

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Form C-144
June 1, 2004

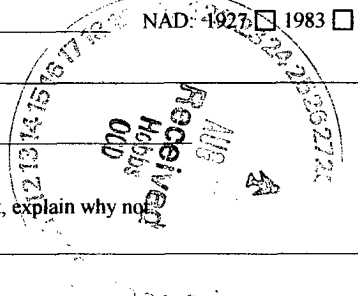
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

For drilling and production facilities, submit to
appropriate NMOCD District Office.
For downstream facilities, submit to Santa Fe
office

Pit or Below-Grade Tank Registration or Closure

Is pit or below-grade tank covered by a "general plan"? Yes ☐ No ☒

Type of action: Registration of a pit or below-grade tank ☐ Closure of a pit or below-grade tank ☒

Operator: <u>Rice Operating Company</u> Telephone: <u>505-393-9174</u> e-mail address: <u>scurtis@riceswd.com</u>		
Address: <u>122 West Taylor, Hobbs, NM 88240</u>		
Facility or well name: <u>BD System D-20 SWD Reserve Pit</u> API #: <u>30-025-37168</u> U/L or Qtr/Qtr <u>D</u> Sec <u>20</u> T <u>22S</u> R <u>37E</u>		
County: <u>Lea</u> Latitude _____ Longitude _____ NAD: <u>1927</u> <input checked="" type="checkbox"/> 1983 <input type="checkbox"/>		
Surface Owner: Federal <input type="checkbox"/> State <input checked="" type="checkbox"/> Private <input type="checkbox"/> Indian <input type="checkbox"/>		
Pit Type: Drilling <input checked="" type="checkbox"/> Production <input type="checkbox"/> Disposal <input type="checkbox"/> Workover <input type="checkbox"/> Emergency <input type="checkbox"/> Lined <input checked="" type="checkbox"/> Unlined <input type="checkbox"/> Liner type: Synthetic <input checked="" type="checkbox"/> Thickness _____ mil Clay <input type="checkbox"/> Pit Volume _____ bbl	Below-grade tank Volume: _____ bbl Type of fluid: _____ Construction material: _____ Double-walled, with leak detection? Yes <input type="checkbox"/> If not, explain why not _____	
Depth to ground water (vertical distance from bottom of pit to seasonal high water elevation of ground water.) Ground water may not be present at this site (See Site Investigation Report)	Less than 50 feet (20 points) 50 feet or more, but less than 100 feet (10 points) X 100 feet or more (0 points)	
Wellhead protection area: (Less than 200 feet from a private domestic water source, or less than 1000 feet from all other water sources.)	Yes (20 points) No (0 points) X	
Distance to surface water: (horizontal distance to all wetlands, playas, irrigation canals, ditches, and perennial and ephemeral watercourses.)	Less than 200 feet (20 points) 200 feet or more, but less than 1000 feet (10 points) 1000 feet or more (0 points) X	
Ranking Score (Total Points) 10 points		

If this is a pit closure: (1) Attach a diagram of the facility showing the pit's relationship to other equipment and tanks. (2) Indicate disposal location: (check the onsite box if you are burying in place) onsite ☒ offsite ☐ If offsite, name of facility Sundance. (3) Attach a general description of remedial action taken including remediation start date and end date. (4) Groundwater encountered: No ☒ Yes ☐ If yes, show depth below ground surface _____ ft. and attach sample results. (5) Attach soil sample results and a diagram of sample locations and excavations.

Additional Comments:
The Site Investigation Report provides maps of the site, depth to ground water data, results of soil sampling.
The Closure Plan describes the proposed closure method, presents information about landfill cover designs tested by Sandia National Laboratories, and presents the modeling of the proposed closure method.

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that the above-described pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☐, a general permit ☐, or an (attached) alternative OCD-approved plan ☒.

Date: 8/28/06

Printed Name/Title C D HAYNES, ENGR. MGR.

Signature

Carolyn Susan Haynes

Your certification and NMOCD approval of this application/closure does not relieve the operator of liability should the contents of the pit or tank contaminate ground water or otherwise endanger public health or the environment. Nor does it relieve the operator of its responsibility for compliance with any other federal, state, or local laws and/or regulations.

Condition: One time approval.

Approval:

Printed Name/Title CHRIS WILLIAMS / DIST. SUPERV.

Chris Williams

Date: 8/29/06

RICE Operating Company

122 West Taylor • Hobbs, New Mexico 88240
Phone: (505)393-9174 • Fax: (505) 397-1471

August 28, 2006

Gary Wink
NMOCD Hobbs District I Office
1625 N. French Dr.,
Hobbs, NM 88240



RE: Blinebry Drinkard SWD System - SWD Well D-20 Drilling Reserve Pit

Dear Mr. Wink:

Rice Operating Company (ROC) retained R.T. Hicks Consultants, Ltd. (Hicks Consultants) to design a reserve pit closure protocol for the "BD" Saltwater Disposal (SWD) "D-20" Reserve Pit Unit Letter D, Section 20, T22S, Range 37E (latitude 32° 23' 0" N, longitude 103° 11' 28" W.)

Although some drilling fluids escaped from the lined reserve pit, the mass of chloride released to the subsurface was relatively small. After removal of the dried drill cuttings and poly liner, ROC collected deep soil samples from locations where the ground appeared to be moist. Analyses of these trench samples detected chloride above 250 mg/kg to depths of 10 feet, the maximum reach of the backhoe. Hicks Consultants mobilized a hollow stem auger rig to determine the vertical and lateral extent of drilling fluid penetration. We found that outside of the areas of moist earth investigated by ROC, drilling fluid penetration was minimal to non-existent. One boring located only a few feet from an ROC trench sample did not detect chloride greater than 1000 mg/kg. At both borings, the chloride concentrations were below background levels at 15 feet below ground surface. We conclude that the released drilling fluid (and chloride) is confined to small diameter preferential pathways that extend to less than 15 feet below ground surface.

The fact that several water well borings in the area penetrated the Ogallala and found no water suggests that ground water is not present beneath the site. At one well located about 1.5 miles east of the site, ROC measured a depth to water of 65 feet below ground surface. Our evaluation of the hydrogeologic data allow us to conclude that ground water, if present at the site, might be found at a depth exceeding 100 feet.

The data and analysis generated by our characterization activities coupled with long-term testing data available through Sandia National Laboratories allow us to conclude that a monolithic evapotranspiration (ET) infiltration barrier (Figure 1 below) will effectively protect fresh water (if present), public health, and the environment from residual constituents of concern in the vadose zone beneath the former pit. The ET barrier will minimize the downward and upward migration of soluble salts such that the rate of vertical migration, down or up, has no material impact on ground water quality or soil productivity. At the D-20 site, the thickness of the fine-grained soil layer will be slightly greater than the 90 cm shown in Figure 1 in order to bring the surface to grade. Also, ROC will install coarser-grained material from the spoil piles first, overlain by the finer-grained material in

the spoil piles. The vegetation final cover for the monolithic ET barrier will be placed during the final restoration of the injection well site, about 40-years from now. Until final site restoration, ROC will cover the area of the former pit with caliche gravel and use this area for operations. The area will be contoured to prevent moisture accumulation.

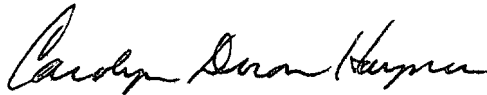
As described in the Closure Plan, monolithic evapotranspiration barriers are routinely employed as the final covers for landfills. Sandia National Laboratories (SNL) compared the efficacy of the monolithic barrier to other landfill cover designs and concluded that this system can work very well in arid and semi-arid environments, such as the Permian Basin. Our unsaturated zone modeling of this proposed remedy is consistent with the findings of SNL.

ROC is the service provider (agent) for the Blinebry Drinkard (BD) SWD System. ROC has no ownership of any portion of pipelines, wells, equipment or facilities. The BD System is owned by a unique consortium of oil producers called System Parties, who provide all operating and project capital on a percentage ownership/usage basis.

If you have any questions concerning this submission, please contact me. We have attached a revised C-144 for this site.

Sincerely,

RICE OPERATING COMPANY



Carolyn Doran Haynes
Engineering Manager

Copy: SC, KP, RTH, Chris Williams

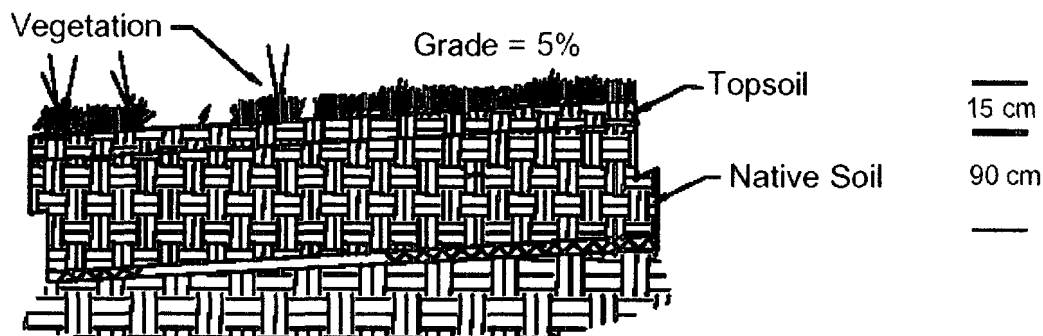


Figure 1: Monolithic Evapotranspiration Landfill Cover (Modified from Sandia National Laboratories Report SAND2000-2427)