

**OIL & GAS DOCKET NO. 06-0254842**

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**THE APPLICATION OF BROOKSIDE STORAGE, LLC FOR AUTHORITY  
PURSUANT TO STATEWIDE RULE 97 FOR A PERMIT TO CREATE, OPERATE  
AND MAINTAIN AN UNDERGROUND HYDROCARBON STORAGE FACILITY,  
BETHEL DOME STORAGE LEASE, BETHEL DOME (STORAGE) FIELD,  
ANDERSON COUNTY, TEXAS**

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**HEARD BY:** Andres (Andy) J. Trevino, P.E. and Richard D. Atkins, P.E. on March 4, 2008

**APPEARANCES:**

Tim George  
J. L. Gray  
Ralph Cole  
David A. Lytle

**REPRESENTING:**

Brookside Storage, LLC

**EXAMINER'S REPORT AND RECOMMENDATION**

**STATEMENT OF THE CASE**

Brookside Storage, LLC ("Brookside" or "Applicant") is requesting a permit for underground storage of hydrocarbon gas in the Bethel Dome (Storage) Field pursuant to Rule 97.

The application was unopposed, and the Examiners recommend approval.

**DISCUSSION OF THE EVIDENCE**

The Brookside facility is located at the Bethel Salt Dome in Anderson County, Texas. The approximately 42.4 acre facility site is approximately 6 miles southeast of Cayuga, Texas.

The Bethel Salt Dome is already the site of five existing permitted hydrocarbon storage caverns operated by Energy Transfer and Atmos Pipeline. The Brookside facility will be located to the west and nearby those other facilities.

The Bethel Salt Dome is typical of other strong and competent Gulf Coast domal salts, and has been utilized successfully for underground hydrocarbon storage for decades. Geological maps and cross sections depict Bethel Salt Dome as a large salt dome with a broad flat top and steeply dipping overhanging flanks. The caprock overlying the salt is composed of anhydrite and calcite and varies in thickness from approximately 60 feet to nearly 500 feet. The top of the salt occurs at approximately 1700 feet.

A total of two (2) storage caverns are proposed for development. The two wells and storage caverns will be situated within the central portion of the salt dome, away from the perimeter boundaries of the salt. The location of the wells and caverns within the facility affords ample distance to other permitted caverns and adjacent properties.

The Texas Commission on Environmental Quality recommends that usable quality water be protected to a depth of 1450 feet at this site. A search of public records identified wells within a ¼ mile Area of Review surrounding the facility and wells, including both wellbores that have been plugged and abandoned and wellbores currently in active storage or production service, and available plugging reports were submitted.

The wells will be cased and completed to confine stored hydrocarbons within the storage wells and caverns, to prevent waste of the stored hydrocarbons, to prevent uncontrolled escape of hydrocarbons, and to protect usable-quality water from pollution. The wells are planned for a total depth of approximately 6000 feet with several casing strings: 48" conductor pipe driven to approximately 150 feet; 36" surface casing set at approximately 1550 feet and cemented to surface; 30" intermediate casing set at approximately 2000 feet and cemented to surface; 20" production casing set at approximately 3200 feet and cemented to surface.

The storage caverns will be created by solution mining. During this process, fresh water will be injected under controlled conditions to dissolve the salt and create the caverns, and brine will be removed for disposal. A diesel blanket will be used to prevent washing of the caverns above desired depths. The blanket/brine interface depth will be monitored and interface logs will be run to verify the blanket depth. The boundaries of the caverns will be determined by periodical sonar caliper surveys during the development. When fully leached, the caverns will each have a capacity of 13,630,000 barrels. The tops of the caverns will be at a depth of approximately 3200 feet and the bottoms of the caverns will be at a depth of approximately 4760 feet. The caverns will be approximately 320 feet in diameter. A salt core testing program is planned for core samples taken from the wells, and data from this testing will be used to guide the detailed design and creation of the caverns.

After completion of the wells in storage service, this facility will participate in a cooperative subsidence monitoring program to be conducted by storage operators at the Bethel Salt Dome.

Notice of application and hearing were provided to each person and entity entitled to

notice. Notice of the hearing was published in a newspaper of general circulation in Anderson County once a week for four consecutive weeks.

Brookside has complied with the requirements set forth in Statewide Rule 97 for approval of the requested permit, and Brookside's facility, wells, and caverns will be subject to the rules and safety standards adopted by the Commission pursuant to Statewide Rule 97.

### **FINDINGS OF FACT**

1. Notice of application and hearing were provided to each person and entity entitled to notice. Notice of the hearing was published in *The Palestine Herald Press*, a newspaper of general circulation in Anderson County, on January 31, and February 7, 14, and 21, 2008.
2. The approximately 42.4 acre subject facility is located approximately 6 miles southeast of Cayuga, Texas, in an area nearby other underground hydrocarbon storage wells, caverns, and facilities in the Bethel Salt Dome.
3. The Bethel Salt dome is typical of other strong competent Gulf Coast domal salts, and has been utilized successfully for underground storage of gas for decades.
4. Geological mappings and cross sections depict Bethel Salt Dome as a large salt dome with a broad flat top and steeply dipping overhanging flanks. This facility is located within the central portion of the salt dome, away from the perimeter boundaries of the salt.
5. The salt rock comprising this dome and located beneath this facility will be strong and competent in comparison to other Gulf Coast salt domes utilized for underground storage of hydrocarbon liquids and gas. Salt rock beneath the subject facility is an impermeable salt formation that will confine stored hydrocarbons, prevent waste of stored hydrocarbons, prevent uncontrolled escape of hydrocarbons, and protect usable-quality water from pollution by stored hydrocarbons.
6. The location of the storage wells and caverns at the subject facility will afford ample distance between the caverns and the perimeter of the facility and other caverns.
7. When fully constructed, the caverns at the subject facility will each have a capacity of 13,630,000 barrels. The tops of the caverns will be at a depth of approximately 3200 feet and the bottoms of the caverns will be at a depth of approximately 4760 feet. The caverns will be approximately 320 feet in diameter.
8. The evidence establishes that usable-quality ground water is to be protected to a depth of 1450 feet, and existing wellbores within the required area of review are shown by map and spreadsheet data. The storage wells at the subject facility will be cased and completed to confine stored liquids within the storage wells and caverns, to prevent waste of the stored hydrocarbons, to prevent uncontrolled escape of hydrocarbons, and to protect usable-quality water from pollution.

9. The storage caverns at the subject facility will be created by solution mining. After each well is drilled to total depth and completed, fresh water will be injected under controlled conditions to dissolve the salt and create the cavern spaces. A diesel blanket will be used to control and limit dissolution. Brine density will be monitored periodically as fluid is removed. Sonar caliper surveys will be performed at stages to monitor cavern development.
10. This facility will participate in a cooperative subsidence survey monitoring program of wells and benchmarks to be conducted by storage operators at Bethel Salt Dome.
11. The Applicant has complied with the requirements set forth in Statewide Rule 97 for approval of the requested permit.
12. When operating in gas storage service under the requested permit, the facility, wells, and caverns will be subject to the rules and safety standards adopted by the Commission pursuant to Statewide Rule 97.

#### **CONCLUSIONS OF LAW**

1. Proper legal notice was timely given to all persons and entities entitled to notice under applicable statutes and rules.
2. All things have occurred and have been accomplished to give the Commission jurisdiction in this case. The Commission has jurisdiction to authorize issuance of a permit pursuant to Statewide Rule 97 to create, operate, and maintain an underground hydrocarbon storage facility for storage of gas in a salt formation.
3. The subject gas storage facility, wells, and caverns will not endanger oil, gas, or geothermal resources or cause the pollution of surface water or fresh water strata unproductive of oil, gas, or geothermal resources. The record establishes that this facility will be created, operated, and maintained so as to confine stored gas within the storage wells and caverns, to prevent waste of the stored hydrocarbons, to prevent uncontrolled escape of hydrocarbons, and to protect usable-quality water from pollution.
4. The Applicant has complied with the requirements for approval set forth in Statewide Rule 97.
5. When operating in gas storage service under the requested Rule 97 permit, the facility, wells, and caverns shall be subject to the rules and safety standards adopted by the Commission pursuant to Statewide Rule 97.
6. The application should be granted, and the Commission staff should be authorized and directed to issue the permit.

**EXAMINER'S RECOMMENDATION**

Based on the above findings and conclusions, the examiner recommends that the application of Brookside Storage, LLC to create, operate and maintain a facility to store gas be approved pursuant to Statewide Rule 97. Technical Permitting is directed to issue the appropriate permit pursuant to Statewide Rule 97 with the usual conditions, restrictions, and limitations as required by the Commission. Brookside Storage LLC shall comply with all applicable rules and safety standards adopted by the Commission pursuant to Statewide Rule 97.

Respectfully submitted,

Andres Trevino  
Technical Hearings Examiner