



RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

OIL AND GAS DOCKET NO. 08-0321458

APPLICATION OF UL WATER MIDSTREAM LLC (875613) PURSUANT TO STATEWIDE RULE 46 FOR A PERMIT TO INJECT FLUID INTO A RESERVOIR PRODUCTIVE OF OIL AND GAS FOR THE JACKIE SHERRILL 6 SWD LEASE, WELL NO. 1, WAR-WINK (DELAWARE) FIELD, WINKLER COUNTY, TEXAS

OIL AND GAS DOCKET NO. 08-0322180

APPLICATION OF UL WATER MIDSTREAM LLC (875613) PURSUANT TO STATEWIDE RULE 46 FOR A PERMIT TO INJECT FLUID INTO A RESERVOIR PRODUCTIVE OF OIL AND GAS FOR THE E KING GILL 2 SWD LEASE, WELL NO. 1, WAR-WINK (DELAWARE) FIELD, WARD COUNTY, TEXAS

PROPOSAL FOR DECISION

HEARD BY: John L. Moore – Technical Examiner
Kristi M. Reeve – Administrative Law Judge

PROCEDURAL HISTORY

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APPEARANCES:

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For Protestant, Oasis Petroleum Permian LLC

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I. Case Summary

UL Water Midstream LLC (Operator No. 875613) ("ULWM" or "Applicant") originally filed four (4) applications for injection disposal permits pursuant to Statewide Rule 46¹ in the Delaware Basin. Two (2) of the disposal applications were withdrawn by ULWM. The remaining two disposal applications are protested by Oasis Petroleum Permian LLC, ("Oasis" or "Protestant") who owns the mineral interests underlying and offset to the two (2) proposed disposal injection sites. The disposal injection applications were consolidated into a single hearing as they share common facts, parties and legal issues.

Oil and Gas Docket No. 08-0321458 is ULMW's application for the proposed Jackie Sherrill 6 SWD, Well No. 1, located approximately 12.4 miles northwest of Pyote, Texas in Winkler County. The Jackie Sherrill 6 SWD will be a newly drilled and completed injection well with a total depth of 7,600 feet. The proposed injection formation is the Delaware Mountain Group ("Delaware"), comprised of the Bell Canyon, the Cherry Canyon, and Brushy Canyon segments. ULMW requests the disposal permit provide a Maximum Daily Injection Rate of 25,000 barrels of fluid per day ("bpd") with a Maximum Surface Injection Pressure of 2,507 pounds per square inch gauge ("psig"). Per the request of Railroad Commission of Texas ("Commission") staff, ULWM has agreed to special conditions of the disposal injection permit including conducting an injectivity test prior to commencing injection operations to determine the rate and pressure at which fluids can be pumped into the injection zone. ULMW has also agreed as a permit condition to not perforate in the Delaware formation below the horizon expected to occur at 6,880 feet or below 407 feet above the top of the Brushy Canyon segment of the Delaware formation.

Oil and Gas Docket No. 08-0322180 is ULMW's application for the proposed E King Gill 2 SWD, Well No. 1, located approximately 8.6 miles northwest of Pyote, Texas in Ward County. The E King Gill 2 SWD will be a newly drilled and completed injection well with a total depth of 8,000 feet. The proposed injection formation is the Delaware, with an injection interval from 5,077 feet to 8,000 feet. ULMW requests the disposal permit provide a Maximum Daily Injection Rate of 25,000 bpd with a Maximum Surface Injection Pressure of 1,269 psig. Per the request of Commission staff, ULWM has agreed to special conditions of the permit including collecting and maintaining daily records of injected volumes and maximum injection pressures, a step-rate test to determine the reservoir fracture initiation pressure prior to initial injection, and an initial static bottom-hole pressure test to quantify reservoir pressure prior to initial injection. ULMW has also agreed as a permit condition to not perforate in the Delaware formation below the horizon expected to occur at 7,568 feet or below 290 feet below the top of the Brushy Canyon segment of the Delaware formation.

ULMW proposes to drill and complete the two disposal injection wells such that useable quality ground water is protected and the injected fluids are confined to the

¹ Refers to 16 Tex. Admin. Code § 3.46.

injection interval. Injection fluids will be delivered to each of the proposed disposal injection wells via pipelines.

Oasis contends that operation of the two proposed disposal wells would potentially pressure-up the Delaware Mountain Group formation and thereby interfere with its plans to drill and develop the reserves in the relatively deeper Wolfcamp and Bone Springs formations on their leaseholds. Oasis asserts that the increased pressure in the Delaware may cause drilling problems resulting in an additional casing string costing \$100,000 to \$350,000 per wellbore in the vicinity of the proposed disposal wells. Oasis operates two (2) disposal injection wells injecting into the Delaware within one mile of ULWM's proposed disposal injection wells and has obtained several other drilling permits in the vicinity targeting the Delaware as a disposal injection interval.

With proper safeguards, the installation and operation of the two (2) proposed disposal injection wells are in the public interest, the injected fluids will not endanger or injure any oil, gas or mineral formation, the injected fluids will be constrained to the injection interval and useable groundwater will be protected. Based on the evidence presented in the hearing, the Technical Examiner and Administrative Law Judge ("Examiners") recommend approval of the applications with the respective injection permits containing the special conditions issued by Commission staff and the respective limitations on the depth of the injection perforations within the Delaware formation.

II. Jurisdiction and Notice

Sections 81.051 and 81.052 of the Texas Natural Resources Code provide the Railroad Commission of Texas ("Commission") with jurisdiction over all persons owning or engaged in drilling or operating oil or gas wells in Texas and the authority to adopt all necessary rules for governing and regulating persons and their operations under the jurisdiction of the Commission.

Section 27.031 of the Texas Water Code states that no person may continue using a disposal well or begin drilling a disposal well or converting an existing well into a disposal well to dispose of oil and gas waste without first obtaining a permit from the Commission.

Statewide Rule 46 requires that notice of the application for a disposal injection permit be sent to the surface owner of the proposed injection well site, to operators of wells within a ½ mile radius of the disposal inject well site, and to the county clerk. Notice of the disposal injection application for the Jackie Sherrill 6 SWD, Well No. 1, was sent to the surface owner, University of Texas ("UT"), to the offset operators: Oasis, Energen Resources Corporation, and Diamondback E & P, and to the county clerk of Winkler County, Shethelia Reed.² Notice of the disposal injection application for the E. King Gill 2 SWD, Well No. 1, was sent to the surface owner, UT, to the offset operator, Oasis, and

² Applicant's Exhibit 7.

to the county clerk of Ward County, Denise Valles.³ Both of the proposed disposal injection permit applications are protested by Oasis.

ULWM published a notice of application⁴ for the Jackie Sherrill 6 SWD, Well No. 1, in The Winkler County News on May 30, 2019, and a notice of application⁵ in The Monahans News on May 23, 2019, for the E. King Gill 2 SWD, Well No. 1.

On September 25, 2019, the Hearings Division of the Commission sent a Joint Notice of Prehearing Conference ("Notice") via first-class mail to Applicant and all affected persons, identified above, setting a pre-hearing conference date of October 15, 2019.⁶ A Notice of Opportunity for Hearing was issued on October 28, 2019, to the county clerk of Winkler County correcting the county for Oil and Gas Docket No. 08-0321458.⁷ The Notice contains (1) a statement of the time, place, and nature of the pre-hearing conference; (2) a statement of the legal authority and jurisdiction under which the hearing is to be held; (3) a reference to the particular sections of the statutes and rules involved; and (4) a short and plain statement of the matters asserted.⁸ The pre-hearing conference was held on October 15, 2019. Both Applicant and Protestant appeared and participated. At the pre-hearing conference, the parties agreed to commence the hearing on the merits on December 4, 2019. The hearing on the merits was held on December 4, 2019. Applicant and Protestant attended and participated in the hearing on the merits. Consequently, all parties received more than 10 days' notice of the hearings and an opportunity for hearing.

III. Applicable Law

The Railroad Commission may grant an application for a disposal well permit under Texas Water Code § 27.051(b) and may issue a permit if it finds:

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

³ Applicant's Exhibit 21.

⁴ Applicant's Exhibit 8.

⁵ Applicant's Exhibit 22.

⁶ Joint Notice of Pre-Hearing Conference issued September 25, 2019.

⁷ Notice of Opportunity for Hearing issued October 28, 2019.

⁸ Tex. Gov't Code §§ 2001.051, .052; 16 Tex. Admin. Code §§ 1.41, 1.42, 1.45, 3.46.

IV. Discussion of the Evidence⁹

A. The Application for the Jackie Sherrill 6 SWD, Well No. 1

1. Form H-1 and H-1A¹⁰

The following information is taken from ULWM's Form H-1, *Application to Inject Fluid into a Reservoir Productive of Oil or Gas* ("H-1"), and H-1A, *Injection Well Data* ("H-1A") submitted to the Commission on May 9, 2019.

a. Field and Lease Name (H-1)

The field name identified on line 6 is the War-Wink (Delaware) Field (95122400). The lease name identified on line 8 is the Jackie Sherrill 6 SWD.

b. Disposal Formation (H-1)

The name of the disposal formation identified on line 11 is the Delaware.

c. Type of injection Fluid (H-1)

The type of injection fluid identified on line 25 is RCRA Exempt Waste and Flowback Fluids.

d. Injection Well Data (H-1A)

The disposal injection well is proposed on line 11 to be drilled to a depth of 7,600 feet. The injection interval is stated on line 23 to be 5,019 feet to 7,600 feet; i.e. below the injection tubing. The maximum daily injection volume is stated on line 28 to be 25,000 bpd. The estimated average daily injection volume is stated on line 29 to be 20,000 bpd. The maximum surface injection pressure 2,507 psig.

e. Well casing and completion program (H-1A)

The Jackie Sherrill 6 SWD, Well No. 1, is proposed to be completed with 9 5/8-inch surface casing to a depth of 1,175 feet with 450 sacks of cement circulated to surface. The 7-inch long string of casing is set from surface to a depth of 7,600 feet with 645 sacks of cement circulated to surface. The 5-inch injection tubing is run from surface to a depth of 4,915 feet with an injection tubing packer set at 4,915 feet.

The proposed casing and cementing program for the Jackie Sherrill 6 SWD, Well 1, will prevent the wellbore from acting as a conduit for the migration of injected fluids

⁹ The hearing transcript in this case is referred to as "Page [pages], line [lines]."

¹⁰ Applicant's Exhibit 5.

from the injection zone, and protect underground sources of drinking water in accordance with the Jackie Sherrill GAU Letter, referenced herein.

2. Ground Advisory Unit

The Ground Advisory Unit letter issued April 30, 2019¹¹ (the "Jackie Sherrill GAU Letter") states "the interval from the land surface to the base of Allurosa, which is estimated to occur at a depth of 225, must be protected." The Jackie Sherrill GAU Letter further states "the base of the underground sources of drinking water is estimated to occur at a depth of 1,125 feet at the site of the referenced well."

3. Seismic Information

A review of the University of Texas Bureau of Economic Geology seismic data¹² shows no earthquakes greater than 2.0 have been reported within 100 square miles (a 9.08 km radius circle) of the Jackie Sherrill 6 SWD, Well No. 1 location.

4. Half Mile Review of Plugged and Abandoned Wellbores

The following plugged and abandoned wellbores are located within a one-half mile radius of the Jackie Sherrill 6 SWD, Well No. 1:

API	Status	Operator	Well Name	Well No.	TVD (ft.)
4249532665	Dry Hole	Chevron USA Inc.	University 37-20 "B"	1	7,350
4249520132	Plugged-Oil	Shell Western E&P	University -37-	3	5,187
4249520152	Dry Hole	Shell Western E&P	University -37-	4	5,320
4249520245	Plugged-Oil	Shell Western E&P	University -37-	2	5,200

Applicant submitted Commission Form W-3, *Plugging Report*, and Form W-15, *Cementing Report*, and casing/cement plug diagrams for each of the dry hole wellbores. For each of the plugged oil wells, Applicant submitted Commission Form W-2, *Completion Report*, affidavits of cementing, and casing/cementing diagrams.¹³

Each of the plugged and abandoned wellbores within a one-half radius are shown to be cased and plugged such that injected fluids from the Jackie Sherrill 6 SWD, Well No. 1, will not migrate from the proposed injection zone in these wellbores.

¹¹ Applicant's Exhibit 6.

¹² Applicant's Exhibits 9 and 10.

¹³ Applicant's Exhibits 13 – 16A, 38.

5. Special Permit Conditions

The Commission issued a draft permit to inject fluid into a reservoir productive of oil and gas for the Jackie Sherrill 6 SWD, Well No. 1.¹⁴ A special condition of the draft permit is an injectivity test “to determine the rate and pressure at which fluids can be pumped into the injection zone.” ULMW has also agreed as a permit condition to not perforate below the horizon expected to occur at 6,880 feet in the wellbore or 407 feet above the top of the Brushy Canyon segment of the Delaware formation.^{15, 16}

B. The Application for the E Gill King 2 SWD, Well No. 1

1. Form H-1 and H-1A¹⁷

The following information is taken from ULWM's Form H-1, *Application to Inject Fluid into a Reservoir Productive of Oil or Gas* (“H-1”), and H-1A, *Injection Well Data* (“H-1A”) submitted to the Commission on May 9, 2019.

a. Field and Lease Name (H-1)

The field name identified on line 6 is the War-Wink (Delaware) Field (95122400). The lease name identified on line 8 is the E Gill King 2 SWD.

b. Disposal Formation (H-1)

The name of the disposal formation identified on line 11 is the Delaware.

c. Type of injection Fluid (H-1)

The type of injection fluid identified on line 25 is RCRA Exempt Waste and Flowback Fluids.

d. Injection Well Data (H-1A)

The disposal injection well is proposed on line 11 to be drilled to a depth of 8,000 feet. The injection interval is stated on line 23 to be 5,077 feet to 8,000 feet; i.e. below the injection tubing. The maximum daily injection volume is stated on line 28 to be 25,000 bpd. The estimated average daily injection volume is stated on line 29 to be 20,000 bpd. The maximum surface injection pressure 1,269 psig.

¹⁴ Draft permit to Inject Fluid into a Reservoir productive of Oil and Gas, issued for the Jackie Sherrill 6 SWD.

¹⁵ Page 133, lines 10 – 17.

¹⁶ Applicant's Exhibit 12.

¹⁷ Applicant's Exhibit 25.

e. Well casing and completion program (H-1A)

The E Gill King 2 SWD, Well No. 1, is proposed to be completed with 9 5/8-inch surface casing to a depth of 1,250 feet with 450 sacks of cement circulated to surface. The 7-inch long string of casing is set from surface to a depth of 8,000 feet with 680 sacks of cement circulated to surface. The 5-inch injection tubing is run from surface to a depth of 4,977 feet with an injection tubing packer set at 4,977 feet.

The proposed casing and cementing program for the E King Gill 2 SWD, Well 1, will prevent the wellbore from acting as a conduit for the migration of injected fluids from the injection zone, and protect underground sources of drinking water in accordance with the E Gill King GAU Letter, referenced herein.

2. Ground Advisory Unit

The Ground Advisory Letter issued April 30, 2019¹⁸ (the "E Gill King GAU Letter") states "the interval from the land surface to a depth of 325, must be protected." The E Gill King GAU Letter further states "the base of the underground sources of drinking water is estimated to occur at a depth of 1,200 feet at the site of the referenced well."

3. Seismic Information

A review of the University of Texas Bureau of Economic Geology seismic data¹⁹ shows no earthquakes greater than 2.0 have been reported within 100 square miles (a 9.08 km radius circle) of the E Gill King 2 SWD, Well No. 1 location. The initial review of seismic data indicated a seismic event of 2.1 within the 9.08 km radius of the proposed injection well, which triggered a seismic review by the Commission and more stringent injection permit requirements. The seismic database has since been updated with the subject seismic event now registered as a 1.9, however ULWM has accepted the special conditions stated in the draft injection permit which were added prior to the seismic database being updated.

4. Half Mile Review of Plugged and Abandoned Wellbores

The following plugged and abandoned wellbores are located within a one-half mile radius of the E Gill King 2 SWD, Well No. 1:

API	Status	Operator	Well Name	Well No.	TVD (ft.)
4247531566	Plugged-Oil	Kerr McGee Oil & Gas Onshore LP	State -XV-	1	13,177
4247531691	Plugged-Oil	Chevron USA Inc.	State -XV-	2	6,375

¹⁸ Applicant's Exhibit 20.

¹⁹ Applicant's Exhibit 23 and 24.

For each of the plugged oil wells, Applicant submitted Commission Form W-2 and/or G-1, *Completion Report*, Form W-3, *Plugging Report*, Form W-15, *Cementing Report* affidavits of cementing, and casing/cementing diagrams.²⁰

Each of the plugged and abandoned wellbores within a one-half radius are shown to be cased and plugged such that injected fluids from the E Gill King 2 SWD, Well No. 1, will not migrate from the proposed injection zone in these wellbores.

5. Special Permit Conditions

The Commission issued a draft permit to inject fluid into a reservoir productive of oil and gas for the E Gill King 2 SWD, Well No. 1.²¹ The special conditions of the draft permit include:

- The operator shall collect and maintain daily records of injected volumes and maximum injection pressure,
- A step-rate test to determine the reservoir fracture initiation pressure prior to initial injection, and
- An initial static bottom-hole pressure test to quantify reservoir pressure prior to initial injection.

ULMW has also agreed as a permit condition to not perforate below the horizon expected to occur at 7,568 feet in the wellbore²² or below 290 feet below the top of the Brushy Canyon segment of the Delaware formation.²³

C. Applicant's Case

Mr. David Grounds, ULWM's Director of Health, Safety, Environment and Regulatory, testified regarding the organization of ULWM and the contractual relationship between ULWM and University Lands. ULWM is a partnership between Layne Water Midstream and H2O Midstream. ULWM has entered into a ten-year contract with University Lands to be a preferred provider of water on 167,000 acres of University Lands in Ward and Winkler Counties.²⁴ Mr. Grounds expressed that the two subject disposal applications were part of ULMW fulfilling its commitment with University Lands. Mr. Grounds sponsored the Commission Form P-5, demonstrating a cash deposit of \$25,000 on behalf of ULWM.

Mr. Grounds acknowledged the concern by Oasis' that the two subject disposal wells may potentially cause Oasis some difficulties when they are drilling and completing across the proposed injection zone to get to the Wolfcamp formation.²⁵ Mr. Grounds

²⁰ Applicant's Exhibits 28 – 29A, 38.

²¹ Draft permit to Inject Fluid into a Reservoir productive of Oil and Gas, issued for the E Gill King 2 SWD.

²² Page 133, lines 17 – 20.

²³ Applicant's Exhibit 27.

²⁴ Page 14, lines 22-25. Page 15, line 1.

²⁵ Page 16, line 20.

stated that ULWM is open to discussions to work with Oasis during their drilling operation to minimize the impact of disposal injection from ULMW's proposed disposal wells.²⁶

Mr. Grounds testified that he was aware that Oasis "owned the lease" to the mineral rights underlying the tracts of the two ULMW proposed disposal injection wells.²⁷ Mr. Grounds acknowledged that all of the injected fluids would be solely piped to each of the disposal injection sites.²⁸ Mr. Grounds further acknowledged that even though ULMW will be charging third-parties for injection disposal services, the injection wells would not be classified by the Commission as commercial because the injection fluids are not trucked or hauled to the injection sites.²⁹

Ms. Ramona Hovey, consulting Sr. Reservoir Engineer at Lonquist & Co. LLC, testified regarding the applications filed for each of the two proposed disposal injection wells, the Commission Form H1 and Form H1A, and for each of the two proposed disposal injection wells, the seismic data within a 9.08 mile radius, and the completion and plugging reports filed with the Commission for plugged and abandoned wells within a one-half mile radius. The contents of the exhibits relating to the Commission Form H-1 and Form H-1A, the seismic data, and the completion and plugging reports for the respective plugged and abandoned wells are represented in Section V.B., above, for each of the proposed disposal injection wells.

With respect to the Jackie Sherrill 6 SWD, Well No. 1, Ms. Hovey testified that the casing and cementing plan she prepared and submitted for the proposed disposal injection well "meets and exceeds the requirements to protect the fresh water."³⁰ Referring to the ability of the casing and cement design confining the injected fluids to the injection zone in the proposed disposal injection well, Ms. Hovey testified "I do believe it will keep that in the requested zone."³¹

Ms. Hovey stated that based on her review of United States Geological Survey seismic data, "there have been no new seismic events"³² over a magnitude of 2.0 since 1973. Ms. Hovey reiterated in her testimony that ULWM agreed to conduct an injectivity test as a permit condition for this disposal injection well.³³

Ms. Hovey opined regarding her review of the four (4) plugged and abandoned wells within a one-half mile of the proposed Jackie Sherrill 6 SWD, Well No. 1.³⁴ Based

²⁶ Page 16, lines 21 – 25. Page 17, lines 1 – 4.

²⁷ Page 135, line 10.

²⁸ Page 137, line 20.

²⁹ Page 138, lines 5 – 13.

³⁰ Page 30, lines 1, 2.

³¹ Page 41, lines 3, 4.

³² Page 33, line 25.

³³ Page 35, line 17. Ms. Hovey incorrectly identified this in testimony as a Step Rate Test. See Form H-1 RAD Response – Tracking No. 50800, dated May 31, 2019.

³⁴ See Section V.A.4. Half Mile Review of Plugged and Abandoned Wells for a listing and description of these wells.

on her review of Commission completion, cementing and plugging reports for each respective plugged and abandoned well with a one-half mile radius of the Jackie Sherrill 6 SWD, Well 1, Ms. Hovey attested that these plugged and abandoned well bores do not represent a conduit for the migration of injected fluids out of the proposed injection zone of the Jackie Sherrill 6 SWD, Well 1.³⁵

Mr. Stephen Pattee, consulting engineer and Vice President of Lonquist & Co. LLC, testified and sponsored an exhibit correcting the cement plugging calculation in the Shell Western E & P, University -37-, Well No. 3, one of the plugged and abandoned wells within a half mile radius of the Jackie Sherrill 6 SWD, Well No.1.³⁶

Ms. Hovey sponsored a map and tabulation demonstrating Oasis' well activity within 1.7 miles of the proposed Jackie Sherrill 6 SWD, Well No. 1.³⁷ Notably, Oasis has one active disposal well approximately 4,500 feet from ULWM's proposed disposal injection well, the UL 20 Sugarloaf 1W (API 4249533915), which injects into the Delaware formation at a maximum daily injection rate of 20,000 bpd.³⁸ The map and tabulation indicate that Oasis has drilling permits for five (5) additional injection wells. The Oasis UL Sugarloaf 20-37 #2W is located approximately 1,600 feet from the proposed Jackie Sherrill 6 SWD, Well No. 1, but does not have an injection permit.

The tabulation associated with the map exhibit³⁹ indicates that Oasis has seven (7) active Wolfcamp wells within 1.5 miles of the Jackie Sherrill 6 SWD, Well 1. The tabulation also indicates that Oasis has an additional six (6) Wolfcamp wells within 1.6 miles of the Jackie Sherrill 6 SWD, Well 1, which have been spudded, and six (6) more Wolfcamp wells within 2,600 feet to 1.7 miles having obtained drilling permits.

Regarding the E Gill King 2 SWD, Well No. 1, Ms. Hovey testified about the casing and cementing plan she prepared and submitted for the proposed disposal injection well, "My opinion is that this design will protect the water-bearing sands for this well."⁴⁰ Referring to the ability of the casing and cement design confining the injected fluids to the injection zone in the proposed disposal injection well, Ms. Hovey stated "It is my opinion that this design will contain the injected fluids within the zone – injection interval requested."⁴¹

Ms. Hovey opined that the original seismic data review indicated a seismic event of 2.1 within the 9.08 Km radius of the E Gill King 2 SWD, Well No. 1. The Commission then issued special permit conditions in the draft injection permit including lowering the injection pressure gradient to 0.25 psig per foot calculated to the top of the proposed injection interval; i.e. 1,269 psig. ULWM agreed to the reduced maximum injection

³⁵ Page 43, lines 22, 23. Page 89, line 23. Page 91, line 13. Page 99, line 19

³⁶ Applicant's Exhibit 32A.

³⁷ Applicant's Exhibit 17.

³⁸ Applicant's Exhibit 18.

³⁹ Applicant's Exhibit 17.

⁴⁰ Page 59, lines 8, 9.

⁴¹ Page 69, lines 17 – 19.

pressure and circulated the application to the "affected" parties. A later review of the seismic data indicated that the TexNet database had been updated to show the seismic event as being 1.9, which is below the 2.0 threshold to trigger a seismic review by the Commission. Nevertheless, in the interest of expediency ULWM kept the 1,269 psig maximum injection pressure in its application to avoid re-noticing the disposal injection application.⁴²

Ms. Hovey opined regarding her review of the two (2) plugged and abandoned wells within a one-half mile of the proposed E Gill King 2 SWD, Well No. 1.⁴³ Based on her review of Commission completion, cementing, and plugging reports for each respective plugged and abandoned well with a one-half mile radius of the E Gill King SWD, Well 1, Ms. Hovey testified that these plugged and abandoned well bores do not represent a conduit for the migration of injected fluids out of the proposed injection zone of the E Gill King SWD, Well 1.⁴⁴

Ms. Hovey sponsored a map and tabulation demonstrating Oasis well activity within 1.7 miles of the proposed E Gill King 2 SWD, Well No. 1.⁴⁵ Notably, Oasis has one active disposal well approximately one mile from ULWM's proposed disposal injection well, the UL Wapati 18-21 (API 4247537670), which is permitted to inject into the Delaware formation at a maximum daily injection rate of 25,000 bpd and at a maximum surface injection pressure of 1,248 psig.⁴⁶ The map and tabulation indicate that Oasis has drilling permits for five (5) additional injection wells within 1.7 miles of the E Gill King 2 SWD, Well No. 1. The closest of these additional injection sites is the Oasis UL Kerwin 18-12 2W which is located approximately 1.2 miles from the proposed E Gill King 2 SWD, Well No. 1, but does not have an injection permit. The tabulation associated with the map exhibit⁴⁷ indicates that Oasis has seven (7) active Wolfcamp wells within 1.8 miles of the E King Gill 2, Well 1.

Mr. Parker Jessee, consulting geologist at Lonquist & Co. LLC, testified regarding his two prepared geologic cross-sections each depicting a representation of the well bore of the Jackie Sherrill 6 SWD, Well 1, or the wellbore of the E Gill King 2 SWD, Well 1, correlated to the well logs of existing offset wells.⁴⁸ Mr. Jessee opined that the Delaware formation is a common target for injection in the Delaware Basin.⁴⁹ Mr. Jessee testified that above the Delaware is the confining anhydrite Castile of the Salado and Castile formations and below the Delaware is the Bone Spring formation.⁵⁰ Mr. Jessee's stated

⁴² Page 65, line 14 – 19.

⁴³ Section V.B.4. Half Mile Review of Plugged and Abandoned Wells for a listing and description of these wells.

⁴⁴ Page 79, lines 2, 3. Page 82, lines 16, 17.

⁴⁵ Applicant's Exhibit 30.

⁴⁶ Applicant's Exhibit 31.

⁴⁷ Applicant's Exhibit 30.

⁴⁸ Applicant's Exhibits 35 and 37.

⁴⁹ Page 109, line 5.

⁵⁰ Page 110, lines 6 - 10.

opinion is that the formations above and below the Delaware are "tight and confining".⁵¹ Mr. Jessee stated that he identified 250 net feet in the lowest portion of the requested injection zone which he considered confining.⁵² Mr. Jessee applied lithology cutoffs of less than fifteen-percent (15%) porosity and less than one (1) millidarcy of permeability to the correlative Delaware formation in the logs of wells offset to the two (2) proposed ULWM disposal injection wells to make his determination that section of the proposed injection interval is confining. Mr. Jessee testified that the top of the 250 feet of confining rock within the proposed injection interval in each of ULWM's proposed disposal wells represents the bottom of perforations for injection activity.

In the hearing ULWM agreed it would not find it adverse if the injection permit for the Jackie Sherrill 6 SWD, Well 1, contained a special condition that the deepest permitted perforation would be 6,880 feet or 407 feet above the top of the Brushy Canyon segment of the Delaware formation as shown on Applicant's Exhibit 12.⁵³ This represents the top of the confining rock as determined by Mr. Jessee. Further, ULWM agreed it would not find it adverse if the injection permit for the E Gill king 2 SWD, Well 1, contained a special condition that the deepest permitted perforation would be 7,568 feet or 290 feet below the top of the Brushy Canyon segment of the Delaware formation as shown on Applicant's Exhibit 27.⁵⁴

Mr. Stephen McNair, President ULWM, testified regarding ULWM agreement with University Lands and the historical discussions between ULWM and Oasis regarding ULWM's disposal injection applications. Mr. McNair opined that the term of the arrangement with University Lands is ten (10) years, and the scope includes full cycle water management; i.e. sourcing, recycling and disposing of water on University Lands. Mr. McNair stated he had no concern about ULWM's legal right to drill and operate the proposed disposal injection wells if the injection permits are granted.⁵⁵ Mr. McNair testified that although Oasis indicated they wanted ULWM to drop its injection permits on Oasis leases, ULWM was willing to work with Oasis while they are drilling and cementing through the injection zone.⁵⁶ Mr. McNair stated "we have three such arrangements"⁵⁷ in the Midland Basin where the San Andres is pressured up. Mr. McNair further testified, "we are woefully short of water handling facilities up to and including disposal wells," in the area of ULWM's two proposed disposal wells.⁵⁸

D. Protestant's Case

Mr. Mike Brown, Oasis' Reservoir and Planning Engineer, testified regarding Oasis' plan to drill and develop the Wolfcamp A reservoir in the vicinity of the Jackie

⁵¹ Page 110, line 110.

⁵² Page 112, line 16 20.

⁵³ Page 133, lines 10 – 17.

⁵⁴ Page 133, lines 17 – 20.

⁵⁵ Page 195, line 3.

⁵⁶ Page 197, line 22.

⁵⁷ Page 197, line 25.

⁵⁸ Page 199, lines 13 – 17.

Sherrill 6 SWD, Well 1, and the Wolfcamp A and Bone Spring 3 in the vicinity of the E Gill King 2 SWD, Well 1.⁵⁹ Mr. Brown stated that Oasis is "concerned that the injection wells would potentially pressure up the Delaware Mountain Group."⁶⁰ Mr. Brown explained that an increased Delaware formation pressure would necessitate Oasis to weight-up the drilling mud to compensate for the increased pressure.⁶¹ As a general opinion, Mr. Brown expressed that some formations cannot hold higher mud weights, resulting in the heavy drilling mud being lost into that formation.⁶²

Mr. Brown related his experience in the Bakken formation where the targeted reservoirs are beneath the Dakota Group, a common formation for injection disposal.⁶³ Mr. Brown designed an extra casing string to preserve the integrity of the wells. Relying on his conversation with an Oasis drilling engineer, Mr. Brown expressed that the estimated cost for an additional casing string is between one-hundred to three-hundred fifty thousand dollars per well.⁶⁴ Mr. Brown stated, "adding further costs to that is problematic for some wells that have questionable economics to start out with."⁶⁵

Mr. Brown affirmed that Oasis has its own Delaware disposal injection wells in the vicinity of the proposed ULMW disposal injection wells.⁶⁶ Mr. Brown confirmed that Oasis has plans for up to twelve injection disposal wells targeting the Delaware formation in the vicinity of ULWM's two proposed disposal injection wells.⁶⁷ Referring to ULWM's two applications, Mr. Brown stated "we would like to have the permits denied in these exact locations, but I think we can work on some alternative locations that better suit both of our needs."⁶⁸

V. Examiners' Analysis

The Examiners' recommend approval ULWM's disposal injection applications for the Jackie Sherrill 6 SWD, Well 1, and for the E Gill King 2 SWD, Well 1, based on the evidence and testimony presented at the hearing. All statutory requirements will be met for the Commission to approve the disposal injection permits for the two injection disposal wells.

⁵⁹ Page 173, lines 7 – 13.

⁶⁰ Page 174, line 16 – 18.

⁶¹ Page 174, line 20.

⁶² Page 174, line 24, 25. Page 175, line 1.

⁶³ Page 175, lines 15 – 24.

⁶⁴ Page 176, lines 3 – 5.

⁶⁵ Page 176, lines 20 – 22.

⁶⁶ Page 177, line 8.

⁶⁷ Page 185, line 8.

⁶⁸ Page 178, lines 4 – 7.

A. The use or installation of the injection well will not endanger or injure any oil, gas, or other mineral formation.

The Examiners find that approving ULWM's application for the Jackie Sherrill 6 SWD, Well 1, and the application for the E King Gill 2 SWD, Well 1, will not endanger or injure any oil, gas, or other mineral formation. The proposed injection interval for the two disposal injection wells is the Delaware formation, and in this area, the Delaware formation is not productive of oil or gas. Oasis' plans to drill and develop the Wolfcamp A reservoir in the vicinity of the Jackie Sherrill 6 SWD, Well 1, and the Wolfcamp A and Bone Spring 3 in the vicinity of the E Gill King 2 SWD, Well 1. These reservoirs are deeper than the Delaware formation. ULWM stated it is open to working with Oasis to minimize any impact on the drilling and completing of Oasis wells targeting the deeper Bone Spring and Wolfcamp reservoirs.

Furthermore, ULWM agreed to limit the deepest perforation in the proposed disposal inject wells such that injection will not occur any deeper than 407 feet above the top of the Brushy Canyon segment of the Delaware formation for the Jackie Sherrill 6 SWD, Well 1, and no deeper than 290 feet below the top of the Brushy Canyon segment of the Delaware formation for the E King Gill 2 SWD, Well 1. This concession by ULWM limits injection to physically occur above the lower confining interval of the Delaware formation to contain injected fluids and not permit the migration of injection into the deeper productive Bone Spring and Wolfcamp reservoirs.

No testimony or evidence was presented to demonstrate or indicate that injected fluids endanger or injure any oil, gas, or other mineral formations. Oasis recognizes the non-productive nature of the Delaware formation in this area and in fact, has a total of twelve (12) active and/or planned injection disposal wells in the vicinity of the ULWM two (2) proposed disposal injection wells.

For these reasons, the Examiners recommend the Commission find the permitting and use of the Jackie Sherrill 6 SWD, Well 1, and the E Gill King 2 SWD, Well 1, as proposed by ULWM, will not endanger or injure oil and/or gas bearing formations.

B. Ground and surface water can be adequately protected from pollution.

The Examiners find the injected fluids will not migrate from the permitted injection interval into strata containing useable groundwater.

The proposed casing and cementing program for the Jackie Sherrill 6 SWD, Well 1, will prevent the wellbore from acting as a conduit for the migration of injected fluids from the injection zone, and protect underground sources of drinking water in accordance with the Jackie Sherrill GAU Letter, referenced herein.

The proposed casing and cementing program for the E King Gill 2 SWD, Well 1, will prevent the wellbore from acting as a conduit for the migration of injected fluids from

the injection zone, and protect underground sources of drinking water in accordance with the E Gill King GAU Letter, referenced herein.

Each of the four (4) plugged and abandoned wellbores within a one-half radius of the Jackie Sherrill 6 SWD, Well No. 1 are shown to be cased and plugged such that injected fluids from the Jackie Sherrill 6 SWD, Well No. 1, will not migrate from the proposed injection zone in these wellbores.

Both of the plugged and abandoned wellbores within a one-half radius of the E Gill King 2 SWD, Well No. 1 are shown to be cased and plugged such that injected fluids from the E Gill King 2 SWD, Well No. 1, will not migrate from the proposed injection zone in these wellbores.

The Examiners recommend the Commission find that the use or installation of the proposed Jackie Sherrill 6 SWD, Well 1, and the E Gill King 2 SWD, Well 1, will adequately protect ground and surface water from pollution.

C. The use or installation of ULWM's two proposed injection disposal wells is in the public interest.

The Examiners find the use or installation of the ULWM's two proposed injection wells is in the public interest.

ULWM and Oasis each provided evidence there is a need for injection disposal capacity in the vicinity of ULWM's two (2) proposed disposal injection wells. ULWM has a 10-year agreement with University Lands to provide full-cycle water management including water sourcing, gathering, recycling and disposal. Oasis demonstrated the need for disposal injection capacity with its twelve (12) active and/or planned injection disposal wells in the vicinity of ULWM's proposed disposal injection wells.

There is a demonstrated need for ULWM's two (2) disposal injection wells which is in the public interest. There is no evidence that injected fluids will migrate to productive mineral formations or useable groundwater. Protection of groundwater and other mineral formations is in the public interest. For these reasons, the Examiners recommend the Commission find the requested permits and use of the Jackie Sherrill 6 SWD, Well 1, and the E Gill King 2 SWD, Well 1, are in the public interest.

D. Applicant has made a satisfactory showing of financial responsibility as required by Texas Natural Resources Code, § 91.142.

Except as may be specifically excluded, Statewide Rule 78⁶⁹ states that any person, including any firm, partnership, joint stock association, corporation, or other organization, is required by Texas Natural Resources Code, § 91.142, to file an

⁶⁹ 16 Tex. Admin. Code § 3.78.

organization report with the Commission must also file financial security. ULWM meets this requirement with filing of its Commission Form P-5 and a cash deposit of \$25,000.

VI. Examiners' Recommendation, Findings of Fact and Conclusions of Law

Based on the evidence and testimony presented at the hearing, the Examiners recommend that the Commission approve ULWM.'s applications for the Jackie Sherrill 6 SWD, Well 1, and for the E King Gill 2 SWD, Well 1, pursuant to Statewide Rule 46, and adopt the following findings of fact and conclusions of law.

A. Findings of Fact

1. ULWM filed two separate applications pursuant to Statewide Rule 46 to inject fluid into a reservoir productive of oil and gas in the War-Wink (Delaware) Field for the proposed:
 - a. Jackie Sherrill 6 SWD, Well 1, in Winkler County, Texas, and
 - b. E Gill King 2 SWD, Well 1, in Ward County, Texas.
2. Statewide Rule 46 requires that notice of the application for an injection permit be sent to the surface owner of the proposed injection well site, to operators of wells within a ½ mile radius of the injection well site, and to the county clerk.
 - a. Notice of the injection application for the Jackie Sherrill 6 SWD, Well No. 1, was sent to the surface owner, UT, to the offset operators: Oasis, Energen Resources Corporation, and Diamondback E & P, and to the county clerk of Winkler County, Shethelia Reed.
 - b. Notice of the disposal injection application for the E. King Gill 2 SWD, Well No. 1, was sent to the surface owner, UT, to the offset operator, Oasis, and to the county clerk of Ward County, Denise Valles.
3. The disposal injection application for the Jackie Sherrill 6 SWD, Well 1, and the disposal injection application for the E Gill King 2, Well 1, are both protested by Oasis.
4. On September 25, 2019, the Hearings Division of the Commission sent a Joint Notice of Prehearing Conference ("Notice") via first-class mail to Applicant and all affected persons, setting a pre-hearing conference date of October 15, 2019. A Notice of Opportunity for Hearing was issued on October 28, 2019, to the county clerk of Winkler County correcting the county for Oil and Gas Docket No. 08-0321458.
 - a. The Notice contains (1) a statement of the time, place, and nature of the pre-hearing conference; (2) a statement of the legal authority and jurisdiction under

which the hearing is to be held; (3) a reference to the particular sections of the statutes and rules involved; and (4) a short and plain statement of the matters asserted. All parties received more than 10 days' notice of hearing and opportunity for hearing.

- b. The pre-hearing conference was held on October 15, 2019. Both Applicant and Protestant appeared and participated.
 - c. At the pre-hearing conference, the parties agreed to commence the hearing on the merits on December 4, 2019.
 - d. The hearing on the merits was held on December 4, 2019.
 - e. Applicant and Protestant attended and participated in the hearing on the merits.
5. A review of United States Geological Survey seismic data indicated the following seismic activity:
- a. No earthquakes greater than 2.0 have been reported within 100 square miles (a 9.08 km radius circle) of the Jackie Sherrill 6 SWD, Well No. 1 location.
 - b. No earthquakes greater than 2.0 are now reported within 100 square miles (a 9.08 km radius circle) of the E Gill King 2 SWD, Well No. 1 location. The initial review of seismic data indicated a seismic event of 2.1 within the 9.08 km radius of the proposed injection well, which triggered a seismic review by the Commission and more stringent injection permit requirements. The seismic database has since been updated with the subject seismic event now registered as a 1.9
6. The Commission issued separate draft permits for the two (2) ULWM proposed disposal injection wells.
- a. Regarding the Jackie Sherrill 6 SWD, Well 1:
 - i. The special conditions of the draft permit include an injectivity test to determine the rate and pressure at which fluids can be pumped into the injection zone.
 - ii. ULMW agreed as a permit special condition to not perforate below the horizon expected to occur at 6,880 feet in the wellbore or 407 feet above the top of the Brushy Canyon segment of the Delaware formation.
 - b. Regarding the E Gill King 2 SWD, Well 1:
 - i. The special conditions of the draft permit include ULWM collecting and maintaining daily records of injected volumes and maximum injection pressure, conducting a step-rate test to determine the reservoir fracture

initiation pressure prior to initial injection, and conducting an initial static bottom-hole pressure test to quantify reservoir pressure prior to initial injection.

- ii. ULMW agreed as a permit special condition to not perforate below the horizon expected to occur at 7,568 feet in the wellbore or below 290 feet below the top of the Brushy Canyon segment of the Delaware formation.
7. Approving ULWM's application for the Jackie Sherrill 6 SWD, Well 1, and the application for the E King Gill 2 SWD, Well 1, will not endanger or injure any oil, gas, or other mineral formation. The proposed injection interval for the two disposal injection wells is the Delaware formation, and in this area the Delaware formation is not productive of oil or gas.
- a. Oasis, the owner of the mineral rights underlying the ULWM two (2) proposed disposal injection sites recognizes the non-productive nature of the Delaware formation in this area and has a total of twelve (12) active and/or planned injection disposal wells targeting the Delaware formation for injection in the vicinity of the ULWM's two (2) proposed disposal injection wells.
 - b. ULWM stated it is open to working with Oasis to minimize any impact on the drilling and completing of Oasis wells targeting the deeper Bone Spring and Wolfcamp reservoirs.
8. The injected fluids will not migrate from the permitted injection intervals into strata containing useable groundwater.
- a. Regarding the Jackie Sherrill 6 SWD, Well 1:
 - i. The proposed casing and cementing program for the Jackie Sherrill 6 SWD, Well 1, will prevent the wellbore from acting as a conduit for the migration of injected fluids from the injection zone, and protect underground sources of drinking water in accordance with the Jackie Sherrill GAU Letter.
 - ii. Each of the four (4) plugged and abandoned wellbores within a one-half radius are shown to be cased and plugged such that injected fluids from the E Gill King 2 SWD, Well No. 1, will not migrate from the proposed injection zone in these wellbores.
 - b. Regarding the E Gill King 2, Well 1:
 - i. The proposed casing and cementing program for the E King Gill 2 SWD, Well 1, will prevent the wellbore from acting as a conduit for the migration of injected fluids from the injection zone, and protect

underground sources of drinking water in accordance with the E Gill King GAU Letter.

- ii. Both of the plugged and abandoned wellbores within a one-half radius of the E Gill King 2 SWD, Well No. 1 are shown to be cased and plugged such that injected fluids from the E Gill King 2 SWD, Well No. 1, will not migrate from the proposed injection zone in these wellbores.
9. ULWM's proposed Jackie Sherril 6 SWD, Well 1, and E Gill King 2 SWD, Well 1, are in the public interest.
 - a. Both parties demonstrated a need for the proposed disposal injection capacity.
 - i. ULWM has a 10-year agreement with University Lands to provide full-cycle water management including water sourcing, gathering, recycling and disposal.
 - ii. Oasis has twelve (12) active and/or planned injection disposal wells in the vicinity of ULWM's proposed disposal injection wells.
 - b. Protection of groundwater and other mineral formations is in the public interest. With proper safeguards, disposal fluids injected into the proposed Jackie Sherrill 6 SWD, Well 1, or into the E Gill King 2 SWD, Well 1, will not migrate to productive mineral formations or useable groundwater.
10. ULWM has made a satisfactory showing of financial responsibility as required by Texas Natural Resources Code, § 91.142. ULWM has filed:
 - a. Commission Form P-5 organization report, and
 - b. Financial assurance of a \$25,000 cash deposit with the Commission.

B. Conclusions of Law

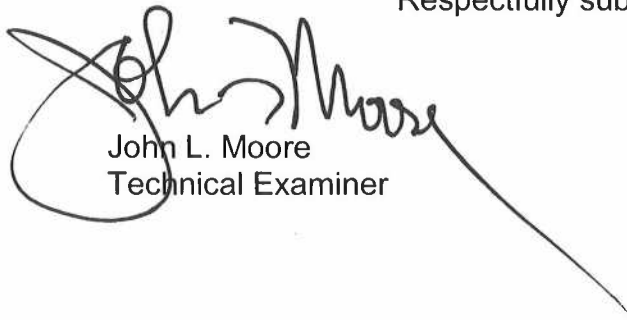
1. Proper notice of hearing was timely issued to persons entitled to notice. See, e.g., Tex. Gov't Code § 2001.051; 16 Tex. Admin. Code §§ 1.41, 1.42, 1.45, 3.9.
2. The Commission has jurisdiction in this case. See, e.g., Tex. Nat. Res. Code § 81.051; Tex. Water Code §§ 27.031, 27.051(b).
3. ULWM's two (2) proposed disposal injection wells will not endanger oil, gas, or geothermal resources. Tex. Water Code § 27.051(b)(2); 16 Tex. Admin. Code § 3.46(a).

4. ULWM's two (2) proposed disposal injection wells will adequately protect groundwater and surface fresh water from pollution.
5. Approval of ULWM's two (2) proposed disposal injection wells' permit and operation is in the public interest.
6. ULWM demonstrated the applications for its two (2) proposed disposal injection wells meet the requirements of chapter 27 of the Texas Water Code and the Railroad Commission's Statewide Rule 46.

C. Recommendation

The Examiners recommend that the applications of UL Water Midstream LLC pursuant to Statewide Rule 46 for a permit to inject fluid into a reservoir productive of oil or gas for the Jackie Sherrill 6 SWD, Well 1, and for a permit to inject fluid into a reservoir productive of oil or gas for the E King Gill 2 SWD, Well 1, be approved as set out in the attached proposed Final Orders.

Respectfully submitted,



John L. Moore
Technical Examiner



Kristi M. Reeve
Administrative Law Judge

WAYNE CHRISTIAN, CHAIRMAN
CHRISTI CRADDICK, COMMISSIONER
RYAN SITTON, COMMISSIONER



DANNY SORRELLS
ASSISTANT EXECUTIVE DIRECTOR
DIRECTOR, OIL AND GAS DIVISION
PAUL DUBOIS
ASSISTANT DIRECTOR, TECHNICAL PERMITTING

RAILROAD COMMISSION OF TEXAS

INJECTION PERMIT ATTACHED TO FINAL ORDER IN OIL AND GAS DOCKET No. 08-0322180

OIL AND GAS DIVISION

PERMIT TO INJECT FLUID INTO A RESERVOIR PRODUCTIVE OF OIL AND GAS

PROJECT NO. (placeholder 0.147556111)

UL WATER MIDSTREAM LLC
3151 BRIARPARK DRIVE STE 825
HOUSTON TX 77042

Authority is granted to inject into the well identified herein in accordance with Statewide Rule 46 of the Railroad Commission of Texas and based on the information contained in the application (Forms H-1 and H-1A) dated May 7, 2019 for the permitted interval of the DELAWARE formation and subject to the following terms and special conditions:

E KING GILL 2 SWD (000000) LEASE
WAR-WINK (DELAWARE) FIELD
WARD COUNTY
DISTRICT 08

WELL IDENTIFICATION AND PERMIT PARAMETERS:

Well No.	API No.	UIC Number	Permitted Fluids	Top Interval (feet)	Bottom Interval (feet)	Maximum Liquid Daily Injection Volume (BBL/day)	Maximum Gas Daily Injection Volume (MCF/day)	Maximum Surface Injection Pressure for Liquid (PSIG)	Maximum Surface Injection Pressure for Gas (PSIG)
1	47500000	(placeholder 0.973661391)	Saltwater, Frac Water, and Other Non-Hazardous O/G Waste	5,077	No lower than 290 feet below the top of the Brushy Canyon formation	25,000		1,269	

SPECIAL CONDITIONS:

Well No.	API No.	Special Conditions
1	47500000	<p>1. For wells with long string casing set more than 100 feet below the permitted injection interval, the plug back depth shall be within 100 feet of the bottom of the permitted injection interval. For wells with open hole completions, the plug back depth shall be no deeper than the bottom of the permitted injection interval.</p> <p>2. One or more seismic events have been recorded within 9.08 km of this well. In addition to the standard H-10 Annual Disposal/Injection Well Monitoring Report, the operator shall collect and maintain daily records of injected volumes and maximum injection pressure. The operator shall make this data available to the Commission upon request.</p> <p>3. Step-Rate Test (SRT):</p> <p>(A) The operator shall conduct a SRT to determine the reservoir fracture initiation pressure prior to initial injection into the permitted formation, using the RRC SRT guidelines. https://www.rrc.state.tx.us/oil-gas/publications-and-notice/manuals/injectiondisposal-well-manual/summary-of-standards-and-procedures/technical-review/step-rate-test-guidelines/</p> <p>(B) The operator shall notify the appropriate District Office at least 48 hours in advance of the test to provide opportunity for the Commission to witness the SRT.</p> <p>(C) The operator shall provide raw data from the test to the Injection-Storage Permits Unit in Austin within 48 hours of completing the SRT.</p> <p>(D) An analysis of the step-rate test shall be filed with the Injection-Storage Permits Unit in Austin within 30 days of completion of the SRT. The SRT analysis shall be prepared, signed and sealed by a professional engineer registered in Texas and filed with the initial mechanical integrity test, Form H-5.</p> <p>4. Initial Static Bottomhole Pressure (BHP) Test:</p> <p>(A) The operator shall perform an initial static BHP test to quantify reservoir pressure prior to initial injection into the permitted formation.</p> <p>(B) The operator shall notify the appropriate District Office at least 48 hours in advance of the test to provide opportunity for the Commission to witness the BHP test.</p> <p>(C) The operator shall provide raw data from the test to the Injection-Storage Permits Unit in Austin within 48 hours of completing the BHP test.</p> <p>(D) An analysis of the BHP test shall be filed with the Injection-Storage Permits Unit in Austin within 30 days of completion of the BHP test. The BHP analysis shall be prepared, signed and sealed by a professional engineer registered in Texas and filed with the Mechanical Integrity Test, Form H-5.</p> <p>(E) Measurement for the BHP test shall be performed via wireline tool, or other Commission-approved bottomhole pressure measurement technique.</p> <p>(F) If multiple formations are open to injection, steps must be taken to isolate the formations for discrete shut-in BHP measurements for each separate formation. The Delaware Mountain Group shall be treated as a single formation and it shall not be necessary to measure the pressure in the discrete members of the Delaware Mountain Group.</p>

STANDARD CONDITIONS:

1. Injection must be through tubing set on a packer.
2. The District Office must be notified 48 hours prior to:
 - a. running tubing and setting packer;
 - b. beginning any work over or remedial operation;
 - c. conducting any required pressure tests or surveys.
3. The wellhead must be equipped with a pressure observation valve on the tubing and for each annulus.
4. Prior to beginning injection and subsequently after any work over, an annulus pressure test must be performed. The test pressure must equal the maximum authorized injection pressure or 500 psig, whichever is less, but must be at least 200 psig. The test must be performed, and the results submitted in accordance with the instructions of Form H-5.
5. The injection pressure and injection volume must be monitored at least monthly and reported annually on Form H-10 to the Commission's Austin office.
6. Within 30 days after completion, conversion to disposal, or any work over which results in a change in well completion, a new Form W-2 or G-1 must be filed to show the current completion status of the well. The date of the disposal well permit, and the permit number must be included on the new Form W-2 or G-1.
7. Written notice of intent to transfer the permit to another operator by filing Form P-4 must be submitted to the Commission at least 15 days prior to the date of the transfer.
8. A well herein authorized cannot be converted to a producing well and have an allowable assigned without filing an amended Form W-1 and receiving Commission approval.
9. Unless otherwise required by conditions of the permit, completion and operations of the well shall be in accordance with the information represented on the application (Forms H-1 and H-1A).
10. This permit will expire when the Form W-3, Plugging Record, is filed with the Commission. Furthermore, permits issued for wells to be drilled will expire three (3) years from the date of the permit unless drilling operations have commenced.

Provided further that, should it be determined that such injection fluid is not confined to the approved interval, then the permission given herein is suspended and the fluid injection operation must be stopped until the fluid migration from such interval is eliminated. Failure to comply with all of the conditions of this permit may result in the operator being referred to enforcement to consider assessment of administrative penalties and/or the cancellation of the permit.

WAYNE CHRISTIAN, CHAIRMAN
CHRISTI CRADDICK, COMMISSIONER
RYAN SITTON, COMMISSIONER



DANNY SORRELLS
ASSISTANT EXECUTIVE DIRECTOR
DIRECTOR, OIL AND GAS DIVISION
PAUL DUBOIS
ASSISTANT DIRECTOR, TECHNICAL PERMITTING

RAILROAD COMMISSION OF TEXAS

INJECTION PERMIT ATTACHED TO FINAL ORDER IN OIL AND GAS DOCKET No. 08-0321458

OIL AND GAS DIVISION

PERMIT TO INJECT FLUID INTO A RESERVOIR PRODUCTIVE OF OIL AND GAS

PROJECT NO. (placeholder 0.43563629)

UL WATER MIDSTREAM LLC
3151 BRIARPARK DRIVE STE 825
HOUSTON, TX 77042

Authority is granted to inject into the well identified herein in accordance with Statewide Rule 46 of the Railroad Commission of Texas and based on the information contained in the application (Forms H-1 and H-1A) dated May 7, 2019 for the permitted interval of the DELAWARE formation and subject to the following terms and special conditions:

JACKIE SHERRILL 6 SWD (000000) LEASE
WAR-WINK (DELAWARE) FIELD
WINKLER COUNTY, DISTRICT 08

WELL IDENTIFICATION AND PERMIT PARAMETERS:

Well No.	API No.	UIC Number	Permitted Fluids	Top Interval (feet)	Bottom Interval (feet)	Maximum Liquid Daily Injection Volume (BBL/day)	Maximum Gas Daily Injection Volume (MCF/day)	Maximum Surface Injection Pressure for Liquid (PSIG)	Maximum Surface Injection Pressure for Gas (PSIG)
1	49500000	(placeholder 0.838173514)	Saltwater, Other Non-Hazardous O/G Waste, and Frac Water	5,015	No lower than 407 feet above the top of the Brushy Canyon formation	25,000		2,507	

SPECIAL CONDITIONS:

Well No.	API No.	Special Conditions
1	49500000	<p>1. For wells with long string casing set more than 100 feet below the permitted injection interval, the plug back depth shall be within 100 feet of the bottom of the permitted injection interval. For wells with open hole completions, the plug back depth shall be no deeper than the bottom of the permitted injection interval.</p> <p>2. Injectivity Test:</p> <p>The operator shall conduct an injectivity test to determine the rate and pressure at which fluids can be pumped into the injection zone. The operator shall notify the appropriate District Office at least 48 hours in advance of the test to provide opportunity for the Commission to witness the test. An analysis of the injectivity test that includes a data table with columns for time, pressure, and rate, and a graph of the data, shall be filed with the Injection-Storage Permits Unit in Austin within 30 days of completion of the injectivity test. The analysis shall be prepared, signed and sealed by a professional engineer registered in Texas.</p>

STANDARD CONDITIONS:

1. Injection must be through tubing set on a packer.
2. The District Office must be notified 48 hours prior to:
 - a. running tubing and setting packer;
 - b. beginning any work over or remedial operation;
 - c. conducting any required pressure tests or surveys.
3. The wellhead must be equipped with a pressure observation valve on the tubing and for each annulus.
4. Prior to beginning injection and subsequently after any work over, an annulus pressure test must be performed. The test pressure must equal the maximum authorized injection pressure or 500 psig, whichever is less, but must be at least 200 psig. The test must be performed, and the results submitted in accordance with the instructions of Form H-5.
5. The injection pressure and injection volume must be monitored at least monthly and reported annually on Form H-10 to the Commission's Austin office.
6. Within 30 days after completion, conversion to disposal, or any work over which results in a change in well completion, a new Form W-2 or G-1 must be filed to show the current completion status of the well. The date of the disposal well permit, and the permit number must be included on the new Form W-2 or G-1.
7. Written notice of intent to transfer the permit to another operator by filing Form P-4 must be submitted to the Commission at least 15 days prior to the date of the transfer.
8. A well herein authorized cannot be converted to a producing well and have an allowable assigned without filing an amended Form W-1 and receiving Commission approval.

9. Unless otherwise required by conditions of the permit, completion and operations of the well shall be in accordance with the information represented on the application (Forms H-1 and H-1A).
10. This permit will expire when the Form W-3, Plugging Record, is filed with the Commission. Furthermore, permits issued for wells to be drilled will expire three (3) years from the date of the permit unless drilling operations have commenced.

Provided further that, should it be determined that such injection fluid is not confined to the approved interval, then the permission given herein is suspended and the fluid injection operation must be stopped until the fluid migration from such interval is eliminated. Failure to comply with all of the conditions of this permit may result in the operator being referred to enforcement to consider assessment of administrative penalties and/or the cancellation of the permit.