ATTACHMENT H
VADOSE ZONE MONITORING PLAN

PROPOSED C.K. DISPOSAL E&P LANDFILL AND PROCESSING FACILITY

Eunice, New Mexico

Project No: 15-04-22

Prepared for:

C.K. Disposal LLC

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Prepared by:

PSC
4222 85th Street
Lubbock, TX 79423
(806) 473-2200

The CAREL CORPORATION
136 Pecan Street
Keller, Texas 76248
(817) 337-0112

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1.0 INTRODUCTION

The proposed C.K. Disposal E&P Landfill and Processing Facility, henceforth known as the "Site", is a proposed Surface Waste Management Facility for oilfield waste processing and disposal services. The proposed Site is subject to Title 19 Chapter 15 Part 36 of the New Mexico Administrative Code (NMAC). Specifically the facility is subject to 19.15.36 NMAC, which is administered by the Oil Conservation Division (OCD).

The proposed tract of land encompasses approximately 316.97 acres and is located in the north half of Section 5, Township 22 South, Range 38 East in Southern Lea County, New Mexico. It is situated approximately 4.16 miles east of the town of Eunice and one-half mile west of the New Mexico-Texas state border south of Highway 234.

Per 19.15.36.13.A(1) NMAC, landfills are restricted where groundwater is less than 100 feet below the lowest elevation of the design depth at which oil field waste will be placed. Additionally, 19.15.36.14.B NMAC requires groundwater monitoring at facilities where "fresh groundwater" exists, unless otherwise approved by the division. Fresh groundwater is typically defined as groundwater that contains less than 10,000 mg/L of total dissolved solids. Based on site-specific criteria discussed in the following sections, a vadose monitoring plan is proposed. Vadose zone monitoring has been employed at other landfills around the country and in New Mexico where hydrogeologic conditions warrant. Of special interest, a recently approved oilfield waste disposal site (similar to the proposed Site) in Lea County and the Lea County Landfill, which adjoins the proposed Site on the eastern property boundary, both perform vadose zone monitoring. This Vadose Zone Monitoring Plan has been prepared by Kevin T. Carel P.G., a qualified groundwater scientist, for the C.K. Disposal LLC.

2.0 SITE HYDROGEOLOGY

The hydrogeologic setting is thoroughly discussed in the Hydrogeology Report located in Attachment G of the C.K. Disposal E&P Landfill and Processing Facility permit application. The proposed Site is underlain by strata deposited during the Holocene Series to middle Pleistocene of the Quaternary System, Scholle, 2003. The Quaternary strata is mostly composed of interlayered sands and was deposited by eolian processes. The regional stratigraphy includes geologic units (listed from oldest to youngest) of the Santa Rosa Formation and the Chinle Formation of the Triassic Dockum Group, Cretaceous rocks undifferentiated, the Tertiary Ogallala Formation, and various Holocene to Pleistocene age deposits. Locally the proposed Site is located on the west flank of a topographic high known as Rattlesnake Ridge. Rattlesnake Ridge, also known as the Dockum Red Bed Ridge or Red Bed Ridge, in adjacent Andrews County, Texas is a northwest-southeast trending topographic high. The ridge has a local influence on the occurrence of groundwater in the vicinity of the proposed Site.

According to Nicholson and Clebsch, (1961) the potable groundwater used in southern Lea County is derived from three principal geologic units, the Dockum Group, the Ogallala Formation, and Quaternary Alluvium. Most wells are completed in the shallowest zone that will produce the desired quantity of water because the shallow groundwater in the Quaternary Alluvium and the Ogallala Formation is of better chemical quality than that from the rocks of the Dockum Group and the younger rocks are more permeable and therefore permit greater well yields. Potable groundwater is not available below the Dockum Group.

The proposed Site is located where groundwater resources are limited. A groundwater contour map of the Ogallala Formation and the Quaternary alluvium in the vicinity of the proposed Site is provided as Figure H.1. The map's authors, Nicholson and Clebsch (1961), state that the groundwater contours are generalized, and in areas with limited subsurface data their contours are dashed where approximated. The overall groundwater flow pattern is toward the Southeast. The boundaries of the aquifer are shown by heavy dashed lines, which delineate the areas in which the Dockum Group and overlying strata project above the water table. The map indicates that the Ogallala Formation is not saturated beneath the proposed Site. This is due to the fact that as the Ogallala Formation rises in elevation toward the crest of Rattlesnake Ridge, its entire section projects above the water table. Based on information provided by Lehman and Rainwater (2000), the strata above the Dockum Group becomes saturated again on the northeast flank of the ridge approximately two miles east of the proposed Site in Andrews County, Texas where it plunges back below the saturated zone.

An east-west oriented hydrogeologic cross-section B-B' (Figure H.2), was constructed using information from two site borings (BH-01 and BH-02) and six (6) other wells located in the general vicinity of the proposed Site. The well logs are provided in Appendix H.A. The surface geology was taken from Scholle (2003) and the elevation of the water table within the Ogallala was taken from Nicholson and Clebsch (1961). The cross-section illustrates how the Ogallala Formation rises above the saturated zone along the southwest flank of Rattlesnake Ridge in the vicinity of the proposed Site.

Five (5) borings were advanced each to a depth of 175-feet below ground surface (bgs). No groundwater was observed in the cuttings obtained during advancement of the borings, nor was any groundwater observed in any of the bore holes after a 24-hour period. No groundwater is

present within the upper 175-feet of the Ogallala Formation or Chinle Formation because they rise above the saturated zone of the Ogallala Formation as illustrated in Figure H.1 and Figure H.2.

A low-level radioactive waste disposal site operated by Waste Control Specialists (WCS) is located approximately one-mile northeast of the proposed Site. The WCS site identifies a saturated zone termed the 225-foot zone as the uppermost aquifer beneath the disposal facility. The 225-foot zone is situated within the Chinle Formation. This zone is also identified as the uppermost aquifer in a RCRA hazardous waste permit adjacent to the low-level radioactive waste site. Similarly, the URENCO facility located immediately north of the proposed Site across Highway 234, identifies the shallowest saturated zone as being between 214 to 222 feet bgs. While not encountered by site borings, the 225-foot zone is considered to be the shallowest fresh water aquifer beneath the proposed Site as required by 19.15.36.8.C.15(c) NMAC. However, it should be noted that the total dissolved solids (TDS) concentration available for the URENCO facility is 11,600 mg/L. The concentration is reportedly the maximum detected concentration through April 2011 and is the only known information available for groundwater in close proximity and specifically for the apparent uppermost saturated zone. As previously stated, fresh groundwater is defined as groundwater that contains less than 10,000 mg/L of TDS. Therefore, the groundwater within the 225-foot zone may not meet the criteria for fresh groundwater.

3.0 MONITORING SYSTEM DESIGN CONSIDERATIONS

3.1 Critical Receptors

Critical receptors to groundwater flow downgradient of any landfill could include public drinking water supply wells, individual drinking water or livestock wells, and surface water bodies used for drinking water supply. A search was conducted for water wells within a one-mile radius of the proposed Site. Several groundwater monitoring wells, geotechnical borings and vadose zone monitoring wells are located at two facilities located north and east of the proposed Site. The wells/borings are illustrated on Figure H.3. and the well logs are provided in Appendix H.B.

Some of the groundwater monitor wells illustrated on Figure H.3 appear to monitor the vadose zone while others monitor a zone within the Chinle Formation known as the 225-foot zone at the WCS Facility in Andrews County, Texas. As previously stated, the TDS concentration for this groundwater zone is known to be elevated (i.e. the maximum detected concentration through April 2011 is reportedly 11,600 mg/L). Therefore, this groundwater zone may not be potable. On the basis of available information, no wells are known to exist in the vicinity of the proposed Site that provide potable groundwater. Additionally, there are no surface water bodies used for drinking water supply in the vicinity of the proposed Site.

3.2 Containment System

The landfill at the proposed Site is designed with a double HDPE liner with intervening geonet leak detection layer. The landfill liner is designed to drain liquids to 12 separate leachate collection sumps as illustrated on Figure H.4. Leachate will be pumped out of the sumps. While a leak from a double lined landfill is unlikely, leachate collection sumps are often viewed as the more likely location of a leak. This is because they are the lowest elevation of the lining system and may retain liquids for longer periods of time than other portions of the lining system. Therefore, where possible the monitor wells have been located down-slope of the leachate collection sumps.

3.3 Site Stratigraphy

Three stratigraphic units have been identified at the site based on soil borings installed during a subsurface investigation. They are described in detail below. The boring logs can be found in Appendix H.C.

3.3.1 Stratum I – Clayey Sand

This stratum is composed of brown to reddish brown clayey sand. This stratum represents Quaternary aged eolian and piedmont deposits (Scholle, 2003) or drift sand (Nicholson and Clebsch, 1961). Stratum I was deposited by eolian (i.e. wind) processes. The materials observed are composed largely of quartz and secondary feldspar minerals.

3.3.2 Stratum II – Silty Sand with Caliche

Stratum II is composed of light brown to white silty clayey sand with caliche. This stratum represents the Ogallala Formation. Similar to Stratum I, Stratum II is also composed largely of quartz and secondary feldspar minerals. Two of the borings, BH-03 and BH-05,

contained gravels composed of quartz and caliche nodules up to one inch in diameter. Stratum II was fully penetrated by each of the five (5) borings.

3.3.3 Stratum III - Claystone

Stratum III is described as a reddish brown claystone. The claystone contains some silt and sand layers. The color is predominantly reddish brown but changes to brown, dark brown and purple. This claystone belongs to the Triassic Chinle Formation of the Dockum Group and is locally referred to as "Red Bed". According to Nicholson and Clebsch (1961), the Chinle Formation is as much as 1,270 feet thick.

Each of the five borings encountered Stratum III at depths ranging from 35 to 50 feet bgs. Figure H.5 is a structure map of the top of the Dockum Group that was prepared from the boring information. The structure map indicates that the surface of the Stratum III has a gentle arcuate shape that generally dips to the west-southwest. The surface does not conform to the regional dip in southern Lea County which is easterly toward the Delaware Basin. Thus the surface of Stratum III appears to be the result of the Site's proximity to Rattlesnake Ridge.

3.4 Contaminant Migration Pathway Analysis

In the improbable incident of a leachate release (i.e., failure of several redundant containment systems such as double HDPE liner with leak detection and a leachate collection system), it would move laterally within the more permeable portion of the Ogallala Formation and along the slope of the top of the Dockum Group. Based on the structure map of the top of the Dockum Group, Figure H.5, the leachate flow direction would be to the south and southwest. The potential leachate flow directions at each sump are illustrated by blue flow vectors on Figure H.6. Vadose zone monitor wells VW-3 through VW-8 and VW-11 are positioned down-slope of proximal leachate collection sumps. Wells VW-9 and VW-10 are positioned to detect contaminant migration from other areas of the proposed landfill including the more distal up-slope leachate sumps. A point of compliance has been established and is shown on Figure H.6, that encompasses the potential flow directions. The north and east sides of the site are the considered up-slope portions of the site and the south and west sides are considered the down-slope sides with regard to potential contaminant flow.

4.0 PROPOSED VADOSE ZONE MONITORING SYSTEM

A vadose monitoring system has been designed for the facility based on site specific technical information. The design considered the thickness, stratigraphy, lithology, and hydraulic characteristics of the geologic units, the depth to groundwater, TDS concentration, critical receptors and the contaminant migration pathway analysis.

The presence of groundwater in the vadose zone monitoring wells may not necessarily be the result of leakage from the facility. Rather, other sources such as infiltration of surface water during excavation of the landfill cells or infiltration from proximal storm water detention ponds may cause temporary saturation and water to be detected in down-slope vadose zone wells. Chemical analysis of water samples, if present, and comparison to leachate samples and/or samples from a leak detection system will be used to determine whether the water is a result of a potential release from the facility.

4.1 Proposed Monitoring Well Locations

Nine vadose zone monitoring wells have been designed along a point of compliance that has been identified on the site perimeter, Figure H.6. The compliance monitoring well locations are generally located down-slope of the leachate collection sumps. In addition, two background (up-slope) monitoring wells have been designed along the north side of the facility. The background wells represent the quality of background (up-slope) water (if present) that cannot be affected by leakage from a landfill.

During construction of the initial landfill unit, wells VW-1, VW-2 and VW-3 will be constructed. An initial sample of water (if present) will be collected prior to acceptance of any waste at the facility. Other vadose zone monitoring wells will be installed according to the schedule provided in Table H.1. An initial sample of water (if present) should be collected prior to acceptance of waste in the stated landfill units.

Table H.1
C.K. Disposal E&P Landfill and Processing Facility
Vadose Zone Monitor Well Schedule

Well ID	Function	Northing[2]	Easting[2]	Surface Elev. (msl)	Depth[1][2] (bgs)	Screen Interval[2] (bgs)	Sequence[3]
VW-1	Background	521651.81	929755.58	3398.4	41	31-41	Phase I, Unit 1
VW-2	Background	521728.91	927830.19	3394.2	38	28-38	Phase I, Unit 1
VW-3	Compliance	519221.99	927237.78	3383.1	51	41-51	Phase I, Unit 1
VW-4	Compliance	519216.78	926746.45	3379.6	50	40-50	Phase I, Unit 2
VW-5	Compliance	519213.21	926300.99	3375.9	50	40-50	Phase II, Unit 3
VW-6	Compliance	519208.53	925836.00	3373.5	50.5	40.5-50.5	Phase II, Unit 4
VW-7	Compliance	519261.27	925358.87	3370.8	50	40-50	Phase III, Unit 5
VW-8	Compliance	519265.14	924911.85	3371.4	54	44-54	Phase III, Unit 6
VW-9	Compliance	519947.76	924800.59	3374.3	51	41-51	Phase III, Unit 6
VW-10	Compliance	520495.93	924793.61	3376.3	46	36-46	Phase III, Unit 6
VW-11	Compliance	520996.46	924782.82	3376.8	51	41-51	Phase III, Unit 6

Notes:
1. All wells to be drilled through the Ogallala approximately three (3) feet into the Dockum Group (Chinle Formation).
2. Values are approximate and may be modified based on field conditions as long as the wells fully penetrate the Ogallala Formation.
3. Wells to be installed and an initial sample collected prior to the acceptance of waste in listed unit.

After the first year, the wells will be monitored semi-annually for the life of the landfill and for a period of 30 years after closure in accordance with the Closure/Post Closure Care Plan Attachment L.

4.2 Monitor Well Design and Construction

The vadose zone monitor wells will be constructed to the specifications listed below and illustrated on Figure H.7.

Table H.2
C.K. Disposal E&P Landfill and Processing Facility
Vadose Zone Monitor Well Specifications

Drill Depth	See Table H.1
Well Materials	4-inch diameter sched. 40 PVC, flush threaded with screw joints, and o-rings.
Screen	Ten-foot section, machine slotted with 0.010" slots. A one foot sump shall be placed beneath the screen.
Filter Pack	Inert 10-20 silica sand extending 2-feet above top of screen.
Annular Seal	Minimum three feet of hydrated sodium bentonite pellets above top of filter pack.
Casing Seal	High solids bentonite grout (Volclay Grout) to within three feet of ground surface.
Concrete Pad	A 4' x 4' x 6" steel reinforced concrete pad extending to grout below surface.
Protective Casing and Barrier	Steel locking protective casing and four yellow bollards placed outside of concrete pad.

Prior to installation of the vadose zone monitoring wells, drilling permits will be obtained from the New Mexico Office of the State Engineer (NMOSE). A drilling contractor licensed in the State of New Mexico will install the monitoring wells in accordance with the applicable regulations. Wells will be drilled by a method that will not introduce contaminants into the borehole or casing. A licensed professional geoscientist or engineer who is familiar with the geology of the area will supervise monitoring well installation and will provide a log of the boring. A registered professional land surveyor will survey the as-built well location, top of concrete pad elevation and top of casing elevation, at a minimum.

If any fluid is required in the drilling of monitoring wells, clean, treated water shall be used and a sample will be collected for chemical analysis of the constituents required in the facility Sampling and Analysis Plan, Attachment I. No glue or solvents will be used in monitoring well construction.

Within 60 days of completion of a vadose zone monitoring well or any other part of a monitoring system, an installation report will be submitted to the Oil Conservation Division (OCD). The report will include a lithologic log and construction details for each well, a site map drawn to scale showing the location of all monitoring wells, well elevations to the nearest 0.01 foot above msl (with year of datum shown), latitude and longitude and/or state plane coordinates of each well, and copies of driller's reports required by other agencies.

All parts of the vadose zone monitoring system will be operated and maintained so that they perform at least to design specifications through the life of the vadose zone monitoring program.

4.3 Sampling and Analysis Procedures

A Sampling and Analysis Plan is provided in Attachment I that contains the general requirements, sampling procedures and reporting procedures.

5.0 REFERENCES

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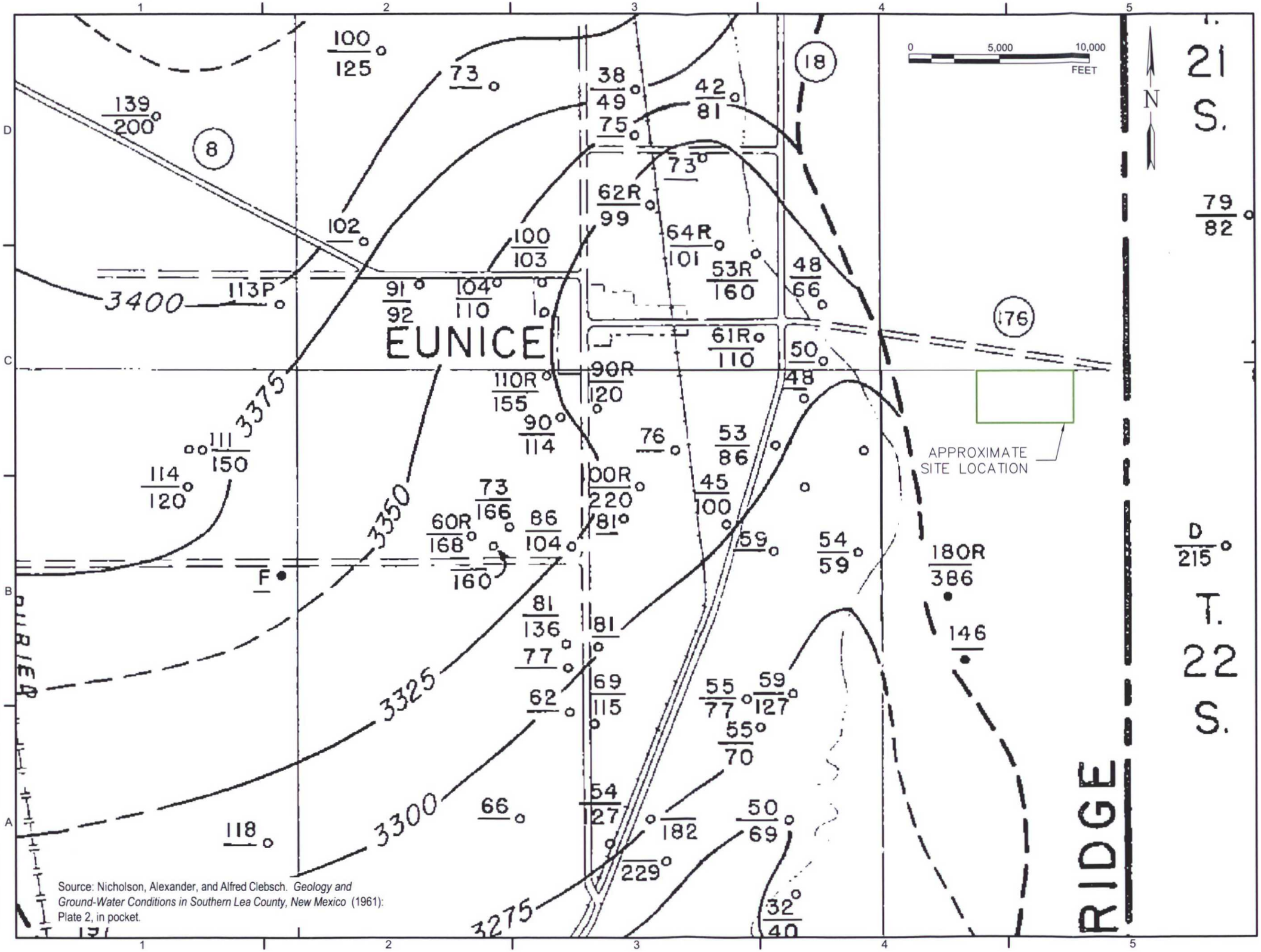
FIGURES



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C.K. DISPOSAL
E & P LANDFILL
& PROCESSING FACILITY

NMED PERMIT NO. __

NEW LANDFILL SITE & PROCESSING FACILITY

LEA COUNTY, NEW MEXICO

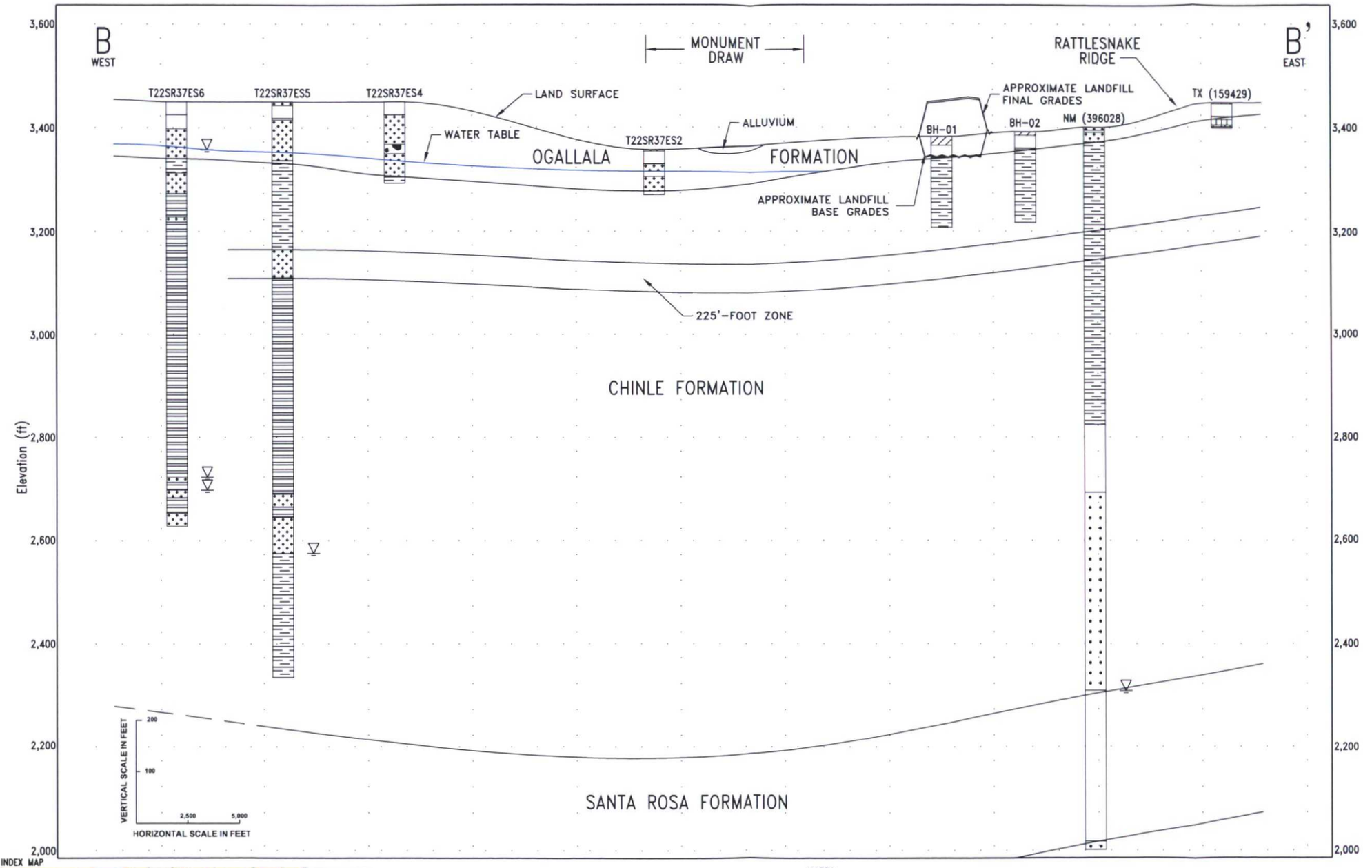
KEY PLAN

NO	DATE	DESCRIPTION

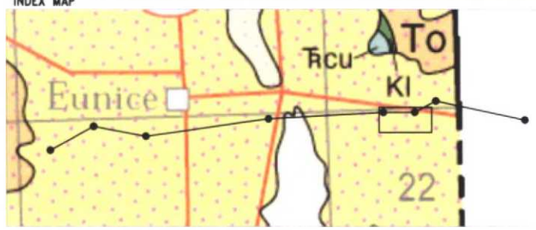
ISSUING OFFICE PROJECT NO

GROUNDWATER CONTOUR MAP, OGALLALA FORMATION

FIG.H.1



INDEX MAP



LITHOLOGY GRAPHICS

- USCS Well-graded Sand
- USCS Well-graded Sandy Gravel
- Calcareous Sandstone
- Sandstone
- Claystone
- Siltstone
- Shale
- Groundwater Elevation at Time of Drilling

NOTES:

1. CORRELATIONS ARE ITERPOLATED BETWEEN WELLS/BORINGS, ACTUAL CONDITIONS MAY VARY FROM THOSE ILLUSTRATED.
2. WATER LEVEL SURFACE TAKEN FROM NICHOLSON AND CLEBSCH, 1961.
3. T22SR37ES6 OR SIMILAR DENOTES THE WELL LOCATION (TOWNSHIP, RANGE, SECTION). NO STATE WELL ID AVAILABLE.
4. NM (396028) - NEW MEXICO STATE WELL ID.
5. TX (159429) - TEXAS STATE WELL ID.
6. BH-01/BH-02 - SITE BORING.
7. HORIZONTAL DISTANCES ARE APPROXIMATE.

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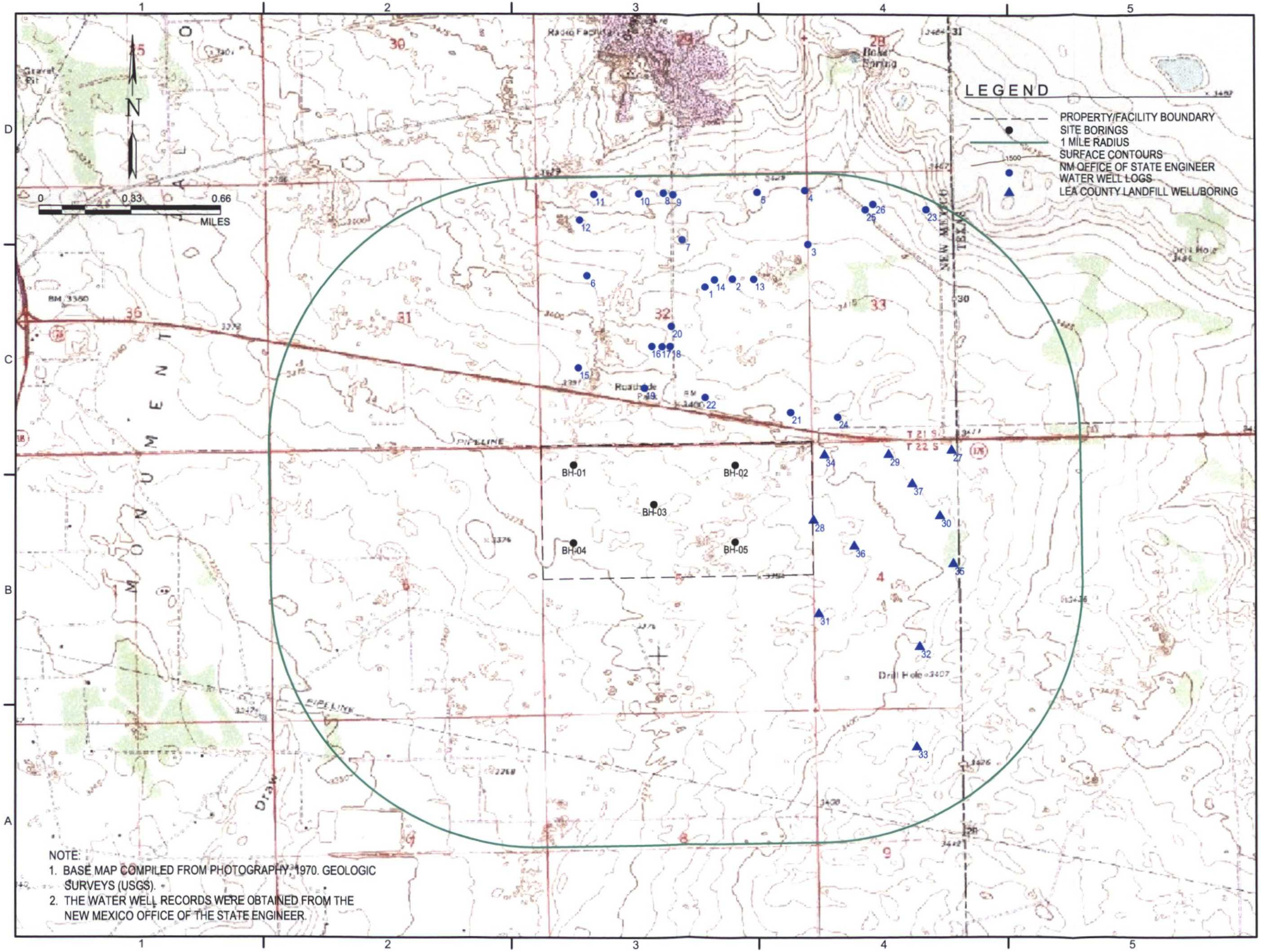
HYDROGEOLOGIC CROSS-SECTION B-B'

FIG.H.2



NOTE:
1. BASE MAP COMPILED FROM PHOTOGRAPHY, 1970. GEOLOGIC SURVEYS (USGS).
2. THE WATER WELL RECORDS WERE OBTAINED FROM THE NEW MEXICO OFFICE OF THE STATE ENGINEER.

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WATER WELL LOCATION MAP

FIG.H.3

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LEGEND

PROPERTY/FACILITY BOUNDARY

PROPOSED VADOSE ZONE MONITORING WELLS

VW-1 VW-2 VW-3 VW-4 VW-5 VW-6 VW-7 VW-8 VW-9 VW-10 VW-11

SUMP 1A SUMP 2A SUMP 3A SUMP 4A SUMP 5A SUMP 6A

SUMP 1B SUMP 2B SUMP 3B SUMP 4B SUMP 5B SUMP 6B

3380 3360 3340

316.97 ACRES

PHASE I

PHASE II

PHASE III

UNIT 1 (23.6± ACRES)
UNIT 2 (23.6± ACRES)
UNIT 3 (23.5± ACRES)
UNIT 4 (23.9± ACRES)
UNIT 5 (23.4± ACRES)
UNIT 6 (23.5± ACRES)

ANDREWS HIGHWAY

BYPASS LANE
INBOUND SCALE
SCALE HOUSE
OUTBOUND SCALE
BYPASS LANE

LOCKHEART #1 P&A

LATHE W/HUB & TACK RICE #1

VEHICLE QUEUING

CLEARED AREA

GATE HOUSE

STABILIZATION AND SOLIDIFICATION AREA

PROCESSING AREA

POND NO. 1
POND NO. 2
POND NO. 3
POND NO. 4
POND NO. 5
POND NO. 6
POND NO. 7
POND NO. 8
POND NO. 9
POND NO. 10
POND NO. 11
POND NO. 12

DETENTION POND #2

NEW CALICHE ROAD

Notes: See Table III.8.1, in Volume III Section 8, for well installation schedule and Table III.8.2 for well construction specifications.

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LEA COUNTY, NEW MEXICO

KEY PLAN

NO DATE DESCRIPTION

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SITE PLAN

FIG.H.4

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LEGEND

PROPERTY/FACILITY BOUNDARY
SITE BORINGS
3300 SITE SPECIFIC DOCKUM CONTOURS

BH-01
3,342.0'

BH-02
3,355.8'

BH-03
3,346.3'

BH-04
3,324.1'

BH-05
3,341.1'

3,360'
3,355'
3,350'
3,345'
3,340'
3,335'
3,330'
3,325'
3,320'

BYPASS LANE
INBOUND SCALE
SCALE HOUSE
OUTBOUND SCALE
BYPASS LANE

VEHICLE QUEUING

GATE HOUSE

STABILIZATION AND SOLIDIFICATION AREA

POND NO. 4
POND NO. 8
POND NO. 12
POND NO. 3
POND NO. 7
POND NO. 11
POND NO. 2
POND NO. 6
POND NO. 10
POND NO. 5
POND NO. 9

DETENTION POND #1

DETENTION POND #2

1 2 3 4 5

D C B A

FILE NAME: Y:\...\NEW MEXICO Eunice\Structure Map Top of the Dockum Group.dwg LAYOUT NAME: II 8.5 PRINTED: Wednesday, November 04, 2015 - 8:40am USER: cbacon

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& PROCESSING FACILITY

LEA COUNTY, NEW MEXICO

KEY PLAN

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STRUCTURE MAP: TOP OF THE DOCKUM GROUP

FIG.H.5

0 400 800
FEET

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LEGEND

- PROPERTY/FACILITY BOUNDARY
- LANDFILL BORING
- PROPOSED VADOSE ZONE MONITORING WELLS
- 3300 SITE SPECIFIC DOCKUM CONTOURS
- POTENTIAL LEACHATE FLOW VECTOR

ANDREWS HIGHWAY

VW-2 3,359.0'

VW-1 3,360.5'

BH-01 3,342.0'

BH-02 3,355.8'

BH-03 3,346.3'

BH-04 3,324.1'

BH-05 3,341.1'

VW-11 3,328.5'

VW-10 3,333.0'

VW-9 3,326.5'

VW-8 3,320.5'

VW-7 3,323.5'

VW-6 3,326.0'

VW-5 3,329.0'

VW-4 3,332.5'

VW-3 3,335.0'

3,360'
3,355'
3,350'
3,345'
3,340'
3,335'
3,330'
3,325'
3,320'

SUMP 6A SUMP 5A SUMP 4A SUMP 3A SUMP 2A SUMP 1A

SUMP 6B SUMP 5B SUMP 4B SUMP 3B SUMP 2B SUMP 1B

3380
3360
3340

316.97 ACRES

PHASE III PHASE II PHASE I

UNIT 6 (23.5± ACRES) UNIT 5 (23.4± ACRES) UNIT 4 (23.9± ACRES) UNIT 3 (23.5± ACRES) UNIT 2 (23.6± ACRES) UNIT 1 (23.6± ACRES)

BYPASS LANE
INBOUND SCALE
SCALE HOUSE
OUTBOUND SCALE
BYPASS LANE

LOCKHEART #1 FSM

LATHE W/HUB & TACK RICE #1

VEHICLE QUEUING

CLEARED AREA

STABILIZATION AND SOLIDIFICATION AREA

GATE HOUSE

PHASE II

POND NO. 4 POND NO. 8 POND NO. 12
POND NO. 3 POND NO. 7 POND NO. 11
POND NO. 2 POND NO. 6 POND NO. 10
POND NO. 5 POND NO. 9

PROCESSING AREA

NEW CALICHE ROAD

PHASE I PHASE III PHASE IV

DETENTION POND #2

CALICHE PIT

EXISTING POND #1

Notes: See Table III.8.1, in Volume III Section 8, for well installation schedule and Table III.8.2 for well construction specifications.

FILE NAME: Y:\NEW MEXICO\Eunice\Monitor Well Plan Figure.dwg LAYOUT NAME: II 8.6 PRINTED: Wednesday, November 04, 2015 - 8:52am USER: cbacon

PSC
PARKHILL SMITH & COOPER

The CAREL CORPORATION

C.K. DISPOSAL E & P LANDFILL & PROCESSING FACILITY

NMED PERMIT NO. __

NEW LANDFILL SITE & PROCESSING FACILITY

LEA COUNTY, NEW MEXICO

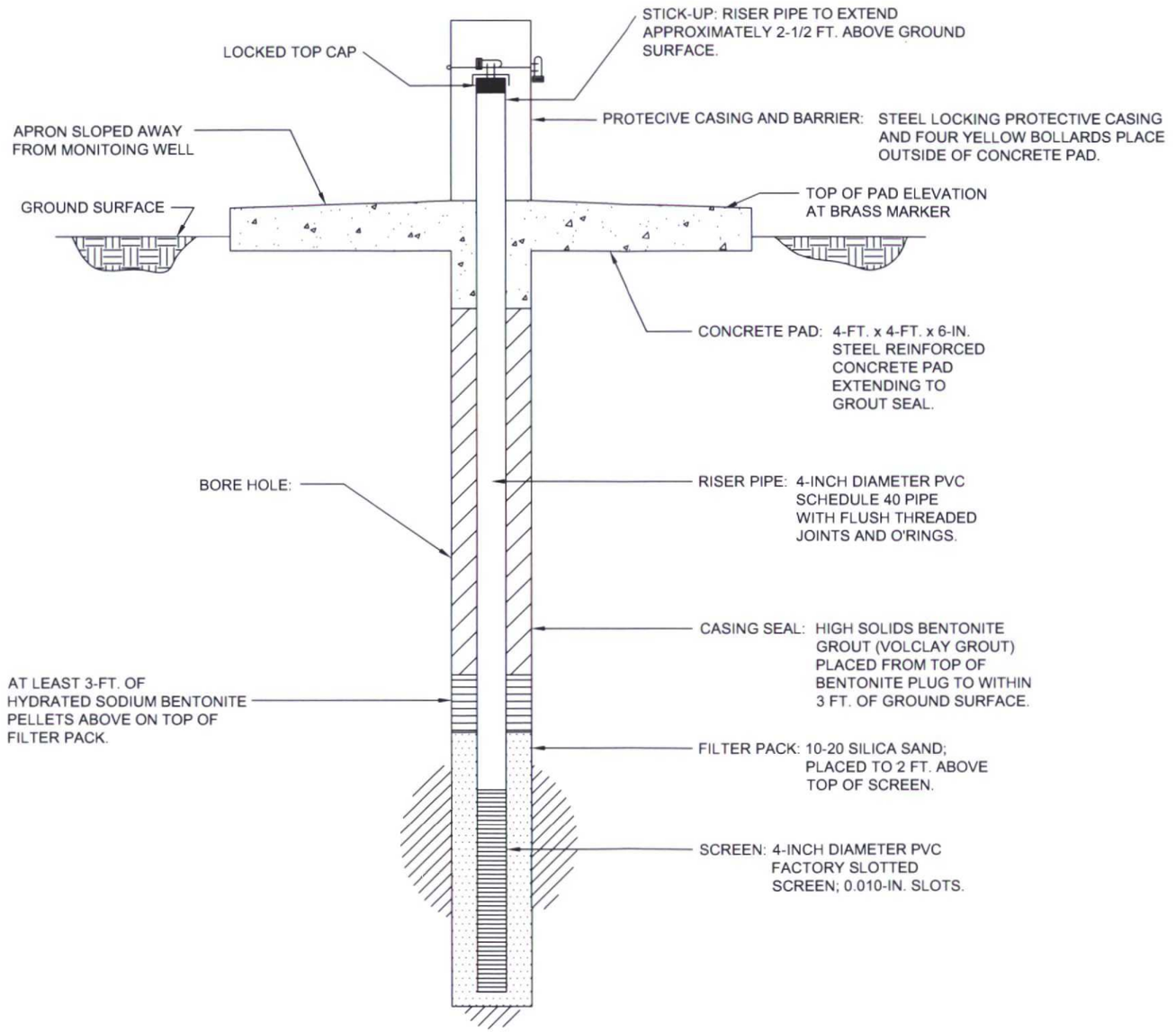
KEY PLAN

NO	DATE	DESCRIPTION

ISSUING OFFICE PROJECT NO

VADOSE ZONE MONITORING NETWORK

FIG.H.6



NOT TO SCALE

FILE NAME: Y: NEW MEXICO Eunice Typical Vadose Zone Monitoring Well DWG LAYOUT NAME: Layout1 PRINTED: Wednesday, November 04, 2015 - 8:38am USER: cbacon

PSC
PARKHILL SMITH & COOPER

The CAREL CORPORATION

C.K. DISPOSAL E & P LANDFILL & PROCESSING FACILITY

NMED PERMIT NO. __

NEW LANDFILL SITE & PROCESSING FACILITY

LEA COUNTY, NEW MEXICO

KEY PLAN

NO DATE DESCRIPTION

ISSUING OFFICE PROJECT NO

TYPICAL VADOSE ZONE MONITORING WELL

FIG.H.7

APPENDICES

APPENDIX H.A

WELLS USED ON CROSS-SECTION B-B'

122SK51E56

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well _____ Owner's Well No. _____
Street or Post Office Address _____
City and State _____

Well was drilled under Permit No. _____ and is located in the:

a. _____ ¼ _____ ¼ _____ ¼ _____ ¼ of Section _____ Township _____ Range _____ N.M.P.M.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in _____ County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor _____ License No. _____

Address _____

Drilling Began _____ Completed _____ Type tools _____ Size of hole _____ in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well _____ ft.

Completed well is ☐ shallow ☐ artesian. Depth to water upon completion of well _____ ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet		Length (feet)	Type of Shoe	Perforations	
			Top	Bottom			From	To

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet		Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement
From	To				

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

No.	Depth in Feet		Cubic Feet of Cement
	Top	Bottom	
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received Typed 1/20/78

Quad _____ FWL _____ FSL _____

File No. _____ Use 011 Location No. 22.37.6.42000

Section 6. LOG OF HOLE

Depth in Feet From	To	Thickness in Feet	Color and Type of Material Encountered
0	55		Caliche and sand
55	95		Dry sand
95	112		Water sand
112	140		Red bed, shale
140	180		Sand
180	225		Shale
225	235		Sand
235	730		Shale, red rock
730	740		Water sand
740	755		Shale
755	770		Water sand
770	800		Shale
800	825		Sand
			L S Elev 3485
			Depth to K ____ Trc [illegible]
			Elev of K ____ Trc 3335
Water -	95'-112'		
	770'-775'	2 BWPH	

Section 7. REMARKS AND ADDITIONAL INFORMATION

This well record is an exceprt from Oil Conservation Commission files at Hobbs, N.M.

Location: 22.37.6.41000 Elevation: 3453' GL

Owner: Gulf Oil Corp.

South Penrose Skelly Unit 109

Record of Casing: 16" - 115'

Cable

1980' FSL - 1980' FEL

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All ...ons, except Section 5, shall be answered as completely and accurat... possible when any well is

T22SR31E S6

Revised June 1971

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well _____ Owner's Well No. _____
Street or Post Office Address _____
City and State _____

Well was drilled under Permit No. _____ and is located in the:

a. _____ ¼ _____ ¼ _____ ¼ _____ ¼ of Section _____ Township _____ Range _____ N.M.P.M

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in _____ County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in
the _____ Grant

(B) Drilling Contractor _____ License No. _____

Address _____

Drilling Began _____ Completed _____ Type tools _____ Size of hole _____ in

Elevation of land surface or _____ at well is _____ ft. Total depth of well _____ ft.

Completed well is ☐ shallow ☐ artesian. Depth to water upon completion of well _____ ft

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet		Length (feet)	Type of Shoe	Perforations	
			Top	Bottom			From	To

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet		Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement
From	To				

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:

_____
State Engineer Representative

No.	Depth in Feet		Cubic Feet of Cement
	Top	Bottom	
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received Typed 1/20/78

Quad _____ FWL _____ FSL _____

File No. _____ Use 011 Location No. 22.37.5.12000

1223K31E55

Section 6. LOG OF HOLE

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color and Type of Material Encountered
0	12		Cellar
12	40		Caliche
40	118		Sand
118	290		Red bed
290	345		Sand
345	765		Shale, red rock
765	790		Sand
790	810		Shale
810	880		Sand
880	1120		Red bed (water 220'-235')
			L S Elev _____
			Depth to K _____ Trc _____
			Elev of K _____ Trc _____

Section 7. REMARKS AND ADDITIONAL INFORMATION

This well record is an excerpt from Oil Conservation Commission files at Hobbs, N.M.

Location: 22.37.5.12000
Owner: Gulf Oil Corp.
South Penrose Skelly Unit #106
Record of Casing: 16" - 122'
13" - 288'
10 3/4" - 677'
Cable

Elevation: 3455' GL

660' FNL - 1980' FWL

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All ... ons, except Section 5, shall be answered as completely and accurat... possible when any well is

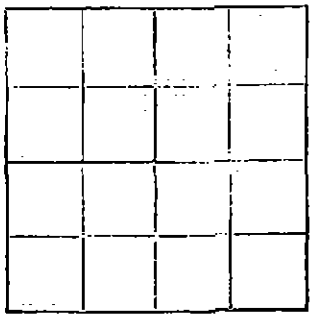
T22SR37E54

Form WR-23 STATE ENGINEER OFFICE FIELD ENGR. LOG

WELL RECORD

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the nearest district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1A and Section 5 need be completed.

Section 1



(Plat of 640 acres)

(A) Owner of well Skelly (Gasoline) Oil Company

Street and Number Box 1257

City Eunice, N.M. State

Well was drilled under Permit No. CP-254 and is located in the NE ¼ SE ¼ NW ¼ of Section 4 Twp. 22 Rge. 37

(B) Drilling Contractor Abbott Bros. License No. WD-46

Street and Number Box 637

City Hobbs, N.M. State

Drilling was commenced ~~XX~~ Jan. 15, 1972 19

Drilling was completed Jan. 21, 1972 19

Elevation at top of casing in feet above sea level 3455 Total depth of well 162

State whether well is shallow or artesian shallow Depth to water upon completion 90

Section 2 PRINCIPAL WATER-BEARING STRATA

No.	Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation
1	87	105	18	gravel and sand
2				
3				
4				
5				

Section 3 RECORD OF CASING

Dia in.	Pounds ft.	Threads in	Depth Top	Depth Bottom	Feet	Type Shoe	Perforations From	Perforations To
85/8	23	10	1	160	160	none	128	150

Section 4 RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Diameter Hole in in.	Tons Clay	No. Sacks of Cement	Methods Used

Section 5 PLUGGING RECORD

Name of Plugging Contractor License No.

Street and Number City State

Tons of Clay used Tons of Roughage used Type of roughage

Plugging method used Date Plugged 19

Plugging approved by:

Basin Supervisor

Cement Plugs were placed as follows:

No.	Depth of Plug From	Depth of Plug To	No. of Sacks Used

FOR USE OF STATE ENGINEER ONLY

STATE ENGINEER OFFICE

Date Received

File No. CP 254 Use IND. Location No. 22.37.4.142

Section 6

LOG OF WELL

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color	Type of Material Encountered
0	4	4	brown	soil
4	30	26	gray	caliche
30	68	38	brown	sand
68	87	19	brown	tight sand
87	105	18	brown	sand & gravel
105	150	45	brown	sand
150	162	12	red	clay

L S Elev 3455 ′
Depth to K Tr 150 ′
Elev of K Tr 3305 ′

Loc. No. 22.37.4.14242
Hydro. Survey Field Check X

SOURCE OF ALTITUDE GIVEN
Interpolated from Topo. Sheet X
Determined by Inst. Leveling
Other

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

Russell Gadd
Well Driller

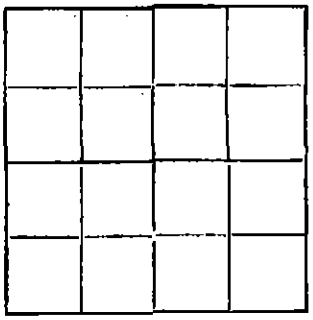
LLSK31E52

Form WR-23 STATE ENGINEER OFFICE

WELL RECORD

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to t nearest district office of the State Engineer. All sections, except Section 5, shall be answered as completely a accurately as possible when any well is drilled, repaired or deepened. When this form is used as a pluggi record, only Section 1A and Section 5 need be completed.

Section 1



(Plat of 640 acres)

(A) Owner of well Humble Oil Co.

Street and Number

City State

Well was drilled under Permit No. and is located in t

NE ¼ NE ¼ NE ¼ of Section 2 Twp. 22S Rge. 37E

(B) Drilling Contractor E. B Burke License No.

Street and Number

City State

Drilling was commenced 19

Drilling was completed Jan. 19 4

Elevation at top of casing in feet above sea level [illegible] Total depth of well 87

State whether well is shallow or artesian Depth to water upon completion

Section 2 PRINCIPAL WATER-BEARING STRATA

No.	Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation
1				
2				
3				
4				
5				

Section 3 RECORD OF CASING

Dia in.	Pounds ft.	Threads in	Depth Top	Depth Bottom	Feet	Type Shoe	Perforations From	Perforations To

Section 4 RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Diameter Hole in in.	Tons Clay	No. Sacks of Cement	Methods Used

Section 5 PLUGGING RECORD

Name of Plugging Contractor License No.

Street and Number City State

Tons of Clay used Tons of Roughage used Type of roughage

Plugging method used Date Plugged 19

Plugging approved by:

Basin Supervisor

Cement Plugs were placed as follows:

No.	Depth of Plug From	Depth of Plug To	No. of Sacks Used

FOR USE OF STATE ENGINEER ONLY

Date Received Copied from USGS W-11

Schedule by A. Nicholson 10/9/53

File No. Use Location No. 22.37.2.222 30

1225K51E52

22.37.2.222

Humble Oil Co.

Section 6

LOG OF WELL

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color	Type of Material Encountered
0	3			soil
3	28			caliche
28	42			sand
42	52			lime
52	80			sand
80	87			red bed
				U S Elev 3358' 3357
				Depth K To 80' 80
				Elev of K Fro 3278' 3277
				Loc. No. 22.37.2.222314
				Hydro. Survey Field Check X
				SOURCE OF ELEVATION GIVEN
				Interpolated from topographic map X
				Determined by mas. Leveling
				Other

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

E. B. Burke
Well Driller

BH-01

LOG OF BORING NO. BH-01

Project Description: CK Disposal

CAREL

Location: Eunice, NM
Top of PVC El: feet MSL
Surface El: 3382 feet MSL
Completion Depth: 175 feet
Date Boring Started: 5/26/2015
Date Boring Completed: 5/26/2015
Northing: 160.00
Easting: 1850.00

Depth, feet	Samples	Symbol/USCS	MATERIAL DESCRIPTION	Monitor Well Construction Details	Monitor Well Description
0–20			CLAYEY SAND, brown to reddish brown, moderately well sorted, subrounded, fine to medium grained, slightly moist, none HCL reaction		
20–40			SILTY SAND, with caliche, light brown to white, well sorted, well rounded, very fine to fine grained, dry, strong HCL reaction		
40–175			CLAYSTONE, reddish brown some gray, slightly moist to dry, weak HCL reaction		

Drilling Contractor: HCI Drilling
Drilling Method: Air Rotary
Sampling Method: Cuttings
Geologist: Steven J. Wimmer
Project No.: 15-04-22

Groundwater Observations	
Date	Depth to Water (ft)
5/26/15	Dry

Remarks: 5 1/8" diameter boring; TH60 Atlas Copco Drill Rig

GROUNDWATER WELL - B&W EUNICE.GPJ CAREL2.GDT 9/14/15

LOG OF BORING NO. BH-01
PAGE 1 of 1

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.

▽ Water level at time of drilling.
▼ Water level at end of drilling.
▼ Water level after drilling.

BH-02

LOG OF BORING NO. BH-02

Project Description: CK Disposal

CAREL

Location: Eunice, NM
Top of PVC El: feet MSL
Surface El.: 3391.8 feet MSL
Completion Depth: 175 feet
Date Boring Started: 5/26/2015
Date Boring Completed: 5/26/2015
Northing: 521273.70
Easting: 928310.35

Depth, feet	Samples	Symbol/USCS	MATERIAL DESCRIPTION	Monitor Well Construction Details	Monitor Well Description
5			CLAYEY SAND, brown to reddish brown, moderately well sorted, subrounded, fine to medium grained, slightly moist, none HCL reaction		
10			SILTY SAND, with caliche, light brown to white, well sorted, well rounded, very fine to fine grained, dry, strong HCL reaction		
35			CLAYSTONE, reddish brown with gray, dry, weak HCL reaction, some purple		
70			less gray and purple; slightly moist to dry		

GROUNDWATER WELL - B&W_EUNICE.GPJ CAREL2.GDT 9/16/15

Drilling Contractor: HCI Drilling
Drilling Method: Air Rotary
Sampling Method: Cuttings
Geologist: Steven J. Wimmer
Project No.: 15-04-22

Groundwater Observations	
Date	Depth to Water (ft)
5/26/15	Dry

Remarks: 5 1/8" diameter boring; TH60 Atlas Copco Drill Rig

LOG OF BORING NO. BH-02
PAGE 1 of 1

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.

▽ Water level at time of drilling.
▼ Water level at end of drilling..
▼ Water level after drilling.

NM (396028)

WSB

OSE FILE NUMBER _____ _____
For OSE Use Only

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD and DRILLING LOG

1. PERMIT HOLDER(S)

Name: WASTE CONTROL SPECIALISTS
Address: P.O. BOX 1129
City: ANDREWS
State: TX Zip: 79714
Phone: (505) 394-4300
Contact: MICHAEL BURNEY
Contact Phone: (505) 394-4300

Name: _____
Address: _____
City: _____
State: _____ Zip: _____
Phone: _____

2. STATE ENGINEER REFERENCE NUMBERS:

File # CP 975 EXPLORE, Well # C.P. 975

3. LOCATION OF WELL (The Datum Is Assumed To Be WGS 84 Unless Otherwise Specified)

Latitude: 32 Deg 25 Min 45.8 Sec
Longitude: 103 Deg 04 Min 20.4 Sec
(Enter Lat/Long To At Least 1/10th Of A Second)
Datum If Not WGS 84: _____

4. DRILLING CONTRACTOR

License Number: WD1184
Name: WEST TEXAS WATER WELL SERVICE Work Phone: (432) 530-2696

Drill Rig Serial Number: 261602

List The Name Of Each Drill Rig Supervisor That Managed On-Site Operations During The Drilling Process:

RONNY KEITH

STATE ENGINEER OFFICE
2008 MAY 14 P 2:

5. DRILLING RECORD

Drilling Began: 1-21-08 ; Completed: 4-29-08 ; Drilling Method MUD ROTARY

Diameter Of Bore Hole: 7-7/8 (in);

Total Depth Of Well: 2,020 (ft);

Completed Well Is (Circle One): Shallow (Artesian)

Depth To Water First Encountered: 1,092 (ft);

Depth To Water Upon Completion Of Well: N/A (ft).

Do Not Write Below This Line

TRN Number: 396028
Form: wr-20 May 07

File Number: CP-975

21.38.33.333

Explore

NM(316026)

OSE FILE NUMBER _____ _____
For OSE Use Only

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD and DRILLING LOG

6. RECORD OF CASING

Diameter (inches)	Pounds (per ft.)	Threads (per inch)	Depth (feet)	Length Top to Bottom (feet)	Type of Shoe	Perforations (from to)
13-3/8	48	8	2' AGL	40'		
8-5/8	24	8	3' AGL	1,440'	FLOAT GUIDE	

7. RECORD OF MUDDING AND CEMENTING

Depth (feet)	Hole (diameter)	Mud Used (# of sacks)	Cement (cubic feet)	Method of Placement
0 - 40	17-1/2		35	TRIMMIE
0 - 1,440	12-1/4		574	POSITIVE
1,380-2,020	7-7/8		275	TRIMMIE

STATE ENGINEER OFFICE
2013 NOV 14 P 2:05

Do Not Write Below This Line

Trn Number: _____ File Number: _____
Form: wr-20 May 07

NM(576020)

OSE FILE NUMBER _____ _____
For OSE Use Only

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

8. LOG OF HOLE. For Each Water Bearing Strata, Estimate The Yield Of The Formation In Gallons Per Minute.

Depth (feet) From	Depth (feet) To	Thickness (Feet)	For Water Bearing Strata Enter The Estimated Yield in GPM	Color and Type of Material Encountered
			SEE ATTACHED	GEOLOGIC LOG

STATE ENGINEER OFFICE
2009 MAY 11 P 2 04

Enter Method Used To Estimate Yield: N/A

Do Not Write Below This Line

Tm Number: _____ File Number: _____

CP-975 Geologic log

0-6 ft 6 pad fill and fine brown sand

6-10 ft 4 white sandy limestone (Mescalero caliche)

10-29 ft 19 sand, light brown, and brown calcareous sandstone (Gatuña Formation)

29-576 ft 547 interbedded sandstone, siltstone, and claystone; reddish-brown to gray; bioturbated (Cooper Canyon Formation)

576-708 ft 132 sandstone and siltstone, gray to reddish brown (Trujillo Formation)

708-1092 ft 384 interbedded very fine sandstone and siltstone, gray to dark reddish brown (Tecovas Formation)

1092-1384 ft 292 gray, fine sandstone with interbedded reddish brown and weak red siltstone and claystone (Santa Rosa Formation)

1384-1566 ft 182 reddish brown, very fine sandstone and siltstone, with some fibrous gypsum in lower part (Dewey Lake Formation)

1566-1602 ft 34 gray anhydrite beds, with intermediate reddish-brown and gray siltstone (Forty-niner Member of the Rustler Formation)

1602-1609 ft 7 gray anhydrite and wavy thin laminae of dolomite (Magenta Dolomite Member of the Rustler Formation)

1609-1736 ft 127 gray anhydrite beds, with intermediate halite including anhydrite and polyhalite (Tamarisk Member of the Rustler Formation)

1736-1807 ft 71 halite with thin two thin anhydrite beds and basal reddish-brown, very fine sandstone (Los Medaños Member of the Rustler Formation)

1807-2020 ft 213 halite with anhydrite/polyhalitic marker beds (MB103 and uppermost MB109) (Salado Formation)

NM C516020

OSE FILE NUMBER _____ _____
For OSE Use Only

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. ADDITIONAL STATEMENTS OR EXPLANATIONS:

2008 MAY 14 P 2 06
STATE ENGINEER OFFICE

The undersigned hereby certifies that, to the best of his or her knowledge and belief, the foregoing is a true and correct record of the above described bore hole. The undersigned further certifies that he or she will file this well record with the Office Of The State Engineer and permit holder within 20 days after completion of the well drilling.

Tommy Keith
Driller

05-12-08
(mm/dd/year)

Do Not Write Below This Line

Trn Number: _____ File Number: _____

 1X (159429)

STATE OF TEXAS WELL REPORT for Tracking #159429

Owner:	**Waste Control Specialists**	Owner Well #:	**TP-62**
Address:	**P.O. Box 1129** **Andrews , TX 79714**	Grid #:	**26-40-5**
Well Location:	**30 Miles NW of Andrews** **Andrews , TX 79714**	Latitude:	**32° 25' 21" N**
Well County:	**Andrews**	Longitude:	**103° 02' 59" W**
Elevation:	**No Data**	GPS Brand Used:	**Garmin etrex**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Date: Started: **1/10/2008**
Completed: **1/10/2008**

Diameter of Hole: Diameter: **5.625 in From Surface To 49 ft**

Drilling Method: **Air Rotary**

Borehole Completion: Gravel Packed From: **35 ft to 49 ft**
Gravel Pack Size: **8/16**

Annular Seal Data: 1st Interval: **From 0 ft to 5 ft with 20 Cement (#sacks and material)**
2nd Interval: **From 5 ft to 35 ft with 10 bentonite (#sacks and material)**
3rd Interval: **No Data**
Method Used: **poured**
Cemented By: **Talon**
Distance to Septic Field or other Concentrated Contamination: **No Data**
Distance to Property Line: **No Data**
Method of Verification: **No Data**
Approved by Variance: **No Data**

Surface Completion: **Surface Slab Installed**

Water Level: Static level: **No Data**
Artesian flow: **No Data**

Packers: **No Data**

Plugging Info: Casing or Cement/Bentonite left in well: **No Data**

Type Of Pump: **No Data**

Well Tests: **No Data**

Water Quality: Type of Water: **fresh**
Depth of Strata: **No Data**
Chemical Analysis Made: **No**
Did the driller knowingly penetrate any strata which contained undesirable constituents: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.

Company Information:	**Talon Drilling, LP** **921 N Bivins** **Amarillo , TX 79107**
Driller License Number:	**54499**
Licensed Well Driller Signature:	**Shane Currie**
Registered Driller Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Comments:	**No Data**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking number (Tracking **#159429**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

From (ft) To (ft) Description
0 to 2 Sandy SILT, tan.
2 to 32 CALICHE, light gray to tan.
32 to 43 Silty SAND, tan.
43 to 46.25 Sandy GRAVEL, various colored chert.
46.25 to 49 CLAY, maroon with gray mottling.

CASING, BLANK PIPE & WELL SCREEN DATA

Dia. New/Used Type Setting From/To
2 new pvc casing 0 to 39 sch 40
2 new pvc screening 39 to 49 slot 0.010

APPENDIX H.B

WATER WELLS WITHIN ONE MILE

NLB

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Louisiana Energy Services — Work Phone: 505-394-5204
Contact: Laurie Wetherell — Home Phone: _____
Address: P.O. Box 1789
City: Eunice — State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. NW 1/4 SW 1/4 NE 1/4 Section: 32 Township: 21S Range: 38E N.M.P.M.
in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 14.8698 s Longitude: 103 d 04 m 49.8642 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____, of the
_____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number if existing well: CP-993

I. On land owned by (required): Louisiana Energy Services

3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon Drilling — Work Phone: 806.467.0607
Agent: Shane Currie — Home Phone: 806.467.0622
Mailing Address: 921 N. Bivins
City: Amarillo — State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 12/5/08 ; Completed: 12/5/08 ; Type tools: Air-Rotary;
Size of hole: 7-7/8 in.; Total depth of well: 231.5 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: Dry ft.

Do Not Write Below This Line

File Number: CP-993 — Trn Number: 415642
Form: wr-20 — page 1 of 4

Monitor

21.38.32.231

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
Dry				

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
4 PVC	Sch 40	2	+3	231	234	end cap	211	231

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	20	7-7/8		20 Sacks	Trimie (Bentonite/Cement)
20	206	7-7/8	61		Poured (Bentonite chips)

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____

Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feetof Cement
1			
2			
3			
4			
5			

Do Not Write Below This Line

File Number: CP-993 Trn Number: 415642
Form: wr-20

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	5	5	Sandstone, lightly cemented, burnt orange
5	15	10	Caliche, relatively soft, gray to lt orange
15	30	15	Sand, minor chert gravel, lt orange sand
30	85	55	Claystone, maroon
85	90	5	Siltstone, hard gray
90	210	120	Claystone, dark purple
210	225	15	Sandstone, very fine-grained, hard, gray
225	231	6	Clayston, maroon

Do Not Write Below This Line

File Number: CP-993 Trn Number: 415642

Form: wr-20 page 3 of 4

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

MW-20

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Steve Cie
Driller

12/28/08
(mm/dd/year)

STATE ENGINEER OFFICE
2008 DEC 31 A 11:51

FOR STATE ENGINEER USE ONLY

Quad ____; FWL ____; FSL ____; Use _____; Location No. _____

Do Not Write Below This Line

File Number: CP-993
Form: wr-20

Trn Number: 415642

JLB

2

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Louisiana Energy Services — Work Phone: 505-394-5204
Contact: Laurie Wetherell — Home Phone: _____
Address: P.O. Box 1789
City: Eunice — State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. NE 1/4 SW 1/4 NE 1/4 Section: 32 Township: 21S Range: 38E N.M.P.M.
in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 14.9172 s Longitude: 103 d 04 m 45.4866 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number if existing well: CP-994

I. On land owned by (required): Louisiana Energy Services

3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon Drilling — Work Phone: 806.467.0607
Agent: Shane Currie — Home Phone: 806.467.0622
Mailing Address: 921 N. Bivins
City: Amarillo — State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 12/5/08 ; Completed: 12/5/08 ; Type tools: Air-Rotary;
Size of hole: 7-7/8 in.; Total depth of well: 36 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: Dry ft.

Do Not Write Below This Line

File Number: CP-994 — Trn Number: 415643
Form: wr-20 — page 1 of 4

21.38.32.232

Monitor

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
Dry				

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
4 PVC	Sch 40	2	+3	36	39	end cap	26	36

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	5	7-7/8		20 Sacks	Trimie (Bentonite/Cement)
5	23	7-7/8	5		Poured (Bentonite chips)

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____

Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feetof Cement
1			
2			
3			
4			
5			

Do Not Write Below This Line

File Number: CP-994
Form: wr-20

Trn Number: 415643

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	10	10	Sandstone, lightly cemented, burnt orange
10	23	13	Caliche, hard, gray
23	34	11	Gravelly sand, chert gravel, red sand matrix
34	36	2	Claystone, dark purple

Do Not Write Below This Line

File Number: CP-994
Form: wr-20

Trn Number: 415643

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

MW-21

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Driller _____ (mm/dd/year) 12/24/08

FOR STATE ENGINEER USE ONLY

Quad ____; FWL ____; FSL ____; Use _____; Location No. _____

Do Not Write Below This Line

File Number: CP-994 Trn Number: 415643

Form: wr-20 page 4 of 4

WLB

3

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Louisianna Energy Services
Contact: Laurie Wetherell
Address: P.O. Box 1789
City: Eunice
Work Phone: 505.394.5204
Home Phone: _____
State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. SE 1/4 NE 1/4 NE 1/4 Section: 32 Township: 21S Range: 38E N.M.P.M.
in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 21.907 s Longitude: 103 d 04 m 27.079 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number if existing well: CP-947

I. On land owned by (required): Lea County, NM

3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon/LPE
Agent: Shane Currie
Mailing Address: 921 N. Bivins
City: Amarillo
Work Phone: 806.467.0607
Home Phone: 806.676.8220
State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 3/15/07 ; Completed: 4/03/07 ; Type tools: Air rotary;
Size of hole: 7-7/8 in.; Total depth of well: 220.5 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: 178.43 ft.

Do Not Write Below This Line

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2007 APR 10 P 2:00

File Number: CP-947
Form: wr-20
page 1 of 4
Trn Number: 376945

Monitor

21.38.32.224

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
178.83	218.1	39.27	claystone & siltstone	0-5

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
4	sch 40 PVC	2	0	198.1	198.1	N/A	N/A	
4	sch 40 PVC	2	198.1	218.1	20	PVC end cap	198.1	218.1

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	75	7-7/8	1	20	tremie - bentonite/cement
75	192	7-7/8	43		poured - bentonite chips

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____

Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feetof Cement
1			
2			
3			
4			
5			

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2001 APR 27 P 2:00

Do Not Write Below This Line

File Number: CP-947
Form: wr-20

Trn Number: 376945

21.38.32.224

Monitor

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	2	2	SAND, loose, dry, brown-tan
2	25	23	CALICHE, soft, dry, gray
25	30	5	SANDY, gravel, dry, orange to tan
30	130	100	Clay, highly plastic, maroon with gray mottling
130	140	10	siltstone, hard, dry, gray with maroon mottling
140	195	55	claystone, dry maroon w/ gray mottling
195	205	10	Siltstone, hard, dry gray w/ maroon splotching
205	207	2	claystone, firm dry, maroon w/ gray mottling
207	215	8	Siltstone with claystone hard, gray & maroon
215	230	15	claystone, firm dry maroon w/ gray mottling

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2001 APR 27 P 2:01

Do Not Write Below This Line

File Number: CP-947 Trn Number: 376945

Form: wr-20

21.38.32.224

Monitor

3

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Driller _____ 04/24/2007 (mm/dd/year)

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2007 APR 27 P 2:01

FOR STATE ENGINEER USE ONLY

Quad ____; **FWL** ____; **FSL** ____; **Use** _____; **Location No.** _____

Do Not Write Below This Line

File Number: CP-947 Trn Number: 376945
Form: wr-20

Monitor 21.38.32.224

4

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Louisiana Energy Services — Work Phone: 505.394.5204
Contact: Laurie Wetherell — Home Phone: _____
Address: P.O. Box 1789
City: Eunice — State: __ Zip: _____

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. NE 1/4 NE 1/4 NE 1/4 Section: 32 Township: 21S Range: 38E N.M.P.M.
in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 33.098 s Longitude: 103 d 04 m 27.582 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the _____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number if existing well: CP-948

I. On land owned by (required): Lea County, NM

3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon/LPE — Work Phone: 806.467.0607
Agent: Shane Currie — Home Phone: 806.676.8220
Mailing Address: 921 N. Bivins
City: Amarillo — State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 3/15/07 ; Completed: 4/03/07 ; Type tools: Air rotary ;
Size of hole: 7-7/8 in.; Total depth of well: 32.2 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: DRY ft.

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2007 APR 27 A 10:01

Do Not Write Below This Line

File Number: CP-948
Form: wr-20

page 1 of 4

Trn Number: 376946

Monitor

21.38.32.222

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
			DRY	

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
4	Sch 40 PVC	2	0	22.2	22.2	N/A	N/A	
4	Sch 40 PVC	2	22.2	32.2	10	PVC end cap	22.2	32.2

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	10	7-7/8	1	2.6	tremie - bentonite/cement
10	19	7-7/8	5	N/A	pour - bentonite chips

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____

Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feetof Cement
1			
2			
3			
4			
5			

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2001 APR 27 P 2:01

Do Not Write Below This Line

File Number: CP-948 Trn Number: 376946
Form: wr-20 page 2 of 4

Monitor 21.38.32.222

4

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	3	3	Topsoil - silt loose, dry, brown
3	30	27	caliche, hard, dry, tan to gray
30	35	5	clay, highly plastic, dry, maroon & gray

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2001 APR 27 P 2:01

Do Not Write Below This Line

File Number: CP-948
Form: wr-20

Trn Number: 376946

page 3 of 1

Monitor

21.38.32.222

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Driller _____ 04/24/2007 (mm/dd/year)

FOR STATE ENGINEER USE ONLY

Quad ____; **FWL** ____; **FSL** ____; **Use** _____; **Location No.** _____

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2007 APR 27 P 2:01

Do Not Write Below This Line

File Number: CP-948
Form: wr-20

Trn Number: 376940

Monitor

21.38.32.222

WLB

5

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Louisiana Energy Services
Contact: Laurie Wetherell
Address: P.O. Box 1789
City: Eunice
Work Phone: 505.394.5204
Home Phone: _____
State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. NW 1/4 NE 1/4 NE 1/4 Section: 32 Township: 21S Range: 38E N.M.P.M.
in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 32.845 s Longitude: 103 d 04 m 39.176 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number if existing well: CP-949

I. On land owned by (required): Lea County, NM

3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon/LPE
Agent: Shane Currie
Mailing Address: 921 N. Bivins
City: Amarillo
Work Phone: 806.467.0607
Home Phone: 806.676.8220
State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 3/16/07 ; Completed: 4/03/07 ; Type tools: Air Rotary ;
Size of hole: 7-7/8 in.; Total depth of well: 240.4 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: DRY ft.

RECEIVED
2007 APR 27 P 1:02
STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO

Do Not Write Below This Line

File Number: CP-949
Form: wr-20
page 1 of 4
Trn Number: 376947

Monitor

21.38.32.221

5

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
			DRY	

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
4.0	sch 40 PVC	2	0	220.9	220.9	N/A	N/A	
4.0	sch 40 PVC	2	220.9	240.9	20	PVC end cap	220.9	240.9

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	15	7-7/8	1	20	tremie - bentonite/cement
15	215	7-7/8	53	N/A	pour - bentonite pellets

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____

Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feetof Cement
1			
2			
3			
4			
5			

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2001 MAR 27 P 2:02

Do Not Write Below This Line

File Number: CP-949
Form: wr-20

Trn Number: 376947

21.38.32.221

Monitor

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	4	4	SAND, loose, dry, orange to light red
4	30	26	CALICHE, moderately hard, chert, dry, orange red
30	50	20	SANDY, Gravel, chert, dry, tan to light orange
50	115	65	Clay, highly plastic, firm, dry, gray & maroon
115	125	10	Siltstone, hard, moist, gray
125	180	55	Claystone, dry, maroon w/ gray mottling
180	190	10	Siltstone & claystone interbedded, dry, gray
190	235	45	Claystone, hard, dry, maroon w/ gray veining
235	240	5	Siltstone, hard to hard, dry, gray
240	245	5	Claystone, hard, dry, maroon w/ gray & cream mottling

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
1991 MAR 27 P 2:02

Do Not Write Below This Line

File Number: CP-949
Form: wr-20

Trn Number: 376947

Monitor

21.58.32.221

5

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Jim Cie
Driller

04/24/07
(mm/dd/year)

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2007 APR 27 P 2:02

FOR STATE ENGINEER USE ONLY

Quad ____; FWL ____; FSL ____; Use _____; Location No. _____

Do Not Write Below This Line

File Number: CP-949
Form: wr-20

Trn Number: 376947
page 4 of 4

21.38.32.221

Monitor

WLB

6

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Louisiana Energy Services Work Phone: 505.394.5204
Contact: Laurie Wetherell Home Phone: _____
Address: P.O. Box 1789
City: Eunice State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. NW 1/4 SW 1/4 NW 1/4 Section: 32 Township: 21S Range: 38E N.M.P.M.
in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 16.2 s Longitude: 103 d 5 m 21.2 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number if existing well: CP-959

I. On land owned by (required): Lea County, NM

3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon/LPE Work Phone: 806.467.0607
Agent: Shane Currie Home Phone: 806.676.8220
Mailing Address: 921 N. Bivins
City: Amarillo State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 3/23/07; Completed: 3/24/07; Type tools: Air Rotary
Size of hole: 7-7/8 in.; Total depth of well: 231 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: DRY ft.

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2007 MAR 27 P 1:
STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO

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File Number: CP-959 Trn Number: 376959
Form: wr-20 page 1 of 4

Monitor

21.38.32.131

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
DRY				

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
4	Sch 40 PVC	2	0	211	211	N/A		
4	Sch 40 PVC	2	211	231	20	PVC end cap	211	231

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	70	7-7/8	1	18	trcmie - bentonite/cement
70	205	7-7/8	48		pour - bentonite chips

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____

Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feetof Cement
1			
2			
3			
4			
5			

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ROSWELL, NEW MEXICO
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Form: wr-20

Trn Number: 376959

Monitor

21.38.32.131

6

File Number: _____
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NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	2	2	SAND loose moist orange/brown
2	15	13	CALICHE, soft dry tan
15	20	5	Gavelly sand loose dry orange to tan
20	30	10	claystone w/ siltstone maroon & gray
30	95	65	claystone, dry maroon w/ gray mottling
95	110	15	Clayshone w/ siltstone dry maroon & gray
110	130	20	claystone, hard, dry maroon w/ gray mottling
130	135	5	claystone w/ siltstone dry maroon & gray
135	210	75	claystone, hard dry maroon & gray
210	215	5	siltstone w/ claystone hard, gray & maroon
215	240	25	Claystone, moderate hard dry maroon & gray

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
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File Number: CP-959 Trn Number: 376959

Form: wr-20 page 3 of 4

21.38.32.131

Monitor

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Driller — 04/24/2007 (mm/dd/year)

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2007 APR 27 P 2:01

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Quad ____; FWL ____; FSL ____; Use _____; Location No. _____

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Form: wr-20

Trn Number: 376959

21.38.32.131

Monitor

JLB

7

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Louisiana Energy Services — Work Phone: 505.394.5204
Contact: Laurie Wetherell — Home Phone: _____
Address: P.O. Box 1789
City: Eunice — State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. SE 1/4 NE 1/4 NW 1/4 Section: 32 Township: 21S Range: 38E N.M.P.M.
in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 23.387 s Longitude: 103 d 04 m 57.803 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number if existing well: CP958

I. On land owned by (required): Lea County, NM

3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon/LPE — Work Phone: 806.467.0607
Agent: Shane Currie — Home Phone: 806.676.8220
Mailing Address: 921 N. Bivins
City: Amarillo — State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 3/20/07 Completed: 3/29/07 Type tools: Air rotary
Size of hole: 7-7/8 in.; Total depth of well: 246.3 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: 217.14 ft.

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ROSWELL, NEW MEXICO

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File Number: CP-958 — Trn Number: 376458
Form: wr-20 — page 1 of 4

Monitor 21.38.32.124

7

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
217.19	246.3	29.11	claystone w/siltstone	0-5

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
4	Sch 40 PVC	2	0	226.3	226.3	N/A	N/A	
4	Sch 40 PVC	2	226.3	246.3	20	PVC End Cap	226.3	246.3

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	70	7-7/8	1	18	tremie - cement/bentonite
70	220	7-7/8	43	N/A	pour - bentonite chips

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____

Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feetof Cement
1			
2			
3			
4			
5			

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ROSWELL, NEW MEXICO
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Form: wr-20

Trn Number: 376958

21.38.32.124

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File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	5	5	SAND, loose, damp, burnt orange
5	35	30	CALICHE, hard, dry light orange to gray
35	40	5	SANDY gravel, gray sand matrix
40	70	30	Clay, Plastic, firm gray & maroon
70	80	10	claystone w/ siltstone dry maroon & gray
80	225	145	claystone, firm, dry maroon w/ gray mottling
225	245	20	claystone w/ siltstone dry, light red
245	250	5	claystone stiff, dry maroon w/ gray mottling

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ROSWELL, NEW MEXICO
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Form: wr-20

Trn Number: 376958

Monitor

21.38.32.124

7

File Number: _____
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NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Driller

04/24/2007
(mm/dd/year)

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2007 APR 27 P 2:03

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Quad ____; FWL ____; FSL ____: Use _____; Location No. _____

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Form: wr-20

Trn Number: 376958

21.38.32.124

Monitor

INLB

8

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Louisiana Energy Services
Contact: Laurie Wetherell
Address: P.O. Box 1789
City: Eunice
Work Phone: 505.394.5204
Home Phone: _____
State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. NE 1/4 NE 1/4 NW 1/4 Section: 32 Township: 21S Range: 38E N.M.P.M.
in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 33.072 s Longitude: 103 d 05 m 2.128 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number if existing well: CP-951

I. On land owned by (required): Lea County, NM

3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon/LPE
Agent: Shane Currie
Mailing Address: 921 N. Bivins
City: Amarillo
Work Phone: 806.467.0607
Home Phone: 806.676.8220
State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 3/29/07 ; Completed: 3/29/07 ; Type tools: Air Rotary
Size of hole: 7-7/8 in.; Total depth of well: 261.3 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: 243.31 ft.

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2007 APR 27 P 2:

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File Number: CP-951
Form: wr-20

Trn Number: 376949

21.38.32.122

Monitor

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
243.8	261.3	17.49	Siltstone, hard, gray	0 - 2

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
4	Sch 40 PVC	2	0	241.3	241.3	n/a	n/a	
4	Sch 40 PVC	2	241.3	261.3	20	PVC end cap	241.3	261.3

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	75	7-7/8	1	20	tremie bentonite/cement
75	235	7-7/8	65	—	pour bentonite chips

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____

Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feetof Cement
1			
2			
3			
4			
5			

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
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Form: wr-20

Trn Number: 376949

Monitor

21.38.32.122

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	4	4	SAND loose, dry tan-brown
4	20	16	CALICHE, soft, chert, dry, tan
20	25	5	Gravelly SAND, chert, orange SAND matrix
25	45	20	CLAY, highly plastic, firm, dry maroon
45	65	20	Siltstone, hard, dry, gray
65	120	55	Claystone, hard, dry, maroon w/ gray mottling
120	125	5	claystone, interbedded w/ siltstone maroon
125	240	115	Claystone, dry maroon w/ gray mottling
240	260	20	Siltstone, hard, damp gray
260	265	5	claystone, dry, maroon with gray mottling

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ROSWELL, NEW MEXICO
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Form: wr-20

Trn Number: 376949

Monitor

21.38.32.122

File Number: _____
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NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Driller — 04/24/07 (mm/dd/year)

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2007 APR 27 P 2:03

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Quad ____; FWL ____; FSL ____; Use ____; Location No. ____

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Form: wr-20

Trn Number: 376949

21.38.32.122

Meritage

Wi-B

9

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Louisiana Energy Services
Contact: Laurie Wetherell
Address: P.O. Box 1789
City: Eunice
Work Phone: 505.394.5204
Home Phone: _____
State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. NE 1/4 NE 1/4 NW 1/4 Section: 32 Township: 21S Range: 38E N.M.P.M.
in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 32.801 s Longitude: 103 d 04 m 59.861 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. ____, Map No. ____ of the _____ Hydrographic Survey

F. Lot No. ____, Block No. ____ of Unit/Tract _____ of the _____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number if existing well: CP-950

I. On land owned by (required): Lea County, NM

3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon/LPE
Agent: Shane Currie
Mailing Address: 921 N. Bivins
City: Amarillo
Work Phone: 806.467.0607
Home Phone: 806.676.8220
State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 3/21/07 ; Completed: 3/30/07 ; Type tools: Air rotary ;
Size of hole: 7-7/8 in.; Total depth of well: 22 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: dry ft.

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ROSWELL, NEW MEXICO

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File Number: CP-950
Form: wr-20
page 1 of 4
Trn Number: 376948

Monitor

21.38.32.122

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
PRY				

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
4	SCH 40 PVC	2	0	10.1	10.1	N/A	N/A	
4	SCH 40 PVC	2	10.1	20.1	10.0	PVC end cap	10.1	20.1

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	2	7-7/8	1	0.5	tremie bentonite/cement
2	7	7-7/8	2		pour bentonite chips

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____

Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feetof Cement
1			
2			
3			
4			
5			

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
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Form: wr-20

Trn Number: 376948

Monitor

21.38.32.122

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NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	Depth in Feet To	Thickness in feet	Color and Type of Material Encountered
0	2	2	SAND, loose, moist, tan to brown
2	15	13	CALICHE, soft, chert gravel, moist, orange-tan
15	19	4	Gravelly SAND, light cementation, moist red sand
19	22	3	Clay, highly plastic, firm, moist, maroon w/ gray mottling

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ROSWELL, NEW MEXICO
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Form: wr-20

Trn Number: 376948

21.38.32.122

Monitor

File Number: _____
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NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Steve Cain
Driller

04/24/2007
(mm/dd/year)

FOR STATE ENGINEER USE ONLY

Quad ____; FWL ____; FSL ____; Use _____; Location No. _____

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2007 APR 27 P 2:02

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File Number: CP-950
Form: wr-20

Trn Number: 376948

Monitor

24.38.32.122

WL.B

10

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Louisiana Energy Services — Work Phone: 505.394.5204
Contact: Laurie Wetherell — Home Phone: _____
Address: P.O. Box 1789
City: Eunice — State: __ Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. NW 1/4 NE 1/4 NW 1/4 Section: 32 Township: 21S Range: 38E N.M.P.M. in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 33.002 s Longitude: 103 d 05 m 8.300 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the _____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number if existing well: CP-952

I. On land owned by (required): Lea County, NM

3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon/LPE — Work Phone: 806.467.0607
Agent: Shane Currie — Home Phone: 806.676.8220
Mailing Address: 921 N. Bivins
City: Amarillo — State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 3/21/07 ; Completed: 3/29/07 ; Type tools: Air Rotary
Size of hole: 7-7/8 in.; Total depth of well: 26.9 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: DRY ft.

STATE ENGINEER OFFICE ROSWELL, NEW MEXICO 2007 APR 12 P 2:03

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File Number: CP-952 — Trn Number: 376950
Form: wr-20 — page 1 of 4

21.38.32.121

Monitor

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
DRY				

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
4	SCH 40 PVC	2	0	16.9	16.9	N/A	N/A	
4	SCH 40 PVC	2	16.9	26.9	10	PVC end cap	16.9	26.9

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	4	7-7/8	1	1	tremie - Cement/bentonite
4	14	7-7/8	4	N/A	pour - bentonite chips

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____

Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feetof Cement
1			
2			
3			
4			
5			

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ROSWELL, NEW MEXICO
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File Number: CP-952
Form: wr-20

Trn Number: 376950

Monitor

21.38.32.121

10

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	2	2	SAND, loose, moist, burnt orange
2	20	18	CALICHE, realative soft, chert, dry tan - light orange
20	27	7	Gravelly, SAND, chert gravel burnt orange.
27	30	3	clay highly plastic, firm, dry maroon

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ROSWELL, NEW MEXICO
2001 FEB 27 P 2:01

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File Number: CP-952
Form: wr-20

Trn Number: 376950

21.38.32.121

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Driller _____ 04/24/2007 (mm/dd/year)

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2007 APR 27 P 2:03

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Quad ____; FWL ____; FSL ____; Use _____; Location No. _____

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File Number: CP-952 Trn Number: 376950

Form: wr-20 page 4 of 4

21.38.32.121

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Louisiana Energy Services — Work Phone: 505.394.5204
Contact: Laurie Wetherell — Home Phone: _____
Address: P.O. Box 1789
City: Eunice — State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. NE 1/4 NW 1/4 NW 1/4 Section: 32 Township: 21S Range: 38E N.M.P.M.
in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 32.999 s Longitude: 103 d 05 m 19.283 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the _____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number if existing well: CP-953

I. On land owned by (required): Lea County, NM

3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon/LPE — Work Phone: 806.467.0607
Agent: Shane Currie — Home Phone: 806.676.8220
Mailing Address: 421 N. Bivins
City: Amarillo — State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 3/22/07 ; Completed: 3/29/07 ; Type tools: Air Rotary
Size of hole: 7-7/8 in.; Total depth of well: 257.5 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: 241.76 ft.

STATE ENGINEER OFFICE ROSWELL, NEW MEXICO
2007 APR 27 P 2:08

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File Number: CP-953 — Trn Number: 376952
Form: wr-20 — page 1 of 1

Monitor

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File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
241.26	257.5	16.24	Claystone w/ interbedded siltstone	0-2

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
4	Sch 40 PVC	2	0	237.5	237.5	N/A	N/A	
4	Sch 40 PVC	2	237.5	257.5	20	PVC End cap	237.5	257.5

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	75	7-7/8	1	20	tremie - cement/bentonite
75	230	7-7/8	4/5	N/A	pour - bentonite chips

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____

Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feet of Cement
1			
2			
3			
4			
5			

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2001 APR 27 P 2:04

Do Not Write Below This Line

File Number: CP-953
Form: wr-20

Trn Number: 376952

Monitor

21.38.3.2.11.2

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	5	5	SAND, loose moist burnt orange
5	15	10	CALICHE, hard dry orange
15	35	20	CLAY, high plastic maroon w/ gray mottling
35	50	15	Siltstone, hard dry gray
50	200	150	Claystone, dry, maroon
200	210	10	Claystone, w/ interbedded siltstone, hard dry maroon
210	245	35	Claystone, hard, dry maroon w/ gray splotching
245	255	10	Claystone, w/ interbedded siltstone hard, dry maroon
255	260	5	Claystone, hard, dry maroon gray mottling

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2001 APR 27 P 2:01

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File Number: CP-953
Form: wr-20

Trn Number: 376952

Monitor

21.38.32.112

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Driller _____ 4/24/2007 (mm/dd/year)

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2007 APR 27 P 2 01

FOR STATE ENGINEER USE ONLY

Quad ____; FWL ____; FSL ____; Use _____; Location No. _____

Do Not Write Below This Line

File Number: CP-953 Trn Number: 376952
Form: wr-20 page 4 of 4

21.35.32.112

Mentec

WLB

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Louisiana Energy Services — Work Phone: 505.394.5204
Contact: Laurie Wetherell — Home Phone: _____
Address: P.O. Box 1789
City: Eunice — State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. NW 1/4 NW 1/4 NW 1/4 Section: 32 Township: 21S Range: 36E N.M.P.M. in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 27.646 s Longitude: 103 d 05 m 22.714 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the _____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number if existing well: CP-954

I. On land owned by (required): Lea County, NM

3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon / LPE — Work Phone: 806.467.0607
Agent: Shane Currie — Home Phone: 806.676.8720
Mailing Address: 421 N. Ruins
City: Amarillo — State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 3/22/07 ; Completed: 3/30/07 ; Type tools: Air Rotary
Size of hole: 7-7/8 in.; Total depth of well: 236.4 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: DRY ft.

STATE ENGINEER OFFICE ROSWELL, NEW MEXICO 2007 APR 27 P 2:01

Do Not Write Below This Line

File Number: CP-954 — Trn Number: 376954
Form: wr-20 — page 1 of 4

21.38.32.111

Monitor

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
DRY				

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
4	Sch 40 PVC	2	0	216.4	216.4	N/A	N/A	
4	Sch 40 PVC	2	216.4	236.4	20	PVC end cap	216.4	236.4

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	15	7-7/8	1	20	tremie - cement/bentonite
15	210	7-7/8	43		pour - bentonite chips

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____

Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feetof Cement
1			
2			
3			
4			
5			

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2001 APR 27 P 2:04

Do Not Write Below This Line

File Number: CP-954
Form: wr-20

Trn Number: 376954

Monitor

21.39.32.111

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	10	10	SAND, fine, loose, moist, burnt orange
10	20	10	CALICHE, soft light orange
20	35	15	Siltstone, hard, dry gray
35	45	10	claystone, hard dry maroon w/ gray mottling
45	50	5	claystone w/ interbedded siltstone maroon & gray
50	75	25	claystone, dry, maroon w/ gray mottling
75	85	10	siltstone w/ interbedded claystone
85	105	20	Claystone, hard, dry maroon w/ gray mottling
105	110	5	siltstone w/ interbedded claystone hard dry gray & maroo
110	130	20	Claystone, dry maroon w/ gray mottling
130	160	30	Claystone, with siltstone dry maroon & gray
160	170	10	Claystone, dry maroon to purple w/ gray mottling
170	175	5	siltstone, hard, dry, gray
175	180	5	claystone, hard dry, maroon w/ gray mottling
180	190	10	siltstone w/ claystone dry gray & maroon
190	215	25	Claystone, hard, dry, maroon w/ gray & maroon
215	235	25	siltstone, hard, dry, gray
235	245	10	claystone, hard, dry maroon w/ gray

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2001 FEB 27 P 2:04

Do Not Write Below This Line

File Number: CP-954 Trn Number: 376954
Form: wr-20

Monitor

21.39.32.111

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Steve Cole
Driller

04/24/2007
(mm/dd/year)

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2007 APR 27 P 2 04

FOR STATE ENGINEER USE ONLY

Quad ____; FWL ____; FSL ____; Use _____; Location No. _____

Do Not Write Below This Line

File Number: CP-954
Form: wr-20

Trn Number: 376954

21.39.3.2.111

Monitor

JLB

13

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Louisiana Energy Services — Work Phone: 505-394-5204
Contact: Laurie Wetherell — Home Phone: _____
Address: P.O. Box 1789
City: Eunice — State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. SW 1/4 SW 1/4 NE 1/4 Section: 32 Township: 21S Range: 38E N.M.P.M.
in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 14.8482 s Longitude: 103 d 04 m 40.2564 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number if existing well: CP-995

I. On land owned by (required): Louisiana Energy Services

3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon Drilling — Work Phone: 806.467.0607
Agent: Shane Currie — Home Phone: 806.467.0622
Mailing Address: 921 N. Bivins
City: Amarillo — State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 12/5/08 ; Completed: 12/5/08 ; Type tools: Air-Rotary;
Size of hole: 7-7/8 in.; Total depth of well: 38 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: Dry ft.

Do Not Write Below This Line

File Number: CP-995 — Trn Number: 418652
Form: wr-20 — page 1 of 4

21.38.32.233

Monitor

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
Dry				

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
4 PVC	Sch 40	2	+3	38	41	end cap	28	38

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	5	7-7/8		20 Sacks	Trimie (Bentonite/Cement)
5	25	7-7/8	6		Poured (Bentonite chips)

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____

Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feetof Cement
1			
2			
3			
4			
5			

Do Not Write Below This Line

File Number: CP-995
Form: wr-20

Trn Number: 418652

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	9	9	Sand, lightly cemented, tan to lt orange
9	24	13	Caliche, relative soft, lt gray
4	36	12	Gravelly sand, chert, tan to lt red matrix
36	38	2	Claystone, purple

Do Not Write Below This Line

File Number: CP-995 Trn Number: 418652

Form: wr-20

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

MW-22

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Driller

12/29/08
(mm/dd/year)

==========

FOR STATE ENGINEER USE ONLY

Quad ____; FWL ____; FSL ____; Use _____; Location No. _____

Do Not Write Below This Line

File Number: CP-995
Form: wr-20

Trn Number: 418652

NLB

14

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Louisiana Energy Services Work Phone: 505-394-5204
Contact: Laurie Wetherell Home Phone: _____
Address: P.O. Box 1789
City: Eunice State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. SW 1/4 SW 1/4 NE 1/4 Section: 32 Township: 21S Range: 38E N.M.P.M.
in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 13.383 s Longitude: 103 d 04 m 52.212 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County

G. Other: _____

H. Give State Engineer File Number if existing well: CP-996

I. On land owned by (required): Louisiana Energy Services

3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon Drilling Work Phone: 806.467.0607
Agent: Shane Currie Home Phone: 806.467.0622
Mailing Address: 921 N. Bivins
City: Amarillo State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 12/5/08 ; Completed: 12/5/08 ; Type tools: Air-Rotary;
Size of hole: 7-7/8 in.; Total depth of well: 39 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: Dry ft.

Do Not Write Below This Line

File Number: CP-996 Trn Number: 418653
Form: wr-20 page 1 of 4

21.38.32.233

Monitor

File Number: ____________
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
Dry				

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
4 PVC	Sch 40	2	+3	39	42	end cap	21	36

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	5	7-7/8		20 Sacks	Trimie (Bentonite/Cement)
5	20	7-7/8	5		Poured (Bentonite chips)

8. PLUGGING RECORD

Plugging Contractor: ____________
Address: ____________
Plugging Method: ____________
Date Well Plugged: ____________

Plugging approved by: ____________
State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feetof Cement
1			
2			
3			
4			
5			

Do Not Write Below This Line

File Number: CP-996 Trn Number: 418653

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	10	10	Sandstone, lightly cemented, burnt orange
10	21	11	Caliche, soft, lt orange to tan
21	37	16	Gravelly sand, abundant chert, lt orange-tan
37	39	2	Claystone, purple

Do Not Write Below This Line

File Number: CP-996 Trn Number: 418653

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

MW-23

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Driller

12/29/08
(mm/dd/year)

FOR STATE ENGINEER USE ONLY

Quad ____; FWL ____; FSL ____; Use _____; Location No. _____

Do Not Write Below This Line

File Number: CP-996 Trn Number: 418653

Form: wr-20

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Louisiana Energy Services — Work Phone: 505.394.6204
Contact: Laurie Wetherell — Home Phone: _____
Address: P.O. Box 1789
City: Eunice — State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. SW 1/4 NW 1/4 SW 1/4 Section: 32 Township: 21S Range: 38E N.M.P.M. in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 25 m 56.857 s Longitude: 103 d 05 m 23.671 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the _____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number if existing well: CP-955

I. On land owned by (required): Lea County, NM

3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon/LPE — Work Phone: 806.467.0607
Agent: Shane Currie — Home Phone: 806.676.5720
Mailing Address: 921 N. Bivins
City: Amarillo — State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 3/23/07; Completed: 3/29/07; Type tools: Air Rotary;
Size of hole: 7-7/8 in.; Total depth of well: 236 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: DRY ft.

STATE ENGINEER OFFICE ROSWELL, NEW MEXICO 2007 APR 27 P 1:

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File Number: CP-955 — Trn Number: 376955
Form: wr-20 — page 1 of 4

Monitor — 21.38.32.313

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
DRY				

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
4	SCH 40 PVC	2	0	216	216	N/A	N/A	
4	SCH 40 PVC	2	216	236	20	PVC End Cap	216	236

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	75	7-7/8	1	20	tremie - cement/bentonite
75	210	7-7/8	42		pour - bentonite chips

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____

Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feetof Cement
1			
2			
3			
4			
5			

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2001 JUN 27 P 2:03

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File Number: CP-955
Form: wr-20

Trn Number: 376955

Monitor

21.38.32.313

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	10	10	SAND, loose, damp tan
10	30	20	CALICHE, soft chert gravel with orange pink
30	35	5	SANDY Gravel, chert, dry light red sand
35	55	20	CLAY, highly plastic, firm
55	60	5	Claystone w/ siltstone hard, dry maroon & gray
60	220	160	Claystone, dry maroon w/ gray mottling
220	225	5	Siltstone w/ claystone hard, dry gray & maroon
225	240	15	Silty claystone, dry, light red to dark red/maroon

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2011 APR 27 P 2:01

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File Number: CP-955
Form: wr-20

Trn Number: 376955

Monitor

21.38.32.313

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Joe Cole
Driller

04/24/2007
(mm/dd/year)

STATE ENGINEER OFFICE
2007 APR 27 P 2:03

FOR STATE ENGINEER USE ONLY

Quad ____; FWL ____; FSL ____; Use _____; Location No. _____

Do Not Write Below This Line

File Number: CP-955
Form: wr-20

Trn Number: 376955

Monitor

21.38.32.313

WLB

16

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Louisiana Energy Services Work Phone: 505-394-5204
Contact: Laurie Wetherell Home Phone: _____
Address: P.O. Box 1789
City: Eunice State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. NW 1/4 NE 1/4 SW 1/4 Section: 32 Township: 21S Range: 38E N.M.P.M.
in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 1.1718 s Longitude: 103 d 05 m 5.5062 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number if existing well: CP-999

I. On land owned by (required): Louisiana Energy Services

3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon Drilling Work Phone: 806.467.0607
Agent: Shane Currie Home Phone: 806.467.0622
Mailing Address: 921 N. Bivins
City: Amarillo State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 12/4/08 ; Completed: 12/4/08 ; Type tools: Air-Rotary;
Size of hole: 7-7/8 in.; Total depth of well: 43 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: Dry ft.

Do Not Write Below This Line

File Number: CP-999 Trn Number: 415856
Form: wr-20 page 1 of 4

Monitor 21.38.32.321

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
Dry				

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
4 PVC	Sch 40	2	+3	43	46	end cap	28	43

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	5	7-7/8		20 Sacks	Trimie (Bentonite/Cement)
5	22	7-7/8	5		Poured (Bentonite chips)

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____

Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feetof Cement
1			
2			
3			
4			
5			

STATE ENGINEER OFFICE
22 AM 8:11

Do Not Write Below This Line

File Number: CP-999 Trn Number: 415856

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	11	11	Sand, lightly cemented, burnt orange
11	29	18	Caliche, relatively soft, gray to lt orange
23	34	11	Gravelly sand, chert gravel, red sand matrix
34	36	2	Claystone, dark purple

Do Not Write Below This Line

File Number: CP-999 Trn Number: 415856

Form: wr-20

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

MW-26

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Steve Cline
Driller

12/24/08
(mm/dd/year)

FOR STATE ENGINEER USE ONLY

Quad ____; FWL ____; FSL ____; Use _____; Location No. _____

Do Not Write Below This Line

File Number: CP-999
Form: wr-20

Trn Number: 415856

WLB

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Louisiana Energy Services — Work Phone: 505-394-5204
Contact: Laurie Wetherell — Home Phone: _____
Address: P.O. Box 1789
City: Eunice — State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. NE 1/4 NE 1/4 SW 1/4 Section: 32 Township: 21S Range: 38E N.M.P.M.
in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 1.071 s Longitude: 103 d 05 m 3.048 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number if existing well: CP-998

I. On land owned by (required): Louisiana Energy Services

RECEIVED
2008 DEC 15 P 12:21
STATE ENGINEER OFFICE

3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon Drilling — Work Phone: 806.467.0607
Agent: Shane Currie — Home Phone: 806.467.0622
Mailing Address: 921 N. Bivins
City: Amarillo — State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 12/4/08 ; Completed: 12/4/08 ; Type tools: Air-Rotary;
Size of hole: 7-7/8 in.; Total depth of well: 250 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: Dry ft.

Do Not Write Below This Line

File Number: CP-998 — Trn Number: 418655
Form: wr-20 — page 1 of 4

Monitor — 21.38.32.322

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
Dry				

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
4 PVC	Sch 40	2	+3	250	253	end cap	230	250

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	20	7-7/8		20 Sacks	Trimie (Bentonite/Cement)
20	206	7-7/8	68		Poured (Bentonite chips)

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____

Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feetof Cement
1			
2			
3			
4			
5			

STATE ENGINEER OFFICE
[illegible] P 1:21

Do Not Write Below This Line

File Number: CP-998 Trn Number: 418655
Form: wr-20

File Number: ______________
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	12	12	Sand, lightly cemented, burnt orange
12	25	13	Caliche, relatively soft, gray to lt orange
25	36	11	Sandstone, lightly cemented, burnt orange
36	70	34	Claystone, maroon
70	72	2	Siltstone, hard gray
72	153	81	Claystone, light red with maroon to purple
153	215	62	Claystone, maroon to lt red
215	218	3	Siltstone, interbeded w/claystone, gray
218	230	12	Claystone, interbeded siltstone, maroon-gray
230	235	5	Siltstone, interbeded w/claystone, gray
235	250	15	Claystone, lt red to maroon

Do Not Write Below This Line

File Number: CP-998 Trn Number: 418655

Form: wr-20

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

MW-25

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Steve Cain
Driller

12/29/08
(mm/dd/year)

==========

FOR STATE ENGINEER USE ONLY

Quad ____; FWL ____; FSL ____; Use _____; Location No. _____

Do Not Write Below This Line

File Number: CP-998
Form: wr-20

Trn Number: 418655

WLB

18

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Louisiana Energy Services — Work Phone: 505-394-5204
Contact: Laurie Wetherell — Home Phone: _____
Address: P.O. Box 1789
City: Eunice — State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. SE 1/4 NE 1/4 SW 1/4 Section: 32 Township: 21S Range: 38E N.M.P.M.
in _____ County.

B. X - _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 1.0998 s Longitude: 103 d 05 m 1.086 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County

G. Other: _____

H. Give State Engineer File Number if existing well: CP-997

I. On land owned by (required): Louisiana Energy Services

3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon Drilling — Work Phone: 806.467.0607
Agent: Shane Currie — Home Phone: 806.467.0622
Mailing Address: 921 N. Bivins
City: Amarillo — State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 12/4/08 ; Completed: 12/4/08 ; Type tools: Air-Rotary;
Size of hole: 7-7/8 in.; Total depth of well: 40 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: Dry ft.

Do Not Write Below This Line

File Number: CP-997 — Trn Number: 418654
Form: wr-20 — page 1 of 4

Monitor 21.38.32.324

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
Dry				

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
4 PVC	Sch 40	2	+3	40	43	end cap	25	40

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	5	7-7/8		20 Sacks	Trimie (Bentonite/Cement)
5	20	7-7/8	5		Poured (Bentonite chips)

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____

Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feetof Cement
1			
2			
3			
4			
5			

FILED
12:1 P 8-11-21
STATE ENGINEER OFFICE

Do Not Write Below This Line

File Number: CP-997 Trn Number: 418654

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	11	11	Sandstone, slight cemented, burnt orange
11	29	18	Caliche, soft, gray to lt orange
29	37	8	Gravelly sand, abundant chert, orange sand
37	40	3	Claystone, maroon

Do Not Write Below This Line

File Number: CP-997 Trn Number: 418654

Form: wr-20 page 3 of 4

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

MW-24

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Driller _____ (mm/dd/year) 12/29/08

==========

FOR STATE ENGINEER USE ONLY

Quad ____; FWL ____; FSL ____; Use _____; Location No. _____

Do Not Write Below This Line

File Number: CP-997 Trn Number: 418654

Form: wr-20 page 4 of 4

ALB

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Louisiana Energy Services — Work Phone: 505.394.5204
Contact: Laurie Wetherell — Home Phone: _____
Address: P.O. Box 1789
City: Eunice — State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. NW 1/4 SE 1/4 SW 1/4 Section: 32 Township: 21S Range: 38E. N.M.P.M. in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 25 m 52.499 s Longitude: 103 d 05 m 7.607 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. ____, Map No. ____ of the _____ Hydrographic Survey

F. Lot No. ____, Block No. ____ of Unit/Tract _____ of the _____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number if existing well: CP-956

I. On land owned by (required): Lea County, NM

3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon/LPG — Work Phone: 806.467.0607
Agent: Shane Currie — Home Phone: 806.676.8220
Mailing Address: 921 N. Bivins
City: Amarillo — State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 3/28/07 ; Completed: 4/3/07 ; Type tools: Air rotary
Size of hole: 7-7/8 in.; Total depth of well: 237 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: DRY ft.

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2007 APR 27 P 2:

Do Not Write Below This Line

File Number: CP-956 — Trn Number: 376956
Form: wr-20

Monitor

21.38.32.341

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
DRY				

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
4	sch 40 PVC	2	0	217.1	217.1	N/A	N/A	
4	sch 40 PVC	2	217.1	237.1	20	PVC end cap	217.1	237.1

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	15	7-7/8	1	20	tremie - cement / bentonite
		7 7/8	48	n/a	pour - bentonite chips

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____

Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feetof Cement
1			
2			
3			
4			
5			

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2001 FEB 27 P 2:05

Do Not Write Below This Line

File Number: CP-956
Form: wr-20

Trn Number: 376956

Monitor

21.38.32.341

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	5	5	SAND, fine, damp, burnt orange
5	25	20	Caliche, soft, dry, gray to tan
25	40	15	Sandy Gravel, chert, dry, burnt orange
40	60	20	Clay firm, dry, maroon w/ gray mottling
60	85	25	claystone w/ siltstone, hard, dry maroon/gray
85	165	80	claystone, dry, maroon w/ gray mottling
165	190	25	claystone w/ siltstone, hard, dry maroon
190	220	30	claystone, hard, dry marcon w/ gray mottling
220	235	15	claystone, w/ siltstone hard, dry light red
235	240	15	claystone, hard, dry, marcon w/ gray mottling

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2001 APR 27 P 2:01

Do Not Write Below This Line

File Number: CP-956
Form: wr-20

Trn Number: 376956

21.38.32.341

Monitor

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Steve Crie
Driller

04/24/07
(mm/dd/year)

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2007 APR 27 P 2:03

FOR STATE ENGINEER USE ONLY

Quad ____; FWL ____; FSL ____; Use _____; Location No. _____

Do Not Write Below This Line

File Number: CP-956
Form: wr-20

Trn Number: 376956

Mexitar

21.38.32.341

WR6

20

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Louisiana Energy Services — Work Phone: 505.394.5204
Contact: Laurie Wetherell — Home Phone: _____
Address: P.O. Box 1789
City: Eunice — State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. NE 1/4 NE 1/4 SE 1/4 Section: 32 Township: 21S Range: 38E N.M.P.M.
in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 5.327 s Longitude: 103 d 04 m 26.985 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number if existing well: CP-946

I. On land owned by (required): Lea County, NM

3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon/LPE — Work Phone: 806.467.0607
Agent: Shane Currie — Home Phone: 806.676.8220
Mailing Address: 921 N. Bivins
City: Amarillo — State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 3/16/07 ; Completed: 4/03/07 ; Type tools: Air Rotary ;
Size of hole: 7 7/8 in.; Total depth of well: 225.5 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: 220.49 ft.

STATE ENGINEER OFFICE
RECEIVED
2007 APR 27 P 1:00

Do Not Write Below This Line

File Number: CP-946 — Trn Number: 376944
Form: wr-20 — page 1 of 4

Monitor

21.38.32.422

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
220.49	225.8	5.31	claystone	0 - 1

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
4	sch 40 PVC	2	0	205.8	205.8	N/A	N/A	
4	sch 40 PVC	2	205.8	225.8	20	PVC end cap	205.8	225.8

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	15	7 7/8	1	20	tremie - bentonite/cement
15	200	7-7/8	48	N/A	Poured - bentonite pellets

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____

Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feet of Cement
1			
2			
3			
4			
5			

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2007 APR 27 P 2:00

Do Not Write Below This Line

File Number: CP-946
Form: wr-20

Trn Number: 376944

Monitor

21.38.32.422

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	2	2	SAND, loose dry, burnt orange
2	20	18	Caliche, moderately hard, dry gray
20	35	15	Gravely SAND, fine grained light gray
35	70	35	CLAY, highly plastic, firm, dry, maroon
70	80	10	CLAYstone, dry light red cuttings
80	95	15	CLAYstone, dry maroon with gray and green mottling
95	100	5	claystone, interbedded siltstone, dry, maroon & gray
100	115	15	claystone, firm dry maroon & gray
115	125	10	claystone, interbedded siltstone maroon
125	175	50	claystone, dry maroon
175	185	10	claystone, interbedded w/ siltstone, dry maroon
185	195	10	Siltstone, hard dry gray
195	200	5	Siltstone, hard dry gray
200	215	15	claystone, hard dry maroon
215	220	5	siltstone, damp, gray
220	235	15	claystone, firm, dry, maroon

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2001 APR 27 P 1:00

Do Not Write Below This Line

File Number: CP-946 Trn Number: 376944

Form: wr-20 page 3 of 4

T Monitor

21.38.32.422

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Steve Cox — Driller

04/24/07 (mm/dd/year)

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2007 APR 27 P 2:00

FOR STATE ENGINEER USE ONLY

Quad ____; FWL ____; FSL ____; Use _____; Location No. _____

Do Not Write Below This Line

File Number: CP-946
Form: wr-20

Trn Number: 376944

21.38.32.422

Monitor

WLB

21

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Louisiana Energy Services Work Phone: 505.394.5204
Contact: Laurie Wethereil Home Phone: _____
Address: P.O. Box 1789
City: Eunice State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. SE 1/4 SE 1/4 SE 1/4 Section: 32 Township: 21S Range: 38E N.M.P.M.
in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 25 m 46.785 s Longitude: 103 d 4 m 31.815 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number if existing well: CP-945

I. On land owned by (required): Lea County, NM

3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon/LPE Work Phone: 806.467.0607
Agent: Shane Currie Home Phone: 806.676.8220
Mailing Address: 921 N. Bivins
City: Amarillo State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 3/14/07 ; Completed: 4/3/07 ; Type tools: Air Rotary
Size of hole: 7 7/8 in.; Total depth of well: 241.2 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: DRY ft.

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2007 SEP 27 P 1:59

Do Not Write Below This Line

File Number: CP-945 Trn Number: 376887
Form: wr-20 page 1 of 4

Monitor

21.38.32.444

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
			DRY	

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
4	Sch 40 PVC	2	0	221.2	221.2	N/A	N/A	
4	Sch 40 PVC	2	221.2	241.2	20	PVC cap	221.2	241.2

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	75	7-7/8	1	20	tremie - bentonite/cement
75	215	7-7/8	48	N/A	poured - bentonite chips

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____

Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feetof Cement
1			
2			
3			
4			
5			

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2001 APR 27 P 1:57

Do Not Write Below This Line

File Number: CP-945
Form: wr-20

Trn Number: 376887

Monitor

21.38.32.444

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	Depth in Feet To	Thickness in feet	Color and Type of Material Encountered
0	10	10	SAND, fine-grained, loose dry, brown to light orange
10	25	15	Caliche, moderately soft, dry, orange and white
25	60	35	clay, stiff dry, gray and maroon; mottled
60	190	130	claystone, dry, maroon
190	200	10	Siltstone, hard damp: light gray
200	260	60	claystone, firm dry maroon

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2007 APR 27 P 1:59

Do Not Write Below This Line

File Number: CP-945
Form: wr-20

Trn Number: 376887

Moxitor

21.38.32.444

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Steve Crie — Driller

04/24/2007 (mm/dd/year)

FOR STATE ENGINEER USE ONLY

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2007 APR 27 P 1:58

Quad ____; FWL ____; FSL ____; Use _____; Location No. _____

Do Not Write Below This Line

File Number: CP-945
Form: wr-20

Trn Number: 376887

Monitor

21.38.32.444

22

W2B

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Louisiana Energy Services — Work Phone: 505.394.5204
Contact: Laurie Wetherell — Home Phone: _____
Address: P.O. Box 1789
City: Eunice — State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. NW 1/4 SW 1/4 SE 1/4 Section: 32 Township: 21S Range: 38E N.M.P.M. in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 25 m 50.439 s Longitude: 103 d 04 m 52.541 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the _____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number if existing well: CP-957

I. On land owned by (required): Lea County, NM

3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon/LPE — Work Phone: 806.467.0607
Agent: Shane Curcle — Home Phone: 806.676.8220
Mailing Address: 921 N. Bivins
City: Amarillo — State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 3/20/07 ; Completed: 4/3/07 ; Type tools: Air Rotary ;
Size of hole: 7-7/8 in.; Total depth of well: 231.4 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: DRY ft.

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2007 MAR 22 P 2:03

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File Number: CP-957 — Trn Number: 376957
Form: wr-20 — page 1 of 4

Monitor 21.38.32.431

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
DRY				

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
4	Sch 40 PVC	2	0	211.4	211.4	N/A	N/A	
4	Sch 40 PVC	2	211.4	231.4	20	PVC end cap	211.4	231.4

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	15	7-7/8	1	20	tremie - cement/bentonite
15	205	7-7/8	48		poured - bentonite chips

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____

Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feetof Cement
1			
2			
3			
4			
5			

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STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO

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File Number: CP-957 Trn Number: 376957
Form: wr-20

Monitor 21.38.32.431

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	10	10	SAND fine, loose, dry orange to tan
10	35	25	CALICHE, hard dry, orange & gray
35	40	5	SANDY gravel, maroon
40	85	45	Clay, highly plastic firm dry maroon
85	95	10	Siltstone, hard dry gray
95	105	10	Claystone, light red
105	110	5	Siltstone w/ claystone gray & maroon
110	170	60	claystone, dry maroon w/ gray mottling
170	195	25	Siltstone w/ Clayshone hard dry gray & maroon
195	220	25	Clayshone, dry, maroon
220	230	10	siltstone w/ Clayshone dry gray & maroon
230	240	10	Clayshone w/ some silt maroon w/ gray mottling

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2001 JAN 27 P 2:

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File Number: CP-957 Trn Number: 376957

Form: wr-20 page 3 of 4

Monitor

21.39.32.431

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Steve Cone
Driller

4/24/2007
(mm/dd/year)

FOR STATE ENGINEER USE ONLY

Quad ____; FWL ____; FSL ____; Use _____; Location No. _____

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2007 APR 27 P 2:03

Do Not Write Below This Line

File Number: CP-957
Form: wr-20

Trn Number: 376957

21.38.32.431

Monitor

WLB

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Waste Control Specialists, LLC — Work Phone: 888-789-2783
Contact: Mike Burney — Home Phone: 505-394-4300
Address: 9998 W. Highway 176
City: Andrews — State: TX Zip: 79714

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. NE 1/4 NE 1/4 NW 1/4 Section: 33 Township: 21S Range: 38E N.M.P.M.
in _____ County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 29 s Longitude: 103 d 03 m 58 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____
_____ Subdivision recorded in _____ County

G. Other: _____

H. Give State Engineer File Number if existing well: CP-979

I. On land owned by (required): Waste Control Specialists, LLC

STATE ENGINEER OFFICE
2008 MAR -6 A 11:33
ROSWELL, NEW MEXICO

3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon Drilling, L.P. — Work Phone: 806-467-0607
Agent: Shane Currie — Home Phone: 806-676-8220
Mailing Address: 921 N. Bivins
City: Amarillo — State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 2/20/08 ; Completed: 2/20/08 ; Type tools: Air Rotary Rig
Size of hole: 5 5/8 in.; Total depth of well: 28 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: Dry ft.

Do Not Write Below This Line

File Number: CP-979 — Trn Number: 399475
Form: wr-20 — page 1 of 4

Monitor

21.38.33.122

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
			Dry	

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
2	Sch 40 Pvc	2	0	28	28	Pvc end cap	13	28

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	5	5-5/8	20		tremie - bentonite/cement
5	10	5-5/8	2		poured - bentonite chips

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____

Plugging approved by: _____
State Engineer Representative

STATE ENGINEER OFFICE
2009 NOV -6 A 11:33

No.	Depth in Feet Top	Bottom	Cubic Feetof Cement
1			
2			
3			
4			
5			

Do Not Write Below This Line

File Number: CP-979
Form: wr-20

Trn Number: _____

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	0.5	0.5	Surface Soil
0.5	15	14.5	Caliche
15	17	2	Gravelly sand
17	25	8	clayey silty sand
25	28.5	3.5	gray sandstone

STATE ENGINEER OFFICE
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2005 FEB -9 A 11:33

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File Number: CP-979
Form: wr-20

Trn Number: _____

File Number: _____
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NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

STATE ENGINEER OFFICE
2008 MAR -6 A 11:33

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Driller

03/03/2008
(mm/dd/year)

==========

FOR STATE ENGINEER USE ONLY

Quad ____; FWL ____; FSL ____; Use _____; Location No. _____

Do Not Write Below This Line

File Number: CP-979
Form: wr-20

Trn Number: _____

24

WD

OSE FILE NUMBER _____ _____
For OSE Use Only

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD and DRILLING LOG

1. PERMIT HOLDER(S)

Name: WASTE CONTROL SPECIALISTS
Address: P.O. BOX 1129
City: ANDREWS
State: TX Zip: 79714
Phone: (505) 394-4300
Contact: MICHAEL BURNEY
Contact Phone: (505) 394-4300

Name: _____
Address: _____
City: _____
State: _____ Zip: _____
Phone: _____

2. STATE ENGINEER REFERENCE NUMBERS:

File # CP 975 EXPLORE, Well # C.P. 975

3. LOCATION OF WELL (The Datum Is Assumed To Be WGS 84 Unless Otherwise Specified)

Latitude: 32 Deg 25 Min 45.8 Sec
Longitude: 103 Deg 04 Min 20.4 Sec
(Enter Lat/Long To At Least 1/10th Of A Second)
Datum If Not WGS 84: _____

Santa Rosa

4. DRILLING CONTRACTOR

License Number: WD1184
Name: WEST TEXAS WATER WELL SERVICE Work Phone: (432) 530-2696

Drill Rig Serial Number: 261602

List The Name Of Each Drill Rig Supervisor That Managed On-Site Operations During The Drilling Process:

RONNY KEITH

STATE ENGINEER OFFICE
2008 MAY 14 P 2:

5. DRILLING RECORD

Drilling Began: 1-21-08 ; Completed: 4-29-08 ; Drilling Method MUD ROTARY
Diameter Of Bore Hole: 7-7/8 (in);
Total Depth Of Well: 2,020 (ft);
Completed Well Is (Circle One): Shallow / (Artesian);
Depth To Water First Encountered: 1,092 (ft);
Depth To Water Upon Completion Of Well: N/A (ft).

Do Not Write Below This Line

TRN Number: 396028 File Number: CP-975
Form: wr-20 May 07

21.38.33.333

Explore

OSE FILE NUMBER _____ _____
For OSE Use Only

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD and DRILLING LOG

6. RECORD OF CASING

Diameter (inches)	Pounds (per ft.)	Threads (per inch)	Depth (feet)	Length Top to Bottom (feet)	Type of Shoe	Perforations (from to)
13-3/8	48	8	2' AGL	40'		
8-5/8	24	8	3' AGL	1,440'	FLOAT GUIDE	

7. RECORD OF MUDDING AND CEMENTING

Depth (feet)	Hole (diameter)	Mud Used (# of sacks)	Cement (cubic feet)	Method of Placement
0 - 40	17-1/2		35	TRIMMIE
0 - 1,440	12-1/4		574	POSITIVE
1,380-2,020	7-7/8		275	TRIMMIE

STATE ENGINEER OFFICE
2013 MAY 11 P 2:03

Do Not Write Below This Line

Trn Number: _____ File Number: _____
Form: wr-20 May 07

OSE FILE NUMBER _____ _____
For OSE Use Only

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

8. LOG OF HOLE. For Each Water Bearing Strata, Estimate The Yield Of The Formation In Gallons Per Minute.

Depth (feet) From	Depth (feet) To	Thickness (Feet)	For Water Bearing Strata Enter The Estimated Yield in GPM	Color and Type of Material Encountered
			SEE ATTACHED GEOLOGIC LOG	

Enter Method Used To Estimate Yield: N/A

Do Not Write Below This Line

Tm Number: _____ File Number: _____

CP-975 Geologic log

0-6 ft 6 pad fill and fine brown sand

6-10 ft 4 white sandy limestone (Mescalero caliche)

10-29 ft 19 sand, light brown, and brown calcareous sandstone (Gatuña Formation)

29-576 ft 547 interbedded sandstone, siltstone, and claystone; reddish-brown to gray; bioturbated (Cooper Canyon Formation)

576-708 ft 132 sandstone and siltstone, gray to reddish brown (Trujillo Formation)

708-1092 ft 384 interbedded very fine sandstone and siltstone, gray to dark reddish brown (Tecovas Formation)

1092-1384 ft 292 gray, fine sandstone with interbedded reddish brown and weak red siltstone and claystone (Santa Rosa Formation)

1384-1566 ft 182 reddish brown, very fine sandstone and siltstone, with some fibrous gypsum in lower part (Dewey Lake Formation)

1566-1602 ft 34 gray anhydrite beds, with intermediate reddish-brown and gray siltstone (Forty-niner Member of the Rustler Formation)

1602-1609 ft 7 gray anhydrite and wavy thin laminae of dolomite (Magenta Dolomite Member of the Rustler Formation)

1609-1736 ft 127 gray anhydrite beds, with intermediate halite including anhydrite and polyhalite (Tamarisk Member of the Rustler Formation)

1736-1807 ft 71 halite with thin two thin anhydrite beds and basal reddish-brown, very fine sandstone (Los Medaños Member of the Rustler Formation)

1807-2020 ft 213 halite with anhydrite/polyhalitic marker beds (MB103 and uppermost MB109) (Salado Formation)

OSE FILE NUMBER _____ _____
For OSE Use Only

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. ADDITIONAL STATEMENTS OR EXPLANATIONS:

2008 MAY 14 P 2:06
STATE ENGINEER OFFICE

The undersigned hereby certifies that, to the best of his or her knowledge and belief, the foregoing is a true and correct record of the above described bore hole. The undersigned further certifies that he or she will file this well record with the Office Of The State Engineer and permit holder within 20 days after completion of the well drilling.

Tommy Keith
Driller

05-12-08
(mm/dd/year)

Do Not Write Below This Line

Trn Number: _____
Form wr-20 May 07

File Number: _____

File Number: [illegible] Per OS [illegible] Suffix

NEW MEXICO OFFICE OF THE STATE ENGINEER
APPLICATION FOR PERMIT TO DRILL AN EXPLORATORY WELL

2-24674
1320

1. APPLICANT:

Name: Waste Control Specialists LLC Work Phone: 888-789-2783
Contact: Mike Burney Home Phone: 505-394-4300
Address: 9998 W. Highway 176
City: Andrews State: TX Zip: 79714

2. LOCATION OF WELL (A, B, C, or D required, E or F if known):

A. NE 1/4 NW 1/4 NW 1/4 Section: 33 Township: 21S Range: 38E N.M.P.M. in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 30.145 s Longitude: 103 d 04 m 10.962 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the _____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number of existing well: _____

I. On land owned by (required): Waste Control Specialists LLC

STATE ENGINEER OFFICE ROSWELL, NEW MEXICO 2007 DEC 31 A 9:53

3. WELL INFORMATION:

Approximate depth 75 feet; Outside diameter of casing 2 inches.
Name of well driller and driller license number Jose Salas/#1575

4. ADDITIONAL STATEMENT OR EXPLANATIONS:

This piezometer (TP-63) is being installed to determine the presence or absence of shallow groundwater in the Ogallala/Antlers/Gatuna formations on top of the Triassic Dockum group "red bed clays" in support of licensing activities by Waste Control Specialists LLC. No pumping or use of groundwater is intended; the piezometer is being installed solely to monitor groundwater levels, if any.

RENAMED "PZ-41"

STATE ENGINEER OFFICE [illegible] NEW MEXICO 2008 FEB 29 P 1:31

Do Not Write Below This Line

File Number: CP-972 Trn Number: 395941

Form: wr-07

File Number: _____ (For OS. Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
APPLICATION FOR PERMIT TO DRILL AN EXPLORATORY WELL

ACKNOWLEDGEMENT

I, We) Mike Burney (Please Print) affirm that the foregoing statements are true to the best of my knowledge and belief.

Applicant Signature _____ Applicant Signature _____

ACTION OF STATE ENGINEER

This application is approved~~xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx~~ provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare, and further subject to the following conditions:

see attached conditions of approval

Witness my hand and seal this 2nd day of January, 20 08

John R. D'Antonio, Jr., P.E., State Engineer

By: Kenneth M. Fresquez

Kenneth M. Fresquez, Acting District II Supervisor

STATE ENGINEER OFFICE ROSWELL, NEW MEXICO 2008 FEB 29 A 11:31

STATE ENGINEER OFFICE ROSWELL, NEW MEXICO 2007 DEC 31 A 9:58

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File Number: CP-972 Trn Number: 395941

Form: wr-07 page 2 of 2

WL 15
WRB

26

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Waste Control Specialists — Work Phone: 888-789-2783
Contact: Mike Burney — Home Phone: 505-394-4300
Address: 9998 W. Highway 176
City: Andrews — State: TX Zip: 79714

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. NE 1/4 NW 1/4 NW 1/4 Section: 33 Township: 21S Range: 38E N.M.P.M.
in _____ County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 29 s Longitude: 103 d 04 m 13 s

D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number if existing well: CP-972

I. On land owned by (required): Waste Control Specialists

STATE ENGINEER OFFICE
2008 FEB 29 A 11:31
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3. DRILLING CONTRACTOR

License Number: 1575
Name: Talon Drilling, L.P. — Work Phone: 806-467-0607
Agent: Shane Currie — Home Phone: 806-676-8220
Mailing Address: 921 N. Bivins
City: Amarillo — State: TX Zip: 79107

4. DRILLING RECORD

Drilling began: 1/21/08 ; Completed: 2/9/08 ; Type tools: Air Rotary Rig
Size of hole: 5-5/8 in.; Total depth of well: 49 ft.;
Completed well is: Monitor (shallow, artesian);
Depth to water upon completion of well: Dry ft.

Do Not Write Below This Line

File Number: CP-972 — Trn Number: 395941
Form: wr-20 — page 1 of 4

Monitor

21.38.33.112

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	To	Thickness in feet	Description of water-bearing formation	Estimated Yield (GPM)
			Dry	

6. RECORD OF CASING

Diameter (inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
2	Sch 40 PVC	2	0	37	37	N/A	N/A	
2	Sch 40 PVC	2	37	49	12	PVC end cap	37	49

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud	Cubic Feet of Cement	Method of Placement
0	5	5 - 5/8	20		tremie - bentonite/cement
5	35	5 - 5/8	6		poured - bentonite chips

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____

Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feetof Cement
1			
2			
3			
4			
5			

STATE ENGINEER OFFICE
2009 FEB 29 A 11:31

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File Number: CP-972
Form: wr-20

Trn Number: 375941
21, 35, 33, 112

Meritor

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	2	2	Silty Sand, tan
2	7	5	Caliche, Hard, tan
7	30	23	Caliche, Moderate hard, tan
30	45	15	Silty Sand, tan
45	49	5	Clay, reddish

STATE ENGINEER OFFICE
SANTA FE, NEW MEXICO
2000 FEB 29 A 11:3

Do Not Write Below This Line

File Number: CP-972
Form: wr-20

Trn Number: 395941

21, 38, 33, 112

Monitor

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

STATE ENGINEER OFFICE
2008 FEB 29 A 11 31

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Driller

02/26/2008
(mm/dd/year)

FOR STATE ENGINEER USE ONLY

Quad ____; FWL ____; FSL ____; Use _____; Location No. _____

Do Not Write Below This Line

File Number: CP-972
Form: wr-20

Trn Number: 395941

21.38.33.112

Monitor

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER
ROSWELL

John R. D'Antonio, Jr., P.E.
State Engineer

1900 WEST SECOND STREET
ROSWELL, NM 88201
Phone: (575) 622-6521
Fax: (575) 623-8559

January 3, 2008

Waste Control Specialists LLC
% Mike Burney
9998 W. Hwy 176
Andrews, TX 79714

RE: CP-971; CP-972; CP-973: CP-974

Greetings:

Enclosed is your copy of the Exploratory / Monitoring Permits, which have been approved subject to the conditions set forth on the approval page thereof.

In accordance with Condition C, a well record shall be filed in this office twenty days after completion of drilling. The well record is proof of completion of well. IT IS YOUR RESPONSIBILITY TO ASSURE THAT THE WELL LOGS BE FILED WITHIN 20 DAYS OF DRILLING OF THE WELLS.

These permits will expire on or before 01/31/09 unless the wells have been drilled and the well logs filed in this office.

Sincerely,

mjw
for Andy Morley
(575) 622-6521, ext 113

Enclosure

cc: Santa Fe Office

NEW MEXICO STATE ENGINEER
PERMIT TO EXPLORE / MONITOR

SPECIFIC CONDITIONS OF APPROVAL

4 No water shall be appropriated and beneficially used under this permit.

B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.

C Driller's well record must be filed with the State Engineer within 20 days after the well is drilled or driven. Well record forms will be provided by the State Engineer upon request.

C2 No water shall be diverted from this well except for testing purposes which shall not exceed ten (10) cumulative days, and well shall be plugged or capped on or before 01/31/09, unless a permit to use water from this well is acquired from the Office of the State Engineer.

The well shall be constructed, maintained and operated that each water shall be confined to the aquifer in which it is encountered.

LOG The Point of Diversion CP-972 Monitor Well must be completed and the Well Log filed on or before 01/31/09.

ACTION OF STATE ENGINEER

Notice of Intention Rcvd:		Date Rcvd. Corrected:	
Formal Application Rcvd:	12/31/07	Pub. Of Notice Ordered:	
Date Returned – Correction:		Affidavit of Pub. Filed:	

This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the specific conditions listed previously.

Witness my hand and seal this 2nd day of January, 2008.

John R. D'Antonio, Jr., P.E., State Engineer

By: Kenneth M. Fresquez
Kenneth M. Fresquez, Acting District II Supervisor

STATE ENGINEER OFFICE
2008 FEB 29 A 11:51

File Nbr: CP-972 Monitor Well

WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUB, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-101

FILE # 95042.10 SHEET 1 OF 1

WATER LEVEL DATA
NE = Not Encountered

NE FT. W.D.
NE FT. AT COMPLETION
____ FT. AT ____ HR. A.D.
____ FT. AT ____ HR. A.D.

Started	11/22/97
Completed	11/22/97
Driller	Allan Eades
Helper	Freddy
Drilling Method	Air Rotary
Sampling Method	Drill Cuttings

LOCATION Proposed Lea County Landfill
Eunice, New Mexico
CLIENT Camino Real Landfill
Sunland Park, New Mexico

GROUND ELEVATION: 3408.62 (Ft., MSL) | Northing: 9800.52 Easting: 9898.97 | Completion Depth: 50.0

Depth (FT.,bgs)	Lithology Type	STRATA DEPTH SOIL DESCRIPTION GRAPHIC LOG	Strata Depth (FT.,bgs)	SAMPLE DATA: Calcareous	Moisture	Munsell	Notes	Depth (FT.,bgs)
		Dark reddish-brown, fine SAND, some roots, no organics	2.0	No	Dry	7.5YR 5/6		
5.0		Reddish-brown, sandy LOAM to poorly cemented loamy SAND, blocky, friable	6.0	No	Dry	7.5YR 6/6		5.0
10.0		Pinkish-white, sandy CALICHE, moderately weak structure, friable nodules of caliche	12.0	Moderate	Dry	2.5YR 8/2		10.0
15.0		Reddish-brown, loamy fine SAND with moist friable sandy nodules, very few calcareous nodules	21.0					15.0
20.0								20.0
25.0		Light red to pink, calcareous pebbly SAND, pebbles are dominantly quartzite, some rose color banded gniess, little chert, angular. Pebbles increase with depth		Moderate	Dry	2.5YR 7/6		25.0
30.0								30.0
35.0		Pink, sandy, pebbly fine GRAVEL, dominantly quartzite, well graded, angular	34.0 36.0	Moderate	Dry	5YR 7/4		35.0
40.0		Reddish-brown MUDSTONE/CLAYSTONE, sandy, dry, blocky cuttings, some chert pebbles and calcareous clasts, poorly indurated		Slight	Dry	2.5YR 7/3		40.0
45.0				Slight	Barely Damp	2.5YR 4/6		45.0
50.0		BORING TERMINATED AT 50.0'	50.0					50.0

NOTES: 1. Dry monitoring well installed in borehole.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND
W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-102

FILE # 95042.10 SHEET 1 OF 1

WATER LEVEL DATA
NE = Not Encountered
NE FT. W.D.
NE FT. AT COMPLETION
____ FT. AT ____ HR. A.D.
____ FT. AT ____ HR. A.D.

Started	11/20/97
Completed	11/20/97
Driller	Allan Eades
Helper	Freddy
Drilling Method	Air Rotary
Sampling Method	Drill Cuttings

LOCATION Proposed Lea County Landfill
Eunice, New Mexico
CLIENT Camino Real Landfill
Sunland Park, New Mexico

GROUND ELEVATION: 3,392.63 (Ft., MSL) Northing: 8467.05 Easting: 7193.22 Completion Depth: 50.0

Depth (FT., bgs)	Lithology Type	STRATA DEPTH SOIL DESCRIPTION GRAPHIC LOG	Strata Depth (FT. bgs)	SAMPLE DATA: Calcareous	Moisture	Munsell	Notes	Depth (FT., bgs)
5.0		Brown, fine to medium SAND with caliche grains, granular structure, some roots, no organics		No Minor	Dry Dry	7.5YR 4/6 7.5YR 5/6		5.0
10.0		Brownish-white calcareous fine SAND, some calcareous cement sand nodules, not as floury as other caliche, gritty, abundant coarse sand and chert when wetted	7.0	Yes	Dry	7.5YR 7/3		10.0
15.0			16.0					15.0
20.0		Pinkish-white sandy CALICHE, many pebbles of hard angular cherty fine sandstone (not friable)		Yes	Dry	7.5YR 7/3		20.0
25.0		Pink, fine to medium SAND, calcareous very small nodules of caliche and cemented sandstone	21.0	Yes	Dry	2.5YR 7/3		25.0
30.0		White sandy CALICHE with calcareous sand matrix and abundant chert clasts. Clasts are angular, coarse gravel size, brown, white and black, some quartzite	26.0	Yes	Dry	2.5YR 8/2		30.0
35.0		Rose and white PEBBLES, with very little sand, dominantly hard, very angular quartzite. White pebbles are hard limestone with quartzite grains	33.0 36.0	Yes	Barely Damp	2.5YR 6/4		35.0
40.0		Reddish-brown MUDSTONE/CLAYSTONE, sticky, occasionally sandy, micaceous clasts infrequently, poorly indurated		Yes	Barely Damp	2.5YR 4/4		40.0
45.0								45.0
50.0		BORING TERMINATED AT 50.0'	50.0	Yes	Barely Damp	2.5YR 4/6		50.0

NOTES: 1. Dry monitoring well installed in borehole.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND
▽ W.D. - WHILE DRILLING ▼ A.D. - AFTER DRILLING ▼ HOUR(S) AFTER DRILLING

WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-103

FILE # 95042.10 SHEET 1 OF 1

WATER LEVEL DATA
NE = Not Encountered
NE FT. W.D.
NE FT. AT COMPLETION
____ FT. AT ____ HR. A.D.
____ FT. AT ____ HR. A.D.

Started	11/21/97
Completed	11/21/97
Driller	Allan Eades
Helper	Freddy
Drilling Method	Air Rotary
Sampling Method	Drill Cuttings

LOCATION Proposed Lea County Landfill
Eunice, New Mexico
CLIENT Camino Real Landfill
Sunland Park, New Mexico

GROUND ELEVATION: 3,402.54 (Ft., MSL) | Northing: 9711.58 Easting: 8682.07 | Completion Depth: 55.0

Depth (FT., bgs)	Lithology Type	STRATA DEPTH / SOIL DESCRIPTION / GRAPHIC LOG	Strata Depth (FT., bgs)	SAMPLE DATA: Calcareous	Moisture	Munsell	Notes	Depth (FT., bgs)
5.0		Reddish-brown, sandy LOAM to poorly cemented loamy SAND, blocky, friable		No	Dry	7.5YR 4/6		5.0
				No	Barely Damp	7.5YR 5/6		
			6.0					
10.0		Pinkish-white, sandy CALICHE, moderately weak structure, friable nodules of caliche		Yes	Dry	7.5YR 8/4		10.0
			14.0					
15.0		Reddish-brown, loamy fine SAND with moist friable sandy nodules, very few calcareous nodules		Yes	Dry	7.5YR 7/3		15.0
20.0								20.0
25.0			26.0					25.0
30.0		*Light red to pink, calcareous pebbly SAND, pebbles are dominantly quartzite, some rose color banded gniess, little chert, angular. Pebbles increase with depth*		Yes	Dry	7.5YR 8/2		30.0
			33.0					
35.0		Rose and white PEBBLES, with very little sand, dominantly hard, very angular quartzite. White pebbles are hard limestone with quartzite grains	36.0	Yes	Dry	2.5YR 7/3		35.0
40.0		Reddish-brown MUDSTONE/CLAYSTONE, sticky, occasionally sandy, micaceous clasts infrequently, poorly indurated		Yes	Barely Damp	2.5YR 4/4		40.0
45.0				Slight	Barely Damp	2.5YR 4/4		45.0
50.0								50.0
55.0		BORING TERMINATED AT 55.0'	55.0	No	Barely Damp	2.5YR 4/6		55.0

NOTES:
1. Boring grouted after completion with 95% portland cement and 5% bentonite.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND
W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL. 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-104

FILE # 95042.10 SHEET 1 OF 1

WATER LEVEL DATA
NE = Not Encountered
NE FT. W.D.
NE FT. AT COMPLETION
____ FT. AT ____ HR. A.D.
____ FT. AT ____ HR. A.D.

Started	11/21/97
Completed	11/21/97
Driller	Allan Eades
Helper	Freddy
Drilling Method	Air Rotary
Sampling Method	Drill Cuttings

LOCATION Proposed Lea County Landfill
Eunice, New Mexico
CLIENT Camino Real Landfill
Sunland Park, New Mexico

GROUND ELEVATION: 3,404.38 (Ft., MSL) | Northing: 8518.93 Easting: 9678.16 | Completion Depth: 60.0

Depth (FT.,bgs)	Lithology Type	STRATA DEPTH SOIL DESCRIPTION GRAPHIC LOG	Strata Depth (FT.,bgs)	Calcareous	Moisture	Munsell	Notes
		Dark reddish-brown, fine SAND, some roots, no organics	3.0	Slight	Barely Damp	7.5YR 5/4	
5.0		Reddish-brown, sandy LOAM to poorly cemented loamy SAND, blocky, friable	6.0	Slight	Dry	7.5YR 6/4	
10.0		Pinkish-white, sandy CALICHE, moderately weak structure, friable nodules of caliche		Moderate	Dry	2.5YR 8/4	
15.0							
20.0			21.0				
25.0		Light red to pink, calcareous pebbly SAND, pebble are dominantly quartzite, some rose color banded gniess, little chert, angular. Pebbles increase with depth		Moderate	Dry	2.5YR 8/2	
30.0							
35.0							
40.0			40.0				
		Very light brown medium GRAVEL with calcareous sand matrix, gravel is brown when wet, very cherty, angular, white and brown chert, some quartzite	44.0	Moderate	Dry	2.5YR 8/2	
45.0		White to light brown pebbly coarse GRAVEL with some fine calcareous sand matrix. Pebbles are less angular, mostly chert but also gniess and quartzite	46.0				
50.0		Reddish-brown MUDSTONE/CLAYSTONE, sandy, dry, poorly indurated, cuttings are blocky, some chert pebbles and white calcareous clasts		Moderate	Dry	2.5YR 7/4	
				Moderate	Dry	2.5YR 4/6	
55.0				Slight	Barely Damp	2.5YR 5/6	Pitcher Bell Sample obtained at 60.0'
60.0		BORING TERMINATED AT 60.0'	60.0	Slight	Barely Damp	2.5YR 4/4	

NOTES:
1. Boring grouted after completion with 95% portland cement and 5% bentonite.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND
▽ W.D. - WHILE DRILLING ▼ A.D. - AFTER DRILLING ▽ HOUR(S) AFTER DRILLING

WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-105

FILE # 95042.10 SHEET 1 OF 1

WATER LEVEL DATA (NE = Not Encountered)

NE FT. W.D.
NE FT. AT COMPLETION
____ FT. AT ____ HR. A.D.
____ FT. AT ____ HR. A.D.

Started 11/19/97
Completed 11/19/97
Driller Allan Eades
Helper Freddy
Drilling Method Air Rotary
Sampling Method Drill Cuttings

LOCATION Proposed Lea County Landfill
Eunice, New Mexico
CLIENT Camino Real Landfill
Sunland Park, New Mexico

GROUND ELEVATION: 3,388.07 (Ft., MSL) | Northing: 6609.23 Easting: 7335.60 | Completion Depth: 50.0

Depth (FT.,bgs)	Lithology Type	STRATA DEPTH SOIL DESCRIPTION GRAPHIC LOG	Strata Depth (FT.,bgs)	SAMPLE DATA: Calcareous	Moisture	Munsell	Notes	Depth (FT.,bgs)
5.0		Grayish-brown loamy fine SAND, granular, no organics, few calcareous nodules increasing with depth, small roots, no iron staining, friable cemented sandstone nodules (Windblown Sands)		Yes	Dry	7.5YR 8/2		5.0
10.0								10.0
15.0			14.0					15.0
20.0		Pink fine to medium calcareous SAND, with few calcareous nodules that are friable, no other large clasts		Yes	Dry	7.5YR 7/4		20.0
25.0								25.0
30.0		Pink calcareous fine SAND to very fractured sandy CALICHE, few to no chert or other clasts. Caliche is very hard, not friable (CAPROCK?)	28.0					30.0
35.0		White sandy CALICHE with calcareous sand matrix and abundant chert clasts. Clasts are angular, coarse gravel size, brown, white and black, some quartzite	35.0					35.0
40.0		Rose and white PEBBLES, with very little sand, dominantly hard very angular quartzite. White pebbles are hard limestone with quartzite grains.	38.0	Yes	Dry	7.5YR 7/2		40.0
45.0		Reddish-brown sandy LOAM with pebbles of calcareous cemented sandstone (friable).	44.0					45.0
50.0		Reddish-brown MUDSTONE/CLAYSTONE, sandy, dry, blocky cuttings, some calcareous stains, poor indurated/friable.	47.0	Yes	Dry	2.5YR 6/4		50.0
			50.0	Yes	Dry	2.5YR 6/4		

NOTES:
1. Boring grouted after completion with 95% portland cement and 5% bentonite.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND

W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL. 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-106

FILE # 95042.10 SHEET 1 OF 1

WATER LEVEL DATA (NE = Not Encountered)
NE FT. W.D.
NE FT. AT COMPLETION
____ FT. AT ____ HR. A.D.
____ FT. AT ____ HR. A.D.

Started	11/21/97
Completed	11/21/97
Driller	Allan Eades
Helper	Freddy
Drilling Method	Air Rotary
Sampling Method	Drill Cuttings

LOCATION Proposed Lea County Landfill
Eunice, New Mexico
CLIENT Camino Real Landfill
Sunland Park, New Mexico

GROUND ELEVATION: 3,401.06 (Ft., MSL) | Northing: 5968.89 Easting: 9285.60 | Completion Depth: 66.5

Depth (FT., bgs)	Lithology Type	STRATA DEPTH / SOIL DESCRIPTION / GRAPHIC LOG	Strata Depth (FT., bgs)	SAMPLE DATA: Calcareous	Moisture	Munsell	Notes	Depth (FT., bgs)
0		Grayish-brown loamy fine SAND, granular, no organics, few calcareous nodules increasing with depth, small roots, no iron staining, friable cemented sandstone nodules (Windblown Sands)		No	Dry	7.5YR 5/6		0
11		Pink fine to medium calcareous SAND, with few calcareous nodules that are friable, no other large clasts	11.0	Moderate	Dry	2.5YR 8/3		11
16		Pink calcareous fine SAND to very fractured sandy CALICHE, few to no chert or other clasts. Caliche is very hard, not friable (CAPROCK?)	16.0	Moderate	Dry	2.5YR 7/6		16
33		White sandy CALICHE with calcareous sand matrix and abundant chert clasts. Clasts are angular, coarse gravel size, brown, white and black, some quartzite	33.0	Moderate	Dry	2.5YR 8/3		33
63		Rose and white PEBBLES, with very little sand, dominantly hard very angular quartzite. White pebbles are hard limestone with quartzite grains.	63.0	Moderate	Dry	2.5YR 7/3		63
66		Reddish-brown MUDSTONE/CLAYSTONE, sandy, dry, blocky cuttings, some calcareous stains, poor indurated/friable. BORING TERMINATED AT 66.0'	66.0 66.5	Slight	Dry	2.5YR 5/6		66

NOTES:
1. Boring grouted after completion with 95% portland cement and 5% bentonite.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND
W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 • • INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-107

FILE # 95042.10 SHEET 1 OF 2

LOCATION Proposed Lea County Landfill
Eunice, New Mexico
CLIENT Camino Real Landfill
Sunland Park, New Mexico

WATER LEVEL DATA (NE = Not Encountered)
NE FT. W.D.
NE FT. AT COMPLETION
FT. AT HR. A.D.
FT. AT HR. A.D.

Started 11/22/97
Completed 11/22/97
Driller Allan Eades
Helper Freddy
Drilling Method Air Rotary
Sampling Method Drill Cuttings

GROUND ELEVATION: 3,405.43 (Ft., MSL) Northing: 4016.88 Easting: 9228.40 Completion Depth: 92.0

Depth (FT..bgs)	Lithology Type	STRATA DEPTH / SOIL DESCRIPTION / GRAPHIC LOG	Strata Depth (FT..bgs)	SAMPLE DATA: Calcareous	Moisture	Munsell	Notes	Depth (FT..bgs)
0.0		Reddish-brown, loamy fine SAND to sandy LOAM, blocky, friable, very few organics, grading to light brown loamy SAND		No	Dry	7.5YR 6/6		0.0
5.0			6.0					5.0
		Reddish-brown, sandy LOAM to poorly cemented loamy SAND, blocky, friable	8.0	No	Dry	7.5YR 5/6		
10.0		Pink, sandy CALICHE, moderately weak with friable nodules of caliche and poorly cemented sand, fewer nodules with depth		Moderate	Dry	2.5YR 8/3		10.0
			13.0					
15.0		Pink, fine to medium SAND, calcareous very small nodules of caliche and cemented sandstone		Moderate	Dry	2.5YR 5/6		15.0
20.0								20.0
25.0								25.0
30.0			31.0					30.0
35.0		Light red to pink, calcareous pebbly SAND, pebbles are dominantly quartzite, some roase color banded gniess, little chert, angular. Pebbles increase with depth		Moderate	Dry	2.5YR 6/4		35.0
40.0								40.0
45.0								45.0
50.0								50.0
55.0								55.0
60.0								60.0
65.0								65.0
70.0								70.0
75.0		Pink, sandy CALICHE with caprock chips (Continued)	75.0	Moderate	Dry	2.5YR 8/3		75.0

NOTES:
1. Boring grouted after completion with 95% portland cement and 5% bentonite.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND
W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

WB C
WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-107

FILE # 95042.10 SHEET 2 OF 2

Depth (FT., bgs)	Lithology Type	STRATA DEPTH SOIL DESCRIPTION GRAPHIC LOG	Strata Depth (FT., bgs)	SAMPLE DATA: Calcareous	Moisture	Munsell	Notes	Depth (FT., bgs)
		(Continued from page 1) Pink, sandy CALICHE with caprock chips	83.0					
85.0		Reddish-brown, sandy MUDSTONE/CLAYSTONE, dry, poorly indurated, some small calcareous cemented sandstone nodules, little to no mica		Moderate	Dry	2.5YR 5/6		85.0
				Slight	Barely Damp	2.5YR 7/3		
90.0				Slight	Barely Damp	2.5YR 5/3		90.0
		BORING TERMINATED AT 92.0'	92.0	No	Barely Damp	2.5YR 5/2		

NOTES:
1. Boring grouted after completion with 95% portland cement and 5% bentonite.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND

W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-108

FILE # 95042.10 SHEET 1 OF 3

WATER LEVEL DATA (NE = Not Encountered)
NE FT. W.D.
NE FT. AT COMPLETION
____ FT. AT ____ HR. A.D.
____ FT. AT ____ HR. A.D.

Started	11/20/97
Completed	11/20/97
Driller	Allan Eades
Helper	Freddy
Drilling Method	Air Rotary
Sampling Method	Drill Cuttings

LOCATION Proposed Lea County Landfill
Eunice, New Mexico
CLIENT Camino Real Landfill
Sunland Park, New Mexico

GROUND ELEVATION: 3,396.15 (Ft., MSL) Northing: 9696.33 Easting: 7439.48 Completion Depth: 215.0

Depth (FT.,bgs)	Lithology Type	STRATA DEPTH / SOIL DESCRIPTION / GRAPHIC LOG	Strata Depth (FT.,bgs)	SAMPLE DATA: Calcareous	Moisture	Munsell	Notes	Depth (FT.,bgs)
		Brown, fine to medium SAND with caliche grains, granular structure, some roots, no organics	4.0	Yes	Dry	7.5YR 6/3		
5.0		Brownish-white calcareous fine SAND, some calcareous cement sand nodules, not as floury as other caliche, gritty, abundant coarse sand and chert when wetted						5.0
10.0				Strong	Dry	7.5YR 8/2		10.0
15.0			17.0					15.0
20.0		Pinkish-white sandy CALICHE, many pebbles of hard angular cherty fine sandstone (not friable)		Strong	Dry	2.5YR 8/2		20.0
25.0		Pink, very fine SAND, calcareous with occasional pebbles of granite, chert	24.0	Mild	Dry	2.5YR 7/4		25.0
30.0								30.0
35.0		Dark brown sandy CLAYSTONE, weathered, blocky, very few caliche clasts, dry, friable/poorly indurated	33.0	Mild	Dry	2.5YR 6/2		35.0
40.0				Mild	Dry	2.5YR 5/3		40.0
45.0		Reddish-brown MUDSTONE/CLAYSTONE, slicky, occasionally sandy, micaceous clasts infrequently, poorly indurated	46.0					45.0
50.0				Mild	Dry	2.5YR 5/2		50.0
55.0								55.0
60.0				Mild	Dry	2.5YR 5/3		60.0
				Mild	Dry	2.5YR 7/3	Pitcher Bell Sample obtained at 60.0'	
65.0				Mild	Dry	2.5YR 4/3		65.0
70.0								70.0
75.0		(Continued)						75.0

NOTES:
1. Backfilled with cuttings to 120', grouted to surface with 95 with 95% portland cement and 5% bentonite.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND
W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-108

FILE # 95042.10 SHEET 2 OF 3

Depth (FT., bgs)	Lithology/ Type	STRATA DEPTH SOIL DESCRIPTION GRAPHIC LOG	Strata Depth (FT., bgs)	SAMPLE DATA: Calcareous	Moisture	Munsell	Notes	Depth (FT., bgs)
85.0		(Continued from page 1) Reddish-brown MUDSTONE/CLAYSTONE, sticky, occasionally sandy, micaceous clasts infrequently, poorly indurated		Mild	Barely Damp	2.5YR 5/3		85.0
90.0								90.0
95.0								95.0
100.0				Mild	Barely Damp	2.5YR 5/3	Pitcher Bell Sample obtained at 100.0'	100.0
105.0								105.0
110.0								110.0
115.0								115.0
120.0								120.0
125.0				Mild	Barely Damp	2.5YR 4/4		125.0
130.0								130.0
135.0				No	Barely Damp	2.5YR 5/6		135.0
140.0								140.0
145.0				No	Barely Damp	2.5YR		145.0
150.0							Pitcher Bell Sample obtained at 150.0'	150.0
155.0								155.0
160.0								160.0
165.0								165.0
170.0		(Continued)		No	Barely Damp	2.5YR 4/3		170.0

NOTES:
1. Backfilled with cuttings to 120', grouted to surf-ce with 95 with 95% portland cement and 5% bentonite.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND

W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-108

FILE # 95042.10 SHEET 3 OF 3

Depth (FT., bgs)	Lithology Type	STRATA DEPTH SOIL DESCRIPTION GRAPHIC LOG	Strata Depth (FT., bgs)	SAMPLE DATA: Calcareous	Moisture	Munsell	Notes	Depth (FT., bgs)
175.0		(Continued from page 2)						175.0
180.0		Reddish-brown MUDSTONE/CLAYSTONE, slicky, occasionally sandy, micaceous clasts infrequently, poorly indurated						180.0
185.0								185.0
190.0				Mild	Barely Damp	2.5YR 7/2		190.0
			191.0					
195.0		Light reddish-gray SILTSTONE, with green laminae, slick, less sandy, poorly indurated, dry		Mild	Barely Damp	2.5YR 7/1		195.0
200.0			201.0					200.0
205.0		Reddish-brown CLAYSTONE, dry, poorly indurated, no bedding or laminae		Mild	Barely Damp	2.5YR 5/2		205.0
210.0							Plicher Bell Sample obtained at 215.0'	210.0
215.0		BORING TERMINATED AT 215.0'	215.0	No	Barely Damp	2.5YR 4/3		215.0

NOTES:
1. Backfilled with cuttings to 120', grouted to surface with 95 with 95% portland cement and 5% bentonite.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND

W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

WB C
WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-109

FILE # 95042.10 SHEET 1 OF 2

WATER LEVEL DATA
NE = Not Encountered

NE FT. W.D.
NE FT. AT COMPLETION
____ FT. AT ____ HR. A.D.
____ FT. AT ____ HR. A.D.

Started	11/21/97
Completed	11/21/97
Driller	Allan Eades
Helper	Freddy
Drilling Method	Air Rotary
Sampling Method	Drill Cuttings

LOCATION Proposed Lea County Landfill
Eunice, New Mexico
CLIENT Camino Real Landfill
Sunland Park, New Mexico

GROUND ELEVATION: 3,404.76 (Ft., MSL) | Northing: 7717.16 Easting: 9920.72 | Completion Depth: 120.0

Depth (FT., bgs)	Lithology Type	STRATA DEPTH SOIL DESCRIPTION GRAPHIC LOG	Strata Depth (FT., bgs)	SAMPLE DATA: Calcareous	Moisture	Munsell	Notes	Depth (FT., bgs)
5.0		Grayish-brown loamy fine SAND, granular, no organics, few calcareous nodules increasing with depth, small roots, no iron staining, friable cemented sandstone nodules (windblown sands)	8.0					5.0
10.0		Pinkish-white, sandy CALICHE, moderately weak structure, friable nodules of caliche						10.0
15.0								15.0
20.0			21.0					20.0
25.0		Light red to pink, calcareous pebbly SAND, pebbles are dominantly quartzite, some rose color banded gniess, little chert, angular. Pebbles increase with depth						25.0
30.0								30.0
35.0			36.0					35.0
40.0		White, sandy CALICHE with calcareous sand matrix and abundant chert clasts. Clasts are angular, coarse gravel size, brown, white and black, some quartzite						40.0
45.0								45.0
50.0			51.0					50.0
55.0		Rose and white PEBBLES, with very little sand, dominantly hard, very angular quartzite. White pebbles are hard limestone with quartzite grains	56.0					55.0
60.0		Reddish-brown MUDSTONE/CLAYSTONE, sandy, dry, blocky cuttings, some chert pebbles and calcareous clasts, poorly indurated						60.0
65.0								65.0
70.0								70.0
75.0			76.0					75.0
		Reddish-brown, sandy CLAYSTONE, micaceous with occasional green siltstone beds					Pitcher Bell Sample	

NOTES:
1. Boring grouted after completion with 95% portland cement and 5% bentonite.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND
W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-109

FILE # 95042.10 SHEET 2 OF 2

Depth (FT., bgs)	Lithology Type	STRATA DEPTH SOIL DESCRIPTION GRAPHIC LOG	Strata Depth (FT., bgs)	SAMPLE DATA: Calcareous	Moisture	Munsell	Notes	Depth (FT., bgs)
		(Continued)					obtained at 80'	
		(Continued from page 1)						
85.0		Reddish-brown, sandy CLAYSTONE, micaceous with occasional green siltstone beds						85.0
90.0								90.0
95.0								95.0
100.0								100.0
105.0								105.0
110.0								110.0
115.0								115.0
120.0		BORING TERMINATED AT 120'	120.0				Pitcher Bell Sample obtained at 120'	120.0

NOTES:
1. Boring grouted after completion with 95% portland cement and 5% bentonite.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND

W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-110

FILE # 95042.10 SHEET 1 OF 7

WATER LEVEL DATA (NE = Not Encountered)
NE FT. W.D.
NE FT. AT COMPLETION
____ FT. AT ____ HR. A.D.
____ FT. AT ____ HR. A.D.

Started 11/17/97
Completed 11/19/97
Driller Allan Eades
Helper Freddy
Drilling Method Air Rotary
Sampling Method Drill Cuttings

LOCATION Proposed Lea County Landfill
Eunice, New Mexico
CLIENT Camino Real Landfill
Sunland Park, New Mexico

GROUND ELEVATION: 3,397.38 (Ft., MSL) Northing: 7924.34 Easting: 8019.53 Completion Depth: 600.0

Depth (FT.,bgs)	Lithology Type	STRATA DEPTH / SOIL DESCRIPTION / GRAPHIC LOG	Strata Depth (FT.,bgs)	Calcareous	Moisture	Munsell	Notes	Depth (FT.,bgs)
		Yellowish-red to reddish-brown, loamy fine SAND, weak granular structure,	2.0	No	Dry	5YR 5/8		
5.0		Reddish-brown, loamy fine SAND to sandy LOAM, blocky, friable, very few organics, grading to light brown loamy SAND		No	Dry	5YR 6/8		5.0
10.0				No	Dry	5YR 6/8		10.0
		Pink, sandy CALICHE, moderately weak with friable nodules of caliche and poorly cemented sand, fewer nodules with depth	11.0	Strong	Dry	5YR 8/4		
15.0								15.0
20.0				Mild	Dry	5YR 8/3		20.0
		Pink, fine to medium SAND, calcareous very small nodules of caliche and cemented sandstone	24.0					
25.0								25.0
30.0								30.0
35.0								35.0
				Mild	Dry	5YR 8/2		
40.0			39.0					40.0
		Reddish-brown, pebbly, coarse GRAVEL with loamy sand matrix. Pebbles are predominantly chert, white, red, black and rose quartzite, all angular to subangular		Mild	Dry	2.5YR 6/4		
45.0		Light reddish-brown, CLAYSTONE with trace sand and calcareous cemented sandtone pebbles, cuttings are blocky, some chert	43.0					45.0
			49.0	Mild	Dry	2.5YR 6/3		
50.0		Reddish-brown, sandy MUDSTONE/CLAYSTONE, dry, poorly indurated, some small calcareous cemented sandstone nodules, little to no mica		Mild	Dry	2.5YR 4/6		50.0
55.0								55.0
				Mild	Dry	2.5YR 6/3		
60.0								60.0
				Mild	Dry	2.5YR 4/6		
65.0								65.0
70.0								70.0
75.0								75.0
		(Continued)		Mild	Dry	2.5YR 6/4		

NOTES: 1: Boring grouted after completion with 95% portland cement and 5% bentonite.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND
W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

WBC WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-110

FILE # 95042.10 SHEET 2 OF 7

Depth (FT., bgs)	Lithology Type	STRATA DEPTH SOIL DESCRIPTION GRAPHIC LOG	Strata Depth (FT., bgs)	SAMPLE DATA Calcareous	Moisture	Munsell	Notes	Depth (FT., bgs)
85.0		(Continued from page 1) Reddish-brown, sandy MUDSTONE/CLAYSTONE, dry, poorly indurated, some small calcareous cemented sandstone nodules, little to no mica	84.0					85.0
90.0		Reddish-brown, sandy CLAYSTONE, micaceous with occasional green siltstone beds		Minor	Barely Damp	2.5YR 4/4	Pitcher Bell Sample obtained at 90'	90.0
95.0								95.0
100.0								100.0
105.0								105.0
110.0			110.0					110.0
115.0		Reddish-brown, sandy MUDSTONE/CLAYSTONE, dry, poorly indurated, some small calcareous cemented sandstone nodules, little to no mica		Slight	Barely Damp	2.5YR 4/4		115.0
120.0								120.0
125.0								125.0
130.0				Yes	Barely Damp	2.5YR 3/4		130.0
135.0								135.0
140.0							Pitcher Bell Sample obtained at 140'	140.0
145.0				Yes	Barely Damp	2.5YR 4/4		145.0
150.0								150.0
155.0				No	Barely Damp	2.5YR 4/6		155.0
160.0								160.0
165.0								165.0
170.0		(Continued)						170.0

NOTES: 1. Boring grouted after completion with 95% portland cement and 5% bentonite.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND

▽ W.D. - WHILE DRILLING ▼ A.D. - AFTER DRILLING ▽ HOUR(S) AFTER DRILLING

WBC WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-110

FILE # 95042.10 SHEET 3 OF 7

Depth (FT., bgs)	Lithology Type	STRATA DEPTH SOIL DESCRIPTION GRAPHIC LOG	Strata Depth (FT., bgs)	SAMPLE DATA Calcareous	Moisture	Munsell	Notes	Depth (FT., bgs)
175.0		(Continued from page 2)						175.0
180.0		Reddish-brown, sandy MUDSTONE/CLAYSTONE, dry, poorly indurated, some small calcareous cemented sandstone nodules, little to no mica						180.0
185.0								185.0
190.0			190.0					190.0
195.0		Light reddish-brown MUDSTONE, slick, siltier, no bedding		No	Barely Damp	2.5YR 6/3		195.0
200.0								200.0
205.0								205.0
210.0			211.0					210.0
215.0		Reddish-brown MUDSTONE/CLAYSTONE, micaceous, no bedding or laminne						215.0
220.0				No	Barely Damp	2.5YR 5/4		220.0
225.0				No	Dry	2.5YR 4/6		225.0
230.0							Pitcher Bell Sample obtained at 230'	230.0
235.0								235.0
240.0				No	Dry	2.5YR 5/4		240.0
245.0								245.0
250.0				No	Dry	2.5YR 4/6		250.0
255.0								255.0
260.0				No	Dry	2.5YR 6/3		260.0
		(Continued)						

NOTES:
1. Boring grouted after completion with 95% portland cement and 5% bentonite.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND
W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-110

FILE # 95042.10 SHEET 4 OF 7

Depth (FT., bgs)	Lithology Type	STRATA DEPTH SOIL DESCRIPTION GRAPHIC LOG	Strata Depth (FT., bgs)	SAMPLE DATA Calcareous	Moisture	Munsell	Notes	Depth (FT., bgs)
265.0		(Continued from page 3)						265.0
270.0				No	Dry	2.5YR 5/6		270.0
275.0		Reddish-brown, MUDSTONE/CLAYSTONE, micaceous, no bedding or laminae						275.0
280.0								280.0
285.0								285.0
290.0				Yes	Dry	2.5YR 5/4		290.0
295.0								295.0
300.0								300.0
305.0								305.0
310.0								310.0
315.0								315.0
320.0								320.0
325.0				No	Dry	2.5YR 4/4		325.0
330.0								330.0
335.0								335.0
340.0								340.0
345.0				Yes	Dry	2.5YR 5/4		345.0
350.0							Pitcher Bell Sample obtained at 350'	350.0
355.0		(Continued)						355.0

NOTES:
1. Boring grouted after completion with 95% portland cement and 5% bentonite.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND

W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-110

FILE # 95042.10 SHEET 5 OF 7

Depth (FT., bgs)	Lithology Type	STRATA DEPTH SOIL DESCRIPTION GRAPHIC LOG	Strata Depth (FT., bgs)	SAMPLE DATA Calcareous	Moisture	Munsell	Notes	Depth (FT., bgs)
360.0		(Continued from page 4)						360.0
365.0		Reddish-brown, MUDSTONE/CLAYSTONE, micaceous, no bedding or laminae		Minor	Dry	2.5YR 4/4		365.0
370.0								370.0
375.0				Minor	Dry	2.5YR 4/6		375.0
380.0								380.0
385.0								385.0
390.0								390.0
395.0								395.0
400.0								400.0
405.0								405.0
410.0								410.0
415.0								415.0
420.0								420.0
425.0								425.0
430.0								430.0
435.0				Minor	Dry	2.5YR 4/8		435.0
440.0								440.0
445.0		(Continued)						445.0

NOTES:
1. Boring grouted after completion with 95% portland cement and 5% bentonite.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND

W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-110

FILE # 95042.10 SHEET 6 OF 7

Depth (FT., bgs)	Lithology Type	STRATA DEPTH SOIL DESCRIPTION GRAPHIC LOG	Strata Depth (FT., bgs)	SAMPLE DATA Calcareous	Moisture	Munsell	Notes	Depth (FT., bgs)
450.0		(Continued from page 5)						450.0
455.0		Reddish-brown, MUDSTONE/CLAYSTONE, micaceous, no bedding or laminae						455.0
460.0								460.0
465.0								465.0
470.0								470.0
475.0								475.0
480.0								480.0
485.0								485.0
490.0								490.0
495.0								495.0
500.0								500.0
505.0								505.0
510.0								510.0
515.0								515.0
520.0				Minor	Dry	2.5YR 5/4		520.0
525.0								525.0
530.0								530.0
535.0		(Continued)						535.0

NOTES:
1. Boring grouted after completion with 95% portland cement and 5% bentonite.
2. Drilling Company: Bades Drilling and Pump Service.

LEGEND

W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-110

FILE # 95042.10 SHEET 7 OF 7

Depth (FT., bgs)	Lithology Type	STRATA DEPTH SOIL DESCRIPTION GRAPHIC LOG	Strata Depth (FT., bgs)	SAMPLE DATA Calcareous	Moisture	Munsell	Notes	Depth (FT., bgs)
				Minor	Dry	7.5YR 5/4		
545.0		(Continued from page 6)						545.0
		Reddish-brown, MUDSTONE/CLAYSTONE, micaceous, no bedding or laminae						
550.0								550.0
555.0				Minor	Dry	2.5YR 4/4		555.0
560.0								560.0
565.0								565.0
				Yes	Dry	2.5YR 6/3		
570.0				Yes	Dry	2.5YR 6/2		570.0
				Yes	Dry	2.5YR 4/4		
575.0								575.0
			576.0					
580.0		Light reddish-gray, clayey SILTSTONE, gritty, sandy, no bedding		Yes	Dry	2.5YR 6/1		580.0
585.0								585.0
			588.0	Yes	Dry	2.5YR 6/1		
590.0		Reddish-gray, silty SANDSTONE						590.0
				Yes	Dry	2.5YR 6/1		
595.0			595.0					595.0
		Light reddish-gray, silty SANDSTONE		Yes	Dry	2.5YR 7/1		
600.0		BORING TERMINATED AT 600 FEET	600.0					600.0

NOTES:
1. Boring grouted after completion with 95% portland cement and 5% bentonite.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND

W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-111

FILE # 95042.10 SHEET 1 OF 7

WATER LEVEL DATA
NE = Not Encountered
598.0 FT. W.D.
____ FT. AT COMPLETION
____ FT. AT ____ HR. A.D.
____ FT. AT ____ HR. A.D.

Started	11/13/97
Completed	11/13/97
Driller	Allan Eades
Helper	Freddy
Drilling Method	Air Rotary
Sampling Method	Drill Cuttings

LOCATION Proposed Lea County Landfill
Eunice, New Mexico
CLIENT Camino Real Landfill
Sunland Park, New Mexico

GROUND ELEVATION: 3,404.35 (Ft., MSL) Northing: 9140.96 Easting: 9138.76 Completion Depth: 598.0

Depth (FT.,bgs)	Lithology Type	STRATA DEPTH / SOIL DESCRIPTION / GRAPHIC LOG	Strata Depth (FT.,bgs)	Calcareous	Moisture	Munsell	Notes	Depth (FT.,bgs)
5.0		Yellowish-red to reddish-brown loamy fine SAND, weak granular structure, friable, very few organics, some roots, increasing caliche nodules with depth and slightly loamier with depth		No	Dry	5YR 5/6		5.0
10.0		Pale red to pinkish-white fine sandy CALICHE, moderately weak, friable nodules of caliche	8.0	Strong	Dry	2.5YR 7/2		10.0
15.0		Reddish-brown loamy fine SAND with moist sandy loam nodules, nodules are friable and slightly sticky, very little calcareous concretions	12.0	Mild	Dry	2.5YR 6/6		15.0
20.0		Light brown loamy fine SAND, pisolitic, slightly indurated with calcareous concretions and sandy loam nodules, coated with carbonates, some organic matter, one chert pebble	20.0	Mild	Dry	2.5YR 6/6		20.0
25.0		Pink to white CALICHE, probably massive, cuttings are very fine, flour-like, few sandy nodules, friable when wet	25.0	Strong	Dry	2.5YR 8/1		25.0
30.0								30.0
35.0		Very light brown medium GRAVEL with calcareous sand matrix, gravel is brown when wet, very cherty, angular, white and brown chert, some quartzite	35.0	Mild	Dry	2.5YR 8/1		35.0
40.0		White to light brown pebbly coarse GRAVEL with some fine calcareous sand matrix. Pebbles are less angular, mostly chert but also gniess and quartzite	37.0	Mild	Dry	2.5YR 8/3		40.0
45.0		Reddish-brown MUDSTONE/CLAYSTONE, sandy, dry, poorly indurated, cuttings are blocky, some chert pebbles and white calcareous clasts	40.0	Mild	Dry	2.5YR 5/3		45.0
50.0		Reddish-brown sandy MUDSTONE/CLAYSTONE, micaceous, especially biotile, occasional chert pieces, occasional green siltstone beds, otherwise massive, very few laminae or bedding, moderately indurated	44.0	Mild	Dry	2.5YR 4/4		50.0
55.0				No	Barely Damp	10R 4/6		55.0
60.0								60.0
65.0				Mild	Barely Damp	2.5YR 5/3		65.0
70.0								70.0
75.0		(Continued)		Mild	Barely Damp	2.5YR 6/4	Pitcher Bell Sample obtained at 80'	75.0

NOTES:
1. Boring grouted after completion with 95% portland cement and 5% bentonite.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND
W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-111

FILE # 95042.10 SHEET 2 OF 7

Depth (FT., bgs)	Lithology Type	STRATA DEPTH SOIL DESCRIPTION GRAPHIC LOG	Strata Depth (FT., bgs)	SAMPLE DATA Calcareous	Moisture	Munsell	Notes	Depth (FT., bgs)
85.0		(Continued from page 1) Reddish-brown sandy, MUDSTONE/CLAYSTONE, micaceous, especially biotite, occasional chert pieces, occasional green siltstone beds, otherwise massive, very few laminae or bedding, moderately indurated		Minor	Barely Damp	2.5YR 5/4		85.0
90.0				Slight	Barely Damp	2.5YR 6/3		90.0
95.0								95.0
100.0								100.0
105.0				Yes	Barely Damp	2.5YR 4/4		105.0
110.0								110.0
115.0								115.0
120.0				Yes	Barely Damp	2.5YR 5/3		120.0
125.0								125.0
130.0								130.0
135.0								135.0
140.0				No	Barely Damp	2.5YR 5/3	Pitcher Bell Sample obtained at 140'	140.0
145.0								145.0
150.0								150.0
155.0								155.0
160.0								160.0
165.0								165.0
170.0		(Continued)						170.0

NOTES: 1. Boring grouted after completion with 95% portland cement and 5% bentonite.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND

W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-111

FILE # 95042.10 SHEET 3 OF 7

Depth (FT., bgs)	Lithology Type	STRATA DEPTH / SOIL DESCRIPTION / GRAPHIC LOG	Strata Depth (FT., bgs)	SAMPLE DATA: Calcareous	Moisture	Munsell	Notes	Depth (FT., bgs)
175.0		(Continued from page 2)						175.0
180.0		Reddish-brown sandy MUDSTONE/CLAYSTONE, micaceous, especially biotite, occasional chert pieces, occasional green siltstone beds, otherwise massive, very few laminae or bedding, moderately indurated		No	Barely	2.5YR 5/6		180.0
				No	Barely	2.5YR 4/4		
185.0			185.0					185.0
		Light reddish-brown, clayey SILTSONE	187.0	No	Dry	2.5YR 6/4		
190.0		Red, clayey SILTSTONE						190.0
				No	Barely Damp	2.5YR 5/6		
195.0			195.0					195.0
		Pink, clayey SILTSTONE						
200.0				No	Barely Damp	7.5YR 7/3	Pitcher Bell Sample obtained at 200'	200.0
205.0								205.0
210.0			211.0					210.0
215.0		Reddish-brown, sandy MUDSTONE/CLAYSTONE, micaceous, especially biotite, occasional chert pieces, occasional green siltstone beds, otherwise massive, very few laminae or bedding, moderately indurated		No	Dry	2.5YR 6/2		215.0
220.0								220.0
225.0								225.0
230.0								230.0
235.0								235.0
240.0								240.0
245.0								245.0
250.0								250.0
				No	Dry	2.5YR 4/6		
255.0								255.0
260.0				Yes	Dry	2.5YR 4/4		260.0
		(Continued)						

NOTES:
1. Boring grouted after completion with 95% portland cement and 5% bentonite.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND

W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-111

FILE # 95042.10 SHEET 4 OF 7

Depth (FT., bgs)	Lithology Type	STRATA DEPTH SOIL DESCRIPTION GRAPHIC LOG	Strata Depth (FT., bgs)	SAMPLE DATA Calcareous	Moisture	Munsell	Notes	Depth (FT., bgs)
265.0		(Continued from page 3)						265.0
270.0								270.0
275.0		Reddish-brown, sandy MUDSTONE/CLAYSTONE, micaceous, especially biotite, occasional chert pieces, occasional green siltstone beds, otherwise massive, very few laminae or bedding, moderately indurated						275.0
280.0								280.0
285.0								285.0
290.0								290.0
295.0				No	Dry	10R 4/6		295.0
300.0								300.0
305.0								305.0
310.0								310.0
315.0								315.0
320.0								320.0
325.0								325.0
330.0				Yes	Dry	10R 4/4		330.0
335.0								335.0
340.0								340.0
345.0								345.0
350.0								350.0
355.0		(Continued)						355.0

NOTES:
1. Boring grouted after completion with 95% portland cement and 5% bentonite.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND

W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-111

FILE # 95042.10 SHEET 5 OF 7

Depth (FT., bgs)	Lithology Type	STRATA DEPTH SOIL DESCRIPTION GRAPHIC LOG	Strata Depth (FT., bgs)	SAMPLE DATA Calcareous	Moisture	Munsell	Notes	Depth (FT., bgs)
360.0		(Continued from page 4)						360.0
365.0		Reddish-brown, sandy MUDSTONE/CLAYSTONE, micaceous, especially biotile, occasional chert pieces, occasional green siltstone beds, otherwise massive, very few laminae or bedding, moderately indurated						365.0
370.0				Minor	Dry	2.5YR 4/6		370.0
375.0								375.0
380.0								380.0
385.0								385.0
390.0				Minor	Dry	2.5YR 5/6		390.0
395.0								395.0
400.0								400.0
405.0								405.0
410.0								410.0
415.0								415.0
420.0								420.0
425.0								425.0
430.0								430.0
435.0				Minor	Dry	2.5YR 4/6		435.0
440.0								440.0
445.0		(Continued)						445.0

NOTES: 1. Boring grouted after completion with 95% portland cement and 5% bentonite.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND

W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-111

FILE # 95042.10 SHEET 6 OF 7

Depth (FT., bgs)	Lithology Type	STRATA DEPTH SOIL DESCRIPTION GRAPHIC LOG	Strata Depth (FT., bgs)	SAMPLE DATA Calcareous	Moisture	Munsell	Notes	Depth (FT., bgs)
450.0		(Continued from page 5)						450.0
455.0								455.0
460.0		Reddish-brown, sandy MUDSTONE/CLAYSTONE, micaceous, especially biotite, occasional chert pieces, occasional green siltstone beds, otherwise massive, very few laminae or bedding, moderately indurated						460.0
465.0								465.0
470.0								470.0
475.0								475.0
480.0								480.0
485.0							Pitcher Bell Sample obtained at 485'	485.0
490.0								490.0
495.0								495.0
500.0								500.0
505.0								505.0
510.0								510.0
515.0								515.0
520.0								520.0
525.0				Minor	Dry	2.5YR 6/4		525.0
530.0								530.0
535.0		(Continued)						535.0

NOTES: 1. Boring grouted after completion with 95% portland cement and 5% bentonite.
2. Drilling Company: Esdes Drilling and Pump Service.

LEGEND

W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

WEAVER BOOS CONSULTANTS, INC.
200 S. MICHIGAN AVENUE, CHICAGO IL, 60604
(312) 922-1030 * * INDIANA (219) 923-9609

LOG OF SOIL BORING NO. B-111

FILE # 95042.10 SHEET 7 OF 7

Depth (FT., bgs)	Lithology Type	STRATA DEPTH SOIL DESCRIPTION GRAPHIC LOG	Strata Depth (FT., bgs)	SAMPLE DATA: Calcareous	Moisture	Munsell	Notes	Depth (FT., bgs)
		(Continued from page 6)						
545.0		Reddish-brown, sandy MUDSTONE/CLAYSTONE, micaceous, especially biotite, occasional chert pieces, occasional green siltstone beds, otherwise massive, very few laminae or bedding, moderately indurated						545.0
550.0								550.0
555.0								555.0
560.0								560.0
				Minor	Dry	2.5YR 6/4		
565.0								565.0
		Pink CLAYSTONE	566.0					
			568.0	Minor	Dry	2.5YR 8/3		
570.0		Light reddish-gray, clayey SILTSTONE						570.0
				Yes	Dry	2.5YR 7/1		
575.0								575.0
		Reddish-gray, sandy SILTSTONE	576.0	Yes	Dry	10R 6/1		
580.0			581.0					580.0
		Reddish-gray, silty SANDSTONE						
585.0				Yes	Dry	10R 6/1		585.0
590.0								590.0
595.0								595.0
		BORING TERMINATED AT 598 FEET	598.0					

NOTES:
1. Boring grouted after completion with 95% portland cement and 5% bentonite.
2. Drilling Company: Eades Drilling and Pump Service.

LEGEND
W.D. - WHILE DRILLING A.D. - AFTER DRILLING HOUR(S) AFTER DRILLING

APPENDIX H.C

SITE BORING LOGS

LOG OF BORING NO. BH-01

Project Description: CK Disposal

CAREL

Location: Eunice, NM
Top of PVC El.: feet MSL
Surface El.: 3382 feet MSL
Completion Depth: 175 feet
Date Boring Started: 5/26/2015
Date Boring Completed: 5/26/2015

Northing: 521233.96
Easting: 924924.72

Depth, feet	Samples	Symbol/USCS	MATERIAL DESCRIPTION	Monitor Well Construction Details	Monitor Well Description
5–15			CLAYEY SAND, brown to reddish brown, moderately well sorted, subrounded, fine to medium grained, slightly moist, none HCL reaction		
20–35			SILTY SAND, with caliche, light brown to white, well sorted, well rounded, very fine to fine grained, dry, strong HCL reaction		
40–175			CLAYSTONE, reddish brown some gray, slightly moist to dry, weak HCL reaction		

Drilling Contractor: HCl Drilling
Drilling Method: Air Rotary
Sampling Method: Cuttings
Geologist: Steven J. Wimmer
Project No.: 15-04-22

Groundwater Observations	
Date	Depth to Water (ft)
5/26/15	Dry

Remarks: 5 1/8" diameter boring; TH60 Atlas Copco Drill Rig

GROUNDWATER WELL - B&W EUNICE.GPJ CAREL2.GDT 9/16/15

LOG OF BORING NO. BH-01
PAGE 1 of 1

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.

▽ Water level at time of drilling.
▼ Water level at end of drilling.
▽ Water level after drilling.

LOG OF BORING NO. BH-02

Project Description: CK Disposal

Location: Eunice, NM
Top of PVC El.: feet MSL
Surface El.: 3391.8 feet MSL
Completion Depth: 175 feet
Date Boring Started: 5/26/2015
Date Boring Completed: 5/26/2015
Northing: 521273.70
Easting: 928310.35

Depth, feet	Samples	Symbol/USCS	MATERIAL DESCRIPTION	Monitor Well Construction Details	Monitor Well Description
5–10			CLAYEY SAND, brown to reddish brown, moderately well sorted, subrounded, fine to medium grained, slightly moist, none HCL reaction		
10–35			SILTY SAND, with caliche, light brown to white, well sorted, well rounded, very fine to fine grained, dry, strong HCL reaction		
35–70			CLAYSTONE, reddish brown with gray, dry, weak HCL reaction, some purple		
70–175			less gray and purple; slightly moist to dry		

Drilling Contractor: HCI Drilling
Drilling Method: Air Rotary
Sampling Method: Cuttings
Geologist: Steven J. Wimmer
Project No.: 15-04-22

Groundwater Observations	
Date	Depth to Water (ft)
5/26/15	Dry

Remarks: 5 1/8" diameter boring; TH60 Atlas Copco Drill Rig

GROUNDWATER WELL - B&W EUNICE.GPJ CAREL2.GDT 9/16/15

LOG OF BORING NO. BH-02
PAGE 1 of 1

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.

▽ Water level at time of drilling.
▼ Water level at end of drilling.
▼ Water level after drilling.

LOG OF BORING NO. BH-03

Project Description: CK Disposal

Location: Eunice, NM
Top of PVC El.: feet MSL
Surface El.: 3386.3 feet MSL
Completion Depth: 175 feet
Date Boring Started: 5/26/2015
Date Boring Completed: 5/26/2015

Northing: 520437.21
Easting: 926605.28

Depth, feet	Samples	Symbol/USCS	MATERIAL DESCRIPTION	Monitor Well Construction Details	Monitor Well Description
5			CLAYEY SAND, reddish brown, moderately well sorted, subrounded, fine to medium grained, slightly moist, none HCL reaction		
10					
15			SILTY SAND, with caliche, light brown to white, well sorted, well rounded, very fine to fine grained, dry, strong HCL reaction		
20					
25					
30					
35					
40			Quartz and Caliche gravel up to 1" in diameter		
45			CLAYSTONE, reddish brown some gray, slightly moist to dry, weak HCL reaction		
50					
55					
60					
65					
70					
75					
80					
85					
90					
95					
100					
105					
110					
115					
120					
125					
130			medium brown from 130' to 135'		
135			reddish brown to brown		
140					
145					
150					
155					
160					
165					
170					
175					

Drilling Contractor: HCI Drilling
Drilling Method: Air Rotary
Sampling Method: Cuttings
Geologist: Steven J. Wimmer
Project No.: 15-04-22

Groundwater Observations	
Date	Depth to Water (ft)
5/26/15	Dry

Remarks: 5 1/8" diameter boring; TH60 Atlas Copco Drill Rig

GROUNDWATER WELL - B&W EUNICE.GPJ CAREL2.GDT 9/16/15

LOG OF BORING NO. BH-03
PAGE 1 of 1

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.

Water level at time of drilling.
Water level at end of drilling.
Water level after drilling.

LOG OF BORING NO. BH-04

Project Description: CK Disposal

CAREL

Location: Eunice, NM
Top of PVC El.: feet MSL
Surface El.: 3374.1 feet MSL
Completion Depth: 175 feet
Date Boring Started: 5/26/2015
Date Boring Completed: 5/26/2015

Northing: 519600.94
Easting: 924941.30

Depth, feet	Samples	Symbol/USCS	MATERIAL DESCRIPTION	Monitor Well Construction Details	Monitor Well Description
5			CLAYEY SAND, reddish brown, moderately well sorted, subrounded, fine to medium grained, slightly moist, none HCL reaction		
10					
15					
20			SILTY SAND, with caliche, light brown to white, well sorted, well rounded, very fine to fine grained, dry, strong HCL reaction		
25					
30					
35			intermixed reddish brown claystone to 50'		
40					
45					
50			CLAYSTONE, reddish brown to purple, dry, weak HCL reaction		
55					
60					
65					
70					
75					
80					
85					
90			dark brown to reddish brown		
95					
100					
105					
110					
115					
120					
125					
130					
135					
140					
145					
150					
155					
160					
165					
170					
175					

GROUNDWATER WELL - B&W: EUNICE.GPJ CAREL2.GDT 9/16/15

Drilling Contractor: HCI Drilling
Drilling Method: Air Rotary
Sampling Method: Cuttings
Geologist: Steven J. Wimmer
Project No.: 15-04-22

Groundwater Observations	
Date	Depth to Water (ft)

Remarks: 5 1/8" diameter boring; TH60 Atlas Copco Drill Rig

LOG OF BORING NO. BH-04
PAGE 1 of 1

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.

▽ Water level at time of drilling.
▼ Water level at end of drilling.
▽ Water level after drilling.

LOG OF BORING NO. BH-05

Project Description: CK Disposal

Location: Eunice, NM
Top of PVC El.: feet MSL
Surface El.: 3386.1 feet MSL
Completion Depth: 175 feet
Date Boring Started: 5/27/2015
Date Boring Completed: 5/27/2015
Northing: 519636.20
Easting: 928326.86

Depth, feet	Samples	Symbol/USCS	MATERIAL DESCRIPTION	Monitor Well Construction Details	Monitor Well Description
5			CLAYEY SAND, reddish brown, moderately well sorted, subrounded, fine to medium grained, slightly moist, none HCL reaction		
10					
15			SILTY SAND, with caliche, light brown to white, well sorted, well rounded, very fine to fine grained, dry, strong HCL reaction		
20					
25					
30			intermixed gravel to 45'		
35					
40					
45			CLAYSTONE, reddish brown, slightly moist to dry, weak HCL reaction		
50					
55					
60					
65					
70					
75					
80					
85					
90			medium brown, some sand		
95					
100			dark brown to reddish brown		
105					
110			dark brown and purple		
115					
120					
125					
130			reddish brown to dark brown		
135					
140					
145					
150					
155					
160			dark brown and purple		
165					
170			reddish brown		
175					

Drilling Contractor: HCI Drilling
Drilling Method: Air Rotary
Sampling Method: Cuttings
Geologist: Steven J. Wimmer
Project No.: 15-04-22

Groundwater Observations	
Date	Depth to Water (ft)

Remarks: 5 1/8" diameter boring; TH60 Atlas Copco Drill Rig

GROUNDWATER WELL - B&W EUNICE.GPJ CAREL2.GDT 9/18/15

LOG OF BORING NO. BH-05
PAGE 1 of 1

The stratification lines represent approximate strata boundaries. In situ, the transition may be gradual.

▽ Water level at time of drilling.
▼ Water level at end of drilling.
▼ Water level after drilling.

ATTACHMENT I
SAMPLING AND ANALYSIS PLAN
(SAP)

PROPOSED C.K. DISPOSAL E&P LANDFILL AND PROCESSING FACILITY

Eunice, New Mexico

Project No: 15-04-22

Prepared for:

C.K. Disposal LLC

October 2015

Prepared by:

PSC

The CAREL CORPORATION

CONTENTS

1.0 SAMPLING PROCEDURES

This Sampling and Analysis Plan (SAP) has been prepared for the C.K. Disposal E&P Landfill and Processing Facility.

The following sampling procedures are designed to aid in obtaining the earliest possible detection of a potential fluid release from the Landfill. Chemical analysis of water samples, if present, and comparison to leachate samples and/or samples from a leak detection system will be used to determine whether the water is a result of a release from the facility. The presence of water in the vadose zone monitoring wells may be the result of infiltration from other sources such as surface water during excavation, construction of the landfill cells, or from proximal stormwater detention ponds.

These or equivalent procedures are to be followed by all personnel conducting vadose zone monitoring.

1.1 MONITORING SCHEDULE

After construction begins, the monitoring wells will be monitored on a monthly basis for a period of 12 months. After 12 months, the monitoring frequency will reduce to semi-annual.

1.2 FIELD SETUP

The well-head area should be examined for anything unusual such as damage to the well head, spilled materials, etc., and all observations recorded on the field data sheet. Insect repellent or other topical skin applications that contain organic compounds should not be used by sampling personnel. Plastic sheeting should be placed around the well riser and sample handling area to prevent contact with the surrounding ground.

Sampling equipment should include a calibrated 5-gallon bucket for measuring bailed or purged well fluids and a small glass container for measuring temperature, specific conductance, and pH. A decontamination area should be set up and should include a water bucket, rinsing bucket, phosphate-free detergent, and additional rinsing bottles.

1.3 FIELD MEASUREMENTS

The monitoring wells will be sounded for the presence of water. All measurements should be taken from the top of the well casing and the measurement recorded on field data sheets. If the well is dry the well depth measurement should be recorded with the same electronic device and recorded on the field data sheet. The water-level measuring device should be decontaminated between wells. Water levels or well depths are to be measured and reported to the nearest hundredth of a foot.

1.4 WELL PURGING

Three well volumes of water should be removed from each well in order to obtain a representative sample and not "stagnant" water from the borehole or filter pack. If all water is removed from the well before three well volumes are obtained, purging will be deemed to be complete. Well volumes can be measured with use of a calibrated 5-gallon bucket.

Non-dedicated, reusable purging and sampling equipment is to be decontaminated in accordance with Section 1.10. Appropriate disposable gloves are to be worn during purging and sampling to reduce the possibility of cross-contamination between wells.

1.5 SAMPLE COLLECTION

If the water-level measuring device indicates the presence of water within the well, samples will be collected using a dedicated or disposable sampling bailer. If there is a sufficient quantity of water to allow sample collection, the water will be tested for the field parameters (temperature, specific conductance, and pH) prior to sampling.

The following sampling procedures should be performed:

- The temperature, specific conductance, and pH of a sample collected in a container not used for laboratory analysis should be measured in that order and recorded on the field data sheet.

- The samples should be collected by pouring the water from the bailer directly into each of the required containers.

- Under normal conditions, the sample bottles must be filled in the order of decreasing volatilization sensitivity. Generally, that will be in the following order, as applicable:

  Volatile organic compounds (VOC)
  RCRA Metals
  Other inorganic parameters

Filling VOC sample containers involves extra care. The water should be gently discharged into each vial, until a positive meniscus is formed over the top of the container. After the cap has been placed on the vial and tightened, the vial should be checked for air bubbles by turning it upside down and tapping with your finger. If an air bubble is seen rising to the bottom of the vial, the process outlined above should be repeated. Air bubbles can be eliminated by removing the cap, topping off the vial with water to a positive meniscus, and resealing. If no air bubbles are seen in each vial, the process is complete.

1.6 SAMPLE CONTAINERS AND LABELING

Water samples collected in the field are to be placed into laboratory-cleaned bottles of the appropriate size and construction for the chemical parameters to be analyzed. A list of chemical parameters and corresponding recommended types and sizes of sample containers are shown in Table I.1. Sample containers must be marked as described below.

Sample labels are to be affixed to each sample container and must contain the following information in waterproof ink:

- Project name and number (includes site name)
- Sample and well number
- Date and time of sample collection
- Type of preservatives added
- Special handling instructions

QA/QC samples, such as trip, field, and equipment blanks, will be labeled accordingly.

1.7 SAMPLE PRESERVATION AND SHIPMENT

Groundwater samples should be chilled to about 4°C upon containment in the field and during transport to the testing laboratory. Many constituents to be analyzed require a chemical additive for preservation. Table I.1 shows preservation requirements for organic and inorganic chemical parameters. Groundwater samples collected for organic analysis should be placed in glass bottles that have been specially prepared with the appropriate type and quantity of chemical additive. Samples that are to be analyzed are not to be filtered.

Samples to be shipped are to be packed in a hard-sided insulated shipping container precooled with water ice. The sample containers must be packed to prevent breakage. The water/ice used to pre-cool the shipping container should be discarded and adequate chemical icepacks added to maintain the temperature at about 4°C during the shipment. Dry ice must not be used.

1.8 QUALITY ASSURANCE AND QUALITY CONTROL

To document that sample collection and handling procedures utilized in the field have not affected the quality of the water samples, blanks are to be prepared and analyzed. These blanks consist of one trip blank and one field blank per sampling event.

A trip blank is prepared by filling a water sample container with Type II reagent-grade water, transporting to the site, handling as a sample, and transporting to the laboratory for

analysis. A field blank is prepared by filling a sample container with Type II reagent-grade water in the field adjacent to one of the wells being sampled and transporting to the laboratory for analysis. The field blank should be prepared at a downwind well. Field blanks and trip blanks are to be analyzed for VOCs only.

An equipment blank is required if dedicated pumps or disposable bailers are not used. Equipment blanks are used to confirm proper field decontamination procedures on non-dedicated equipment utilized in the field. An equipment blank is prepared in the field immediately following decontamination cleaning procedures on non-dedicated equipment used for purging, sampling, or sample filtration. Field supply deionized water will be passed through the non-dedicated equipment in the same procedure as a water sample. Equipment blanks will be analyzed for VOCs. Equipment blanks shall be collected at a minimum frequency of one blank (1) per ten (10) wells at which non-dedicated purge or sampling equipment are utilized per monitoring event.

1.9 CHAIN-OF-CUSTODY DOCUMENTATION

A chain-of-custody (COC) form must be maintained in order to track possession and handling of samples from field collection through laboratory testing. COC records show the custody of samples at all times. Samples are in custody of an individual when they are either in the individual's sight or locked securely under the individual's control.

COC documentation is maintained on a chain-of-custody record form. Each sample must be logged onto the COC record form as it is collected. Information on the COC record form includes the following.

- Project name and number (includes site name)
- Site location
- Sample number
- Sample date and time
- Sample type
- Number and type of sample containers
- Analyses required
- Sample preservative
- Lab destination
- Carrier/shipping number
- Special instructions
- Spaces for signatures of sampler(s) and everyone assuming sample custody

The COC record must contain the signatures of anyone assuming custody of the samples. Each time custody changes hands, the party releasing the samples should sign under "Relinquished By" and record the date and time. The party receiving the samples should sign under the heading "Received By" and record the date and time. The COC form is typically provided by the analytical laboratory.

If available or required, COC seals can be placed over the shipping container lid or sample container lids to deter sample tampering by unauthorized parties.

1.10 EQUIPMENT DECONTAMINATION

Reusable purging and sampling equipment and measurement instruments coming in contact with the groundwater in wells or in samples are to be decontaminated before use at each well location.

The following decontamination standards or equivalent procedures are to be followed for non-dedicated well purging and sampling equipment. The equipment should be washed with a nonphosphate detergent and rinsed with tap water and Type II reagent-grade water. The sampling equipment should be thoroughly dried before use to ensure that residual cleaning agents are not carried over to the sample.

Disposable bailers and non-dedicated bailer line must be discarded along with disposable health and safety garments. Water and cleaning agents are to be disposed of in accordance with applicable regulations.

1.11 FIELD DOCUMENTATION

Field activities must be thoroughly documented on field data sheets. Below is an outline of the information that should be documented during field activities.

- Project name and number
- Date and time of all activities
- Weather conditions
- Sampling personnel
- Field instrument calibration remarks
- Well identification number
- Description of well condition
- Depth to the well bottom with point of reference (from well records)
- Physical description of groundwater (color, odor, turbidity)
- Sampling equipment and remarks
- Initial temperature, conductivity, and pH measurements
- Sample time and date
- Description of sample
- Quality control remarks

2.0 VADOSE ZONE MONITORING REQUIREMENTS

2.1 ANALYZED CONSTITUENTS

The vadose zone monitoring constituents at the facility will be as specified in Table I.1 of this SAP.

2.2 VERIFICATION RESAMPLING

No later than 30 days after each sampling event, the owner or operator shall determine whether the initial field and laboratory data show evidence that the water encountered is the result of surface water infiltration; or potential impacts from the Landfill. If there is evidence of a potential release (i.e., BTEX or TPH detection), the owner or operator shall notify the Oil Conservation Division (OCD) and conduct a verification resampling event as soon as practical. During the initial monthly sampling, the verification resampling event can coincide with the subsequent monthly sampling event. At the time of verification sampling, fluid samples from the proximal upslope Landfill sump and leak detection system also will be collected and analyzed for the parameters in Table I.1.

In the event that one or more constituents are confirmed through verification resampling in any downgradient well, the Facility will submit an Action Plan to the OCD within approximately 90 days of the confirmation sampling date. The Action Plan will implement the course of action to further investigate the source of a potential release and/or complete any mitigation measures. The resampling and leachate analytical comparison results will also be included within the Action Plan.

2.3 VADOSE ZONE MONITORING RESULT SUBMITTALS

Two (2) copies of an annual vadose zone monitoring report describing sampling and analysis results will be completed and submitted to the OCD no later than ninety (90) days after the facility's last sampling event in a calendar year. The annual report will include information determined since the previously submitted annual report.

Table I.1
C.K. Disposal E&P Landfill and Processing Facility
Vadose Zone Monitoring Constituents and the Recommended Sampling, Preparation, and Storage Procedures

Constituent	Sampling Container[1]	Preservation[1]
Field Parameters		
Temperature	Measured in the Field	
Specific Conductance		
pH		
Volatile Organic Compounds (VOC)		
BTEX	3x40 mL VOA Vials	HCL[2]
TPH		
Inorganic Compounds		
TDS	250 mL Clear Plastic	None[2]
Major Cations		
Calcium	250 mL Clear Plastic	Nitric Acid[2] (HNO_3)
Magnesium		
Sodium		
Potassium		
Major Anions		
Bicarbonate	4 oz. Glass Jar	None[2]
Chloride		
Sulfate		
RCRA Metals		
Arsenic	250 mL Clear Plastic	Nitric Acid[2] (HNO_3)
Barium		
Cadmium		
Chromium		
Lead		
Mercury		
Selenium		
Silver		

Notes:
(1) – EPA Sample Container and Preservation List (http://www.epa.gov/region9/lab/container.html)
(2) – Samples should be chilled to ~ 4°C