NM2 - ____22____

GENERAL CORRESPONDENCE YEAR(S):

_____2007_____

Ocean Munds-Dry
Associate
omundsdry@hollandhart.com

HOLLAND&HART LLP

November 21, 2007

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2007 NOV 21 PM 3 40

HAND DELIVERY

Carol Leach
General Counsel
State of New Mexico
Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Re: Application of Marbob Energy Corporation for a Centralized Waste Management Facility, Artesia, New Mexico.

Dear Ms. Leach:

Pursuant to your discussion with Mr. Carr, enclosed please a copy of the original application filed by R.T. Hicks Consultants, Ltd. on behalf of Marbob Energy Corporation for a proposed centralized surface waste management facility. I appreciate your assistance in directing this to the proper person for further handling.

Please let me know if you have any questions or need anything further. Thank you for your attention to this application.

Sincerely,

Ocean Munds-Dry

Ocean Munds-Dry
ATTORNEY FOR MARBOB ENERGY CORP.

Enclosure

R. T. HICKS CONSULTANTS, LTD.
1909 Brunson Avenue ▲ Midland, Texas 79701 ▲ 432-638-8740▲ Fax: 413-403-9968

February 14, 2006

Mr. Ed Martin
New Mexico Oil Conservation Division
1220 South St Francis
Santa Fe, New Mexico 87505
Via email: emartin@state.nm.us

RE: Marbob Energy Corporation Rule 711 Permit Application
Section 19 &30, T17S, R30E

Dear Mr. Martin:

On behalf of Marbob Energy Corporation, R.T. Hicks Consultants, Ltd. is pleased to submit the above referenced application. In a June meeting in Carlsbad, we discussed the attached 711 Permit application with the current landowner, the Department of Interior. The proposed centralized surface waste management facility provides for habitat restoration of the former caliche pits by filling the pits with drilling pit material and other non-hazardous waste, covering the compacted material with an infiltration barrier, then restoring the site with native vegetation.

We look forward to working with you to expedite approval of this program. We have changed the approach presented in this application several times in an attempt to comply with salient provisions of the most recent draft of the proposed Surface Waste Regulations. We hope that NMOCD finds this permit application administratively complete under Rule 711, allowing us to move forward with public notice. We have sent notification letters to adjacent landowners in advance of publication in newspapers (see Appendix C of the Permit Application).

Sincerely,
R.T. Hicks Consultants, Ltd.

Clinton J. Peebles for
Gilbert Van Deventer
Project Manager

Copy: Rand French, Marbob
Randall Hicks, Hicks Consultants
NMOCDNMOCD Artesia District Office

February 2006

Rule 711 Permit Application

Loco Hills Habitat Restoration Facility

Marbob Energy Corporation
2208 West Main Street
Artesia, New Mexico

R.T. Hicks Consultants, Ltd.

901 Rio Grande Blvd. NW, Suite F-142, Albuquerque, NM 87104

February, 2006

Loco Hills Habitat Restoration Program

Application for a Centralized Waste Management Facility

MARBOB ENERGY CORPORATION
ARTESIA, NEW MEXICO

Prepared for:

Marbob Energy Corporation
2208 West Main
Artesia, NM 88211

R.T. Hicks Consultants, Ltd.
1909 Brunson Avenue, Midland, Texas 79701

LOCO HILLS HABITAT RESTORATION FACILITY

Application for Centralized Surface Waste Management Facility

TABLE OF CONTENTS

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

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

Form C-137
Revised June 10, 2003

Submit Original Plus 1
Copy to Santa Fe
1 Copy Appropriate
District Office

APPLICATION FOR WASTE MANAGEMENT FACILITY

(Refer to the OCD Guidelines for assistance in completing the application)

☐ Commercial ☒ Centralized

1. Type: ☐ Evaporation ☐ Injection ☐ Other
   ☒ Solids/Landfarm ☐ Treating Plant
2. Operator: Marbob Energy Corporation
   Address: P. O. Box 227 (2208 W Main) Artesia, New Mexico 88211-0227
   Contact Person: Dean Chumbley Phone: 505-748-3303
3. Location: NW/4 NW/4 Section 30 Township 17 South Range 30 East
   Submit large scale topographic map showing exact location
4. Is this a modification of an existing facility? ☐ Yes ☒ No
5. Attach the name and address of the landowner of the facility site and landowners of record within one mile of the site.
6. Attach description of the facility with a diagram indicating location of fences, pits, dikes, and tanks on the facility.
7. Attach designs prepared in accordance with Division guidelines for the construction/installation of the following: pits or ponds, leak-detection systems, aerations systems, enhanced evaporation (spray) systems, waste treating systems, security systems, and landfarm facilities.
8. Attach a contingency plan for reporting and clean-up for spills or releases.
9. Attach a routine inspection and maintenance plan to ensure permit compliance.
10. Attach a closure plan.
11. Attach geological/hydrological evidence demonstrating that disposal of oil field wastes will not adversely impact groundwater. Depth to and quality of ground water must be included.
12. Attach proof that the notice requirements of OCD Rule 711 have been met.
13. Attach a contingency plan in the event of a release of H_2S.
14. Attach such other information as necessary to demonstrate compliance with any other OCD rules, regulations and orders.
15. CERTIFICATION
    I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: Johnny C. Gray Title: President

Signature: Date: 2/9/06

E-mail Address: marbob@marbob.com

5. NAME AND ADDRESS OF FACILITY/LANDOWNERS WITHIN ONE-MILE

Current Landowner:	United States Department of the Interior Bureau of Land Management Carlsbad Field Office 620 E. Greene St. Carlsbad, New Mexico 88220 (505) 628-3471
Landowner at time of permit approval:	Marbob Energy Corporation P. O. Box 227 2208 W Main Street Artesia, New Mexico 88211-0227 (505) 748-3303
Landowners within 1 Mile:	Larry Taylor Highway 83 Loco Hills, New Mexico 88255 (505) 677-2271
	United States Department of the Interior Bureau of Land Management Carlsbad Field Office 620 E. Greene St. Carlsbad, New Mexico 88220 (505) 628-3471

6. DESCRIPTION OF FACILITY

After Marbob Energy Corporation completes the acquisition of the property from the current owner, the Bureau of Land Management, the proposed centralized Surface Waste Management Facility will restore the natural habitat of one former caliche pit. The habitat restoration program (i.e. the Surface Waste Management Facility) will initially consist of two cells and will expand to additional cells according to the needs of the operator. In general:

1. Separate landfarm cells will accept hydrocarbon stained soil and other RCRA exempt oil field waste for biologic treatment and
2. Separate landfill cells each will include an area where reserve pit material will dry before placement and compaction to restore the natural grade of the former caliche pit
3. Landfill cells may accept other oilfield exempt waste, such as tank bottoms and reserve pit material, as well as non-hazardous solid waste generated by the operator.

Each landfarm or landfill cell will each occupy approximately 2-3-acres located in the SW/4 SW/4 Section 19 and NW/4 NW/4 Section 30, of Township 17 South, Range 30 East, Eddy County, New Mexico. Plate 1 is a 1:24000 scale topographic map showing the location of the facility and a portion of the surrounding environs. Plate 2 is a 2004 aerial photograph of the same area as Plate 1. Plate 3 reproduces Plate 2 on a larger scale to show the proposed landfarm cells (Cells 1 and 2) and landfill cells (Cells A and B) that are required for the habitat restoration program. This application seeks approval of all four cells, however cells A and 1 will be activated first and cells B and 2 will be activated in the future. NMOCD will be notified 30-days in advance of activation of Cells B and 2.

Proposed use of the facility:
The facility is designed to recycle oilfield waste and non-hazardous solid waste generated by the operator in a manner that will facilitate habitat restoration of the former caliche pit. Specifically:

- The landfill cells will accept reserve pit material exported from drilling locations where on site burial is not permitted or preferred. First the material will be spread in the bottom of the pit within a specific landfill cell to dry until it can be worked and compacted. Then the material will be placed into the cell, graded then compacted to reduce permeability.
- Landfill cells may accept other oilfield waste or non-hazardous solid waste generated by the operator.
- Reclaimed caliche roadbed and drill pad gravel will be imported to the landfill cells and employed as the first layer of an infiltration barrier,

creating a cap over the compacted material to prevent the upward migration of soluble salts and attendant soil sterilization.

- The landfarm cells, which are 2-3 acres, will treat oilfield wastes that are exempt from RCRA Subtitle C regulations and that do not contain naturally occurring radioactive material (NORM) regulated pursuant to 20 NMAC 3.1 Subpart 1403. This treated waste, which becomes fine-grained organic-rich soil, is the second layer of the barrier over the compacted reserve pit material.
- As the first landfill cells reach capacity, we plan to convert a landfarm cell to a landfill cell. The landfill cells will not reach capacity for several years, perhaps a decade.
- Surplus native soil currently stored at the site, will be placed over the treated soil/waste to facilitate restoration of the site with native plant species.
- Native vegetation planted on the sloped restored wildlife habitat creates the final and most important element of the site restoration.

The intent is to eliminate the adverse visual impact of the former caliche pit and provide habitat for native plants and wildlife.

As suggested above, waste streams imported to the site will be dominated by drilling reserve pit solids, hydrocarbon and/or chloride-impacted soils resulting from leaks or spills and tank bottom solids and water (BS&W). Free liquids (e.g. BS&W) will be brought into the facility at a rate no greater than 50 barrels per day as allowed by rule in subsection A, paragraph (3)(b) of Section 9.15.9.711 NMAC. At no time will the facility accept wastes that are determined to be RCRA Subtitle C hazardous wastes by either listing or by characteristic testing.

The facility will accept only waste generated in New Mexico. The landfarm and the landfill cells will not receive compensation for waste management and will be used exclusively by Marbob Energy Corporation (Marbob), but may be used by more than one generator subject to New Mexico's "Oil and Gas Conservation Tax Act" Section 7-30-1 NM SA-1978 as amended under an operating agreement and may receive wastes that are generated from two or more production units or areas or from a set of jointly owned or operated leases.

This permit seeks approval for the first landfill and landfarm cells as soon as possible. Currently, our calculations suggest that Marbob will not generate a sufficient volume of reserve pit material within a reasonable period to effectively restore the habitat at the proposed facility. Therefore, we seek approval to employ the remaining cells on an as-needed basis and we will notify NMOCD 30 days prior to accepting any waste into the remaining cells.

Directions to the facility:
From Artesia, NM proceed 18 miles east on Highway 83. Turn right near mile marker 130 and proceed south on County Road 216. Continue 0.6 miles south and turn left onto caliche lease road. Proceed east 0.1 mile, and bear left heading northeast another 0.1 miles to south entrance of facility.

7A. LANDFARM AND LANDFILL CONSTRUCTION

Upon completion of the land sale from the BLM to Marbob Energy Corporation and conditional approval of the 711 permit, the perimeters of the landfarm and landfill cells will be fenced as shown in Plate 4. Locked gates will prevent unauthorized access to the facilities. As active cells area added, earthen berms will separate each active landfarm and landfill cells from non-active areas of each facility. The landfarm and landfill facilities will each have a sign at the north entrance which is legible from at least fifty feet and contain the following information:

> **Loco Hills Habitat Restoration Facility**
> SW/4 Section 19, T17S, R30E
> NW/4 Section 30, T17S, R30E
> Emergency Contact: (505) 748-3303

Existing access roads will be used for access to the facility. No berms are necessary to prevent runoff or run-on of precipitation outside of the caliche pit since the land farmed and landfill material will be contained within the caliche pit, which is 6-10 feet below the natural ground surface.

The next section of this submittal describes the operation of the landfarm and landfill.

Plate 4 is a diagram showing the layout and construction of each facility Cells A and B designate the areas where hydrocarbon-impacted soils will be landfarmed. Cells 1 and 2 designate the general area where the drill cuttings and caliche layers will be landfilled.

7.B LANDFARM AND LANDFILL OPERATION

General Operation

Appendix A presents the results of samples obtained to define ambient, pre-operation conditions for the landfarm cells. The location of the sampling points is shown on Plate 4. The samples were analyzed for the following constituents:

- Benzene, toluene, ethylbenzene, and xylenes (BTEX),
- Major cations/anions including boron, nitrogen species,
- The 17 Water Quality Control Commission (WQCC) metals: and
- Radium 226 & Radium 228

The general operation of the facility is outlined below

- Contaminated soils will not be placed within 100 feet of the property line of the facility, or within 20 feet of any pipeline crossing the facility.
- No equipment will be employed for landfill or landfarm activity within 10 feet of a pipeline. All pipelines crossing the facility will have surface markers identifying their location.
- Oilfield waste will only be accepted at the facility while an attendant is on duty. The facility will be secured with a locked gate(s) when no attendant is present.
- Design of the facility will prevent runoff or run-on of precipitation to accumulate in pools or travel past 20 feet from the treatment or landfill areas.
- Any excessive precipitation forming ponds and pools within the treatment or landfill cells will be removed within 24 hours of discovery. However, allowance for precipitation to remain within the cell is encouraged to enhance the aerobic biodegradation of hydrocarbon-impacted soils.
- Records of all laboratory analyses and sampling locations will be available at all times at the Marbob office in Artesia, NM.

It is possible but not probable that the landfill cells identified in this submission will fill before Marbob's needs for the landfill ends. If this occurs, we will convert a landfarm cell for use as a landfill. We will notify NMOCD of our intent to implement this 30-days prior to this proposed conversion.

Landfarm Operation
The operation of the landfarm portion of the facility is outlined below.

- Within 72 hours of placement within a cell, hydrocarbon-impacted soils will be disked and spread on the surface in lifts 6-inches thick or less.
- Hydrocarbon-impacted soils will be disked a minimum of once every 2 weeks or more - as often as necessary to improve the biodegradation rate.
- Nitrogen, phosphorous and other nutrients may be added as necessary.
- Precipitation captured within the facility may be added to the hydrocarbon-impacted soils as necessary for dust suppression and to enhance biodegradation processes, and minimize odors.

- Successive lifts of hydrocarbon-impacted soils will not be spread until laboratory analyses of TPH (DRO) in the previous lift have reached a concentration endpoint (i.e. no incremental decrease in TPH (DRO) values) or the hydrocarbon constituents meet the risk-based soil screening levels established by the New Mexico Environment Department
- On an annual basis, analytical results of the treatment zone will be submitted to the NMOCD Santa Fe office, with a copy to the Artesia District office,
- On an as-needed basis, treated soil will be mixed with a small volume of fine-grained native material and placed as a layer of the infiltration barrier of the landfill, as described in the next section
- As described in the next section, a thin layer of stockpiled native soil will be placed over the soil/treated waste mixture at the landfill. We will "patch-seed" this top layer with native species, creating micro-habitats that will spread to form the final vegetative cap for the landfill and an active biologic layer (root zone) that will continue to biodegrade any remaining hydrocarbons in the soil.
- Records of all materials landfarmed at the facility will be maintained and documentation will include the following: (a) generator, (b) origin, (c) date received, (d) quantity, (e) certification of exempt status, (f) transporter, and (g) cell location

Landfill Operation

The operation of the landfill portion of the facility is outlined in general terms below. We intend to perform several tests of this landfill protocol with reserve pit material that is currently at a drilling site waiting excavation and disposal. This protocol will be observed and evaluated by a Professional Engineer who will then develop site-specific engineering drawings and specifications that provide more detail of not only the day-to-day protocol, but the proposed final grade of the fully-restored landfill facility. The drawings will show that the berms and other measures are capable of protecting the facility against damage due to a 25-year storm event.

- Drilling pit material will be placed in rows approximately 2-3 feet tall and 4-6 feet wide in a drying area adjacent to the active landfill cell to allow seepage of residual drilling fluid liquids into the underlying fine-grained native material and evaporation to the atmosphere. Other configurations may be employed such that pooling of liquids draining from the drilling pit material is minimized.

- When the imported material is sufficiently dry to allow placement and compaction, equipment will place the dried material and the uppermost 2-6 inches of the underlying Dockum Group material (to capture the infiltrated brine) into the active portion of the landfill. The material will be placed in 6-inch to 2-foot lifts and compacted with the equipment on a slope as shown in Figure 1.
- The process outlined above will be repeated until the height of the fill is essentially the same as the height of the natural land surface. Then at least 1-foot of caliche gravel from reclaimed well pads and roads will be placed over the compacted fill as the first layer of the infiltration barrier, with reclaimed soil placed on the caliche layer (Figure 2). Because ground water is not present at the site, this process is designed to prevent upward infiltration of saline pore fluid from the drill cuttings to the soil horizon.
- Placing the coarse-grained caliche gravel with open pore spaces over the fine-grained reserve pit material is the key design feature that will prevent upward wicking of saline pore water. To reduce the fines entrained in the reclaimed caliche road gravel, we intend to wash the caliche gravel with clear produced water as it is laid down over the compacted reserve pit material.
- To minimize intrusion of finer-grained material into the open-pore space of the coarse-grained caliche layer, we may need to install a geotextile material over the caliche before placing a 1-foot layer of mixed reclaimed and native soil.
- Eventually, the cell will fill and the compacted drilling pit material can be fully encapsulated with a final layer of native soil and a vegetative cap as shown in Figure 3.
- As stated above, a detailed set of engineering plans and specifications for the landfill operation will be submitted to NMOCD after several full-scale tests of this proposed protocol.

8. CONTINGENCY PLAN FOR REPORTING & CLEANUP FOR SPILLS OR RELEASES

The facility will be closely monitored by staff as it is within 500 feet of the Marbob pipe yard and warehouse facilities, where Marbob will maintain an office and field laboratory for this operation.

Only minor leaks or spills will occur as only very small volumes (less than 50 barrels/day) of liquids will be transported to the site for dust suppression and maintenance of optimal moisture content in the landfarm treatment zone.

The operator of the site will notify the NMOCD Santa Fe and Artesia offices within 24 hours of any fire, break, leak, spill, blow out or any other circumstance from the facility or nearby operations of others that could constitute a hazard or contamination in accordance with OCD Rule 116.

The site operator will ensure that all conditions to the proper operation of the facility and requirements are met.

Because there is no regulated ground water at the site, any limited migration of constituents from the landfill cells into the underlying native material will not create a threat to human health or the environment.

As stated, the infiltration barrier described in the previous section will effectively prevent any contaminants from wicking upward into the soil horizon at the landfill.

No constituents of concern will remain at the closed portions of the landfarm because we plan to remove the reclaimed soil for use as part of the proposed landfill infiltration barrier.

The landfarm will accept only soil and soil-like material plus small volumes of BS&W and other liquids to maintain optimal moisture content in the treatment zone. The landfill will accept only exempt solid waste or non-exempt, non-hazardous solid waste generated by Marbob Energy Corporation. Therefore, we do not believe a contingency plan to address hydrogen sulfide, fires or explosions is necessary for this facility.

9. ROUTINE INSPECTION AND MAINTENANCE PLAN

Landfarm inspection and maintenance will be conducted on at least a monthly basis and immediately following each consequential rainstorm or windstorm. If any defect is noted, we will make repairs as soon as possible. If the defect will jeopardize the integrity of the landfarm or landfill, the NMOCD Santa Fe and Artesia offices will be notified within 24 hours and additional wastes will not be placed into landfarm or landfill cells until repairs have been completed.

At the landfarm, we will sample the treatment zone, which will not exceed three feet beneath the landfarm ground surface, on an annual or more frequent basis. We will obtain samples at 6-inch intervals below the placed material at four locations within each active cell. We will evaluate the samples for total organic vapors using the heated headspace method. All samples will be submitted to a laboratory for analysis of TPH and GRO to monitor the efficacy of biodegradation.

After soil samples are obtained, the boreholes will be filled with local fine-grained material.

10. CLOSURE PLAN

The NMOCD will be notified when operation of the facility is to be discontinued for a period in excess of six months or when the facility is to be permanently closed. Within six months after discontinuing use or within 30 days of proposed closure, Marbob will submit a final closure plan to NMOCD Santa Fe office for approval. The operator will dismantle constructed facilities and complete restoration of the facility within six months of receiving approval of the closure plan, unless the NMOCD Director grants an extension of time.

The closure plan will include the following procedures:

- No new material will be accepted after the facility is closed.
- Existing landfarm soils will be remediated until they meet the NMED soil screening standards for industrial use in effect at time of closure.
- The treatment zone soils within each landfarm cell will be sampled at two to three feet below the native ground surface and analyzed for constituents of concern.
- Soils exceeding NMED soil screening standards for industrial use in effect at the time of closure will be removed or further remediated.
- Any areas not contoured and seeded with native grasses will be restored and allowed to return to its natural state. Perimeter fences will be left in place to prevent grazing by stock.
- If possible, drainage from the former caliche pit will be designed to direct runoff into the existing stock pond, which is located outside of the proposed fences discussed above.
- Closure will be pursuant to all NMOCD requirements in effect at the time of closure, and any other applicable local, state, and/or federal regulations.
- Because no regulated ground water exists at the site and because site restoration is the goal of this program, no post-closure plan is necessary.

Estimated Closure Costs

Habitat restoration is the desired outcome of the facility and is constantly ongoing. Therefore, the estimated costs for final closure (e.g. fence removal, etc.) are not expected to exceed the required financial assurance for a centralized facility ($25,000).

11. SITE GEOLOGICAL AND HYDROLOGIC ASSESSMENT

An initial subsurface investigation was conducted the week of July 5, 2005, for a more site-specific assessment of the subsurface hydrogeology and soil conditions. One soil boring was advanced to 255 feet below ground surface (bgs) using an air/mud rotary drilling rig operated by Eades Drilling Services (Hobbs NM). The boring was located near the southwestern edge of the caliche pit as shown in Plate 4. The caving dry sand of the Santa Rosa Sandstone unit prevented completion of the borehole and construction of a monitoring well.

Numerous samples were collected with a split spoon and from drill cuttings at five-foot intervals for analysis of chloride concentration, moisture content, and grain size analysis.

On August 16, 2005, we mobilized to the site to complete a monitoring well using mud/water rotary techniques. Depth to ground water approximately 260 feet below land surface within the area of the proposed action based on a measurement obtained from a monitoring well that was completed on August 18, 2005, near the southwest corner of the caliche pit. The monitoring well was developed several times by jetting it dry with the drilling rig.

Prior to collecting groundwater samples the well was bailed dry three times over a 3 day period. On September 28, 2005 (11:30 am) we evacuated 5 gallons of standing water in the well, then allowed the well to recover overnight. At 3:15 pm the following day, we removed all of the water in the well, which consisted of 10 gallons. On September 30, 2005 (3:08 pm), we again bailed the well dry (7 gallons) and obtained a sample. Based upon these bailing tests, we believe the ground water zone at the site is capable of yielding only 5-10 gallons per day into this four-inch well.

The definition of ground water in the NMOCD Rulebook is clear:

> "Ground water shall mean interstitial water which occurs in saturated earth material and which is capable of entering a well in sufficient amounts to be utilized as a water supply."

Because 5-10 gallons per day cannot be considered a water supply, ground water at this site does not exist in sufficient quantities for beneficial use.

The ground water quality is poor based on the laboratory analysis of a water sample collected from the on site deep monitoring well on September 30, 2005. A well sample data form detailing the sampling procedures and results is included in Appendix B. The total dissolved solids (TDS) of the ground water sample was 5240 milligrams per liter (mg/l) which exceeds the New Mexico Water Quality Control Commission (WQCC) standard of 1000 mg/l. The

same laboratory analysis recorded sulfate (2030 mg/l) and chloride (1550 mg/l) concentrations that exceeded the WQCC standards for these constituents of 600 mg/l and 250 mg/l, respectively. The anomalously high sulfate concentration can be attributed to the high gypsum and anhydrite minerals common to the Rustler Formation. Well yields for a single family household of less than 150 gallons per day are not deemed of sufficient quantity for beneficial use. Activities associated with the proposed action will not affect the beneficial use of ground water.

Table 1 – Summary of Ground Water Quality Results (MW-1)

Depth to Groundwater	Cl	F	SO4	HCO3	CO3	Ca	Na	Mg	K	TDS
264.45	1550	1.44	2030	122	<2	708	584	216	29.9	5240

Because drilling the monitor well employed potable water as a drilling fluid, the chemistry of this sample could be affected by the introduction of potable water into the water-bearing zone. In 2006, we plan to obtain a final sample of water from this well and we will report the results of this sampling event to NMOCD.

Site Soils

The surface soils surrounding the caliche pit consist of Simona gravelly fine sandy loam and Tonuco loamy fine sand with 0 to 3 percent slopes (USDA-NRCS, 2005). A soils map with more detailed description of these soil profiles is provided in Plate 5. A map showing the local and regional geology is presented in Plates 6 and 7, respectively. A stratigraphic column of the geologic formations is provided on Plate 8.

Beneath the surface soils identified above is an approximately 2 to 3-foot thick layer of Mescalero Caliche. The Mesacalero Caliche is a well-lithified calcareous soil of Pleistocene age. The caliche consists of a white, sandy weathered and fractured limestone with a porous to chalky texture.

Site Geology

Underlying the Mescalero caliche at a depth of approximately 6 feet below ground surface is the Santa Rosa Formation of late Triassic age. The Santa Rosa Formation is the lower member of the Dockum Group and consists principally of interbedded shale, sand, sandstone, and a basal conglomerate (Richey et al, 1985). The rock is somewhat silty and ranges in color from light gray and yellowish gray through light brown to reddish brown. Its thickness amounts to approximately 150 feet at the site. The lithologic log from the failed attempt to install a monitor well at the site (Plate 9) shows the lithology of this unit.

Beneath the Santa Rosa Sandstone is the Dewey Lake (Red Bed) Formation of upper Permian age. The Dewey Lake consists of reddish-brown siltstone and mudstone with thin interbeds of fine- to medium-grained sandstone. Much of the reddish- brown rock is irregularly bleached greenish-gray in spotty and lenticular masses. Platy fragments of fibrous white selenite, presumably derived from selenite veinlets, are common in the lower portion of the unit. Their presence attests to the absence of circulating ground water since the introduction of selenite by vein-forming processes (Hendrickson and Jones, 1952). Plate 9 shows that the thickness of the Dewey Lake Formation lies between 155 to 245 feet below ground surface at the site.

Beneath the Dewey Lake Formation is the Rustler Formation of lower Permian age, which is estimated to be approximately 245 feet below ground surface at the site. The Rustler consists of anhydrite (or gypsum) and siltstone with interbeds of dolomite and clayey silt. The bulk of the gypsum occurs immediately above and below beds of dolomite and clayey silt where it forms a thick rind along the upper and lower sides of anhydrite beds. The clayey silt is structureless, essentially unconsolidated, and free of cement; it is considered to be dissolution residue derived from clayey and silty halite. Formation thinness in conjunction with the absence of halite and the presence of gypsum is related to the removal by dissolution of soluble constituents [NaCl, $CaSO_4$, and possibly $CaMg(C0_3)_2$] by circulating ground water. Maximum thickness of the Rustler Formation is about 500 feet.

A review of several geophysical logs (natural gamma) from various oil wells in the near vicinity further support the estimated depths and thicknesses of the formations identified above.

Ground water Characteristics

The Dockum aquifer comprises all water-yielding units within the Dockum Group. The Santa Rosa Formation, which is the most productive part of the Dockum aquifer, is present in eastern third (10-20 miles) of Eddy County, however the site borings demonstrate that the Santa Rosa Sandstone is not saturated at the site.

The Rustler aquifer consists of water-yielding rocks from the Culebra and Magenta dolomite members of the Rustler Formation. The Rustler aquifer is confined by the overlying Permian Dewey Lake Formation. The dissolved solids concentration of the water is extremely variable and ranges from 2,000 to over 300,000 mg/L, with the principal ions being calcium and sulfate. The water is not suitable for human consumption, but is sometimes used for irrigation, livestock watering, and oilfield water-flooding operations.

We measured a depth to ground water at a cathodic protection well located about 2,500 feet west of the proposed facility. This well is 260 feet deep and completed in the Rustler Formation. The depth to ground water is 205 feet below land surface. Depth to ground water is approximately 260 feet below land surface within the area of the proposed action based on a measurement obtained from a monitoring well that was completed on August 18, 2005, near the southwest corner of the caliche pit. A second monitoring well was nested within the same boring and completed at a depth of 160 feet bgs. This depth represents the base of the Santa Rosa Formation. Copies of the well completion diagrams are included in Appendix B.

Water Well Inventory

Based on database information obtained from the New Mexico State Engineer Office (NMSEO) and USGS websites, there are no water supply wells located within one mile from the site. Several ground water monitoring wells are located approximately 2.5 miles east –northeast of the site at the Loco Hills Water Disposal (LHWD) facility. According to NMOCD permitting records obtained for this commercial surface waste management facility the wells are completed in the upper Santa Rosa and Rustler Formations at depths of 60 feet and 320 feet bgs, respectively. The well records for each of these wells reports that no ground water was observed after the initial borings were jetted dry. Furthermore, the annual reports for the completed monitoring wells indicate they were dry on a quarterly basis since there installation in the 1980s and as recently as 2002 (the most recent data available from the NMOCD files in Santa Fe). Monitoring of the deeper Rustler Formation monitoring wells was no longer required after the permit renewal in 1999.

Potable water supply for the area is supplied by Caprock Water Company, an investor owner water utility, which obtains its water from wells located several miles east and north near Maljamar in Lea County.

Waste Disposal Facility Inventory

The locations of the several waste disposal facilities are listed below because they are situated in a very similar hydrogeological environment as the proposed facility:

- *Loco Hills Water Disposal (LHWD)* facility - 2.5 miles northeast of the site in T17S-R30E-Section 16. This facility has been permitted by the NMOCD since 1981 to accept produced water generated from oil and gas operations. Produced water is disposed in unlined surface impoundments for evaporation and leaching of brine.

- *Old Loco Treating Plant* - 6 miles east of the site in T17S-R31E-Section 19. This facility was permitted by the NMOCD in 1985 as a waste oil treating plant. This facility is no longer in operation.
- *Artesia Aeration Landfarm*- 12 miles east –northeast of the site in T17S-R32E-Section 7. This facility has been permitted by the NMOCD since 1999 to remediate hydrocarbon-impacted soils generated from oil and gas activities and is still in operation.
- *Controlled Recovery Inc. (CRI)* – 24 miles southeast the site in T20S-R32E-Section 27. This facility has been permitted by the NMOCD since 1990 to accept produced water, solids, and drilling muds generated from oil and gas operations for disposal in unlined surface cells (landfill).
- *Lea Lands Landfill* - 24 miles southeast the site in T20S-R32E-Section 27. This facility has been permitted by the New Mexico Environment Department for disposal of non-hazardous Industrial Waste since 1996. Amendments to the permit allow for landfarming of hydrocarbon-contaminated soils.
- *Waste Isolation Pilot Plant (WIPP)* - 35 miles south-southeast of the site T20S-R31E-Section 21. This facility accepts transuranic waste generated from USDOE weapons programs for deep burial (2,150 feet) in a subsurface salt formation (Salado Formation of Permian age).

12. PUBLIC NOTICE REQUIREMENTS

Marbob Energy Corporation has given written notice of our intent to submit this application to the surface owners of record within one mile of the facility (Appendix C).

The operator will issue public notice in the form approved by the NMOCD in a newspaper of general circulation in the county the facility is to be located Artesia, Eddy County, New Mexico). Proof of public notification will be forwarded to the NMOCD upon conditional approval of the permit.

13. H2S CONTINGENCY PLAN

An H2S Contingency Plan is not applicable to this application since the facility is not designed to generate H2S.

14. COMPLIANCE WITH DRAFT SURFACE WASTE MANAGEMENT RULES

We have made every attempt to comply with appropriate sections of the NMOCD Draft Surface Waste Management Rules (November 2005) and the amendments proposed by NMOGA and industry groups. In addition to these data in the permit application, Marbob Energy Corporation agrees to the following applicable mandates expressed in the DRAFT Rule and the industry-proposed amendments to 19.15.2.53.C(5)(a):

Upon notification by the division that it has approved a permit but prior to the division issuing the permit, Marbob Energy Corporation shall submit acceptable financial assurance in the amount of $25,000, or a statewide "blanket" financial assurance in the amount of $50,000 to cover all of that applicant's centralized facilities.

Marbob agrees to the following applicable provisions as outlined in the DRAFT Rule and industry-proposed amendments to 19.15.2.53.E

(4) No liquid wastes transported by commercial motor vehicle shall be accepted at the facility unless the commercial transporter has a form C-133, authorization to move liquid waste, approved by the division.

(5) Marbob shall accept only oil field related wastes generated by Marbob and its affiliates, except as provided in Subparagraph (c) of Paragraph (5) of Subsection E of 19.15.2.53 NMAC. No non-exempt wastes, which are RCRA subtitle C hazardous wastes by either listing or characteristic testing shall be accepted.

(5) (c) Emergency non-oil field wastes. Non-hazardous, non-oil field wastes may be accepted in an emergency if ordered by the department of pubic safety. The operator shall complete a form C-138, request to accept solid wastes, and maintain the same, accompanied by the department of public safety order, subject to division inspection.

(11) Marbob shall comply with the provisions of 19.15.3.116 NMAC.

After completion of the engineering drawings for the facility:

(12) Marbob shall submit an inspection and maintenance plan that includes the following:
(c) Inspections and maintenance of berms in such a manner as to prevent excessive erosion;

(13) Marbob shall submit a plan to control run-on water onto the site and run-off water from the site, such that:
(a) The run-on control system shall prevent flow onto the facility's active portion during the peak discharge from a 25-year storm;
(b) The run-off control system from the facility's active portion collects and controls at least the water volume resulting from a 24-hour, 25-year storm; and

(c) run-off from the facility's active portion shall not be allowed to discharge any pollutant to the waters of the state or United States that violates any state water quality standards.

(14) The permit application demonstrates that a failure of the operations plan should not reasonably cause a fire, explosion, or sudden release of contaminants.

Marbob agrees to the following applicable provisions as outlined in the November DRAFT Rule and industry-proposed amendments to 19.15.2.53.F

(2) Marbob's permit application demonstrates that fresh water will not be adversely impacted by the proposed landfill design.
(3) Marbob shall confine the landfill's working face to the smallest practical area and compact the solid waste to the smallest practical volume.
(4) Marbob shall prevent unauthorized access by the public and entry by large animals to the landfill's active portion through the use of fences, gates, locks or other means that attain equal protection.
(5) Marbob shall provide adequate means to prevent and extinguish fires.
(6) Marbob shall control litter and odors.
(7) Marbob shall not excavate a closed cell or allow others to excavate a closed cell except as approved by the division.
(10) Once a landfill cell has been filled it shall be closed pursuant to the conditions contained in the surface waste management facility permit and the requirements of Subparagraph (i) of Subparagraph (b) of Paragraph (3) of Subsection I of 19.15.2.53 NMAC. Marbob shall notify the division's environmental bureau 72 hours prior to closure of a landfill cell.

Marbob agrees to the following applicable provisions as outlined in the DRAFT Rule and industry-proposed amendments to 19.15.2.53.G

(1) The application contains a general landfarm operations plan. The plan is based on the environmental setting and landfarm design, and addresses waste acceptance procedures, representative waste sampling and analysis, cell operations, salt management program, waste placement plan, storm water management, bioremediation program (depth placement, moisture management, tilling schedule, bioremediation end-point [e.g., using TPH DRO], treatment zone sampling and analysis program, and annual reporting and certification.
(2) Only soils and soil like material such as drill cuttings or tank bottoms shall be placed in landfarm.
(3) No contaminated soils shall be placed within 100 feet of a boundary of the facility.
(4) Because ground water is not present at the site, the base of the treatment zone in each landfarm cell shall not be monitored.
(7) The operator shall maintain records of the facility's treatment activity schedule in a form readily accessible for division inspection.

(10) Exempt and non-exempt contaminated soils shall be physically separated so that the division can visually identify whether the waste is exempt or non-exempt prior to placement in the landfill or landfarm.
(11) Moisture shall be added, as necessary, to control blowing dust.
(12) The application of microbes for the purposes of enhancing bioremediation requires prior division approval.
(13) No free liquids in excess of 50 barrels per day shall be placed in the landfarm cells.
(15) Pooling of liquids in the landfarm is prohibited. Freestanding water shall be removed.

Marbob agrees to the following applicable provisions as outlined in the November DRAFT Rule and industry-proposed amendments to 19.15.2.53.I

(1) Facility closure by operator. The operator shall notify the division's environmental bureau at least 90 days prior to cessation of operations at the facility and provide a proposed schedule for closure. Upon receipt of such notice and proposed schedule, the division shall inspect the facility and review the current closure plan for adequacy within 30 days. The division shall notify the operator when it has completed its review and inspection and shall specify in such notice any modifications of the closure plan and proposed schedule or additional requirements that it determines are necessary for the protection of fresh water, public health or the environment. The operator shall be entitled to a hearing concerning any modification or additional requirement the division seeks to impose if it files an application for a hearing within 10 days after receipt of written notice of the proposed modifications or additional requirements. Closure shall proceed in accordance with the approved closure plan and schedule and any modifications or additional requirements imposed by the division. During closure operations the operator shall maintain the facility to protect fresh water, public health and the environment. If it is determined that closure is complete the division shall release the financial assurance, except for the amount needed to maintain and sample a proposed post-closure monitoring system according to the post-closure period identified in the closure plan, and to re-vegetate the site. Prior to the partial release of the financial assurance covering the facility, the division will inspect the site to determine that closure is complete. After the closure period has expired, the division shall release the remainder of the financial assurance if the monitoring system shows that fresh water is protected and the re-vegetation is successful

(b) Landfill cell closure. The operator shall ensure that:
(i) all landfill cells are properly closed, covering the cell with a division-approved evapotranspiration cap, or other final cover design approved by the division, and at least two feet of soil contoured to promote drainage of precipitation; side slopes shall not exceed a 33 percent grade (three feet horizontal to one foot vertical), such that the final cover of the landfill's top portion has a minimum gradient of two percent to five percent, and the slopes are sufficient to prevent the ponding of water and erosion of the cover material; and
(ii) the area is re-vegetated or otherwise restored in a manner that is capable of sustaining native plant growth.

(d) Landfarm closure. The operator shall ensure that
(i) disking and addition of bioremediation enhancing materials continues until soils within the cells are remediated to a TPH-DRO endpoint and risk based cleanup standards established by the New Mexico Environment Department
(ii) soil remediated to the foregoing standards are re-vegetated;
(iii) landfarmed soils that have not been or cannot be remediated to the above standards are amended, or removed and the cell filled in with soil and re-vegetated;
(iv) all berms on the compost facility are removed; and
(vi) annual reports of treatment zone sampling are submitted to the division's Santa Fe office until the division has approved final closure of the facility.

(4) Alternatives to re-vegetation. If the operator or owner of the land contemplates use of the land where a cell or facility is located for purposes inconsistent with re-vegetation, the operator may, with division approval, implement an alternative surface treatment appropriate for the contemplated use, provided that the alternative treatment will effectively prevent erosion.

15. REFERENCES

Groat, C. G., 1976, *Geologic Atlas of Texas: Hobbs Sheet*, Bureau of Economic Geology, The University of Texas at Austin, 1 map

Hendrickson, G. E., and Jones, R. J., 1952, *Geology and Ground-Water Resources of Eddy County, New Mexico*: New Mexico Bureau of Mines and Mineral Resources, Ground-Water Report 3, 169 p.

Kelley, V. C., 1971, *Geology of the Pecos country, southeastern New Mexico*: New Mexico Bureau of Mines and Mineral Resources Memoir 24, 78 p.

Richey, S. F., Wells, J. G., and Stephens, K. T., 1985, *Geohydrology of the Delaware Basin and Vicinity, Texas and New Mexico*: U. S. Geological Survey, Water-Resources Investigations Report 84-4077, 99 p.

U. S. Department of Agriculture, Natural Resources Conservation Service, 2005, *Eddy County Soil Survey, Tabular Data Version 2*, Map Unit Text and Chemical and Physical Soil Properties

FIGURES

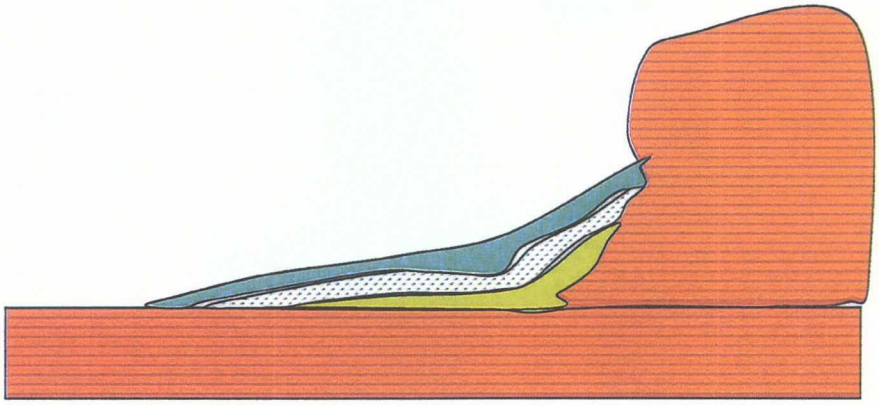


Figure 1. Illustration of how material will be placed in 6-inch to 1-foot lifts and compacted on a slope.

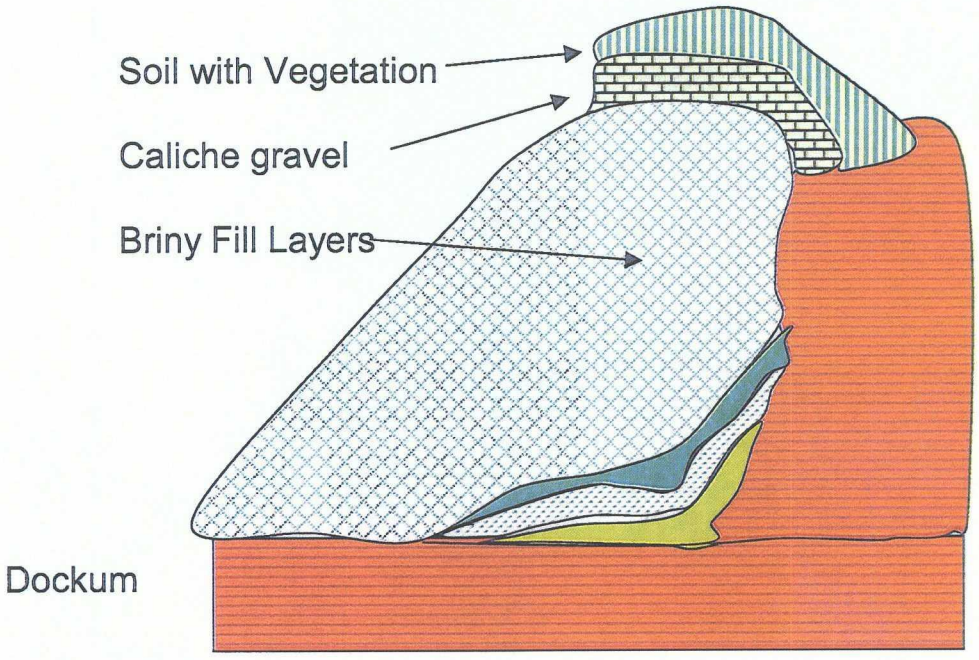


Figure 2. Illustration of at least 1-foot of caliche gravel from reclaimed well pads. Roads will be placed over the compacted fill as the first layer of the infiltration barrier, with reclaimed soil placed on the caliche layer.

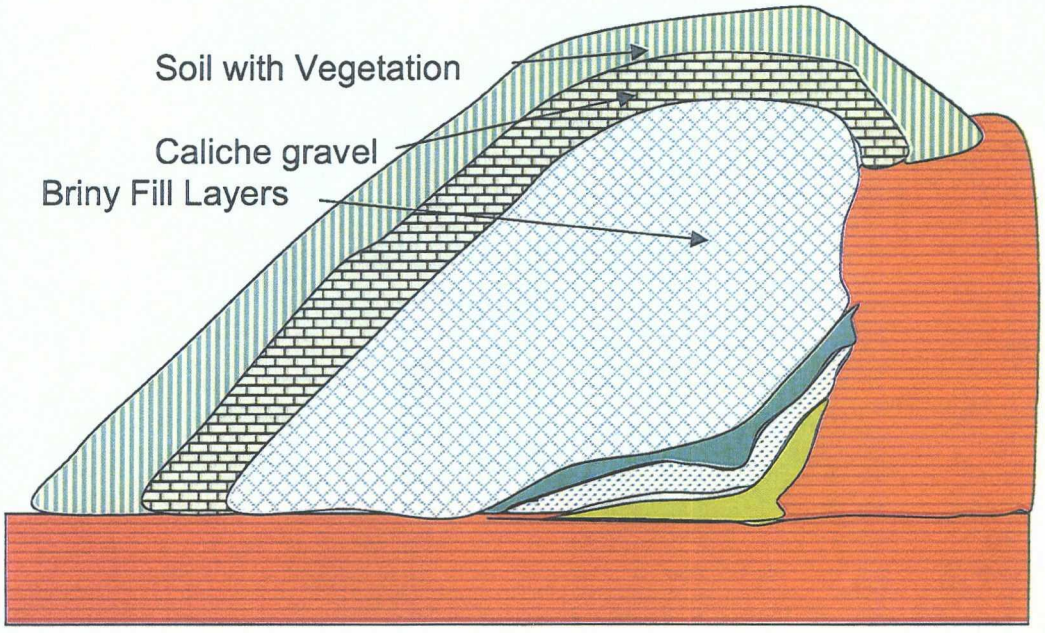
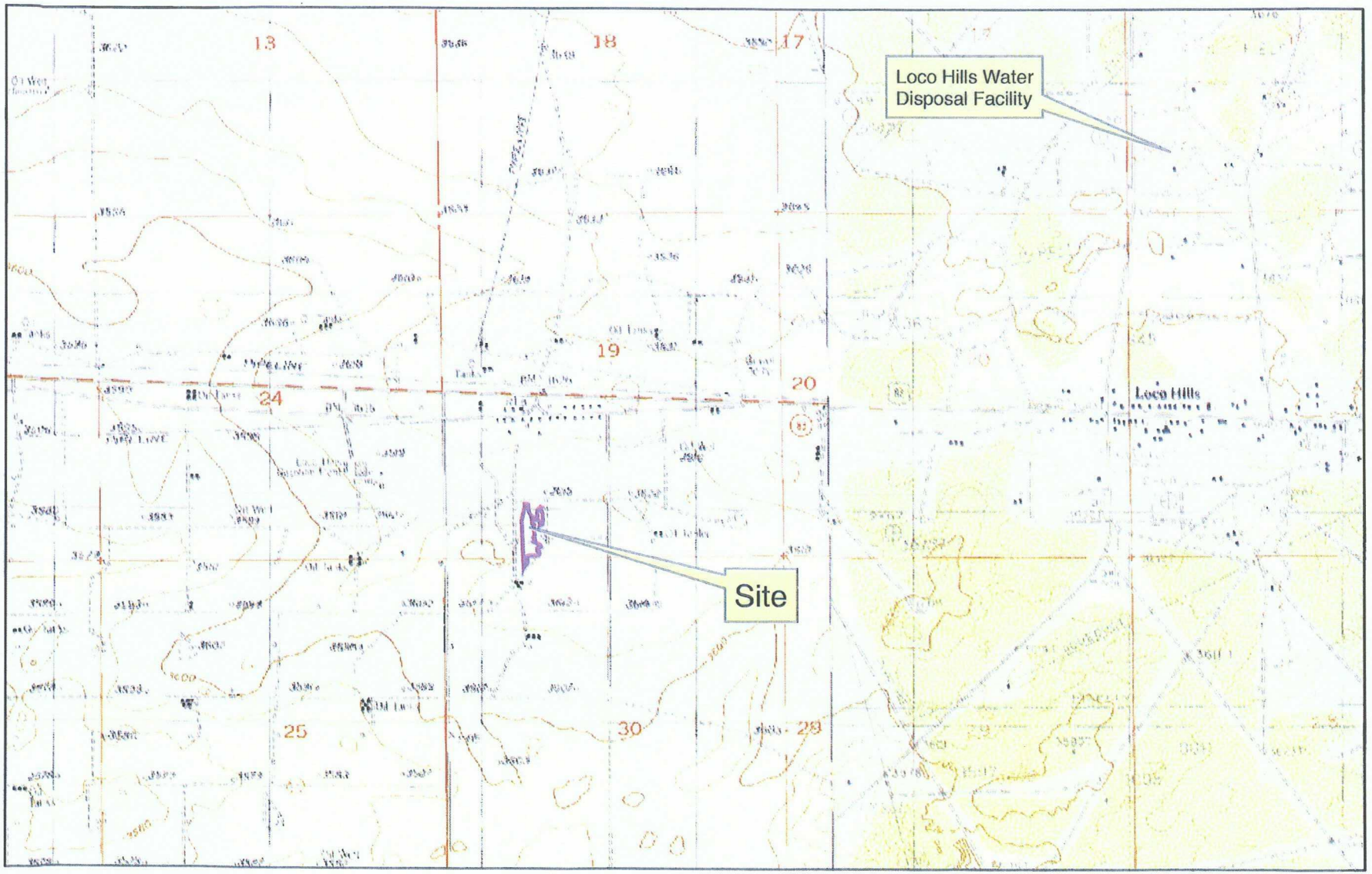


Figure 3. Illustration of how the compacted drilling pit material will be fully encapsulated with a final layer of native soil and a vegetative cap.

PLATES

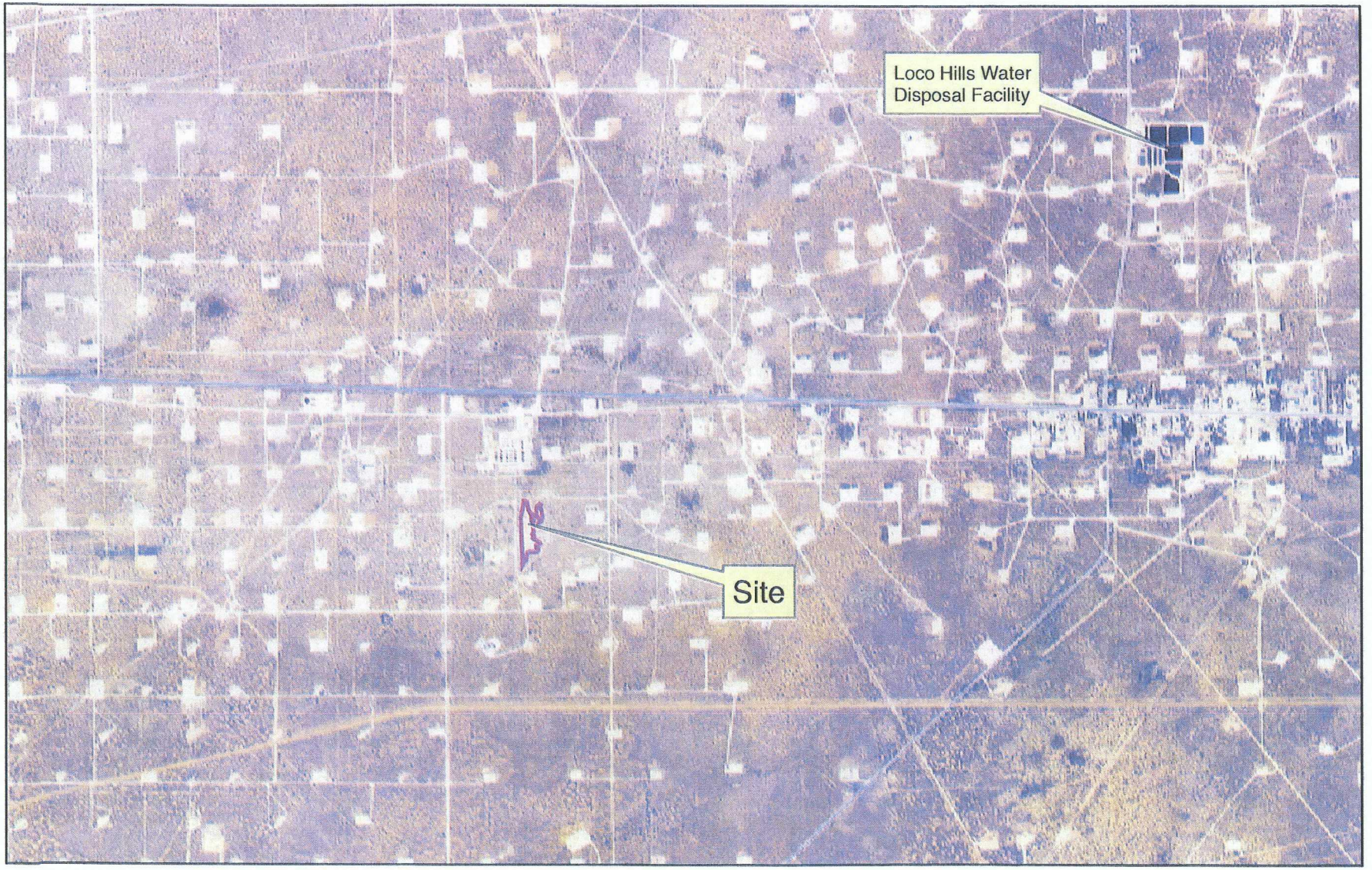


Source: USGS 7.5' Topo (Red Lake SE; Loco Hills)

0 1,000 2,000 4,000 6,000 Feet

N
W E
S

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Loco Hills Habitat Restoration Facility	Plate 1
	Marbob Energy Corporation	January 2006



Source: http://rgis.unm.edu

0 1,000 2,000 4,000 6,000 Feet

R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

2004 Aerial Photograph: Loco Hills Habitat Restoration Facility

Plate 2

Marbob Energy Corporation

January 2006

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W E
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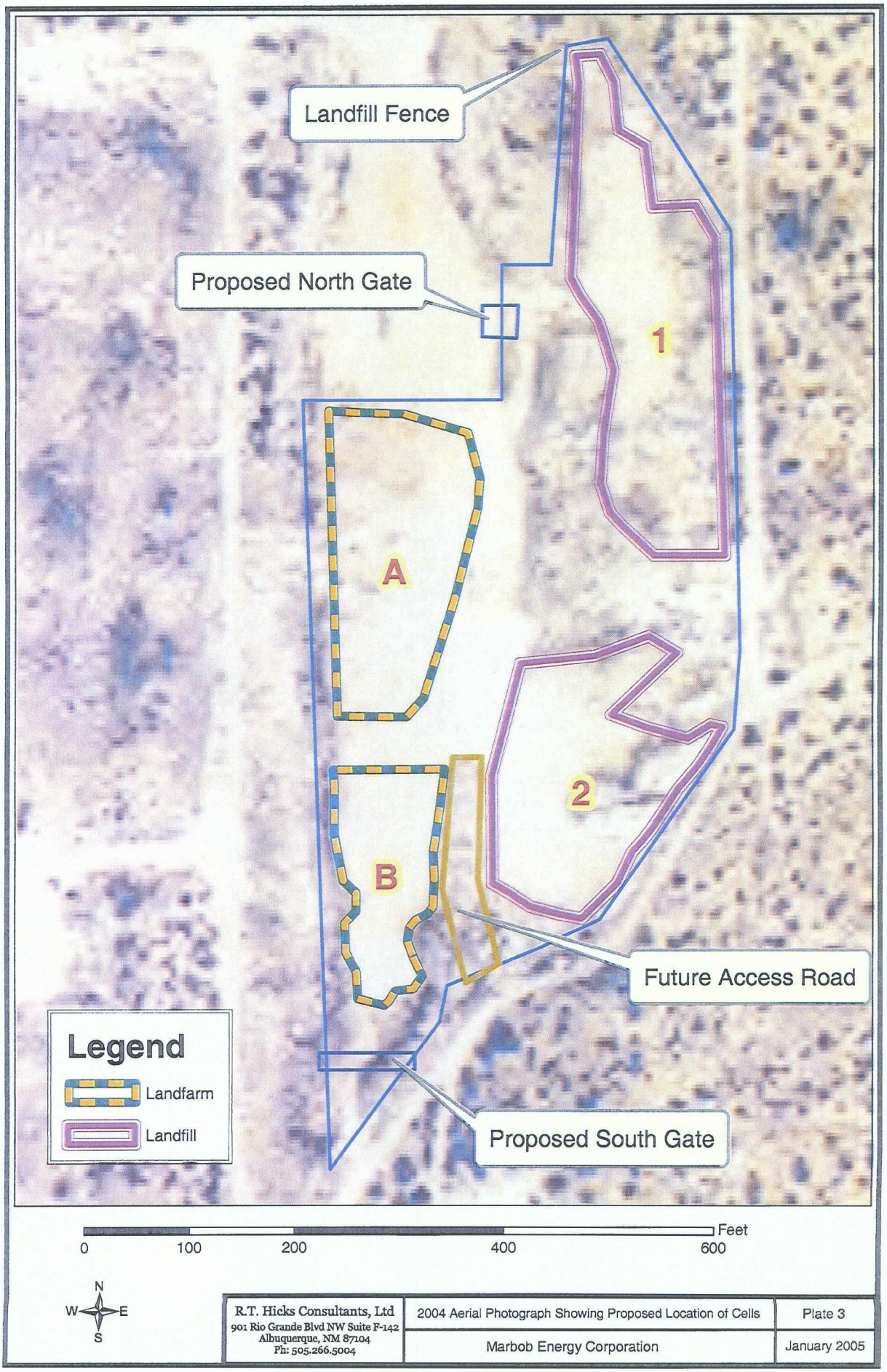
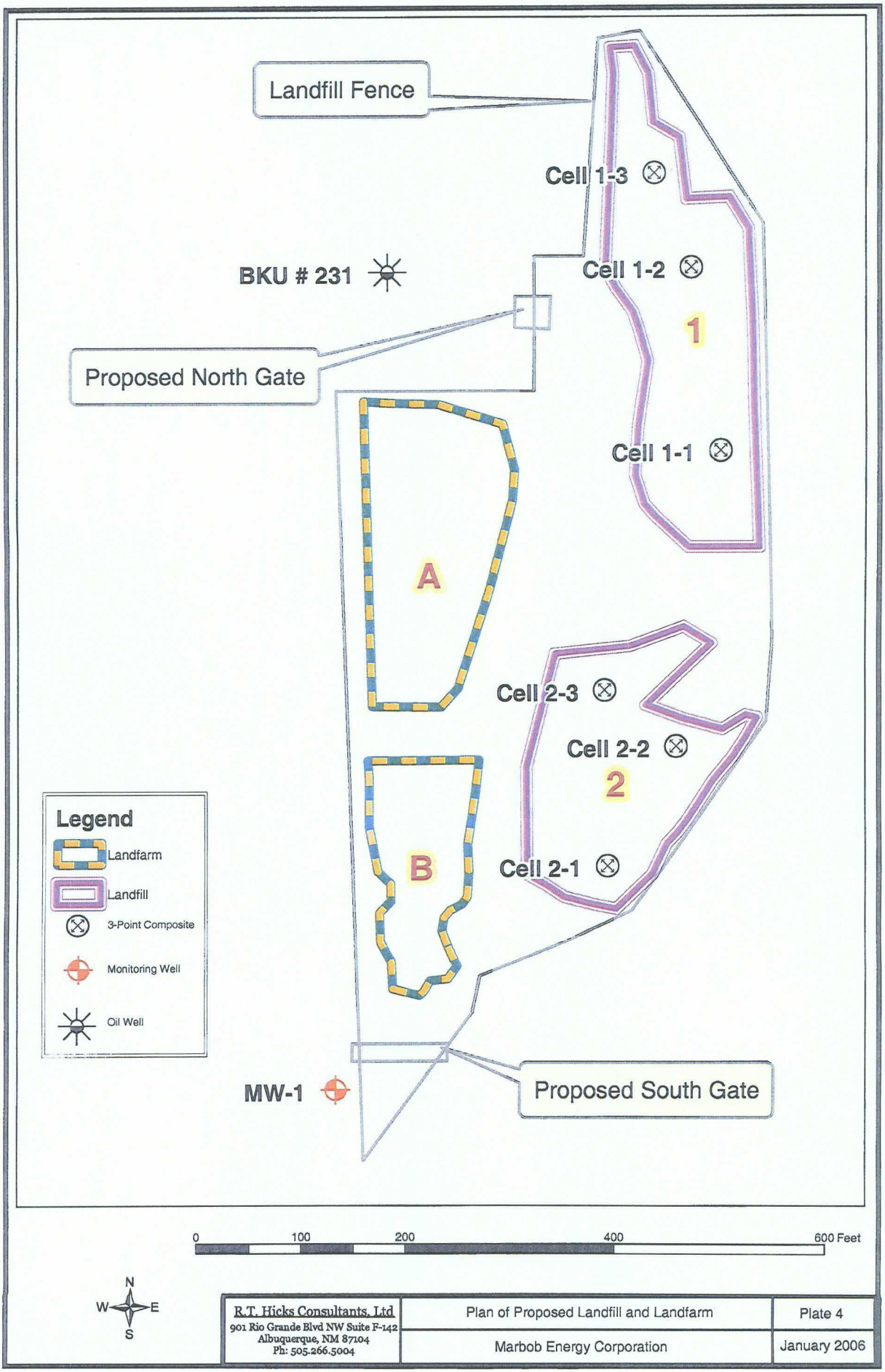
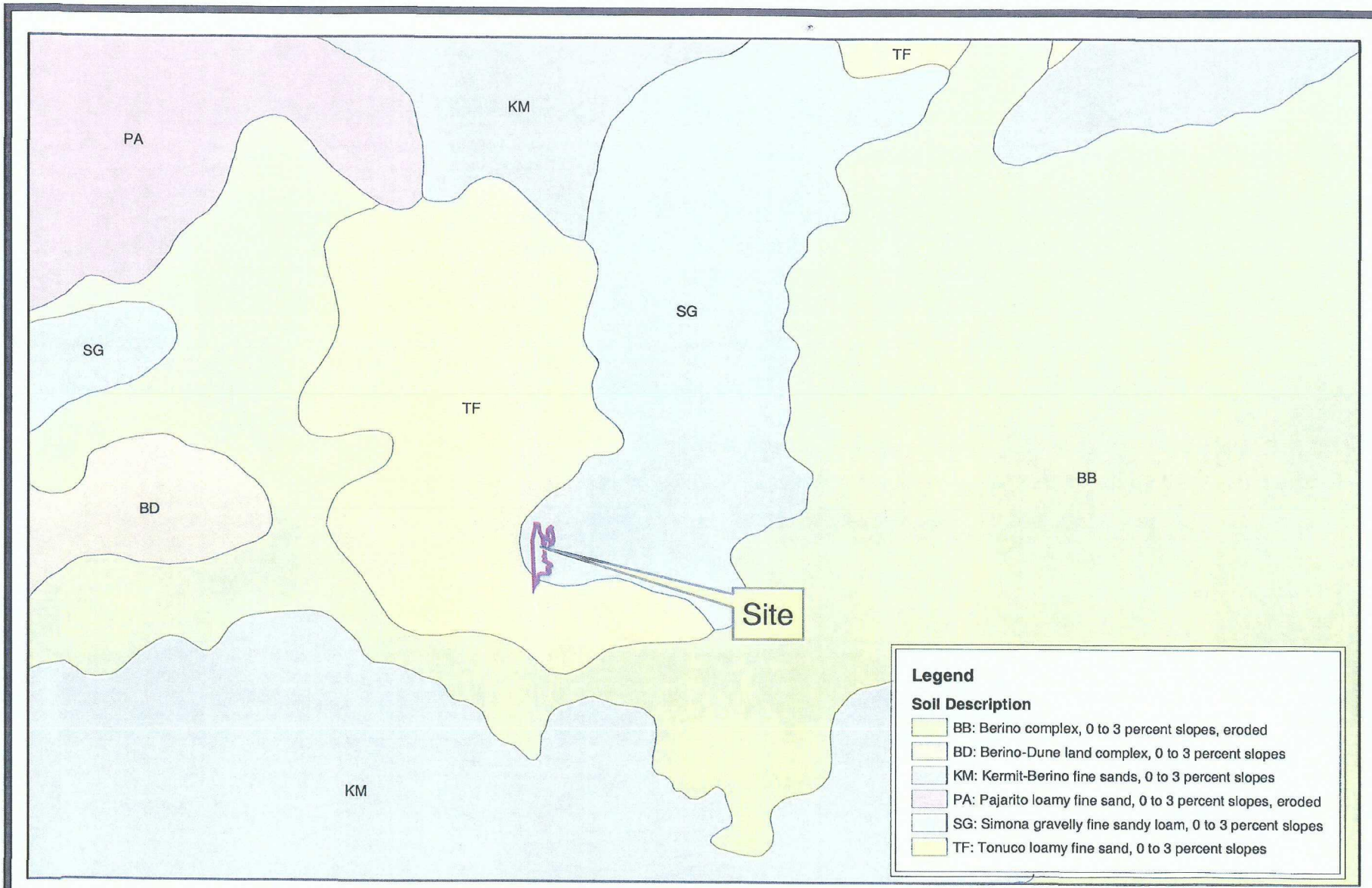


R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	2004 Aerial Photograph Showing Proposed Location of Cells	Plate 3
	Marbob Energy Corporation	January 2005



R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Plan of Proposed Landfill and Landfarm	Plate 4
	Marbob Energy Corporation	January 2006

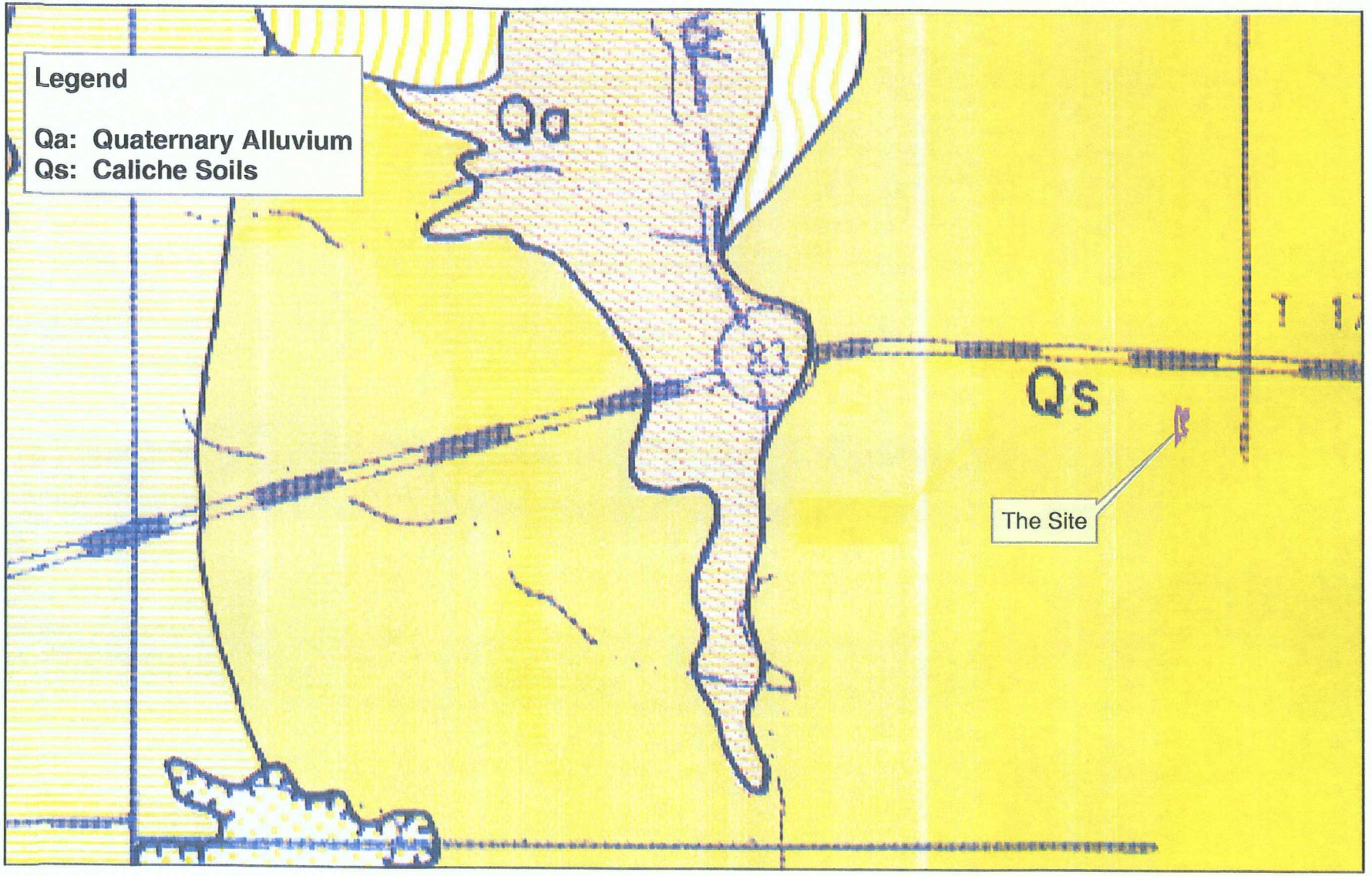


Source: United States Department of Agriculture

0 1,000 2,000 4,000 6,000 Feet

N W E S

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Soils Map	Plate 5
	Marbob Energy Corporation	January 2006

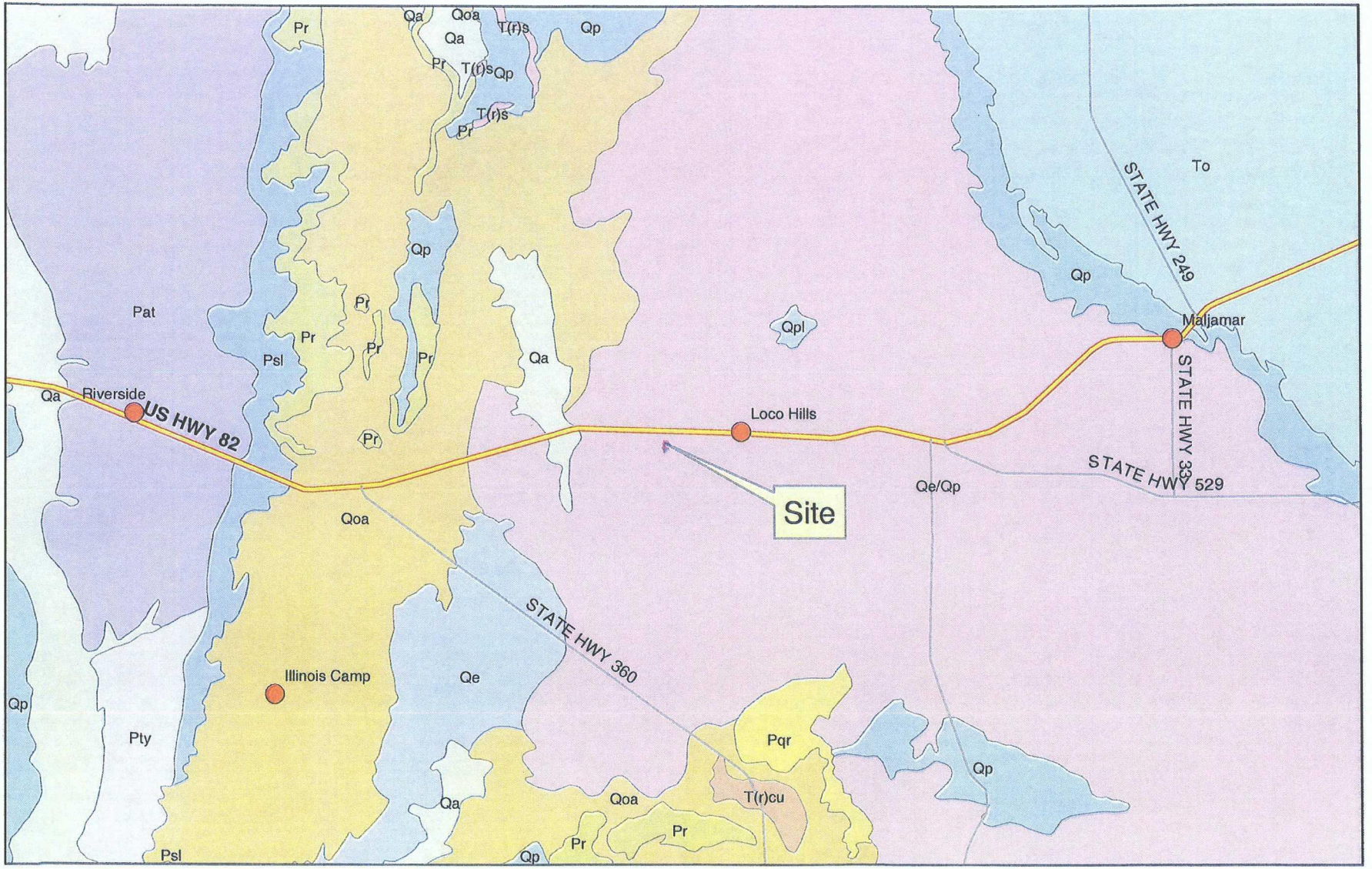


Source: Geology of the Pecos Country

0 0.5 1 2 3 Miles

N W E S

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Local Geology Map	Plate 6
	Marbob Energy Corporation	January 2006



Source: Green and Jones, 1997; NMBMNR)

0 5 10 20 Miles

N W E S

R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Regional Geology	Plate 7
	Marbob Energy Corporation	January 2006

PLATE 8

STRATIGRAPHIC COLUMN OF GEOLOGIC FORMATIONS IN LOCO HILLS AREA

Age	Formation	Thickness (Feet)	Lithology Description	Waterbearing characteristics
Quaternary	Soil	2	Unconsolidated dune sand; fine to medium grained and brown	Does not produce water.
	Mescalero Caliche	2-4	Well-lithified calcareous soil; white, sandy limestone with a porous to chalky texture	Does not produce water.
Triassic	Santa Rosa Fm (Lower Dockum)	50-100	Interbedded shale, sand, fine- to medium-grained sandstone sandstone, and conglomerate; ranges in color from light gray and yellowish gray through light brown to reddish brown	Present in eastern third (10-20 miles) of Eddy County. Depth to water generally less than 400 ft. Direction of flow generally to south and southwest.Water quality generally sufficient for stock or domestic use. TDS range: 201-3,590 mg/L, Chloride range: 1
Permian	Dewey Lake Red Beds	50-100	Chiefly reddish-brown siltstone and mudstone with thin interbeds of fine- to medium-grained sandstone; much of the reddish-brown rock is irregularly bleached greenish-gray in spotty and lenticular masses. Platy fragments of fibrous white selenite are comm	Not known to produce water; upper confining unit to underlying Rustler formation.
	Rustler Fm	200-500	Chiefly anhydrite (or gypsum) and siltstone with interbeds of dolomite and clayey silt	Present in eastern two-thirds of Eddy County (east of the Pecos River). Depth to water generally less than 500 ft. Direction of flow generally to southwest where it discharges into the Pecos River. Water not suitable for domestic use and quality ranges fr
	Salado Fm	1200-1600	Predominantly rock salt with minor interbeds of anhydrite, polyhalite, siltstone, and sparse potash deposits	Does not produce water.

References:

Hendrickson, G. E., 1952, *Geology and Ground-Water Resources of Eddy County, New Mexico,* New Mexico Bureau of Mines and Mineral Resources, Ground-Water Report 3.

Jones, C. L.1981, *Geologic Data for Borehole ERDA-6, Eddy County, New Mexico,* U. S. Geological Survey Open-File Report 81-468

Kelley, Vincent C., 1971, *Geology of the Pecos country, southeastern, New Mexico,* New Mexico Bureau of Mines and Mineral Resources, Memoir 24.

Richey, Steven F., 1985, *Geohydrology of the Delaware Basin and Vicinity, Texas and New Mexico* , U. S. Geological Survey Water-Resources Investigations Report 84-4077

Geologist: Gil Van Deventer
Driller: Eades Drilling
Drilling Method: Air/Mud Rotary
Start Date: 7/5/2005
End Date: 7/8/2005

Client: Marbob Energy Corporation
Project Name: Caliche Pit
Project Location: T17S, R30E, Section 30, Unit D
Boring ID: B-1 (255 ft)
Boring Location: SWC of caliche pit ~160 ft northwest of Burch Keely Unit #143

Depth (feet)	Description	Lithology	USCS Symbol	Sample Interval	Time	Type	Chloride mg/kg	Moisture Content (%)	Grain size distibution (%) Gravel	Coarse sand	Med Sand	Fine Sand	Silt	Clay
0	Sandy loam from 0' - 1' ; weathered, fractured caliche		SM	0' - 1'	0945	Surface								
5	(95%) with fine sand (5%) in matrix from 1' - 6'		CAL	5' - 7'	0950	SplitSpoon			0%	3%	17%	12%	21%	47%
10	Reddish-brown silty fine to medium sand, subangular to			10'-12'	0955		64	6.1	15%	11%	14%	23%	20%	17%
15	subrounded, some clay (<5%), some MnO_2 (<1-2%)		SM	15'-17'	1005	SplitSpoon								
20	from 6' - 22'			20'-22'	1015		64	11.8	0.0%	0%	5%	21%	41%	33%
25	Reddish-brown fine sand, loose, rounded frosted quartz		SW	25'-27'	1040	SplitSpoon	64	3.7	4%	1%	0%	36%	42%	17%
30	grains from 22' - 28'			30'-32'	1055		96	11.4	2%	8%	10%	5%	6%	69%
35				35'-37'	1115		112	19.9	0%	1%	7%	11%	16%	65%
40	Reddish-brown and brownish-red clayey fine sand,			40'-42'	1145	SplitSpoon	144	14.8	0%	0%	1%	9%	25%	65%
45	subangular to subrounded, some calcite nodules near top,		SC	45'-47'	1200		96	6.5	0%	1%	0%	10%	32%	57%
50	some 1/2"-2" thick stringers of fine sand; from 28' - 50'			50'-52'	1315									
55	Reddish-brown uniform fine sand, loose, subrounded,		SW	55'-57'	1345	SplitSpoon	64	5.3	0%	0%	0%	19%	48%	33%
60	rounded frosted quartz grains; from 50' - 65'			60'-62'	1405									
65	Reddish-brown and brownish-red clayey fine sand,			65'	1430	Cuttings								
70	subangular to subrounded, some calcite nodules near top,		SC	70'-72'	1440	SplitSpoon	64	6.9	0%	0%	0%	14%	43%	43%
75	some 1/2"-2" thick stringers of fine sand; from 65' - 80'			75'	1500	Cuttings								
80														
85				85'	1550									
90				90'	1600									
95	Reddish-brown uniform fine sand, loose, subrounded,			95'	1615									
100	rounded frosted quartz grains; from 80' - 138'			100'	1635									
105				105'	1640									
110			SW	110'	1645	Cuttings	64		0%	0%	1%	22%	44%	33%
115				115'	1650									
120	Due to borehole instability of loose sands above drilling			120'	1651									
125	resumed using freshwater at 125 ft on 07/06/05			125'	1720									
130				130'	1400									
135	Reddish-brown uniform fine sand, loose, subrounded,			135'	1420									
140	rounded frosted quartz grains; from 80' - 138'			140'	1440									
145	Gravelly fine sand		SP	145'	1500	Cuttings								
150	Gravelly red clay (Base of Santa Rosa?)		GC	150'	1530	Cuttings								
155				155'	1600									
160	Red clay (Top of Dewey Lake Red Bed Formation?)			160'	0940									
165	Red clay (driller noted formation denser at this point)			165'	0945									
170	Red clay with minor fine to coarse sand (<1-2%)			170'	1000									
175				175'	1005									
180				180'	1020									
185				185'	1040									
190				190'	1050									
195				195'	1100									
200			CH	200'	1120	Cuttings	64		0%	3%	16%	10%	7%	64%
205				205'	1140									
210	Red clay with minor fragments of fine to med-grained sandstone			210'	1200									
215				215'	1205									
220				220'	1210									
225				225'	1215									
230				230'	1225									
235				235'	1235									
240				240'	1245									
245				245'	1255									
250	Red clay with medium-grained sandstone stringers		SC	250'	1300	Cuttings	96		0%	3%	44%	7%	10%	37%
255				255'	1305									

R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, New Mexico 87104
505.266.5004

Marbob Energy Corp.
Lithologic Log of Boring B-1

Plate 9
July 2005

APPENDIX A

AMERICAN RADIATION SERVICES, INC.

2609 North River Road Port Allen, Louisiana 70767
1 (800) 401-4277 FAX (225) 381-2996

American Radiation Services, Inc.

Laboratory Analysis Report

Prepared For :

Trace Analysis, Inc.
Nell Green
6701 Aberdeen Avenue, Ste. 9
Lubbock, TX 79424

Phone: 806-794-1296
FAX: 806-794-1298

Quality Assurance Review

Technical Review

Notes: American Radiation Services, Inc. assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the client.

Contact Person: Questions regarding this analytical report should be addressed to American Radiation Services, Inc. at 2609 North River Road, Port Allen, Louisiana. Phone: 225.381.2991 Fax: 225.381.2996

LELAP Cert# 30658

NELAP Cert# E87558

AMERICAN RADIATION SERVICES, INC.

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group: ARS1-05-00443
Client Sample ID: Cell 2 71582
Sample Collection Date: 08/19/05 10:00
Sample Matrix: Soil/Solid

Request or PO Number: NA
ARS Sample ID: ARS1-05-00443-002
Date Received: 08/23/05 00:00
Report Date: 09/08/05 11:39

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
RA-226	2.5722	1.3581	0.6510	NA	NA	pCi/g	EPA 901.1M	9/7/05 15:45	JMB	
RA-228	0.5309	0.3161	0.1250	NA	NA	pCi/g	EPA 901.1M	9/7/05 15:45	JMB	

Kristy Douglas
Quality Assurance Review

LELAP Certificate# 30658 NELAP Certificate # E87558

AMERICAN RADIATION SERVICES, INC.

2609 North River Road, Port Allen, Louisiana 70767

1 (800) 401-4277 FAX (225) 381-2996

ARS Sample Delivery Group:	ARS1-05-00443	**Request or PO Number:**	NA
Client Sample ID:	Cell 1 71581	**ARS Sample ID:**	ARS1-05-00443-001
Sample Collection Date:	08/19/05 10:00	**Date Received:**	08/23/05 00:00
Sample Matrix:	Soil/Solid	**Report Date:**	09/08/05 11:39

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
RA-226	1.4000	1.3900	2.3000	NA	NA	pCi/g	EPA 901.1M	9/7/05 15:38	JMB	
RA-228	1.1400	0.4970	0.8370	NA	NA	pCi/g	EPA 901.1M	9/7/05 15:38	JMB	

Quality Assurance Review

LELAP Certificate# 30658 NELAP Certificate # E87558

AMERICAN RADIATION SERVICES, INC.

2609 North River Road Port Allen, Louisiana 70767
1 (800) 401-4277 FAX (225) 381-2996

Notes:

Comments:

1.0) Soil and Sludge analysis are reported on a wet basis or an as received basis unless otherwise indicated.
2.0) The data in this report are within the limits of uncertainty specified in the reference method unless specfied.
3.0) Modified analysis procedures are procedures that are modified to meet the certain specifications. An example may be the use of a water method to analyze a solid matrix due to the lack of an officially recognized procedure for the analysis of the solid matix.
4.0) Derived Air Concentrations and Effluent Release Concentrations are obtained from 10 CFR 20 Appendix B.
5.0) Total activity is actually total gamma activity and is determined utilizing the prominent gamma emitters from the naturally occurring radioactive decay chains and other prominent radioactive nuclides. Total activity may be lower than the actual total activity due to the extent of secular equilibrium achieved in the various decay chains at the time of analysis. The total activity is not representative of nuclides that emit solely alpha or beta particles.
6.0) Ra-228 is determined via secular equilibrium with its daughter, Actinium 228. (Gamma Spectroscopy only).
7.0) U-238 is determined via secular equilibrium with its daughter, Thorium 234. (Gamma Spectroscopy only).
8.0) All gamma spectroscopy was performed utilizing high purity germanium detectors (HPGe).

Method References:

1.0) EPA 600/4-80-032, Prescribed Procedures for the Measurements of Radioactivity in Drinking Water, August 1980.
2.0) Standard Methods for Examination of Water and Waste Water, 18th, 1992.
3.0) EPA SW-846, Test Methods for Evaluating Solid Waste, Third Edition, (9/86). (Updated through 1995).
4.0) EPA 600/4/79-020, Methods for Chemical Analysis of Water and Waste, March 1983.
5.0) HASL 300

Definitions:

1.0)	BDL	Analyte not detected because the value was below the detection limit.
2.0)	ND	Not detected above the detection limit.
3.0)	Detection Limit	The minimum amount of the analyte that ARS can detect utilizing the specific analysis.
4.0)	B	Method Blank
5.0)	D	Method Duplicate
6.0)	MS	Matrix Spike
7.0)	S	Spike
8.0)	RS	Reference Spike
9.0)	*SC	Subcontracted out to another qualified laboratory
10.0)	NR	Not Referenced
11.0)	N/A	Not Applicable

6701 Aberdeen Avenue, Ste. 9
Lubbock, Texas 79424
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TraceAnalysis, Inc.

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El Paso, Texas 79932
Tel (915) 585-3443
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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID #_____

Company Name: Phone #:

Address: (Street, City, Zip) Fax #:
e-mail:

Contact Person: Nell Green

Invoice to:
(If different from above)

Project #: Project Name:

Project Location: Sampler Signature:

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	SAMPLING: DATE	TIME
	71581	1			✓									8-19-05	
	71582	1			✓									8-19-05	

MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005	TX 1005 Extended (C35)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	Moisture Content	Radium 226 / 228		Turn Around Time if different from standard	Hold
																	✓			
																	✓			

Relinquished by: Date: Time: 8-22-05
Received by: Date: Time:

Relinquished by: Date: Time:
Received by: Date: Time:

Relinquished by: Date: Time:
Received at Laboratory by: Jamaal Brown Date: 8-23-05 Time: 1030

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.

ORIGINAL COPY

LAB USE ONLY

Intact Y / N
Headspace Y / N
Temp °
Log-in Review

REMARKS:

☐ Dry Weight Basis Required
☐ TRRP Report Required
☐ Check If Special Reporting Limits Are Needed

Carrier #_____

Summary Report

Gil Van Deventer
R. T. Hicks Consultants,Ltd.
901 Rio Grande Blvd. NW Suite F-142
Albuquerque,, NM 87104

Report Date: August 23, 2005

Work Order: 5082226

Project Name: Loco Hills,NM
Project Number: Marbob Energy Corp.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
71581	Cell 1	soil	2005-08-22	10:00	2005-08-22
71582	Cell 2	soil	2005-08-22	08:50	2005-08-22

	BTEX by 8260					MTBE by 8260
Sample - Field Code	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethylbenzene (µg/Kg)	m,p-Xylene (µg/Kg)	o-Xylene (µg/Kg)	MTBE (µg/Kg)
71581 - Cell 1	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
71582 - Cell 2	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0

Sample: 71581 - Cell 1

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/Kg as CaCo3	1.00
Carbonate Alkalinity		5.00	mg/Kg as CaCo3	1.00
Bicarbonate Alkalinity		113	mg/Kg as CaCo3	4.00
Total Alkalinity		118	mg/Kg as CaCo3	4.00
Chloride		9.40	mg/Kg	1.00
Total Aluminum		17400	mg/Kg	10.0
Total Arsenic		<1.00	mg/Kg	1.00
Total Barium		424	mg/Kg	1.00
Total Boron		50.4	mg/Kg	10.0
Total Cadmium		<0.500	mg/Kg	0.500
Total Calcium		82800	mg/Kg	50.0
Total Chromium		9.94	mg/Kg	1.00
Total Cobalt		<10.0	mg/Kg	10.0
Total Copper		4.53	mg/Kg	0.500
Total Iron		12900	mg/Kg	10.0
Total Mercury		0.0450	mg/Kg	0.0400
Total Lead		29.9	mg/Kg	1.00
Total Magnesium		7060	mg/Kg	50.0
Total Manganese		220	mg/Kg	1.00
Total Molybdenum		<2.00	mg/Kg	2.00
Total Nickel		<10.0	mg/Kg	10.0
Total Potassium		2660	mg/Kg	50.0
Total Selenium		<1.00	mg/Kg	1.00

continued ...

sample 71581 continued ...

Param	Flag	Result	Units	RL
Total Silica		722	mg/Kg	10.0
Total Silver		<0.200	mg/Kg	0.200
Total Sodium		308	mg/Kg	50.0
Total Zinc		18.1	mg/Kg	1.00
Sulfate		30.6	mg/Kg	2.00

Sample: 71582 - Cell 2

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/Kg as CaCo3	1.00
Carbonate Alkalinity		8.00	mg/Kg as CaCo3	1.00
Bicarbonate Alkalinity		52.0	mg/Kg as CaCo3	4.00
Total Alkalinity		60.0	mg/Kg as CaCo3	4.00
Chloride		10.8	mg/Kg	1.00
Total Aluminum		10400	mg/Kg	10.0
Total Arsenic		<1.00	mg/Kg	1.00
Total Barium		28.2	mg/Kg	1.00
Total Boron		34.6	mg/Kg	10.0
Total Cadmium		<0.500	mg/Kg	0.500
Total Calcium		16900	mg/Kg	50.0
Total Chromium		6.95	mg/Kg	1.00
Total Cobalt		<10.0	mg/Kg	10.0
Total Copper		3.36	mg/Kg	0.500
Total Iron		9330	mg/Kg	10.0
Total Mercury		<0.0400	mg/Kg	0.0400
Total Lead		19.5	mg/Kg	1.00
Total Magnesium		4030	mg/Kg	50.0
Total Manganese		149	mg/Kg	1.00
Total Molybdenum		<2.00	mg/Kg	2.00
Total Nickel		<10.0	mg/Kg	10.0
Total Potassium		1810	mg/Kg	50.0
Total Selenium		<1.00	mg/Kg	1.00
Total Silica		620	mg/Kg	10.0
Total Silver		<0.200	mg/Kg	0.200
Total Sodium		240	mg/Kg	50.0
Total Zinc		13.4	mg/Kg	1.00
Sulfate		87.5	mg/Kg	2.00

TRACEANALYSIS, INC.

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Analytical and Quality Control Report

Gil Van Deventer
R. T. Hicks Consultants,Ltd.
901 Rio Grande Blvd. NW Suite F-142
Albuquerque,, NM 87104

Report Date: August 23, 2005

Work Order: 5082226

Project Name: Loco Hills,NM
Project Number: Marbob Energy Corp.

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
71581	Cell 1	soil	2005-08-22	10:00	2005-08-22
71582	Cell 2	soil	2005-08-22	08:50	2005-08-22

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

Dr. Blair Leftwich, Director

Analytical Report

Sample: 71581 - Cell 1

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	20819	Date Analyzed:	2005-08-26	Analyzed By:	RS
Prep Batch:	18274	Sample Preparation:	2005-08-26	Prepared By:	RS

Parameter	Flag	Result	RL	Units	Dilution	RL
Hydroxide Alkalinity		<1.00		mg/Kg as CaCo3	1	1.00
Carbonate Alkalinity		**5.00**		mg/Kg as CaCo3	1	1.00
Bicarbonate Alkalinity		**113**		mg/Kg as CaCo3	1	4.00
Total Alkalinity		**118**		mg/Kg as CaCo3	1	4.00

Sample: 71581 - Cell 1

Analysis:	BTEX by 8260	Analytical Method:	S 8260B	Prep Method:	S 5030B
QC Batch:	20874	Date Analyzed:	2005-08-29	Analyzed By:	JG
Prep Batch:	18329	Sample Preparation:	2005-08-29	Prepared By:	JG

Parameter	Flag	Result	RL	Units	Dilution	RL
Benzene		<10.0		µg/Kg	10	1.00
Toluene		<10.0		µg/Kg	10	1.00
Ethylbenzene		<10.0		µg/Kg	10	1.00
m,p-Xylene		<10.0		µg/Kg	10	1.00
o-Xylene		<10.0		µg/Kg	10	1.00
MTBE		<10.0		µg/Kg	10	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Dibromofluoromethane		507	µg/Kg	10	50.0	101	70 - 130
Toluene-d8		494	µg/Kg	10	50.0	99	70 - 130
4-Bromofluorobenzene (4-BFB)		500	µg/Kg	10	50.0	100	70 - 130

Sample: 71581 - Cell 1

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	20750	Date Analyzed:	2005-08-24	Analyzed By:	WB
Prep Batch:	18218	Sample Preparation:	2005-08-24	Prepared By:	WB

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		**9.40**		mg/Kg	5	1.00

Sample: 71581 - Cell 1

Analysis:	OCD Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	20768	Date Analyzed:	2005-08-25	Analyzed By:	TP
Prep Batch:	18207	Sample Preparation:	2005-08-24	Prepared By:	TP
Analysis:	OCD Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	20784	Date Analyzed:	2005-08-26	Analyzed By:	RR
Prep Batch:	18183	Sample Preparation:	2005-08-23	Prepared By:	DS
QC Batch:	20803	Date Analyzed:	2005-08-25	Analyzed By:	TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Aluminum		**17400**		mg/Kg	100	10.0
Total Arsenic		<1.00		mg/Kg	1	1.00
Total Barium		**424**		mg/Kg	1	1.00
Total Boron		**50.4**		mg/Kg	1	10.0
Total Cadmium		<0.500		mg/Kg	1	0.500
Total Calcium		**82800**		mg/Kg	10	50.0
Total Chromium		**9.94**		mg/Kg	1	1.00
Total Cobalt		<10.0		mg/Kg	1	10.0
Total Copper		**4.53**		mg/Kg	1	0.500
Total Iron		**12900**		mg/Kg	100	10.0
Total Mercury		**0.0450**		mg/Kg	1	0.0400
Total Lead		**29.9**		mg/Kg	1	1.00
Total Magnesium		**7060**		mg/Kg	1	50.0
Total Manganese		**220**		mg/Kg	1	1.00
Total Molybdenum		<2.00		mg/Kg	1	2.00
Total Nickel		<10.0		mg/Kg	1	10.0
Total Potassium		**2660**		mg/Kg	1	50.0
Total Selenium		<1.00		mg/Kg	1	1.00
Total Silica		**722**		mg/Kg	1	10.0
Total Silver		<0.200		mg/Kg	1	0.200
Total Sodium		**308**		mg/Kg	1	50.0
Total Zinc		**18.1**		mg/Kg	1	1.00

Sample: 71581 - Cell 1

Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	20750	Date Analyzed:	2005-08-24	Analyzed By:	WB
Prep Batch:	18218	Sample Preparation:	2005-08-24	Prepared By:	WB

Parameter	Flag	Result	RL	Units	Dilution	RL
Sulfate		**30.6**		mg/Kg	5	2.00

Sample: 71582 - Cell 2

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	20819	Date Analyzed:	2005-08-26	Analyzed By:	RS
Prep Batch:	18274	Sample Preparation:	2005-08-26	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/Kg as CaCo3	1	1.00
Carbonate Alkalinity		8.00	mg/Kg as CaCo3	1	1.00
Bicarbonate Alkalinity		52.0	mg/Kg as CaCo3	1	4.00
Total Alkalinity		60.0	mg/Kg as CaCo3	1	4.00

Sample: 71582 - Cell 2

Analysis:	BTEX by 8260	Analytical Method:	S 8260B	Prep Method:	S 5030B
QC Batch:	20874	Date Analyzed:	2005-08-29	Analyzed By:	JG
Prep Batch:	18329	Sample Preparation:	2005-08-29	Prepared By:	JG

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<10.0	µg/Kg	10	1.00
Toluene		<10.0	µg/Kg	10	1.00
Ethylbenzene		<10.0	µg/Kg	10	1.00
m,p-Xylene		<10.0	µg/Kg	10	1.00
o-Xylene		<10.0	µg/Kg	10	1.00
MTBE		<10.0	µg/Kg	10	1.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Dibromofluoromethane		506	µg/Kg	10	50.0	101	70 - 130
Toluene-d8		494	µg/Kg	10	50.0	99	70 - 130
4-Bromofluorobenzene (4-BFB)		507	µg/Kg	10	50.0	101	70 - 130

Sample: 71582 - Cell 2

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	20750	Date Analyzed:	2005-08-24	Analyzed By:	WB
Prep Batch:	18218	Sample Preparation:	2005-08-24	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		10.8	mg/Kg	5	1.00

Sample: 71582 - Cell 2

Analysis:	OCD Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	20768	Date Analyzed:	2005-08-25	Analyzed By:	TP
Prep Batch:	18207	Sample Preparation:	2005-08-24	Prepared By:	TP
Analysis:	OCD Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	20784	Date Analyzed:	2005-08-26	Analyzed By:	RR
Prep Batch:	18183	Sample Preparation:	2005-08-23	Prepared By:	DS
QC Batch:	20803	Date Analyzed:	2005-08-25	Analyzed By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Aluminum		10400	mg/Kg	100	10.0
Total Arsenic		<1.00	mg/Kg	1	1.00
Total Barium		28.2	mg/Kg	1	1.00
Total Boron		34.6	mg/Kg	1	10.0
Total Cadmium		<0.500	mg/Kg	1	0.500
Total Calcium		16900	mg/Kg	10	50.0
Total Chromium		6.95	mg/Kg	1	1.00
Total Cobalt		<10.0	mg/Kg	1	10.0
Total Copper		3.36	mg/Kg	1	0.500
Total Iron		9330	mg/Kg	100	10.0
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		19.5	mg/Kg	1	1.00
Total Magnesium		4030	mg/Kg	1	50.0
Total Manganese		149	mg/Kg	1	1.00
Total Molybdenum		<2.00	mg/Kg	1	2.00
Total Nickel		<10.0	mg/Kg	1	10.0
Total Potassium		1810	mg/Kg	1	50.0
Total Selenium		<1.00	mg/Kg	1	1.00
Total Silica		620	mg/Kg	1	10.0
Total Silver		<0.200	mg/Kg	1	0.200
Total Sodium		240	mg/Kg	1	50.0
Total Zinc		13.4	mg/Kg	1	1.00

Sample: 71582 - Cell 2

Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	20750	Date Analyzed:	2005-08-24	Analyzed By:	WB
Prep Batch:	18218	Sample Preparation:	2005-08-24	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		87.5	mg/Kg	5	2.00

Matrix Blank (1) QC Batch: 20750

Parameter	Flag	MDL Result	Units	RL
Chloride		1.64	mg/Kg	1

Matrix Blank (1) QC Batch: 20750

Parameter	Flag	MDL Result	Units	RL
Sulfate		<0.0581	mg/Kg	2

Method Blank (1) QC Batch: 20768

Parameter	Flag	MDL Result	Units	RL
Total Mercury		<0.00880	mg/Kg	0.04

Method Blank (1) QC Batch: 20784

Parameter	Flag	MDL Result	Units	RL
Total Aluminum		<0.270	mg/Kg	10
Total Arsenic		<0.228	mg/Kg	1
Total Barium		<0.601	mg/Kg	1
Total Boron		<0.206	mg/Kg	10
Total Cadmium		<0.0795	mg/Kg	0.5
Total Chromium		<0.125	mg/Kg	1
Total Cobalt		<0.164	mg/Kg	10
Total Copper		<0.268	mg/Kg	0.5
Total Iron		<0.208	mg/Kg	10
Total Lead		<0.650	mg/Kg	1
Total Manganese		<0.295	mg/Kg	1
Total Molybdenum		<0.241	mg/Kg	2
Total Nickel		<0.222	mg/Kg	10
Total Selenium		<0.767	mg/Kg	1
Total Silica		<0.549	mg/Kg	10
Total Silver		<0.0444	mg/Kg	0.2
Total Zinc		<0.124	mg/Kg	1

Method Blank (1) QC Batch: 20803

Parameter	Flag	MDL Result	Units	RL
Total Calcium		<0.642	mg/Kg	50
Total Magnesium		<6.42	mg/Kg	50
Total Potassium		<1.66	mg/Kg	50
Total Sodium		<1.74	mg/Kg	50

Method Blank (1) QC Batch: 20819

Parameter	Flag	MDL Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/Kg as CaCo3	1
Carbonate Alkalinity		<1.00	mg/Kg as CaCo3	1
Bicarbonate Alkalinity		<4.00	mg/Kg as CaCo3	4
Total Alkalinity		<4.00	mg/Kg as CaCo3	4

Method Blank (1) QC Batch: 20874

Parameter	Flag	MDL Result	Units	RL
1,1-Dichlorocthene		<2.44	µg/Kg	1
Benzene		<1.84	µg/Kg	1
Trichloroethene (TCE)		<7.08	µg/Kg	1
Toluene		<1.50	µg/Kg	1
Chlorobenzene		<1.45	µg/Kg	1
Ethylbenzene		<2.03	µg/Kg	1
m,p-Xylene		<5.03	µg/Kg	1
o-Xylene		<2.03	µg/Kg	1
MTBE		<3.35	µg/Kg	1

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Dibromofluoromethane		514	µg/Kg	10	50.0	103	70 - 130
Toluene-d8		497	µg/Kg	10	50.0	99	70 - 130
4-Bromofluorobenzene (4-BFB)		492	µg/Kg	10	50.0	98	70 - 130

Duplicate (1) QC Batch: 20819

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Hydroxide Alkalinity	<1.00	<1.00	mg/Kg as CaCo3	1	0	20
Carbonate Alkalinity	8.00	8.00	mg/Kg as CaCo3	1	0	20
Bicarbonate Alkalinity	52.0	52.0	mg/Kg as CaCo3	1	0	20
Total Alkalinity	60.0	60.0	mg/Kg as CaCo3	1	0	20

Laboratory Control Spike (LCS-1) QC Batch: 20750

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	13.1	13.2	mg/Kg	1	12.5	1.64	92	1	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 20750

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Sulfate	13.6	13.8	mg/Kg	1	12.5	<0.0581	109	1	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 20768

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Mercury	0.487	0.479	mg/Kg	1	0.500	<0.00880	97	2	81.8 - 120	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 20784

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Aluminum	106	106	mg/Kg	1	100	<0.270	106	0	85 - 115	20
Total Arsenic	44.0	44.9	mg/Kg	1	50.0	<0.228	88	2	85 - 108	20
Total Barium	94.6	95.7	mg/Kg	1	100	<0.601	95	1	85 - 107	20
Total Boron	4.47	4.87	mg/Kg	1	5.00	<0.206	89	9	85 - 115	20
Total Cadmium	23.8	23.0	mg/Kg	1	25.0	<0.0795	95	3	85 - 103	20
Total Chromium	10.9	10.3	mg/Kg	1	10.0	<0.125	109	6	85 - 113	20
Total Cobalt	26.7	25.8	mg/Kg	1	25.0	<0.164	107	3	85 - 115	20
Total Copper	12.2	12.9	mg/Kg	1	12.5	<0.268	98	6	85 - 115	20
Total Iron	55.6	56.1	mg/Kg	1	50.0	<0.208	111	1	85 - 115	20
Total Lead	44.2	45.5	mg/Kg	1	50.0	<0.650	88	3	85 - 110	20
Total Manganese	24.3	25.7	mg/Kg	1	25.0	<0.295	97	6	85 - 115	20
Total Molybdenum	55.7	53.3	mg/Kg	1	50.0	<0.241	111	4	85 - 115	20
Total Nickel	23.3	23.5	mg/Kg	1	25.0	<0.222	93	1	85 - 115	20
Total Selenium	45.9	45.0	mg/Kg	1	50.0	<0.767	92	2	85 - 100	20
Total Silica	106	103	mg/Kg	1	100	<0.549	106	3	85 - 115	20
Total Silver	12.0	12.0	mg/Kg	1	12.5	<0.0444	96	0	85 - 101	20
Total Zinc	25.1	24.9	mg/Kg	1	25.0	<0.124	100	1	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 20803

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Calcium	4670	4670	mg/Kg	100	50.0	<64.2	93	0	75 - 125	20
Total Magnesium	4540	4430	mg/Kg	100	50.0	<642	91	2	75 - 125	20
Total Potassium	4630	4740	mg/Kg	100	50.0	<166	93	2	75 - 125	20
Total Sodium	4860	4970	mg/Kg	100	50.0	<174	97	2	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 20874

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
1,1-Dichloroethene	476	474	µg/Kg	10	50.0	<2.44	95	0	70 - 130	20
Benzene	445	456	µg/Kg	10	50.0	<1.84	89	2	70 - 130	20
Trichloroethene (TCE)	527	533	µg/Kg	10	50.0	<7.08	105	1	70 - 130	20
Toluene	473	482	µg/Kg	10	50.0	<1.50	95	2	70 - 130	20
Chlorobenzene	507	515	µg/Kg	10	50.0	<1.45	101	2	70 - 130	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Dibromofluoromethane	527	532	µg/Kg	10	50.0	105	106	70 - 130
Toluene-d8	490	491	µg/Kg	10	50.0	98	98	70 - 130
4-Bromofluorobenzene (4-BFB)	476	478	µg/Kg	10	50.0	95	96	70 - 130

Matrix Spike (MS-1) QC Batch: 20750 Spiked Sample: 71582

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	68.1	68.4	mg/Kg	5	12.5	9.4	94	0	60.9 - 143	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 20750 Spiked Sample: 71582

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Sulfate [2]	150	152	mg/Kg	5	12.5	30.6	191	1	89.8 - 112	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 20768 Spiked Sample: 71582

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Mercury	0.516	0.545	mg/Kg	1	0.500	<0.00880	103	6	77.7 - 124	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 20784 Spiked Sample: 71581

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Arsenic	44.4	44.0	mg/Kg	1	50.0	<0.228	89	1	75 - 108	20
Total Barium	499	500	mg/Kg	1	100	424	75	0	75 - 125	20
Total Cadmium	19.2	19.5	mg/Kg	1	25.0	<0.0795	77	2	75 - 100	20
Total Chromium	20.4	20.6	mg/Kg	1	10.0	9.94	105	1	75 - 125	20
Total Copper	16.2	16.3	mg/Kg	1	12.5	4.53	93	1	75 - 125	20
Total Lead	73.6	74.6	mg/Kg	1	50.0	29.9	87	1	75 - 109	20
Total Nickel	28.7	29.0	mg/Kg	1	25.0	<0.222	115	1	75 - 125	20
Total Selenium	39.6	40.1	mg/Kg	1	50.0	<0.767	79	1	75 - 100	20
Total Silver	11.1	11.2	mg/Kg	1	12.5	<0.0444	89	1	76.3 - 105	20
Total Zinc	37.8	38.0	mg/Kg	1	25.0	18.1	79	0	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 20803 Spiked Sample: 71581

[1] Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[2] Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

Param		MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Calcium	[3]	87600	89700	mg/Kg	100	50.0	82800	96	2	75 - 125	20
Total Magnesium		10900	11300	mg/Kg	100	50.0	7060	77	4	75 - 125	20
Total Potassium		7240	7560	mg/Kg	100	50.0	2660	92	4	75 - 125	20
Total Sodium		5080	5250	mg/Kg	100	50.0	308	95	3	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (ICV-1) QC Batch: 20750

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	12.5	12.3	98	90 - 110	2005-08-24

Standard (ICV-1) QC Batch: 20750

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/Kg	12.5	12.6	101	90 - 110	2005-08-24

Standard (CCV-1) QC Batch: 20750

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	12.5	12.4	99	90 - 110	2005-08-24

Standard (CCV-1) QC Batch: 20750

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/Kg	12.5	12.6	101	90 - 110	2005-08-24

Standard (ICV-1) QC Batch: 20768

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.00500	0.00491	98	90 - 110	2005-08-25

Standard (CCV-1) QC Batch: 20768

[3]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.00500	0.00552	110	80 - 120	2005-08-25

Standard (ICV-1) QC Batch: 20784

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Arsenic		mg/Kg	1.00	1.00	100	90 - 110	2005-08-26
Total Barium		mg/Kg	1.00	0.994	99	90 - 110	2005-08-26
Total Cadmium		mg/Kg	1.00	0.995	100	90 - 110	2005-08-26
Total Chromium		mg/Kg	1.00	0.993	99	90 - 110	2005-08-26
Total Copper		mg/Kg	1.00	0.988	99	90 - 110	2005-08-26
Total Lead		mg/Kg	1.00	0.986	99	90 - 110	2005-08-26
Total Nickel		mg/Kg	1.00	0.993	99	90 - 110	2005-08-26
Total Selenium		mg/Kg	1.00	1.01	101	90 - 110	2005-08-26
Total Silver		mg/Kg	0.125	0.124	99	90 - 110	2005-08-26
Total Zinc		mg/Kg	1.00	0.992	99	90 - 110	2005-08-26

Standard (CCV-1) QC Batch: 20784

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Aluminum		mg/Kg	1.00	1.00	100	90 - 110	2005-08-26
Total Arsenic		mg/Kg	1.00	0.965	96	90 - 110	2005-08-26
Total Barium		mg/Kg	1.00	0.973	97	90 - 110	2005-08-26
Total Boron		mg/Kg	1.00	0.967	97	90 - 110	2005-08-26
Total Cadmium		mg/Kg	1.00	0.969	97	90 - 110	2005-08-26
Total Chromium		mg/Kg	1.00	0.972	97	90 - 110	2005-08-26
Total Cobalt		mg/Kg	1.00	1.04	104	90 - 110	2005-08-26
Total Copper		mg/Kg	1.00	0.962	96	90 - 110	2005-08-26
Total Iron		mg/Kg	1.00	1.05	105	90 - 110	2005-08-26
Total Lead		mg/Kg	1.00	0.989	99	90 - 110	2005-08-26
Total Manganese		mg/Kg	1.00	1.04	104	90 - 110	2005-08-26
Total Molybdenum		mg/Kg	1.00	1.03	103	90 - 110	2005-08-26
Total Nickel		mg/Kg	1.00	0.969	97	90 - 110	2005-08-26
Total Selenium		mg/Kg	1.00	0.965	96	90 - 110	2005-08-26
Total Silica		mg/Kg	5.00	5.15	103	90 - 110	2005-08-26
Total Silver		mg/Kg	0.125	0.121	97	90 - 110	2005-08-26
Total Zinc		mg/Kg	1.00	0.970	97	90 - 110	2005-08-26

Standard (CCV-2) QC Batch: 20784

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Aluminum		mg/Kg	1.00	1.00	100	90 - 110	2005-08-26
Total Boron		mg/Kg	1.00	0.967	97	90 - 110	2005-08-26

continued ...

standard continued . . .

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Cobalt		mg/Kg	1.00	1.04	104	90 - 110	2005-08-26
Total Iron		mg/Kg	1.00	1.05	105	90 - 110	2005-08-26
Total Manganese		mg/Kg	1.00	1.04	104	90 - 110	2005-08-26
Total Molybdenum		mg/Kg	1.00	1.03	103	90 - 110	2005-08-26
Total Silica		mg/Kg	5.00	5.15	103	90 - 110	2005-08-26

Standard (ICV-1) QC Batch: 20803

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Calcium		mg/Kg	50.0	48.7	97	90 - 110	2005-08-25
Total Magnesium		mg/Kg	50.0	49.8	100	90 - 110	2005-08-25
Total Potassium		mg/Kg	50.0	52.9	106	90 - 110	2005-08-25
Total Sodium		mg/Kg	50.0	53.1	106	90 - 110	2005-08-25

Standard (CCV-1) QC Batch: 20803

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Calcium		mg/Kg	50.0	46.7	93	90 - 110	2005-08-25
Total Magnesium		mg/Kg	50.0	47.5	95	90 - 110	2005-08-25
Total Potassium		mg/Kg	50.0	48.2	96	90 - 110	2005-08-25
Total Sodium		mg/Kg	50.0	50.2	100	90 - 110	2005-08-25

Standard (ICV-1) QC Batch: 20819

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Alkalinity		mg/Kg as CaCo3	250	240	96	90 - 110	2005-08-26

Standard (CCV-1) QC Batch: 20819

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Alkalinity		mg/Kg as CaCo3	250	244	98	90 - 110	2005-08-26

Standard (CCV-1) QC Batch: 20874

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Vinyl Chloride		µg/Kg	50.0	41.5	83	80 - 120	2005-08-29
1,1-Dichloroethene		µg/Kg	50.0	48.8	98	80 - 120	2005-08-29
Chloroform		µg/Kg	50.0	41.1	82	80 - 120	2005-08-29
1,2-Dichloropropane		µg/Kg	50.0	42.1	84	80 - 120	2005-08-29
Toluene		µg/Kg	50.0	47.0	94	80 - 120	2005-08-29
Chlorobenzene		µg/Kg	50.0	49.4	99	80 - 120	2005-08-29
Ethylbenzene		µg/Kg	50.0	47.0	94	80 - 120	2005-08-29

5082226

R. T. Hicks Consultants, Ltd.

901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, New Mexico 87104
Phone: (505) 266-5004
Fax: (505) 266-0745

M050802

Chain of Custody

Date 8/22/05 Page 1 of 1

Lab Name: Trace Analysis					Analysis Request																				
Address: 6701 Aberdeen Avenue, Suite 9																									
Lubbock, Texas 79424																									
Telephone: 800-378-1296																									
Samplers (SIGNATURES)																									
Sample Identification	Matrix	Date	Time	Sample Type: G - Grab, C - Composite	BTEX (EPA 8021B) 8260	MTBE (EPA 8021B)	SVOC (EPA 8270)	PAH (EPA 8270)	VOC (EPA 8260)	TPH (EPA 418.1)	TPH (TX-1005)	TPH (TX-1005)	GRO (EPA 8015G)	DRO (EPA 8015D)	TDS (EPA 160.1)	Anions: SO_4, Cl & HCO_3	Cations: Ca, Mg, K & Na	TDS	17 WQCC Metals	Ra 226 & Ra 228					Number of Containers
Cell 1 71581	Soil	8/19/05	1000	C	✓											✓	✓		✓	✓					4
Cell 2 71582	Soil	8/19/05	0850	C	✓											✓	✓		✓	✓					4

Project Information		Sample Receipt	
Project Name:	Marbob Energy Corp.	Total Containers:	
Project Location:	Loco Hills, NM	COC Seals:	
Project Manager:	Gil Van Deventer	Rec'd Good Cond/Cold:	
Cost Center No.:		Conforms to Records:	
Shipping ID No.:		Lab No.:	
Bill to (see below):	R. T. Hicks Consultants, Ltd.		
Special Instructions:	Fax results to: (413) 403-9968 email to gilert hicksconsults.com		

Relinquished By: (1) (Company)	Relinquished By: (2) (Company)	Relinquished By: (3) (Company)
R. T. Hicks Consultants, Ltd.		
(Printed Name) Gil Van Deventer	(Printed Name)	(Printed Name)
(Signature)	(Signature)	(Signature)
(Date) (Time)	(Date) (Time)	(Date) (Time)
Received By: (1) (Company)	**Received By: (2) (Company)**	**Received By: (3) (Company)**
Nell Green		
(Printed Name) Nell Green	(Printed Name)	(Printed Name)
(Signature) Trace Analysis	(Signature)	(Signature)
(Date) 8-22-05 (Time) 1:50pm	(Date) (Time)	(Date) (Time)

Copy signed original form for Trident Environmental records

Report Date: August 23, 2005
Marbob Energy Corp.

Work Order: 5082226
Loco Hills,NM

2609 North River
1 (800) 40

ARS Sample Delivery Group: ARS1-05-00443
Client Sample ID: Cell 1 71581
Sample Collection Date: 08/19/05 10:00
Sample Matrix: Soil/Solid

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units
RA-226	1.4000	1.3900	2.3000	NA	NA	pCi/g
RA-228	1.1400	0.4970	0.8370	NA	NA	pCi/g

Quality Assurance Review

LELAP Certificate# 30658 NELAP Certificate

QC Results Report

Analysis Batch	QC Type	Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC

13 #NAME?

2609 North River Road, Port Allen, Louisiana 70767
1 (800) 401-4277 FAX (225) 381-2996

Request or PO Number:
ARS Sample Delivery Group: ARS1-05-00443
Date Received: 08/23/05 00:00
Report Date: 09/08/05 11:39

Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery

· Road, Port Allen, Louisiana 70767
1-4277 FAX (225) 381-2996

Request or PO Number: NA
ARS Sample ID: ARS1-05-00443-001
Date Received: 08/23/05 00:00
Report Date: 09/08/05 11:39

Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
EPA 901.1M	9/7/05 15:38	JMB	
EPA 901.1M	9/7/05 15:38	JMB	

other than the cost of the analysis itself. Reproduction of this report in

E87558

2609 North River
1 (800) 40

ARS Sample Delivery Group: ARS1-05-00443
Client Sample ID: Cell 2 71582
Sample Collection Date: 08/19/05 10:00
Sample Matrix: Soil/Solid

Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC	Qual	Analysis Units
RA-226	2.5722	1.3581	0.6510	NA	NA	pCi/g
RA-228	0.5309	0.3161	0.1250	NA	NA	pCi/g

Quality Assurance Review

LELAP Certificate# 30658 NELAP Certificate

QC Results Report

Analysis Batch	QC Type	Analysis Description	Analysis Results	Analysis Error +/- 2 s	MDC	DLC

· Road, Port Allen, Louisiana 70767
1-4277 FAX (225) 381-2996

Request or PO Number: NA
ARS Sample ID: ARS1-05-00443-002
Date Received: 08/23/05 00:00
Report Date: 09/08/05 11:39

Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
EPA 901.1M	9/7/05 15:45	JMB	
EPA 901.1M	9/7/05 15:45	JMB	

other than the cost of the analysis itself. Reproduction of this report in

13 #NAME?

2609 North River Road, Port Allen, Louisiana 70767
1 (800) 401-4277 FAX (225) 381-2996

Request or PO Number:
ARS Sample Delivery Group: ARS1-05-00443
Date Received: 08/23/05 00:00
Report Date: 09/08/05 11:39

Qual	Analysis Units	Analysis Test Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery

71581-82

5082226

R. T. Hicks Consultants, Ltd.

901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, New Mexico 87104
Phone: (505) 266-5004
Fax: (505) 266-0745

M050802

Chain of Custody

Date 8/22/05 Page 1 of 1

Lab Name: Trace Analysis
Address: 6701 Aberdeen Avenue, Suite 9
Lubbock, Texas 79424
Telephone: 800-378-1296

Samplers (SIGNATURES)

Sample Identification	Matrix	Date	Time	Sample Type: G - Grab, C - Composite	BTEX (EPA 8021B) 8260	MTBE (EPA 8021B)	SVOC (EPA 8270)	PAH (EPA 8270)	VOC (EPA 8260)	TPH (EPA 418.1)	TPH (TX-1005)	TPH (TX-1006)	GRO (EPA 8015G)	DRO (EPA 8015D)	TDS (EPA 160.1)	Anions: SO_4, Cl & HCO_3	Cations: Ca, Mg, K & Na	TDS	17 WQCC Metals	Ra 226 & Ra 228	129				Number of Containers
Cell 1 71581	Soil	8/19/05	1000	C	✓											✓	✓		✓	✓	✓				4
Cell 2 71582	Soil	8/19/05	0850	C	✓											✓	✓		✓	✓	✓				4

Project Information		Sample Receipt	
Project Name:	Marbob Energy Corp.	Total Containers:	
Project Location:	Loco Hills, NM	COC Seals:	
Project Manager:	Gil Van Deventer	Rec'd Good Cond/Cold:	
Cost Center No.:		Conforms to Records:	
Shipping ID No.:		Lab No.:	
Bill to (see below):	R. T. Hicks Consultants, Ltd.		
Special Instructions:	Fax results to: (413) 403-9968 email to gil@rthicksconsults.com		

Relinquished By: (1) (Company)	Relinquished By: (2) (Company)	Relinquished By: (3) (Company)
R. T. Hicks Consultants, Ltd.		
(Printed Name) Gil Van Deventer	(Printed Name)	(Printed Name)
(Signature)	(Signature)	(Signature)
(Date) (Time)	(Date) (Time)	(Date) (Time)
Received By: (1) (Company)	**Received By: (2) (Company)**	**Received By: (3) (Company)**
Nell Green		
(Printed Name) Nell Green	(Printed Name)	(Printed Name)
(Signature) Trace Analysis	(Signature)	(Signature)
(Date) 8-22-05 (Time) 1:50pm	(Date) (Time)	(Date) (Time)

Copy signed original form for Trident Environmental records

9/13/05 - Faxed Radium Results 13F

Report Date: August 23, 2005 Work Order: 5082226 Page Number: 1 of 2
Marbob Energy Corp. Loco Hills,NM

Summary Report

Gil Van Deventer
R. T. Hicks Consultants,Ltd.
901 Rio Grande Blvd. NW Suite F-142
Albuquerque,, NM 87104

Report Date: August 23, 2005
Work Order: 5082226

Project Name: Loco Hills,NM
Project Number: Marbob Energy Corp.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
71581	Cell 1	soil	2005-08-22	10:00	2005-08-22
71582	Cell 2	soil	2005-08-22	08:50	2005-08-22

	BTEX by 8260					MTBE by 8260
Sample - Field Code	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethylbenzene (µg/Kg)	m,p-Xylene (µg/Kg)	o-Xylene (µg/Kg)	MTBE (µg/Kg)
71581 - Cell 1	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
71582 - Cell 2	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0

Sample: 71581 - Cell 1

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/Kg as CaCo3	1.00
Carbonate Alkalinity		5.00	mg/Kg as CaCo3	1.00
Bicarbonate Alkalinity		113	mg/Kg as CaCo3	4.00
Total Alkalinity		118	mg/Kg as CaCo3	4.00
Chloride		9.40	mg/Kg	1.00
Total Aluminum		17400	mg/Kg	10.0
Total Arsenic		<1.00	mg/Kg	1.00
Total Barium		424	mg/Kg	1.00
Total Boron		50.4	mg/Kg	10.0
Total Cadmium		<0.500	mg/Kg	0.500
Total Calcium		82800	mg/Kg	50.0
Total Chromium		9.94	mg/Kg	1.00
Total Cobalt		<10.0	mg/Kg	10.0
Total Copper		4.53	mg/Kg	0.500
Total Iron		12900	mg/Kg	10.0
Total Mercury		0.0450	mg/Kg	0.0400
Total Lead		29.9	mg/Kg	1.00
Total Magnesium		7060	mg/Kg	50.0
Total Manganese		220	mg/Kg	1.00
Total Molybdenum		<2.00	mg/Kg	2.00
Total Nickel		<10.0	mg/Kg	10.0
Total Potassium		2660	mg/Kg	50.0
Total Selenium		<1.00	mg/Kg	1.00

continued ...

Report Date: August 23, 2005 Work Order: 5082226 Page Number: 2 of 2
Marbob Energy Corp. Loco Hills,NM

sample 71581 continued ...

Param	Flag	Result	Units	RL
Total Silica		722	mg/Kg	10.0
Total Silver		<0.200	mg/Kg	0.200
Total Sodium		308	mg/Kg	50.0
Total Zinc		18.1	mg/Kg	1.00
Sulfate		30.6	mg/Kg	2.00

Sample: 71582 - Cell 2

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/Kg as CaCo3	1.00
Carbonate Alkalinity		8.00	mg/Kg as CaCo3	1.00
Bicarbonate Alkalinity		52.0	mg/Kg as CaCo3	1.00
Total Alkalinity		60.0	mg/Kg as CaCo3	1.00
Chloride		10.8	mg/Kg	1.00
Total Aluminum		10400	mg/Kg	10.0
Total Arsenic		<1.00	mg/Kg	1.00
Total Barium		28.2	mg/Kg	1.00
Total Boron		34.6	mg/Kg	10.0
Total Cadmium		<0.500	mg/Kg	0.500
Total Calcium		16900	mg/Kg	50.0
Total Chromium		6.95	mg/Kg	1.00
Total Cobalt		<10.0	mg/Kg	10.0
Total Copper		3.36	mg/Kg	0.500
Total Iron		9330	mg/Kg	10.0
Total Mercury		<0.0400	mg/Kg	0.0400
Total Lead		19.5	mg/Kg	1.00
Total Magnesium		4030	mg/Kg	50.0
Total Manganese		149	mg/Kg	1.00
Total Molybdenum		<2.00	mg/Kg	2.00
Total Nickel		<10.0	mg/Kg	10.0
Total Potassium		1810	mg/Kg	50.0
Total Selenium		<1.00	mg/Kg	1.00
Total Silica		620	mg/Kg	10.0
Total Silver		<0.200	mg/Kg	0.200
Total Sodium		240	mg/Kg	50.0
Total Zinc		13.4	mg/Kg	1.00
Sulfate		87.5	mg/Kg	2.00

71581-82

3082226

R. T. Hicks Consultants, Ltd.

901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, New Mexico 87104
Phone: (505) 266-5004
Fax: (505) 266-0745

M050802

Chain of Custody

Date 8/22/05 Page 1 of 1

Lab Name: Trace Analysis					Analysis Request																			
Address: 6701 Aberdeen Avenue, Suite 9, Lubbock, Texas 79424																								
Telephone: 800-378-1296																								
Samplers (SIGNATURE): Gilbert Van Deventer																								
Sample Identification	Matrix	Date	Time	Sample Type: G - Grab, C - Composite	BTEX (EPA 8021B) 8260	MTBE (EPA 8021B)	SVOC (EPA 8270)	PAH (EPA 8270)	VOC (EPA 8260)	TPH (EPA 418.1)	TPH (TX-1005)	TPH (TX-1005)	GRO (EPA 8015G)	DRO (EPA 8015D)	TDS (EPA 160.1)	Anions: SO_4, Cl & HCO_3	Cations: Ca, Mg, K & Na	TDS	17 WQCC Metals	Ra 226 & Ra 228	Hg			Number of Containers
Cell 1 71581	Soil	8/19/05	1000	C	✓											✓	✓		✓	✓	•			4
Cell 2 71582	Soil	8/19/05	0850	C	✓											✓	✓		✓	✓	•			4

Project Information		Sample Receipt	Relinquished By: (1) (Company)	Relinquished By: (2) (Company)	Relinquished By: (3) (Company)
Project Name:	Marbob Energy Corp.	Total Containers:	R. T. Hicks Consultants, Ltd.		
Project Location:	Loco Hills, NM	COC Seals:	(Printed Name) Gil Van Deventer	(Printed Name)	(Printed Name)
Project Manager:	Gil Van Deventer	Rec'd Good Cond/Cold:	(Signature)	(Signature)	(Signature)
Cost Center No.:		Conforms to Records:	(Date) (Time)	(Date) (Time)	(Date) (Time)
Shipping ID No.:		Lab No.:	Received By: (1) (Company)	Received By: (2) (Company)	Received By: (3) (Company)
Bill to (see below):	R. T. Hicks Consultants, Ltd.		Neil Green		
Special Instructions:	Fax results to: (413) 403-9968		(Printed Name) Neil Green	(Printed Name)	(Printed Name)
	email to gilbert@hicksconsults.com		(Signature) Trace Analysis	(Signature)	(Signature)
			(Date) 8-22-05 (Time) 1:50pm	(Date) (Time)	(Date) (Time)

Copy signed original form for Trident Environmental records

08/13/2005 18:47 8057941298 TRACEANALYSIS PAGE 03

APPENDIX B

WELL SAMPLING DATA FORM

CLIENT: Marbob Energy Corp. WELL ID: MW-1

LEASE Burch Keely Unit DATE: September 30, 2005

SITE NAME: Marbob Land Sale SAMPLER: Elvin Chavez

SITE LOCATION: T17S-R30E-SEC 30

PURGING METHOD: ☑ Hand Bailed ☐ Pump* If Pump, Type: _____

SAMPLING METHOD: ☑ Disposable Bailer ☐ Direct from Discharge Hose ☐

DESCRIBE EQUIPMENT DECONTAMINATION METHOD BEFORE SAMPLING THE WELL:

☑ Gloves ☑ Alconox ☑ Distilled Water Rinse ☐ Other: _____

DISPOSAL METHOD OF PURGE WATER: ☑ Surface Discharge ☐ Drums ☐ Disposal Facility

TOTAL DEPTH OF WELL: 271.60 Feet

DEPTH TO WATER: 264.50 Feet

HEIGHT OF WATER COLUMN: 7.10 Feet

WELL DIAMETER: 4.0 Inch

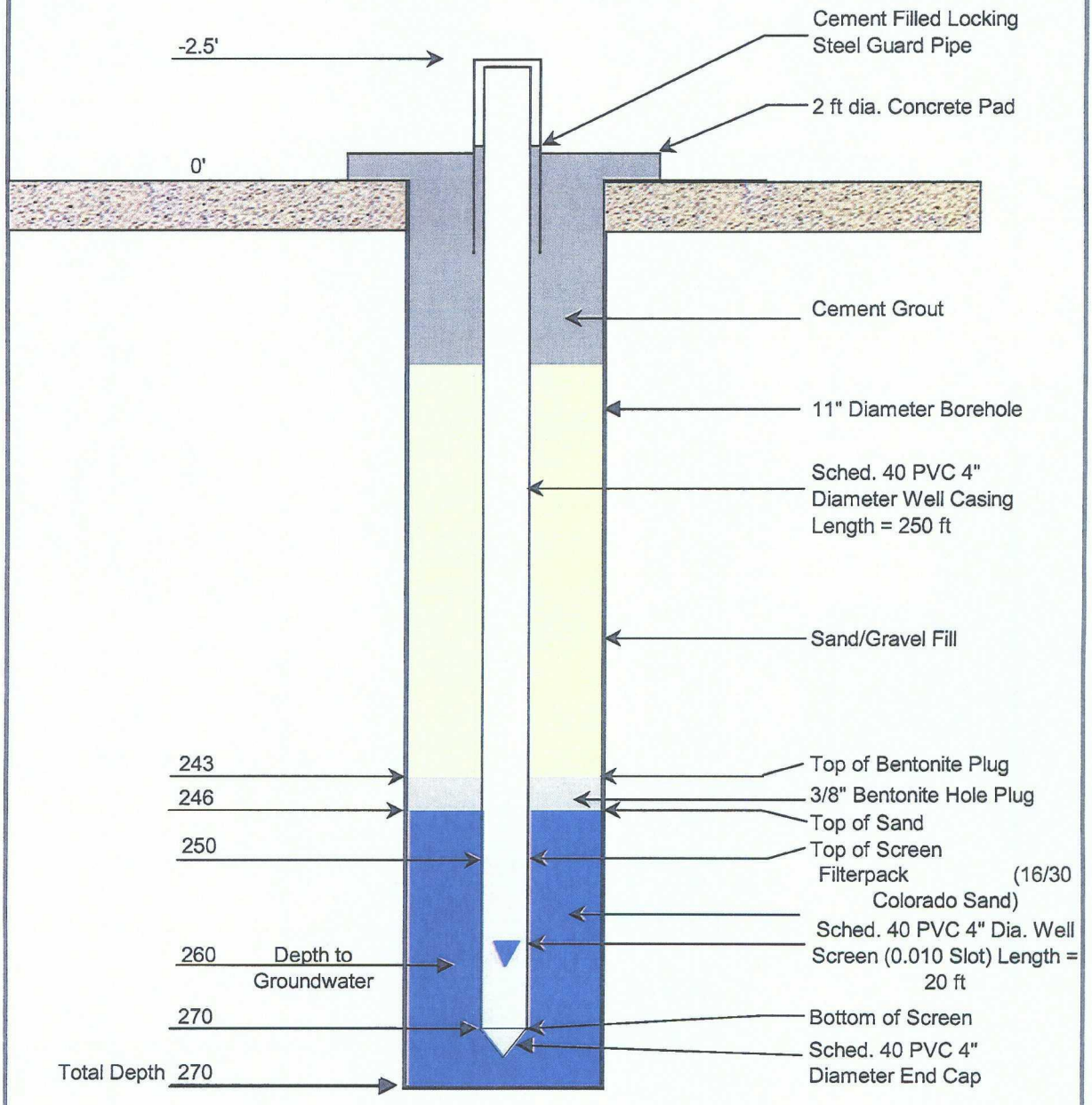
13.9 Minimum gallons to purge 3 well volumes

_____ Actual Gallons purged

DATE	TIME	VOLUME PURGED	TEMP. °C	COND. mS/cm	pH		PHYSICAL APPEARANCE AND REMARKS
9/28/05	11:30	5	22.5	5.72	7.64		Bailed dry
9/29/05	15:15	10	21.6	7.08	7.02		Bailed dry
9/30/05	15:08	7	21.1	7.15	7.34		Collected sample

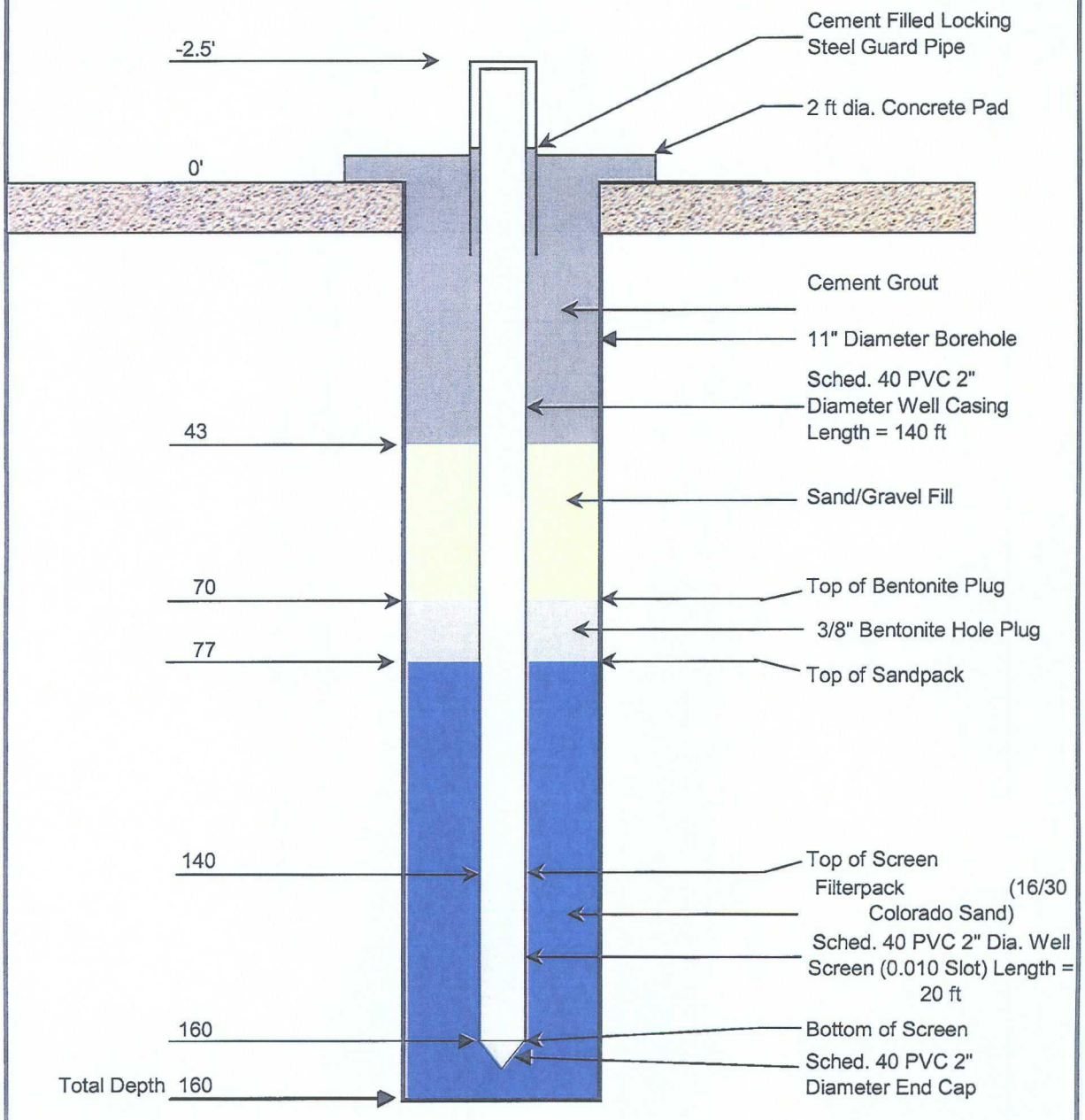
COMMENTS: Delivered samples to Assaigai Analytical Laboratories, Inc. (Albuquerque NM) for analysis of: anions (chloride, fluride, sulfate, and bicarbonate), cations (sodium, calcium, potassium, and magnesium), and TDS

MONITORING WELL CONSTRUCTION DIAGRAM



R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW, Suite F-142 Albuquerque, New Mexico 87104	Company: Marbob Energy Co. Site: Caliche Pit Date: 8/18/2005 Geologist: Gil Van Deventer	MW-1d Rustler Monitoring Well Construction Diagram

MONITORING WELL CONSTRUCTION DIAGRAM



R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW, Suite F-142 Albuquerque, New Mexico 87104	Company: Marbob Energy Co. Site: Caliche Pit Date: 8/18/2005 Geologist: Gil Van Deventer	MW-1s Santa Rosa Monitoring Well Construction Diagram

APPENDIX C

NOTICE OF PUBLICATION

State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division

Notice is hereby given that pursuant to New Mexico Oil Conservation Division Regulations, the following Application for a Centralized Surface Waste Management Facility has been submitted to the Director of the Oil Conservation Division, 1220 S. St. Francis Dr., Santa Fe, New Mexico 87504, Telephone (505) 476-3440:

> Marbob Energy Corporation, Rand French, Telephone (505) 748-3303, 2208 W Main, Artesia, New Mexico 88210, has submitted a Application for a Centralized Surface Waste Management Facility, located 2 miles west of Loco Hills, Eddy County, NM, as described below:
>
> Township 17 South, Range 30 East, Section 19 Lot 4 & 8 and W/2 E/2 SW/4 and Township 17 South, Range 30 East, Section 30 Lot 1 and W/2 NE/4 NW/4
>
> The primary purpose for the Centralized Surface Waste Management Facility is to restore the habitat of an existing caliche pit by infilling with drilling pit material, recycled caliche roadbed or drill pad material, remediated hydrocarbon-impacted soils, and topsoil. The intended result is the to return the land to a condition approximating or equal to that which existed prior to the formation of the caliche pit without threat to human health or the environment.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The Application for a Centralized Surface Waste Management Facility may be viewed at the above address or at the Oil Conservation Division District Office, 1625 N. French Drive, Hobbs, New Mexico 88240, Telephone (505) 393-6161 between 8:00 a.m. and 4:00 p.m., Monday through Friday. Prior to ruling on any Application for a Centralized Surface Waste Management Facility, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which written comments may be submitted to him.

R. T. HICKS CONSULTANTS, LTD.
1909 Brunson Ave. ▲ Midland, TX 79701-6924 ▲ 432.638.8740 ▲ Fax: 413.403.9969

R.T. Hicks Consultants, LTD.
1909 Brunson Ave.
Midland TX 79701-6924

RE: Notice of Proposed Permit Application
February 14, 2006

Dear Sir or Madam:

Marbob Energy Corporation has retained R.T. Hicks Consultants, Ltd. to prepare and submit a permit application for a centralized surface waste management facility. The attached proposed public notice provides a general summary of the permit. NMOCD Rules specify that:

> Prior to public notice, the applicant shall give written notice of application to the surface owners of record within one (1) mile of the facility, the county commission where the facility is located or is proposed to be located, and the appropriate city official(s) if the facility is located or proposed to be located within city limits or within one (1) mile of the city limits.

This letter and the attachment serve as this initial public notice. The NMOCD Rules go on to say:

> The applicant will issue public notice in a form approved by the Division in a newspaper of general circulation in the county in which the facility is to be located.

Please expect publication of a notice in a format similar to the attached in the Artesia News and Albuquerque Journal within the next few weeks.

Sincerely,

Clinton J. Peebles for
Gilbert J. Van Deventer

Distribution:

Larry Taylor
Highway 83
Loco Hills, New Mexico 88255
(505) 677-2271

Eddy County Commission
101 West Greene Street
Suite 110
Carlsbad, New Mexico 88220

United States Department of the Interior
Bureau of Land Management
Carlsbad Field Office
620 E. Greene St.
Carlsbad, New Mexico 88220
(505) 628-3471

Artesia Daily Press

P.O. Box 190, Artesia, NM 88211-0190
Phone: (505) 746-3524
Fax: (505) 746-8795

INVOICE

Invoice Date:
04/10/06
Invoice Number:
Customer Number:
11293777

R.T. Hicks Consultants, Ltd.
Attn: Randy Hicks
901 Rio Grande NW Suite F-142
Albuquerque 87104

DATE	TYPE	DOC NO	REF NUMBER	DESCRIPTION	# OF INS	DEPTH	RATE	AMOUNT
04/10/06	INV		A/R:1142386 Ord:11271239	---------- Artesia Daily Press Legal Section, Legal Notice				
				04/06/2006	1	13.90	61.04	61.04
				Sales Tax	1	1.00	4.16	4.16
							TOTAL	65.20

Please detach and return this portion with payment. To ensure proper credit to your account, please write your customer number on your check. If you have any questions about your account, please contact Accounts Receivable at (505) 746-3524.

Invoice Date	Invoice Number
04/10/06	1142386
Customer Number	
11293777	

Retail Advertising

PLEASE PAY: 65.20

ARTESIA DAILY PRESS
Attn: Accounts Receivable
P.O. Box 190
Artesia, NM 88211-0190

R.T. Hicks Consultants, Ltd.
901 Rio Grande NW Suite F-142
Albuquerque 87104

* * * **Proof** * * *

Albuquerque Publishing Company
7777 Jefferson NE
Albuquerque, NM 87109
(505)823-7777

Account Information

Phone:	(505) 266-5004
Name:	HICKS,R T CONSULTANTS LIMIT-ED
Account #:	C82519
Address:	901 RIO GRANDE NW STE F-142 ALBUQUERQUE, NM 87104
Client:	
Placed by:	RANDALL HICKS
Fax #:	

Ad Information

Classification:	0001-Legals - Non - Government	**Size:**	[illegible]
Start date:	04-07-06	**Billed size:**	74.00 lns., 6.5pt
Stop date:	04-07-06	**Ad #:**	[illegible]
Insertions:	1	**Ad type:**	Liner Ad
Rate code:	Non-Government Le-gals		
Publications:	Journal Daily (AM)		

Ad Cost:	[illegible]
Tax @ 6.7500%:	[illegible]
Tax @ 7.3125%:	[illegible]
Tax @ 7.6250%:	[illegible]
Total:	[illegible]

Ad Copy:

State of New Mexico
Energy, Minerals and
Natural Resources Department
Oil Conservation Division

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Township 17 South, Range 30 East, Section 30 Lot 1 and W/2 NE/4 NW/4

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MARBOB 711

* * * Proof * * *

Albuquerque Publishing Company
7777 Jefferson NE
Albuquerque, NM 87109
(505)823-7777