



RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

OIL AND GAS DOCKET NO. 06-0298113

THE APPLICATION OF BASIC ENERGY SERVICES, LP 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 GARRISON SWD LEASE, WELL NO. 1, APPLEBY, N (PETTIT) FIELD, NACOGDOCHES COUNTY, TEXAS

HEARD BY: Karl Caldwell – Technical Examiner
Laura Miles-Valdez – Legal Examiner

PFD PREPARED BY: Karl Caldwell – Technical Examiner
Ryan Lammert – Administrative Law Judge

PROCEDURAL HISTORY:

Application Filed:	July 24, 2015
Protest Received:	August 4, 2015
Request for Hearing:	August 24, 2015
Notice of Hearing:	November 12, 2015
Hearing Held:	December 16, 2015
Transcript Received:	January 6, 2016
Proposal for Decision Issued:	May 18, 2016

APPEARANCES:

REPRESENTING:

APPLICANT:

Basic Energy Services, LP

George Neale
James Clark
Clifford Packer
Mark Peloquin
Mark Ehrlich
Will Powers

PROTESTANTS:

Vionette Delgado-Lee
Mike Lee

Pro Se
Pro Se

OBSERVER:

Joe Edwards

CASE SUMMARY

Basic Energy Services, LP (“Applicant”) is requesting to drill a new well for commercial disposal on the Garrison SWD Lease, located approximately 2 miles southwest of Garrison, Nacogdoches County, Texas. The Applicant proposes to inject a maximum volume of 25,000 barrels per day (bpd) of salt water and RCRA-exempt waste¹ into the Rodessa Formation at the depth interval between 6,000 feet and 7,000 feet. The application is protested by adjacent landowners Mike Lee and Vionette Delgado-Lee (“Protestants”). The Protestants are concerned with potential contamination of their land and groundwater, potential harm to their minerals, and potential earthquakes. Based on the evidence, the Administrative Law Judge and Technical Examiner (collectively, Examiners) recommend approval of the application. Based on the evidence, the Examiners also recommend reducing the disposal interval from the depth interval between 6,000 feet to 7,000 feet in the Rodessa Formation to the depth interval between 6,140 feet to 6,700 feet in the Rodessa Formation.

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 Railroad Commission of Texas (Commission) has authority to permit disposal 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.

¹ Resource Conservation and Recovery Act: Examples of RCRA exempt oil and gas waste includes produced water, drilling fluids, hydraulic fracturing flow back fluids, rig wash and workover wastes.

PRELIMINARY MATTER

At the outset of the hearing, Applicant challenged the standing of Protestants Vionette Delgado-Lee and husband, Mike Lee; and Joe Edwards. Protestants Vionette Delgado-Lee and husband, Mike Lee, offered both testimony and evidence in support of their assertion that they are an affected party. Protestant Joe Edwards offered testimony in support of his assertion that he is an affected party.

Statewide Rule 9(5)(E) defines an “affected person” as “a person who has suffered or will suffer actual injury or economic damage other than a member of the general public or as a competitor, and includes surface owners of property on which the well is located and commission-designated operators of wells located within one-half mile of the proposed disposal well.”² Protestants Vionette Delgado-Lee and husband, Mike Lee, are adjacent surface landowners to the proposed SWD well.³ In addition to owning the surface estate, Protestants Vionette Delgado-Lee and husband, Mike Lee, offered testimony and evidence that they possess an interest in the mineral estate, as well.⁴

In support of their status as an “affected person”, Protestants Vionette Delgado-Lee and husband, Mike Lee, testified:

So, these are the oil and gas wells [referencing Protestant Ex. 3] on my property, or near my property that I get paid off of . . . because of the overly charged Rodessa formation in that area, oil and gas companies . . . have an extra \$250,000 per well . . . The issue that we now have is due to the injection wells and the extra pressure created on the Rodessa and for the new drilling companies that want to drill new wells for exploration . . . They are going to have to incur extra expense to be able to do the casing—the cement casing that is a lot further down to make sure . . . that it is safe . . . That’s money out of my pocket. That’s costing me money. *My royalties are going to go down.*⁵

Because Protestants Vionette Delgado-Lee and husband, Mike Lee, successfully demonstrated that they are persons who have suffered or will suffer actual injury or economic damage other than members of the general public or as a competitor, the Examiners find that Protestant is an affected party and therefore, is entitled to standing as a protestant of the subject application.

However, during the hearing, the presiding Examiner ruled that Protestant Joe Edwards failed to demonstrate that he is a person who has suffered or will suffer actual injury or economic damage other than members of the general public or as a competitor and therefore, is not entitled

² 16 Tex. Admin. Code § 9(5)(E).

³ Tr., Page 202, lines 3-25.

⁴ Tr., Page 207, lines 7-22; Protestant Ex. 3.

⁵ Tr., Page 31, lines 1-25; Tr., Page 32, line 1 (emphasis added).

to standing as a protestant of the subject application.⁶ Accordingly, Protestant Joe Edwards is identified as an observer for the remainder of this Proposal for Decision.

DISCUSSION OF THE EVIDENCE

Applicant's Evidence (Basic Energy Services, LP)

Application

On July 22, 2015, a copy of the Form W-14 *Application To Dispose Of Oil And Gas Waste By Injection Into A Formation Not Productive Of Oil And Gas* for the Garrison SWD Lease, Well No. 1 (API No. 42-347-33334) was mailed to the owner of the surface tract, to all adjacent surface owners to the disposal well tract,⁷ to all offset operators with active wells within a half-mile radius,⁸ and to the Nacogdoches County Clerk. The notice of the application was published in the *Daily Sentinel*, a newspaper having general circulation in Nacogdoches County, Texas on July 10, 2015. In a letter dated August 11, 2015, the Underground Injection Control (UIC) Division of the Railroad Commission of Texas (RRC) determined the application to be administratively complete. However, the application could not be approved administratively due to the UIC Division receiving a protest to the application.⁹

Fresh Water Formations

The Groundwater Advisory unit (GAU) letter for the proposed disposal well indicates the base of useable-quality water (BUQW) occurs at a depth of approximately 1,350 feet and the base of underground sources of drinking water (USDW) is at a depth of approximately 1,450 feet (GAU File No. 12229). The GAU letter states that geologic isolation occurs at a depth of approximately 1,875 feet. The GAU letter also states that if otherwise compliant with Railroad Commission rules and guidance, injecting oil and gas waste into the depth interval from 6,000 feet to 7,000 feet will not endanger freshwater strata in that area.

Injection Interval and Confining Intervals

The applied-for injection interval listed on line item 33 on the Form W-14 is from 6,000 feet to 7,000 feet within the Rodessa Formation. James M. Clark, a petroleum engineer, registered as professional engineer in the State of Texas, stated "I'll narrow down this injection interval in item 33 in some subsequent exhibits where we're not actually proposing to inject into

⁶ Tr., Page 103, lines 21-22.

⁷ The adjacent surface owners were identified as: Joe Piazza, Michael Roby Lee, LW & RJ Phillips Rev Living Trust, and Joseph A. & Andrea A. Edwards.

⁸ The operators identified as having active wells within a half-mile radius are Tanos Exploration II, LLC and O'Benco, Inc.

⁹ Basic Energy Services, L.P. Exhibit No. 11.

a thousand feet. It's a subset of that. The Rodessa is about a hundred feet thick. The Rodessa Gloyd is specifically what we're targeting."¹⁰

The depth interval of the Rodessa SWD zone as shown on a west-northwest to east-southeast cross section that intersects the proposed well location ranges from a depth interval of approximately 6,638 feet to 6,700 feet as shown on the well log for the Newman, D.H. Gas Unit 3 (API No. 42-347-32015) to 6,140 feet to 6,218 feet as shown on the well log for the Irwin 'A' 1 (API No. 42-347-32013). A north-northwest to south-southeast well log cross section that passes through the proposed well location shows the thickness of the Rodessa SWD zone increases in thickness from north the south. The Rodessa SWD zone is shown to be at a depth interval from approximately 6,440 feet to 6,470 feet as shown on the well log for McDuffie Gas Unit 5 (API No. 42-347-32337) to a depth interval from approximately 6,450 feet to 6,558 feet as shown on the well log for the Cranford 3 (API No. 42-347-33283).

The nearest offset well log to the proposed disposal well location is the Lee D Gas Unit, Well No. 5, API No. 347-32941, ("Lee GU No. 5") located approximately a half-mile to the north-northwest. This offset well log indicates the presence of relatively thick shale from a depth of approximately 1,600 feet to 2,300 feet, which will provide isolation between the disposal interval and the base of useable quality water (BUQW). The Rodessa-Gloyd target interval as shown on the nearest offset log is estimated to occur between approximately 6,400 feet and 6,490 feet. Mr. Clark estimates the entire injection interval is above 15% porosity and this interval is being used by a number of commercial disposal wells in the area. In Mr. Clark's opinion, there is no way for water to migrate down hole from this interval since the offset well log indicates an impermeable zone just below the disposal zone. "...the bottom of the Gloyd is basically approximately 6,490 feet where the resistivity starts to go back to the right and the porosity starts to go back to zero...that's for this particular well and we'll see this zone on cross sections."¹¹ Above the Gloyd interval at approximately 6,200 feet on the Lee GU No. 5 offset log is a shale interval to prevent the upward migrate of injected fluids from the Rodessa-Gloyd interval. Although the application has indicated a permitted interval of 6,000 feet to 7,000 feet, Mr. Clark states that the target interval as shown on the Lee GU No. 5 offset log is in the Gloyd which is at about 6,404 feet down to 6,490 feet.

Productive Formations in the Area

The proposed disposal interval is within the Rodessa Formation, which is not productive within a two-mile area. The productive formations within two miles of the proposed disposal well are the Pettit, Travis Peak, and the Cotton Valley Formations. The productive formations within two miles are all deeper than the Rodessa Formation.

¹⁰ Tr. pg. 42 ln 22 – pg. 43. Ln 2.

¹¹ Tr. pg. 60, ln 9-17.

Well Construction

The well construction plan is to set 9-5/8 surface casing at depth of 1,500 feet and circulate cement to surface to isolate both the BUQW and USDW. The well will be drilled to a total depth (TD) of 7,000 feet, with 7-inch long string casing set at a depth of 7,000 feet and cemented in place with cement circulated to surface. The Applicant is requesting a maximum permitted injection rate of 25,000 bpd, at a maximum permitted surface injection pressure of 3,000 psi.

Nearby Wellbores

A one-quarter mile radius of review around the proposed disposal well location shows one existing wellbore, the Lee "D" Gas Unit, Well No. 3, API No. 42-347-32555, ("Lee D No. 3"). The Lee D No. 3 is an active producing well located north-northwest of the proposed disposal well location. The Lee D No. 3 well is constructed with 9-5/8 inch surface casing set at a depth of 1,525 feet, with cement circulated to surface. 5 1/2 inch production casing is set at a depth of 9,873 feet with cement circulated to surface. The Lee D No. 3 was drilled and completed to target productive intervals deeper than the Rodessa Formation. The wellbore is perforated between 7,392 feet and 7,426 feet. Mr. Clark estimates that the perforations correlate to the Pettit and Travis Peak Formations, and possibly the Cotton Valley Formation.

Seismic Survey

A review of USGS seismic data from June 7, 1900 to June 14, 2015 shows no seismic activity has been reported within 100 square miles (a circle with a radius of 9.08 km) of the proposed disposal well location. Mr. Clark testified that he checked the USGS website three days prior to the hearing, on Sunday, December 13, 2015, searching for any seismic activity within 100 square miles, between the dates of January 1, 1973, when Mr. Clark stated that events started to be recorded, and December 13, 2015. Mr. Clark stated there still had been no seismic activity reported within 100 square miles of the proposed disposal well location.

Oil and Gas Activity in the Area and Basic Energy's Existing Commercial Disposal Wells

The duties of Mark Peloquin, the Area Manager for Basic Energy, include the day-to-day operations of five facilities and six disposal wells. Mr. Peloquin estimates that he manages a total of 50 trucks and over 70 employees at these facilities. In Mr. Peloquin's opinion, there is a need for additional disposal in this area. This opinion is based on the growing number of wells in the area, and the fact that Basic Energy is running at capacity some of their disposal wells due to the on-going completion of wells. Two of the disposal wells under Mr. Peloquin's supervision are located in Panola County, while two other disposal wells are located in Shelby County. Basic Energy's disposal wells are considered commercial disposal wells in that water from various leases and operators is disposed of. However, the trucks that haul the water to Basic Energy's facilities are limited to Basic Energy's own trucks. Mr. Peloquin has encountered a situation in East Texas where Basic Energy's disposal wells could not handle the volume of

water hauled by Basic Energy's trucks and the water was subsequently transported to third party disposal locations.

The top ten active operators within a 25-mile radius of the proposed disposal well location have a total of 26 approved drilling permits as of June 2015. In addition, there are more than 3,000 active wells within a 25-mile radius of the proposed disposal well location. Basic Energy currently hauls water for some of these operators, and currently has to transport the water to its Tenaha facility for disposal. Mr. Peloquin estimates the distance from the proposed Garrison SWD to the existing Tenaha facility to be approximately 30 miles, one-way. If the subject application approved, it could potentially save Basic Energy 30 miles of truck travel each way.

On cross-examination, Mr. Peloquin stated that the purpose of proposed application is for the safe and efficient transport and disposal of Basic Energy's customer's waste. If the application is approved, it will minimize exposure on highways, and provide relief for Basic Energy's disposal wells in Shelby and Panola Counties.

Clifford A. Packer, is Basic Energy's Fluid Services Manager for the Northeast Texas Region, which includes Nacogdoches, Shelby, Panola, Harrison, and Rusk Counties. Mr. Packer is involved in the management, drilling, completion, design, and construction of saltwater disposal facilities. Mr. Packer is also involved in the maintenance of Basic Energy's existing 26 disposal facilities in this area. Mr. Packer stated that Basic Energy has selected the proposed disposal well location due to a need for additional disposal capacity in this area of Nacogdoches County.

Basic contracts to haul water for various oil and gas operators using only Basic Energy's trucks and only disposing of the water at Basic Energy's disposal wells. Basic Energy does not have a disposal well in this area, and in Mr. Packer's opinion, hauling water with over a 10-mile turnaround is "... not economic or feasible for us to do it, and it doesn't help the customer."¹²

Mr. Packer is familiar with issues regarding the potential overpressure of some formations in Shelby, Panola, and Harrison Counties. Mr. Packer stated that the RRC has issued a letter to all operators of disposal wells in Harrison, Panola, and Shelby Counties, including Basic Energy. The notice pertains to operators of commercial disposal wells injecting into the Rodessa, Glen Rose, Fredricksburg, Duck Creek, Mooringsport, Nacatoch, Goodland Lime, and formations deeper than the Rodessa Formation in Harrison, Panola, and/or Shelby Counties. Nacogdoches County is not referenced in the subject line of the letter. The letter proposes additional permit conditions for the referenced counties.

One of the reasons Basic Energy chose Nacogdoches County for a disposal well is because the county is not included in the RRC letter regarding potential over-pressurization of formations. The Rodessa Formation at the proposed location in Nacogdoches County is the same formation as the Rodessa Formation in the surrounding counties, but is approximately

¹² Tr. pg. 109, ln 19-20.

1,000 feet deeper than in Shelby County. The location of the proposed disposal well is also close enough to haul water from the adjoining counties. The distance from the proposed disposal well to Shelby County is estimated to be five miles. In Mr. Packer's personal experience, which includes approximately 50 wells, completing a well with 10.2 ppg to 10.6 ppg mud weight does not indicate any wellbore or overpressure problems.

On cross-examination Mr. Packer was questioned whether the Applicant is moving a disposal formation over-pressurization problem to Nacogdoches County. Mr. Packer stated that Basic Energy agrees with the RRC that Shelby, Panola, Harrison Counties are saturated, and therefore the subject application is in Nacogdoches County. Mr. Packer does not think the Rodessa Formation in Nacogdoches County is over-pressured, and considers it to be a tremendous formation.

Other Commercial Disposal Wells in the Area

There are a total of seven active commercial disposal wells within a ten-mile radius of the proposed Garrison SWD. The ten-mile radius includes areas of Shelby, Rusk, and Nacogdoches Counties. All of the existing commercial disposal wells within a ten-mile radius are injecting into the Rodessa-Gloyd zone, with the exception of the Appleby SWD No. 1S (API No. 42-347-33035) which is permitted to inject fluids into the Duck Creek interval between 4,200 feet and 5,200 feet. Only two of these seven commercial disposal wells are located within a 5-mile radius of the proposed disposal well location. These two wells are the Davis SWD No. 4 (API No. 42-401-33833), which was previously permitted as the Barton SW Lease, Well No. 1, and the Peterson, T.M. No. 1 (API No. 42-347-30124). The cumulative maximum permitted injection volume for these two wells is 25,000 bpd. The cumulative permitted maximum injection volume for the seven wells within a 10-mile radius is 74,000 bpd.

On-cross-examination, the Protestants questioned Mr. Clark as to whether he was aware that the Davis No. 4-Barton well was shut down, and whether he had knowledge of the reason the well was shut down. Mr. Clark stated that he reviewed all public records on the well and did not see any reason listed for why it may be shut down. The Protestants asked Mr. Clark if over-pressurization of the Rodessa Formation was a concern, and whether the Commission had implemented a moratorium of Rodessa Formation injection in nearby counties. Mr. Clark stated that there is not a moratorium of the Rodessa Formation and shallower formations in Panola, Shelby, and Harrison Counties. Mr. Clark has worked for an operator that has been granted a permit in Panola County. Mr. Clark stated that there are some special testing and monitoring procedures for wells in Panola, Shelby, and Harrison Counties. Mr. Clark stated that the reason for these special conditions is due to concerns about possible overpressuring of the formations. Mr. Clark stated that it is the same Rodessa Formation in Nacogdoches County as in Rusk and Panola Counties. In Mr. Clark's opinion, there is no reason to think that over-pressurization has, or would occur at the proposed disposal location. Mr. Clark has reviewed three different well logs in the area surrounding the proposed Garrison SWD. All three wells were drilled with drilling mud between 10 ppg and 10.5 ppg mud, which Mr. Clark considers to be normal mud weight. In Mr. Clark's opinion, you would use a much heavier mud weight if you had to deal with over-pressurization.

In response to a question on whether the proposed disposal well may cause earthquakes or fresh water contamination, Mr. Clark stated that surface casing will be set deeper than the BUQW with cement circulated to the ground surface. Mr. Clark is not aware of any earthquakes in this area and has searched the USGS website and has found that no seismic events have been reported within 100 square miles.

Basic Energy's Proposed Facility

Basic Energy has already obtaining a drilling permit for the proposed well.¹³ At the present time, Basic Energy intends to construct the Garrison SWD facility similar to its existing Talco SWD facility located in Titus County. The proposed facility will be located 2 miles southwest of Garrison, on the 3.9 acre Garrison SWD Lease. The entrance to the facility will be located on Highway 259. On cross-examination, Mr. Packer estimates the tank batteries for the facilities can be constructed on an area 100 feet by 100 feet.

Financial Assurance

Basic Energy has an active P-5 on file with the Commission, with a blanket financial assurance bond in the amount of \$50,000 for financial assurance.

Protestants' Evidence

The application is protested by adjacent surface owner Michael R. Lee and Vionette Delgado-Lee. The Protestants are concerned with potential contamination of their land and groundwater, and potential earthquakes. The Protestants are also concerned with potential harm, and a decrease of potential future income from their minerals, including possible over-pressurization of the disposal formation, which may result in an increase in well completion costs on their land.

Mr. Lee states that the property has been in the family since the 1870's or 1880's and is a Centurion Ranch. There are oil wells on the property, and the property is currently leased for pasture land and hunting. Mr. Lee has future plans to make the property into a working ranch within the next several years. Mr. Lee may possibly sell groundwater to the city of Garrison in the future. Mr. Lee stated that the city is always looking for water. In Mr. Lee's opinion, if the city is aware that there is an injection well beside the property, the city may not want to buy the water due to the possibility of contamination. The Protestants are also considering a possible food-to-market plan for the land in the future.

Mr. Lee stated that he is fine with fracing but one of his biggest issues is potentially contaminating everybody else's land since the proposed disposal well is to be located on 3.9 acres of land. In Mr. Lee's opinion, there will be issues with fluid migrating off of the 3.9 acres where the proposed disposal well will be drilled.

¹³ Applicant's Exhibit No. 27, API No. 42-347-33334.

On cross-examination, Mr. Lee stated that he receives royalties from Tanos Exploration II, LLC for oil wells located on his property. Mr. Lee is aware that at some point in a well's life it will produce salt water. Mr. Lee stated that he does not have a problem with saltwater disposal. Mr. Lee's concern is that saltwater disposal should not be located within several miles of where people live and where there are businesses. On cross-examination, Mr. Lee stated that he was concerned that the Rodessa Formation in this area was over-pressured, but has not performed a study to determine whether the Rodessa Formation is over-pressured in this area.

On re-direct, Mr. Lee stated that he receives royalty checks and also receives an end-of-year statement of expenses. Mr. Lee is a working interest owner and pays expenses. Mr. Lee's end-of-year- statement shows water as an expense.

EXAMINERS' ANALYSIS OF THE EVIDENCE

Public Interest

The Examiners conclude that the proposed commercial disposal well is in the public interest, in terms of a need for additional disposal capacity. There are more than 3,000 producing wells within a 25-mile radius of the proposed disposal well location. In addition, the top ten operators within a 25-mile radius of the proposed disposal well location have a total of 26 approved drilling permits as of June 2015. There are a total of two active commercial disposal wells, permitted for a cumulative maximum injection volume of 25,000 bpd, within a 5-mile radius of the proposed disposal well location. There are a total of seven active commercial disposal wells within a 10-mile radius, permitted for a cumulative maximum injection volume of 74,000 bpd. The Examiners conclude there is sufficient evidence to support the need for additional disposal capacity in this area.

The Protestants are concerned that injecting fluids into the Rodessa Formation at the proposed location may result in over-pressurization of the formation. If the formation were to become over-pressured it may increase well completion costs and subsequently, decrease the future value of their minerals. The evidence in the record shows the Lee GU No. 5, located approximately a half-mile from the proposed disposal well location, was drilled with 10.4 ppg mud, which is normal for this area, and does not indicate any formations are over-pressured. The Commission has proposed additional permit conditions for disposal wells in several counties in close proximity to Nacogdoches County, including Shelby County, but the evidence in the record shows that these additional permit conditions do not currently apply to Nacogdoches County. The proposed disposal well is approximately five miles west of the Shelby-Nacogdoches County line.

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

Based on the evidence, the Examiners agree with the Applicant's engineering witness that the target injection interval is a subset within the applied-for 1,000 foot interval between 6,000 feet and 7,000 feet. The upper extent of the top of the Rodessa SWD zone as shown on

log cross sections is at a depth of approximately 6,140 feet, while the deepest depth of the target Rodessa SWD zone as shown on log cross sections is at a depth of approximately 6,700 feet. Therefore, the Examiners recommend reducing the disposal interval to be within the Rodessa Formation from a depth of 6,140 feet to 6,700 feet at the proposed disposal well location. Raising the bottom of the injection interval to 6,700 feet from 7,000 feet will provide an additional 300 feet of separation between the disposal interval and productive formations deeper than the disposal interval.

The Examiners conclude the proposed disposal well will not harm or injure the productive formations in the area. The Rodessa Formation is not productive within two miles. The Rodessa Formation is identified as the disposal formation in six active disposal wells within a ten-mile radius of the proposed disposal well location.

There is one well, the Lee D No. 3, located within a quarter-mile radius of the proposed disposal well location. Based on the evidence, the Examiners conclude that this well will not act as a conduit for injected fluids to escape the disposal interval. The Lee D No. 3 is constructed with 9-5/8 inch surface casing set at a depth of 1,525 feet, with cement circulated to surface. 5 1/2 inch production casing is set at a depth of 9,873 feet with cement circulated to surface. The wellbore is perforated between 7,392 feet and 7,426 feet.

The productive formations within two miles of the proposed disposal well are the Pettit, Travis Peak, and the Cotton Valley Formations, all of which are deeper than the disposal formation. An offset log for a well located approximately 0.5 miles from the proposed disposal well location indicates the presence of an impermeable zone below the Gloyd interval of the Rodessa Formation, which will prevent the downward migration of injected fluids to productive formations.

A drilling permit for the proposed Garrison SWD No. 1 has been issued but the well has not yet been drilled. The well construction plan is to set 9-5/8 surface casing at depth of 1,500 feet and circulate cement to surface to isolate both the BUQW and USDW. The well will be drilled to a total depth (TD) of 7,000 feet with 7-inch long string casing set at a depth of 7,000 feet and cemented in place with cement circulated to surface. The requested maximum permitted injection rate is 25,000 bpd, at a maximum permitted surface injection pressure of 3,000 psi.

Protection of Ground and Surface Fresh Water

The Examiners conclude that the proposed well construction of the Garrison SWD No. 1 will adequately protect both ground and surface fresh water. The BUQW occurs at a depth of approximately 1,350 feet and the base of USDW at a depth of approximately 1,450 feet at the proposed disposal well location. The well construction plan is to set 9-5/8 surface casing at depth of 1,500 feet and circulate cement to surface to isolate both the BUQW and USDW.

The well log for an offset well located approximately 0.5 miles from the proposed disposal well location indicates a shale interval from a depth of approximately 1,600 feet to 2,300 feet. Therefore, the disposal interval within the Rodessa Formation will be separated from

freshwater formations by impervious beds which will give adequate protection to such freshwater formations.

One well is located within a quarter mile radius, the Lee D No. 3. This is a producing well that is constructed with 9-5/8 inch surface casing set at a depth of 1,525 feet, with cement circulated to surface. 5 1/2 inch production casing is set at a depth of 9,873 feet with cement circulated to surface. The wellbore is perforated between 7,392 feet and 7,426 feet and will not act as a conduit for injected fluids to migrate to freshwater formations.

Financial Assurance

Basic Energy has an active P-5 on file with the Commission, with a blanket financial assurance bond in the amount of \$50,000 for financial assurance.

Additional Information

No seismic activity has been reported within a 100 square miles of the proposed disposal well location. USGS seismic data from June 7, 1900 to June 14, 2015 shows no seismic activity has been reported within 100 square miles of the proposed disposal well location. The Applicant's engineering witness checked the USGS website on Sunday, December 13, 2015, and stated there has not been any seismic activity reported within 100 square miles of the proposed disposal well location.

FINDINGS OF FACT

1. Basic Energy Services, LP seeks a permit authorizing commercial disposal operations pursuant to 16 Tex. Admin. Code § 3.9 for the Garrison SWD Lease, Well No. 1, API No. 42-347-33334, Appleby, N (Pettit) Field, Nacogdoches County, Texas.
2. The commercial disposal well application for the the Garrison SWD Lease, Well No. 1 was mailed to the owner of the surface tract, to adjacent surface owners, to the Nacogdoches County Clerk, and to all operators within a half-mile radius of the proposed well location. 16 Tex. Admin. Code § 3.9(5)(A), (B).
3. Notice of the the Garrison SWD Lease, Well No. 1 commercial disposal well application was published in the *Daily Sentinel*, a newspaper having general circulation in Nacogdoches County, Texas on July 10, 2015. 16 Tex. Admin. Code § 3.9(5)(D).
4. The application is protested by adjacent surface owner Michael R. Lee and Vionette Delgado-Lee.
5. At least 10 days' notice of the hearing was provided to the owner of the surface tract, to adjacent surface owners, to the Nacogdoches County Clerk, and to operators within a half-mile of the proposed disposal well. 16 Tex. Admin. Code § 3.9(5)(E)(i).

6. The use or installation of the Garrison SWD Lease, Well No. 1 is in the public interest in terms of a need for additional disposal capacity in this area.
 - a. Two active commercial disposal wells are located within a 5-mile radius of the proposed disposal well location, permitted for a cumulative maximum injection volume of 25,000 bpd;
 - b. Seven active commercial disposal wells are located within a 10-mile radius of the proposed disposal well location, permitted for a cumulative maximum injection volume of 74,000 bpd;
 - c. There are more than 3,000 producing wells within a 25-mile radius of the proposed disposal well location; and
 - d. There is evidence of future well completions in this area as the top ten operators within a 25-mile radius of the proposed disposal well location have a total of 26 drilling permits approved as of June 2015;

7. The use or installation of the Garrison SWD Lease, Well No. 1 will not endanger or injure oil, gas, or other mineral formations.
 - a. The injection interval is in the Rodessa-Gloyd interval within the Rodessa Formation;
 - b. The Rodessa Formation is not productive within a two-mile radius;
 - c. The Rodessa Formation has been authorized for disposal in six active commercial disposal wells within a 10-mile radius of the proposed disposal well location;
 - d. The productive formations within two miles are all deeper than the Rodessa Formation;
 - e. The log for the Lee D Gas Unit, Well No. 5, API No. 347-32941, located approximately 0.5 miles from the proposed disposal well location indicates the presence of an impermeable zone below the Rodessa-Gloyd interval which will prevent the downward migration of injected fluids to productive formations; and
 - f. There is only one well within a quarter-mile radius of the proposed disposal well location that penetrates the disposal interval. This well is the Lee "D" Gas Unit, Well No. 3 which is constructed in a manner such that the well will not act as a conduit for injected fluids to escape the disposal interval. The Lee "D" Gas Unit, Well No. 3 is constructed with 9-5/8 inch surface casing set at a depth of 1,525 feet, with cement circulated to surface. 5 1/2 inch production casing is set at a depth of 9,873 feet with cement circulated to surface. The wellbore is perforated between 7,392 feet and 7,426 feet.

8. With proper safeguards, both ground and surface fresh water can be adequately protected from pollution.
 - a. The BUQW occurs at a depth of approximately 1,350 feet and the base of USDW at a depth of approximately 1,450 feet at the proposed disposal well location;
 - b. The well construction plan is to set 9-5/8 surface casing at depth of 1,500 feet and circulate cement to surface to isolate both the BUQW and USDW;
 - c. The injection interval is in the Rodessa Formation which is deeper than both the both the BUQW and USDW;
 - d. The disposal interval within the Rodessa Formation will be separated from freshwater formations by impervious beds which will give adequate protection to such freshwater formations. The log for the Lee D Gas Unit, Well No. 5, API No. 347-32941, located approximately 0.5 miles from the proposed disposal well location indicates a the presence of a shale interval from a depth of approximately 1,600 feet to 2,300 feet;
 - e. There is one well, the Lee "D" Gas Unit, Well No. 3 located within a one-quarter mile radius of the proposed disposal well location. This well is constructed in a manner such that the well will not act as a conduit for injected fluids to escape the disposal interval and migrate to freshwater formations. The Lee "D" Gas Unit, Well No. 3 is constructed with 9-5/8 inch surface casing set at a depth of 1,525 feet, with cement circulated to surface 5 1/2 inch production casing is set at a depth of 9,873 feet with cement circulated to surface. The wellbore is perforated between 7,392 feet and 7,426 feet.
9. No seismic events have been reported within 100 square miles of the proposed disposal well location between June 7, 1900 and December 13, 2015.

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 form of decision of the subject application meets the requirements of TEX. GOV'T CODE §2001.141.
3. The installation and use of the proposed commercial disposal well is in the public interest. Texas Water Code § 27.051(b)(1).

4. The proposed fluid disposal operations will not endanger oil, gas or geothermal resources. Texas Water Code § 27.051(b)(2).
5. The proposed fluid disposal operations will not cause the pollution of freshwater strata. Texas Water Code § 27.051(b)(3).
6. Basic Energy Services, LP has met its burden of proof and the application for the Garrison SWD Lease, Well No. 1 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 Basic Energy Services, LP for commercial disposal authority pursuant to Statewide Rule 9 for the Garrison SWD Lease, Well No. 1, Appleby, N (Pettit) Field, Nacogdoches County, Texas, be approved, as set out in the attached Final Order.

Respectfully submitted,



Karl Caldwell
Technical Examiner



Ryan Lammert
Administrative Law Judge