



RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

OIL AND GAS DOCKET NO. 02-0277949

THE APPLICATION OF BELLOWS OPERATING CO., LC FOR COMMERCIAL DISPOSAL AUTHORITY PURSUANT TO STATEWIDE RULE 9 FOR THE FORT WORTH NATIONAL BANK LEASE, WELL NO. 1D, BUCHEL (AUSTIN) FIELD, DE WITT COUNTY, TEXAS

HEARD BY: Richard D. Atkins, P.E. - Technical Examiner
Michael Crnich - Legal Examiner

APPEARANCES:

REPRESENTING:

APPLICANT:

John Hicks
Rick Johnston
Gary Bellows

Bellows Operating Co., LC

PROTESTANTS:

Brian R. Sullivan
Kyle Cook
Mark C. Rogers

Pioneer Natural Res. USA, Inc.

PROCEDURAL HISTORY

Application Filed:	May 4, 2012
Protest Received:	May 15, 2012
Request for Hearing:	August 1, 2012
Notice of Hearing:	September 20, 2012
Hearing Held:	October 23, 2012
Transcript Received:	November 2, 2012
Proposal for Decision Issued:	January 4, 2013



EXAMINERS' REPORT AND PROPOSAL FOR DECISION

STATEMENT OF THE CASE

Bellows Operating Co., LC ("Bellows") requests commercial disposal authority pursuant to Statewide Rule 9 for the Fort Worth National Bank Lease, Well No. 1D, Buchel (Austin) Field, De Witt County, Texas.

Notice of the subject application was published in *The Cuero Record*, a newspaper of general circulation in De Witt County, on February 29, 2012. Notice of the application was sent to the De Witt County Clerk, offset operators within 1/2 mile and the surface owners of the disposal tract and each tract which adjoins the disposal tract on May 2, 2012.

The application is protested by Pioneer Natural Res. USA, Inc. ("Pioneer"), which is the operator of the lease on which the proposed disposal well is located.

DISCUSSION OF THE EVIDENCE

Applicant's Evidence

The proposed Fort Worth National Bank Lease, Well No. 1D, disposal facility will be located on an 1.4 acre tract that is adjacent to, and south of, Spies Road, which intersects FM 240 west of the disposal facility tract. The tract is situated in a rural area approximately six miles northeast of the town of Yorktown, Texas. Bellows has re-entered a Wilcox formation disposal well that was originally drilled by Shell Oil Company in 1978 and was plugged in 2010. The well is located approximately one-half mile south of the disposal facility tract. Bellows ran a new cement bond log, which was submitted with the application.

The well has 9 5/8" surface casing set at 916 feet that was cemented to the surface with 280 sacks of cement. The well has 7" production casing set at 4,502 feet that was cemented to the surface with 640 sacks of cement. The cement bond log confirmed that there was a good cement bond on the 7" production casing and the cement had been circulated to surface. Bellows proposes to run 5 1/2" casing inside the 7" production casing to 4,250 feet that will be cemented up to 2,400 feet with 100 sacks of cement. The well will be equipped with 2 7/8" tubing and packer set at 3,350 feet (See attached Bellows Exhibit No. 5 - Wellbore Diagram).

The proposed disposal interval is the Wilcox formation between 3,400 feet and 4,200 feet. The interval is suitable for disposal and is used for disposal in other area wells. There is no Wilcox formation production located within two and one-half miles of the proposed disposal well. Additionally, above the proposed disposal interval there is over 1,300 feet of impervious shale, which will serve to prevent the migration of injected fluids

out of the Wilcox formation. Bellows requests authority to dispose of a maximum of 10,000 barrels of saltwater and RCRA exempt waste per day with a maximum surface injection pressure of 1,700 psig. At the hearing, Bellows lowered the requested injection volume from 10,000 barrels of saltwater per day to 6,000 barrels of saltwater per day.

The Commission Groundwater Advisory Unit ("GAU") recommends that usable-quality groundwater be protected to a depth of 1,550 feet below the land surface. The base of the underground source of drinking water ("USDW") is 1,800 feet. Bellows submitted a GAU letter dated March 2, 2012, which stated that injection into the proposed injection interval will not harm usable-quality groundwater.

There is one vertical and one horizontal producing Edwards formation gas well, operated by Pioneer, located within the one-quarter mile radius of review for the proposed disposal well. There are several permitted Eagle Ford formation wells, to be operated by Pioneer, located within the one-half mile radius of review for the proposed disposal well. The wells are properly cased and cemented and will not provide a conduit for the migration of injected fluids into useable-quality groundwater zones. However, the proposed Wilcox formation disposal interval between 3,400 feet and 4,200 feet is not completely covered by cement in either of the offset Edwards formation producing wells, which are 1,100 feet and 1,300 feet from the proposed disposal well.

Bellows submitted a three well cross section covering approximately one-half mile and containing the two producing Edwards formation wells on either side of the proposed disposal well. The cross section showed that the proposed Wilcox formation disposal interval was continuous and homogeneous between the wells. The disposal zone had an average net pay thickness of 200 feet. Since the proposed disposal well had been a disposal well from 1978 through 2010, Bellows submitted a tabulation of the yearly injection volumes showing the total historical injection volume to be 488.9 MBW. Bellows opined that this injection volume had not had any adverse affects on the nearby Edwards formation producing wells.

Bellows's expert engineering witness performed a pressure front water displacement calculation to determine the distance from the proposed disposal well that the injected water front would be after 20 years of injection. The available reservoir data for the Wilcox formation showed an average porosity of 30%, an average permeability of 1 darcy and an average net pay thickness of 200 feet. After injection of 6,000 BWPD for 20 years, or 43.8 MMBW, the expert calculated that the areal extent of the injected water front would be approximately 74.3 acres and have a plume radius of 1,015 feet from the disposal well. The closest producing well is 1,100 feet from the proposed disposal well. In addition, the pressure increase in the disposal formation at the closest well was calculated to be only 20 psia, which would cause the hydrostatic head to increase by only 40 feet.

Bellows Exhibit No. 23 is the PFD and Final Order from Oil & Gas Docket No. 06-0236695, the application of Hydro-FX for a commercial disposal-well permit. Bellows offered this exhibit to provide an example of an analogous case in which the application

was approved even though there were several producing wells without cement across the disposal interval located within one-half mile of the disposal well. In response, Protestant Pioneer requested that it be permitted to late-file an exhibit to show the subsequent history of the Hydro-FX permit. The examiners allowed the filing of the late exhibit for the limited purpose of demonstrating this subsequent history. Pioneer's exhibit contained several hundred pages, many of which did not pertain to this limited purpose. Bellows objected to the majority of the voluminous late-filed exhibit.

The examiners admit several of the documents contained in the exhibit¹ and exclude the remainder of the documents because they are either irrelevant or inadmissible hearsay. The relevant documents show that after Hydro-FX began disposal operations, a number of offsetting wells experienced an increase in bradenhead pressures. When the offsetting operator informed the Commission of these increases, the District Office ordered Hydro-FX to cease disposal operations and back-flow the disposal well. The Commission offered Hydro-FX an opportunity to request a hearing to show why its permit should not be cancelled, but Hydro-FX chose instead to apply for a new permit to dispose into a different, productive formation. Once Hydro-FX received this Rule-46 permit, the Commission cancelled its original Rule-9 permit.

The proposed facility is located in the northwestern portion of De Witt County and the Eagle Ford formation development core area encompasses this area of the county. Bellows submitted a map depicting over 100 permitted and completed Eagle Ford formation horizontal drainhole wells in the northwestern portion of De Witt County. The wells are being completed with large multi-stage fracs, and with the large number of permitted locations, this will create a tremendous volume of frac flow-back water. Bellows opined that the Eagle Ford formation trend wells will produce significant volumes of frac and produced water.

In addition, there are only three other commercial disposal wells located in De Witt County and the nearest facility is located at least eight miles from the proposed disposal facility. Spies Road intersects FM 240 west of the proposed disposal facility tract and FM 240 contains a lot of oilfield traffic, as there are many drilling rigs running in the area. Bellows contends that the use of the proposed disposal well will reduce truck traffic, travel time and miles traveled, resulting in reduced costs to operators.

¹ The specific documents admitted are: (1) RRC letter dated January 22, 2007, to Hydro-FX; (2) RRC letter dated February 23, 2007, to Hydro-FX; (3) RRC letter dated February 27, 2007, to Hydro-FX; (4) District Office Inspection Report dated March 13, 2006; (5) District Office Inspection Report dated January 26, 2006; (6) RRC internal memo dated March 27, 2007; and (7) RRC letter dated June 20, 2007, to Hydro-FX.

The Facility

The area surrounding the proposed injection facility is rural ranching and farming land. Access to the disposal facility will be off of Spies Road and at a total injection rate of 6,000 BWPD, there will be approximately 50 loads per day delivered to the facility. The facility will be constructed to accommodate numerous trucks at any one time and will be large enough to allow trucks access without waiting on Spies Road. The surface facility will be manned 24 hours per day. A firewall will be constructed around the entire facility to contain any spilled fluids. The tanks will be equipped with high water level switches to prevent overflows. Additionally, the facility will comply with all of the permit conditions required by the Commission staff.

Bellows submits that it has the expertise to build and manage the proposed facility. Bellows has a current approved Form P-5 (Organization Report), a posted \$50,000 financial assurance bond and no pending Commission enforcement actions.

Protestants' Evidence

The application is protested by Pioneer, which is the operator of the lease on which the proposed disposal well is located. Pioneer is primarily concerned that the injected fluids will adversely affect the existing producing wells and the ongoing development of the Eagle Ford formation on its acreage. Pioneer also noted that the producing Edwards wells did not have cement across the injection interval and believed that the movement of fluids across the casing could cause corrosion and pressure on the surface casing.

Pioneer submitted an area map detailing the proposed Eagle Ford development horizontal drainhole wells on its lease. Pioneer was concerned that it might encounter problems while drilling its development wells through the Wilcox formation disposal interval.

EXAMINERS' OPINION

The examiners recommend that the application for commercial disposal authority be approved. Bellows has established:

1. The freshwater resources (surface and sub-surface) will be adequately protected from pollution;
2. The proposed injection well will not endanger or injure any oil, gas, or mineral formations;
3. The proposed injection is in the public interest; and
4. The applicant has made a satisfactory showing of financial responsibility, as required under Texas statutes and Commission regulatory requirements.

The well will be completed in a manner which will protect usable-quality groundwater resources and injected fluids will be confined to the injection interval. The proposed disposal well has cement to surface behind the surface and 7" production casings. To further protect usable-quality groundwater, the examiners recommend that the proposed 5 1/2" casing to be run inside the 7" production casing be cemented to surface, instead of the proposed depth of 2,400 feet. There is over 1,300 feet of impervious shale above the proposed disposal interval, which will serve to prevent the migration of injected fluids out of the Wilcox formation. Injection will be through tubing set on a packer to confine injected fluids to the Wilcox formation between 3,400 feet and 4,200 feet.

There is one vertical and one horizontal producing Edwards formation gas well, operated by Pioneer, located within the one-quarter mile radius of review for the proposed disposal well. There are several permitted Eagle Ford formation wells, to be operated by Pioneer, located within the one-half mile radius of review for the proposed disposal well. The wells are properly cased and cemented and will not provide a conduit for the migration of injected fluids into useable-quality groundwater zones.

Approval of the application is in the public interest. The Eagle Ford formation development core area encompasses all of northwestern De Witt County. Bellows has shown that the proposed disposal well is necessary to provide needed capacity for disposal of frac and produced water from numerous Eagle Ford formation wells to be drilled and produced within northwestern De Witt County. The proposed disposal well is closer to the most recently permitted wells than any other commercial disposal well. There are only three other commercial disposal wells located in De Witt County and the nearest facility is located at least eight miles from the proposed disposal facility. Use of the proposed disposal well will reduce travel time and miles traveled for waste haulers, resulting in reduced disposal costs to operators. The reduced disposal costs will lower the economic limit of the producing wells and, thereby, ultimately increase total production.

There has already been injection into the Wilcox formation in the proposed disposal well. To date, the total injection volume has been 488.9 MBW and this injection volume has not had any adverse affects on the nearby Edwards formation producing wells. Based on the previous injection and Bellows's pressure front water displacement calculation, the injection front will only move out to a distance of 1,015 feet, which will have a limited effect on the closest Edwards formation producing well. The pressure increase in the disposal formation after 20 years of injection was calculated to be only 20 psia, which would cause the hydrostatic head to increase by only 40 feet in the closest well. If Pioneer does report increased bradenhead pressure at its nearby wells, then the Commission has the ability to suspend or cancel Bellows' permit for failure to confine the injected fluids to the approved interval. Additionally, the surface locations for any additional horizontal drainhole wells are at least one-half mile from the proposed disposal well. Since the horizontal wells will penetrate the Wilcox formation under the surface location, the examiners believe that the proposed disposal well will have a limited effect on Pioneer's drilling operations.

The surface facility will be newly constructed and is of sufficient size to accommodate trucks hauling water to the facility without backing up onto the highway that provides access to the facility. The proposed access to the facility will have adequate sight distance for entering and exiting trucks. Compliance with permit conditions will minimize the risk of spills at the facility and will prevent the migration of any spills that occur, thereby protecting both ground and surface water.

FINDINGS OF FACT

1. Notice of the application and hearing was provided to all persons entitled to notice. Notice of the application was sent to the De Witt County Clerk, offset operators within 1/2 mile and the surface owners of the disposal tract and each tract which adjoins the disposal tract on May 2, 2012.
2. Notice of the subject application was published in *The Cuero Record*, a newspaper of general circulation in De Witt County, on February 29, 2012.
3. The proposed injection into the Fort Worth National Bank Lease, Well No. 1D, will not endanger useable quality water.
 - a. The Commission Groundwater Advisory Unit ("GAU") recommends that usable-quality groundwater be protected to a depth of 1,550 feet below the land surface.
 - b. The well has 9 5/8" surface casing set at 916 feet that was cemented to the surface with 280 sacks of cement.
 - c. The well has 7" production casing set at 4,502 feet that was cemented to the surface with 640 sacks of cement. A cement bond log confirms that there is a good cement bond on the 7" production casing and the cement has been circulated to surface.
 - d. There is over 1,300 feet of impervious shale overlying the Wilcox disposal interval.
 - e. There is one vertical and one horizontal producing Edwards formation gas well, operated by Pioneer, located within the one-quarter mile radius of review for the proposed disposal well. The wells are properly cased and cemented and will not provide a conduit for the migration of injected fluids into useable-quality groundwater zones.
4. The proposed injection into the Fort Worth National Bank Lease, Well No. 1D, will not endanger production from other oil, gas or mineral bearing formations.

- a. Bellows Operating Co., LC ("Bellows") proposes to run 5 1/2" casing inside the 7" production casing to 4,250 feet.
 - b. For additional protection of the usable-quality groundwater, the 5 1/2" casing inside the 7" production casing will have cement circulated to the surface.
 - c. The well will be equipped with 2 7/8" tubing and packer set at 3,350 feet.
 - d. The proposed Wilcox formation disposal interval between 3,400 feet and 4,200 feet is not completely covered by cement in either of the offset Edwards formation producing wells, which are 1,100 feet and 1,300 feet from the proposed disposal well.
 - e. A cross section shows that the proposed Wilcox formation disposal interval is continuous and homogeneous and has a net pay thickness of 200 feet.
 - f. Since the proposed disposal well had been a disposal well from 1978 through 2010, the total historical injection volume is 488.9 MBW. This injection volume has not had any adverse affects on the nearby Edwards formation producing wells.
 - g. After injection of 6,000 BWPD for 20 years, or 43.8 MMBW, a pressure front water displacement calculation shows that the areal extent of the injected water front would be approximately 74.3 acres and have a plume radius of 1,015 feet from the disposal well.
 - h. The closest producing well is 1,100 feet from the proposed disposal well and the pressure increase in the disposal formation was calculated to be only 20 psia, which would cause the hydrostatic head to increase by only 40 feet in the closest well.
5. Use of the Fort Worth National Bank Lease, Well No. 1D, as commercial disposal well is in the public interest because it will reduce hauling distances and will provide needed commercial disposal capacity for wells to be drilled, completed and produced in the area of the proposed facility.
- a. The proposed facility is located in the northwestern portion of De Witt County and the Eagle Ford formation development core area encompasses this area of the county.
 - b. There are over 100 permitted and completed Eagle Ford formation horizontal wells in the northwestern portion of De Witt County. The

wells are being completed with large multi-stage fracs, and with the large number of permitted locations, this will create a tremendous volume of frac flow-back water.

- c. The Eagle Ford formation trend wells will produce significant volumes of frac and produced water and additional disposal facilities are necessary to accommodate the Eagle Ford formation development that is expected in northwestern De Witt County.
 - d. There are only three other commercial disposal wells located in De Witt County and the nearest facility is located at least eight miles from the proposed disposal facility.
 - e. Spies Road intersects FM 240 west of the proposed disposal facility tract and FM 240 contains a lot of oilfield traffic, as there are many drilling rigs running in the area.
 - f. The proposed disposal well will provide needed capacity for disposal of frac and produced water from numerous Eagle Ford formation wells to be drilled and produced within northwestern De Witt County.
 - g. The proposed disposal well is closer to a vast majority of recently permitted wells than any other commercial disposal well and the existing commercial disposal wells in the area have a limited capacity with some wait times.
 - h. Use of the proposed disposal well will reduce travel time and miles traveled for waste haulers, resulting in reduced disposal costs to operators.
 - i. The reduced disposal costs will lower the economic limit of the producing wells and, thereby, ultimately increase total production.
6. Bellows has a current approved Form P-5 (Organization Report), a posted \$50,000 financial assurance bond and no pending Commission enforcement actions.

CONCLUSIONS OF LAW

1. Proper notice was issued in accordance with the applicable statutory and regulatory requirements.
2. All things necessary to give the Railroad Commission jurisdiction to consider this matter have occurred.

3. Approval of the application will not harm useable-quality water resources, will not endanger oil, gas, or geothermal resources, will promote further development in this area of De Witt County and is in the public interest pursuant to Sec. 27.051 of the Texas Water Code.
4. Bellows Operating Co., LC 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 Commission approve the application of Bellows Operating Co., LC for commercial disposal authority pursuant to Statewide Rule 9 for the Fort Worth National Bank Lease, Well No. 1D, as set out in the attached Final Order.

Respectfully submitted,



Richard D. Atkins, P.E.
Technical Examiner



Michael Crnich
Legal Examiner