



# RAILROAD COMMISSION OF TEXAS

## HEARINGS DIVISION

OIL AND GAS DOCKET NO. 01-0282833

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THE APPLICATION OF MKS SERVICES, LLC FOR A COMMERCIAL PERMIT TO DISPOSE OF OIL AND GAS WASTE BY INJECTION INTO A POROUS FORMATION NOT PRODUCTIVE OF OIL OR GAS, MKS SWD LEASE WELL NO. 3, BRISCOE RANCH (EAGLEFORD) FIELD, DIMMIT COUNTY, TEXAS

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OIL AND GAS DOCKET NO. 01-0282834

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THE APPLICATION OF MKS SERVICES, LLC FOR A COMMERCIAL PERMIT TO DISPOSE OF OIL AND GAS WASTE BY INJECTION INTO A POROUS FORMATION NOT PRODUCTIVE OF OIL OR GAS, MKS SWD LEASE WELL NO. 4, BRISCOE RANCH (EAGLEFORD) FIELD, DIMMIT COUNTY, TEXAS

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HEARD BY: Andres J. Trevino P.E., Technical Examiner  
Laura Miles-Valdez, Hearings Examiner

### APPEARANCES:

#### APPLICANT:

George Neale  
John F. Miller  
Jerry Don Kelly

#### REPRESENTING:

MKS Services, LLC

#### PROTESTANTS:

Hugh Fitzsimmons

Wintergarden Water Conservation District

### PROCEDURAL HISTORY

Application Filed:	December 17, 2012
Request for Hearing:	May 16, 2013
Notice of Hearing:	August 14, 2013
Date of Hearing:	August 30, 2013
Proposal For Decision Issued:	October 30, 2013

**EXAMINERS' REPORT AND PROPOSAL FOR DECISION****STATEMENT OF THE CASE**

MKS Services, LLC (MKS) requests authority pursuant to Statewide Rule 9 to operate Well Nos. 3 and 4 on its MKS SWD Lease in Dimmit County as commercial disposal wells. The wells will be drilled approximately 800 feet apart but will only operate one well at a time. The applications were declared administratively complete by Doug Johnson, Manager for Injection of the Storage Permits and Support Section of the Commission on May 6, 2013. This application is protested by Hugh Fitzsimmons, the Director of the Wintergarden Water Conservation District which oversees the protection of water resources in the area.

**DISCUSSION OF THE EVIDENCE****Applicant's Evidence**

The subject wells have not yet been drilled. Permits to drill the wells were issued by the Commission on September 27, 2012. It is proposed that the wells be drilled through the Georgetown and Edwards formations to a maximum depth of 8,200 feet. It is proposed that the wells have 1,400 feet of 8<sup>5</sup>/<sub>8</sub>" surface casing with cement circulated from the casing shoe to the ground surface, and 5<sup>1</sup>/<sub>2</sub>" casing set through the Edwards, estimated to occur no deeper than 8,200 feet. The 5<sup>1</sup>/<sub>2</sub>" casing will be cemented with 965 sacks of cement with cement circulated to the surface. (See Wellbore Diagram attachments). The Commission's Groundwater Advisory Unit recommends that usable-quality ground water be protected to a depth of 1,400 feet. The GAU further identifies that fresh water contained in the Carrizo from a depth of 600 feet to 1,000 feet is of superior quality and must be isolated from overlying and underlying beds. The Groundwater Advisory Unit further identified the base of the underground sources of drinking water (USDW) at a depth of 2,300 feet.

The proposed injection will be through 3<sup>1</sup>/<sub>2</sub>" tubing set on a packer at approximately 7,100 feet, but no higher than 100 feet above the top of the injection interval. The proposed injection interval is the Georgetown and Edwards formations, the top of which is expected to occur at about 7,200 feet. The proposed injection interval is between 7,200 and 8,000 feet. The estimated depth of the Georgetown and Edwards formations is based on the log of the Mormac Oil and Gas Company - Marvin G. Kropf No. 1. This well is approximately two miles northeast of the proposed wells and is the closest well which penetrated the Georgetown and Edwards formations and for which an electric log is available. The log shows there is approximately 150 feet of shale and additional 4,900 feet rock separating the top of the injection interval and the base of the underground sources of drinking water. The proposed maximum injection volume is 25,000 BWPD. The proposed maximum injection pressure is 3,600 psig.

There is one plugged uranium test hole within a ¼ mile radius of the proposed disposal wells. The uranium test hole, the Sunoco Energy Charles Wilson No. A-1, was

drilled to a total depth of 1,055 feet, and plugged in June 1978. The well does not penetrate the proposed disposal interval, therefore is not a conduit for disposal fluids and does not pose a threat to usable quality water.

MKS, out of caution, performed a more extensive, ½ mile radius area of review around each disposal well. The ½ mile review identified one additional well and four additional permitted locations within the ½ mile of the proposed well. The Heckman Water Resources, Catarina SWD No.1 as an active disposal well with a total depth of 4,567 feet. The well does not penetrate the proposed disposal interval, therefore is not a potential conduit for disposal fluids and does not pose a threat to usable quality water. The four permitted locations are horizontal laterals from permitted Briscoe Ranch (Eagleford) wells proposed to be completed in the Eagleford formation at a true vertical depth (TVD) of 7,034 feet, above the proposed disposal interval. The four proposed permitted wells will not penetrate the proposed disposal interval, therefore will not be conduits for disposal fluids and will not pose a threat to usable quality water.

The MKS SWD site will incorporate the requirements the Commission imposes on all commercial disposal wells to operate in environmentally sound and safe manner. The Commission's standard permit conditions for commercial permits require in part that the proposed facility's tanks sit inside a synthetically lined secondary containment basin, all waste storage and pretreatment facilities be constructed of steel, concrete, fiberglass or other material approved by the Commission, the facility shall have security to prevent unauthorized access, and each storage tank must be equipped with a device to alert drivers when each tank is within 130 barrels from being full. Both wells will be located on a single MKS Services disposal site. The wells will be approximately 800 feet apart. The wells will be operated one at a time in order to help distribute the fluids within the interval. The two wells will increase the reliability and availability of the disposal site should one well go down for maintenance, the second well will be used for injection. Increasing reliability and availability at the site will reduce the number trucks which must be "waved off" when an injection well is out of service.

MKS plans to use the proposed wells to dispose of produced water and frac water generated as a result of the active and ongoing development of the Briscoe Ranch (Eagleford) Field in the area. MKS believes that additional disposal facilities are necessary to accommodate the active drilling which generates large quantities of disposal fluids. MKS presented drilling permit data for Dimmit County that shows that since 2010 through April 15, 2013 there have been 1,996 drilling permits issued. Permitting has increased six fold since 2010. In 2010 there were 206 drilling permits issued in Dimmit County. In 2013, the annualized rate is 1,221 drilling permits issued per year. Within a 10 mile radius of the proposed disposal wells there have been 749 drilling permits issued since 2010. Drilling permits, within a 10 mile radius, have increased nine fold since 2010. In 2010 there were 51 drilling permits issued within a 10 mile radius of the proposed wells. In 2013, the annualized rate is 459 drilling permits issued per year. A study of water test rates for recent completions of wells within 10 miles of the proposed disposal wells shows each completed well had an average initial water production of 341 BWPD. Some wells produced as high

as 902 BWPD.

A study of commercial disposal wells within 10 miles of the proposed disposal wells show there are 17 active, permitted and pending commercial disposal wells. Of the 17 commercial disposal wells, only six are active, eight are permitted but yet not drilled, and three are pending permit approval and have not yet been drilled. Of the active disposal wells, all are completed in the Olmos formation at an average shallow depth of 3,252 feet. Of the eight permitted but not yet drilled disposal wells, five were permitted in 2011, two in 2012, and one in 2013. The remaining three wells are pending permit approval. With some permitted wells being permitted for over two years it is not known if they will ever be drilled and put into service.

MKS which also operates water hauling trucks has experience difficulties using existing area disposal wells. Many times the facilities have long wait times to dispose of fluids followed by the facility closing early as the facility is either full or can no longer inject fluids down the well due to the well's pressuring up. When area wells are not available, and MKS trucks are turned away, MKS must travel 55 miles each way to its Dilley facility in Frio County or travel 25 miles each way to a facility west of Carrizo Springs requiring trucks to travel through the towns of Asherton and Carrizo Springs.

A closer review of the area's active disposal well's H-10 data from the Commission's records show most wells are injecting at relatively low volumes but injecting at either the maximum authorized injection pressure or near the maximum authorized injection pressure. The Catarina No.1 is authorized to inject 25,000 BWPD at a maximum pressure of 2,010 psi at a depth of 4,020 feet in the Olmos formation. H-10 data shows the well initially began injecting in mid 2011 at a rate of 7,500 BWPD at a pressure of 2,000 psi. The well can only inject at a rate of less than 1,000 BWPD at the same 2,000 psi. The Jung No.1 is authorized to inject 4,000 BWPD at a maximum pressure of 1,750 psi at a depth of 3,500 feet in the Olmos formation. H-10 data shows the well initially began injecting in early 2007 at a rate of 3,500 BWPD at a pressure of 1,370 psi. The well can only inject at a rate of 2,000 BWPD at a pressure of 1,750 psi. The Jung No.2 is authorized to inject 9,500 BWPD at a maximum pressure of 2,350 psi at a depth of 3,210 feet in the Olmos formation. H-10 data shows the well initially began injecting in mid-2008 at a rate of 1,500 BWPD at a pressure of 1,750 psi. The well can only inject at a rate of 1,500 BWPD at the same pressure of 1,750 psi. The Frost No.1 is authorized to inject 10,000 BWPD at a maximum pressure of 1,500 psi at a depth of 3,000 feet in the Olmos formation. H-10 data shows the well initially began injecting in early-2009 at a rate of 1,500 BWPD at a pressure of 1,100 psi. The well experienced a maximum daily rate of 8,000 BWPD in September 2010, followed by decline and current rate of 6,000 BWPD at the same pressure of 1,100 psi. The Farias No.1 is authorized to inject 25,000 BWPD at a maximum pressure of 1,542 psi at a depth of 3,085 feet in the Olmos formation. H-10 data shows the well initially began injecting in December 2012 at a rate of 500 BWPD at a pressure of 1,400 psi. The well experienced a maximum daily rate of 2,300 BWPD in January 2013, followed by decline and current rate of 1,000 BWPD at the same pressure of 1,400 psi. MKS believes the Olmos formation is pressure constrained making increasing future disposal demands difficult to be accommodated by existing disposal wells completed

in the Olmos. MKS believes additional, reliable disposal capacity is needed in deeper formations such as the Georgetown and Edwards to meet current and future demands for disposal. All disposal well sites in the area are experiencing wait times. MKS believes that the location of the proposed wells in an area with increasing demand will reduce wait times at all disposal facilities, which results in reducing disposal costs for the area operators.

MKS Services, LLC has an active P-5 on file with the Commission, with \$25,000 letter of credit. There are no active enforcement actions against MKS Services, LLC.

Notice of the subject application was published in *The Carrizo Springs Javelin*, a newspaper of general circulation in Dimmit County, on October 31, 2012. A copy of the applications were mailed on December 14, 2012, to the Dimmit County Clerk's Office and the offsetting surface owners and operators within ½ mile of the proposed well.

### **Protestant's Evidence**

Hugh Fitzsimmons, the Director of the Wintergarden Water Conservation District, (District) filed a protest out of concern over the protection of the water resources the District oversees. Mr. Fitzsimmons also was in protest of the application as the Applicant failed to respond to eleven questions a hydrologist within the District had asked about the proposed disposal well application. The letter was never filed with the Commission and is not part of the record. Mr. Fitzsimmons attempted to place the letter as part of the record but was objected to by the Applicant's attorney as hearsay. The author of the letter, the hydrologist was not available for questioning as he did not appear at the hearing. The objection was sustained and the letter was not admitted. A brief review of the questions by the examiners showed all but one question was irrelevant to the case. The only relevant question requested the proposed disposal interval. The disposal interval was available to the Wintergarden Water District from multiple sources, including the Notice of Hearing, the copy of the applications and the notice published in the newspaper. The Commission could not compel the Applicant to respond to the District's questions. The Applicant stated it estimated it would have to spent \$40,000 in consultant fees to respond to the questions. A response, they felt would not guarantee a withdrawal of the protest.

Mr. Fitzsimmons stated the District did not want disposal into the Glen Rose formation. Mr. Fitzsimmons, stated the Glen Rose contains water that is between 3,000 to 10,000 ppm chlorides and is used for wildlife and livestock watering. The Protest letter stated they believe the need for disposal is increasing as is the potential for aquifer contamination. The letter further states the District prefers disposal be limited to deeper formations. When asked by the examiners if the proposed disposal interval would qualify as a deeper formation, Mr. Fitzsimmons, Director of the Wintergarden Water District stated he was not qualified to answer the question and provided no response.

### **EXAMINERS' OPINION**

The examiners believe that these applications should be approved. The MKS SWD No. 3 and No. 4 will be completed in a manner which will confine disposal fluids to the proposed disposal interval in the Georgetown and Edwards formations. Surface casings

will be set and cemented through the base of usable quality water. The longstring casings will also be cemented with cement circulated to the surface to prevent migration from the injection interval. There are no oil or gas wells within the  $\frac{1}{4}$  or  $\frac{1}{2}$  mile radius of review that pose a threat to groundwater contamination or confinement of injected fluids in the Georgetown and Edwards formations. It is unlikely the operation of the MKS SWD No. 3 and No. 4 will result in the contamination of surface or subsurface water or will endanger or injure any oil, gas, or other mineral formation.

Approval of the requested permit is in the public interest because it will promote the development of the Briscoe Ranch (Eagleford) Field in the immediate area and in Dimmit County in general. Drilling permit data for Dimmit County shows that since 2010 there have been 1,996 drilling permits issued. The rate of increase in drilling permits being issued in the county has increased six fold since 2010 to the current annualized rate of 1,221 drilling permits being issued per year. Within a 10 mile radius of the proposed disposal wells the annualized rate of drilling permits being issued is 459 drilling permits per year.

Area commercial disposal facilities are permitted in the shallower Olmos sands and are showing signs of being pressure constrained. Nearly all six wells are currently injecting near their maximum authorized injection pressures while injecting only a fraction of their authorized volumes. MKS operates their own vacuum trucks which are often turned away as a facility may have reached their physical capacity for the day and can't accept any more water. Trucks being turned away must seek other facilities farther away to dispose of water. The extra time and travel increases disposal costs to area operators. Having an additional facility to dispose of produced water will reduce wait times observed at other disposal facilities in the area. Having an additional disposal facility permitted in the deeper Georgetown and Edwards formations will increase capacity and facility reliability and availability for area operators which will ultimately reduce disposal costs and increase hydrocarbon recovery.

The evidence indicates that the operation of the subject disposal wells and facility will not adversely impact any surface or subsurface useable quality water and will enhance hydrocarbon recovery.

#### **FINDINGS OF FACT**

1. Notice of this hearing was given to all persons entitled to notice at least ten (10) days prior to the hearing. Notice of the applications were published in *The Carrizo Springs Javelin*, a newspaper of general circulation in Dimmit County, on October 31, 2012. A copy of the applications were mailed on December 14, 2012, to the Dimmit County Clerk's Office and the offsetting surface owners and operators within  $\frac{1}{2}$  mile of the proposed well.
2. The MKS SWD Nos. 3 and 4 have not been drilled. MKS plans to drill the wells to a maximum depth of approximately 8,200 feet. The top of the Georgetown and Edwards is expected to occur at approximately 7,200 feet.
3. The maximum requested injection volume for each well is 25,000 barrels of

water per day and the maximum requested surface injection pressure is 3,600 psi. The requested disposal interval is the Georgetown and Edwards formations between approximately 7,200 and 8,000 feet.

4. MKS Services, LLC will permit the two disposal wells on one site to use one well as back up well should one well need maintenance, to distribute fluids within the disposal formations and to increase the reliability and availability of the disposal facility.
5. The MKS SWD Nos. 3 and 4 will be cased and cemented in a manner to protect usable quality water, and injection will be confined to the injection interval.
  - a. The subject wells will have 1,400 feet of 9<sup>5</sup>/<sub>8</sub>" surface casing cemented to surface.
  - b. The subject wells will have approximately 8,200 feet of 5<sup>1</sup>/<sub>2</sub>" casing, cemented with 965 sacks of cement with a top of cement circulated to the surface.
  - c. Injection will be through 3<sup>1</sup>/<sub>2</sub>" tubing set on a packer no higher than 100 feet above the top of the injection interval.
  - d. The Groundwater Advisory Unit recommends that usable-quality water be protected to 1,400 feet in the area of the proposed well.
  - e. The Mormac Oil and Gas Company - Marvin G. Kropf No. 1 well log shows there is approximately 150 feet of shale and additional 4,900 feet rock separating the top of the injection interval and the base of the underground sources of drinking water.
6. The Wintergarden Water Conservation District seeks to prevent the injection of disposal fluids into the Glen Rose formation.
7. Disposal will occur from 7,200 feet to 8,000 feet into the Georgetown and Edwards formations. The Glen Rose is estimated to occur at a depth of 8,450 feet.
8. The only nearby wellbore is a plugged uranium test hole within a ¼ mile radius of the proposed disposal wells that was drilled to a depth of 1,055 feet. The well does not penetrate the proposed disposal interval, therefore is not a conduit for disposal fluids and does not pose a threat to usable quality water.
9. A more extensive review of wells with ½ mile radius area of the proposed disposal well identified one additional well and four permitted locations. Well records of wells within the ½ mile radius demonstrate the wells will not pose

a potential threat to usable quality water or oil and gas production in the area as the wells do not and will not penetrate the proposed disposal interval.

10. The MKS SWD facility will incorporate all required standard containment design features for commercial disposal facilities. Additionally, areas which are expected to hold fluids will have concrete containment systems underneath. The secondary containment system around the storage tanks will contain the entire volume of fluids expected to be stored within the tanks when they are full.
11. Drilling in the Briscoe Ranch (Eagleford) Field is increasing in the area and in Dimmit County.
  - a. Drilling permit data for Dimmit County that shows that from 2010 through April 15, 2013 there have been 1,996 drilling permits issued.
  - b. Permitting has increased six fold since 2010. In 2010 there were 206 drilling permits issued in Dimmit County. In 2013, the annualized rate is 1,221 drilling permits.
  - c. Within a 10 mile radius of the proposed disposal wells there have been 749 drilling permits issued since 2010.
  - d. Within a 10 mile radius, permitting has increased nine fold since 2010. In 2010 there were 51 drilling permits issued within a 10 mile radius of the proposed wells. In 2013, the annualized rate is 459 drilling permits.
  - e. A study of water test rates for recent completions of wells within 10 miles of the proposed disposal wells shows each completed well had an average initial water production of 341 BWPD. Some wells produced as high as 902 BWPD.
12. A study of commercial disposal wells within 10 miles of the proposed disposal wells show there are 17 active, permitted and pending commercial disposal wells.
  - a. Of the 17 commercial disposal wells, only six are active, eight are permitted but not yet drilled, and three are pending permit approval and have not yet been drilled.
  - b. Of the active disposal wells, all are completed in the shallower Olmos formation at an average depth of 3,252 feet.
  - c. Of the eight permitted but not yet drilled disposal wells, five were permitted in 2011, two in 2012, and one in 2013. With some permitted wells being permitted for over two years it is not known if they will ever

be drilled and put into service.

- d. The remaining three wells are pending permit approval.
13. MKS Services operates water hauling trucks and has experienced long wait times and congestion at existing commercial disposal facilities. Many times they are turned away as the existing facilities are near capacity and cannot accept any more water.
  14. Most area commercial disposal wells which are permitted in the Olmos formation are injecting at relatively low volumes but injecting at either the maximum authorized injection pressure or near the maximum injection pressure.
    - a. The Catarina No.1 is authorized to inject 25,000 BWPD at a maximum pressure of 2,010 psi at a depth of 4,020 feet in the Olmos formation. H-10 data shows the well initially began injecting in mid 2011 at a rate of 7,500 BWPD at a pressure of 2,000 psi. Currently the well can only inject at a rate of less than 1,000 BWPD at the same 2,000 psi.
    - b. The Jung No.1 is authorized to inject 4,000 BWPD at a maximum pressure of 1,750 psi at a depth of 3,500 feet in the Olmos formation. H-10 data shows the well initially began injecting in early 2007 at a rate of 3,500 BWPD at a pressure of 1,370 psi. Currently the well can only inject at a rate of 2,000 BWPD at a pressure of 1,750 psi.
    - c. The Jung No.2 is authorized to inject 9,500 BWPD at a maximum pressure of 2,350 psi at a depth of 3,210 feet in the Olmos formation. H-10 data shows the well can only currently inject at a rate of 1,500 BWPD at the pressure of 1,750 psi.
    - d. The Frost No.1 is authorized to inject 10,000 BWPD at a maximum pressure of 1,500 psi at a depth of 3,000 feet in the Olmos formation. H-10 data shows the well is injecting at a current rate of 6,000 BWPD at a pressure of 1,100 psi.
    - e. The Farias No.1 is authorized to inject 25,000 BWPD at a maximum pressure of 1,542 psi at a depth of 3,085 feet in the Olmos formation. H-10 data shows the well currently injects at a rate of 1,000 BWPD at a pressure of 1,400 psi.
  15. Due to increasing development of the Briscoe Ranch (Eagleford) Field with horizontal drilling, large quantities of produced water must be disposed of. Use of the MKS SWD Nos. 3 and 4 as commercial disposal wells is in the public interest of promoting this development by providing a safe and

economic means of disposal of the fluids associated with drilling and production.

16. Having a disposal facility close to the horizontal wells will reduce disposal cost, and increase hydrocarbon recovery.
17. MKS Services, LLC has an active P-5 on file with the Commission, and a \$25,000 letter of credit as financial assurance.

**CONCLUSIONS OF LAW**

1. Proper notice was issued in accordance with the applicable statutory and regulatory requirements.
2. All things have occurred to give the Railroad Commission jurisdiction to consider this matter.
3. The use or installation of the proposed injection wells are in the public interest.
4. The use or installation of the proposed injection wells will not endanger or injure any oil, gas, or other mineral formation.
5. With proper safeguards, as provided by terms and conditions in the attached final order, which are incorporated herein by reference, both ground and surface fresh water can be adequately protected from pollution.
6. MKS Services, LLC has made a satisfactory showing of financial responsibility to the extent required by Section 27.073 of the Texas Water Code.
7. MKS Services, LLC has met its burden of proof and satisfied 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 and conclusions, the examiners recommend that the applications be approved as set out in the attached Final Orders.

Respectfully submitted,

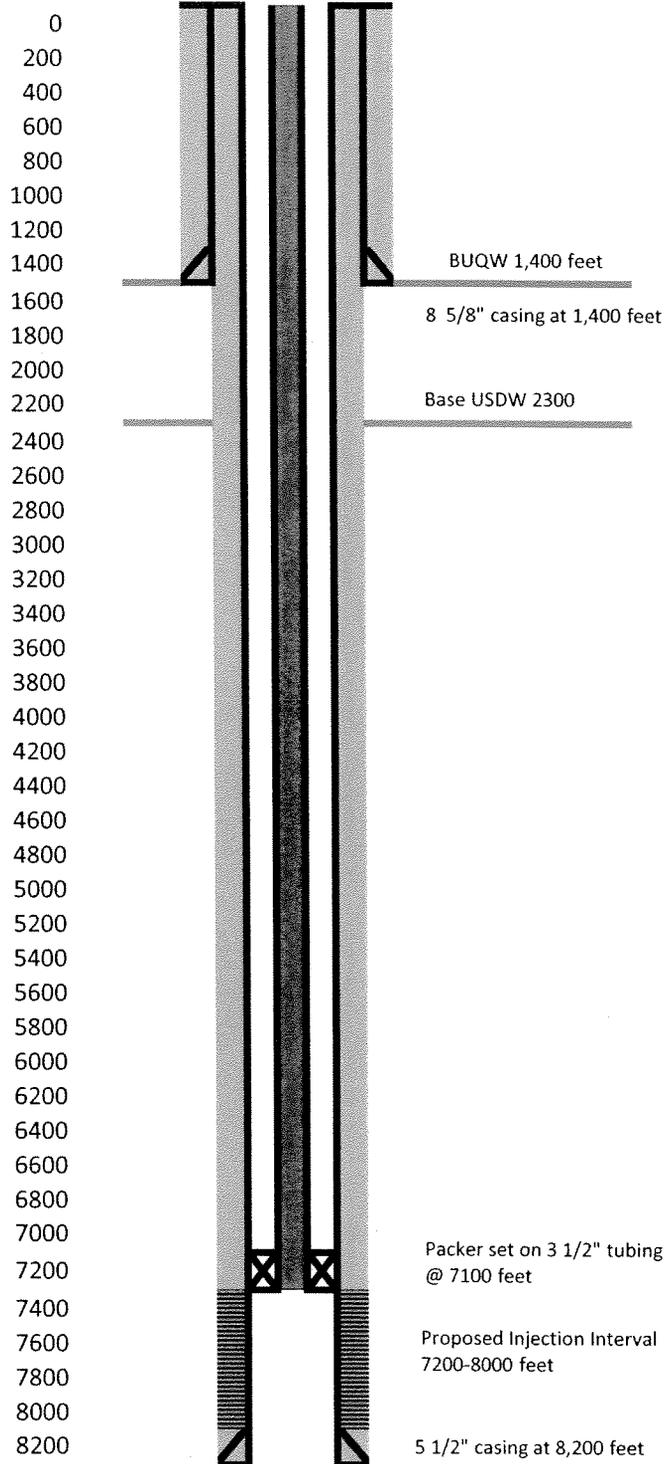


Andres J. Trevino P.E.  
Technical Examiner



Laura Miles-Valdez  
Hearings Examiner

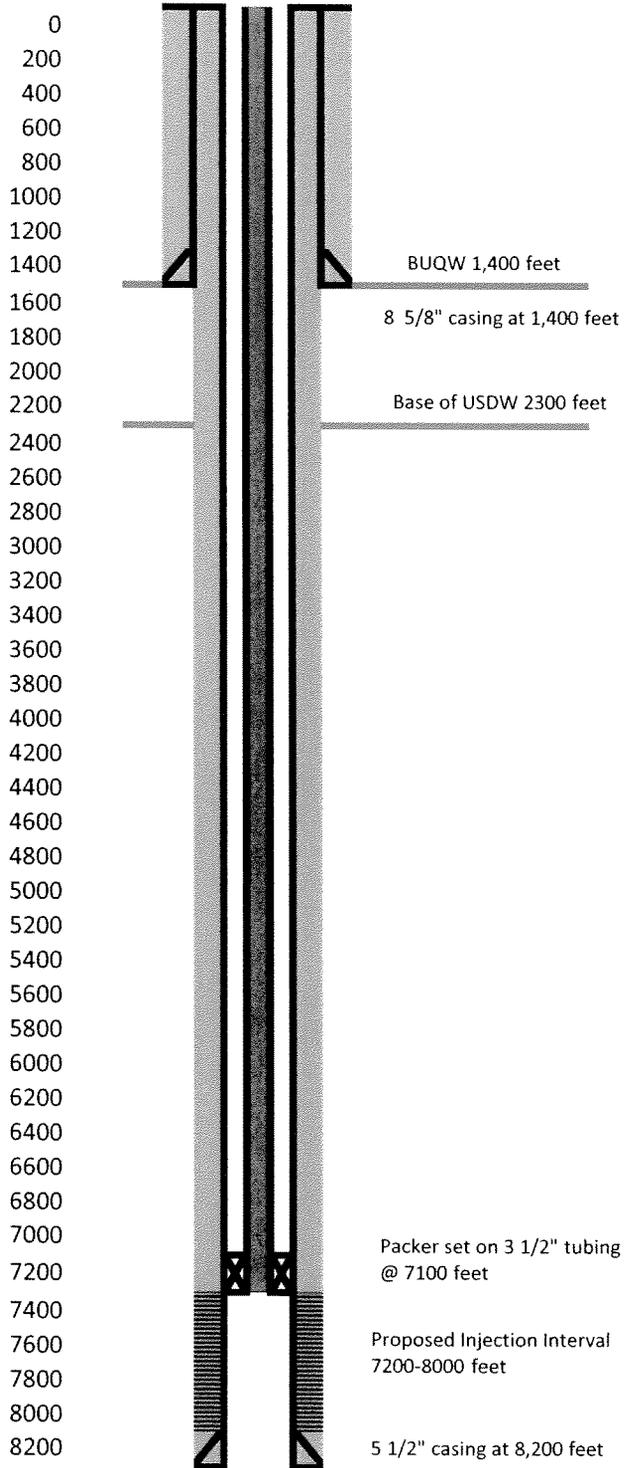
**MKS SERVICES LLC  
MKS SWD WELL NO. 3  
API NO. 127-35094**



Total Depth 8,200 feet

Exhibit No.:	<u>3</u>
Operator:	<u>MKS Services, L.L.C.</u>
Docket Nos.:	<u>01-0282833 &amp; 01-0282834</u>
Date:	<u>August 30, 2013</u>

MKS SERVICES LLC  
MKS SWD NO. 4  
API NO. 127-35095



Total Depth 8,200 feet

Exhibit No.: 17  
Operator: MKS Services, L.L.C.  
Docket Nos.: 01-0282833 & 01-0282834  
Date: August 30, 2013