac flowback water. And this is more or less typical of the Eagle Ford wells in this area."<sup>8</sup> In Mr. Clark's opinion, if Encana were to pipe water from the Korth C Unit to the proposed Henning No. 2 SWD, it would reduce the trucking requirements to dispose of the frac flowback and produced water from the Korth C Unit.

The nearest Sugarkane Austin Chalk completion to the subject Henning SWD No. 2 is the EOG Resources, Inc. (EOG) Denali Unit No. 10H. This well was completed on March 30, 2016. The potential test was conducted on April 19, 2016 when the well was flowing on a 36/64 choke. The well produced 2,524 barrels of oil, 3,432 Mcf of gas, and 2,127 barrels of water. Mr. Clark considers this to be fairly significant water production. The well was hydraulically fracture stimulated with 15,576,120 gallons (370,860 bbl) of water, much more water than the Eagle Ford wells. Mr. Clark would expect the Austin Chalk wells in this area to make even more water than the Eagle Ford wells. He testified that the fact that Encana has permitted numerous Austin Chalk wells on the tract next to the Henning tract indicates that there is going to be a tremendous need for disposal capacity of frac flowback. This will be the case for the Korth C Unit, which is where the Henning tract is located, as well as adjacent units, which Mr. Clark thinks will be developed. In Mr. Clark's opinion, there will be continue to be a demand for saltwater disposal in this immediate area.

In Mr. Clark's opinion, lowering the lease operating expenses (LOE) extends the life of the well. When the revenue equals the expenses it's time to plug the well because you're going to lose money if you continue to produce the well at that point.<sup>9</sup> Mr. Clark performed several calculations to quantify the concept of lowering LOE to extend the life of a well, and recovery of oil. Mr. Clark assumed wells are completed in the Austin Chalk and making approximately 10 barrels of water per day (bwpd) near the end of the life of the well. Mr. Clark also assumed the cost to truck water to go to a different commercial disposal facility than Black Buck's proposed well to be \$1.50 per bbl, as compared to the price to pipe water to the proposed Black Buck Henning SWD No. 2 well at a cost of \$0.65 per bbl. Mr. Clark also assumed an oil price of \$45 per barrel, 4.6% oil severance tax, and a 2% ad valorem tax. The non-saltwater disposal component of the LOE is identical for the two scenarios (trucking vs piping). The

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<sup>7</sup> Tr. Vol. II, pg. 101, ln 11-15.

<sup>8</sup> Tr. Vol. II, pg. 118, ln 10-12.

<sup>9</sup> Tr. Vol. II, pg. 126, ln 20-24.

additional cost to truck the water to another commercial disposal facility vs piping to the proposed Henning SWD is \$255 per month per well, or in terms of oil, the difference is 8.1 barrels of oil (BO) per month. Assuming a terminal exponential decline rate of 5% per year, in terms of an incremental abandonment rate, the oil wasted due to a higher well abandonment rate is 1,895 BO per well. Assuming 7 Austin Chalk completions on the Korth C Unit, the amount of oil wasted would be 13,265 BO. Mr. Clark estimates 25 Austin Chalk wells to be completed in surrounding units, which would equate to 47,000 BO wasted. In Mr. Clark's opinion, the same concept applies for Eagle Ford wells in the area, but since Eagle Ford wells are only 10 years old, Mr. Clark is unsure how much water they will be producing in 20 -25 years at the end of the life of the well.

In Mr. Clark's opinion, hauling water is a major expense, and it is preferable to dispose of water in a relatively short distance from where the water is generated to minimize this expense. The longer distance to haul the water, the more it costs. The proposed Henning SWD No. 2 location is on Highway 119. Mr. Clark notes there is Eagle Ford development in the area. Any trucks hauling water from wells to the southeast on Highway 119 would have to drive past the proposed Henning SWD No. 2 to the disposal wells located to the northwest. In Mr. Clark's opinion, if the application is approved it will reduce the required truck miles to dispose of water, which will also reduce ongoing and recurring lease and well operational expenses to operators. Mr. Clark stated that the Henning SWD No. 2 "...will provide another alternative that's closer, and a really attractive alternative if water is piped to the Henning location, that reduces the cost of water disposal."<sup>10</sup> There is a big area to the southwest, south, and southeast of the 10-mile area of review, that Mr. Clark estimates is 150 square miles or larger, where there is no current commercial disposal capacity.<sup>11</sup> Mr. Clark describes that area as "...the core area of the Eagle Ford. It is one of the hot spots for sure."<sup>12</sup> This represents future demand for disposal need. Whether water is piped over to the Henning No. 2 or is trucked, reducing truck miles reduces lease operating expenses. If you can reduce the operating expenses then you can extend the productive life of the producing wells. In Mr. Clark's opinion, the proposed Black Buck disposal well is in the public interest as there is a need for additional disposal capacity in this area where the well is proposed.

On cross-examination, Mr. Clark stated that he did not consider the cost to cement across the proposed disposal interval because wells drilled and completed in the area have casing and cement across this interval already, and Mr. Clark expects any new wells drilled would also be cased and cemented across the proposed disposal interval. For example, Form W-2 for the Korth C Unit, Well No. 1H (API No. 42-255-32841) casing shows 9-5/8 inch surface casing set at 3,525 feet with and cemented with cement circulated to surface. The well was drilled to a measured depth of 17,245 feet in the Eagleford Formation and 5-1/2 inch casing was set and cemented with 2,140 sacks of Class H cement with top of cement at 3,542 feet. So the only place in the wellbore without cement behind casing, by that calculation, is a 17-foot interval from 3,525 feet to 3,542 feet. Mr. Clark would expect a similar design on future wells.

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<sup>10</sup> Tr. Vol. II, pg. 130, ln 22-25.

<sup>11</sup> Tr. Vol. II, pg. 88, ln 12-16.

<sup>12</sup> Tr. Vol. II, pg. 131, ln 16-17.



Mr. Clark would not expect any new well to have exposure to injected fluids into the proposed Henning SWD No. 2.<sup>13</sup>

On cross-examination, Mr. Clark stated that in some instances there can be additional costs to drill through a pressured-up zone, to ensure well integrity as you drill through a pressured up injection zone, but did not add that cost in his economic analysis. In Mr. Clark's cost analysis, the disposal well cost of a \$1.50 per bbl was a number provided by Trace Hight. Mr. Clark did not contact any disposal well operators, trucking companies, or oil and gas operators regarding their disposal costs in the area. Mr. Clark's opinion is based on his general understanding of saltwater disposal costs. Mr. Clark agrees that some operators do environmental assessments of disposal operators, and some operators believe that some disposal wells are run better than other disposal wells, and distance is not the only factor in selecting a disposal well to dispose of water. Mr. Clark agrees that commercial disposal wells are located on major roads and infrastructure can be an issue when trying to site a disposal well.

In Mr. Clark's opinion, adding competition and additional disposal wells should lower disposal costs and lease operating expenses by giving trucks an option to a closer disposal location.<sup>14</sup> In general, a shorter distance to haul saltwater generally means lower costs, lower lease operating expenses and extending the life of producing wells.

### **Existing Commercial Disposal Wells in the Area**

A review of existing commercial saltwater disposal wells within a 10-mile radius (314 square miles) of the proposed Henning SWD No. 2 reveals a total of nine commercial saltwater disposal wells (SWDs). Five of the nine wells are utilizing the Wilcox Formation for disposal. There are no commercial SWDs within an estimated 150-mile area to the southwest, south, and southeast of the proposed Henning SWD No. 2. The closet NGL well is the Karnes SWD No. 1 (API No. 42-255-31906) located approximately 7.2 miles away. This NGL SWD has a permitted injection interval in the Wilcox Formation from 5,400 feet to 7,100 feet. The permit for this SWD was amended by NGL on June 27, 2012. One of the amendments was to increase the maximum daily injection volume from 20,000 bpd to 25,000 bpd. In reviewing the Form H-10 data reported between January 2013 through early-2016 for the NGL Karnes SWD No. 1, Mr. Clark concluded that the monthly injected water volumes generally ranged between 400,000 and 700,000 barrels per month. Peak injection was approximately 22,500 bpd. Based on the injection pressure reported Mr. Clark concluded that the Wilcox Formation is an excellent disposal zone in this area.<sup>15</sup>

Approximately 6.4 miles to the northwest of the proposed Henning SWD No. 2 is the BD Operating Kerlick Lease, Well No. 1, API No. 42-255-31274, ("BD Kerlick No. 1"). This disposal well is currently permitted for a maximum injection rate of 10,000 bpd. The operator is currently requesting to amend the permit to increase the daily injection volume to 17,500

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<sup>13</sup> Tr. Vol. II, pg. 146, ln 16-20.

<sup>14</sup> Tr. Vol. II, pg. 197, ln 14 – pg. 198, ln 7.

<sup>15</sup> Tr. Vol. II, pg. 93, ln 17-18.

bpd, which in Mr. Clark's opinion, is further proof of a need for additional disposal capacity in this area. The BD Kerlick No. 1 permit amendment application was filed in June 2016. NGL filed a protest to the permit amendment application, and to Mr. Clark's knowledge, NGL is the only protestant. In its protest, NGL is claiming that the permit amendment is unnecessary because NGL has additional disposal in the area. According to Mr. Clark, as a truck travels northwest on Highway 119 to the BD Kerlick No. 1 well the truck would have to turn north or south to another location, thereby increasing trucking miles and increasing costs. In Mr. Clark's opinion, the BD Kerlick No. 1 demonstrates a need for additional disposal capacity, otherwise the operator would not be seeking a permit amendment.

On cross-examination, Mr. Clark stated that he reviewed all disposal wells within a 10-mile radius, as well as disposal well hearings in Karnes, Gonzales, and DeWitt County. For the purpose of reviewing the commercial saltwater disposal wells around the Henning SWD location, Mr. Clark stated that he always uses a 10-mile radius of review. Mr. Clark agreed that having extended wait times at disposal facilities can indicate a need for more disposal options, and long distances to disposal facilities can also be an indication for the need for additional disposal options. Mr. Clark also agreed that there are times when disposal facilities require maintenance and are shut down during this time. Mr. Clark does not have any information regarding wait times or any type of maintenance issues with any of the existing wells in this area.

Trace Hight is a saltwater disposal market analyst and an equity interest owner in Black Buck. Mr. Hight has experience since 2008 or 2009 conducting saltwater disposal market analysis for various saltwater disposal companies. This experience includes transaction advisory in buy-side, sell-side, and working for companies looking to put together prospects for new saltwater disposal wells.

Mr. Hight previously had a working relationship with Doug White, Executive Vice President with NGL, and exchanged emails with with Mr. White regarding the proposed Henning SWD. Mr. Hight stated that he called Mr. White to inform him he was involved with the Black Buck Henning SWD and mentioned to Mr. White that NGL had protested the Black Buck Henning SWD application. Mr. Hight was inquiring if there was any way NGL could drop its protest. Mr. White responded in an email to Mr. Hight, dated August 3, 2016 at 1:37 pm that "After a review of the location and NGL's current customer base, this permit would be in direct competition with the NGL Gillette SWD and the NGL Nixon SWD. Per our business strategy we will need to go forward with our protest"<sup>16</sup> In Mr. Hight's opinion, NGL is appearing at the hearing "strictly as a competitor."<sup>17</sup>

Mr. Hight prepared a market analysis for the proposed Henning SWD location that was constructed by gathering information on activity and demand, supply for disposal needs, and where the water is being produced and where it is being disposed of. Mr. Hight has performed similar studies for clients in the past. The source of the data for Mr. Hight's analysis includes information from the Railroad Commission, in addition to Drillinginfo and Digital H2O as third

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<sup>16</sup> Black Buck Exhibit No. 53, pg. 2.

<sup>17</sup> Tr. Vol. II, pg. 246, ln 12-13.

party services utilized to aid in summarizing and analyzing this type of data. Mr. Hight conducted the analysis to provide a current market analysis of the demand and need for a new saltwater disposal well within a 10-mile trucking service distance, and more importantly along Highway 119 near the Black Buck's proposed Henning SWD location.

On November 10, 2016, Mr. Hight reviewed new exploration and production companies (E&P's) drilling permits issued by the RRC within the preceding 30 days, and concluded that the area surrounding the Henning SWD is still very active, and appears it will continue to be developed.<sup>18</sup> A total of 23 new drilling permits within a 3-mile radius of the proposed Henning SWD No. 2 had been issued by the RRC within the 30 days.<sup>19</sup> In Mr. Hight's opinion, the new permits are close enough to the proposed Henning SWD location to consider a pipeline solution for saltwater as an alternative to trucking saltwater to other SWDs further away. Mr. Hight performed a study of wells in a polygon area surrounding the proposed Henning SWD, and found in August 2016 there were a total of 362 oil wells, and 6 gas wells, and 563,000 bbl of saltwater produced within the polygon area. No saltwater was disposed within this polygon area surrounding the Henning location in that same month. Mr. Hight then expanded the polygon to capture an area surrounding the proposed Henning SWD location that generated 724,000 bbl of saltwater per month to more closely match the requested monthly permitted capacity of 750,000 bbl for the proposed Henning SWD No. 2. Mr. Hight estimated the polygon to cover a 150 square mile area. This polygon area focused on wells producing along Highway 119 as well as county roads and private roads extending off Highway 119. The polygon area does not touch any other major highway intersection to the east or west. In August of 2016, there were 489 oil wells and 121 gas wells, and 724,000 bbl of saltwater produced in the polygon area, but no saltwater was disposed in the polygon area. In Mr. Hight's opinion, this data shows a market imbalance.<sup>20</sup>

Mr. Hight used Digital H2O and Google Earth software to analyze and estimate trucking miles and identify where each oil and gas lease currently takes their saltwater for primary disposal. Mr. Hight also used Google Earth to estimate the distance of each lease to the proposed Henning SWD and to estimate the total trucking miles saved by using the Henning SWD instead of the current SWD. Based on his analysis, Mr. Hight estimates that the Henning SWD could save E&P operators and trucking companies within its Highway 119 market approximately 85,000 miles per month, or over one million miles annually. Mr. Hight stated "This estimate would represent a 50 percent savings in not only miles to the operator and trucking companies, but also help reduce lease operating expenses which is critical to oil and gas operators in a sub-50 oil market environment like the one we are in now, reduce lease operating expenses, help increase profits to E&P companies, and allow them to extend the life of the lease. Knowing that each truck has to currently pass through a major highway intersection at least once to get to the current SWD identified and then back to their oil and gas lease, it could also be theoretically concluded that the Henning SWD could reduce the total number of trucks passing through major highway intersections by almost 13,600 occurrences

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<sup>18</sup> Tr. Vol. II, pg. 254, ln 23.

<sup>19</sup> Black Buck Exhibit No. 54.

<sup>20</sup> Tr. Vol. II, pg. 257, ln 10-12.

per month, or 160,000 occurrences annually. This, again, is due to the Henning SWD being located directly on Highway 119 within the identified Highway 119 market polygon.”<sup>21</sup>

Mr. Hight also identified a total of nine active commercial SWDs within a 10-mile radius of the Henning SWD location. In terms of actual driving distance, Mr. Hight used Google Earth to estimate that the nearest SWD to the proposed Henning SWD is the BD Kerlick No. 1, located 7.27 driving miles away. The average driving distance from the proposed Henning SWD to the nine commercial SWDs within a 10-mile radius is 13.33 miles.

In Mr. Hight’s opinion, the proposed Henning SWD location is in an active area of the Eagle Ford. This active area of the Eagle Ford has a highway going through it, Highway 119, without a current active commercial SWD on this highway. Mr. Reynolds agrees that the location of the proposed Henning SWD No. 2 is in an area with active oil and gas activity. Mr. Reynolds stated “It is in what a geologist or an engineer would define as probably the sweetest of the sweet spots in the Eagle Ford trend....everything thickens in that Karnes trough, and that includes the Eagle Ford. You know, the Eagle Ford is a thicker reservoir and can contain more oil. And it also has, you know, some natural fracturing that’s occurring in that Karnes trough area that makes for better production, better results. And it’s not just -- you know, at this point, we’re not just imagining it. There’s thousands of wells drilled in that part of Karnes County right now. So we have measurable results that show that this is probably the best part of Eagle Ford trend. And drilling activity, permit activity continues to support that.”<sup>22</sup>

In Mr. Hight’s opinion there is a demand for additional saltwater disposal in addition to future demand for disposal, as E&P operating companies look for ways to reduce their lease operating expenses. One of the highest expenses is the cost associated with trucking and disposal of water. In Mr. Hight’s opinion, one of the best ways to reduce costs is by reducing truck miles. Another way to reduce truck miles is to pipe the water instead of trucking water. Mr. Hight stated “Competition can generally lead to competitive pricing.”<sup>23</sup> Black Buck has identified a market that is underserved and is in demand for a new disposal well. Black Buck would be able to offer E&P operators reduced trucking miles and a pipeline solution that currently does not exist in this area and there is drilling is currently going on in this area. According to Mr. Hight, Encana has shown interest in the Black Buck Henning location.<sup>24</sup> Encana has plans to drill some Austin Chalk wells on the adjacent tract of land.

On cross-examination, Mr. Hight stated that he observed that the Heckmann Water Resources (HWR) Lamza SWD has reported reported zero volumes since April 2016. Based on his knowledge - which included his experience with Banks Group, Capital Energy Advisors, and some clients at Heckmann, Mr. Hight stated that “It could be any number of reasons...It is my knowledge that that well had major pressure and has been struggling to inject volumes for a long time.”<sup>25</sup> Protestants Torres provided Mr. Hight with a copy of Form P-18 on file with the

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<sup>21</sup> Tr. Vol. II, pg. 261, ln 25 – pg. 262 ln 18.

<sup>22</sup> Tr. Vol. I, pg. 204, ln 20 – pg. 205, ln 15.

<sup>23</sup> Tr. Vol. II, pg. 272, ln 23-24.

<sup>24</sup> Tr. Vol. II, pg. 276, ln 15-17.

<sup>25</sup> Tr. Vol. II, pg. 302, ln 12-24.

Commission for the HWR Lamza SWD, upon which the operator included the comment that the site is operational but shut-in due to inactivity of produced water in the area. This comment appeared on the Form P-18 starting in April 2016.<sup>26</sup>

### *Seismic Events*

Statewide Rule 9(3)(B) requires the applicant for a disposal well permit to provide the results of a survey of information from the United States Geological Survey (USGS) regarding the locations of any historical seismic events within a circular area of 100 square miles (a circle with a radius of 9.08 kilometers) centered around the proposed disposal well location. A review of USGS seismic data shows one seismic event has been reported within 100 square miles of the proposed disposal well location. A 2.7 magnitude event occurred on March 6, 2014, approximately 4.9 miles to the northwest of the proposed disposal well location. The Underground Injection Control Division (UIC) has reviewed the application and deemed the application to be administratively complete. Since the application is protested, the application cannot be approved administratively.<sup>27</sup> Since the application was protested, Black Buck requested the application be set for hearing. UIC prepared a draft permit for the Henning SWD No. 2, with two special permit conditions<sup>28</sup>:

- 1) One or more seismic events has been recorded within 9.08 km of this well. Operator shall, in addition to the standard H-10 Annual Disposal/Injection Well Monitoring Report, collect and record accurate injected volumes and maximum injection pressure daily and make this data available to the Commission upon request.
- 2) Upon approval of this disposal permit for either or both of the Black Buck Disposal Services, LLC Henning SWD No. 1 and Henning SWD No. 2 wells, Black Buck can keep only one of the disposal permits and must cancel the other disposal permit.

Black Buck is willing to accept the special conditions outlined by the Oil and Gas Division in the draft permit and has cancelled (withdrawn) the Henning SWD No. 1 application.<sup>29</sup>

Mr. Reynolds researched seismic events outside the 100-mile (9.08 km radius) circular area centered around the proposed Henning SWD No. 2 required by Statewide Rule 9, expanding his search to a 30-km radius around the proposed Henning SWD No. 2. This more expansive search showed an additional seismic event with a magnitude of 2.9, approximately 9 miles (14.4 km) to the west-north-west of the proposed Henning SWD No. 2 location. According to Mr. Reynolds, there are accuracy issues with respect to the exact location of earthquakes on the USGS seismicity search on the USGS website. The epicenters for

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<sup>26</sup> Protestant Torres Exhibit No. 21.

<sup>27</sup> 16 Tex. Admin. Code §3.9 (5)(E) Protested applications.

<sup>28</sup> Black Black Exhibit No. 32.

<sup>29</sup> Tr. Vol. I, pg. 201, ln 24 – pg. 202, ln 3.

earthquakes in Texas routinely determined by the National Earthquake Information Center (NEIC) can be uncertain by 5 miles or more due to the very large distances between seismograph stations in this part of the country.<sup>30</sup> Mr. Reynolds stated "...when you have seismic activity, the more likely true location of that seismic activity is going to be along a fault. That's typically the one thing you need to have for earthquake activity of this type, is some sort of fault that moves...So it doesn't necessarily make sense for an earthquake location that shows up just randomly out in the middle of nowhere. If there's a fault two miles, a mile, mile-and-a-half away, most likely that's where the seismic activity is occurring."<sup>31</sup>

Mr. Reynolds prepared a structure map on top of the Wilcox Formation centered around the proposed Henning SWD No. 2. The structure map illustrates that within 100 square miles around the proposed disposal well there is a fairly uniform dip to the southeast with no obvious disruptions that would suggest faulting at the Wilcox Formation level. The cross-sections of well logs Mr. Reynolds used to construct the structure map all have a normal section thickness, with no missing section that would suggest faulting at the Wilcox level.<sup>32</sup>

Mr. Reynolds also prepared an isopach map of the injection interval, which is mainly the middle and lower sections of the Wilcox Formation. The isopach map shows the Wilcox Formation is a thick interval to inject into, that varies across the 100-square mile area between 1,900 and 2,500 feet in thickness. Again, there is no evidence of faulting in the Wilcox Formation within 100 square miles of the proposed Henning SWD No. 2 location.<sup>33</sup>

In studying the Buda Formation in the area, Mr. Reynolds noted that the top of the Buda is the base of the Eagle Ford, so the structure map Mr. Reynolds prepared on the top of the Buda Formation also represents a structure map on the base of the Eagle Ford. Mr. Reynolds stated "...one of the essential requirements for these small earthquakes is a fault, a subsurface fault...And we don't see that in the Wilcox. We don't see faulting in the Wilcox in this area. However, at depth, there's a structural feature called the Karnes trough that runs through this part of Karnes County on into Gonzales County, over into Atascosa County, and it's a fairly prominent feature that's fairly well known and is shown in a number of publications. It will show approximate locations of the faulting in Karnes trough...we've used data points to correlate the faulting and map the structure. Shown next to each of those data points is the subsurface depth to the top of the Buda Formation. A number of these wells have – the fault cut can be correlated in the well log, so you have good control on where the fault is. And the thing that you note here is the magnitude 2.7 event, even though there is some, you know, discrepancy in error in the locating of these events with the USGS, it falls very close to one these prominent faults at depth in the deeper horizons...and also shown on this map are a number of the existing SWD wells in the area. Also show the proposed Henning SWD...The existing SWDs in the area... a number of these only are drilled through the Wilcox, so faulting at the Buda depth would not be a concern to a number of these SWD wells...Specifically, there's a 31906 and a 32213 off to the southwest; I believe one of those is an NGL well. Those

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<sup>30</sup> Black Buck Exhibit No. 25.

<sup>31</sup> Tr. Vol. I, pg. 167, ln 14-24.

<sup>32</sup> Black Buck Exhibit No. 20 and Tr. Vol. I pg. 143, ln 8-14.

<sup>33</sup> Black Buck Exhibit No. 24 and Tr. Vol. I, pg. 158, ln 15-17.

are injecting into the Wilcox, which is not faulted in the area. I would not have a real concern for seismicity for those wells...as I don't have for the Henning well for the same reason."

In Mr. Reynolds' opinion, the faulting extends at least to the top of the Austin Chalk at one end of the well cross sections he prepared, while a fault near the BD Operating Kerlick well appears to still have displacement at the Olmos and dies out up towards the Midway Formation marker.<sup>34</sup>

### **Financial Assurance**

At the time of the hearing, Black Buck (Operator No. 072660) had an active P-5 and \$25,000 letter of credit on file with the Commission as financial assurance. McCabe Turner is a one-third equity owner in Black Buck. Mr. Turner has experience in saltwater disposal wells, vacuum trucks, frac tanks, swab rigs, and pulling units. Mr. Turner also has experience drilling, completing and operating disposal wells. Mr. Turner has worked on more than 20 disposal wells, including 6 disposal wells with Complete Production Services and 7 disposal wells with Moxie Disposal Systems.

### **Protestants' Evidence**

The Application is protested by two groups of adjacent surface owners, Protestants Torres, and Protestant Johnson.

### **Protestants Torres Evidence**

Protestants Torres includes John Torres, Gary and Susan Powers, Danny and Suzanne Polinard, Delton and Donna Hahn, Thomas and Dinah Perez, Patrick and Leslie Malloy, and Bruce Anderson BBDL Property. John Torres is the surface owner of an adjacent tract to the Henning SWD tract. Gary Powers is a land owner close to the Henning tract. Danny Polinard owns the G&G BR Ranch property that adjoins the Henning SWD tract. Donna Hahn's land is not adjacent to the Henning SWD tract, but the entrance to the Hahn's property is about a half-mile from the entrance to the Henning SWD tract. Ramon, Tom and Dinah Perez own two tracts of land, both of which adjoin the Henning SWD tract, as the Henning SWD tract and several adjoining tracts are triangular in shape and adjoin at a common point.

#### *John Torres*

Mr. Torres opposes the application due to traffic, dust and the dumping of trash on the proposed Henning tract. Mr. Torres stated that near the proposed disposal tract there is a hill, and a curve on Highway 119. Therefore, caution is required to turn onto Highway 119 due to truck traffic, including eighteen-wheelers.<sup>35</sup> Highway 119 is a two-lane highway without a turning lane and no work has been done to date to improve the shoulders in anticipation of any additional activity at the location.

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<sup>34</sup> Tr. Vol II, pg. 54, ln 1-15.

<sup>35</sup> Tr. Vol. II, pg. 210, ln 24 – pg. 211, ln 3.

In 2012, Mr. Torres noticed a truck enter the Henning property hauling a trailer and dump the trash on the property, and then exit the Henning property. Mr. Torres has not seen anyone on the Henning tract to clean up the trash he visually observed. There have been no construction activities on the proposed disposal tract<sup>36</sup>.

On cross examination, Mr. Torres stated that he is also the mineral owner of the tract adjacent to the Henning tract and receives oil and gas royalty from producing wells drilled on the tract or a unit that includes his tract. Mr. Torres stated that he did not know whether those wells produced saltwater and was not generally aware that saltwater is a byproduct of oil and gas production. Mr. Torres does not reside on the tract, but resides approximately 75 miles away. Mr. Torres does have a hunting blind and a few farm animals on the tract that he visits approximately every 10 days.

#### *Gary Powers*

Gary Powers is concerned about water contamination, traffic and potential earthquake activity. In Mr. Powers opinion, this is not a good location for trucks to be entering and exiting the roadway. Mr. Powers stated that there is a hill and in a short distance there is a curve. In Mr. Powers' opinion, eighteen-wheelers travelling 70-75 mph, cannot stop if a vehicle is trying to turn onto or from Highway 119.

Mr. Powers visited the nine, active commercial saltwater disposal facilities within 10-miles of the proposed Henning SWD No. 2 to observe the number of trucks, wait times, and general activity. Mr. Powers observed each site for approximately 15 minutes. All site visits were made on August 15, 2016 with the exception of the Pyote Gillett SWD No. 1, which was visited on July 31, 2016. In Mr. Powers' opinion, only one of the facilities seemed to have a substantial amount of traffic "... the only one that I see really any activity is that High Roller by NGL across from the EOG offices on Highway 80."<sup>37</sup>

On cross examination, Mr. Powers stated that his tract is not adjacent to the tract where the proposed disposal well is to be drilled. Mr. Powers' tract is about a mile south to southeast as the crow flies. Mr. Powers owns some of the minerals on his property. These minerals are currently being produced and Mr. Powers is receiving royalty payments. Mr. Powers is aware that saltwater is a by-product of oil production. Mr. Powers agrees that there is oil field traffic in this area of Karnes County. Mr. Powers describes Texas 80, where several current commercial SWDs are located, as "...a two-lane road. It had so much traffic that they finally had to put a traffic light out there."<sup>38</sup> In terms of whether Texas 80 has a shoulder near

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<sup>36</sup> BC&D the Black Buck-affiliated entity acquired the Henning property a few weeks prior to the hearing. Protestant Johnson also has not seen any clean up of trash since the property has been acquired by the Black Buck-affiliated entity. Mr. Turner with Black Buck stated that he did not notice any trash when he was on the property recently, and is unaware there is trash that is visible from Mr. Johnson's and Mr. Torres properties on the 30.8-acre Henning tract.

<sup>37</sup> Tr. Vol. II, pg. 229, ln 20-22.

<sup>38</sup> Tr. Vol. II, pg. 233, ln 8-9.



the existing Kerlick SWD, Mr. Powers stated "it's not much of a shoulder, if you've got a shoulder there at all."<sup>39</sup>

*Danny Polinard*

Danny Polinard owns property (referred to as the G&G BR Ranch) that adjoins the Henning SWD tract. Mr. Polinard is retired and resides on his property full-time. Mr. Polinard has surface water on his property, which is situated downhill from the Henning SWD tract. Mr. Polinard has a little herd of buffalo on his property. In Mr. Polinard's opinion, the proposed Henning SWD No. 2 poses a threat to his way of life, to groundwater, traffic, increased seismicity, while diminishing the value of his property. Mr. Polinard has felt an earthquake at the location of his property twice in the past five years.<sup>40</sup> Mr. Polinard is also concerned with the possibility of spills and run-off into his ponds where his children play and fish and buffalo drink.

Mr. Polinard made a total of 3 visits to each of the nine commercial disposal wells within a 10-mile radius of the proposed Henning SWD No. 2. In Mr. Polinard's opinion, these facilities were not particularly busy.<sup>41</sup>

Mr. Polinard made phone calls to Encana upon hearing that Encana had discussed potentially piping water to the Henning SWD No. 2. Ken Retzlaff with Encana left Mr. Polinard a voice message stating that Encana will not be writing a letter to support the Black Buck well, and will not oppose the well either.<sup>42</sup>

On cross examination, Mr. Polinard stated that he owned some of the minerals on the property that he lives on, and the minerals are in the Korth Unit that is being developed by Encana. Mr. Polinard believes Encana will drill more wells, and the wells will produce saltwater. If Encana does not pipe the water Mr. Polinard believes the water will leave the lease by truck that will travel on Highway 119. Mr. Polinard was questioned whether he saw any saltwater being piped in at any of the facilities that he observed. He did see some pipes but could not tell where the pipes go. Mr. Polinard agrees that it is possible that some of the facilities were receiving saltwater by pipe in addition to by trucking.

*Donna Hahn*

Donna Hahn is also protesting the subject application. On cross-examination, Ms. Hahn stated that the entrance to her property is about a half-mile from the entrance to the Henning tract. Ms. Hahn's land is not adjacent to the Henning SWD tract. Ms. Hahn is working to develop a retreat center for families on her property. Ms. Hahn does not live on the property full-time, but is at the property every week. Ms. Hahn shares same the concerns as other Protestants regarding potential groundwater contamination and earthquakes. Ms. Hahn

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<sup>39</sup> Tr. Vol. II, pg. 234, ln 1-2.

<sup>40</sup> Tr. Vol. III, pg. 38, ln 15-20.

<sup>41</sup> Tr. Vol. III, pg. 42, ln 18 – pg. 45, ln 19.

<sup>42</sup> Tr. Vol. III, pg. 52, ln 6 – pg. 53, ln 9.

believes there is not a need for another saltwater disposal well and has great concern over the destruction of land when it is not necessary.

Ms. Hahn made visits to the commercial SWDs within a 10-mile radius of the proposed Henning SWD No. 2 on the evening of August 5, 2016. Ms. Hahn observed each facility for approximately 15 minutes. Based on her observations, Ms. Hahn concluded that the facilities were not busy that day, although one facility did have a truck in each of their lanes during her observation. The rest of the facilities had very little activity.

On cross-examination, Ms. Hahn stated that she did not know whether the SWD facilities she observed received water by pipeline instead of, or in addition to by truck.<sup>43</sup> Ms. Hahn does own some minerals and receives royalties. Ms. Hahn understands that saltwater is a by-product of oil and gas production. Ms. Hahn is concerned about truck traffic related to oil field development and is concerned about truck traffic on Highway 119.

*Ramon, Tom, and Dinah Perez*

Ramon Perez and parents Tom and Dinah Perez (the Perez's) are also protesting the subject application. Ramon Perez testified on behalf of the Perez's. The Perez's are opposed to the Black Buck SWD application. A total of three households live full-time on the Perez property. Along with living on the property the Perez's raise livestock. The Perez's first concern is their freshwater well that they use to take care of their horses and cattle. The Perez's have a freshwater pond on their property where catfish and some other freshwater fish are stocked. A portion of the Perez property is slightly downhill so any potential run-off from the Black Buck location will enter the Perez's property.

The entrance to the Perez property is estimated to be less than 500 feet from entrance to the Henning SWD entrance. According to Mr. Perez, the Perez's entrance is located at the top of a hill and near a blind curve, "...so left or right, we cannot see past a hundred feet."<sup>44</sup> According to Mr. Perez, the truck traffic in the peak oil field was atrocious.<sup>45</sup> The speed limit on this stretch of Highway 119 is 70 mph. According to Mr. Perez, the nearest road to the Perez's property where trucks enter onto Highway 119 is approximately a mile way.

In Mr. Perez's opinion, the SWDs on Highway 80 and 119 do not seem busy. On cross-examination Mr. Perez stated that he did not investigate whether any of the facilities he observed also accept saltwater by pipeline.<sup>46</sup>

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<sup>43</sup> Tr. Vol. III, pg. 77, ln 18-21.

<sup>44</sup> Tr. Vol. III, pg. 83, ln 19-23.

<sup>45</sup> Tr. Vol. III, pg. 84, ln 1.

<sup>46</sup> Tr. Vol. III, pg. 85, ln 25 - pg. 87, ln 2.

**Protestant Stephen Johnson's Evidence**

*Steven Johnson*

Stephen Johnson is an adjacent landowner, appearing at the hearing for tracts Nos. 5 and 7 as shown on Attachment A, which are adjacent to the Henning SWD tract. Mr. Johnson's mother is Terry Johnson, and Mesquite Tree Ventures, LP is owned by Mr. Johnson's family. Mr. Johnson lives on tract No. 7. There is a fence line between the Johnson tract No. 5 and the Henning SWD tract. Mr. Johnson is opposed to the Black Buck application due to potential groundwater contamination, surface contamination, traffic, a lack of need in the area, and interference with any future drilling operations in the area.<sup>47</sup> Mr. Johnson owns minerals on the tracts adjacent to the Henning SWD tract, and leases the minerals to Encana and Devon. According to Mr. Johnson, there is a blind hill and a blind curve in the vicinity of the proposed Black Buck facility, which is no place for any kind of 24-hour commercial facility with trucks turning onto or off of the highway.

In Mr. Johnson's opinion, Black Buck's evidence of the number of truck miles saved by the proposed Henning SWD No. 2 assumes all water is trucked. However, Mr. Johnson has knowledge that not all water in the area is trucked. According to Mr. Johnson, the majority of well locations pipe water to gathering facilities.<sup>48</sup> For example, Both Encana and EOG have water gathering facilities in the area. Mr. Johnson has not seen trucks waiting in line at the SWDs located along Highway 80.

On cross-examination, Mr. Johnson stated that he has a surface use agreement with Encana. The plat of record with the surface use agreement shows that the entrance for the proposed Encana facility on Mr. Johnson's property would be between the same hill and the same curve on Highway 119 that Mr. Johnson considers to be a poor location for an entrance with trucks turning for the proposed Black Buck facility.

The original entrance on the plat of record with the surface use agreement between Encana and the Johnson's contains the text "TxDOT approved entrance and cattle guard" for the Encana entrance on Mr. Johnson's property adjacent to the Henning tract.<sup>49</sup> Mr. Johnson stated that the speed limit of Highway 119 is 70 mph.

Mr. Johnson stated that he receives royalty checks from Encana, and Encana has begun surface clearance and staking operations on Mr. Johnson's property. To date, Encana has surveyed, staked, and built a pad on Mr. Johnson's property. Mr. Johnson agrees that while the pad is being built and the well is being drilled that trucks are travelling on Highway 119 and the trucks are slowing down and turning onto Mr. Johnson's property.

Mr. Johnson estimates Encana's gathering facility is about a mile in pipeline distance from the Johnson property. Mr. Johnson agrees that saltwater piped to the gathering facility is then

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<sup>47</sup> Tr. Vol. III, pg. 98, ln 25 – pg. 99, ln 4.

<sup>48</sup> Tr. Vol. III, pg. 119, ln 5 – pg. 120, ln 3.

<sup>49</sup> Johnson Exhibit No. 57.

trucked from that gathering facility to a disposal well somewhere. Mr. Johnson agrees that if Encana's water were piped to the Henning No. 2 it would be a shorter pipeline distance than piping the water to the Encana gathering facility.

Mr. Johnson stated that even if Encana could reduce its lease operating expenses and extend the producing life of wells by piping water over to the proposed Henning SWD No. 2 he would still be opposed to the Henning No. 2 application. Mr. Johnson is concerned that if any pipelines were installed for the Henning SWD No. 2 and those pipes were to crack or burst, they would contaminate groundwater. The pipelines may also interfere with any future oil and gas drilling operations in the area.

*Tim Jurco*

Tim Jurco is employed by NGL as vice president of the Eagle Ford for NGL.<sup>50</sup> Mr. Jurco is involved in commercial and day-to-day operations of NGL's footprint in the Eagle Ford which includes Karnes County operations. Mr. Jurco does not believe that additional disposal is necessary for additional oil and gas development in this area. In Mr. Jurco's opinion, there is existing adequate capacity based on NGL's involvement in the area and real-time information. Therefore, Mr. Jurco does not believe the Black Buck well is needed and is not in the public interest.

According to Mr. Jurco, both Encana and EOG dispose of their water at the NGL facilities in the area. In Mr. Jurco's opinion, the water disposal market is shrinking as NGL has noticed a contraction in the market at their SWD facilities, specifically the NGL facilities in Karnes County. NGL has permits issued for commercial disposal wells that they have not yet drilled. Mr. Jurco stated that if operators were taking more water to NGL's wells that they would be able to inject more water than they are currently injecting.

Mr. Jurco and NGL examined SWDs within a 15-mile radius of the proposed Henning SWD No. 2. Mr. Jurco concluded that there is a wide range of disposal activity in the area, with some SWDs having no activity to some having significant activity. In Mr. Jurco's opinion, distance is an important factor, but not the only factor for E&P's in determining where to dispose of water. Other factors include reliability of the facilities, and accessibility. Mr. Jurco stated "For NGL's case, we have a -- we have a competitive advantage in that we have a number of facilities all over the play. So we work long-term deals with a number of different

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<sup>50</sup> At the hearing, Black Buck objected to testimony from Mr. Jurco and objected to NGL's participation in the hearing. Black Buck claims that NGL is merely a competitor and does not have standing to present evidence because it is excluded as an "affected party" under to Statewide Rule 9 and therefore should not be able to present evidence. NGL and Mr. Johnson's attorney asserted that Mr. Jurco was Mr. Johnson's witness, in addition to NGL. There is no dispute that Mr. Johnson is a party and can present evidence. Because any evidence that NGL intended to present was also presented by Mr. Johnson, it is immaterial if NGL participates in that the evidence, and record in this case, is the same. The Examiners decline to grant Black Buck's motion to exclude NGL's participate and decline to sustain Black Buck's objection to Mr. Jurco's testimony. Other than NGL being a competitor, Black Buck offered no reason to prevent Mr. Johnson, one of the protestants, from offering Mr. Jurco as a witness. Thus, any ruling against NGL in this case is immaterial and would be merely advisory. While Black Buck also raised the issue of Mr. Jurco's credibility due to being a competitor, the Examiners can consider credibility when determining the weight to give the evidence. See BLACKBUCKV3 - Vol. I, (Pages 152:8 to 154:16)

E&P companies, and trucking companies for that matter, to access our facilities based on volumetric requirements. Safety is another big issue.”<sup>51</sup>

In Mr. Jurco’s opinion, existing agreements with operators is important to show that the well will be used. NGL has long-term contracts in DeWitt, Karnes, Wilson, and Gonzales Counties. Mr. Jurco is not aware of any oil and gas development that is on hold waiting on this application.

Mr. Jurco investigated the daily injection volumes compared to the permitted volumes between November 2015 and October 2016 for two of the three NGL facilities within a 15-mile radius of the proposed Henning SWD No. 2 (Karnes SWD Lease, or the Gillett Lease, API No. 42-255-31906, and the High Roller Wells, L.L.C (High Roller) Karnes, or Karnes City, API No. 42-255-32286. Mr. Jurco also looked at the daily injection volumes and permitted injection volume for the NGL Nor Tex (Fashing) SWD, API No. 42-255-32564 located to the southwest, just outside a 20-mile radius from the proposed Henning SWD No. 2. Mr. Jurco stated that he considers data from NGL’s Fashing well when evaluating the entire market area of Karnes and DeWitt counties. Mr. Jurco concluded that over the past year NGL is not injecting at its maximum permitted capacity at these facilities. NGL’s most active SWD in the study area during this time period was the Gillett SWD. The maximum injection volume for any one month was 520,000 bbl in November of 2015. The maximum permitted monthly injection volume for this well is 750,000 bbl.

In Mr. Jurco’s opinion, there is more than adequate capacity in this area for present and future E&P operations at NGL’s facilities.<sup>52</sup> Mr. Jurco stated that the NGL Fashing SWD was idled in February 2016 due to lack of commercial viability. NGL also has two active disposal well permits for wells to be drilled within a 15-mile radius of the proposed Henning SWD No. 2 for which NGL has yet to build the facilities.<sup>53</sup> NGL refers to these wells as the “Yorktown Permits”, and the permitted locations are in DeWitt County. Mr. Jurco stated that the Yorkton Permits are valid permits but NGL has not drilled the wells yet because, according to NGL, the market activity currently wouldn’t support building a facility at that site.<sup>54</sup> In addition, NGL does not have the only SWD facilities in the area so there is available capacity when considering all available SWDs in the area. NGL does not utilize any wastewater pipelines in this area, but NGL does have active pipelines for a number of their facilities in other areas. Mr. Jurco stated that there are times when NGL does have traffic at a facility.

In Mr. Jurco’s opinion, most of the water generated in Mr. Hight’s 150-mile polygon where no SWDs currently exist is being disposed of at the existing SWDs along the I-80 corridor. Mr. Jurco stated <sup>55</sup>“The quality of the highway and the infrastructure is a very big deal. And I think that’s why you see that predominance, especially along 80, of all those SWDs built out pretty much on top of each other. In our case, we built No. 2, our Nixon facility, in

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<sup>51</sup> Tr. Vol. III, pg. 172, ln 8 – ln 14.

<sup>52</sup> Tr. Vol. III, pg. 183, ln 7-10.

<sup>53</sup> Tr. Vol. III, pg. 187, ln 19 – pg. 188, ln 3.

<sup>54</sup> Tr. Vol. III, pg. 190, ln 6-9.

<sup>55</sup> Tr. Vol. III, pg. 195, ln 10-21.

the fall of 2013 around existing SWDs. So it was a big deal for us not to identify a place where there wasn't a spot necessarily, but a place -- a site that had the infrastructure, that already had the traffic, that we could basically back-to-back our business opportunities on top of our existing facility."

With respect to Mr. Clark's economic analysis, Mr. Jurco believes a disposal cost of \$1.50 per bbl is high. Mr. Jurco believes the current environment is in the \$1.00 to \$1.40 range.<sup>56</sup>

On cross-examination, Mr. Jurco stated that he is participating in the hearing as an employee of NGL. Mr. Jurco stated that Doug White is "...my boss's boss."<sup>57</sup> He further testified:

Q: Mr. White told Black Buck that this permit would be in direct competition with the NGL Gillett disposal and Nixon disposal wells.

A: he did.

Q: All right. And so your testimony is that this is not a business decision for NGL and that they're not protesting this because they're a competitor?

A: No, I didn't say that. I said I'm here to represent that I don't think this is in the public interest.

Mr. Jurco testified that High Roller and NGL had a joint venture at the time the two Yorktown disposal permits were applied-for. NGL had a development agreement where High Roller would pursue disposal permits, build the site, and then NGL would purchase the facility from High Roller. Mr. Jurco stated that since the Yorktown permits were granted there is a "new" relationship between High Roller and NGL. NGL stills has a business relationship with High Roller, however Mr. Jurco is not sure what the relationship entails. Mr. Jurco confirmed that NGL does own the two Yorktown commercial disposal well permits.<sup>58</sup>

The Proposal for Decision (PFD) for the two Yorktown disposal well permits that Mr. Jurco stated NGL had not drilled yet was issued in April of 2016. In the PFD, High Roller identified three commercial disposal wells within a 10-mile radius of the subject wells. The testimony of Doug White on behalf of NGL as summarized in the PFD is that the Phoenix and Pyote wells were not operating efficiently. High Roller and NGL reached this conclusion based on the volume of waste fluids received at each facility, which were significantly less than each facility's permitted volume. High Roller maintained the limited availability of actual disposal capacity established a need for additional disposal capacity provided by the proposed Yorktown wells. Mr. Jurco agrees that in applying for the two Yorktown permits NGL was arguing that two active SWDs within 10-miles were not operating efficiently, not that there was a excess of

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<sup>56</sup> Tr. Vol. III, pg. 200, ln 7-16.

<sup>57</sup> Tr. Vol. III, pg. 205, ln 7-9.

<sup>58</sup> Tr. Vol. III, pg. 209 ln 15 – pg. 211, ln 14.

disposal capacity.<sup>59</sup> In Mr. Jurco's opinion, one additional factor also considered in the Yorkton permit applications was a long-term relationship with EOG. Mr. Jurco stated "So I think the important driver there is that based on our relationship and our footprint, we saw this as a viable SWD in our footprint and with these customers."<sup>60</sup>

Mr. Jurco agrees that there are no disposal wells located on Highway 119. Mr. Jurco also agrees that Mr. Hight's polygon shows 150-square miles around Highway 119 that has zero active disposal wells.<sup>61</sup> Mr. Jurco agrees that enough potential saltwater was identified in NGL's market analysis to support additional disposal capacity, and there is enough potential saltwater produced in Mr. Hight's polygon to match the requested 25,000 bpd capacity of the proposed Henning SWD No. 2.<sup>62</sup> Mr. Jurco also agrees that there are leases producing water that are closer to the proposed Henning SWD No. 2 location than to the SWDs located on Highway 80.<sup>63</sup> Mr. Jurco agrees that (1) the polygon surrounding the Henning SWD is in part of the highest level of drilling activity in a heat map provided by Black Buck's witness, (2) distance is a factor in trucking water, (3) being closer to a disposal well is better than being farther away, and (4) permitted capacity does not always equal actual capacity. Mr. Jurco also agrees that if operating companies decide to dispose of their water at the Henning disposal site instead of NGL's, they would save miles in some cases, and that operating companies can save money by piping their water as opposed to trucking water. Although the proposed Henning SWD may hurt NGL's business, Mr. Jurco believes NGL has strong relationships with many operators in the area and does not think that would change.

### **EXAMINERS' ANALYSIS OF THE EVIDENCE**

#### **Public Interest**

Based on the evidence in the record, the Examiners conclude that the proposed commercial disposal well is in the public interest. Saltwater is a by-product of oil and gas production. The Henning SWD No. 2 will (1) provide disposal capacity in an area where there is evidence of current and future oil and gas activity, (2) provide disposal capacity in an area where the volume of saltwater generated by oil and gas activity is much greater than the volume of water being disposed, (3) reduce the distance between where current oil, gas, and saltwater is being produced and where it is currently being disposed, and (4) provide a potential pipeline option for saltwater disposal.

The Examiners were not persuaded by the testimony and concept presented by NGL's employee that if NGL has available capacity at its disposal facilities than an application to provide another disposal option or add additional capacity closer to current and future oil and gas production by anyone other than NGL is not in the public interest. NGL provided no evidence to support its claim that limiting disposal options to E&P operators is in the public interest.

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<sup>59</sup> Tr. Vol. III, pg. 212 ln 25 – pg. 213, ln 5.

<sup>60</sup> Tr. Vol. III, pg. 214, ln 6-9.

<sup>61</sup> Tr. Vol. III, pg. 219, ln 5-12.

<sup>62</sup> Tr. Vol. III, pg. 218, ln 10-14.

<sup>63</sup> Tr. Vol. III, pg. 225, ln 2-12.

The proposed Henning SWD No. 2 location is on Highway 119, and there is evidence of oil and gas development in this area. On November 10, 2016, a total of 23 new drilling permits within a 3-mile radius of the proposed Henning SWD No. 2 had been issued in the preceding 30 days. Drilling permits have been issued for 7 wells to be completed in either the Sugarkane (Austin Chalk) Field or the Eagleville (Eagle Ford-2) Field within a quarter-mile radius. Multiple wells are permitted on Protestant Johnson's tract, which is adjacent to the Henning SWD tract. Wells drilled and completed in the Eagle Ford and Austin Chalk are horizontal wells that are hydraulically fractured-stimulated with large volumes of water, and the wells flow back large volumes of water. For example, the volume of water used to stimulate these wells range from 107,658 bbl for an Eagle Ford completion and 370,860 bbl for a nearby Austin Chalk completion. There is oil and gas activity in close proximity to the proposed Henning SWD No. 2 such that piping water to this facility is feasible and, based on the evidence, is less expensive than trucking saltwater for disposal. Reducing disposal cost lowers the economic limit of wells, preventing waste.

Currently, the volume of water generated within a 150-mile polygon area surrounding the Henning SWD No. 2 must be transported from this area since there is no current disposal in this same 150-mile area. The number of wells and volume of saltwater generated in this 150-mile area is noteworthy. In August of 2016, there were 489 oil wells and 121 gas wells, and 724,000 bbl of saltwater produced and zero barrels disposed in this 150-square mile area along Highway 119 and roads connecting to Highway 119.

There are 9 existing commercial saltwater disposal wells within a 10-mile radius (314 square miles) of the proposed Henning No. 2. There are no active disposal wells to the south or southeast of the proposed Henning SWD No. 2 within 10 miles. The closest commercial SWD to the subject application is the BD Kerlick No. 1, located approximately 6.4 miles to the northwest of the proposed Henning SWD No. 2. The nearest NGL disposal well is located 7.2 miles to the southwest of the proposed Henning SWD No. 2. Therefore, the 23 new drilling permits within a 3-mile radius of the proposed Henning SWD No. 2 issued in the 30-day period ending November 10, 2016 would all be closer to the proposed Henning SWD No. 2 than any of the existing commercial disposal wells.

Further evidence to support the need for additional disposal capacity in the immediate is supported by the application filed by the operator of the nearest commercial disposal well, BD's Kerlick No. 1, to increase its maximum daily injection volume from 10,000 bpd to 17,500 bpd. The Examiners note that NGL filed a protest to BD's application to increase its disposal capacity, and an employee of NGL participated in the subject hearing protesting Black Buck's application to add additional disposal capacity.

The Examiners also find it noteworthy that NGL identified a need for additional disposal capacity within 15-miles of the subject application recently. NGL applied-for and was granted two commercial disposal well permits within a 15-mile radius of the proposed Henning SWD No. 2 location. In June 2016, the Commission found that NGL's applications were in the public interest. Now, NGL is arguing that two applications by two different applicants to provide



additional disposal capacity, both of which are closer to the active oil and gas area identified by Black Buck than NGL's locations, are not in the public interest.

The Examiners find the Protestants evidence to support its claim that the proposed Henning SWD No. 2 is not in the public interest to be unpersuasive. The Protestants concluded that these facilities were not busy during their site visits based on the number of trucks and wait times. However, none of the Protestants had any knowledge as to whether any water was being piped to the facilities as opposed to, or in addition to, being trucked to the facilities for disposal. The number of trucks at a facility and truck wait times are not the only consideration in determining the activity level at a facility. Water may be piped to a facility, and therefore trucks would not be needed to transport water.

The Protestants reviewed Forms H-10 and P-18, comparing permitted injection volumes to reported injection volumes. The Protestants concluded that only two of the nine commercial disposal wells within a 10-mile radius of the proposed Henning SWD No. 2 injected, on average, more than 50% of their permitted volume from January 2015 through August 2016, and none achieve 60%. However, the Protestants witness, an employee of NGL, an operator of two of the wells within a 10-mile radius, agreed that permitted capacity does not always equal available capacity. There is no evidence that any of these wells can inject at their permitted capacity. Therefore, there is insufficient evidence that the presumed available capacity, based on permitted capacity, is in fact, actually available.

The Protestants contend that the Heckman Water Resources (HWR) Lamza SWD No. 1 was voluntarily taken off-line due to lack of demand based on a comment on its Form P-18 stating that the site is operational, but temporarily shut in due to inactivity of produced water in the area. However, The Examiners note that the Protestant Torres site visit exhibits contained notes on the facilities. Protestant Torres Exhibit No. 33 contains a note that HWR closed due to loss of contract, while Protestant Torres Exhibit No. 35 notes that the HWR Lamza SWD No. 1 was silent, without any lights on. Based on the evidence in the record there appears to be conflicting information as to why the HWR Lamza No. 1 is no longer injecting water. No one from the HWR Lamza appeared at the hearing to confirm whether no water injection was due to loss of a contract or inactivity of produced water in the area.

The Examiners also note that Protestant Torres Exhibit No. 32 contains a note that the RRC closed that particular SWD for non-compliance several days ago. The exhibit lists two disposal well names, the Sable Karnes SWD No. 1 and the Bridger Gillet SWD. It is unclear which of these two facilities is closed for non-compliance. Based on the evidence, the Protestant Torres site visit notes indicate that not all of the commercial disposal wells within a 10-mile radius are operational, as a result of loss of contract, or non-compliance with RRC rules and regulations. Therefore, the mere presence of an SWD does not necessarily mean that the permitted disposal volume for every SWD is available for E&P operators to dispose of saltwater in the area. In addition, Protestant witness Mr. Jurco's own testimony confirms that available disposal capacity and driving distance are not the only factors E&P companies consider in determining where to dispose of water. E&P companies also consider reliability of the facilities, accessibility, and safety.

The Examiners give no weight to the testimony of the Applicant's witnesses or the Protestants witnesses regarding Encana's future saltwater disposal plans. No one from Encana attended the hearing, and therefore the Examiners conclude that there is no way to know Encana's future plans with regard to the proposed disposal well at this time.

### **Any Injury to Any Oil, Gas, or Other Mineral Formation**

Based on the evidence in the record, the Examiners conclude the proposed disposal well will not harm or injure productive formations in the area. The productive formations within two miles of the proposed Henning SWD No. 2 location are the Eagleford and Austin Chalk Formations. These formations are 3,000 feet deeper than the proposed disposal interval within the Wilcox Formation. Below the base of the Wilcox Formation is more than 2,000 cumulative feet of shale. These shale intervals will prevent fluid migration from the disposal interval to deeper formations. No Protestant disputed the testimony of the Applicant's geology and engineering witnesses, and no evidence to the contrary was presented.

### **With Proper Safeguards, Both Ground and Surface Fresh Water Will Be Protected**

Based on the evidence in the record, the Examiners conclude that the disposal formation is adequately separated from freshwater formations by impervious beds which will provide protection to freshwater formations. The GAU estimates that the BUQW occurs from the land surface to a depth of 750 feet, and base of the USDW is estimated to occur at a depth of 2,200 feet. The GAU also estimates geologic isolation occurs at 2,500 feet. An offset well log approximately one mile from the proposed Henning SWD No. 2 location shows a 600-foot shale interval from 2,600 feet to 3,200 feet that will provide geological isolation between the injection interval and both the BUQW and USDW. Another shale interval immediately above the Wilcox Formation from about 4,050 feet to approximately 4,450 feet shows an additional 400 feet of continuous shale to provide additional isolation between injection interval and BUQW. No Protestant disputed the testimony of the Applicant's geology and engineering witnesses that the disposal formation is adequately separated from freshwater formations by impervious beds which will provide protection to freshwater formations. and no evidence to the contrary was presented.

The Protestants are concerned that a nearby wellbore may act as a conduit for injected fluids to escape the permitted disposal interval, and are also concerned about surface water pollution. The Examiners conclude that with proper safeguards, both ground and surface water will be protected from pollution. If the application is approved, standard permit condition No. 9, as shown on the draft permit prepared by UIC, details the requirements the operator of the disposal well must adhere to prior to commencing injection operations to assure that discharges of oil and gas waste will not occur.

Based on the evidence, the Examiners conclude that the well will be constructed in a manner to protect fresh ground water. The well is not yet drilled. The well construction plan is to set 9 5/8-inch surface casing at a depth of 2,300 feet, below both the BUQW and USDW, and the surface casing will be cemented to surface to protect both the BUQW and USDW. After the 9 5/8-inch surface casing is set at 2,300 feet and cement circulated to surface, the well

will be drilled to a TD of approximately 8,050 feet, and 7-inch longstring casing will be set, and the longstring casing will be cemented. The perforated interval will be in the Wilcox Formation in the interval between 5,300 feet and 7,950 feet.

Based on the evidence, the Examiners conclude that no nearby wellbores will act as a conduit for injected fluids to escape the permitted disposal interval. No wellbores penetrate the disposal interval within a three-quarters of a mile to a mile of the proposed Henning SWD No. 2 location. A total of six active horizontal wells are within one-quarter mile of the proposed Henning No. 2. However, these wells are completed in the Eagleford Formation, with the horizontal lateral 3,000 feet or deeper than the base of the Wilcox Formation. The surface locations of these six wells are between three-quarters of a mile and a mile away. The Applicant's engineering witness testified that these wells are cased and cemented across the entire Wilcox Formation. No evidence to the contrary was presented. The Examiners conclude that none of these wells will act as a conduit for fluids to escape the permitted disposal interval.

The Protestants identified the Seidel well, located between a quarter-mile and half-mile from the proposed Henning SWD No. 2 location to be a possible conduit for injected fluids to escape the disposal interval. Based on the evidence in the record, the Examiners conclude the Seidel well will not act as a conduit for fluids to escape the permitted injection interval or harm fresh water. The Seidel well was plugged in 1969 with a cement plug set from 900 feet to 1,000 feet using 45 sacks of cement, and 10.1 ppg mud in the hole. Therefore, a cement plug is present in the Seidel wellbore between the BUQW and the proposed injection interval in the Henning No. 2. The Applicant showed that the Seidel well was drilled to a TD that penetrates the top of the Wilcox Formation, but does not penetrate the proposed disposal interval of 5,300 feet to 7,950 feet. The Applicant's geology witness provided evidence of shale separation between the TD of the Seidel well and the proposed disposal interval in the Henning SWD No. 2. The Applicant's geology and engineering witnesses testified that there is 20 to 25 feet of shale between the top of the injection interval and the TD of the Seidel well, and therefore, the proposed injection interval is geologically isolated from the Seidel well. The Protestants did not provide any evidence to rebut the Applicant's evidence of geological isolation between the proposed injection interval in the Henning SWD No. 2 and the TD of the Seidel well. The Protestants did request a copy of the well log for the Henning SWD No. 2 if the well is drilled, and the Applicant agreed to provide a copy to the Protestants. In the Examiners opinion, an agreement between the Applicant and Protestant to share a well log does not need to be a condition of the permit.

### **Financial Assurance**

The Examiners conclude that Black Buck has made an adequate showing of financial assurance. At the time of the hearing, Black Buck (Operator No. 072660) had an active P-5 and \$25,000 letter of credit on file with the Commission as financial assurance. In addition, McCabe Turner, a one-third equity owner in Black Buck has operational experience with more than 20 saltwater disposal wells.

## Other Considerations

The Protestants are also concerned with the potential for increased seismicity, traffic, dust, interference with any future drilling operations in the area, and diminishing property value.

### *Potential for Increased Seismicity*

There is no evidence in the record to suggest the proposed Henning SWD No. 2 will increase seismicity in the area. A review of USGS seismic data shows one seismic event has been reported within 100 square miles of the proposed disposal well location. A 2.7 magnitude event occurred on March 6, 2014, approximately 4.9 miles to the northwest of the proposed disposal well location. The draft permit prepared by UIC includes two special permit conditions as a result of a seismic event being reported within 100 square miles. First, the operator shall, in addition to the standard H-10 Annual Disposal/Injection Well Monitoring Report, collect and record accurate injected volumes and maximum injection pressure daily and make this data available to the Commission upon request. Secondly, Black Buck can only keep one applied-for Henning SWD No. 1 and Henning SWD No. 2 disposal well permits and must cancel the other permit. Black Buck has already complied with this second requirement by withdrawing the Henning SWD No. 1 disposal permit application.

The proposed injection interval is in the Wilcox Formation. A structure map of the Wilcox Formation centered around the proposed Henning SWD No. 2 indicates there is a fairly uniform dip to the southeast with no obvious disruptions. Well log cross-sections show the Wilcox Formation with normal section thickness, with no missing section that would suggest faulting at the Wilcox Formation level.

### *Traffic and Dust*

The Commission has historically declined to consider traffic issues as properly part of its public interest inquiry.<sup>64</sup> In addition, trucks, including eighteen-wheelers, currently travel on Highway 119. The Protestants are concerned that trucks will not be able to safely enter and exit the proposed facility from Highway 119. Encana has a surface use agreement with Protestant's Johnson to build a well pad on the adjacent property to the proposed Henning SWD tract. The plat of record with the surface use agreement shows that the entrance for the proposed Encana operations on Mr. Johnson's property would be near the same hill and the same curve on Highway 119 that several Protestants consider to be a poor location for the proposed Black Buck facility. In addition, the original entrance shown on the plat of record with the surface use agreement between Encana and Mr. Johnson contains the text "TxDOT approved entrance and cattle guard" for the Encana entrance on Mr. Johnson's property adjacent to the Henning SWD tract.

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<sup>64</sup> See, e.g., *R.R. Comm'n of Texas v. Texas Citizens for a Safe Future & Clean Water*, 336 S.W.3d 619, 628 (Tex. 2011).

With regards to dust control, the Examiners conclude that dust control is not a permit consideration. However, the Applicant's preliminary design for the facility is to use an asphalt blend, which should reduce dust from the facility.

*Interference With Any Future Drilling Operations in the Area and Diminishing Property Value*

The Examiners conclude that there is no evidence in the record to support Protestants' claim that the proposed Henning SWD No. 2 will interfere with any future drilling operations in the area or diminish property value. The evidence in the record shows there are several existing horizontal wellbores in the Korth C Unit completed in the Eagleville (Eagle Ford-2) Field that are within a quarter-mile of the proposed Henning SWD No. 2 location. In addition, several drilling permits have been issued to drill more wells in the area, including a proposed surface location for the Encana Korth C No. 13H on Protestant Johnson's property. Protestant Mr. Polinard is concerned that the proposed Henning SWD facility may diminish property value. The evidence in the record shows that Mr. Polinard's minerals are in the Korth Unit being developed by Encana. Mr. Polinard receives royalty payments and believes if Encana drills more wells that the wells will produce saltwater. The evidence in the record indicates this is an area of current and future oil and gas activity, and saltwater is a by-product of oil and gas production.

**FINDINGS OF FACT**

1. Black Buck Disposal Services, LLC seeks a permit authorizing commercial disposal operations pursuant to 16 Tex. Admin. Code § 3.9 for the Henning SWD Lease, Well No. 2, Eagleville, (Eagle Ford-2) Field, Karnes County, Texas.
2. Notice of the application (Form W-14) was mailed to the surface owner of the well tract, to the Karnes County Clerk, to offset surface owners of the well tract, and to operators with active wells within one-half mile (Encana Oil & Gas (USA) Inc., and Devon Energy Production Co., L.P.), and to the Evergreen Underground Water Conservation District.
3. Notice of the application was published in the *Karnes Countywide*, a newspaper having general circulation in Karnes County, Texas, on Wednesday, September 28, 2016.
4. The application was protested by adjacent surface owners and by Evergreen Underground Water Conservation District.
5. At least 10 days' notice of the hearing was provided to the owner of the surface tract, to adjacent surface owners, to the Karnes County Clerk, and to operators with active wells within a half-mile of the proposed disposal well location, and to persons who filed protests. 16 Tex. Admin. Code § 3.9(5)(E)(i).
6. The use or installation of the Henning SWD Lease, Well No. 2 is in the public interest.

- a. The proposed Henning SWD No. 2 location is on Highway 119 and there is evidence of Eagle Ford development in the area.
  - i. On November 10, 2016, a total of 23 new drilling permits within a 3-mile radius of the proposed Henning SWD No. 2 had been issued within the past 30 days.
  - ii. Drilling permits have been issued for 7 wells to be completed in either the Sugarkane (Austin Chalk) Field or the Eagleville (Eagle Ford-2) Field within a quarter-mile radius.
  - iii. Multiple wells are permitted on Protestant Johnson's tract. Examples of the volume of frac water used to stimulate wells in the area range from 107, 658 bbl for an Eagle Ford completion and 370,860 bbl for a nearby Austin Chalk completion.
  - iv. There are 9 existing commercial saltwater disposal wells within a 10-mile radius (314 square miles) of the proposed Henning SWD No. 2. Currently, there are no commercial disposal wells to the south or southeast of the proposed Henning SWD No. 2 within 10 miles.
  - v. There are leases producing water that are closer to the proposed Henning SWD No. 2 location than to the active commercial disposal wells to the northwest located on Highway 80.
- b. The closest commercial SWD to the subject application is the BD Kerlick No. 1, located approximately 6.4 miles to the northwest of the proposed Henning SWD No. 2. This disposal well is currently permitted for a maximum injection volume of 10,000 bpd. The operator filed an application in June 2016, to amend the permit to increase the daily injection volume to 17,5000 bpd.
- c. The number of trucks at a facility and truck wait times are not the only factors in determining the level of activity at a disposal facility. Water may be piped to a facility, and therefore trucks would not be needed to transport water.
- d. Permitted capacity does not always equal available capacity.
- e. Shorter distances to disposal wells can lower lease operating expenses and prevent waste.
- f. Saltwater is a necessary by-product in E&P operations, and providing cost effective, safe disposal of this by-product is in the public interest.
- g. Piping saltwater to disposal facilities is more feasible when the saltwater is produced in close proximity to the disposal facility.

- h. Piping saltwater for disposal can be less expensive than trucking saltwater for disposal.
7. The use or installation of the Henning SWD Lease, Well No. 2 will not endanger or injure oil, gas, or other mineral formations.
  - a. The injection interval is in the Wilcox Formation.
  - b. The productive formations within two miles are the Eagleford and Austin Chalk Formations. These formations are 3,000 feet deeper than the disposal interval.
  - c. Below the base of the Wilcox Formation is more than 2,000 cumulative feet of shale which will prevent fluid migration from the disposal interval to deeper formations.
8. With proper safeguards, both ground and surface fresh water can be adequately protected from pollution.
  - a. The BUQW occurs from the land surface to a depth of 750 feet, and USDW at 2,200 feet.
  - b. The well construction plan is to set 9 5/8-inch surface casing at a depth of 2,300 feet and cement the casing to surface to protect the BUQW and USDW.
  - c. The injection interval is in the Wilcox Formation between 5,300 feet and 7,950 feet, which is deeper than the BUQW and the USDW.
  - d. The disposal interval in the Wilcox Formation between 5,300 feet and 7,950 feet will be separated from freshwater formations by impervious beds which will give adequate protection to the freshwater formations.
    - i. A 600-foot shale interval from approximately 2,600 feet to 3,200 feet will provide shale separation between the injection interval and the BUQW.
    - ii. A shale interval immediately above the Wilcox Formation from about 4,050 feet to approximately 4,450 feet will provide an additional 400 feet of continuous shale separation between injection interval and BUQW.
  - e. There are no unplugged or plugged and abandoned wellbores within a quarter mile of the proposed Henning No. 2.
  - f. A total of six active horizontal wells are within one-quarter mile of the proposed Henning No. 2. None of these wellbores penetrate the Wilcox Formation within a quarter-mile of the proposed Henning No. 2. The wells are completed in the Eagle Ford, with the horizontal lateral 3,000 feet or deeper than the base

of the Wilcox Formation. The surface locations of these six wells are between three-quarters of a mile and a mile away.

- g. There is one plugged and abandoned wellbore between a quarter-mile and a half-mile.
  - i. This well (the Seidel well) is located approximately 1,670 feet southeast of the proposed Henning SWD, Well No. 2.
  - ii. The Seidel well was a dry hole drilled to a TD of 4,807 feet.
  - iii. This well was plugged and abandoned in November of 1969. The plugging report (Form W-3) shows a cement plug was set from 900 feet to 1,000 feet using 45 sacks of cement, and the well was also plugged with 10.1 ppg mud in the hole.
  - iv. A cement plug is present in the Seidel wellbore between the BUQW at 750 feet and the proposed injection interval in the Henning No. 2.
  - v. Black Buck amended its original application to lower the top of the injection interval from 5,100 feet to 5,300 feet as part of an agreement reached with the Evergreen Underground Water Conservation District.
  - vi. The top of the injection interval is below a 20 to 25-foot thick shale interval that will provide geologic isolation between the top on the injection interval and the TD of the Seidel well.
  - vii. The Seidel well will not act as a conduit for injected fluids to escape the disposal interval.
- 9. A review of USGS seismic data shows one seismic event has been reported within 100 square miles of the proposed disposal well location.
  - a. A 2.7 magnitude event occurred on March 6, 2014, approximately 4.9 miles to the northwest of the proposed disposal well location.
  - b. The UIC has reviewed the application and deemed the application to be administratively complete.
  - c. UIC prepared a draft permit for the Henning SWD No. 2, with two special permit conditions:
    - i. One or more seismic events has been recorded within 9.08 km of this well. Operator shall, in addition to the standard H-10 Annual Disposal/Injection Well Monitoring Report, collect and record accurate



injected volumes and maximum injection pressure daily and make this data available to the Commission upon request.

- ii. Upon approval of this disposal permit for either or both of the Black Buck Disposal Services, LLC Henning SWD No. 1 and Henning SWD No. 2 wells, Black Buck can keep only one of the disposal permits and must cancel the other disposal permit. Black Buck has already cancelled (withdrawn) the Henning SWD No. 1 application to fulfill special permit condition No. 2.
  - d. The proposed injection interval is in the Wilcox Formation. A structure map of the Wilcox Formation centered around the proposed Henning SWD No. 2 indicates there is a fairly uniform dip to the southeast with no obvious disruptions that would suggest faulting at the Wilcox Formation level. Well log cross-sections show the Wilcox Formation with normal section thickness, with no missing section that would suggest faulting at the Wilcox Formation level.
10. Black Buck (Operator No. 072660) has an active P-5 and \$25,000 letter of credit on file with the Commission as financial assurance. McCabe Turner is a one-third equity owner in Black Buck and has operational experience with saltwater disposal wells, having worked on more than 20 disposal wells.

### **CONCLUSIONS OF LAW**

1. Resolution of the subject application is a matter committed to the jurisdiction of the Railroad Commission of Texas. TEX. NAT. RES. CODE § 81.051.
2. The installation and use of the proposed commercial disposal well is in the public interest. Texas Water Code § 27.051(b)(1).
3. The proposed fluid disposal operations will not endanger oil, gas or geothermal resources. Texas Water Code § 27.051(b)(2).
4. The proposed fluid disposal operations will not cause the pollution of freshwater strata. Texas Water Code § 27.051(b)(3).
5. Black Buck Disposal Services, LLC. has met its burden of proof and the application for the Henning SWD Lease, Well No. 2 satisfies the requirements of Chapter 27 of the Texas Water Code and the Railroad Commission's Statewide Rule 9.

**EXAMINERS' RECOMMENDATION**

Based on the above findings of fact and conclusions of law, the Examiners recommend that the application of Black Buck Disposal Services, LLC for commercial disposal authority pursuant to Statewide Rule 9 for the Henning SWD Lease, Well No. 2, Eagleville (Eagle Ford-2) Field, Karnes County, Texas, be approved, as set out in the attached Final Order.

Respectfully submitted,

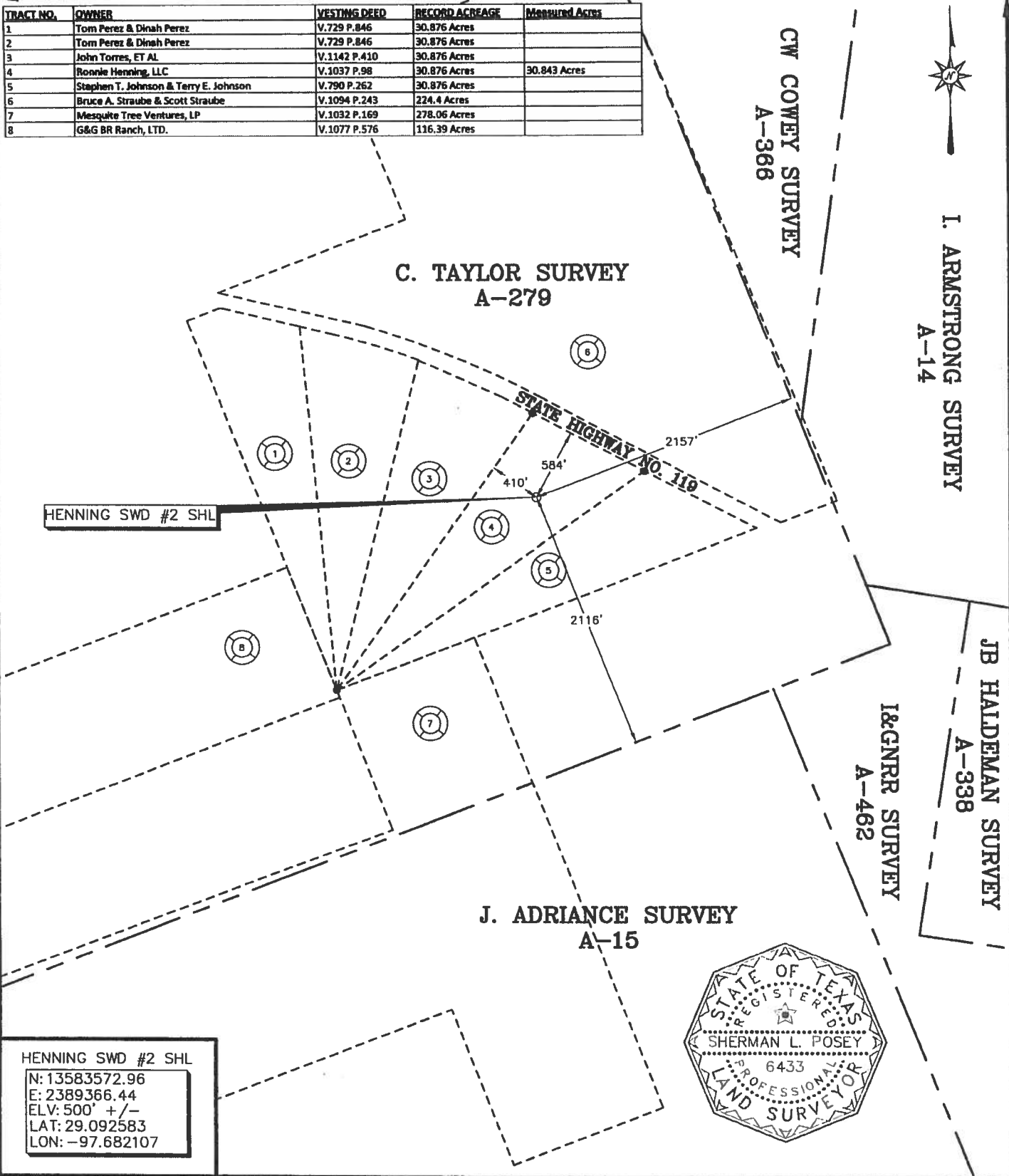


Karl Caldwell  
Technical Examiner



Jennifer Cook  
Administrative Law Judge

TRACT NO.	OWNER	VESTING DEED	RECORD ACREAGE	Measured Acres
1	Tom Perez & Dinah Perez	V.729 P.846	30.876 Acres	
2	Tom Perez & Dinah Perez	V.729 P.846	30.876 Acres	
3	John Torres, ET AL	V.1142 P.410	30.876 Acres	
4	Roanie Henning, LLC	V.1037 P.98	30.876 Acres	30.843 Acres
5	Stephen T. Johnson & Terry E. Johnson	V.790 P.262	30.876 Acres	
6	Bruce A. Straube & Scott Straube	V.1094 P.243	224.4 Acres	
7	Mesquite Tree Ventures, LP	V.1032 P.169	278.06 Acres	
8	G&G BR Ranch, LTD.	V.1077 P.576	116.39 Acres	



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**LEGEND**

SL STACKED LATERAL  
LTP LAST TAKE POINT  
SHL SURFACE HOLE LOCATION  
FTP FIRST TAKE POINT  
PP PENETRATION POINT  
POINT  
AS MARKED SURFACE LOCATION OBTAINED FROM NRC  
K.C.D.R. - KARNES COUNTY DEED RECORDS

--- BOUNDARY LINE ---  
--- SURVEY LINE ---

PLAT DATE: 160820  
UPDATE: 160711

SCALE 1" = 1000'  
JOB NO.: 16-0380  
DRAWN BY: SLP

NOTE:

1. BEARINGS, DISTANCES & ACREAGE ARE GRID, NAD 83 US TX SOUTH CENTRAL ZONE AND ARE OBTAINED BY NORMAL GPS TECHNIQUES.
2. ELEVATIONS ARE BASED ON NAVD 83, CGEDD MODEL 12A.
3. THIS EXHIBIT IS FOR AN OIL & GAS SUB-SURFACE LEASE AND THEREFORE THIS IS NOT A BOUNDARY SURVEY.
4. LOCATION OF ADJOINING WELLS OUTSIDE LEASE BOUNDARY ARE APPROXIMATED FROM TEXAS RAILROAD COMMISSION DATA.
5. DOWNHOLE INFORMATION PROVIDED BY THE CLIENT.
6. LEASE BOUNDARY & TRACT BOUNDARY WAS PROVIDED BY THE CLIENT.
7. SURVEY LINES ARE APPROXIMATE.
8. (O) - PARENTHESES REPRESENT RECORD CALLED FOR ACREAGE

SURFACE LOCATION IS APPROXIMATELY +/- 5.3 MILES NORTHEAST OF ECLETO, TEXAS.

PERMIT PLAT OF  
BLACK BUCK DISPOSAL SERVICES, LLC  
HENNING SWD #2  
SURVEY LINES

SHL: 2116' FSEL & 2157' FNEL  
C. TAYLOR SURVEY, A-279

LEASE LINES

SHL: 584' FNEL & 410' FNWL  
KARNES COUNTY, TEXAS  
Exhibit No. 4  
Docket No. 02-0302219  
BLACK BUCK DISPOSAL SVCS LLC.  
November 16, 2016