



July 6, 1993

Basin Operating Company  
370 17th Street, Suite 1800  
Denver, Colorado 80202

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COLORADO OIL & GAS CONSERVATION COMM.

Ms. Susan McCannon, Acting Director  
Colorado Oil and Gas Conservation Commission  
1580 Logan Street, Suite 380  
Denver, Colorado

Subject: Disposal Well into Sussex & Shannon Formations  
Portion of Spindle Field  
Futura Horse Village 41-3 No. 2  
SW/4 NE/4 SEC 3 T1N R68W  
Weld County, Colorado

Dear Ms. McCannon:

Application for approval to conduct underground disposal of produced water into the Sussex formation at the subject well is hereby requested.

Per rule 326 of Colorado Oil & Gas Conservation Commission the following information is provided:

Name, Description, & Depth

Injection of produced Codell, Niobrara, Sussex, Shannon & J-Sand water will be into the Sussex & Shannon formations (4708-4738, 5148-5164) RKB. Injection will be through tubing equipped with a packer set in the production casing.

Water Analysis

The following is a breakdown of the produced water which will be injected:

<b>Specific Gravity</b>	1.015	<b>pH</b>	6.9
<b>Chloride</b>	9,700 mg/l	<b>Calcium</b>	2,446 mg/l
<b>Bicarbonate</b>	433 mg/l	<b>Magnesium</b>	1,107 mg/l
<b>Sulfate</b>	1,650 mg/l	<b>Iron</b>	182 mg/l
<b>Total Hardness</b>	7,000 mg/l	<b>TDS</b>	17,708 mg/l
		<b>TSS</b>	.6mg/l

Surface Operations

The subject injection well will utilize the existing injection battery that is now being utilized by the UPRR 43 B1 disposal well. Per conversation with COGCC staff, Basin will inject into the wells on an alternating basis. This approach allows Basin to utilize its surface facilities while accommodating the low volume/low pressure injection characteristics of the Sussex/Shannon formations.

Production Decline Curves

Attachment IA is a graph which illustrates the historic production trends of the Sussex & Shannon producing wells in the vicinity of Basin's disposal wells. The information provided at the request of COGCC staff.

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Fracture Pressure

Extensive step rate testing has been conducted on wells in the Sussex formation of the Spindle field. Our conclusion is that the Sussex formation is severely depleted in this area and that significant volumes can be injected without parting the rock. The fracture gradient of the Sussex formation in the Spindle field has been calculated at .69 psi/ft.

Water Volume

It is anticipated that we will inject approximately 500-1000 barrels of produced water each day.

Base Plat Covering the Area

A base plat showing the location of the disposal well, oil, gas, and irrigation wells within 1/2 mile of the proposed injection well is provided on Attachment I.B. There were no irrigation wells found on record within 1/2 mile of the proposed injection well.

Surface & Mineral Owners

The names, addresses and holdings of all surface ownership is shown on Attachment II. Mineral lease ownership is shown on Attachment IIIA. Mineral ownership is shown on Attachment IIIB.

Remedial Action

⇒ The injection zone is adequately confined in all wells producing from the Sussex formation within a 1/2 mile radius. *not correct 1/4 yes, 1/2 no*

Resistivity Log

A copy of the resistivity log run from the bottom of the surface casing to TD is shown on Attachment IV. The log is from the well within 1/2 mile of the proposed injection well.

Casing Description

A full description of the wellbore & casing system is shown on Attachment V. As shown on the diagram, The Fox Hills aquifer is adequately cemented.

Surface Facilities

A diagram of the existing surface facility and existing water plant location is shown on Attachment VI. Approximately 500 barrels of produced water from Basin operated wells will be trucked into the water disposal tank battery each day. A water disposal agreement has been negotiated with the surface owners and a copy of said agreement is shown on Attachment VII.

Water Sources

All water injected into this formation will be produced from adjacent and outlying Sussex, Codell, Niobrara, and J-Sand wells owned and operated by Basin Operating Company. The water analysis, representative of these leases was previously detailed above. Basin Exploration is the operator of all leases encompassed in this application and it is not our intent to set up a commercial disposal facility. The water will be filtered at the surface to remove as many suspended solids as is practical. Chemical treatment will include surfactant, scale inhibitor, and corrosion inhibitor. Attachment VIII identifies the source leases which will utilize this injection well.

Stimulation Program

The well will be cleaned up with a combination xylene and 15% hydrochloric acid treatment periodically to ensure continued injection capacity.

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Minimum and Maximum Amount of Water

It is anticipated that 400 to 1000 barrels of water will be injected daily.

Mechanical Integrity Test

A mechanical integrity will be conducted immediately pending approval of our application to the COGCC. We anticipate pressurizing the annulus to approximately 750 psig for 30 minutes. A cement bond log will be run from TD to surface. This well has surface casing set and cemented across the Fox Hills formation. Subsequent mechanical integrity testing will be conducted every five years or at a more frequent interval as requested by the COGCC.

Names and Addresses of Those Notified

Notice of the application will be given by certified mail or by personal delivery to each surface owner within 1/4 mile and to owners and operators of oil and gas wells producing from the proposed injection zone within 1/2 mile. Attachment II and III identify all parties notified.

Verification and Affidavit that the following notice has been transmitted to all interested parties is shown on Attachment IX.

Basin Operating Company  
370 17th St.  
Suite 1800  
Denver, Colorado 80202

Re: Notice of Application, to the Colorado Oil & Gas Conservation Commission, for Approval to Inject Produced Sussex Formation Water into the Sussex & Shannon Oil & Gas Reservoir in the SW/4, NE/4, Sec. 3, T1N, R68W, Weld County, Colorado

TO ALL INTERESTED PARTIES AND TO WHOM IT MAY CONCERN:

On July 6th, 1993, Basin Operating Company filed with the Colorado Oil & Gas Conservation Commission an application for an order approving an injection into the Sussex & Shannon zones in the Futura Horse Village No. 2 Well.

It is our intent to recycle and inject approximately 500 barrels per day of water produced from wells which are operated by Basin.

Any person who would be adversely affected or aggrieved by the authorization of the underground disposal operation may file, within fifteen days of notification, a written request for public hearing before the Commission. The Commission shall hold a hearing if it finds a significant degree of public interest. Additional information on the operation for which authorization has been applied may be obtained at the Commission Office or from Basin Operating Company.