



RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

OIL AND GAS DOCKET NO. 01-0286961

THE APPLICATION OF 714596 & 714602 SWD LP LTD. PURSUANT TO STATEWIDE RULE 9 FOR AN AMENDED COMMERCIAL PERMIT TO DISPOSE OF OIL AND GAS WASTE BY INJECTION INTO A RESERVOIR NOT PRODUCTIVE OF OIL OR GAS ASHERTON SWD LEASE, WELL NO. 2 THIRTEEN, W. (OLMOS 3450) FIELD, GONZALES COUNTY, TEXAS

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THE APPLICATION OF 714596 & 714602 SWD LP LTD. PURSUANT TO STATEWIDE RULE 9 FOR AN AMENDED COMMERCIAL PERMIT TO DISPOSE OF OIL AND GAS WASTE BY INJECTION INTO A RESERVOIR NOT PRODUCTIVE OF OIL OR GAS ASHERTON SWD LEASE, WELL NO. 1 THIRTEEN, W. (OLMOS 3450) FIELD, GONZALES COUNTY, TEXAS.

HEARD BY: Karl Caldwell - Technical Examiner
Marshall Enquist - Legal Examiner

PROCEDURAL HISTORY

Application Filed:	November 26, 2013
Protest Received:	November 27, 2013
Request for Hearing:	January 10, 2014
Notice of Hearing:	February 18, 2014 and March 28, 2014
Hearing Held:	April 18, 2014
Transcript Received:	May 5, 2014
Proposal for Decision Issued:	April __, 2015

APPEARANCES:

REPRESENTING:

APPLICANT:

714596 & 714602 SWD LP Ltd.

George Neale
Andres Trevino
Rick Johnston
Chris Gabriel

PROTESTANTS:

Wintergarden Groundwater Conservation
District

Peter Gregg
Ronald Green
Ed Walker

PROPOSAL FOR DECISION

STATEMENT OF THE CASE

In Final Order No. 01-0269762, effective July 11, 2011, commercial disposal authority pursuant to Statewide Rule 46 was granted to Sandy SWD for the Asherton SWD Lease, Well Nos. 1 and 2.¹ The permit authorized a maximum injection volume of 5,000 barrels per day (bpd), per well, into an interval from 3,400 feet to 3,900 in the Olmos Formation. On January 29, 2013, ownership of the permit was transferred from Sandy SWD to 714596 and 714605 SWD Ltd. (Applicant). To date, the wells have not been drilled.

On November 26, 2013, the Commission received a request from the Applicant to amend the current permit. The Applicant has requested to deepen the injection interval to inject into porous formations not productive of oil or gas², increase the maximum daily injection volume, and increase the maximum surface injection pressure. The request to amend the permit is protested by Wintergarden Groundwater Conservation District (WGCD).

CASE SUMMARY

The Applicant is requesting to amend the current injection permit for the Asherton SWD Lease, Well Nos. 1 and 2 ("Asherton Nos. 1 and 2"), due to a concern that the formation currently authorized for injection, the Olmos Formation, has a limited capacity to accept fluids. As a result, the Applicant has requested to amend the permit to inject in the Georgetown, Edwards, and Glen Rose Formations. The Protestant is concerned that two plugged oil wells located approximately 1,000 feet from the proposed Asherton Nos. 1 and 2 locations are not sufficiently cemented and plugged to prevent the migration of injected fluids from polluting ground and surface fresh water. The evidence in the record supports granting the application request. Neither plugged oil well penetrates the top of the proposed injection interval or formation. Both oil wells were cased and cemented at the time the wells were drilled to protect the usable quality water and productive formations. Lastly, both oil wells were plugged in a manner to prevent the wellbores from acting as potential conduits for the pollution of ground or surface fresh water. The Examiners recommend

¹ Project No. F-18497, Commercial

² 16 Tex. Admin. Code §3.9 Disposal Wells

that the application be approved.

DISCUSSION OF THE EVIDENCE

714596 & 714602 SWD LP Ltd.'s Evidence

Notice of Application, Permit Amendment

On November 22, 2013, the Asherton Nos. 1 and 2 permit amendment application was published in the *Carrizo Springs Javelin*, a newspaper of general circulation in Dimmit County, Texas. A copy of the application was mailed to the surface owner of the well site tract, Cheto SWD, LLC, the Dimmit County Clerk, and all operators with active wells within in a one-half mile radius of either the Asherton Nos. 1 or 2 on November 25, 2013. The application was protested by WGCD and set for hearing on February 27, 2014, at which time the docket was called and recessed.

On March 5, 2014, the Applicant sent notice to the owner of the surface tract, the Dimmit County Clerk, all operators with active wells within a one-half mile radius of either of the wells subject to the application, as well as WGCD, as an interested party. The Applicant amended the previously-noticed application to deepen the injection interval, to increase the maximum daily disposal volume, and to increase the maximum surface injection pressure. The Amended application was published in the *Carrizo Springs Javelin*, on Wednesday, March 5, 2014.

Well Construction

The Commission's Groundwater Advisory Unit (GAU) identified the base of usable-quality groundwater (BUQW) at a depth of 1,000 feet at the proposed well location of both the Asherton Nos. 1 and 2. The Asherton Nos. 1 and 2 have not yet been drilled but the proposed well construction plan for each of the two wells is identical and will protect the BUQW. Each well will have 10.75-inch surface casing set to a depth of 1,100 feet and cemented in-place with cement circulated to surface. Long string casing, (7-inch), will be set at a depth of 9,500 feet. A multi-stage cementing tool will be set at 7,050 feet and cement will be circulated behind the long string casing with a planned top of cement (TOC) at 2,850 feet. Tubing will be run inside the long string casing and a packer will be set at a depth of 6,950 feet (see Attachments I and II). The requested maximum injection volume of salt water and RCRA-exempt waste is 25,000 bpd, per well.³ The requested maximum surface injection pressure is 3,535 psi.⁴

³ 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.

⁴ The permitted pressure will not exceed 0.5 psi per foot of depth to the top of the injection/disposal interval, unless the results of a fracture pressure step-rate test support a higher pressure.
(<http://www.rrc.state.tx.us/oil-gas/publications-and-notices/manuals/injectionanddisposal-well-manual/summary-of-standards-and-procedures/technical-review/>)

Injection Interval

The proposed disposal interval in the Asherton Nos. 1 and 2 is from 7,050 feet to 9,500 feet into the Georgetown, Edwards, and Glen Rose Formations. The upper injection depth at 7,050 feet would be in the lower Georgetown Formation. Above the Georgetown Formation is the Del Rio Formation, a shale interval, approximately 160 feet in thickness. The Del Rio Formation will act as a confining interval to prevent fluids from escaping the permitted disposal interval.

Area of Review

The Asherton Nos. 1 and 2 are located 0.9 miles northwest of the town of Asherton, Dimmit County, Texas. Productive formations within two miles of the subject well locations include the Olmos Formation at 3,400 feet, the Eagleford Formation at 6,230 feet, and the Buda Formation at 6,534 feet.

The only operator within a one-half mile radius of the Asherton No. 1 is Exco Operating Company, LP, which operates Silva Unit Dim Well No. 1H (API No. 42-127-34844). The only operator within a one-half mile radius of the Asherton No. 2 is the Chesapeake Operating, Inc., which operates the Wilson Unit I Dim Well No. 1H, (API No. 127-34783). These two wells are permitted and drilled as horizontal drainholes at a depth of approximately 6,200 feet to 6,400 feet in the Eagleford Formation. Therefore, the laterals do not penetrate the proposed disposal interval. Furthermore, although the terminus point of each well is within a one-half mile radius, the penetration point of each well is outside of the one-half mile radius.

There are two plugged oil wells located within a one-quarter mile radius of the Asherton Nos. 1 and 2. These two oil wells are located on the Winn Lease, and were not drilled deep enough to penetrate the proposed injection interval for the Asherton Nos. 1 and 2.

- 1) The Winn Lease, Well No. 1 (API No. 127-33254) ("Winn No. 1") was completed in the Pearsall (Buda, S.) Field. Surface casing was set at a depth of 1,053 feet with cement circulated to surface.⁵ The well was drilled to a total depth (TD) of 7,034 feet and plugged back to 6,804 feet. 4.5-inch long string casing was set to 6,970 feet. The long string casing was cemented with 375 sacks of Class H cement, circulated to a height of 1,644 feet, which resulted in a calculated TOC at 5,326 feet. The well was perforated between 6,534 and 6,616 feet. Plugging records show the well was plugged on August 17, 2011.
- 2) The Winn Lease, Well No. 2 (API No. 127-33417) ("Winn No. 2") was completed in the Pearsall (Buda, S.) Field. Surface casing was set at a depth of 1058 ft and

⁵ The GAU estimated the BUQW at a depth of 1000 feet.

cemented, with cement circulated to surface.⁶ The well was drilled to a TD of 6,650 feet and 4.5-inch production casing was set at a depth of 6,626, and cemented with cement circulated to surface. This well was perforated from 6,534 to 6,616 ft. Plugging records show the well was plugged on August 10, 2012. Applicant's expert witness, Andres Trevino, a professional petroleum engineer registered in the State of Texas pointed out that a plug was not set above a set of perforations in this well. However, Mr. Trevino is not concerned that this well will act as a conduit since "the well is cemented from top to bottom and it is 400 feet above our injection interval".⁷

There is a dry hole located greater than one-half mile from the Asherton No. 2, but within one-half mile of the Asherton No. 1. This dry hole is located on the Silva A.B. Lease, identified by API No. 127-32283. This well location was issued a drilling permit to a depth of 3,560 feet. A scout report for the well shows that the total depth of the well was 3,560 feet. This well was plugged on October 19, 1981 and does not penetrate the proposed disposal interval for the Asherton Nos. 1 and 2 and will not act as a conduit.

Public Interest

There has been a large increase in the number of drilling permits issued in Dimmit County targeting the Briscoe Ranch (Eagleford) Field in recent years. In 2013 alone, approximately 1,029 drilling permits were issued, and nearly 1,500 permits had been issued to mid-April 2014.⁸ According to Mr. Trevino, the vast majority of these wells are horizontal completions that require a large hydraulic fracture stimulation treatment consisting of large fluid volumes; fluid which is recovered during flowback in the initial stages of well production. There is a significant amount of proposed horizontal drilling and completion activity within ten miles of the Asherton Nos. 1 and 2 and more activity outside of a ten mile radius.

There are approximately ten active commercial disposal wells within a ten mile radius of the Asherton Nos. 1 and 2.⁹ Nine of these wells, (90%), are permitted in the Olmos Formation at a depth of approximately 3,000 feet. Mr. Trevino considered eight of these ten disposal wells in the area (80%), to be "private" commercial disposal wells.¹⁰

⁶ The GAU estimated the BUQW at a depth of 1000 feet.

⁷ Tr. 94.

⁸ Tr. 43.

⁹ Mr. Trevino defined active disposal wells as wells with H-10 filed with the Commission showing injection/disposal volumes and does not include permits, proposed permits, or permitted, but not drilled.

¹⁰ Tr. 46-47. Private commercial disposal wells were defined by Mr. Trevino as wells with restricted access where only certain operators or certain trucking companies are allowed access.

The Applicant has requested to amend the injection interval from the currently-permitted Olmos Formation in the Asherton Nos. 1 and 2 to deeper formations due to evidence indicating that the Olmos Formation is a short-term disposal interval. Disposal wells in the area permitted in the Olmos Formation have reported reaching the maximum permitted injection pressure and have ceased injecting fluid for periods of time as a result.¹¹ In contrast, the only commercial disposal well within ten miles permitted in the Glen Rose Formation injected 408,000 bbl of fluid in March 2014. This well reported a maximum injection pressure of 2,450 psi, while the permitted maximum injection pressure is 4,000 psi, and therefore, injection was not pressure-limited.

Chris Gabriel is the Saltwater Disposal Operations Manager for Steve Kent Trucking, a commercial saltwater disposal company operating in the area. The company operates approximately 15 to 20 commercial water transport trucks in Dimmit County. At the time of the hearing, Steve Kent Trucking operated one salt water disposal well and was in the process of drilling another disposal well. Mr. Gabriel had previously been employed by Heckmann Water Resources, and had more than one year of personal experience as an operator of the Heckmann Water Resources Catarina Saltwater Disposal well which is permitted in the Olmos Formation. During Mr. Gabriel's experience operating the Catarina saltwater disposal well, he witnessed a number of trucks waiting at that facility for extended periods of time, which he considered to be over 5 hours.¹² In Mr. Gabriel's opinion, additional available disposal capacity is needed in the area. In Mr. Gabriel's opinion, if the Asherton SWD Nos. 1 and 2 applications were approved, it would decrease disposal costs in the area.¹³

Financial Assurance

The Applicant has an active P-5 and a \$25,000 letter of credit on file with the Commission for financial assurance.

Protestant's Evidence (Wintergarden Groundwater Conservation District)

The application is protested by WGCD. WGCD's expert witness, Ronald Green, a hydrologist, does not believe the permit should be approved because the Applicant is requesting to inject into three formations that Mr. Green considers to be aquifers and highly permeable. Mr. Green is also concerned that two plugged wells may provide a potential pathway from the zone of injection

¹¹ Applicant Exhibit No. 24

¹² Tr. 72.

¹³ Tr. 74.

to the usable quality water. Mr. Green stated that he found “inconsistencies and incompleteness in the records”.¹⁴

Mr. Green’s concerns with the plugged Winn No. 1 are:

- 1) No caliper log to know the amount of washout;
- 2) The W-12 (Inclination Report) indicated that the operator was out of compliance by a small amount on two of the shots, (shots 5 and 6) where they exceeded 1,000 feet between shots. Mr. Green is concerned that the inclination of the borehole is unknown and the casing could lean against the bore hole and could allow formation water to interact with the casing. Mr. Green noted that the operator did not cement to surface, so casing is exposed to formation anyway;
- 3) The cementing company estimated 100% washout for surface casing and only 35% washout for the long string casing, and did not circulate cement behind the long string casing to surface. The operator calculated that cement was circulated to 5,326 feet; and
- 4) The Form W-3 (Plugging Record) shows that six plugs were set but only one plug was tagged. The depth of the other plugs were estimated based on the volume of cement pumped. Another concern is a comment on the plugging report that they could not squeeze perfs for plug No. 3. Mr. Green considered this a “failed” plug.

The Winn No. 1 was drilled to a TD of 7,034 feet, the long string casing was set at a depth of 6,970 feet, and the plug back depth was 6,804 feet. The Protestant is concerned that when this well was drilled to a depth of 7,034 feet, the confining interval above the disposal formations, the Del Rio Formation, was penetrated. In Mr. Green’s opinion, this penetration of the confining interval provides a weak point and an avenue for the migration of contaminants injected in the Georgetown, Edwards, and Glen Rose Formations through the confining layer.¹⁵

The Protestant also has concerns with the status of the Winn No. 2 plugged well. Specifically:

- 1) There are two different API Nos. on different forms in the well file. The Cementing Report (Form W-15) and the Completion Report (Form W-2) lists the API No. as 42-127-33253. The Plugging Record lists the API as 42-127-33417. There is no

¹⁴ Tr. 114.

¹⁵ Tr. 126.

cementing report for API No. 42-127-33417. The Protestant raised the possibility that there is no cement behind pipe for the Winn No. 2;

- 2) If the cementing report for the API No. 42-127-33253 is for the Winn No. 2, a “considerable amount” of cement was pumped in order to circulate cement to surface behind the long string casing. In Mr. Green’s opinion, this indicated considerable washout, greater than the 35% estimated when the cementing company calculated the TOC in the Winn No. 1 well;
- 3) The completion report for the Winn No. 2 shows the well was perforated from 6,534 feet to 6,616 feet, the same perforated interval as listed for the Winn No. 1. Mr. Green considered this identical perforated interval in both wells as possible, but unlikely. There is also concern over the validity of information on the forms as the perforated intervals listed on Form W-3 are not consistent with perforation information on Form W-2;
- 4) The actual deviation and inclination of the borehole is a concern since there were two Statewide Rule 11 violations related to the first shot exceeding 500 feet below the surface and one shot point exceeding 1,000 feet¹⁶; and
- 5) Plugging Record (Form W-3):
 - a) Two plugs were set, one from a depth of 32 feet to surface, and the second from 1,059 feet to 250 feet. However, the depth to the top of the plug was not measured.
 - b) No plug was set to isolate the perforations; whether the perforations are at 6,534 feet to 6,616 feet (Form W-2) or from 5,600 feet to 6,180 feet and 6,440 feet to 6,616 feet (Form W-3).

Applicant’s Rebuttal Evidence

Winn No. 2 API Number

Applicant’s expert witness, Rick Johnston, a professional petroleum engineer registered in the State of Texas, provided evidence to address the various concerns raised by the Protestant. A Commission mainframe search for API No. 127-33253 stated the current API No. is 127-33417

¹⁶ The first shot of an inclination survey, when required pursuant to 16 Tex. Admin. Code 3.11(b)(1)(A), shall be made at a depth not greater than 500 feet below the surface of the ground, and succeeding shot points shall be made either at 500-foot intervals, or at intervals at the nearest drill bit change thereto, but not to exceed 1,000 feet apart.

(Applicant's Exhibit No. 28). Mr. Johnston explained the confusion of two API Nos. referring to the same well by examining the timing of drilling permits issued for the Winn No. 2. Well records show that the original drilling permit for the Winn No. 2 was granted on October 21, 2004 and identify the well by API No. 127-33253 in a Wildcat field. Form W-1 for the Winn No. 2 was filed on November 30, 2006. By this time, the original drilling permit that was issued in 2004 had expired. After the original drilling permit expired, the Winn No. 2 was assigned a new API No. 127-33417.¹⁷

Winn Nos. 1 and 2 Well Logs

A well log cross section of the Winn No. 1, Winn No. 2 and the Gonzales Lease, Well No. 1 (API No.42-127-32189), located less than 1.5 miles to the east, showed the proposed disposal interval and correlative depths of formations. The cross-section showed that the total depth (TD) of the Winn No. 2 does not penetrate the proposed disposal interval, or the Del Rio Formation, which has been identified as the confining interval. The cased-hole log of the Winn No. 1 showed the well was logged from the plug back depth of 6,800 feet. This well does not entirely penetrate the confining Del Rio Formation and it does not penetrate the Georgetown Formation based on the log correlation. In Mr. Johnston's opinion, neither the Winn No. 1 or Winn no. 2 will act as a conduit for fluids to escape the disposal interval.

Winn No. 1 Well Construction and Plugging Records

Records show 4.5 inch casing was set to a depth of 6,970 feet and the well was plugged back to 6,800 feet. Form W-2 showed the top of cement outside the 4.5-inch casing to be at 5,326 feet. Mr. Johnston verified this calculation to show the height of cement would be 1,644 feet. According to Mr. Johnston, "even if you use 80 % of that to account for washout, it drops the calculated TOC to 5,655 feet, the area of review guidelines as published by the UIC group use 80%...at 5,655 feet TOC (is) well above the top of the Eagleford (Formation) ...even if you assumed a substantial washout and assumed 50% washout, TOC will still be above the Del Rio Shale and up above the top of the Eagleford (Formation)".¹⁸ Since this well was completed in the Buda Formation and the well was produced, there must be cement above the Del Rio and Buda Formations.

A cast iron bridge plug was set in the bottom of the Winn No. 1 and the well has cement plugs inside the wellbore and outside of the casing that will prevent the well from being an avenue for injected fluids to escape the injection interval. There is a cement plug across the surface casing and the surface casing is set below the BUQW, protecting the BUQW. Mr Johnston disagreed with the Protestant's assessment that plug No. 3 is a failed plug. The plugging record shows that plug No. 3 would not squeeze, but a cement plug was set and tagged at 940 feet. Mr. Johnston stated that

¹⁷ Tr. 151.

¹⁸ Tr. 160.

since they could not squeeze, there must be something on the back side of the pipe, such as cement or dehydrated mud “something that is creating a hydraulic seal so that after you perforate you’re not able to squeeze the cement”.¹⁹ The Plugging Record remarks section also states that the procedure was witnessed by the RRC.

Winn No. 2 Well Construction and Plugging Records

In Mr. Johnston’s opinion, the Winn No.2 does not present a problem because the well does not penetrate the confining interval or the proposed disposal interval. Plugging records show that a plug was not set above the top of perforations in the well. However, the TD of this well is 400 feet above the injection interval. There is also a cement plug across the surface casing and the surface casing is set below the BUQW, protecting the BUQW.

Mr. Johnston does not consider the inclination of the wellbore to be an issue as the inclination is no more than 1.5%, and centralizers were run to ensure the casing is not leaning against the formation. Cementing records show the long string casing was properly cemented with cement circulated to surface. Mr. Johnston did not consider the large volume of cement pumped to circulate cement to surface to be an indicator of the amount of washout, merely the amount of cement pumped. In Mr. Johnston’s opinion, a caliper log is required to determine the amount of washout. In addressing the Protestant’s concern that both the Winn No. 1 and No. 2 are perforated at the same depth, Mr. Johnston stated that the structural cross-section showed that there is only 14 feet of structural difference between the Winn Nos. 1 and 2, so it’s possible that both wells were perforated at the same depth.²⁰

EXAMINERS’ OPINION

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

¹⁹ Tr. 174.

²⁰ Tr. 165.

- (4) that the applicant has made a satisfactory showing of financial responsibility if required by Section 27.073.

In the Examiners' opinion, the Applicant has adequately demonstrated that both the Asherton Nos. 1 and 2 meet these four requirements.

Public Interest

Pursuant to Texas Water Code § 27.051(d), in determining whether the proposed application demonstrates a public interest, several factors may be considered, which include: whether there is a practical, economic, and feasible alternative to an injection well reasonably available; compliance history; as well as other considerations raised by the Commission in consideration of the application.²¹ The Asherton Nos. 1 and 2 have previously been granted authority by the Commission to inject fluids into the Olmos Formation. In the Examiners' opinion, approving the current applications authorizing the Asherton Nos. 1 and 2 to inject fluids in the Georgetown, Edwards, and Glen Rose Formations is in the public interest. The evidence in the record shows that there has been an increase in the number of drilling permits issued in Dimmit County in recent years targeting the Briscoe Ranch (Eagleford) Field. A large percentage of these wells are horizontal completions with hydraulic fracturing stimulation treatments requiring large fluid volumes. Large volumes of fluid are recovered from these wells during the initial stages of flowback.

There are only two active, non-private, commercial disposal wells within a 10-mile radius of the Asherton Nos. 1 and 2. One of these two wells is permitted in the Olmos Formation, a formation with a limited disposal capacity. In addition, nine of the ten active, commercial disposal wells within a ten mile radius of the Asherton Nos. 1 and 2 are permitted in the Olmos Formation.

One of the Applicant's witnesses had first-hand experience operating the Caterina Saltwater disposal well and testified that injection into the Olmos Formation at the facility would cease when the maximum permitted surface injection pressure was reached. In addition, wait times, in excess of five hours, were observed at the facility.

Monthly injection volumes and maximum injection pressures reported to the Commission for the only well within ten miles permitted to inject into the Glen Rose Formation show that injection into this formation is not injection pressure-limited. The Protestant did not rebut the Applicant's evidence and testimony and did not submit any contradicting evidence to show that additional disposal capacity is not needed in this area.

²¹ The "public interest" finding required by Texas Water Code 27.051(b) is limited to matters related to oil and gas production, and does not include issues such as traffic safety and road conditions.

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

In the Examiners' opinion, the proposed use or installation of the injection well will not endanger or injure any oil, gas, or other mineral formation. The applications for the Asherton Nos. 1 and 2 are requesting to inject fluids into an interval from 7,050 feet to 9,500 feet into the Georgetown, Edwards, and Glen Rose Formations. The productive formations within two miles of the proposed Asherton Nos. 1 and 2 are the Olmos Formation at a depth of 3,400 feet, the Eagleford Formation, at a depth of 6,230 feet, and the Buda Formation at a depth of 6,534 feet. Therefore, fluids will be injected into non-productive formations that are deeper than the productive formations in the nearby area. The Del Rio Formation is a shale interval approximately 160 feet in thickness at the proposed Asherton Nos. 1 and 2 locations which will act as an impervious interval to keep injected fluids confined to the disposal interval.

There are no existing wellbores that penetrate the requested disposal interval with a one-quarter mile or a one-half mile radius of the Asherton Nos. 1 and 2. The Protestant was concerned that the Winn No. 1 may not be properly cemented and plugged. The Applicant's evidence shows the Winn No. 1 was plugged back to a depth of 6,800 feet, long string casing was set to a depth of 6,970 feet, and the calculated TOC of cement is at least 1,315 feet, using a washout factor of 20%.²² The plugging report for the Winn No. 1 states that Commission staff witnessed the plugging operation. In the Examiners' opinion, this well is plugged in a manner that will not act as a conduit for injected fluids to escape the permitted disposal interval.

The Asherton Nos 1 and 2 will be drilled, cased and cemented to meet the requirements of Statewide Rule 13. Each well will have 10.75-inch surface casing set to a depth of 1,100 feet and cemented with cement circulated to surface. Long string casing will be set at a depth of 9,500 feet. A multi-stage cementing tool will be set at 7,050 feet and cement will be circulated behind the long string casing with a planned top of cement (TOC) at 2,850 feet. Tubing will be run inside the long string casing and a packer will be set at a depth of 6,950 feet.

Ground and Surface Fresh Water Adequately Protected From Pollution

In the Examiners' opinion, the proposed installation and use of the Asherton Nos. 1 and 2 ensures that both ground and surface fresh water will be adequately protected from pollution. The GAU identified the BUQW at a depth of 1,000 feet at the proposed location of both the Asherton Nos. 1 and 2. The proposed well construction plan for each of the two wells is identical, and will protect the BUQW. The wells have not been drilled yet, but the surface casing will be set to a depth of 1,100 feet and cemented in place with cement circulated to surface. Long string casing will be set at a depth of 9,500 feet. A multi-stage cementing tool will be set at 7,050 feet and cement will

²² A factor of 20% for inland wells is used by Commission staff in verifying cement top calculations.
<http://www.rrc.state.tx.us/oil-gas/publications-and-notice/manuals/injectiondisposal-well-manual/summary-of-standards-and-procedures/technical-review/>

be circulated behind the long string casing with a planned TOC at 2,850 feet. Tubing will be run inside the long string casing and a packer will be set at a depth of 6,950 feet.

Injected fluids will be confined to the permitted disposal interval from 7,050 feet to 9,500 feet in the Georgetown, Edwards, and Glen Rose Formations. The Del Rio Formation located above the Georgetown Formation will act as an impervious layer to prevent injected fluids from migrating above the permitted disposal interval. As described in the previous section, no existing wellbores penetrate the proposed injection interval. The Winn No. 1 did partially penetrate the confining formation (Del Rio Formation). However, the entire extent of the Del Rio Formation was not penetrated, and this well was plugged back to 6,804 feet and the well is currently plugged. The plugging operation was witnessed by RRC staff. This well will not act as a conduit for injected fluids to escape the permitted disposal interval.

The Protestant raised a concern that there are no cementing records for the well with the API No. 127-22417. The Applicant showed that the Winn No. 2 had been previously assigned API No. 127-33253 and is now identified by API No. 127-22417. This wellbore was properly cased and cemented to protect the BUQW. The Winn No. 2 was plugged in a manner that ensures the well will not act as a conduit for injected fluids to escape the permitted disposal interval.

Financial Assurance

The Examiners conclude that the Applicant has made a satisfactory showing of financial responsibility, as required by Section 27.073 of the Texas Water Code. The Applicant has a current approved Form P-5 (Organization Report) and a \$25,000 letter of credit on file with the Commission for financial assurance. There is no evidence to suggest any current active enforcement matters involving the Applicant.

FINDINGS OF FACT

1. At least 10 days' notice of the hearing was provided to the owner of the surface tract, to the Dimmit County Clerk, to all offset operators within one-half mile of the proposed commercial disposal wells, and to the Wintergarden Groundwater Conservation District.
2. Notice of the original permit amendment application and the revised permit amendment application was mailed to the county clerk, to the owner of the drill site surface tract, and to offset operators located within one-half mile of either the Asherton SWD Lease Well Nos. 1 or 2.
3. Notice of the Applicant's permit amendment application was published in the *Carrizo Springs Javelin*, a newspaper of general circulation in Dimmit County,

Texas, on November 22, 2013. The permit amendment was re-published in the *Carrizo Springs Javelin* on Wednesday, March 5, 2014.

4. In Final Order No. 01-0269762, commercial disposal authority pursuant to Statewide Rule 46 was granted for the Asherton SWD Lease, Well Nos. 1 and 2, effective July 11, 2011.
5. On January 29, 2013, ownership of the Asherton SWD Lease, Well Nos. 1 and 2 permits was transferred from Sandy SWD to 714596 and 714605 SWD Ltd.
6. 714596 & 714602 SWD LP Ltd. seeks a permit amendment authorizing commercial disposal operations pursuant to 16 Tex. Admin. Code § 3.9 for the Asherton SWD Lease, Well Nos. 1 and 2, Thirteen, W. (Olmos 3450) Field, Gonzales County, Texas.
7. The use or installation of the injection well is in the public interest.
 - a. The Asherton Lease SWD Nos. 1 and 2 are currently permitted for injection into the Olmos Formation which has a limited disposal capacity in the area;
 - b. A nearby operator, Caterina Salt Water Disposal, is permitted in the Olmos Formation and has experienced problems due to reaching the maximum injection pressure which has resulted in wait times as great as 5 hours;
 - c. There are only two non-private commercial disposal wells within a 10-mile radius;
 - d. The only commercial disposal well permitted in the Glen Rose Formation is able to inject fluids without reaching the maximum injection pressure; and
 - e. Permitting the Asherton SWD Lease Well Nos. 1 and 2 for injection in the Georgetown, Edwards, and Glen Rose Formations as opposed to the Olmos Formation will increase the disposal capacity in the area.
8. The use or installation of the disposal well will not endanger or injure oil, gas, or other mineral formation.
 - a. Injected fluids will be confined to the Georgetown, Edwards and Glen Rose Formations between 7,050 feet and 9,500 feet;
 - b. The productive formations in the area are the Olmos, Eagleford and Buda Formations, all of which are located above the disposal interval;

- c. The Del Rio Formation, 160 feet thick at the proposed location of the Asherton SWD Lease, Well Nos. 1 and 2, will act as an impervious barrier between the disposal interval and the productive formations to confine injected fluids to the disposal interval; and
 - d. No wellbores within a one-quarter mile, or one-half mile radius penetrate the disposal interval.
- 9. With proper safeguards, both ground and surface fresh water can be adequately protected from pollution.
 - a. The Commission's GAU recommends that useable-quality water be protected from the land surface to a depth of 1,000 feet. In conformity with this recommendation:
 - i. Each well will set 10.75-inch surface casing to a depth of 1,100 feet and will be cemented with cement circulated to surface;
 - ii. 7-inch long string casing will be set at a depth of 9,500 feet;
 - iii. A multi-stage cementing tool will be set at 7,050 feet and cement will be circulated behind the long string casing with a planned top of cement at 2,850 feet; and
 - iv. Tubing will be run inside the long string casing and a packer will be set at a depth of 6,950 feet.
 - b. Injected fluids will be confined to the Georgetown, Edwards and Glen Rose Formations with a permitted interval from 7,050 feet to 9,500 feet;
 - c. There are no wellbores within a one-quarter mile or one-half mile radius of the proposed disposal well locations that penetrate the proposed disposal interval; and
 - d. The Winn Lease, Well Nos. 1 and 2 are located within a one-quarter mile radius of the Asherton SWD Lease Well Nos. 1 and 2:
 - i. The Winn Lease Well Nos. 1 and 2 were cased and cemented in a manner that protected the BUQW;
 - ii. The Winn Lease Well Nos. 1 and 2 were plugged in a manner that ensures the wells will not act as conduits for fluids injected into the

Asherton SWD Lease, Well Nos. 1 and 2 to escape the permitted intervals.

- e. The maximum surface injection pressure for each well will be 3,435 psi; and
- f. The maximum daily injection volume for each well will be 25,000 bpd.

CONCLUSIONS OF LAW

1. All notice requirements have been satisfied. 16 TEX. ADMIN. CODE § 3.9.
2. Resolution of the subject application is a matter committed to the jurisdiction of the Railroad Commission of Texas. TEX. NAT. RES. CODE § 81.051.
3. The proposed fluid disposal operations will not cause the pollution of freshwater strata and will not endanger oil, gas or geothermal resources. 16 TEX. ADMIN. CODE § 3.9.
4. The installation and use of the proposed commercial disposal well is in the public interest. Texas Water Code § 27.051(b)(1).
5. 714596 & 714602 SWD LP Ltd. has met its burden of proof and its application 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 714596 & 714602 SWD LP Ltd. for commercial disposal authority pursuant to Statewide Rule 9 for the for the Asherton SWD Lease, Well Nos. 1 and 2, Thirteen, W. (Olmos 3450) Field, Gonzales County, Texas, be approved, as set out in the attached Final Orders.

Respectfully submitted,



Karl Caldwell
Technical Examiner



Marshall Enquist
Legal Examiner