AP - 007

STAGE 1 & 2 REPORTS

DATE:

June 2001

SITE INVESTIGATION REPORT

(Pursuant to Stage 1 Abatement Plan)

Prepared for:

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LIST OF ACRONYMS AND ABBREVIATIONS

ARAR	applicable or relevant and appropriate requirement
ASTM	American Society for Testing and Materials
bgs	below ground surface
°C	degrees Celsius
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cm/sec	centimeters per second
COC	chain of custody
DOT	Department of Transportation
DQO	data quality objective
EC	electrical conductivity
EPA	Environmental Protection Agency
FID	flame ionization detector
FSP	Field Sampling Plan
ft	foot or feet
g/cm^3	grams per cubic centimeter
G	glass
gal/ft^3	gallons per cubic foot
H_2SO_4	sulfuric acid
HCl	hydrochloric acid
HNO_3	nitric acid
HSP	Health and Safety Plan
lbs/gal	pounds per gallon
mL	milliliter
mL/L	milliliters per liter
MS/MSD	matrix spike/matrix spike duplicate
$Na_2S_2O_3$	sodium thiosulfate
NCP	National Contingency Plan
NTU	nephelometric turbidity unit
OD	outside diameter
OSHA	Occupational Safety and Health Administration
OVA	organic vapor analyzer

P	polyethylene
PID	photoionization detector
PO_4^{-3}	phosphate
PPE	personal protective equipment
PVC	polyvinyl chloride
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
RCRA	Resource Conservation and Recovery Act
RI/FS	remedial investigation/feasibility study
SAP	Sampling and Analysis Plan
SARA	Superfund Amendments and Reauthorization Act
SO_4^{-2}	sulfate
SOW	statement of work
SP	spontaneous potential
SVOC	semivolatile organic compound
T	California brass
TCLP	toxicity characteristic leaching procedure
TPH	total petroleum hydrocarbon
USCS	Unified Soil Classification System
USGS	U.S. Geological Survey
VOC	volatile organic compound
WP	work plan
µm	micrometer
3-D	three-dimensional

EXECUTIVE SUMMARY

This report describes the activities involved in the delineation of the hydrocarbon impact for the pipeline release at the Darr Angell Denton #2 site by Environmental Technology Group, Inc. (ETGI) for EOTT Energy Corporation (EOTT). The pipeline release was reported to the New Mexico Oil Conservation Division (NMOCD) on July 29, 1999. This investigation was conducted in accordance with NMOCD rules and guidelines.

The time period covered by this report begins in May 2000 with the sampling and subsequent analysis of soils in the immediate release area. In June 2000, ten soil borings were advanced to further delineate hydrocarbon impact. The installation of three monitoring and two recovery wells was also completed to monitor groundwater impact. The period covered in this report ended in July 2000 with the installation of an additional monitoring well to further delineate and monitor groundwater impact.

The surface area surrounding the EOTT pipeline was excavated to approximately four and one-half feet on both sides of the pipeline for a length of 384 feet. An Amoco pipeline that intersects the EOTT pipeline was also excavated to approximately four and one-half feet on both sides of the pipeline for a distance of 47 feet. The area of surface excavation is 5,454 square feet. This area was excavated to an average depth of five feet. The volume of excavated area at this site is estimated to be 27,270 cubic feet. The amount of soil excavated at the site is 1,010 cubic yard. The majority of this soil was hauled offsite prior to ETGI's involvement on this site. Two small stockpiles remain onsite at this time.

Based on initial surface soil sampling in the excavation area, further excavation is needed on the sidewalls of the excavation areas to remove impacted soils to below the NMOCD remediation action levels for this site. The soils in the spoils piles are also above the NMOCD action levels and will need to be addressed.

Investigation of the site has determined that the groundwater has been impacted at the site as a function of the pipeline release. Two recovery wells were installed immediately adjacent to the leak site. Phase separated hydrocarbon (PSH) has been measured in both wells, with the greatest thickness observed on recovery well RW #1. This well is located approximately 63 feet southeast of the leak site. The PSH plume appears to have migrated past monitoring well MW #2,which is located 234 feet down gradient from recovery well RW #1. Data collected from monitoring well MW #4, located 150 feet down gradient from MW #2, indicates that there is no PSH or dissolved phase petroleum constituents at this time in the groundwater.

Automated recovery systems will be installed on both the recovery wells, RW #1 and RW #2 and MW #2 to facilitate removal of PSH from the water table. These systems will be in place by fall of 2001.

On completion of PSH removal at this site, the soils at the site will be evaluated. A site-specific plan will be developed and submitted to NMOCD to address soil remediation. On completion of the soil remediation, a No Further Action (NFA) closure request will be submitted to the NMOCD.

1.0 INTRODUCTION

1.1 PROJECT PURPOSE AND SCOPE

The purpose of this site investigation report is to describe the extent of impacted soil and groundwater as a result of the hydrocarbon release from the EOTT pipeline at the Darr Angell Denton #2 site, located in rural Lea County, New Mexico. This report covers the investigation of the soils at the site and any groundwater impact in compliance with 19 NMAC 15.A19.E(3) and NMOCD *Guidelines for Remediation of Leaks, Spills and Releases*, 1993.

1.1.1 Objectives

The objectives for this site investigation were to 1) delineate the extent of hydrocarbon impact in the soils in the immediate release area via soil borings, sampling and laboratory analysis, 2) investigate any impact to the groundwater from the release via monitoring well installation, sampling and laboratory analysis, 3) continue monitoring the groundwater for further impact via sampling and laboratory analysis and 4) provide for recovery of any PSH observed in the groundwater via recovery wells.

1.1.2 Field Activities

Table 1-2

Field Activities Summary

Location	Activity	Number
Excavated Areas	Surface sampling of side walls in area immediately adjacent to release site; sampling in spoils piles adjacent to site	14
Adjacent to EOTT line	Soil borings to depths of 15' to 60' with sampling at five foot intervals	10
Adjacent to EOTT line	Product recovery wells to facilitate removal of PSH from the water table	2
Surrounding the site	Monitoring wells to delineate and monitor any movement of PSH within the site's groundwater	4
Monitoring wells	Quarterly sampling and laboratory analysis of monitoring wells to identify and monitor any movement of PSH within the site's groundwater	4

This investigation was initiated by surface sampling of the vertical walls of the excavated areas adjacent to the release site surrounding the pipeline. In addition, samples were taken at a one-foot below ground surface (bgs) level from the stockpiles adjacent to the excavated areas.

Further investigation consisted of the advancement of soil borings surrounding the release site. Samples were collected at five-foot intervals from each boring. Laboratory analysis of the samples was performed to give an accurate delineation of any impacted areas. The soil samples were analyzed for Total Petroleum Hydrocarbons (TPH), Method SW 846-8015M. Any sample producing a field reading over 100ppm for Volatile Organic Compounds (VOC) with a Photoionization Detector (PID) was also tested in the laboratory for Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX), Method SW 846-8021B.

Monitoring wells (MW) were installed to investigate any movement of PSH within the groundwater. During the installation on these wells the soils were also sampled at five-foot intervals and the samples were submitted for TPH analysis as well as BTEX analysis if the field PID reading was over 100ppm for VOC. When conducting the borings or installation of monitoring wells, if observable PSH was encountered in the groundwater, a recovery well (RW) was installed facilitate removal of any product.

1.2 PROJECT ORGANIZATION AND RESPONSIBILITY

Beth Aldrich, Geologist, conducted overall project management for this site with assistance from Ken Dutton, Operations Manager. Beth Aldrich also performed the collation and assessment of data obtained from fieldwork as well as from laboratory analysis.

Beth Aldrich, Simon Casas and Ken Dutton conducted field activities, i.e. sampling of soils and water and drilling supervision. Simon Casas and Danny Stevens performed monitoring well sampling and gauging and gauging of recovery wells.

1.2.1 Subcontractors

Subcontractors involved in this project included Eades Drilling (Eades) of Hobbs, New Mexico, who drilled and/or installed the soil borings, monitoring wells and recovery wells. Eades was also responsible for the decontamination the drilling equipment, installation of the monitoring well and recovery well hardware and collection and containment of cuttings from the above-mentioned activities.

The soil and groundwater samples that were collected were processed and analyzed by Environmental Laboratory of Texas (ELOT), based out of Midland, Texas, who conducted all required testing of both the soils and groundwater and submitted reports to ETGI.

John West Surveying Company of Hobbs, New Mexico, a certified land surveyor, surveyed the site, including all soil borings, monitoring wells and recovery wells. A survey plat was provided upon completion of the survey.

2.0 SITE DESCRIPTION

2.1 SITE HISTORY

2.1.1 Operational History

The release point emanated from a buried 8" steel pipeline trending north – south. The pipeline is currently operated by EOTT. The release was reported to the NMOCD on July 29, 1999.

2.1.2 Nature of Current Release

Structural failure due to external corrosion on the 8" pipeline appears to have caused the release of hydrocarbons from this pipeline. This information was reported to the NMOCD on July 29, 1999.

2.1.3 Summary of Previous Investigations

There have been no previous investigations at the site.

2.2 ENVIRONMENTAL SETTING

2.2.1 Physical Location, Topography, and Site Layout

As shown in the U.S. Geological Survey (USGS) quadrangle map in Figure 1, the site is located south of US Highway 82 at Latitude 033° 01' 47.0" N and Longitude 103° 10' 10.5" W, in the SE ¼, SE ¼, Section 11 and NE ¼, NE ¼, Section 14, Township 15 South, Range 37 East in rural Lea County, New Mexico. Generally, the surface of the site consists of unconsolidated sand covered by moderate to sparse grasses. Oil and gas production facilities are located in the surrounding area.

The site is located at an elevation of approximately 3,784 feet above mean sea level (msl). The topography is relatively flat terrain, sloping to the southeast. Storm water runoff from the site is minimal, trending to the southeast. The surface runoff that does occur is localized into marginally depressed areas on the site. Known utilities on the site consist of electricity in overhead lines as well as crude oil gathering and transportation lines.

A layout of the site is presented in Figure 2, the Site Plan. The site is currently a rural area with no development. Located in the central portion of the site is an east-west trending 12" Amoco crude oil transportation pipeline.

2.2.2 Receptor Identification

As previously discussed, the site is located in a rural area. The site is not fenced on all sides but the portion of the site containing monitoring wells MW #2, MW #3 and MW #4 is fenced and locked. In the vicinity of the site, access is unrestricted via the adjacent lease roads.

Based on the aforementioned site conditions, the following onsite and offsite potential receptor populations were identified for this risk assessment.

- Onsite:
  - Environmental/Sampling Technician
  - Remedial/Construction worker
- Offsite:
  - Adult Trespasser
  - Adolescent Trespasser (7 to 15 years of age)

The onsite environmental/sampling technician was considered a potential receptor due to the possibility of exposures from periodic, non-intrusive, maintenance-related operations performed by that receptor at the site. Currently, activities that are conducted by the environmental/sampling technician include site inspections, monitoring and maintenance of the PSH recovery systems, sampling onsite monitoring wells and loading recovered groundwater into a tank mounted on a trailer. Site inspections occur once a week and are done in two hours or less unless maintenance is required on the PSH recovery systems. Groundwater sampling is conducted on a quarterly basis, and requires approximately twelve manhours per sampling event, with recovered groundwater loading occurring at this time. All current site activities are conducted in accordance with a site Health and Safety Plan that is designed to minimize the potential for exposure to contaminants at the site.

There are no construction plans for the site at this time. However, further soil contamination has been identified at the site. Future activities will include excavation and remediation of the impacted soils. Therefore, a construction worker or remedial worker (intrusive scenario) will be considered in this risk assessment. All site activities will be conducted in accordance with the site Health and Safety Plan that is designed to minimize the potential for exposure to contaminants at the site.

Sampling data indicate that contaminants are present in soils and groundwater at the site. Therefore, in addition to the aforementioned onsite receptor, offsite receptors could potentially be exposed to contamination.

Due to the fact that the site has access via adjacent lease roads and oil and gas activities surround the site, adult, and less likely, adolescent trespassers were included as potential receptors in this risk assessment. These receptors were considered to be potentially exposed to petroleum-based constituents that were primarily detected in near surface soils and spoils piles of the excavation area at the site. Due to the fencing around the three southeastern monitoring wells (MW #2, MW #3, MW #4) and security (locked gate) as well as the locks placed on each monitoring well and recovery well at the site, it is extremely difficult for potential offsite receptors to encounter any groundwater at the

site. Site controls (well locks) will be maintained at the site as a part of the ongoing assessment that will further limit unauthorized access.

2.3 GEOLOGY AND HYDROGEOLOGY

The site is located in rural Lea County, New Mexico, east of the town of Lovington, New Mexico. The surface of the site consists of unconsolidated, wind blown sands and finer materials with elevations between 3,784 and 3,785 msl. The topography is predominantly a flat terrain, sloping slightly to the southeast. There is no surface water, not including manmade excavations, within 1,000 feet of the site. The nearest water well is in excess of one half mile away, to the southeast.

2.3.1 Soils

According to the U.S. Department of Agriculture (USDA) Soil Conservation Service soil survey, the soils at the site consist of the Kimbrough-Lea association, with a 0 to 3 percent slope. The soils of the Kimbrough-Lea association are nearly level and gently sloping, gravelly and loamy soils that are very shallow to moderately deep to indurated caliche. The soils are located mainly in the northern half of Lea County.

The surface layer ranges from 6 to 20 inches thick. Color ranges from dark grayish-brown to brown and the soil is mildly alkaline. The texture of the surface layer is loam or loamy sand.

The subsurface layer is from 6 to 40 inches thick. Color ranges from grayish-brown to brown. The texture is gravelly loam or loamy sand, which can be as much as 60 percent by volume. The underlying material is indurated caliche, a very pale tan calcareous sand or unconsolidated red sand. The caliche layer is discontinuous.

Kimbrough-Lea association soils have slow to rapid surface drainage, with permeability that is moderate to moderately rapid. Soil blowing is a slight to severe hazard. Runoff is slow to rapid.

Kimbrough gravelly loam, 0 to 3 percent slopes, soil occurs on prairie uplands and is locally known as "scabland" and is locally interbedded with fragmented caliche. Stegall loam, 0 to 1 percent slopes, soil occurs on uplands in northern Lea County, mixed with Kimbrough-Lea series soils and has a sub angular, blocky structure. Included in the area near the site are patches of Portales loam, 0 to 1 percent slopes and Portales fine sandy loam, 1 to 3 percent slopes.

2.3.2 Regional Geology

The Lea County surface topography consists of unconsolidated, wind blown sands and finer materials associated with the Tertiary Ogalalla Formation, which serves as a major aquifer for southeastern New Mexico and several high plains states. The Triassic Dockum Group, commonly referred to as the "red beds", underlies the Ogalalla. While there are sand lenses within the Dockum Group, it is

more typically characterized by red silts and red shales in which detectable groundwater is often absent or of limited extent.

2.3.3 Site Geology

Based on the results of the site investigation, as well as a review of geologic maps, the site appears to lie within the Ogalalla Formation. The uppermost unit was a tan-brown to brown, very fine grained loamy sand with a few calcareous fragment and deposits and was from 2 to 10 feet thick. This unit is underlain by a red to red-brown very fine grained, well-sorted sand with none to abundant caliche nodules and was from 8 to 20 feet thick. That unit was underlain by a tan to white, very hard, calcareous sandstone, which was from 3 to 5 feet thick. The next underlying unit was very fine grained, well sorted, red to red-brown sand with slight moisture at the water table and none to few sandstone fragments with a thickness of between 12 and 32 feet. At depths of 8 to 10 feet and 28 to 33 feet bgs lies a discontinuous layer of well-indurated sandstone with calcareous cement, which varies in thickness from one to five feet.

2.3.4 Regional Hydrogeology

The primary water-bearing formation in Lea County is the Tertiary Ogalalla Formation, which serves as a major aquifer for southeastern New Mexico. Alluvial, unconfined groundwater is typically present in these sands at varying depths and generally flows from north to south. These aquifers are typically characterized by relatively high hydraulic conductivity and transmissivity.

2.3.5 Local Hydrogeology

Shallow groundwater at the site occurs near the unconformity between the underlying red clay of the Dockum Formation and the unconsolidated sands associated with the overlying Ogallala Formation. At the site, this unconformity is present at depths hat range between 53 to 57 feet bgs. The movement of fluids, including groundwater and PSH, is enhanced where the groundwater occurs in the sand. However, the movement of fluids is significantly retarded in areas where the groundwater occurs within the red clay (C.W. Fetter, *Applied Hydrogeology*, 1988). The groundwater observed at this depth is considered to be of beneficial use based on the site-specific concentration of total dissolved solids (TDS) and criteria included in the NMOCD regulations.

2.3.6 Water Well Inventory

For the site investigation report a water well search was performed of the New Mexico Office of the State Engineer's water well database (See Appendix B). The search was conducted on a one-mile radius surrounding the site. The nearest water well is over one-half mile away, to the southeast. This information was verified during the field investigation.

2.4 SURFACE HYDROLOGY

2.4.1 Distance to Nearest Surface Water Body

Based on site reconnaissance and a review of the USGS topographic maps in this area, there are no natural surface bodies of water, either standing (ponds, lakes) or free flowing (rivers or streams) within a one-mile radius of the site.

2.4.2 Seasonal Stream Flow Characteristics

There are no streams within a half-mile radius of the site area; therefore impact from any seasonal flow would be negligible. Seasonal rainfall is negligible, as the area is classified as dry upland.

2.4.3 Groundwater/Surface Water Relationships

As there are no surface water impoundments in the site area, a relationship between surface water and groundwater does not exist. Pooling of rainfall may occur on an intermittent basis, but the arid climate and rapid evaporation associated with it precludes any percolation to the groundwater table.

3.0 FIELD OPERATIONS

3.1 GEOLOGIC STANDARDS

The lithologic descriptions for unconsolidated materials (soils [engineering usage] or deposits) used the name of the predominant particle size (e.g., silt, fine sand, etc.). The dimensions of the predominant and secondary sizes were recorded using the metric system. The grain size and name of the deposit were accompanied by the predominant mineral content, accessory minerals, color, particle angularity, and any other characteristics. The clastic deposit descriptions included, as a supplement, symbols of the Unified Soil Classification System. The color descriptions were designated by the Munsell Color System.

The scales for maps, cross sections, or 3-D diagrams were selected in accordance with the geologic and hydrologic complexity of the area and the purposes of the illustrations. Maps are oriented with North toward the top, unless the shape of the area dictates otherwise. Orientation is indicated with a North arrow.

3.2 SITE RECONNAISSANCE, PREPARATION, AND RESTORATION PROCEDURES

Site investigation and field sampling was conducted by ETGI personnel utilizing mobile units (pickup trucks). Each unit is equipped with a first aid kit and a portable fire extinguisher. Onsite personnel were equipped with hardhat, safety glasses, personal H_2S monitor and safety boots. In addition, portable cellular telephones were onsite to facilitate emergency access in the event of fire or accident.

3.3 BOREHOLE DRILLING, LITHOLOGIC SAMPLING, LOGGING, AND ABANDONMENT

3.3.1 General Drilling Procedures

All drilling activities conformed to state and local regulations, were performed by licensed well driller, and were supervised by a geologist. All permits, applications, and other documents required by state and local authorities were obtained.

The location of all borings was coordinated, in writing, with the EOTT Project Manager before drilling commenced. When boreholes were drilled through more than one water bearing zone or aquifer, measures were taken to prevent cross-connection or cross-contamination of the zones or aquifers.

The drill rig was cleaned and decontaminated in accordance with the procedure in Section 3.7. The drill rig did not leak any fluids that might have entered the borehole or contaminated equipment placed in the hole.

A log of drilling activities was kept in a bound field notebook. Information in the log book included location, time onsite, personnel and equipment present, downtime, materials used, samples collected,

measurements taken, and any other observations or information necessary to reconstruct field activities at a later date. At the end of each day of drilling, the drilling supervisor completed a Daily Drilling Log.

The drilling contractor disposed of all trash, waste grout, cuttings, and drilling fluids as coordinated with the EOTT Project Manager or designated representative.

3.3.2 Sampling and Logging

The lithology in all boreholes was logged. The boring log was used for recording the lithologic logging information. Information on the boring log sheet includes the borehole location; drilling information; sampling information such as sample intervals, and recovery; and sample description information. Copies of the boring logs are included the Appendices.

Unconsolidated samples for lithologic description were obtained continuously. Lithologic descriptions of unconsolidated materials encountered in the boreholes was described in accordance with both the New Mexico Oil Conservation Division Guidelines for Remediation of Leaks, Spills and Releases and American Society for Testing and Materials (ASTM) D-2488-90 Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) (ASTM, 1990). Descriptive information recorded in the field included: (1) identification of the predominant particles size and range of particle sizes, (2) percent of gravel, sand, silts, or all three, (3) description of grading and sorting of coarse particles, (4) particle angularity and shape, and (5) maximum particle size or dimension. In addition, the unconsolidated materials were ranked as either highly contaminated or saturated soils (based on observable free phase hydrocarbons or immiscible phases and gross staining) or unsaturated contaminated soils (based on PID readings), as applicable.

Identification of the Unified Soil Classification System (USCS) group symbol was used for clastic material. Additional information recorded included the depth to the water table, caving or sloughing of the borehole, changes in drilling rate, depths of samples collected, presence of organic materials, presence of fractures or voids in consolidated materials, and other noteworthy observations or conditions, such as the locations of geologic boundaries.

All samples were monitored with an organic vapor monitor (e.g., PID, organic vapor analyzer [OVA]). The samples were handled in such a way as to minimize the loss of volatiles, and these procedures shall be described in Section 4.0. Cuttings were examined for their hazardous characteristics. Materials suspected to be hazardous because of abnormal color, odor, or organic vapor monitor readings were containerized in conformance with the Resource Conservation and Recovery Act (RCRA) and the state and local requirements.

3.3.3 Abandonment

Boreholes that were not converted to monitoring wells were abandoned in accordance with applicable federal, state and local requirements. Appropriate paperwork was filed with the correct New Mexico department. If slurry was used, a mud balance and/or Marsh Funnel was used to ensure the density (lbs/gal) of the abandonment mud mixture conforms to the manufacturer's specifications. The slurry was emplaced from the bottom to the top of the hole using a tremie pipe.

All abandoned boreholes were checked 24 to 48 hours after mud/solid bentonite emplacement to determine whether curing was occurring properly. If more specific curing specifications were recommended by the manufacturer, these were followed. If settling occurred, a sufficient amount of mud/solid bentonite was added to fill the hole to the ground surface. These curing checks and any addition of mud/solid bentonite were recorded in the field log.

3.4 MONITORING WELL CONSTRUCTION

All monitoring wells were constructed in accordance with criteria set forth in *Guidelines For Remediation of Leaks, Spills and Releases*, 1993 by the NMOCD. The well construction materials were selected according to industry standards, are chemically resistant to the monitored contaminants and were installed without the use of glues/adhesives. The monitoring wells were constructed according to NMOCD approved industry standards to prevent migration of contaminant along the well casing. The monitoring wells were constructed with a minimum of fifteen feet of well screen, at least five feet of which was above the water table to accommodate seasonal fluctuations in the water table.

3.5 MONITORING WELL DEVELOPMENT

The objective of monitoring well development is to repair damage done to the formation by the drilling operation so that the natural hydraulic properties of the formation are restored and to remove any fluids introduced into the formation that could jeopardize the integrity of the sample.

Monitoring well development is accomplished by purging the well a minimum of nine well volumes of groundwater. The pH and specific conductivity of the fluid in the well should be stabilized and the turbidity should be reduced to the greatest extent possible before sampling is begun.

3.6 SURVEYING

All surveying locations of field activities were measured by a certified land surveyor as the distance in feet from a reference location that was tied to the state plane system. The surveys were third order (cf. Urquhart, L.C., *1962 Civil Engineering Handbook*, 4th Edition, p. 96 and 97). A XY-coordinate system was used to identify locations. The X-coordinate was the East-West axis; the Y-coordinate was the North-South axis. The reference location was the origin. All surveyed

locations were reported using the state plane coordinate system. The survey plat gives the X and Y coordinates in state plane coordinate values and the elevation of the ground surface.

3.7 EQUIPMENT DECONTAMINATION

Cleaning of drilling equipment was the responsibility of the drilling company. In general, the cleaning procedures consisted of using high-pressure steam to wash the drilling and sampling equipment prior to drilling and prior to starting each hole.

Prior to use, the sampling equipment was cleaned with Liqui-Nox detergent and rinsed with distilled water. The following procedure was used to decontaminate sampling and drilling devices, such as split spoons, bailers and augers that can be hand-manipulated. For sampling and smaller drilling devices, the equipment was scrubbed with a solution of potable water and Alconox. Then the equipment was rinsed with copious quantities of potable water followed by an ASTM Type II Reagent Water. The equipment was air dried on a clean surface or rack, such as Teflon®, stainless steel, or oil-free aluminum elevated at least two feet above ground. If the sampling device was not used immediately after being decontaminated, it was wrapped in oil-free aluminum foil, or placed it in a closed stainless steel, glass, or Teflon® container.

3.8 INVESTIGATION DERIVED WASTE HANDLING

3.8.1 General Waste Handling Procedures

Non-investigative waste, such as litter and household garbage, was collected on an as-needed basis to maintain each site in a clean and orderly manner. This waste was containerized and transported to the designated sanitary landfill or collection bin. Acceptable containers were sealed boxes or plastic garbage bags.

Investigation derived waste was properly containerized and temporarily stored at each site, prior to transportation. Depending on the constituents of concern, fencing or other special marking was used as required. The number of containers was estimated on an as-needed basis. Acceptable containers were sealed, U.S. Department of Transportation (DOT)-approved steel 55-gallon drums. The containers were transported in such a manner to prevent spillage or particulate loss to the atmosphere.

The investigative derived waste was segregated at the site according to matrix (solid or liquid) and as to how it was derived (drill cuttings, drilling fluid, decontamination fluids, and purged groundwater). Each container was properly labeled with a tracking number, and with site and source identification, sampling point, depth, matrix, constituents of concern, and other pertinent information for handling.

4.0 ENVIRONMENTAL SAMPLING

4.1 SAMPLING PROCEDURES

All purging and sampling equipment was decontaminated according to the specifications in Section 3.7 prior to any sampling activities and was protected from contamination until ready for use.

4.1.1 Groundwater Sampling

When numerous monitoring wells were sampled in succession, those wells expected to have low levels of contamination or no contamination were sampled prior to those wells expected to have higher levels of contamination. This practice helped reduce the potential for cross contamination between wells. All sampling activities were recorded in the field logbook. Additionally, all sampling data were recorded on a well sampling form.

The following information was recorded each time a well was purged and sampled: (1) depth to water before and after purging, (2) well bore volume calculation, (3) sounded total depth of the monitoring well, (4) the condition of each well, (5) the thickness of any nonaqueous layer, and (6) field parameters, such as turbidity.

4.1.1.1 Water Level Measurement

The groundwater level was then measured to the nearest 0.01 foot using an electric water level indicator. Water levels were measured from the top of the well casing. Following water level measurement, the total depth of the well from the top of the casing was determined and recorded on the well sampling form. The length of well casing above the ground surface was then measured and subtracted from the total depth to obtain a depth of water and total well depth from the ground surface. All water level and total depth measuring devices were routinely checked with a tape measure to ensure measurements were accurate.

4.1.1.2 Purging Prior to Sampling

Purging of monitoring wells was performed to evacuate water that has been stagnant in the well and may not be representative of the aquifer. Purging was accomplished using a Teflon® bailer.

At least three well volumes were removed from the well before it is sampled. The well bore volume is defined as the volume of submerged casing and screen. One well volume can be calculated using the following equation (reference: Ohio EPA Technical Guidance Manual for Hydrogeologic Investigations and Groundwater Monitoring Programs, June 1993):

$$V = H \times F$$

where
- V = one well volume
- H = the difference between the depth of well and depth to water (ft)
- F = factor for volume of one foot section of casing (gallons) from Table 4.1

Table 4.1 Volume of Water in One-Foot Section of Well Casing

Diameter of Casing (inches)	F Factor (gallons)
1.5	0.09
2	0.16
3	0.37
4	0.65
6	1.47

F can also be calculated from the formula:

$$F = \Pi (D/2)^2 \times 7.48 \text{ gal/ft}^3$$

where D = the inside diameter of the well casing (feet).

Wells with yields too low to produce three well volumes before the well goes dry were purged to dryness. Water removed from the well during purging was containerized. Detailed information concerning investigative derived wastes is presented in Section 3.8.

4.1.1.3 Sample Collection

Samples were taken within 24 hours of monitoring well development. Except as noted, at least three well volumes were removed from the well before it was sampled.

The sample was collected after three well volumes were removed. Field equipment was calibrated in accordance with the QAPP of this site investigation report. VOCs samples were collected as soon as possible after purging, and not more than two hours after purging was completed. If a monitor well was bailed or pumped dry before three well volumes were obtained, the sample was collected when a sufficient volume of water had accumulated in the well.

Before collecting groundwater samples, the sampler put on clean, phthalate-free protective gloves. Samples were collected first using a Teflon® bailer. Disposable nylon rope was used to lower and retrieve the bailers. A new length of nylon rope was used for each well, and the rope was disposed of following the sampling activities. Each bailer was equipped with a dedicated stainless steel or Teflon® coated leader so that the nylon rope did not contact the water in the well.

Groundwater sample containers were filled in the order of decreasing volatilization sensitivity (i.e., BTEX containers will be filled first and PAH containers second). Groundwater samples, collected for BTEX analysis, were placed in 40 ml glass VOA vials equipped with Teflon-lined caps. The sample

containers were provided by the analytical laboratory. The vials were filled to a positive meniscus, sealed, and visually checked to ensure the absence of air bubbles.

Groundwater samples, collected for Polynuclear Aromatic Hydrocarbons (PAH) analysis, were filled to capacity in sterile, 1-liter glass containers equipped with Teflon lined caps. Groundwater samples, collected for metals analysis, were filled to capacity in sterile, 1-liter plastic containers equipped with Teflon lined caps. The sample containers were provided by the analytical laboratory.

The filled containers were labeled and placed on ice in an insulated cooler. The cooler was sealed for transportation to the analytical laboratory. Proper chain-of-custody documentation was maintained throughout the sampling process.

Required sample containers, preservation methods, volumes and holding times are given in Section 4.2.2 and Table 4.2.2-1. Sampling equipment shall be decontaminated in accordance with Section 3.7 upon completion of sampling activities.

4.1.2 Subsurface Soil Sampling

Soil samples were collected at five-foot intervals from the surface to the total depth of the boring. Split spoon sampling was the preferred method of sample collection, however, due to local lithology, grab sampling from the cuttings at the measured depth was utilized as a backup method.

4.1.2.1 Split-Spoon Samples

When soil samples were to be submitted for laboratory analysis, they were collected using stainless steel, continuous drive, California modified split-spoon samplers. These samplers are 24 inches in length and have an outside diameter (OD) of 3 inches.

As soon as the split-spoon was opened, samples for field VOC analysis were collected and placed in a resealable plastic bag to facilitate field headspace analysis utilizing a Photoionization Detector (PID). The field monitoring results were recorded on the boring log and in the field logbook. If the field PID reading was over 100ppm, the sample was additionally tested for BTEX at the laboratory.

Samples to be tested were collected by extruding the soil out of the split spoon sampler into a 4 ounce, laboratory cleaned glass containers with Teflon® lined lids. This was done using clean stainless steel sampling tools. The sample was then sealed, labeled, and place in an iced cooler held at a temperature below 4°C.

4.1.3 Surface Soil Sampling

Surface soil samples were collected from the land surface to 6 inches below the surface. The sample was homogenized and quartered before being containerized. Stainless steel scoops or trowels, glass

jars with Teflon® lids or equivalent equipment, compatible with the chemical analyses proposed, were used to collect and store samples.

Unusual surface conditions that may have affected the chemical analyses were recorded in the logbook, such as the following: (1) evidence of dumping or spillage of chemicals, (2) soil discoloration, and/or (3) unusual condition of growing plants, etc.

4.2 SAMPLE HANDLING

4.2.1 Sample Containers

Sample containers were purchased precleaned and treated according to EPA specifications for the methods. Containers were stored in clean areas to prevent exposure to fuels, solvents, and other contaminants. Amber glass bottles were used for SVOCs and other constituents that may be sensitive to exposure to light.

4.2.2 Sample Volumes, Container Types, and Preservation Requirements

Sample volumes, container types, and preservation requirements for the analytical methods performed on the samples were listed in Table 4.2.2-1.

Sample holding time tracking began with the collection of samples and continued until the analysis is complete. Holding times for methods are specified in Table 4.2.2-1.

Table 4.2.2-1 Requirements for Containers, Preservation Techniques, Sample Volumes, and Holding Times

Name	Analytical Methods	Container[a]	Preservation[b,c]	Minimum Sample Volume or Weight	Maximum Holding Time
Conductance	SW 846 Method 9050	P, G	None required	N/A	Analyze immediately
Temperature	E170.1	P, G	None required	N/A	Analyze immediately
Dissolved oxygen	E360.1	G	None required	500 mL	Analyze immediately
Turbidity	E180.1	P, G	4°C	N/A	48 hours
Total Dissolved Solids (TDS)	E160.1	P, G	4°C	N/A	7 days
Metals (except chromium (VI) and mercury)	SW 846 Method 6010B	P, G, T	HNO_3 to pH < 2, 4°C	500 mL or 8 ounces	180 days (water)
Polynuclear Aromatic Hydrocarbons	SW 846 Method 8270C	G, Teflon®-lined cap, T	4°C, 0.008% $Na_2S_2O_3$	1 liter or 8 ounces	7 days until extraction and 40 days after extraction (water);
TPH	SW 846 Method 8015M	P, Teflon®-lined cap, T	Cool, 4°C	4 or 8 ounces	14 days until extraction and 40 days after extraction (water);
BTEX	SW 846 Method 8021B	G, Teflon®-lined septum, T	4°C, 0.008% $Na_2S_2O_3$ (HCl to pH < 2 for volatile aromatics by SW8240 and SW8260)[b]	2 x 40 mL or 4 ounces	14 days (water and soil); 7 days if unpreserved by acid
TCLP/SPLP	SW 846 Method 1311/ 1312	G, Teflon®-lined cap, T	Cool, 4°C	1 liter or 8 ounces	14 days to TCLP/SPLP extraction and 14 days after extraction (volatiles); 14 days to TCLP extraction and 40 days after extraction (semivolatiles); 28 days to TCLP/SPLP extraction and 28 days after extraction (mercury); 180 days to TCLP/SPLS extraction and 180 days after extraction (metals)

a. Polyethylene (P); glass (G); brass sleeves in the sample barrel, sometimes called California brass (T).
a. No pH adjustment for soil.

4.2.3 Sample Identification

Field soil samples were assigned numbers based upon their origin, i.e. Soil Boring SB #1, Monitor well MW #1, the chronology of the event, i.e., #1, #2, #3, and the depth from which they were obtained. Water samples were assigned numbers based upon their originating monitor well, for example MW #1.

4.3 FIELD MEASUREMENTS

4.3.1 PARAMETERS

Field measurements to be conducted include VOC readings of field soil samples, water level measurements in monitor wells and PSH measurements in recovery wells and tanks. Field VOC readings were measured with a Photoionization Detector (PID). Field water and PSH levels were measured with an Interface Probe/Water Monitor.

4.3.2 EQUIPMENT CALIBRATION AND QUALITY CONTROL

The Photoionization Detector (PID) that was used or field VOC measurements is a MultiRAE Plus manufactured by RAE Systems Inc. of Sunnyvale, CA. This monitor is calibrated using Portagas Specialty gas mixtures and in accordance with the MultiRAE's Operations and Maintenance Manual.

The Interface Probe/Water Monitor used for water and PSH level measurements is a Solinst Interface Probe and Water Monitor manufactured by Solinst Canada Corp. of Georgetown, Ontario, Canada. The fluid level alarm on the interface probe is verified by pressing the test button and confirming its operation prior to each use.

4.3.3 EQUIPMENT MAINTENANCE AND DECONTAMINATION

All field measurement equipment was decontaminated according to the specifications in Section 3.7 prior to any measurement activities and was protected from contamination until ready for use.

4.3.4 FIELD MONITORING MEASUREMENTS

4.3.4.1 Groundwater Level Measurements

Water-level measurements were taken in all wells to determine the elevation of the groundwater level at least once within a single 24-hour period. These measurements were taken after all wells have been installed and developed and their water levels recovered completely. Any conditions (e.g., barometric pressure) that would have affected water levels were recorded in the field log. The field log also included the previous water level measurement for each well (to determine if current water level was reasonable).

Water-level measurements were taken with electric water level monitors. All measuring equipment was decontaminated according to the specifications in Section 4.3.3 and 3.7. Groundwater level was measured to the nearest 0.01 foot. (Two or more sequential measurements were taken at each location until two measurements agree to within + or - 0.01 foot.)

Static water levels were measured each time a well was sampled, and before any equipment entered the well.

4.4 SAMPLE CUSTODY

Procedures to ensure the custody and integrity of the samples were begun at the time of sampling and continued through transport, sample receipt, preparation, analysis and storage, data generation and reporting, and sample disposal. Records concerning the custody and condition of the samples were maintained in field and laboratory records.

ETGI maintained chain-of-custody records for all field and field QC samples. A sample is defined as being under a person's custody if any of the following conditions exist: (1) it is in their possession, (2) it is in their view, after being in their possession, (3) it was in their possession and they locked it up, or (4) it is in a designated secure area. All sample containers were sealed in a manner that prevented or detected tampering.

The following minimum information concerning the sample was documented on the chain of custody (COC) form:

- Unique sample identification
- Date and time of sample collection
- Source of sample (including name, location, and sample type)
- Preservative used
- Analyses required
- Name of collector(s)
- Pertinent field data
- Custody transfer signatures and dates and times of sample transfer from the field to transporters and to the laboratory or laboratories

All samples were uniquely identified, labeled, and documented in the field at the time of collection in accordance with Section 4.2.3 of the site investigation report.

Samples collected in the field were transported to the laboratory. When a 4°C requirement for preserving the sample was indicated, the samples were packed in ice to keep them cool during collection and transportation.

5.0 SAMPLE ANALYSIS SUMMARY

Table 1-1
Sample Analysis Summary

Method (prep/analytical)	Matrix	Total # of Samples
TPH - 8015M	Soil	142
BTEX – 8021B	Soil	26
BTEX – 8021B	Water	4
Metals – 6010B	Water	4
PAH – 8270C	Water	4
Cations/Anions/ TDS– 375.4,325.3,310,160.1	Water	4
Fingerprint- GS/MS 8270	PSH	1

6.0 DATA QA/QC REVIEW AND EVALUATION

6.1 DATA QA/QC REVIEW

The laboratory was responsible for proper QA/QC procedures after signing the chain-of-custody form. These procedures were either transmitted with the laboratory reports or are on file at the laboratory. A review of the QA/QC data, transmitted with the laboratory reports, was performed by ETGI personnel. All instrumentation and extraction accuracy ranges were within acceptable limits.

6.2 DATA EVALUATION

As constituents were detected in the various media sampled at the site (soil and groundwater), ongoing evaluations for determining contaminants was performed. For the purposes of this risk assessment, contamination levels will be based upon criteria set forth in the NMOCD guidelines for soils. The contamination levels for groundwater will follow criteria set forth in the New Mexico Water Quality Control Commission (NMWQCC) guidelines.

Due to the nature of ongoing pipeline operations, it is assumed that the constituents, detected in the soil, originated from the pipeline release. A total of 14 soil samples, obtained from the excavation and adjacent to the pipeline release, were analyzed for TPH using SW 846 Method 8015M and BTEX by SW 846 Method 8021B if the field PID reading exceeded 100ppm.

Ten soil borings were advanced at the site, with a total of 55 soil samples taken. The samples were analyzed for TPH using SW 846 Method 8015M and BTEX by SW 846 Method 8021B if the field PID reading exceeded 100ppm. Four monitor wells were advanced at the site, with a total of 48 soil samples taken. The samples were analyzed for TPH using SW 846 Method 8015M and BTEX by SW 846 Method 8021B if the field PID reading exceeded 100ppm TPH using SW 846. Two product recovery wells were advanced at the site, with a total of 25 soil samples taken. The samples were analyzed for TPH using SW 846 Method 8015M and BTEX by SW 846 Method 8021B if the field PID reading exceeded 100ppm.

Once the monitor wells were installed, four groundwater samples were taken from the first permeable zone (53 to 57 feet bgs) to determine if the contamination had migrated to the groundwater. The samples were analyzed for BTEX by SW 846 Method 8021B, Metals by SW 846 Method 6010B, Polynuclear Aromatic Hydrocarbons (PAH) by SW 846 Method 8270 and Cations, Anions and Total Dissolved Solids (TDS) by Methods 375.4, 325.3, 310 and 160.1. Additionally, a PSH sample was obtained from recovery well RW #1 and fingerprinted by GC/MS SW 846 Method 8270 to identify the hydrocarbon constituent.

7.0 SUMMARY OF RESULTS

7.1 DELINEATION OF NATURE, EXTENT, AND MAGNITUDE OF CONTAMINATION

The presence of petroleum-impacted soil was detected in the unsaturated and capillary fringe zones in both recovery wells RW #1 and RW #2 as well as the sidewalls of the excavation. The greatest impact in the unsaturated zone was detected at the depth of two feet bgs on the west wall of the Amoco pipeline excavation (SS04) where a TPH concentration of 25,199 mg/kg was measured in the soil sample (See Table 1). Visual observations of the soil samples indicated that this soil would not qualify as Highly Contaminated/Saturated Soils as per NMOCD guidelines. Elevated levels of TPH were observed in the surface to 15 feet bgs in samples from the boring later completed as recovery well RW #1. Additionally, elevated levels of TPH were observed in the surface to 25 feet bgs in samples from the boring later completed as recovery well RW #2. None of these samples appear to qualify as Highly Contaminated/Saturated Soils as described above.

At the recovery well RW #1 location, a TPH concentration of 17,244 mg/kg was measured in the soil sample collected at 55 feet bgs (See Table 1). At the recovery well RW #2 location, a TPH concentration of 4,632 mg/kg was measured in the soil sample collected at 55 feet bgs (See Table 1). These soil samples showed evidence of petroleum saturation based on the NMOCD guidelines for Highly Contaminated/Saturated Soils.

With the exception of the two recovery wells and the adjacent release excavation area, Highly Contaminated/Saturated and Unsaturated/Contaminated Soils were not observed in any of the other soil samples. Therefore, it is assumed that the Highly Contaminated/Saturated Soils and Unsaturated Contaminated Soils are limited to the area immediately adjacent to the release site.

The greatest soil impact within the capillary fringe zone was detected at the recovery well RW #1 location where the TPH concentration in the sample collected from 55 feet bgs was 17,244 mg/kg (See Table 1).

7.1.1 Highly Contaminated/Saturated Soils

During the site investigation, soils that may be characterized by NMOCD guidelines as Highly Contaminated/Saturated Soils were observed in recovery wells RW #1 and RW #2, adjacent to the pipeline at the leak site. These soils occurred in the capillary fringe zone, at a depth of 55 feet bgs.

7.1.2 Unsaturated Contaminated Soils

Surface soil samples that were taken from the walls of the excavation surrounding the pipeline on May 17, 2000 exhibited contamination that could be classified as Unsaturated/Contaminated Soils at a depth of two feet bgs. Soil samples that were also taken from a depth of two feet bgs from each

stockpile on May 17, 2000 exhibited contamination that could be classified as Unsaturated/Contaminated.

Soil samples taken from 0 to 15 feet bgs in recovery well RW #1 and from 0 to 25 feet bgs in recovery well RW #2 showed evidence of hydrocarbon contamination. These samples could be classified as Uncontaminated Saturated Soils under NMOCD guidelines.

7.1.3 Groundwater Contamination

The groundwater gradient, as depicted on Figure 3, slopes to the southeast at approximately 0.0017 feet per foot. The variations in gradient, as depicted on the map, are most likely a function of variations in lithology at the water table, and the presence of PSH within portions of the mapped area.

A plume of PSH is distributed in the subsurface from the point of release and down gradient of monitor well MW #2, southeast of the release site (See Figures 4,5,6). Monitor well MW #2 is located approximately 327 feet southeast and down gradient from the release site. The thickness of PSH is greatest in recovery well RW #1, where measured PSH thickness is 10.39 feet. Recovery well #2 has shown a consistent thickness of between 8.73 and 9.51 on four different measuring occasions. A thickness of 4.11 feet of PSH was detected in monitor well MW #2 when measured on November 15, 2000.

Dissolved phase petroleum constituents were detected in the sample from one of the monitor wells, MW #2. The sample was above the NMOCD standard for benzene. This well is located down gradient of recovery well RW #1. None of the other groundwater samples were in excess of NMWQCC standards for other petroleum constituents including naphthalene (see Tables 2, 3, 4).

Samples collected from monitor wells MW #1, MW #2, and MW #3 were in excess of NMWQCC standards for aluminum and iron. Groundwater samples from monitor wells MW #1 and MW #3 had levels of mercury slightly above the NMWQCC standard. The groundwater sample from monitor well MW #2 also had a level of manganese slightly above the NMWQCC standard.

All of the groundwater samples were non-detect for benzo-a-pyrene; however, the laboratory detection limit was 0.005 mg/L while the regulatory limit is 0.0007 mg/L. The analytical method used for this analysis is acceptable to the OCD and this detection limit is a function of this method. Therefore, it cannot be concluded that groundwater at the site does not exceed the regulatory limit for benzo-a-pyrene.

In the site monitor well groundwater samples, TDS concentrations range from 389 mg/L to 654 mg/L. New Mexico WQCC statute 20.6.2 Subpart III.3101 and OCD Rule 19 NMAC 15.A.19.A state that groundwater with a TDS concentration of less than 10,000 mg/L is considered to be of beneficial use and subject to abatement. Since all of the TDS sample concentrations from the site are below this value, the site groundwater qualifies for beneficial use and is subject to abatement.

7.1.4 Background (Up gradient) Sample Results

The groundwater sample from monitor well MW #1, the up gradient well, was in excess of NMWQCC standards for aluminum, iron and mercury (See Table 4).

7.2 IDENTIFICATION OF REMEDIAL ACTION LEVELS

7.2.1 Highly Contaminated/Saturated and Unsaturated Contaminated Soils

During the site investigation, soils that may be characterized by NMOCD guidelines as Highly Contaminated/Saturated Soils were observed in recovery wells RW #1 and RW #2, adjacent to the pipeline at the leak site. These soils were identified in the capillary fringe zone of the recovery wells at 55 feet bgs.

Soils that may be characterized by NMOCD guidelines as Unsaturated Contaminated Soils were observed in recovery wells RW #1 and RW #2, adjacent to the pipeline at the leak site. These soils were identified at the surface to 15 feet bgs and 25 feet bgs, respectively.

Soils that may be characterized by NMOCD guidelines as Unsaturated Contaminated Soils were observed at the surface of the sidewalls in the excavation area at two feet bgs. The excavation area is adjacent to the pipelines at the leak site.

7.2.1.1 Site Ranking

The groundwater table occurs at a depth of approximately 53 to 57 feet bgs, however the presence of PSH on the groundwater in recovery wells RW #1 and RW #2 has been observed. Following NMOCD ranking guidelines, the site will have a ranking greater than 19 points.

The nearest water well is to the southeast, in excess of one-half mile away. The distance to the nearest surface water, not including man made excavations, is greater than 1,000 feet from the site. Therefore, these parameters have no bearing on determining the NMOCD ranking.

7.2.1.2 Remedial Action Levels

As per the NMOCD Guidelines (1993), the soil remediation action levels for a site with a Ranking Score of greater than 19 are as follows:

- Benzene - 10 ppm
- BTEX - 50 ppm
- TPH - 100 ppm

7.2.2 Groundwater

The presence of PSH on the water table in recovery wells RW #1 and RW #2 indicates the need for groundwater remediation. The NMWQCC groundwater remediation levels are as follows:

- Benzene – 0.01 mg/L
- Toluene – 0.75 mg/L
- Ethyl Benzene – 0.75 mg/L
- Total Xylenes – 0.62 mg/L
- PAHs (total naphthalene) – 0.03 mg/L
- Benzo-a-pyrene – 0.0007 mg/L

7.3 COMPARISON TO REMEDIAL ACTION LEVELS

7.3.1 Highly Contaminated/Saturated and Unsaturated Contaminated Soils

The soil sample classified as Highly Contaminated/Saturated Soils, collected from recovery well RW #2, had a TPH level of 17,244 mg/kg, a BTEX concentration of 504.8 mg/kg and a Benzene concentration of 29.9 mg/kg. These levels far exceed the NMOCD regulatory action levels for this site of 100 ppm (mg/kg), 50 ppm and 10 ppm respectively.

The soil samples classified as Unsaturated Contaminated Soils, collected from the sidewalls of the excavation, had exhibited TPH levels of less than 122 mg/kg to 25,199 mg/kg, BTEX concentrations of less than 0.50 mg/l to 5.734 mg/kg and Benzene concentrations of less than 0.10 mg/kg to 0.123 mg/kg. The NMOCD regulatory action levels for this site are 100 ppm for TPH, 50 ppm for BTEX and 10 ppm for Benzene.

7.3.2 Groundwater

The groundwater is impacted at recovery wells RW #1 and RW #2, where PSH levels of 9.43 feet and 10.38 feet were measured on the water table (See Table 5). The dissolved phase concentration of Benzene is 0.711 mg/L, and the BTEX concentration is 1.87 mg/L. The NMWQCC regulatory limit in groundwater for Benzene is 0.01 mg/l and for BTEX is 2.13 mg/L. The occurrence of PSH and dissolved phase hydrocarbons in monitor well MW #2 far exceeds the NMWQCC regulatory limits.

8.0 CONCLUSIONS

8.1 DELINEATION OF CONTAMINANT IMPACTS/PLUME (S)

PSH has been encountered in recovery wells, RW #1 and RW #2, and the down gradient monitor well MW #2. The greatest level of impact is on recovery well RW #1, the down gradient recovery well, approximately 63 feet southeast of the leak site. PSH thickness is measured at 10.36 feet in recovery well RW #2, trending to 0.59 feet in measured thickness at monitor well MW #2.

Monitor well MW #4, which is located 150 feet southeast (down gradient) from monitor well MW #2, has exhibited no levels of PSH or dissolved phase hydrocarbons in the groundwater.

8.1.1 Onsite Impacts from Release

Localized groundwater contamination and PSH impact have been observed in the recovery wells, RW #1 and RW #2. The up gradient monitor well MW #1, is devoid of any hydrocarbon impact.

8.1.2 Offsite Impacts from Release

Both PSH and dissolved phase hydrocarbon constituents have been observed in monitor well MW #2. Monitor well MW #2 is located on property immediately adjacent to the property on which the release point is located. No other offsite impacts have been identified in monitor wells MW 3# and MW #4 at this time.

8.1.3 Impacts from Up Gradient/Offsite Releases

The lack of identified petroleum-based contaminants in the up gradient monitor well, MW #1, indicates that there is no up gradient source causing impact to the referenced site.

8.1.4 Evaluation of Appropriate Plume(s) Boundaries

Based upon the analytical data obtained from both the recovery wells RW #1 and RW #2 and the monitor wells, MW #1, MW #2, MW #3 and MW #4, the down gradient extent of the PSH plume has been inferred. The up gradient extent has also been inferred. An accurate estimation of the width of the plume cannot be made with the existing data. The inferred plume at the site is depicted on Figure 4, the PSH Thickness Map.

8.2 MIGRATION OF CONTAMINANT PLUME (S)

8.2.1 Future Extent of Contamination

The installation of an automated recovery system for the PSH observed in recovery wells RW #1, RW #2 and Monitor well #2 would remove the PSH that is present on the water table at the site. This reduction in source contamination will slow or halt the extension of the PSH plume further down

gradient.

Further monitoring of the groundwater in the down gradient monitor wells, MW #2, MW #3 and MW #4, will identify any change in the contaminant plume size.

8.2.2 Evaluation of Future Offsite Impacts

The down gradient monitor wells, MW #2, MW #3 and MW #4, occur offsite. Monitor well MW #2 has observable PSH at this time. Ongoing monitoring of the down gradient monitor wells will identify any spread of the PSH and/or dissolved phase hydrocarbons. The installation of up gradient recovery systems for the PSH observed in the recovery wells will limit the source of contamination. This action will limit or halt the spread of the contaminate plume.

8.3 EXPOSURE ASSESSMENT

8.3.1 Current Exposures

8.3.1.1 Onsite Receptors

Potential pathways for onsite receptors include direct contact with surface soils, direct contact with exposed subsurface soils, volatilization from surface soils, volatilization from subsurface soils, uptake/assimilation from surface soils and direct contact with groundwater. The exposure routes are as follows:

- Direct Contact:

Soil was classified as Highly Saturated/Contaminated and Unsaturated Contaminated as per NMOCD guidelines based on analytical testing. Analysis of site soils has determined that not all contaminated soil was removed.

- With Surface Soil:

  Surface soil is assumed to be that interval which is from 0 to 2 feet bgs. Based on the definition of their duties, it is assumed that remedial workers, construction workers, and sampling/environmental technicians may be exposed to surface soil. Therefore, this pathway is potentially complete for these receptors.

  Based on site maps, no residents live in the immediate area of contamination. Therefore, this pathway is considered incomplete for residents.

- With Subsurface Soil:

  Subsurface soil is assumed to be that interval which is deeper than 2 feet bgs.

Based on the definition of their duties, it is assumed that remedial workers, construction workers and environmental technicians may come into contact with subsurface soil. Therefore, this pathway is potentially complete for these receptors.

It is assumed that maintenance work will not occur at a depth greater than 2 feet bgs. This pathway is therefore assumed to be incomplete for environmental technicians performing maintenance duties.

Based on site maps, no residents live in the immediate area of contamination. Therefore, this pathway is considered incomplete for residents.

- Volatilization from Surface Soil:

Surface soil is assumed to be that interval which is from 0 to 2 feet (bgs). Soil was classified as Unsaturated Contaminated as per NMOCD guidelines based on analytical testing, indicating that some of the contaminants are volatile organic compounds (VOCs). This site investigation has confirmed that not all contaminated soil was removed.

- To Ambient Air:

Based on this information, this pathway is considered potentially complete for the following receptors: remediation workers, construction workers and sampling/environmental technicians.

Based on site maps, no residents live in the immediate area of contamination. Therefore, this pathway is considered incomplete for residents.

- Volatilization from Subsurface Soil:

Subsurface soil is assumed to be that interval which is deeper than 2 feet bgs. Soil was classified as Highly Saturated/Contaminated and Unsaturated Contaminated as per NMOCD guidelines based on analytical testing, indicating that some of the contaminants are volatile organic compounds (VOCs). Further sampling and testing has confirmed that not all contaminated soil was removed.

- To Ambient Air:

Based on this information, this pathway is considered complete for the following receptors: remediation workers, construction workers, and sampling/environmental technicians.

Based on site maps, no residents live in the immediate area of contamination. Therefore, this pathway is considered incomplete for residents.

- Uptake/Assimilation via Surface Soil:

  Surface soil is assumed to be that interval which is from 0 to 2 feet bgs. Soil was classified as Unsaturated Contaminated as per NMOCD guidelines based on analytical testing. Until further remediation occurs, contaminated surface soil is present.

  - From Livestock:

  If contaminated surface soil is present, those compounds which bioaccumulate will be found in any livestock that may be grazed on the land. At this time, no livestock are grazed on this land. Therefore, the potential pathway is incomplete.

- Direct Contact with Groundwater:

  It has been determined that groundwater at the site is contaminated. Sampling/environmental technicians have the potential to come in direct contact with the groundwater when sampling an/or gauging occurs. Therefore, the pathway is considered potentially complete for sampling/environmental technicians.

8.3.1.2 Offsite Receptors

Offsite impact to the groundwater has occurred at the site. Therefore, potential pathways for offsite exposure exist and are as follows:

- Infiltration/Migration to Shallow Groundwater:

Contamination of shallow groundwater does exist offsite. The documented plume of contamination has not spread down gradient to any domestic use water wells. Therefore, the pathway is considered incomplete.

- Infiltration/Migration to a Potable Aquifer:

Based upon NMWQCC guidelines the groundwater at the site is considered of beneficial use and therefore a potable aquifer. Contamination of the shallow groundwater does exist offsite. The documented plume of contamination has not spread down gradient to any domestic use water wells. Therefore, the pathway is considered incomplete.

If future unrestricted use residents draw irrigation water from this shallow aquifer, they could be exposed to contamination. Therefore, this pathway must be considered potentially complete. Because residents do not live in the site area, exposure to humans via this pathway is not currently viable.

8.3.2 Future Potential Exposures

8.3.2.1 Onsite Receptors

- Direct Contact:

Soil was classified as Highly Saturated/Contaminated and Unsaturated Contaminated as per NMOCD guidelines based on analytical testing. Analysis of site soils has determined that not all contaminated soil was removed.

- With Surface Soil:

Surface soil is assumed to be that interval which is from 0 to 2 feet bgs. Based on the definition of their duties, it is assumed that remedial workers, construction workers, and sampling/environmental technicians may be exposed to surface soil. Therefore, this pathway is potentially complete for these receptors.

Future unrestricted use residents could build houses or other structures on the site. If the future unrestricted use residents do any type of landscaping or yard work, they could be exposed to surface soil. This pathway is considered potentially complete for future residents.

- With Subsurface Soil:

Subsurface soil is assumed to be that interval which is deeper than 2 feet bgs.

Based on the definition of their duties, it is assumed that remedial workers, construction workers and environmental technicians may come into contact with subsurface soil. Therefore, this pathway is potentially complete for these receptors.

It is assumed that maintenance work will not occur at a depth greater than 2 feet bgs. This pathway is therefore assumed to be incomplete for environmental technicians performing maintenance duties.

Future unrestricted use residents could build houses or other structures on the site. If the future unrestricted use residents do any extensive home improvement or plant certain types of vegetation, such as large trees or bushes, they could be exposed to subsurface soil. This pathway is considered potentially complete.

- Volatilization from Surface Soil:

Surface soil is assumed to be that interval which is from 0 to 2 feet (bgs). Soil was classified as Unsaturated Contaminated as per NMOCD guidelines based on analytical testing, indicating that some of the contaminants are volatile organic compounds (VOCs). This site investigation has confirmed that not all contaminated soil was removed.

- To Ambient Air:

Based on this information, this pathway is considered potentially complete for the following receptors: remediation workers, construction workers and sampling/environmental technicians.

Future unrestricted use residents could build houses or other structures on the site. If the future unrestricted use residents do any type of landscaping or yard work, they could be exposed to surface soil. This pathway is considered potentially complete for future residents.

- Volatilization from Subsurface Soil:

Subsurface soil is assumed to be that interval which is deeper than 2 feet bgs. Soil was classified as Highly Saturated/Contaminated and Unsaturated Contaminated as per NMOCD guidelines based on analytical testing, indicating that some of the contaminants are volatile organic compounds (VOCs). Further sampling and testing has confirmed that not all contaminated soil was removed.

- To Ambient Air:

Based on this information, this pathway is considered complete for the following receptors: remediation workers, construction workers, and sampling/environmental technicians.

Future unrestricted use residents could build houses or other structures on the site. If the future unrestricted use residents do any extensive home improvement or plant certain types of vegetation, such as large trees or bushes, they could be exposed to subsurface soil. This pathway is considered potentially complete for future residents.

- Uptake/Assimilation via Surface Soil:

Surface soil is assumed to be that interval which is from 0 to 2 feet bgs. Soil was classified as Unsaturated Contaminated as per NMOCD guidelines based on analytical testing. Until further remediation occurs, contaminated surface soil is present. If contaminated surface soil is present, those compounds which bioaccumulate will be found in any livestock that may be grazed on the land.

- From Livestock:

If contaminated surface soil is present, those compounds which bioaccumulate will be found in any livestock that may be grazed on the land.

It is possible that future unrestricted use residents will raise livestock on the contaminated soil. Therefore, this pathway is potentially complete for unrestricted use residents.

- Direct Contact with Groundwater:

  It has been determined that groundwater at the site is contaminated. Until remediation removes the identified contaminates from the groundwater, sampling/environmental technicians have the potential to come in direct contact with the groundwater when sampling an/or gauging occurs. Therefore, the pathway is considered potentially complete for sampling/environmental technicians.

8.3.2.2 Offsite Receptors

Offsite impact to the groundwater has occurred at the site. Therefore, potential pathways for offsite exposure exist and are as follows:

- Infiltration/Migration to Shallow Groundwater:

Contamination of shallow groundwater does exist offsite. The documented plume of contamination has not spread down gradient to any domestic use water wells. Therefore, the pathway is considered incomplete.

- Infiltration/Migration to a Potable Aquifer:

Based upon NMWQCC guidelines the groundwater at the site is considered of beneficial use and therefore a potable aquifer. Contamination of the shallow groundwater does exist offsite. The documented plume of contamination has not spread down gradient to any domestic use water wells. Therefore, the pathway is considered incomplete.

If future unrestricted use residents draw irrigation water from this shallow aquifer, they could be exposed to contamination. Therefore, this pathway must be considered potentially complete.

These pathways were thoroughly evaluated for completeness and applicability based on known and potential receptor behavior patterns. However, significant data gaps are present. Once information is supplied to fill the data gaps, modification of the exposure pathways may occur.

CONCLUSIONS

This exposure assessment is intended to evaluate the potential for site-specific receptors to be exposed to the contaminants at the site. Based on the analytical data, the assumed contaminants are TPH and BTEX. Several different receptor populations were addressed based on the likely activities that are currently conducted or may be conducted in the future at the site or in areas impacted by contamination generated at the site. Based on the assumptions in the text, the following list highlights the exposure pathways by which each receptor could be exposed.

- A remedial/construction worker could only be exposed to the contaminants via volatilization from surface soil to ambient air; volatilization from subsurface soil to ambient air; and direct contact with both surface and subsurface soil.

- A sampling/environmental technician could only be exposed to the contaminants via volatilization from surface soil to ambient air; volatilization from subsurface soil to ambient air; direct contact with surface soil; and exposure to groundwater when sampling and/or gauging occurs.
- No complete pathways are present for recreational users.
- A future unrestricted use resident could only be exposed to the contaminants via infiltration/migration to shallow groundwater; volatilization from surface soil to ambient air; volatilization from subsurface soil to ambient air; direct contact with both surface and subsurface soil; uptake/assimilation via surface soil by livestock; and uptake/assimilation via shallow groundwater from onsite irrigation of plants/crops.

Only the complete pathways listed above need to be considered in the quantitative risk assessment that follows this exposure assessment. These pathways are predicated on the accuracy of the assumptions listed in the text. Once the accuracy has been determined, these exposure pathways will be finalized.

8.3.3 Site Conceptual Exposure Model

Based on the field activities, the contamination delineation, soil and groundwater classification, receptor and migration pathway identification, past history, and land use information documented in this report, a site conceptual exposure model (SCEM) was developed and is presented as Figure 7, current exposure. All potentially complete exposure pathways are addressed qualitatively, based on current and realistic future exposure scenarios.

An exposure pathway describes a specific environmental transport pathway by which receptor populations can be potentially exposed to the contaminates present at or originating from the site. An exposure pathway consists of four necessary elements:

- A source and mechanism of chemical release to the environment
- An environmental retention or transport medium for the released chemical
- A point of potential human contact with the medium and the receptors located at these points
- A human uptake route (intake of media containing site-related chemicals) at the point of exposure

All four elements must be present for an exposure pathway to be complete and for exposure to occur. If any one of the four elements is absent, the pathway is incomplete and no exposure can occur. A quantitative assessment of exposure will occur at a later date based on this exposure assessment and the results of subsequent field activities.

The results of the qualitative and quantitative exposure assessments will be used to make health risk-based decisions at the site.

9.0 RECOMMENDATIONS

9.1 MONITORING PROGRAM

All site monitoring wells will be gauged and sampled on a quarterly basis. Each well will be measured for the depth to PSH and/or groundwater. All of the groundwater monitoring wells, with the exception of those with measurable PSH on the water table, will be purged and sampled for BTEX and TPH.

After purging the wells, groundwater samples will be collected with a disposable Teflon sampler and polyethylene line by personnel wearing clean, disposable gloves. Groundwater sample containers will be filled in the order of decreasing volatilization sensitivity (i.e., BTEX containers will be filled first and PAH containers second).

Groundwater samples collected for BTEX analysis will be placed in 40 ml glass VOA vials equipped with Teflon lined caps. The analytical laboratory will provide the containers. The vials will be filled to a positive meniscus, sealed, and visually checked to ensure the absence of air bubbles. The analytical laboratory will provide the containers.

The filled containers will be labeled and placed on ice in an insulated cooler. The cooler will be sealed for transportation to the analytical laboratory. Proper chain-of-custody documentation will be maintained throughout the sampling process.

The groundwater samples will be analyzed as follows:

- BTEX concentrations in accordance with EPA Method 8021B, 5030
- TPH concentrations in accordance with modified EPA Method 8015-GRO/DRO

The quarterly data will be compiled and summarized in an annual report. The annual report will be submitted prior to April 1 of the following year.

9.2 FUTURE ACTIVITIES

At the present time, installation of automated skimmer systems is planned for recovery wells, RW #1 and RW #2 and monitor well MW #2. These recovery systems will allow the removal of PSH from these wells on a 24-hour basis once power is provided to the site. This system will be operational by Fall 2001 and will continue until measurable PSH has been removed from the site's recovery wells.

The first sampling event of the monitor wells occurred in May 2000. Subsequent quarterly sampling event will be conducted in November of the year 2000. The annual report will be provided to the NMOCD prior to April 1, 2001.

A Stage 2 abatement report, which will address the impacted soil and groundwater, will be provided in the near future. Based on site conditions, future activities will include the abatement and groundwater and the remediation of soil as appropriate. Details of these remedial activities will be provided under separate cover.

Upon completion of remedial activities at the site, a NFA closure request will be submitted to the NMOCD for approval.

10. REFERENCES

1. NMOCD *Guidelines For Remediation of Leaks, Spills and Releases*, August 1993 (NMOCD, 1993)
2. Title 19 NMAC 15.A.19
3. Title 20 NMAC 6.2.III.3103

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Quality Control Review

TABLES

Table 1

CONCENTRATIONS OF TPH & BTEX IN SOIL

EOTT Energy Corp.
DARR ANGELL DENTON #2
LEA COUNTY, NM
ETGI PROJECT # EOT2020R

All concentrations are in mg/kg

SAMPLE DATE	SAMPLE LOCATION	Methods: EPA SW 846-8021B, 5030			SW 846-8021B, 5030					
		GRO C_6-C_{10}	DRO >C_{10}-C_{28}	TPH C_6-C_{28}	BENZENE	TOLUENE	ETHYL-BENZENE	M,P-XYLENES	O-XYLENES	BTEX
05/17/2000	SS01 North Wall Pipeline 2'	<10	<10	<20	<0.100	0.122	<0.100	0.121	<0.100	0.243
05/17/2000	SS02 North Wall West 2'	594	13720	14314	<0.100	0.136	<0.100	0.147	0.112	0.395
05/17/2000	SS03 North Wall East 2'	12	5284	5296	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
05/17/2000	SS04 West Wall A. Pipeline 2'	661	24538	25199	<0.100	0.173	0.171	0.203	0.341	0.888
05/17/2000	SS05 East Wall A. Pipeline 2'	626	19579	20205	<0.100	0.282	0.188	0.335	0.272	1.077
05/17/2000	SS06 South Wall West 2'	561	8977	9538	<0.100	<0.100	<0.100	0.279	0.162	0.441
05/17/2000	SS07 South Wall East 2'	902	3656	4558	<0.100	0.254	0.184	1.830	1.420	3.688
05/17/2000	SS08 South Wall Pipeline 2'	<10	197	197	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
05/17/2000	SS09 Stock Pile B NW	381	8749	9130	0.123	2.210	1.080	1.640	0.681	5.734
05/17/2000	SS10 Stock Pile B NE 1'	451	7743	8194	<0.100	0.199	0.339	0.361	0.303	1.202
05/17/2000	SS11 Stock Pile B SW 1'	199	6863	7062	<0.100	0.142	0.259	0.243	0.250	0.894
05/17/2000	SS12 Stock Pile B SE 1'	243	7697	7940	<0.100	<0.100	0.467	0.371	0.353	1.191
05/17/2000	SS13 Stock Pile A South 1'	<10	933	933	<0.100	0.250	<0.100	0.164	<0.100	0.414
05/17/2000	SS14 Stock Pile A North 1'	<10	112	112	<0.100	<0.100	<0.100	0.172	<0.100	0.172
06/01/2000	RW1 5' C	60	823	883	<0.100	1.770	0.836	5.340	0.965	8.91
	RW1 10' SS	781	2257	3038	<0.100	16.30	9.34	41.90	13.40	80.94
	RW1 15' C	81	965	1046	<0.100	3.40	1.59	6.64	2.47	14.10
	RW1 20' SS	<10	<10	<20						
	RW1 25' SS	<10	<10	<20						

CONCENTRATIONS OF TPH & BTEX IN SOIL

EOTT Energy Corp.
DARR ANGELL DENTON #2
LEA COUNTY, NM
ETGI PROJECT # EOT2020R

All concentrations are in mg/kg

SAMPLE DATE	SAMPLE LOCATION	Methods: EPA SW 846-8021B, 5030			SW 846-8021B, 5030					
		GRO C_6-C_{10}	DRO >C_{10}-C_{28}	TPH C_6-C_{28}	BENZENE	TOLUENE	ETHYL-BENZENE	M,P-XYLENES	O-XYLENES	BTEX
	RW1 30' SS	<10	<10	<20						
	RW1 35' SS	<10	<10	<20						
	RW1 40' SS	<10	<10	<20						
	RW1 45' SS	<10	<10	<20						
	RW1 50' SS	454	1264	1718	<0.100	3.34	3.28	12.10	4.45	23.17
	RW1 55' SS	7092	10152	17244	29.90	169.00	63.80	183.00	59.10	504.80
	RW1 60' SS	388	1227	1615	<0.100	4.37	3.02	9.97	3.66	21.02
06/01/2000	RW2 5' C	910	2850	3760	<0.100	11.10	4.76	19.30	8.12	43.28
	RW2 10' C	515	2041	2556	<0.100	5.54	2.99	11.90	4.43	24.86
	RW2 15' C	1456	4764	6220	0.666	14.30	6.05	24.70	9.15	54.87
	RW2 20' C	563	2857	3420	<0.100	5.00	2.95	12.20	4.65	24.80
	RW2 25' SS	<10	102	<20						
	RW2 30' SS	<10	<10	<20						
	RW2 35' SS	<10	32	32						
	RW2 40' SS	<10	<10	<20						
	RW2 45' SS	<10	<10	<20						
	RW2 50' SS	53	648	701						
	RW2 55' SS	916	3716	4632	<0.100	4.90	3.60	8.06	4.20	20.76
	RW2 60' SS	12	285	297						
	RW2 65' SS	<10	221	221						
06/02/2000	SB1 5' C	<10	<10	<20						
	SB1 10' C	<10	<10	<20						
	SB1 15' C	<10	<10	<20						
	SB1 20' C	<10	<10	<20						
	SB1 25' SS	<10	<10	<20						
	SB1 30' C	<10	<10	<20						
	SB1 35' SS	<10	<10	<20						
	SB1 40' SS	<10	<10	<20						
	SB1 45' SS	<10	<10	<20						
	SB1 50' SS	<10	<10	<20						
	SB1 55' SS	<10	<10	<20						
	SB1 57' SS	<10	<10	<20						
06/05/2000	SB2C 5'	<10	<10	<20						

CONCENTRATIONS OF TPH & BTEX IN SOIL

EOTT Energy Corp.
DARR ANGELL DENTON #2
LEA COUNTY, NM
ETGI PROJECT # EOT2020R

All concentrations are in mg/kg

SAMPLE DATE	SAMPLE LOCATION	Methods: EPA SW 846-8021B, 5030			SW 846-8021B, 5030					
		GRO C_6-C_{10}	DRO >C_{10}-C_{28}	TPH C_6-C_{28}	BENZENE	TOLUENE	ETHYL-BENZENE	M,P-XYLENES	O-XYLENES	BTEX
	SB2C 10'	<10	<10	<20						
	SB2SS 15'	<10	<10	<20						
	SB2SS 20'	<10	<10	<20						
	SB2SS 25'	<10	<10	<20						
	SB2SS 30'	<10	<10	<20						
	SB2SS 35'	<10	<10	<20						
	SB2SS 40'	<10	<10	<20						
	SB2SS 45'	<10	<10	<20						
	SB2SS 50'	<10	<10	<20						
	SB2SS 57'	<10	<10	<20						
06/05/2000	SB3C 5'	<10	<10	<20						
	SB3C 10'	<10	<10	<20						
	SB3C 15'	<10	<10	<20						
	SB3C 20'	<10	<10	<20						
	SB3C 25'	<10	<10	<20						
	SB3C 30'	<10	<10	<20						
	SB3C 35'	<10	<10	<20						
	SB3C 40'	<10	<10	<20						
	SB3C 45'	<10	<10	<20						
	SB3C 50'	<10	<10	<20						
	SB3C 60'	<10	<10	<20						
06/06/2000	SB4C 5'	<10	<10	<20						
	SB4C 10'	<10	<10	<20						
	SB4C 15'	<10	<10	<20						
06/06/2000	SB5C 5'	<10	<10	<20						
	SB5C 10'	<10	<10	<20						
	SB5C 15'	<10	<10	<20						
06/06/2000	SB6C 5'	<10	<10	<20						
	SB6C 10'	<10	<10	<20						
	SB6C 15'	<10	<10	<20						
06/06/2000	SB7C 5'	<10	<10	<20						

CONCENTRATIONS OF TPH & BTEX IN SOIL

EOTT Energy Corp.
DARR ANGELL DENTON #2
LEA COUNTY, NM
ETGI PROJECT # EOT2020R

All concentrations are in mg/kg

SAMPLE DATE	SAMPLE LOCATION	Methods: EPA SW 846-8021B, 5030			SW 846-8021B, 5030					
		GRO C_6-C_{10}	DRO >C_{10}-C_{28}	TPH C_6-C_{28}	BENZENE	TOLUENE	ETHYL-BENZENE	M,P-XYLENES	O-XYLENES	BTEX
	SB7C 10'	<10	<10	<20						
	SB7C 15'	<10	<10	<20						
06/06/2000	SB8C 5'	<10	<10	<20						
	SB8C 10'	<10	<10	<20						
	SB8C 15'	<10	<10	<20						
06/06/2000	SB9C 5'	<10	<10	<20						
	SB9C 10'	<10	<10	<20						
	SB9C 15'	<10	<10	<20						
06/06/2000	SB10C 5'	<10	<10	<20						
	SB10C 10'	<10	<10	<20						
	SB10C 15'									
		<10	<10	<20						
06/06/2000	MW1C 5'	<10	<10	<20						
	MW1C 10'	<10	<10	<20						
	MW1C 15'	<10	<10	<20						
	MW1C 20'	<10	<10	<20						
	MW1SS 25'	<10	<10	<20						
	MW1SS 30'	<10	<10	<20						
	MW1SS 35'	<10	<10	<20						
	MW1SS 40'	<10	<10	<20						
	MW1SS 45'	<10	<10	<20						
	MW1SS 52'	<10	<10	<20						
	MW1C 65'	<10	<10	<20						
06/12/2000	MW2C 5'	<10	<10	<20						
	MW2C 10'	<10	<10	<20						
	MW2C 15'	<10	<10	<20						
	MW2C 20'	<10	<10	<20						
	MW2C 25'	<10	<10	<20						
	MW2C 30'	<10	<10	<20						
	MW2C 35'	<10	<10	<20						
	MW2C 40'	<10	<10	<20						
	MW2C 45'	<10	<10	<20						

CONCENTRATIONS OF TPH & BTEX IN SOIL

EOTT Energy Corp.
DARR ANGELL DENTON #2
LEA COUNTY, NM
ETGI PROJECT # EOT2020R

All concentrations are in mg/kg

SAMPLE DATE	SAMPLE LOCATION	Methods: EPA SW 846-8021B, 5030			SW 846-8021B, 5030					
		GRO C_6-C_{10}	DRO >C_{10}-C_{28}	TPH C_6-C_{28}	BENZENE	TOLUENE	ETHYL-BENZENE	M,P-XYLENES	O-XYLENES	BTEX
	MW2C 55'	15	2251	2266	<0.100	0.724	<0.100	1.27	0.318	2.312
	MW2C 65'	<10	229	229						
06/12/2000	MW3C 5'	<10	<10	<20						
	MW3C 10'	<10	<10	<20						
	MW3C 15'	<10	<10	<20						
	MW3C 20'	<10	<10	<20						
	MW3C 25'	<10	<10	<20						
	MW3C 30'	<10	<10	<20						
	MW3C 35'	<10	<10	<20						
	MW3C 40'	<10	<10	<20						
	MW3C 45'	<10	<10	<20						
	MW3C 50'	<10	<10	<20						
	MW3C 55'	<10	<10	<20						
	MW3C 65'	<10	<10	<20						
07/11/2000	MW4 0-2'	<10	<10	<20						
	MW4 3-5'	<10	<10	<20						
	MW4 6-10'	<10	<10	<20						
	MW4 13-15'	<10	<10	<20						
	MW4 18-20'	<10	<10	<20						
	MW4 23-25'	<10	<10	<20						
	MW4 28-30'	<10	<10	<20						
	MW4 33-35'	<10	<10	<20						
	MW4 38-40'	<10	<10	<20						
	MW4 43-45'	<10	<10	<20						
	MW4 48-50'	<10	<10	<20						
	MW4 53-55'	<10	<10	<20						
	MW4 58-60'	<10	<10	<20						

Table 2

CHEMICAL CONCENTRATIONS IN GROUNDWATER

EOTT Energy Corp.
DARR ANGELL DENTON #2
LEA COUNTY, NM
ETGI PROJECT # EOT2020R

All concentrations are in mg/L

		SW 846-8021B, 5030						Methods: EPA 375.4, 325.3, 310. 160.1				
SAMPLE DATE	SAMPLE LOCATION	BENZENE	TOLUENE	ETHYL-BENZENE	M,P-XYLENES	O-XYLENES	BTEX	Sulfate	Chloride	Carbonate	Bicarbonate	TDS
06/16/2000	MW-1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	122.3	48	0	144	431
09/13/2000	MW-1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001					
11/15/2000	MW-1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001					
02/14/2001	MW-1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001					
06/16/2000	MW-2	0.711	0.475	0.143	0.441	0.100	1.87	100.9	87	0	220	559
06/16/2000	MW-3	0.001	<0.001	<0.001	<0.001	<0.001	0.001	80.2	35	0	187	395
09/13/2000	MW-3	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001					
11/15/2000	MW-3	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001					
02/14/2001	MW-3	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001					
05/05/2000	MW-4	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	154	71	<5	350	654
07/14/2000	MW-4	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	137	40	0	166	389
09/13/2000	MW-4	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001					
11/15/2000	MW-4	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001					
02/14/2001	MW-4	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001					
05/05/2000	MW-7	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	69.4	27	<5	227	399

Table 3

CONCENTRATIONS OF SEMI-VOLATILES IN GROUNDWATER

EOTT Energy Corp.
DARR ANGELL DENTON #2
LEA COUNTY, NM
ETGI PROJECT # EOT2020R

All soil concentrations are in mg/kg
All water concentrations are in mg/L

SAMPLE DATE	SAMPLE LOCATION	SAMPLE TYPE	EPA SW846-8270C, 3510															
			Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo[a]anthracene	Chrysene	Benzo[b]fluoranthene	Benzo[k]fluoranthene	Benzo[a]pyrene	Indeno[1,2,3-cd]pyrene	Dibenz[a,h]anthracene	Benzo[g,h,i]perylene
06/16/2000	MW-1	Water	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
06/16/2000	MW-2	Water	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
06/16/2000	MW-3	Water	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
05/05/2000	MW-4	Water	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
07/14/2000	MW-4	Water	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

Table 4

CONCENTRATIONS OF METALS IN GROUNDWATER

EOTT Energy Corp.
DARR ANGELL DENTON #2
LEA COUNTY, NM
ETGI PROJECT # EOT2020R

All soil concentrations are in mg/kg
All water concentrations are in mg/L

			EPA SW846-6010B, 7470																						
SAMPLE DATE	SAMPLE LOCATION	SAMPLE TYPE	Aluminum	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Tin	Vanadium	Zinc	Boron	Strontium
06/16/2000	MW-1	Water	8.5	0.008	0.203	<0.004	0.002	242	0.026	<0.02	<0.01	5.84	<0.003	20.6	0.114	0.004	<0.05	0.026	5.52	<0.005	<0.005	55.4	<0.05	0.063	0.045	0.158	0.482
06/16/2000	MW-2	Water	10.3	0.008	0.355	<0.004	0.02	405	0.034	<0.02	0.01	6.46	0.003	28.3	0.194	0.002	<0.05	0.034	7.63	<0.005	<0.005	73.4	<0.05	0.088	0.144	0.168	0.855
06/16/2000	MW-3	Water	17	0.011	0.382	<0.004	0.002	681	0.041	<0.02	0.011	10.6	0.007	31.5	0.207	0.003	<0.50	0.037	9.31	<0.005	<0.005	56	<0.05	0.109	0.088	0.145	0.693
05/05/2000	MW-4	Water	0.074	<0.005	0.155	<0.004	<0.001	135	<0.005	<0.02	<0.01	0.057	<0.003	23.5	<0.015	<0.0002	<0.05	<0.01	3.68	<0.005	<0.005	71.3	<0.05	0.03	<0.02	0.204	0.828
07/14/2000	MW-4	Water	27.4	0.013	1.15	<0.004	<0.001	702	0.045	0.03	0.052	18.45	0.008	48.1	0.287	<0.002	<0.050	0.043	11.2	<0.005	<0.005	67.8	<0.05	0.097	0.055	0.189	0.934
05/05/2000	MW-7	Water	0.647	0.006	0.086	<0.004	<0.001	78.2	<0.005	<0.02	<0.01	0.342	<0.003	12.1	0.039	<0.0002	<0.05	<0.01	3.12	<0.005	<0.005	54.7	<0.05	0.051	<0.02	0.158	0.424

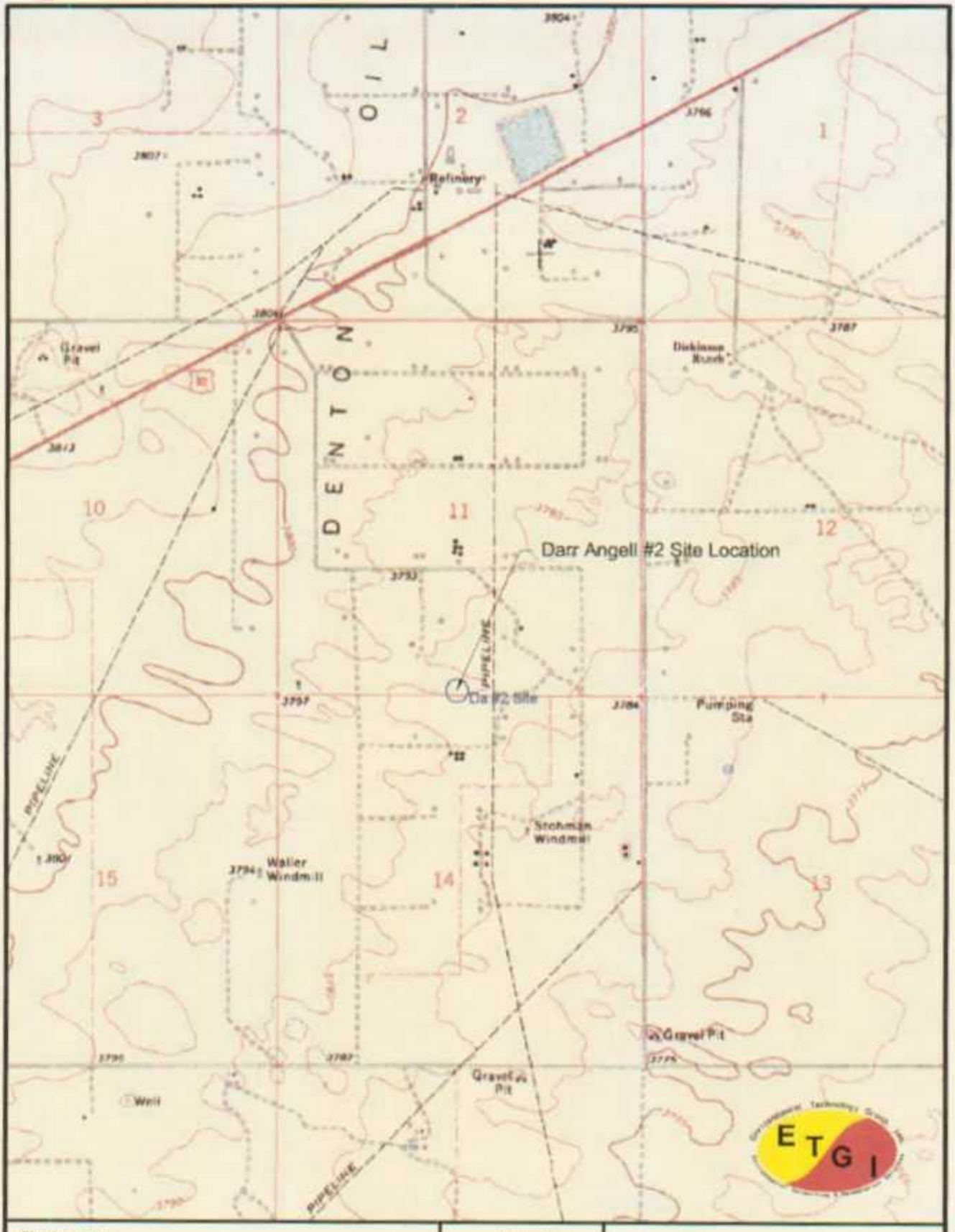
TABLE 5

GROUND WATER ELEVATION
ANNUAL REPORT

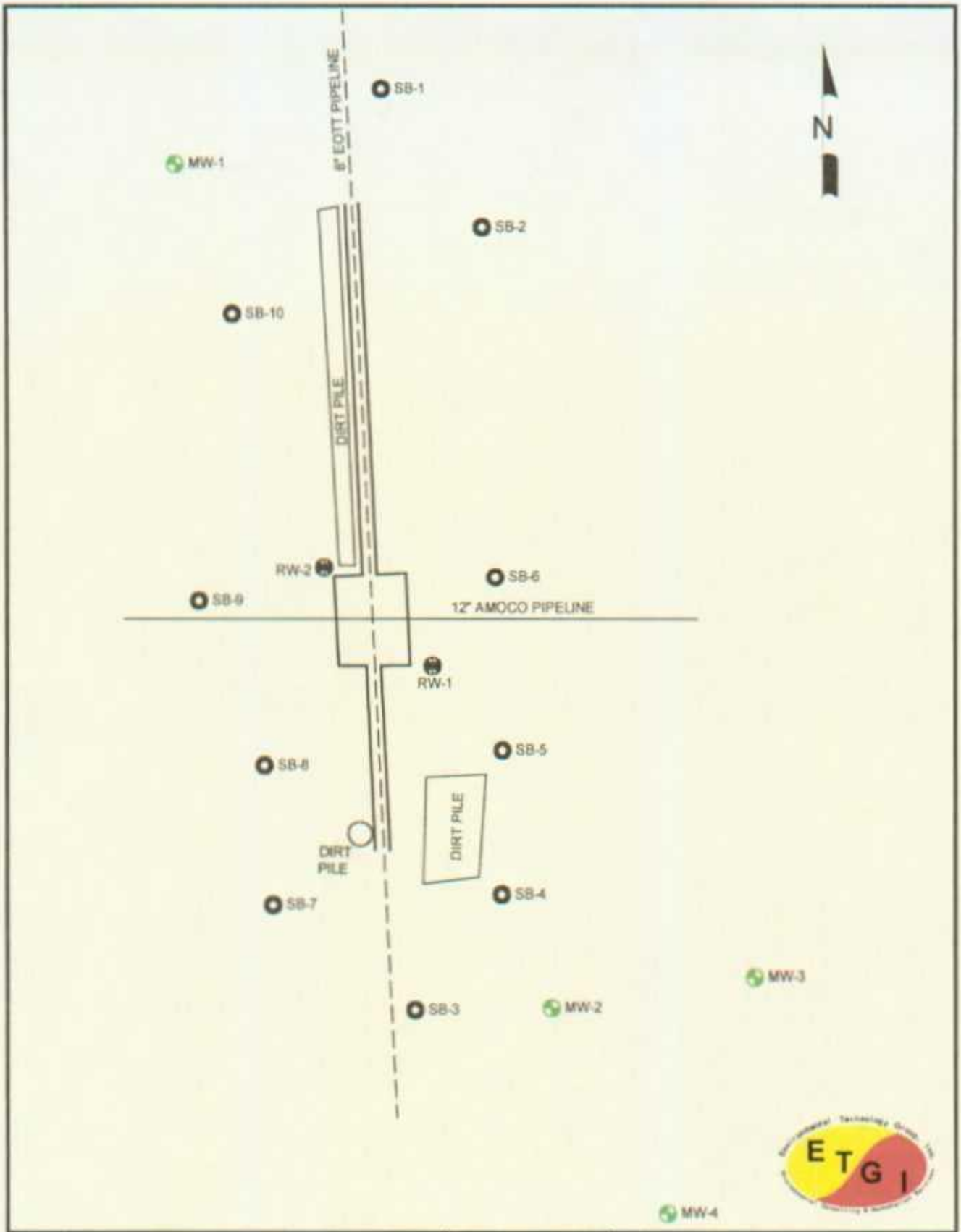
EOTT ENERGY CORPORATION
DARR ANGELL 2
LEA COUNTY, NEW MEXICO
ETGI PROJECT # EOT2020R

WELL NUMBER	DATE MEASURED	CASING WELL ELEVATION	DEPTH TO PRODUCT	DEPTH TO WATER	PSH THICKNESS	CORRECTED GROUND WATER ELEVATION
MW - 1	06/16/2000	3,788.04	-	57.35	0.00	3,730.69
	07/31/2000	3,790.14	-	57.39	0.00	3,732.75
	09/13/2000	3,788.04	-	57.46	0.00	3,730.58
	11/15/2000	3,788.04	-	57.61	0.00	3,730.43
	02/14/2001	3,788.04	-	57.44	0.00	3,730.60
MW - 2	06/16/2000	3,788.41	-	58.62	0.00	3,729.79
	07/31/2000	3,790.51	58.57	59.16	0.59	3,731.85
	09/13/2000	3,788.41	58.44	60.13	1.20	3,729.30
	11/15/2000	3,788.41	58.15	62.26	4.11	3,729.64
	02/14/2001	3,788.41	57.94	64.26	6.32	3,729.52
MW - 3	06/16/2000	3,787.94	-	58.27	0.00	3,729.67
	07/31/2000	3,790.04	-	58.31	0.00	3,731.73
	09/13/2000	3,787.94	-	58.38	0.00	3,729.56
	11/15/2000	3,787.94	-	58.48	0.00	3,729.46
	02/14/2001	3,787.94	-	58.48	0.00	3,729.46
MW-4	07/31/2000	3,789.86	-	58.26	0.00	3,731.60
	09/13/2000	3,787.76	-	58.32	0.00	3,729.44
	11/15/2000	3,787.76	-	58.41	0.00	3,729.35
	02/14/2001	3,787.76		58.40	0.00	3,732.09
RW - 1	06/16/2000	3,789.45	55.49	65.63	10.14	3,732.44
	07/31/2000	3,789.93	55.5	65.88	10.38	3,732.49
	09/13/2000	3,789.45	55.53	65.92	10.39	3,732.36
	11/15/2000	3,789.45	55.68	66.08	10.4	3,732.21
	02/14/2001	3,789.45	55.8	66.19	10.39	3,732.09
RW - 2	06/16/2000	3,787.83	55.98	64.71	8.73	3,730.54
	07/31/2000	3,789.93	55.92	65.35	9.43	3,732.60
	09/13/2000	3,787.83	55.93	65.42	9.49	3,730.48
	11/15/2000	3,787.83	56.06	65.57	9.51	3,730.34
	02/14/2001	3,787.83	56.18	65.43	9.25	3,730.26

FIGURES



Site Location 033° 01' 47.0" N 103° 10' 10.5" W SW 1/4 of SE1/4 of Sec 11 T15S R37E NW 1/4 of NE 1/4 of Sec 14 T15S R37E	Figure 1 Site Location Map EOTT Energy Corp. Darr Angell # 2 Lea County, NM	Environmental Technology Group, Inc. Scale: 1"=2000' | Prep By: JDJ | Checked By: RBE August 20, 2000 | ETGI Project # EOT 2020C



LEGEND:

— Excavation

Monitoring Well Locations

Recovery Well Locations

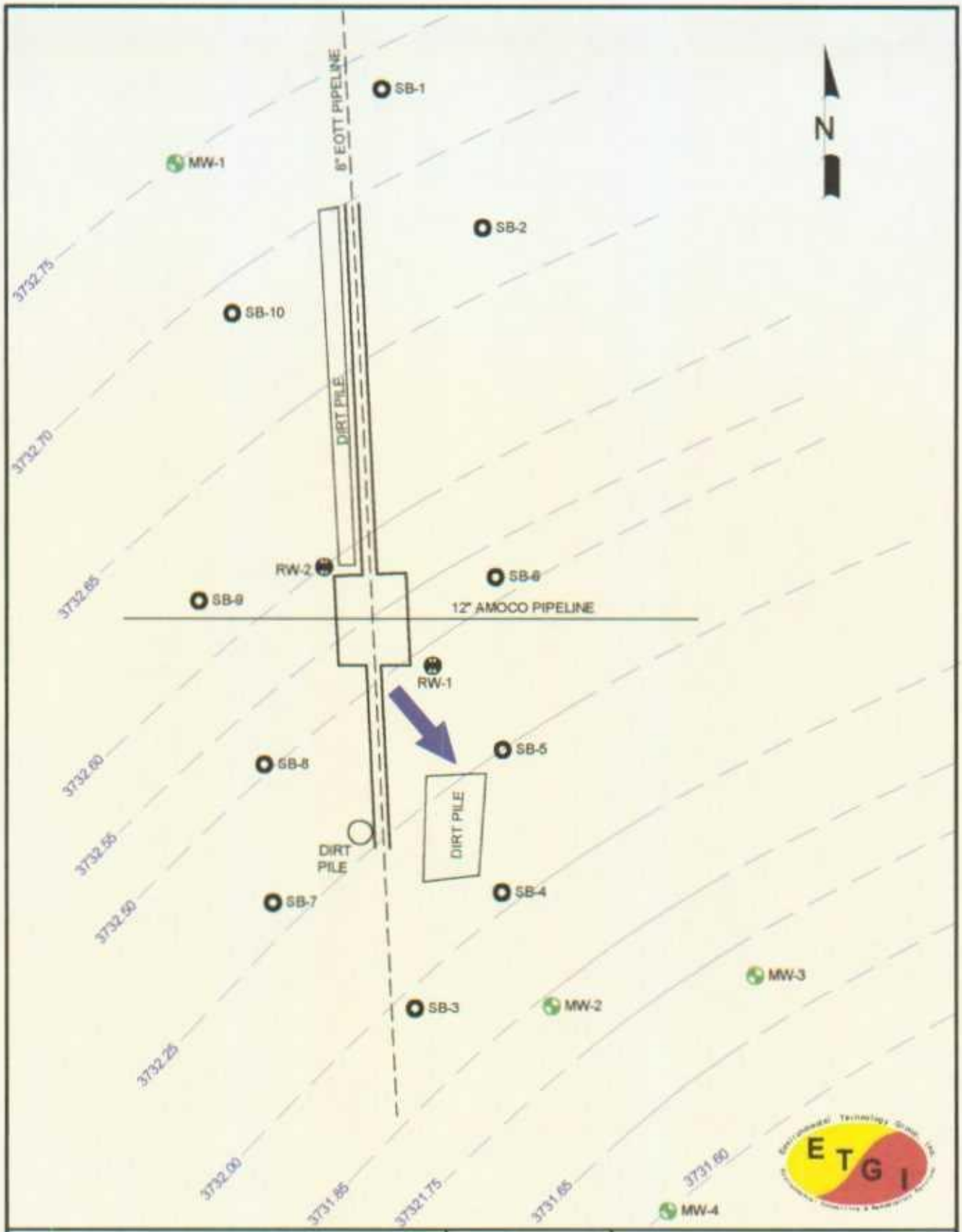
Soil Boring Locations

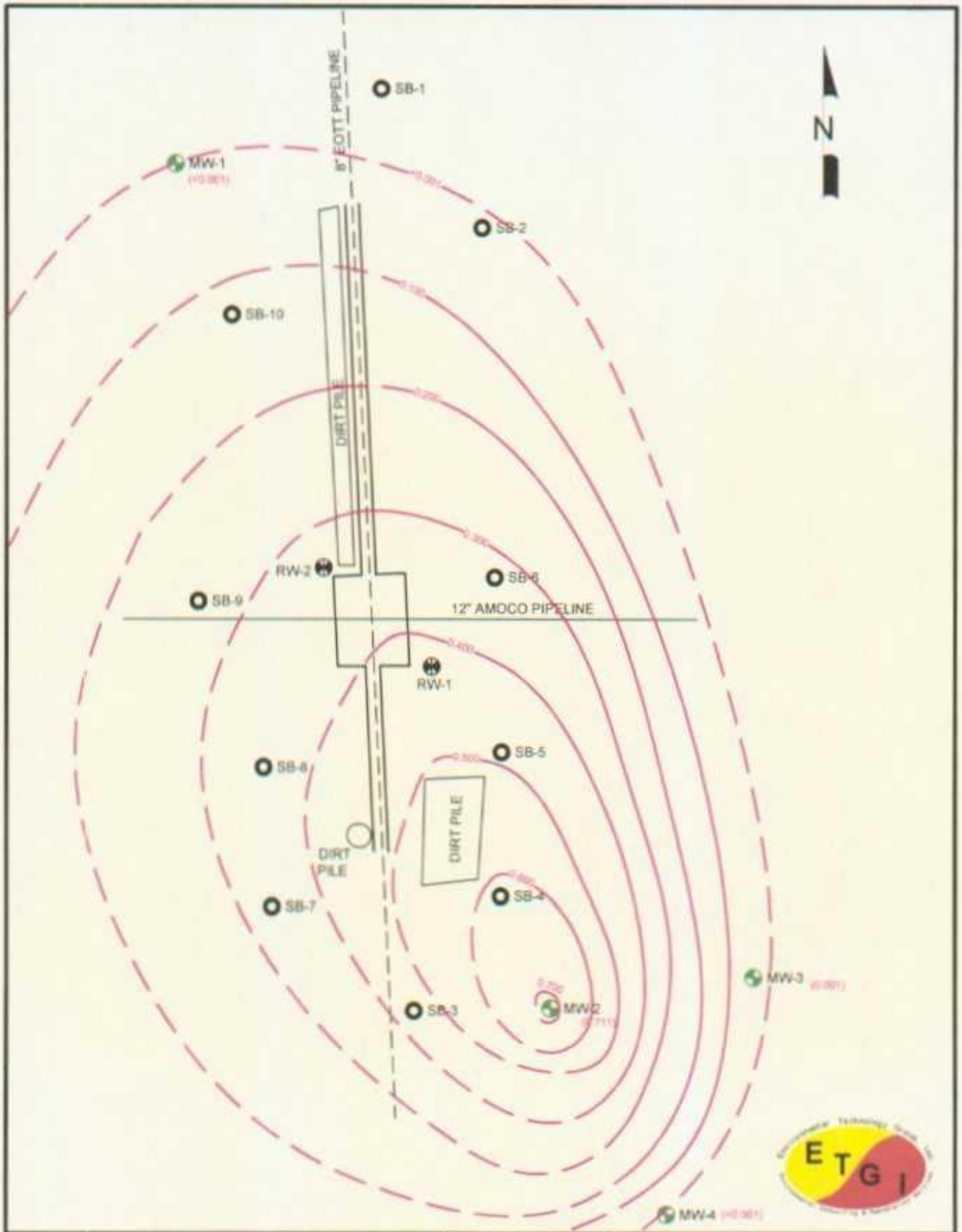
Figure 2
Site Map

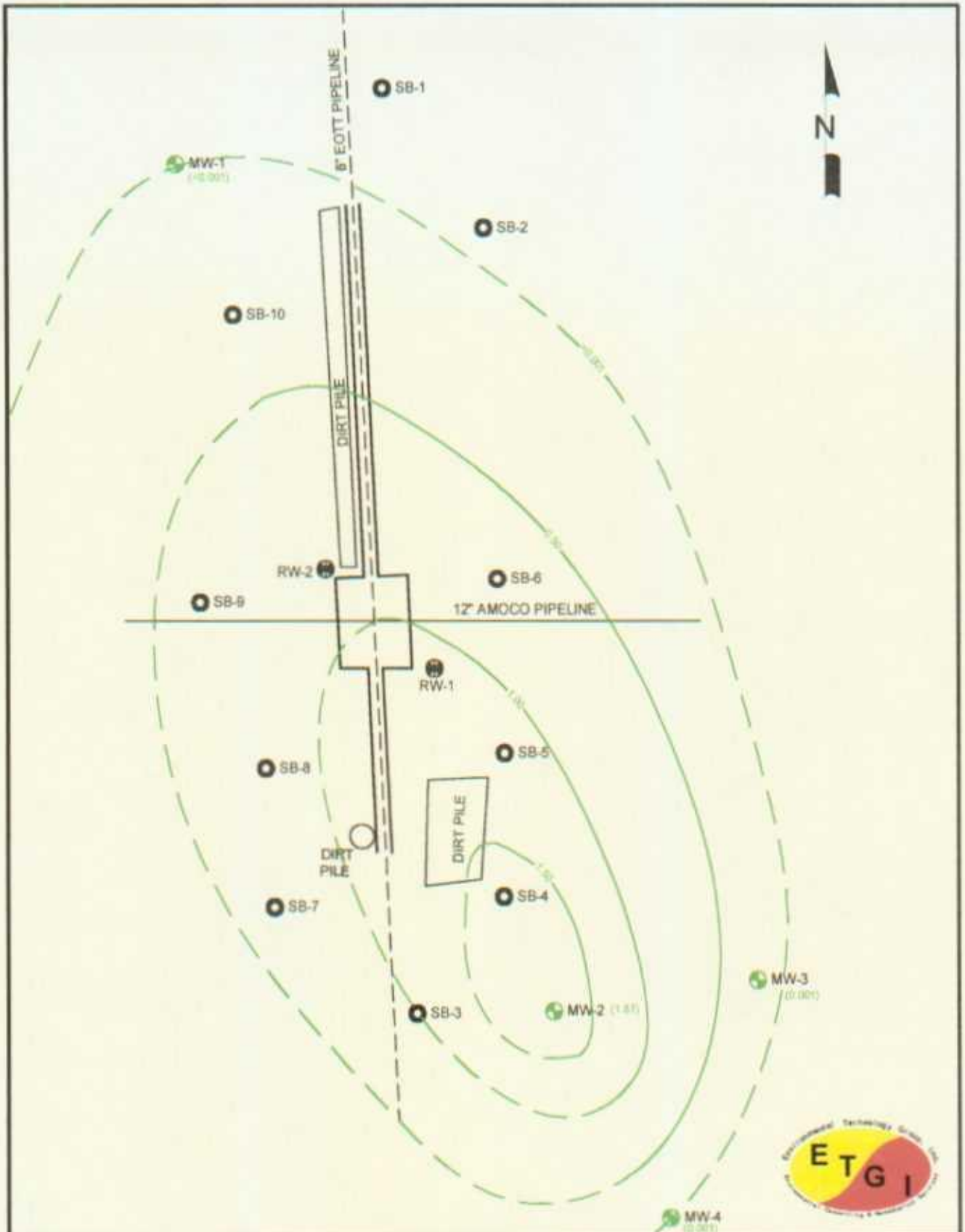
EOTT Energy Corp.
Darr Angell # 2
Lea County, NM

Environmental Technology Group, Inc.

Scale: 1"=60'	Prep By: RS	Checked By: JDJ
July 26, 2000	ETGI Project # EOT 2020R	


6" EOTT PIPELINE
SB-1
MW-1
SB-2
3732.75
SB-10
DIRT PILE
3732.70
RW-2
SB-6
3732.65
SB-9
12" AMOCO PIPELINE
RW-1
SB-5
SB-8
3732.60
3732.55
DIRT PILE
DIRT PILE
SB-4
SB-7
3732.50
MW-3
SB-3
MW-2
3732.25
3732.00
3731.85
3731.75
3731.65
3731.60
MW-4
N
E T G I
LEGEND:
Excavation
Monitoring Well Locations
Recovery Well Locations
Soil Boring Locations
Figure 3
Inferred Ground Water Gradient Map
EOTT Energy Corp.
Darr Angell # 2
Lea County, NM
Environmental Technology Group, Inc.
Scale: 1"=80'
Prep By: JDJ
Checked By: MVS
July 26, 2000
ETGI Project # EOT 2020C


8" EOTT PIPELINE
SB-1
MW-1
SB-2
SB-10
DIRT PILE
RW-2
SB-9
SB-6
12" AMOCO PIPELINE
RW-1
SB-5
SB-8
DIRT PILE
DIRT PILE
SB-4
SB-7
MW-3
SB-3
MW-2
MW-4
N
LEGEND
Monitoring Well Locations
Recovery Well Locations
Soil Boring Locations
Excavation
Benzene Contour Line
(0.711) Benzene Concentration in mg/kg
Figure 4
Benzene Iso-Concentration Map
EOTT Energy Corp.
Darr Angell # 2
Lea County, NM
Environmental Technology Group, Inc.
Scale: 1"=80'
Prep By: JDJ
Checked By: MVS
August 17, 2000
ETGI Project # EOT 2020R



LEGEND:

- Monitoring Well Locations
- Recovery Well Locations
- Soil Boring Locations
- Excavation
- BTEX Contour
- BTEX Concentration (in mg/kg)

Figure 5
BTEX Concentration Map

EOTT Energy Corp.
Darr Angell # 2
Lea County, NM

Environmental Technology Group, Inc.

Scale: 1"=80	Prep By: JCJ	Checked By: MVS
August 17, 2000	ETGI Project # EOT 2020C	

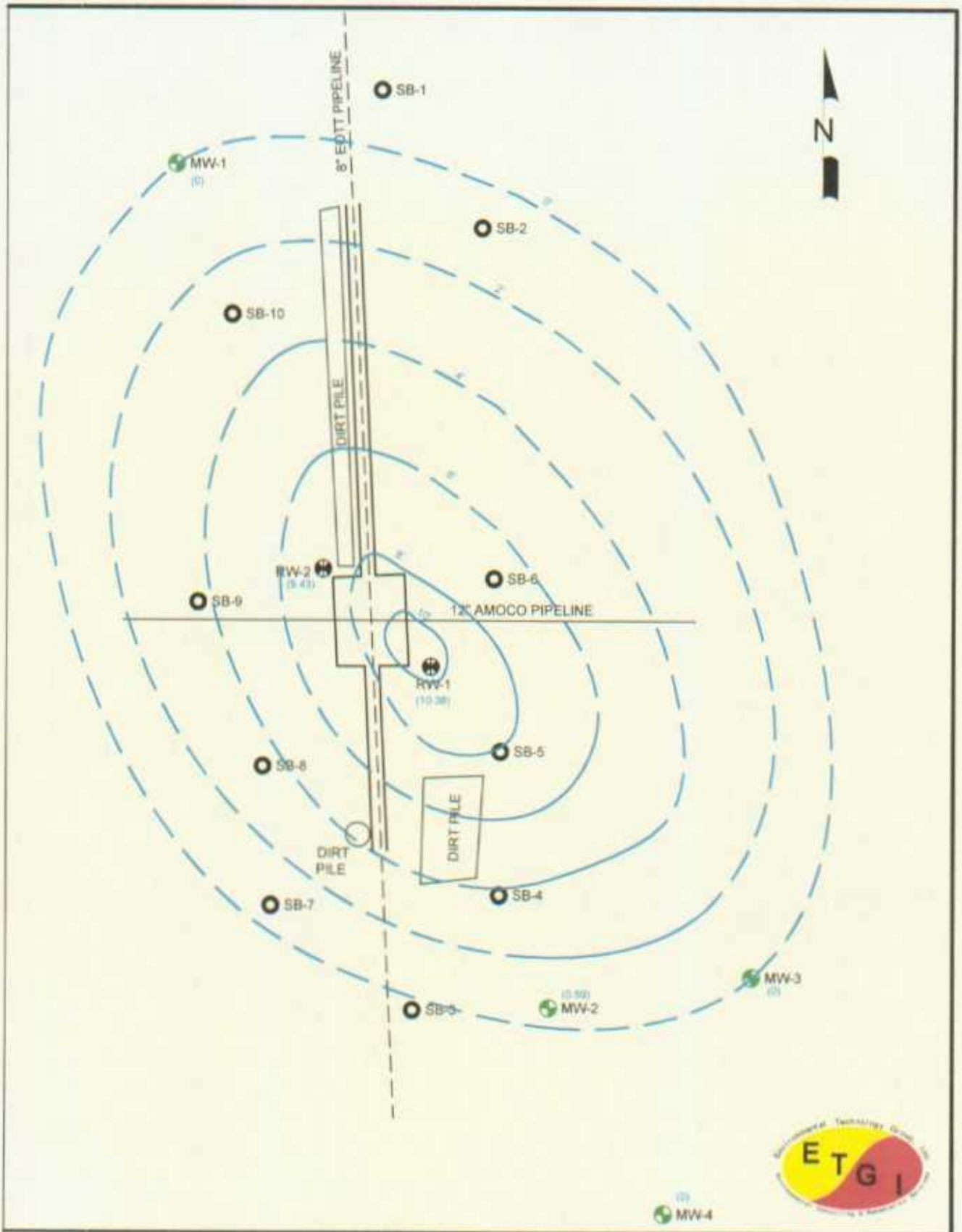
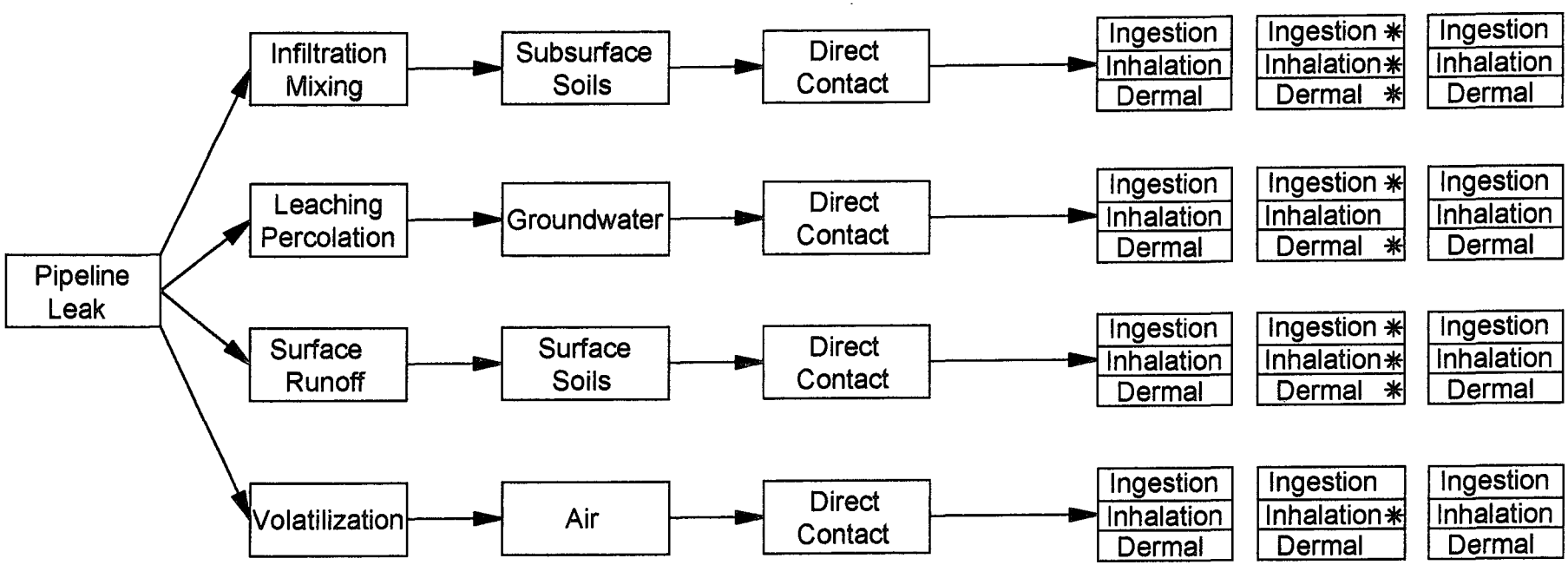


Figure 6
PSH Thickness Map

EOTT Energy Corp.
Darr Angell # 2
Lea County, NM

Environmental Technology Group, Inc.

Scale: 1"=80'	Prep By: JDJ	Checked By: MVS
August 17, 2000	ETGI Project # EOT 2020R	



Note: "*" denotes potentially complete pathways

Figure 7

Site Conceptual Exposure Model for Present Conditions

E.O.T.T. Energy Corp. Darr Angell # 2 Lovington, NM

Environmental Technology Group, Inc.

Scale: NTS	Prep By: RS	Checked By: BA
August 24, 2000	ETGI Project # EOT 2020R	

APPENDICES

APPENDIX A

WATER WELL INVENTORY

New Mexico Offic *State Engineer*
Well Report *ownloads*

Township: 15S Range: 37E S

11,14

NAD27 X: Y:

Search Radius:

County: LE Basin:

Number: Suffix:

Owner Name: (First) (Last)

Non-Domestic Domestic

WATE

(quarters are biggest t

Well Number	Tws	Rng	Sec	q	q	q
L 02317 APPRO	15S	37E	11	1	1	
L 01182 APPRO	15S	37E	11	1	1	1
L 01322 APPRO	15S	37E	11	1	1	2
L 01430 APPRO	15S	37E	11	1	2	
L 01324 APPRO	15S	37E	11	2	1	
L 07610	15S	37E	11	2	3	
L 01283 APPRO	15S	37E	11	2	3	
L 01321 APPRO	15S	37E	11	2	4	
L 01323 APPRO	15S	37E	11	2	4	
L 01117 APPRO	15S	37E	11	2	4	3
L 02391 APPRO	15S	37E	11	3	3	3
L 07665	15S	37E	11	4	4	4
L 01199 APPRO	15S	37E	14	1	4	2
L 01080 APPRO	15S	37E	14	2	2	1
L 01045 APPRO	15S	37E	14	2	3	1

Record Count: 15

'N REPORT 08/13/2000

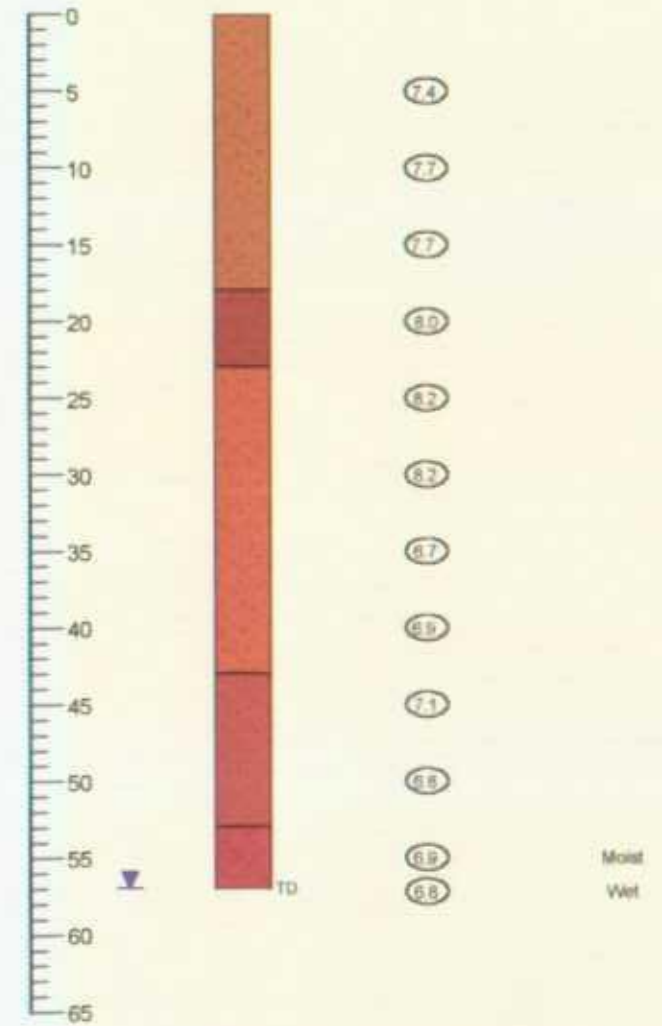
lest) e	X	Y	Depth Well	Depth Water	Wat Colu
			110	65	
			110	35	
			120		
			120	33	
			120	32	
			100		
			120	40	
			120	32	
			120	32	
			120	50	
			80	37	
			136	40	
			121	37	
			120	32	
			120	70	

.../awd.html?email_address=etgi@leaco.net&tws=1: =37E&sec=11%2C14&X=&Y=&Z=&8/13/00

APPENDIX B

BORING LOGS

Soil Boring SB - 1



Legend

- Sand - (SP) - Tan to Brown, Very Fine Grained, Well Sorted with Caliche Nodules,
- Sand - (SP) - Tan to Red, Very Fine Grained, Well Sorted with Calcihe Nodules.
- Sand - (SP) - Red to Brown, Very Fine Grained, Well Sorted with Large Sandstone Nodules, Sandstone Layer at 28' - 30'.
- Sand - (SP) - Red to Brown, Very Fine Grained, Well Sorted with Small Sandstone Nodules.
- Sand - (SP) - Red to Brown, Very Fine Grained, Well Sorted with Silty Sandstone Nodules.

PID Head-space reading in ppm obtained with a photo-ionization detector.

Indicates samples selected for laboratory analysis.

Soil Boring Details

Date Drilled 06 / 02 / 00

Plugged - Surface to TD with Bentonite and hydrated with deionized water

Soil Boring Log Details

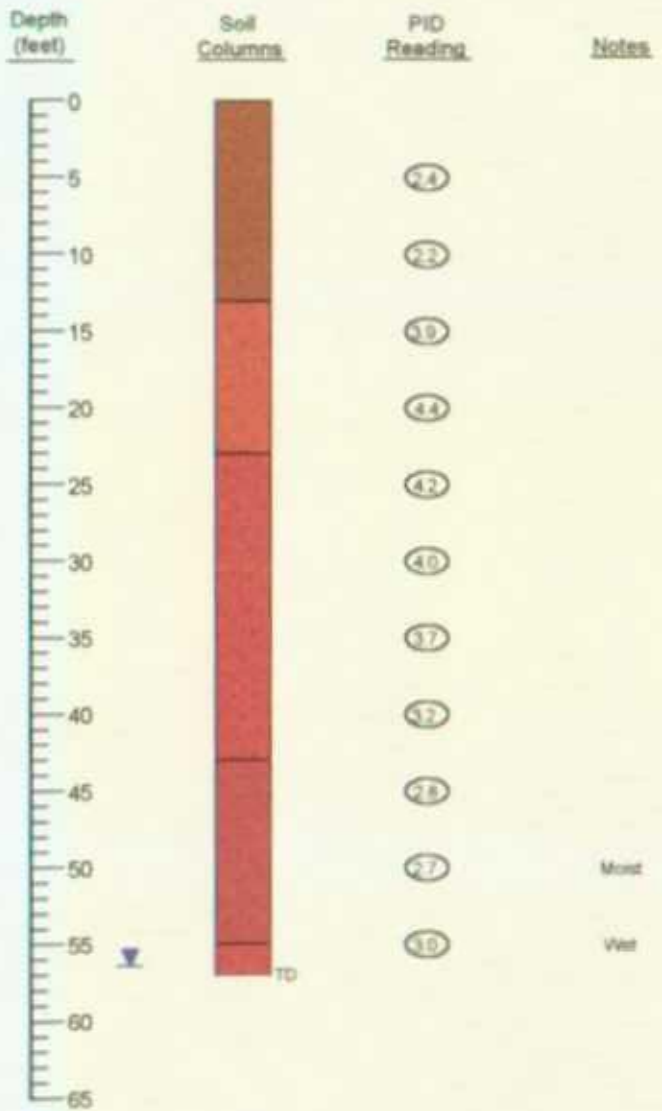
Soil Boring SB - 1

EOTT Energy Corp. Darr Angell #2 Lea County, NM

Environmental Technology Group, Inc.

Scale: NTS	Prep By: JDJ	Checked By: JT
July 15, 2000	ETGI Project # EOT 2026R	

Soil Boring SB - 2



Legend

- Sand - (SP) - Tan, Very Fine Grained, Well Sorted with Caliche Nodules.
- Sand - (SP) - Red Brown, Very Fine Grained, Well Sorted.
- Sand - (SP) - Red, Very Fine Grained, Well Sorted, Sandstone Layer at 30' - 32'.
- Sand - (SP) - Red to Brown, Very Fine Grained, Well Sorted with Sandstone Nodules.

PID Head-space reading in ppm obtained with a photo-ionization detector.

Indicates samples selected for laboratory analysis.

Soil Boring Details

Date Drilled 06 / 05 / 00

Plugged - Surface to TD with Bentonite and hydrated with deionized water

Soil Boring Log Details

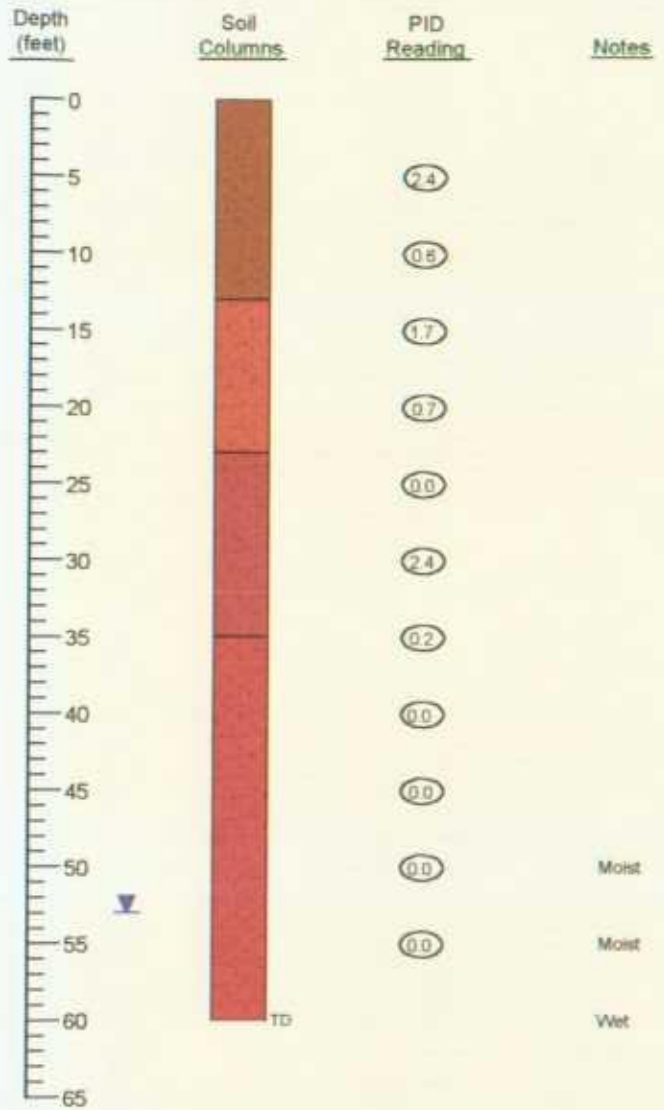
Soil Boring SB - 2

EOTT Energy Corp. Darr Angell #2 Lea County, NM

Environmental Technology Group, Inc.

Scale: NTS	Prep By: JDJ	Checked By: JT
July 15, 2000	ETGI Project # EOT 2020R	

Soil Boring SB - 3



Legend

- Sand - (SP) - Tan, Very Fine Grained, Well Sorted with Calcihe Nodules.
- Sand - (SP) - Red to Brown, Very Fine Grained, Well Sorted with SS Nodules, Sandstone Layer at 18' - 23'.
- Sand - (SP) - Red to Brown, Very Fine Grained, Well Sorted with Caliche Nodules, Sandstone Layer at 32' - 35'.
- Sand - (SP) - Red, Very Fine Grained, Well Sorted.

PID Head-space reading in ppm obtained with a photo-ionization detector.

Indicates samples selected for laboratory analysis.

Soil Boring Details

Date Drilled 06 / 05 / 00

Plugged - Surface to TD with Bentonite and hydrated with deionized water

Soil Boring Log Details

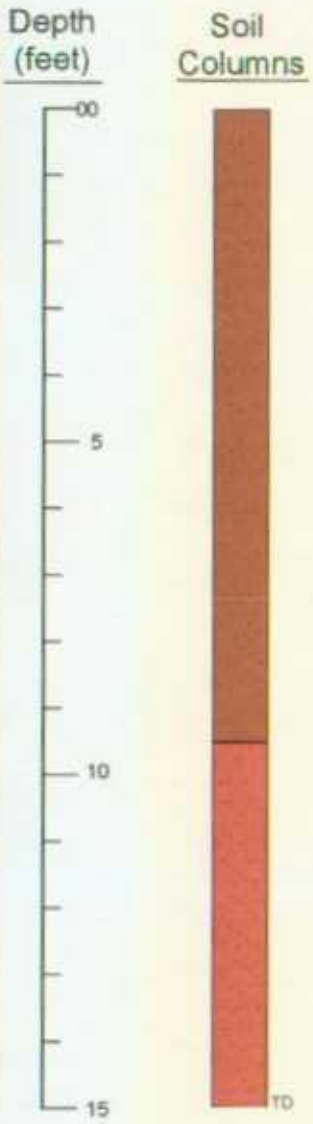
Soil Boring SB - 3

EOTT Energy Corp. Darr Angell #2 Lea County, NM

Environmental Technology Group, Inc.

Scale: NTS	Prep By: JDJ	Checked By: JT
July 15, 2000	ETGI Project # EOT 2026R	

Soil Boring SB - 4



Legend

Sand - (SP) - Tan, Very Fine Grained, Well Sorted with Caliche Nodules.

Sand - (SP) - Red to Brown, Very Fine Grained, Well Sorted with Caliche Nodules.

PID Head-space reading in ppm obtained with a photo-ionization detector.

Indicates samples selected for laboratory analysis.

Soil Boring Details

Date Drilled 06 / 06 / 00

Plugged - Surface to TD with Bentonite and hydrated with deionized water

Soil Boring Log Details

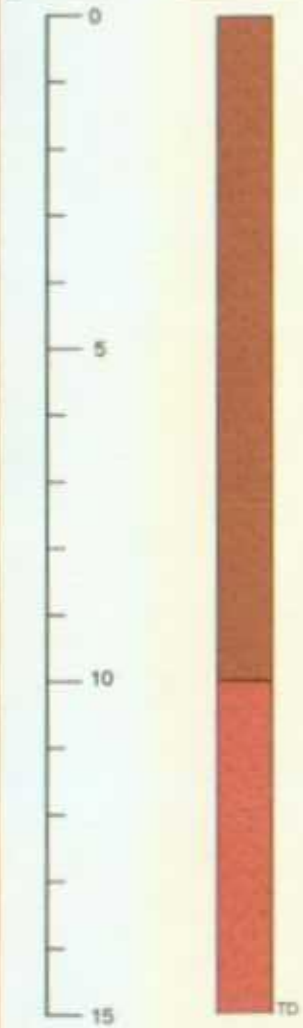
Soil Boring SB - 4

EOTT Energy Corp. Darr Angell #2 Lea County, NM

Environmental Technology Group, Inc.

Scale: NTS	Prep By: JDJ	Checked By: JT
July 15, 2000	ETGI Project # EOT 2020R	

Soil Boring SB - 5



Legend

Sand - (SP) - Tan, Very Fine Grained, Well Sorted with Caliche Nodules.

Sand - (SP) - Red to Brown, Very Fine Grained, Well Sorted with Caliche Nodules.

PID Head-space reading in ppm obtained with a photo-ionization detector.

Indicates samples selected for laboratory analysis.

Soil Boring Details

Date Drilled 06 / 06 / 00

Plugged - Surface to TD with Bentonite and hydrated with deionized water

Soil Boring Log Details

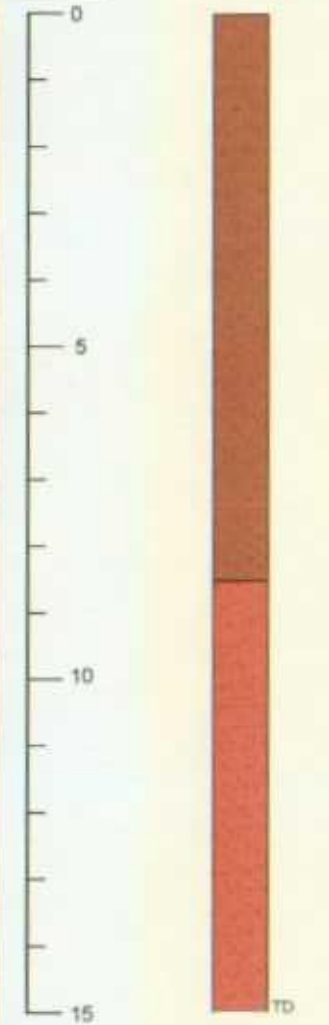
Soil Boring SB - 5

EOTT Energy Corp. Darr Angell #2 Lea County, NM

Environmental Technology Group, Inc.

Scale: NTS	Prep By: JGJ	Checked By: JT
July 18, 2000	ETGI Project # EOT 2020R	

Soil Boring SB - 6



Legend

Sand - (SP) - Tan, Very Fine Grained, Well Sorted with Caliche Nodules, Sandstone Layer at 7.5' - 8.5'.

Sand - (SP) - Red to Brown, Very Fine Grained, Well Sorted with Caliche Nodules.

PID Head-space reading in ppm obtained with a photo-ionization detector.

Indicates samples selected for laboratory analysis.

Soil Boring Details

Date Drilled 06 / 06 / 00

Plugged - Surface to TD with Bentonite and hydrated with deionized water

Soil Boring Log Details

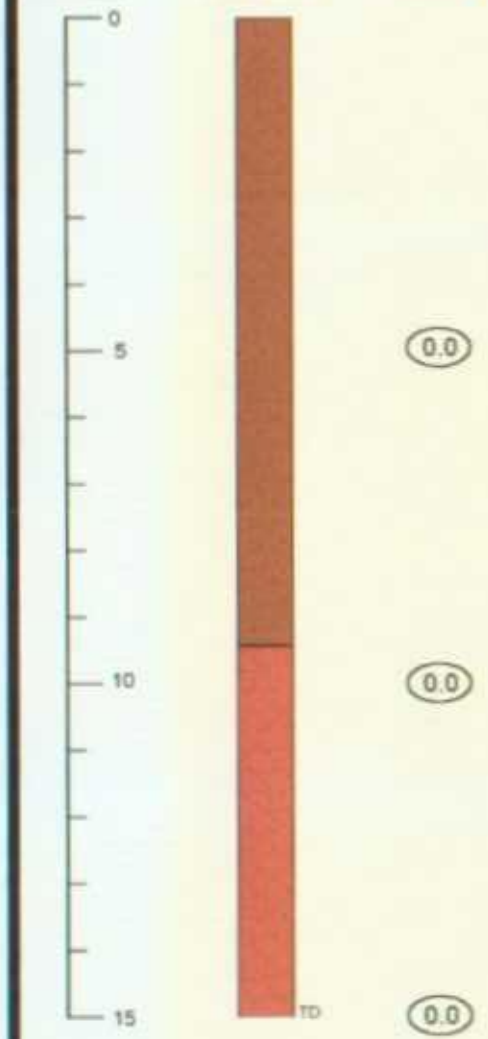
Soil Boring SB - 6

EOTT Energy Corp. Darr Angell #2 Lea County, NM

Environmental Technology Group, Inc.

Scale: NTS	Prep By: JDJ	Checked By: JT
July 15, 2000	ETGI Project # EOT 2020R	

Soil Boring SB - 7



Legend

Sand - (SP) - Tan, Very Fine Grained, Well Sorted with Caliche Nodules, Sandstone Layer at 8' - 9.5'.

Sand - (SP) - Red to Brown, Very Fine Grained, Well Sorted with Caliche Nodules.

PID Head-space reading in ppm obtained with a photo-ionization detector.

Indicates samples selected for laboratory analysis.

Soil Boring Details

Date Drilled 06 / 06 / 00

Plugged - Surface to TD with Bentonite and hydrated with deionized water

Soil Boring Log Details

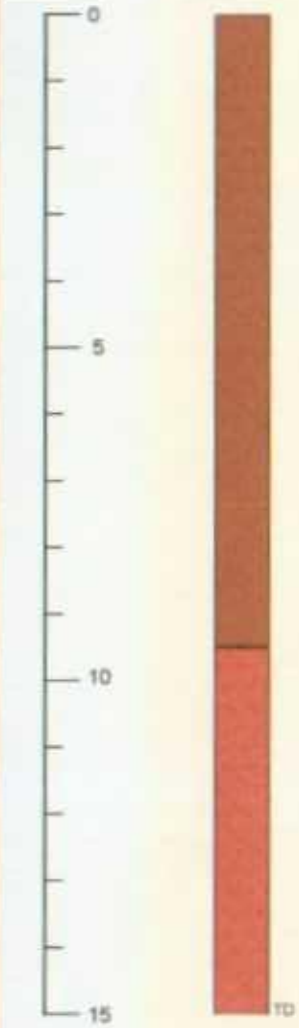
Soil Boring SB - 7

EOTT Energy Corp. Darr Angell #2 Lea County, NM

Environmental Technology Group, Inc.

Scale: NTS	Prep By: JDJ	Checked By: JT
July 15, 2000	ETGI Project # EOT 2020R	

Soil Boring SB - 8



Legend

Sand - (SP) - Tan, Very Fine Grained, Well Sorted with Calcihe Nodules, Sandstone Layer at 8' - 9.5'.

Sand - (SP) - Red to Brown, Very Fine Grained, Well Sorted with Caliche Nodules.

PID Head-space reading in ppm obtained with a photo-ionization detector.

Indicates samples selected for laboratory analysis.

Soil Boring Details

Date Drilled 06 / 06 / 00

Plugged - Surface to TD with Bentonite and hydrated with deionized water

Soil Boring Log Details

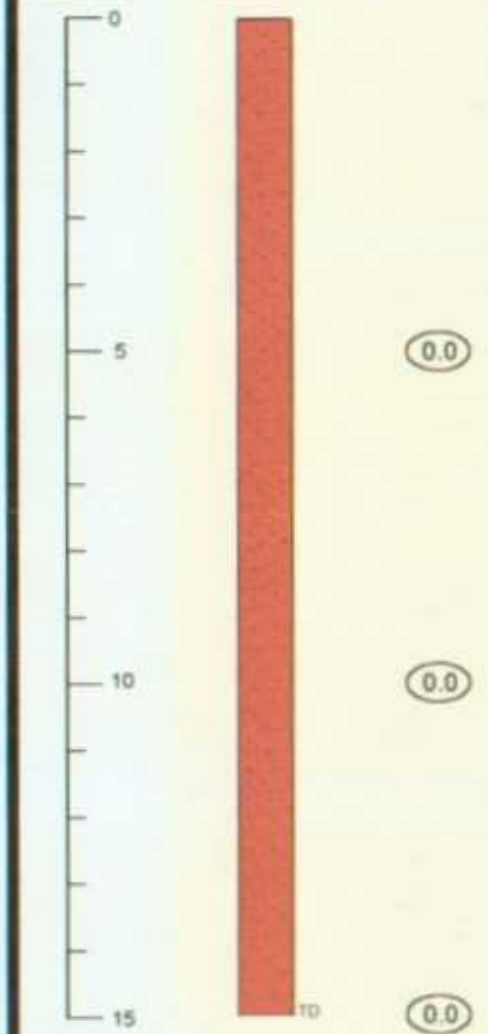
Soil Boring SB - 8

EOTT Energy Corp. Darr Angell #2 Lea County, NM

Environmental Technology Group, Inc.

Scale: NTS	Prep By: JDJ	Checked By: JT
July 15, 2000	ETGI Project # EOT 20209	

Soil Boring SB - 9



Legend

Sand - (SP) - Red to Brown, Very Fine Grained, Well Sorted with Caliche Nodules, Sandstone Layer at 8' - 9'.

PID Head-space reading in ppm obtained with a photo-ionization detector.

Indicates samples selected for laboratory analysis.

Soil Boring Details

Date Drilled 06 / 06 / 00

Plugged - Surface to TD with Bentonite and hydrated with deionized water

Soil Boring Log Details

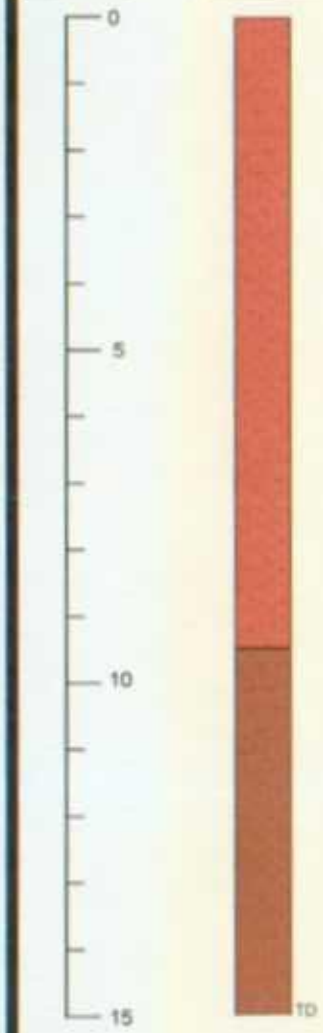
Soil Boring SB - 9

EOTT Energy Corp. Darr Angell #2 Lea County, NM

Environmental Technology Group, Inc.

Scale: NTS	Prep By: JDJ	Checked By: JT
January 28, 2000	ETGI Project # EOT 2029R	

Soil Boring SB - 10



Soil Columns

PID Reading

0.0

0.0

0.0

Notes

Legend

Sand - (SP) - Red to Brown, Very Fine Grained, Well Sorted with Caliche Nodules, Sandstone Layer at 8' - 9.5'.

Sand - (SP) - Tan, Very Fine Grained, Well Sorted with Calcihe Nodules.

PID Head-space reading in ppm obtained with a photo-ionization detector.

Indicates samples selected for laboratory analysis.

Soil Boring Details

Date Drilled 06 / 06 / 00

Plugged - Surface to TD with Bentonite and hydrated with deionized water

Soil Boring Log Details

Soil Boring SB - 10

EOTT Energy Corp. Darr Angell #2 Lea County, NM

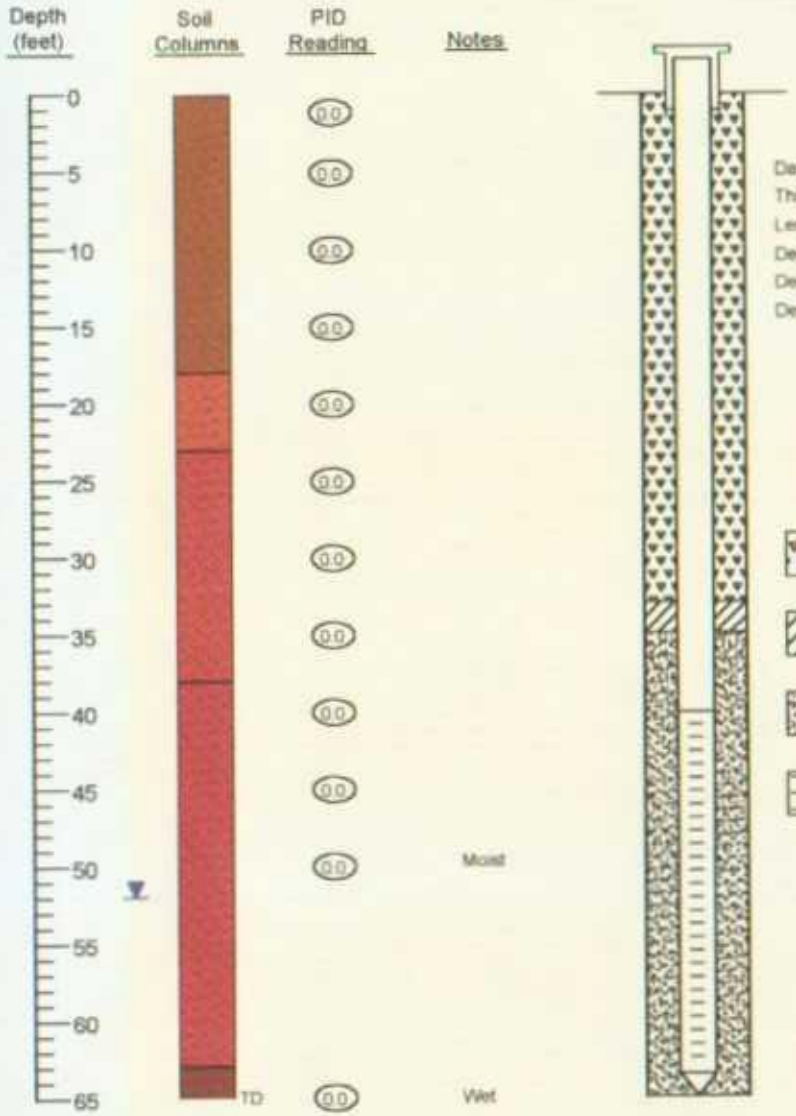
Environmental Technology Group, Inc.

Scale: NTS	Prep By: JDJ	Checked By: JT
July 15, 2000	ETGI Project # EOT 20206	

APPENDIX C

WELL CONSTRUCTION DIAGRAMS

Monitoring Well MW - 1



Monitoring Well Details

Date Drilled	6 - 6 - 00
Thickness of Bentonite Seal	2 ft
Length of PVC Well Screen	25 ft
Depth of PVC Well	65 ft
Depth of Exploratory Well	65 ft
Depth to Ground Water	52 ft

Grout Surface Seal

Bentonite Pellet Seal

Sand Pack

Screen

Legend

Sand - (SP) - Tan, Very Fine Grained, Well Sorted with Caliche Nodules.

Sand - (SP) - Red Brown, Very Fine Grained, Well Sorted with Caliche Nodules.

Sand - (SP) - Red, Very Fine Grained, Well Sorted.

Sand - (SP) - Red, Very Fine Grained, Well Sorted with Caliche Nodules.

Sand - (SP) - Brown, Very Fine Grained, Well Sorted.

Indicates samples selected for laboratory analysis.

Indicates the ground water level measured on date.

PID Head-space reading in ppm obtained with a photo-ionization detector.

Completion Notes

1. The monitoring well was installed on date using air rotary drilling techniques.
2. The well was constructed with 2" ID, 0.020 inch factory slotted, threaded joint, schedule 40 PVC pipe.
3. The well is protected with a locked stick up steel cover and a compression cap.
4. The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.
5. The depths indicated are referenced from the ground surface.

Boring Log And Monitoring Well Details

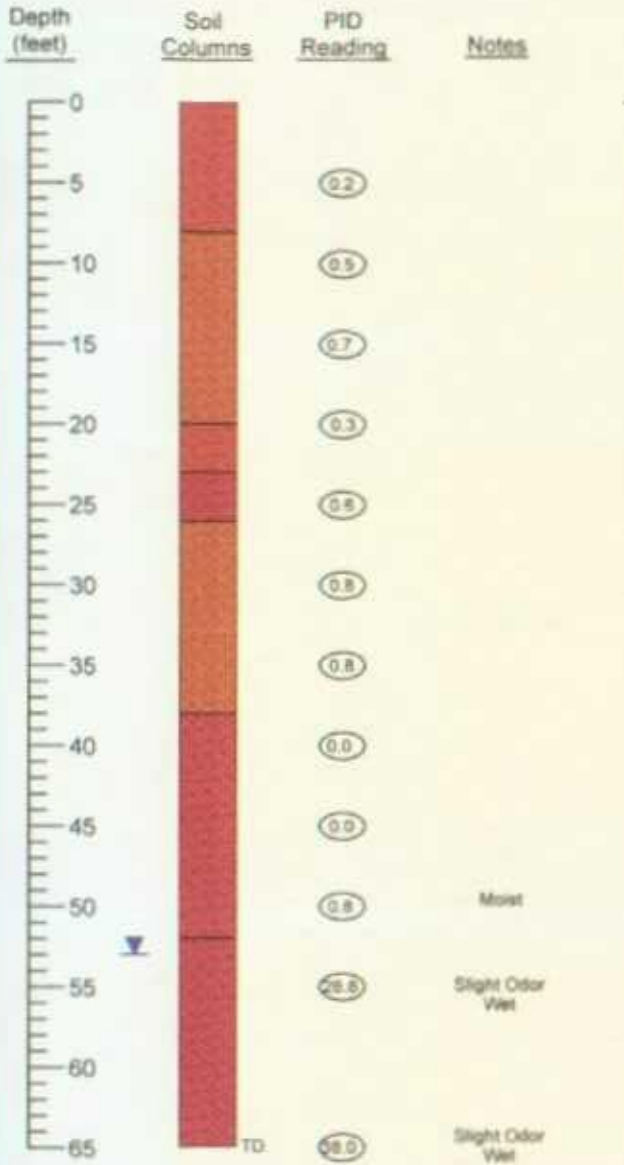
Monitoring Well - 1

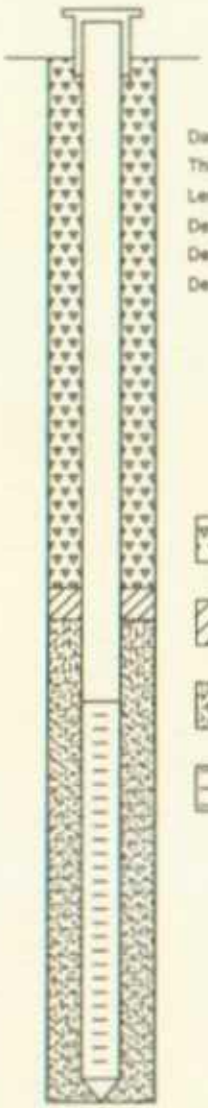
EOTT Energy Corp. Darr Angell #2 Lea County, NM

Environmental Technology Group, Inc.

Scale: use scale	Prep By: JDJ	Checked By: JT
July 14, 2000	ETGI Project # EOT 2020R	

Monitoring Well MW - 2





Monitoring Well Details

Date Drilled	6 - 12 - 00
Thickness of Bentonite Seal	2 ft
Length of PVC Well Screen	25 ft
Depth of PVC Well	65 ft
Depth of Exploratory Well	65 ft
Depth to Ground Water	53 ft

Grout Surface Seal

Bentonite Pellet Seal

Sand Pack

Screen

Legend

Sand - (SP) - Red to Brown, Very Fine Grained, Well Sorted with Caliche Nodules.

Sand - (SP) - Tan to Brown, Very Fine Grained, Well Sorted with Caliche Nodules, Sandstone Layer at 15' - 20' and 29' - 33'.

Sand - (SP) - Red Brown, Very Fine Grained, Well Sorted.

Sand - (SP) - Red, Very Fine Grained, Well Sorted with Caliche Nodules.

Indicates samples selected for laboratory analysis.

Indicates the ground water level measured on date.

PID Head-space reading in ppm obtained with a photo-ionization detector.

Completion Notes

1. The monitoring well was installed on date using air rotary drilling techniques.
2. The well was constructed with 2" ID, 0.020 inch factory slotted, threaded joint, schedule 40 PVC pipe.
3. The well is protected with a locked stick up steel cover and a compression cap.
4. The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.
5. The depths indicated are referenced from the ground surface.

Boring Log And Monitoring Well/Recovery Well Details

Monitoring Well - 2

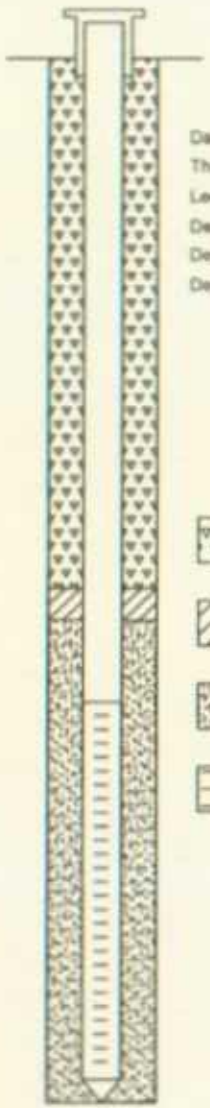
EOTT Energy Corp. Darr Angell #2 Lea County, NM

Environmental Technology Group, Inc.

Scale: use scale	Prep By: JDJ	Checked By: JT
July 14, 2000	ETGI Project # EOT 2000R	

Monitoring Well MW - 3

Depth (feet)	Soil Columns	PID Reading	Notes
0			
5		0.0	
10		0.0	
15		0.0	
20		0.0	
25		0.0	
30		0.0	
35		0.0	
40		0.0	
45		0.3	
50		0.0	Moist
55		0.0	Moist
60			Wet
65	TD	0.0	Wet



Monitoring Well Details

Date Drilled	6 - 12 - 00
Thickness of Bentonite Seal	2 ft
Length of PVC Well Screen	25 ft
Depth of PVC Well	65 ft
Depth of Exploratory Well	65 ft
Depth to Ground Water	53 ft

Grout Surface Seal

Bentonite Pellet Seal

Sand Pack

Screen

Legend

Sand - (SP) - Tan, Very Fine Grained, Well Sorted with Caliche Nodules, Sandstone Layer at 30' - 35'.

Sand - (SP) - Tan to Brown, Very Fine Grained, Well Sorted with Caliche Nodules, Chert Nodules at 15' - 18'.

Sand - (SP) - Tan, Very Fine Grained, Well Sorted with Caliche Nodules.

Sand - (SP) - Tan to Red, Very Fine Grained, Well Sorted with Caliche Nodules.

Sand - (SP) - Red, Very Fine Grained, Well Sorted.

Indicates samples selected for laboratory analysis.

Indicates the ground water level measured on date.

PID Head-space reading in ppm obtained with a photo-ionization detector.

Completion Notes

1. The monitoring well was installed on date using air rotary drilling techniques.
2. The well was constructed with 2" ID, 0.020 inch factory slotted, threaded joint, schedule 40 PVC pipe.
3. The well is protected with a locked stick up steel cover and a compression cap.
4. The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.
5. The depths indicated are referenced from the ground surface.

Boring Log And Monitoring Well

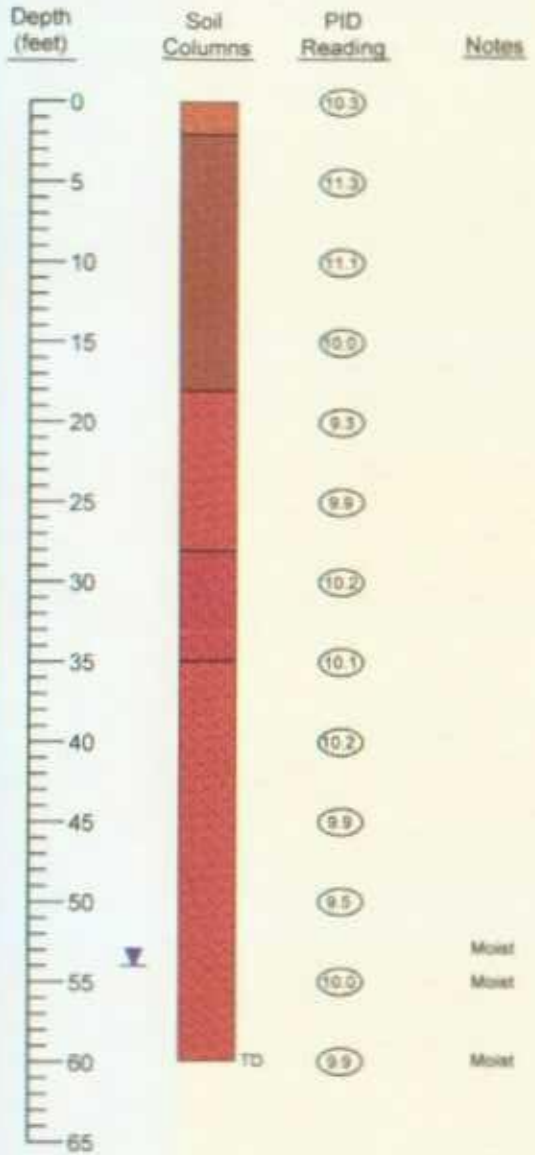
Monitoring Well - 3

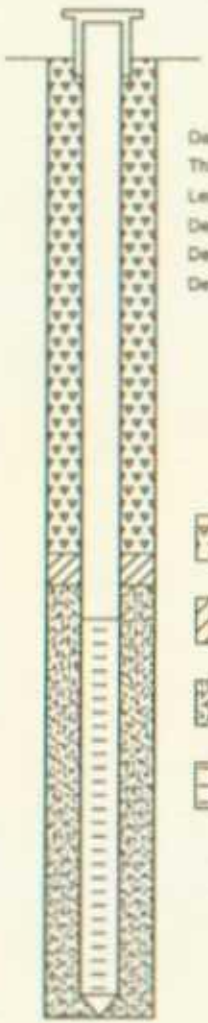
EOTT Energy Corp. Darr Angell #2 Lea County, NM

Environmental Technology Group, Inc.

Scale: use scale	Prep By: JDJ	Checked By: JT
July 14, 2000	ETGI Project # EOT 2020R	

Monitoring Well MW - 4





Monitoring Well Details

Date Drilled	7 - 11 - 00
Thickness of Bentonite Seal	2 ft
Length of PVC Well Screen	25 ft
Depth of PVC Well	65 ft
Depth of Exploratory Well	65 ft
Depth to Ground Water	54 ft

Grout Surface Seal

Bentonite Pellet Seal

Sand Pack

Screen

Legend

Sand - (SP) - Brown, Very Fine Grained, Well Sorted.

Sand - (SP) - Tan, Very Fine Grained, Well Sorted with Caliche Nodules.

Sand - (SP) - Red Brown, Very Fine Grained, Well Sorted with Caliche Nodules, Caliche Layer at 35' - 37'.

Sand - (SP) - Red Brown, Very Fine Grained, Well Sorted, Sandstone Layer at 33' - 35'.

Indicates samples selected for laboratory analysis.

Indicates the ground water level measured on date.

PID Head-space reading in ppm obtained with a photo-ionization detector.

Completion Notes

1. The monitoring well was installed on date using air rotary drilling techniques.
2. The well was constructed with 2" ID, 0.020 inch factory slotted, threaded joint, schedule 40 PVC pipe.
3. The well is protected with a locked stick up steel cover and a compression cap.
4. The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.
5. The depths indicated are referenced from the ground surface.

Boring Log And Monitoring Well

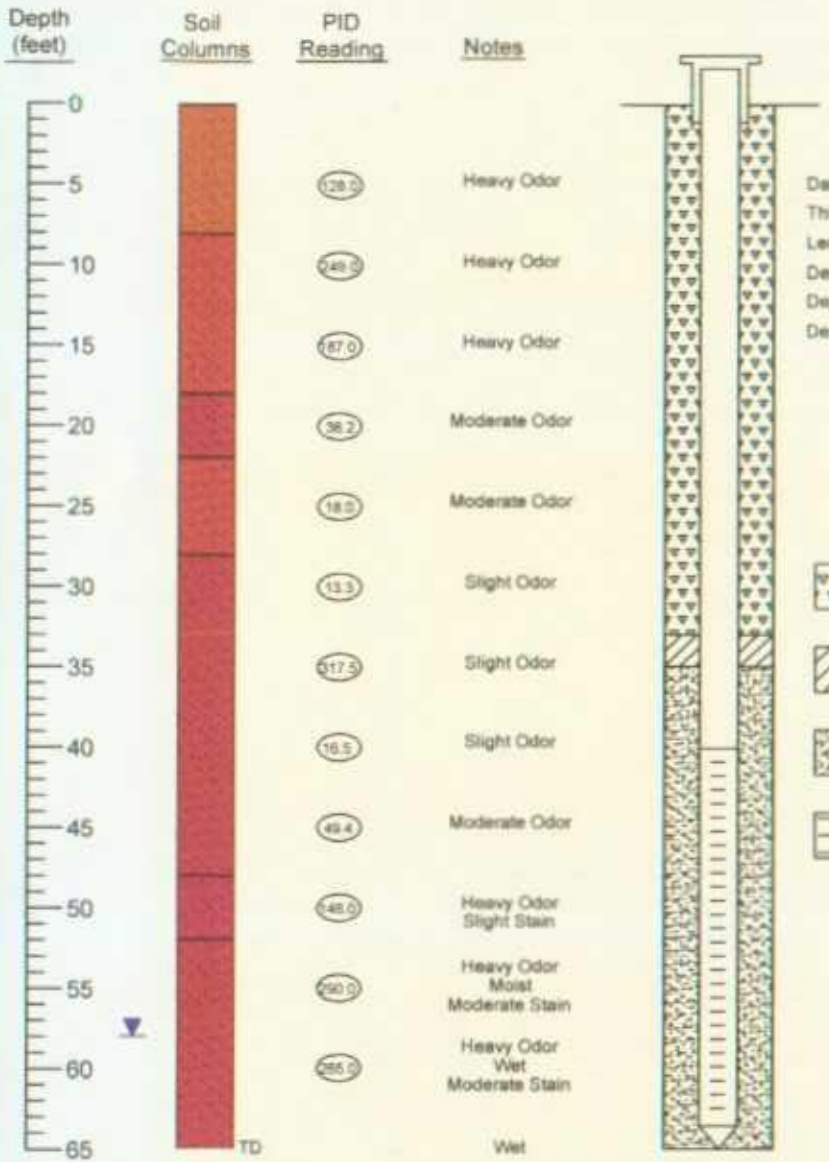
Monitoring Well - 4

EOTT Energy Corp. Darr Angell #2 Lea County, NM

Environmental Technology Group, Inc.

Scale: use scale	Prep By: JDJ	Checked By: JT
July 25, 2000	ETGI Project # EOT 2020R	

Recovery Well RW - 1



Recovery Well Details

Date Drilled	6 - 12 - 00
Thickness of Bentonite Seal	2 ft
Length of PVC Well Screen	25 ft
Depth of PVC Well	65 ft
Depth of Exploratory Well	65 ft
Depth to Ground Water	58 ft

Grout Surface Seal

Bentonite Pellet Seal

Sand Pack

Screen

Legend

Sand - (SP) - Tan to Brown, Very Fine Grained, Well Sorted with Caliche Nodules, Chert Nodules at 15' - 18'.

Sand - (SP) - Red to Brown, Very Fine Grained, Well Sorted with Large Caliche Nodules, Sandstone Layer at 14' - 16'.

Sand - (SP) - Red Brown, Very Fine Grained, Well Sorted, Sandstone Layer at 31' - 33'.

Sand - (SP) - Red to Brown, Very Fine Grained, Well Sorted with Sandstone Nodules.

Indicates samples selected for laboratory analysis.

Indicates the ground water level measured on date.

PID Head-space reading in ppm obtained with a photo-ionization detector

Completion Notes

1. The Recovery well was installed on date using air rotary drilling techniques.
2. The well was constructed with 2" ID, 0.020 inch factory slotted, threaded joint, schedule 40 PVC pipe.
3. The well is protected with a locked stick up steel cover and a compression cap.
4. The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.
5. The depths indicated are referenced from the ground surface.

Boring Log And Recovery Well

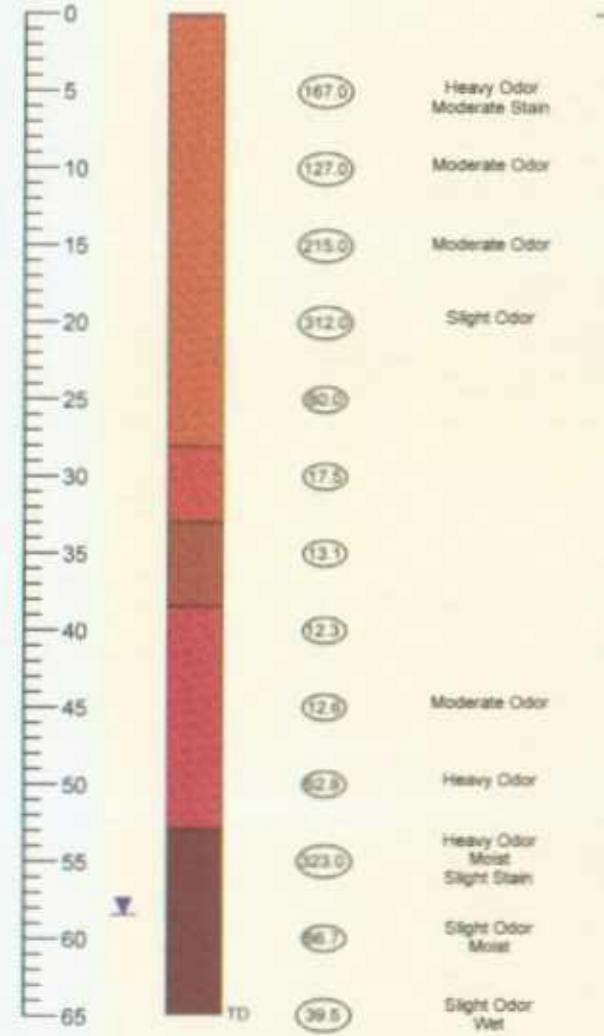
Recovery Well - 1

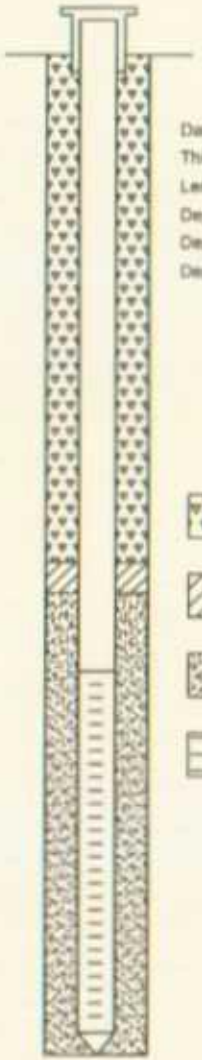
EOTT Energy Corp. Darr Angell #2 Lea County, NM

Environmental Technology Group, Inc.

Scale: use scale	Prep By: JDJ	Checked By: JT
July 14, 2000	ETGI Project # EOT 2020R	

Recovery Well RW - 2





Recovery Well Details

Date Drilled	6 - 12 - 00
Thickness of Bentonite Seal	2 ft
Length of PVC Well Screen	25 ft
Depth of PVC Well	65 ft
Depth of Exploratory Well	65 ft
Depth to Ground Water	58.5 ft

Grout Surface Seal

Bentonite Pellet Seal

Sand Pack

Screen

Legend

Sand - (SP) - Tan to Brown, Very Fine Grained, Well Sorted with Caliche Nodules.

Sand - (SP) - Red to Brown, Very Fine Grained, Well Sorted with Large Caliche Nodules, Sandstone Layer at 31' - 33'.

Sand - (SP) - Tan, Very Fine Grained, Well Sorted with Caliche Nodules.

Sand - (SP) - Red Brown, Very Fine Grained, Well Sorted, Sandstone Layer at 31' - 33'.

Sand - (SP) - Brown, Very Fine Grained, Well Sorted.

Indicates samples selected for laboratory analysis.

Indicates the ground water level measured on date.

PID Head-space reading in ppm obtained with a photo-ionization detector.

Completion Notes

1. The Recovery well was installed on date using air rotary drilling techniques.
2. The well was constructed with 2" ID, 0.020 inch factory slotted, threaded joint, schedule 40 PVC pipe.
3. The well is protected with a locked stick up steel cover and a compression cap.
4. The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.
5. The depths indicated are referenced from the ground surface.

Boring Log And Recovery Well

Recovery Well - 2

EOTT Energy Corp. Darr Angell #2 Lea County, NM

Environmental Technology Group, Inc.

Scale: use scale	Prep By: JDJ	Checked By: JT
July 14, 2000	ETGI Project # EOT 2020R	

APPENDIX D

ANALYTICAL RESULTS

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
P.O. BOX 4845
MIDLAND, TEXAS 79704
FAX: 915-520-4310
FAX: 505-392-3760

Sample Type: Water
Sample Condition: Intact/ Iced/ HCl/ 47 deg. F
Project #: EOT 1020R
Project Name: Darr Angel
Project Location: Lea County, N.M.

Sampling Date: 05/05/00
Receiving Date: 05/05/00
Analysis Date: 05/05/00

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L
25565	MW 4	<0.001	<0.001	<0.001	<0.001	<0.001
25566	MW 7	<0.001	<0.001	<0.001	<0.001	<0.001
	% IA	106	100	103	113	102
	% EA	101	96	98	105	97
	BLANK	<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8021B,5030

Umesh Rao, Ph. D.

5/17/00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
P.O. BOX 4845
MIDLAND, TEXAS 79704
FAX: 505-392-3760
FAX: 915-520-4310

Sample Type: Water
Sample Condition: Intact/ Iced/ 47 deg. F
Project #: EOT 1020R
Project Name: Darr Angel
Project Location: Lea County, N.M.

Sampling Date: 05/05/00
Receiving Date: 05/05/00
Analysis Date: See Below

ELT#	FIELD CODE	Sulfate mg/L	Chloride mg/L	Carbonate mg/L	Bicarbonate mg/L	TDS mg/L
25565	MW-4	154	71	<5	350	654
25566	MW-7	69.4	27	<5	227	399
	QUALITY CONTROL	56.4	5140	*	*	*
	TRUE VALUE	50.0	5000	*	*	*
	% PRECISION	113	103	*	*	*
	ANALYSIS DATE	05/10/0	05/09/00	05/10/00	05/10/00	05/09/00

METHODS: EPA 375.4, 325.3, 310, 160.1

Umesh Rao
Umesh Rao, Ph. D.

5/17/00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
P.O. BOX 4845
MIDLAND, TEXAS 79704
FAX: 505-392-3760
FAX: 915-520-4310

Sample Type: Water
Sample Condition: Intact/Iced/HNO3/ 47 deg. F
Project #: EOT 1020R
Project Name: Darr Angel
Project Location: Lea County, N.M.

Sample Date: 05/05/00
Receiving Date: 05/05/00
Analysis Date: 05/16/00
Analysis Date: Hg 05/12/00

Analyte (mg/L)	MW 4 25565	MW 7 25566	Reporting Limit	%IA	%EA	BLANK	RPD
Aluminum	0.0740	0.6470	0.0500	98	102	<0.0500	5.29
Arsenic	ND	0.0060	0.0050	102	106	<0.0050	3.70
Barium	0.1550	0.0860	0.0100	96	95	<0.0100	2.52
Beryllium	ND	ND	0.0040	102	100	<0.0040	3.92
Cadmium	ND	ND	0.0010	94	92	<0.0010	1.98
Calcium	135.0	78.20	1.000	95	*	<1.000	0.00
Chromium	ND	ND	0.0050	98	98	<0.0050	2.52
Cobalt	ND	ND	0.0200	96	94	<0.0200	2.32
Copper	ND	ND	0.0100	96	98	<0.0100	2.82
Iron	0.0570	0.3420	0.0500	96	111	<0.0500	7.04
Lead	ND	ND	0.0030	90	96	<0.0030	4.08
Magnesium	23.50	12.10	1.000	97	*	<1.000	0.00
Manganese	ND	0.0390	0.0150	97	95	<0.0150	2.35
Mercury	ND	ND	0.00020	96	99	<0.00020	5.18
Molybdenum	ND	ND	0.050	98	96	<0.050	3.27
Nickel	ND	ND	0.0100	96	93	<0.0100	2.33
Potassium	3.680	3.120	1.000	86	*	<1.000	4.23
Selenium	ND	ND	0.0050	96	94	<0.0050	4.17
Silver	ND	ND	0.00500	98	98	<0.0050	4.00
Sodium	71.30	54.70	1.000	115	*	<1.000	0.18
Tin	ND	ND	0.0500	100	95	<0.0500	3.82
Vanadium	0.0300	0.0510	0.0200	97	97	<0.0200	2.25
Zinc	ND	ND	0.0200	96	96	<0.0200	2.06
Boron	0.204	0.158	0.050	104	106	<0.050	0.94
Strontium	0.828	0.424	0.050	102	93	<0.050	2.47

ND = Below Reporting Limit
METHOD: EPA SW846-6010B, 7470

Umesh Rao, Ph. D.

5/17/00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
P.O. BOX 4845
MIDLAND, TEXAS 79704
FAX: 505-392-3760
FAX: 915-520-4310

Sample Type: Water
Sample Condition: Intact/ Iced/HCl/ 47 deg. F
Project #: EOT 1020R
Project Name: Darr Angel
Project Location: Lea County, N.M.
Field Code: MW 4

Sampling Date: 05/05/00
Receiving Date: 05/05/00
Analysis Date: 05/12/00

EPA SW846 8270 (mg/L)	REPORT LIMIT	ELT# 25565	RPD	%EA	%DEV
Naphthalene	0.005	ND			0.4
Acenaphthylene	0.005	ND			3.9
Acenaphthene	0.005	ND	20	84	-9.8
Fluorene	0.005	ND			-9.6
Phenanthrene	0.005	ND			-2.4
Anthracene	0.005	ND			-3.6
Fluoranthene	0.005	ND			-4.9
Pyrene	0.005	ND	16	96	-9.6
Benzo[a]anthracene	0.005	ND			-6.1
Chrysene	0.005	ND			-6.8
Benzo[b]fluoranthene	0.005	ND			16.1
Benzo[k]fluoranthene	0.005	ND			-11.0
Benzo [a]pyrene	0.005	ND			0.4
Indeno[1,2,3-cd]pyrene	0.005	ND			2.8
Dibenz[a,h]anthracene	0.005	ND			2.4
Benzo[g,h,i]perylene	0.005	ND			8.9

	% RECOVERY
Nitrobenzene-d5 SURR	185*
2-Fluorobiphenyl SURR	245*
Terphenyl-d14 SURR	306*

ND= not detected at reporting limit
Method: EPA SW 846 8270C , 3510
*NOTE: Matrix Interference

Umesh Rao
Umesh Rao, Ph. D.

5/17/00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
P.O. BOX 4845
MIDLAND, TEXAS 79704
FAX: 505-392-3760
FAX: 915-520-4310

Sample Type: Water
Sample Condition: Intact/ Iced/HCl/ 47 deg. F
Project #: EOT 1020R
Project Name: Darr Angel
Project Location: Lea County, N.M.
Field Code: MW 7

Sampling Date: 05/05/00
Receiving Date: 05/05/00
Analysis Date: 05/12/00

EPA SW846 8270 (mg/L)	REPORT LIMIT	ELT# 25566	RPD	%EA	%DEV
Naphthalene	0.005	ND			0.4
Acenaphthylene	0.005	ND			3.9
Acenaphthene	0.005	ND	20	84	-9.8
Fluorene	0.005	ND			-9.6
Phenanthrene	0.005	ND			-2.4
Anthracene	0.005	ND			-3.6
Fluoranthene	0.005	ND			-4.9
Pyrene	0.005	ND	16	96	-9.6
Benzo[a]anthracene	0.005	ND			-6.1
Chrysene	0.005	ND			-6.8
Benzo[b]fluoranthene	0.005	ND			16.1
Benzo[k]fluoranthene	0.005	ND			-11.0
Benzo [a]pyrene	0.005	ND			0.4
Indeno[1,2,3-cd]pyrene	0.005	ND			2.8
Dibenz[a,h]anthracene	0.005	ND			2.4
Benzo[g,h,i]perylene	0.005	ND			8.9

	% RECOVERY
Nitrobenzene-d5 SURR	198*
2-Fluorobiphenyl SURR	135*
Terphenyl-d14 SURR	141*

ND= not detected at reporting limit
Method: EPA SW 846 8270C , 3510
*NOTE: Matrix Interference

Umesh Rao
Umesh Rao, Ph. D.

5/19/00
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

COC 133

Project Manager: Jesse Taylor
Phone #: (915) 664-9166
FAX #: (505) 392-3760

ANALYSIS REQUEST

Company Name & Address: ETGI
P.O. Box 4845 Midland TX 79704

Project #: EOT 1020R
Project Name: Dark Angel

Project Location: Lea County, NM
Sampler Signature: Simon Cesar

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8021B/5030	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS 160.1	RCI	Cations 6010	Anions 300.0	PAH 8100 or 8270	Heavy Metals 6010
25565	MW 4	5	40 ml	X					X	X	X			5-5	0950	X						X		X	X	X	X
25566	MW 7	↓	↓	↓					↓	↓	↓			↓	1040	↓						↓		↓	↓	↓	↓

Relinquished by:	Date:	Times:	Received by:	REMARKS
Simon Cesar	5-5-00	1200		Mail Results : K. Dutton
Relinquished by:	Date:	Times:	Received by:	47°F
Relinquished by:	Date: 5/5/00	Times: 15:00	Received by Laboratory: Celey Keene	Invoice EOT 1015 M

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
P.O. BOX 4845
MIDLAND, TEXAS 79704
FAX: 915-520-4310
FAX: 505-392-3760

SampleType: Soil
Sample Condition: Intact/ Iced/ 32 deg. F
Project #: EOT 2020R
Project Name: Darr Angel #2
Project Location: Lea County, N.M.

Sampling Date: 05/17/00
Receiving Date: 05/17/00
Analysis Date: 05/22/00

ELT#	FIELD CODE	BENZENE mg/kg	TOLUENE mg/kg	ETHYLBENZENE mg/kg	m,p-XYLENE mg/kg	o-XYLENE mg/kg
25839	SS01 North Wall Pipeline 2'	<0.100	0.122	<0.100	0.121	<0.100
25840	SS02 North Wall West 2'	<0.100	0.136	<0.100	0.147	0.112
25841	SS03 North Wall East 2'	<0.100	<0.100	<0.100	<0.100	<0.100
25842	SS04 West Wall A. Pipeline 2'	<0.100	0.173	0.171	0.203	0.341
25843	SS05 East Wall A. Pipeline 2'	<0.100	0.282	0.188	0.335	0.272
25844	SS06 South Wall West 2'	<0.100	<0.100	<0.100	0.279	0.162
25845	SS07 South Wall East 2'	<0.100	0.254	0.184	1.83	1.42
25846	SS08 South Wall Pipeline 2'	<0.100	<0.100	<0.100	<0.100	<0.100
25847	SS09 Stock Pile B NW	0.123	2.210	1.080	1.640	0.681
25848	SS10 Stock Pile B NE 1'	<0.100	0.199	0.339	0.361	0.303
25849	SS11 Stock Pile B SW 1'	<0.100	0.142	0.259	0.243	0.250
25850	SS12 Stock Pile B SE 1'	<0.100	<0.100	0.467	0.371	0.353
25851	SS13 Stock Pile A South 1'	<0.100	0.250	<0.100	0.164	<0.100
25852	SS14 Stock Pile A North 1'	<0.100	<0.100	<0.100	0.172	<0.100
	% IA	107	102	102	112	102
	% EA	99	97	96	107	92
	BLANK	<0.100	<0.100	<0.100	<0.100	<0.100

METHODS: SW 846-8021B,5030

Umesh Rao

Umesh Rao, Ph. D.

5/24/00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
P.O. BOX 4845
MIDLAND, TEXAS 79704
FAX: 915-520-4310
FAX: 505-392-3760

SampleType: Soil
Sample Condition: Intact/ 32 deg. F
Project #: EOT 2020R
Project Name: Darr Angel #2
Project Location: Lea County, N.M.

Sampling Date: 05/17/00
Receiving Date: 05/17/00
Analysis Date: 05/19/00

ELT#	FIELD CODE	GRO C6-C10 mg/kg	DRO >C10-C28 mg/kg
25839	SS01 North Wall Pipeline 2'	<10	<10
25840	SS02 North Wall West 2'	594	13720
25841	SS03 North Wall East 2'	12	5284
25842	SS04 West Wall A. Pipeline 2'	661	24538
25843	SS05 East Wall A. Pipeline 2'	626	19579
25844	SS06 South Wall West 2'	561	8977
25845	SS07 South Wall East 2'	902	3656
25846	SS08 South Wall Pipeline 2'	<10	197
25847	SS09 Stock Pile B NW 1'	381	8749
25848	SS10 Stock Pile B NG 1'	451	7743
25849	SS11 Stock Pile B SW 1'	199	6863
25850	SS12 Stock Pile B SE 1'	243	7697
25851	SS13 Stock Pile A South 1'	<10	933
25852	SS14 Stock Pile A North 1'	<10	112
	% IA	97	95
	% EA	115	97
	BLANK	<10	<10

METHODS: SW 846-8015M GRO/DRO

Umesh Rao

Umesh Rao, Ph. D.

5/22/00
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

COC # 139

Project Manager: JESSE TAYLOR

Phone #: (505) 392-8731
FAX #: (505) 392-3760

Company Name & Address: EIGI
P.O. BOX 4845 MIDLAND TX 79704

Project #: EOT 2020R

Project Name: DORR ANGEL #2

Project Location: LEA COUNTY NM

Sampler Signature: Simon Cooks

ANALYSIS REQUEST

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	MATRIX: SOIL	MATRIX: AIR	MATRIX: SLUDGE	MATRIX: OTHER	PRESERVATIVE METHOD: HCL	PRESERVATIVE METHOD: HNO3	PRESERVATIVE METHOD: ICE	PRESERVATIVE METHOD: NONE	PRESERVATIVE METHOD: OTHER	SAMPLING: DATE (2000)	SAMPLING: TIME	BTEX 8021	TPH 8015 DRO/GRO	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
25839	SS01 NORTH WALL PIPELINE 2' bgs	1	4oz		X						X			5-17	1500	X	X						
25840	SS02 NORTH WALL WEST 2' bgs	↓	↓		↓						↓			↓	1306	↓	↓						
25841	SS03 NORTH WALL EAST 2' bgs	↓	↓		↓						↓			↓	1311	↓	↓						
25842	SS04 WEST WALL A. PIPELINE 2' bgs	↓	↓		↓						↓			↓	1318	↓	↓						
25843	SS05 EAST WALL A. PIPELINE 2' bgs	↓	↓		↓						↓			↓	1322	↓	↓						
25844	SS06 SOUTH WALL WEST 2' bgs	↓	↓		↓						↓			↓	1330	↓	↓						
25845	SS07 SOUTH WALL EAST 2' bgs	↓	↓		↓						↓			↓	1338	↓	↓						
25846	SS08 SOUTH WALL PIPELINE 2' bgs	↓	↓		↓						↓			↓	1345	↓	↓						
25847	SS09 STOCK PILE B NW 1'	↓	↓		↓						↓			↓	1406	↓	↓						
25848	SS10 STOCK PILE B NE 1'	↓	↓		↓						↓			↓	1411	↓	↓						
25849	SS11 STOCK PILE B SW 1'	↓	↓		↓						↓			↓	1415	↓	↓						

Relinquished by:	Date:	Time:	Received by:
Simon Cooks	5-17-00	1530	
Relinquished by: Justin Jones	Date: 5/17/00	Time: 5:45	Received by: J McMurry
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS:
MAIL RESULTS K. DUTTON
Rec 32°F
INVOICE! EOTT 1015 RM

May 24 00 09:48a
p.5

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

COC # 139

Project Manager: JESSE TAYLOR
Phone #: (505) 392-8731
FAX #: (505) 392-3760

Company Name & Address: ETGT
P.O. BOX 4854 MIDLAND TX 79704

Project #: EOT 2020 R
Project Name: DARR ANGEL #2

Project Location: LEA COUNTY NM
Sampler Signature: Lemon Casas

ANALYSIS REQUEST

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8021B/5030	TPH 8015 DRO/GRO	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
25850	SS12 STOCK PILE B SE 1'	1	402	X							X			5-17	1425	X	X						
25851	SS13 STOCK PILE A SOUTH 1'														1440								
25852	SS14 STOCK PILE A NORTH 1'														1450								

Relinquished by:	Date:	Time:	Received by:
Lemon Casas	5-17-00	1530	
Relinquished by:	Date:	Time:	Received by:
Linda Jones	5/17/00	5:45	D McMurry
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS
Mail Results: K. Dutton
Rec 32°F
Invoice: EOT 1015 AA

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
P.O. BOX 4845
MIDLAND, TEXAS 79704
FAX: 915-520-4310
FAX: 505-392-3760

SampleType: Soil
Sample Condition: Intact/ Iced/ 30 deg. F
Project #: EOT 2020R
Project Name: Darr Angel #2
Project Location: Lea County, N.M.

Sampling Date: 06/01/00
Receiving Date: 06/03/00
Analysis Date: 06/03 & 06/08/00

ELT#	FIELD CODE	BENZENE mg/kg	TOLUENE mg/kg	ETHYLBENZENE mg/kg	m,p-XYLENE mg/kg	o-XYLENE mg/kg
26259	RW 1C (5')	<0.100	1.77	0.836	5.34	0.965
26260	RW 1SS (10')	<0.100	16.3	9.34	41.9	13.4
26261	RW 1C (15')	<0.100	3.40	1.59	6.64	2.47
26268	RW 1SS (50')	<0.100	3.34	3.28	12.1	4.45
26269	RW 1SS (55')	29.9	169	63.8	183	59.1
26270	RW 1SS (60')	<0.100	4.37	3.02	9.97	3.66
26271	RW 2C (5')	<0.100	11.1	4.76	19.3	8.12
26272	RW 2C (10')	<0.100	5.54	2.99	11.9	4.43
26273	RW 2C (15')	0.666	14.3	6.05	24.7	9.15
26274	RW 2C (20')	<0.100	5.00	2.95	12.2	4.65
26281	RW 2SS (55')	<0.100	4.90	3.60	8.06	4.20
	% IA	95	93	94	104	95
	% EA	92	91	94	103	94
	BLANK	<0.100	<0.100	<0.100	<0.100	<0.100

METHODS: SW 846-8021B,5030

Raland K. Tuttle

6-9-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
P.O. BOX 4845
MIDLAND, TEXAS 79704
FAX: 915-520-4310
FAX: 505-392-3760

SampleType: Soil
Sample Condition: Intact/ Iced/ 30 deg. F
Project #: EOT 2020R
Project Name: Darr Angel #2
Project Location: Lea County, N.M.

Sampling Date: 06/01/00
Receiving Date: 06/03/00
Analysis Date: 06/07/00

ELT#	FIELD CODE	GRO C6-C10 mg/kg	DRO >C10-C28 mg/kg
26259	RW 1C (5')	60	823
26260	RW 1SS (10')	781	2257
26261	RW 1C (15')	81	965
26262	RW 1SS (20')	<10	<10
26263	RW 1SS (25')	<10	<10
26264	RW 1SS (30')	<10	<10
26265	RW 1SS (35')	<10	<10
26266	RW 1SS (40')	<10	<10
26267	RW 1SS (45')	<10	<10
26268	RW 1SS (50')	454	1264
26269	RW 1SS (55')	7092	10152
26270	RW 1SS (60')	388	1227
26271	RW 2C (5')	910	2850
26272	RW 2C (10')	515	2041
26273	RW 2C (15')	1456	4764
26274	RW 2C (20')	563	2857
26275	RW 2SS (25')	<10	102
26276	RW 2SS (30')	<10	<10
26277	RW 2SS (35')	<10	32
26278	RW 2SS (40')	<10	<10
26279	RW 2SS (45')	<10	<10
	% IA	80	92
	% EA	99	116
	BLANK	<10	<10

METHODS: SW 846-8015M GRO/DRO

Raland K. Tuttle

6-9-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
P.O. BOX 4845
MIDLAND, TEXAS 79704
FAX: 915-520-4310
FAX: 505-392-3760

SampleType: Soil
Sample Condition: Intact/ Iced/ 30 deg. F
Project #: EOT 2020R
Project Name: Darr Angel #2
Project Location: Lea County, N.M.

Sampling Date: See Below
Receiving Date: 06/03/00
Analysis Date: 06/07/00

ELT#	FIELD CODE	GRO C6-C10 mg/kg	DRO >C10-C28 mg/kg	SAMPLE DATE
26280	RW 2SS (50')	53	648	06/01/00
26281	RW 2SS (55')	916	3716	06/01/00
26282	RW 2SS (60')	12	285	06/01/00
26283	RW 2SS (65')	<10	221	06/01/00
26284	SB 1C (5')	<10	<10	06/02/00
26285	SB 1C (10')	<10	<10	06/02/00
26286	SB 1C (15')	<10	<10	06/02/00
26287	SB 1C (20')	<10	<10	06/02/00
26288	SB 1SS (25')	<10	<10	06/02/00
26289	SB 1C (30')	<10	<10	06/02/00
26290	SB 1SS (35')	<10	<10	06/02/00
26291	SB 1SS (40')	<10	<10	06/02/00
26292	SB 1SS (45')	<10	<10	06/02/00
26293	SB 1SS (50')	<10	<10	06/02/00
26294	SB 1SS (55')	<10	<10	06/02/00
26295	SB 1SS (57')	<10	<10	06/02/00
	% IA	88	96	
	% EA	90	106	
	BLANK	<10	<10	

METHODS: SW 846-8015M GRO/DRO

Raland K. Tuttle

6-9-00
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

COC: 147

Project Manager: JESSE TAYLOR
Phone #: (915) 664-9166
FAX #: (505) 392-3760

Company Name & Address: ETGI
PO BOX 4845 MIDLAND TX 79704

Project #: EOT2020R
Project Name: DARR ANGEL #2

Project Location: LEA COUNTY NM
Sampler Signature: Ben Dutton

ANALYSIS REQUEST

1 of 4

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8021B	TPH 8015 DRO/GRO	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
26259	RW1C (5')	1	4oz		X						X			6/1	0820	X	X						
26260	RW1SS (10')														0840	X							
26261	RW1C (15')														0850	X							
26262	RW1SS (20')														0900								
26263	RW1SS (25')														0910								
26264	RW1SS (30')														0920								
26265	RW1SS (35')														0950								
26266	RW1SS (40')														1000								
26267	RW1SS (45')														1015								
26268	RW1SS (50')														1030	X							
26269	RW1SS (55')														1047	X							

Relinquished by:	Date:	Time:	Received by:
Ben Dutton	6/3/00	0900	Simon Casas
Simon Casas	6/5/00	1630	Rebecca Jones
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS
JOB # IS EOT 2020R - NOT 2055 ON JAR LIDS
30° F
FR: (505) 392-3760

p. 4

Jun 09 00 03:54p

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

COC: 147

Project Manager: JESSE TAYLOR
Phone #: (915) 664-9166
FAX #: (505) 392-3760

Company Name & Address: ETGI
PO Box 4845 MIDLAND TX 79704

Project #: EOT 2020R
Project Name: DARR ANGEL #2

Project Location: LEA COUNTY NM
Sampler Signature: Ben Dutton

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8021B/5030	TPH 8015 D/GRO	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
26270	RW1 SS (60')	1	4oz		X						X			6/1	1107	X	X						
26271	RW2 C (5')														1400	X							
26272	RW2 C (10')														1410	X							
26273	RW2 C (15)														1420	X							
26274	RW2 C (20)														1430	X							
26275	RW2 SS (25)														1440								
26276	RW2 SS (30)														1450								
26277	RW2 SS (35)														1500								
26278	RW2 SS (40)														1515								
26279	RW2 SS (45)														1530								
26280	RW2 SS (50)														1600								

Relinquished by:	Date:	Times:	Received by:
Ben Dutton	6/3/00	0900	Simon Casas
Simon Casas	6/3/00	1630	
Relinquished by:	Date:	Times:	Received by Laboratory:

REMARKS
Job #IS 2020R vs 2055
30°F
FR: ~~220~~ (505) 392-3760

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

COC: 147

3 of 4

Project Manager: ESSO TAYLOR
Phone #: (915) 664-9166
FAX #: (505) 392-3760

Company Name & Address: ETGI
PO Box 4845 MIDLAND TX 79704

Project #: EOT 2020R
Project Name: DARR ANGEL #2

Project Location: LEA COUNTY NM
Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8021B/5030	TPH 418.1/8015	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI	8021B/5020
26281	RW2 SS (55)	1	402		X						X			6/1	1630	X	X							
26282	RW2 SS (60)														1645									
26283	RW2 SS (65)														1700									
26284	SB1 [redacted] C (5)													6/2	0830									
26285	SB1 [redacted] C (10)														0835									
26286	SB1 [redacted] C (15)														0840									
26287	SB1 [redacted] C (20)														0850									
26288	SB1 SS (25)														0900									
26289	SB1 [redacted] C (30)														0910									
26290	SB1 SS (35)														0930									
26291	SB1 SS (40)														0945									

Relinquished by:	Date:	Time:	Received by:
[signature]	6/3/00	0900	[signature]
[signature]	6/3/00	1630	[signature]
			Received by Laboratory:

REMARKS
Job # IS 2020 VS 2055
30°F
FR: (505) 392-3760

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

COC: 147

4 of 4

Project Manager: JESSE TAYLOR

Phone #: (915) 664-9166
FAX #: (505) 392-3760

Company Name & Address: ETGI PO BOX 4845 MIDLAND TX 79704

Project #: EOT 2020R

Project Name: DARR ANGELC #2

Project Location: LEA COUNTY NM

Sampler Signature: [signature]

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE (2000)	TIME	BTEX 8021B	TPH 8015 DRO/GRO	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
26292	SB1SS (45)	1	4oz		X						X			6/2	1000		X						
26293	SB1SS (50)	↓	↓		↓						↓			↓	1030		↓						
26294	SB1SS (55)	↓	↓		↓						↓			↓	1050		↓						
26295	SB1SS (57)	↓	↓		↓						↓			↓	1110		↓						

Relinquished by:	Date:	Time:	Received by:
[signature]	6/3/00	0900	[signature]
[signature]	6/3/00	1630	[signature]
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS: Job # IS 2030 VS 2055
30°F
FR: (505) 392-3960

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
P.O. BOX 4845
MIDLAND, TEXAS 79704
FAX: 915-520-4310
FAX: 505-392-3760

SampleType: Soil
Sample Condition: Intact/ Iced/ 32 deg. F
Project #: EOT 2020C
Project Name: Darr Angel #2
Project Location: None Given

Sampling Date: 06/05/00
Receiving Date: 06/10/00
Analysis Date: 06/13/00

ELT#	FIELD CODE	GRO C6-C10 mg/kg	DRO >C10-C28 mg/kg
26494	SB2C (5')	<10	<10
26495	SB2C (10')	<10	<10
26496	SB2SS (15')	<10	<10
26497	SB2SS (20')	<10	<10
26498	SB2SS (25')	<10	<10
26499	SB2SS (30')	<10	<10
26500	SB2SS (35')	<10	<10
26501	SB2SS (40')	<10	<10
26502	SB2SS (45')	<10	<10
26503	SB2SS (50')	<10	<10
26504	SB2SS (57')	<10	<10
26505	SB3C (5')	<10	<10
26506	SB3C (10')	<10	<10
26507	SB3C (15')	<10	<10
26508	SB3C (20')	<10	<10
26509	SB3C (25')	<10	<10
26510	SB3C (30')	<10	<10
26511	SB3C (35')	<10	<10
26512	SB3C (40')	<10	<10
26513	SB3C (45')	<10	<10
26514	SB3C (50')	<10	<10
26515	SB3C (60')	<10	<10
	% IA	82	100
	% EA	92	111
	BLANK	<10	<10

METHODS: SW 846-8015M GRO/DRO

Umesh Rao
Umesh Rao, Ph. D.

6/15/00
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

COC: 152

Project Manager: JESSE TAYLOR

Phone #: (915) 664-9166

FAX #: (505) 392-3760

Company Name & Address: ETGI

P.O. Box 4845 MIDLAND, TX 79704

Project #: EOT2020C

Project Name: DARR ANGELL #2

Project Location:

Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX 8021B/5030	TPH 418.1 8015 Gas / Diesel	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
26494	SB2 (5')	1	4oz		X						X			6/5	1100		X						
26495	SB2 (10')														1102								
26496	SB2 ss (15')														1108								
26497	SB2 ss (20')														1115								
26498	SB2 ss (25')														1126								
26499	SB2 ss (30')														1140								
26500	SB2 ss (35')														1224								
26501	SB2 ss (40')														1241								
26502	SB2 ss (45')														1303								
26503	SB2 ss (50')														1318								
26504	SB2 ss (57')	↓	↓		↓						↓			↓	1344		↓						

Relinquished by:	Date:	Time:	Received by:	REMARKS
	09 Jun 00	1510		FR: (505) 392-3760
Relinquished by:	Date:	Time:	Received by:	32°F
	10 Jun 00	1100		
Relinquished by:	Date:	Time:	Received by Laboratory:	INVOICE: EOTT

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

COC: 152

Project Manager: JESSE TAYLOR
Phone #: (915) 664-9166
FAX #: (505) 392-3760
Company Name & Address: ETGI
P.O. Box 4845 MIDLAND, TX 79704
Project #: ECT 20206C
Project Name: DARR ANGELL #2
Project Location: Loving, NM
Sampler Signature: Beth Aldrich

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME
26505	SB3c (5')	1	4oz		X						X			6/5	
26506	SB3c (10')														
26507	SB3c (15')														
26508	SB3c (20')														
26509	SB3c (25')														
26510	SB3c (30')														
26511	SB3c (35')														
26512	SB3c (40')														
26513	SB3c (45')														
26514	SB3c (50')														
26515	SB3c (60')														

ANALYSIS REQUEST

BTEX 8021B/5030	TPH 418.1 8015 GRO / DRO	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
	X						

Relinquished by:	Date:	Time:	Received by:
Beth Aldrich	6/5/00	1510	
Relinquished by:	Date:	Time:	Received by:
	10 Jun 00	1100	
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS
32°F

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
P.O. BOX 4845
MIDLAND, TEXAS 79704
FAX: 915-520-4310
FAX: 505-392-3760

SampleType: Soil
Sample Condition: Intact/ Iced/ 32 deg. F
Project #: EOT 2020C
Project Name: Darr Angel
Project Location: Lovington, N.M.

Sampling Date: 06/06/00
Receiving Date: 06/10/00
Analysis Date: 06/13/00

ELT#	FIELD CODE	GRO C6-C10 mg/kg	DRO >C10-C28 mg/kg
26462	SB4 C (5')	<10	<10
26463	SB4 C (10')	<10	<10
26464	SB4 C (15')	<10	<10
26465	SB5 C (5')	<10	<10
26466	SB5 C (10')	<10	<10
26467	SB5 C (15')	<10	<10
26468	SB6 C (5')	<10	<10
26469	SB6 C (10')	<10	<10
26470	SB6 C (15')	<10	<10
26471	SB7 C (5')	<10	<10
26472	SB7 C (10')	<10	<10
26473	SB7 C (15')	<10	<10
26474	SB8 C (5')	<10	<10
26475	SB8 C (10')	<10	<10
26476	SB8 C (15')	<10	<10
26477	SB9 C (5')	<10	<10
26478	SB9 C (10')	<10	<10
26479	SB9 C (15')	<10	<10
26480	SB10 C (5')	<10	<10
26481	SB10 C (10')	<10	<10
26482	SB10 C (15')	<10	<10
26483	MW #1C (5')	<10	<10
26484	MW #1C (10')	<10	<10
26485	MW1 C (15')	<10	<10
	% IA	97	112
	% EA	109	121
	BLANK	<10	<10

METHODS: SW 846-8015M GRO/DRO

Umesh Rao

Umesh Rao, Ph. D.

6/14/00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
P.O. BOX 4845
MIDLAND, TEXAS 79704
FAX: 915-520-4310
FAX: 505-392-3760

SampleType: Soil
Sample Condition: Intact/ Iced/ 32 deg. F
Project #: EOT 2020C
Project Name: Darr Angel
Project Location: Lovington, N.M.

Sampling Date: 06/06/00
Receiving Date: 06/10/00
Analysis Date: 06/13/00

ELT#	FIELD CODE	GRO C6-C10 mg/kg	DRO >C10-C28 mg/kg
26486	MW #1C (20')	<10	<10
26487	MW #1 S/S (25')	<10	<10
26488	MW #1SS (30')	<10	<10
26489	MW #1 SS (35')	<10	<10
26490	MW #1 SS (40')	<10	<10
26491	MW #1 SS (45')	<10	<10
26492	MW #1 SS (52')	<10	<10
26493	MW #1C (65')	<10	<10
	% IA	90	96
	% EA	89	106
	BLANK	<10	<10

METHODS: SW 846-8015M GRO/DRO

Umesh Rao

Umesh Rao, Ph. D.

6/14/00
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

COC: 151

Project Manager: JESSE TAYLOR
Phone #: (915) 664-9166
FAX #: (915) 392-3760

Company Name & Address: ETGI
P.O. Box 4845 MIDLAND, TX 79704

Project #: EOT2020C
Project Name: DARR ANGELL #2

Project Location: Lovington, NM
Sampler Signature: Buck Ollerman

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME
26462	SB4 c (5')	1	4oz		X						X			6/6	0851
26463	SB4 c (10')														0855
26464	SB4 c (15')														0856
26465	SB5 c (5')														0915
26466	SB5 c (10')														0918
26467	SB5 c (15')														0921
26468	SB6 c (5')														0940
26469	SB6 c (10')														0943
26470	SB6 c (15')														0946
26471	SB7 c (5')														1002
26472	SB7 c (10')	↓	↓	↓	↓						↓			↓	1009

ANALYSIS REQUEST

BTEX 8021B/5030	TPH 8015 GRO / DRO	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
	X						

Relinquished by:	Date:	Time:	Received by:
Buck Ollerman	09 June 00	1455	
Relinquished by:	Date:	Time:	Received by:
	10 Jun 00	1100	
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS
FR: (575) 392-3760
32°F

INVOICE: EOTT

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

COC: 151

Project Manager: JESSE TAYLOR
Phone #: (915) 664-9166
FAX #: (505) 392-3760

Company Name & Address: ETGI
P.O. Box 4845 MIDLAND, TX 79704

Project #: EOT 2026
Project Name: DARR ANGELL #2

Project Location: Lovington, NM
Sampler Signature: Bert Allen

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX 8021B/5030	TPH 418.1 8015 GRO DRO	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
26473	SB7c (15')	1	4oz		X						X			6/6	1014		X						
26474	SB8c (5')														1041								
26475	SB8c (10')														1047								
26476	SB8c (15')														1051								
26477	SB9c (5')														1108								
26478	SB9c (10')														1115								
26479	SB9c (15')														1118								
26480	SB10c (5')														1212								
26481	SB10c (10')														1219								
26482	SB10c (15')														1225								
26483	MW#1c (5')														1245								

Relinquished by:	Date:	Time:	Received by:
Bert Allen	9 Jan 00	1455	Simon Casas
Simon Casas	10 Jan 00	1100	
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS
FR: (505) 392-3760
32°F

INVOICE: EOT

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

COC: 151

Project Manager: JESSE TAYLOR
Phone #: (915) 664-9166
FAX #: (505) 392-3760
Company Name & Address: ETGI
P.O. Box 4845 MIDLAND, TX 79704
Project #: EOT2002.0C
Project Name: DARR ANGELL #2
Project Location: Lovington NM
Sampler Signature: Bill Aldrich

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME
26484	MW1 c (40')	1	40cc		X						X			6/6	1242
26485	MW1 c (45')														1251
26486	MW1 c (20')														1254
26487	MW1 S/S (25')														1302
26488	MW1 SS (30')														1322
26489	MW1 SS (35')														1355
26490	MW1 SS (40')														1350
26491	MW1 SS (45')														1408
26492	MW1 SS (52')														1426
26493	MW1 c SS (65')														1520

ANALYSIS REQUEST

BTEX 8021B/5030	TPH 418.1 8015 GRO DRO	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
	X						

Relinquished by:	Date:	Time:	Received by:
Bill Aldrich	09 June 00	1455	
Relinquished by:	Date:	Time:	Received by:
	10 Jun 00	1100	
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS
32°F

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
2540 MARLAND
HOBBS, N.M. 88240
FAX: 915-520-4310
FAX: 505-397-4701

Sample Type: Soil
Sample Condition: Intact/ Iced/ 29 deg. F
Project #: EOT 2020C
Project Name: Darr Angel #2
Project Location: Lovington, N.M.

Sampling Date: 06/12/00
Receiving Date: 06/17/00
Analysis Date: 06/22/00

ELT#	FIELD CODE	BENZENE mg/kg	TOLUENE mg/kg	ETHYLBENZENE mg/kg	m,p-XYLENE mg/kg	o-XYLENE mg/kg	TOTAL BTEX mg/kg
26975	MW 2 (C) 55'	<0.100	0.724	<0.100	1.27	0.318	2.31
% IA		99	99	100	113	101	
% EA		94	86	93	107	96	
BLANK		<0.100	<0.100	<0.100	<0.100	<0.100	

METHODS: SW 846-8021B,5030

Raland K. Tuttle

6-26-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
2540 W. MARLAND
HOBBS,N.M. 88240
FAX: 505-397-4701
FAX: 915-520-4310

SampleType: Soil
Sample Condition: Intact/ Iced/ 29 deg. F
Project #: EOT 2020C
Project Name: Darr Angel #2
Project Location: Lovington, N.M.

Sampling Date: 06/16/00
Receiving Date: 06/17/00
Analysis Date: 06/20/00

ELT#	FIELD CODE	GRO C6-C10 mg/kg	DRO >C10-C28 mg/kg
26965	MW 2 (C) 5'	<10	<10
26966	MW 2 (C) 10'	<10	<10
26967	MW 2 (C) 15'	<10	<10
26968	MW 2 (C) 20'	<10	<10
26969	MW 2 (C) 25'	<10	<10
26970	MW 2 (C) 30'	<10	<10
26971	MW 2 (C) 35'	<10	<10
26972	MW 2 (C) 40'	<10	<10
26973	MW 2 (C) 45'	<10	<10
26974	MW 2 (C) 50'	<10	<10
	% IA	98	122
	% EA	76	97
	BLANK	<10	<10

METHODS: SW 846-8015M GRO/DRO

Raland K. Tuttle

6-26-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
2540 W. MARLAND
HOBBS,N.M. 88240
FAX: 505-397-4701
FAX: 915-520-4310

SampleType: Soil
Sample Condition: Intact/ Iced/ 29 deg. F
Project #: EOT 2020C
Project Name: Darr Angel #2
Project Location: Lovington, N.M.

Sampling Date: 06/12/00
Receiving Date: 06/17/00
Analysis Date: 06/20/00

ELT#	FIELD CODE	GRO C6-C10 mg/kg	DRO >C10-C28 mg/kg
26975	MW 2 (C) 55'	15	2251
26976	MW 2 (C) 65'	<10	229
26977	MW 3 (C) 5'	<10	<10
26978	MW 3 (C) 10'	<10	<10
26979	MW 3 (C) 15'	<10	<10
26980	MW 3 (C) 20'	<10	<10
26981	MW 3 (C) 25'	<10	<10
26982	MW 3 (C) 30'	<10	<10
26983	MW 3 (C) 35'	<10	<10
26984	MW 3 (C) 40'	<10	<10
26985	MW 3 (C) 45'	<10	<10
26986	MW 3 (C) 50'	<10	<10
26987	MW 3 (C) 55'	<10	<10
26988	MW 3 (C) 65'	<10	<10
	% IA	78	124
	% EA	87	127
	BLANK	<10	<10

METHODS: SW 846-8015M GRO/DRO

Raland K. Tuttle

6-26-00
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

COC 163

1 of 3

Project Manager: Jesse Taylor

Phone #: (505) 397-4882

FAX #: (505) 397-4701

Company Name & Address: ETGI, 2540 W. Marland, Hobbs, NM 88240

Project #: EOT 2020C

Project Name: Dan Angell #2

Project Location: Lovington, NM

Sampler Signature: [signature]

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8020/5030	TPH ~~418.1~~ GRO and DRO	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
	~~MW-26@~~		~~#~~		~~X~~						~~X~~				~~[illegible]~~		~~X~~						
26965	MW-26@5'				X						X			6/16/00	0849		X						
26966	MW-26@10'														0852								
26967	MW-26@15'														0859								
26968	MW-26@20'														0915								
26969	MW-26@25'														0925								
26970	MW-26@30'														0945								
26971	MW-26@35'														1035								
26972	MW-26@40'														1050								
26973	MW-26@45'														1110								
26974	MW-26@50'														1130								

Relinquished by:	Date:	Time:	Received by:
[signature]	6/16/00	3:45 pm	
[signature]	6-17-00	1:40 pm	[signature]
			Received by Laboratory:

REMARKS: Fax Results to ETGI

29°F

Invoice EOTT

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

COC: 163

Project Manager: Jesse Taylor
Phone #: (505) 397-4892
FAX #: (505) 397-4701

ANALYSIS REQUEST

2 of 3

Company Name & Address: ETGI, 2540 W. Marland, Hobbs, NM

Project #: EOT 2026
Project Name: Dan Angell #2

Project Location: Lovington, NM
Sampler Signature: Bert Aldrich

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8021B/5030	TPH 418.1/TX1005 Ext(C35)	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
26975	MW-2(c) 55'	1	40z		X						X			6/12/00	1145	X	X						
26976	MW-2(c) 65'														1220								
26977	MW-3(c) 5'														1342								
26978	MW-3(c) 10'														1348								
26979	MW-3(c) 15'														1353								
26980	MW-3(c) 20'														1355								
26981	MW-3(c) 25'														1405								
26982	MW-3(c) 30'														1412								
26983	MW-3(c) 35'														1573								
26984	MW-3(c) 40'														1520								
26985	MW-3(c) 45'														1525								

Relinquished by:	Date:	Time:	Received by:
Bert Aldrich	6/16/00	3:45 pm	
Relinquished by:	Date:	Time:	Received by:
Danny Byrd	6-17-00	1:40 pm	Rhonda Ray
Relinquished by:	Date:	Time:	Received by Laboratory:

REMARKS: Fax results to ETGI

29°F

INDIGO EOT

P.5

Jun 26 00 07:38a

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
2540 MARLAND
HOBBS, N.M. 88240
FAX: 505-397-4701
FAX: 915-520-4310

Sample Type: Water
Sample Condition: Intact/ Iced/ HCl/ 29 deg. F
Project #: EOT 2020R
Project Name: Darr Angel #2
Project Location: Lea County, N.M.

Sampling Date: 06/16/00
Receiving Date: 06/17/00
Analysis Date: 06/21/00

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L
27013	MW 1	<0.001	<0.001	<0.001	<0.001	<0.001
27014	MW 2	0.711	0.475	0.143	0.441	0.100
27015	MW 3	0.001	<0.001	<0.001	<0.001	<0.001
% IA		88	86	86	94	87
% EA		96	91	93	102	94
BLANK		<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8021B,5030

Raland K. Tuttle

7-3-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
2540 MARLAND
HOBBS, N.M. 88240
FAX: 505-397-4701
FAX: 915-520-4310

Sample Type: Water
Sample Condition: Intact/Iced/HNO3/ 29 deg. F
Project #: EOT 2020R
Project Name: Darr Angel #2
Project Location: Lea County, N.M.

Sample Date: 06/16/00
Receiving Date: 06/17/00
Analysis Date: 06/28/00
Analysis Date: Hg 07/03/00

Analyte (mg/L)	MW 1 27013	MW 2 27014	MW 3 27015	Report Limit	%IA	%EA	BLANK	RPD
Aluminum	8.50	10.3	17.0	0.0500	91	89	<0.0500	0.00
Arsenic	0.0080	0.0080	0.0110	0.0050	96	102	<0.0050	1.98
Barium	0.2030	0.3550	0.3820	0.0100	96	98	<0.0100	0.50
Beryllium	ND	ND	ND	0.0040	98	100	<0.0040	0.00
Cadmium	0.0020	0.0200	0.0020	0.0010	102	102	<0.0010	1.94
Calcium	242.0	405.0	681.0	1.000	99	N/A	<1.000	1.91
Chromium	0.0260	0.0340	0.0410	0.0050	96	98	<0.0050	0.51
Cobalt	ND	ND	ND	0.0200	94	95	<0.0200	0.42
Copper	ND	0.0100	0.0110	0.0100	97	100	<0.0100	0.00
Iron	5.840	6.460	10.60	0.0500	104	99	<0.0500	0.94
Lead	ND	0.0030	0.0070	0.0030	94	96	<0.0030	2.06
Magnesium	20.60	28.30	31.50	1.000	95	N/A	<1.000	1.82
Manganese	0.1140	0.1940	0.2070	0.0150	93	94	<0.0150	0.41
Mercury	0.004	0.002	0.003	0.002	104	103	<0.002	3.12
Molybdenum	ND	ND	ND	0.050	N/A	95	<0.050	0.63
Nickel	0.0260	0.0340	0.0370	0.0100	99	100	<0.0100	0.40
Potassium	5.520	7.630	9.310	1.000	88	N/A	<1.000	3.59
Selenium	ND	ND	ND	0.0050	104	104	<0.0050	0.00
Silver	ND	ND	ND	0.00500	92	94	<0.0050	0.00
Sodium	55.40	73.40	56.00	1.000	102	N/A	<1.000	2.41
Tin	ND	ND	ND	0.0500	90	93	<0.0500	1.40
Vanadium	0.0630	0.0880	0.1090	0.0200	92	93	<0.0200	0.43
Zinc	0.0450	0.1440	0.0880	0.0200	102	102	<0.0200	3.67
Boron	0.158	0.168	0.145	0.050	106	N/A	<0.050	N/A
Strontium	0.482	0.855	0.693	0.050	100	102	<0.050	0.87

ND = Below Reporting Limit
METHOD: EPA SW846-6010B, 7470

Raland K. Tuttle

7-3-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
2540 W. MARLAND
HOBBS, N.M. 88240
FAX: 505-397-4701
FAX: 915-520-4310

Sample Type: Water
Sample Condition: Intact/ Iced/ 29 deg. F
Project #: EOT 2020R
Project Name: Darr Angel #2
Project Location: Lea County, N.M.

Sampling Date: 06/16/00
Receiving Date: 06/17/00
Analysis Date: See Below

ELT#	FIELD CODE	Sulfate mg/L	Chloride mg/L	Carbonate mg/L	Bicarbonate mg/L	TDS mg/L
27013	MW 1	122.3	48	0	144	431
27014	MW 2	100.9	87	0	220	559
27015	MW 3	80.2	35	0	187	395
	QUALITY CONTROL	56.8	5849	*	*	*
	TRUE VALUE	50.0	5000	*	*	*
	% PRECISION	114	117	*	*	*
	ANALYSIS DATE	06/27/00	06/23/00	06/23/00	06/23/00	06/20/00

METHODS: EPA 375.4, 325.3, 310, 160.1

Raland K. Tuttle

7-3-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
2540 W. MARLAND
HOBBS, N.M. 88240
FAX: 505-397-4701
FAX: 915-520-4310

Sample Type: Water
Sample Condition: Intact/ Iced/ 29 deg. F
Project #: EOT 2020R
Project Name: Darr Angel #2
Project Location: Lea County, N.M.
Field Code: MW 1

Sampling Date: 06/16/00
Receiving Date: 06/17/00
Analysis Date: 06/23/00

EPA SW846 8270 (mg/L)	REPORT LIMIT	ELT# 27013	RPD	%EA	%DEV
Naphthalene	0.005	ND			-0.8
Acenaphthylene	0.005	ND			-1.7
Acenaphthene	0.005	ND	8	71	-12.6
Fluorene	0.005	ND			-3.5
Phenanthrene	0.005	ND			-0.3
Anthracene	0.005	ND			-1.9
Fluoranthene	0.005	ND			-11.6
Pyrene	0.005	ND	15	64	-5.8
Benzo[a]anthracene	0.005	ND			-9.9
Chrysene	0.005	ND			-8.2
Benzo[b]fluoranthene	0.005	ND			2.4
Benzo[k]fluoranthene	0.005	ND			9.3
Benzo [a]pyrene	0.005	ND			-0.9
Indeno[1,2,3-cd]pyrene	0.005	ND			-26.7#
Dibenz[a,h]anthracene	0.005	ND			-31.4#
Benzo[g,h,i]perylene	0.005	ND			-52.6#

	% RECOVERY
Nitrobenzene-d5 SURR	147
2-Fluorobiphenyl SURR	128
p-Terphenyl-d14 SURR	111

ND= not detected at report limit.
Method: EPA SW 846 8270C , 3510

Raland K. Tuttle

7-3-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
2540 W. MARLAND
HOBBS, N.M. 88240
FAX: 505-397-4701
FAX: 915-520-4310

Sample Type: Water
Sample Condition: Intact/ Iced/ 29 deg. F
Project #: EOT 2020R
Project Name: Darr Angel #2
Project Location: Lea County, N.M.
Field Code: MW 2

Sampling Date: 06/16/00
Receiving Date: 06/17/00
Analysis Date: 06/23/00

EPA SW846 8270 (mg/L)	REPORT LIMIT	ELT# 27014	RPD	%EA	%DEV
Naphthalene	0.005	ND			-0.8
Acenaphthylene	0.005	ND			-1.7
Acenaphthene	0.005	ND	8	71	-12.6
Fluorene	0.005	ND			-3.5
Phenanthrene	0.005	ND			-0.3
Anthracene	0.005	ND			-1.9
Fluoranthene	0.005	ND			-11.6
Pyrene	0.005	ND	15	64	-5.8
Benzo[a]anthracene	0.005	ND			-9.9
Chrysene	0.005	ND			-8.2
Benzo[b]fluoranthene	0.005	ND			2.4
Benzo[k]fluoranthene	0.005	ND			9.3
Benzo [a]pyrene	0.005	ND			-0.9
Indeno[1,2,3-cd]pyrene	0.005	ND			-26.7#
Dibenz[a,h]anthracene	0.005	ND			-31.4#
Benzo[g,h,i]perylene	0.005	ND			-52.6#

	% RECOVERY
Nitrobenzene-d5 SURR	124
2-Fluorobiphenyl SURR	129
p-Terphenyl-d14 SURR	124

ND= not detected at report limit.
Method: EPA SW 846 8270C , 3510

Raland K. Tuttle

7-3-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
2540 W. MARLAND
HOBBS, N.M. 88240
FAX: 505-397-4701
FAX: 915-520-4310

Sample Type: Water
Sample Condition: Intact/ Iced/ 29 deg. F
Project #: EOT 2020R
Project Name: Darr Angel #2
Project Location: Lea County, N.M.
Field Code: MW 3

Sampling Date: 06/16/00
Receiving Date: 06/17/00
Analysis Date: 06/23/00

EPA SW846 8270 (mg/L)	REPORT LIMIT	ELT# 27015	RPD	%EA	%DEV
Naphthalene	0.005	ND			-0.8
Acenaphthylene	0.005	ND			-1.7
Acenaphthene	0.005	ND	8	71	-12.6
Fluorene	0.005	ND			-3.5
Phenanthrene	0.005	ND			-0.3
Anthracene	0.005	ND			-1.9
Fluoranthene	0.005	ND			-11.6
Pyrene	0.005	ND	15	64	-5.8
Benzo[a]anthracene	0.005	ND			-9.9
Chrysene	0.005	ND			-8.2
Benzo[b]fluoranthene	0.005	ND			2.4
Benzo[k]fluoranthene	0.005	ND			9.3
Benzo [a]pyrene	0.005	ND			-0.9
Indeno[1,2,3-cd]pyrene	0.005	ND			-26.7#
Dibenz[a,h]anthracene	0.005	ND			-31.4#
Benzo[g,h,i]perylene	0.005	ND			-52.6#

	% RECOVERY
Nitrobenzene-d5 SURR	129
2-Fluorobiphenyl SURR	138
p-Terphenyl-d14 SURR	129

ND= not detected at report limit.
Method: EPA SW 846 8270C , 3510

Raland K. Tuttle

7-3-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
2540 W. MARLAND
HOBBS, N.M. 88240
FAX: 505-397-4701
FAX: 915-520-4310

Sample Type: Water
Sample Condition: Intact/ Iced/ 29 deg. F
Project #: EOT 2020R
Project Name: Darr Angel #2
Project Location: Lea County, N.M.

Sampling Date: 06/16/00
Receiving Date: 06/17/00
Analysis Date: 06/25/00
Field Code: RW 1
ELT# 27012

Tentatively Identified Compound	RT
2-methyl hexane	1.80
1,3-dimethyl hexane	2.19
Octane	2.37
2-ethyl hexane	2.81
1,2-dimethyl benzene	3.38
Nonane	3.87
1,2,4-Trimethylbenzene	5.20
Decane	5.76
Undecane	7.65
Dodecane	9.39
Heptadecane	13.18
Tridecane	13.68
Heptadecane	14.16

METHODS: GC/MS SW 846-8270

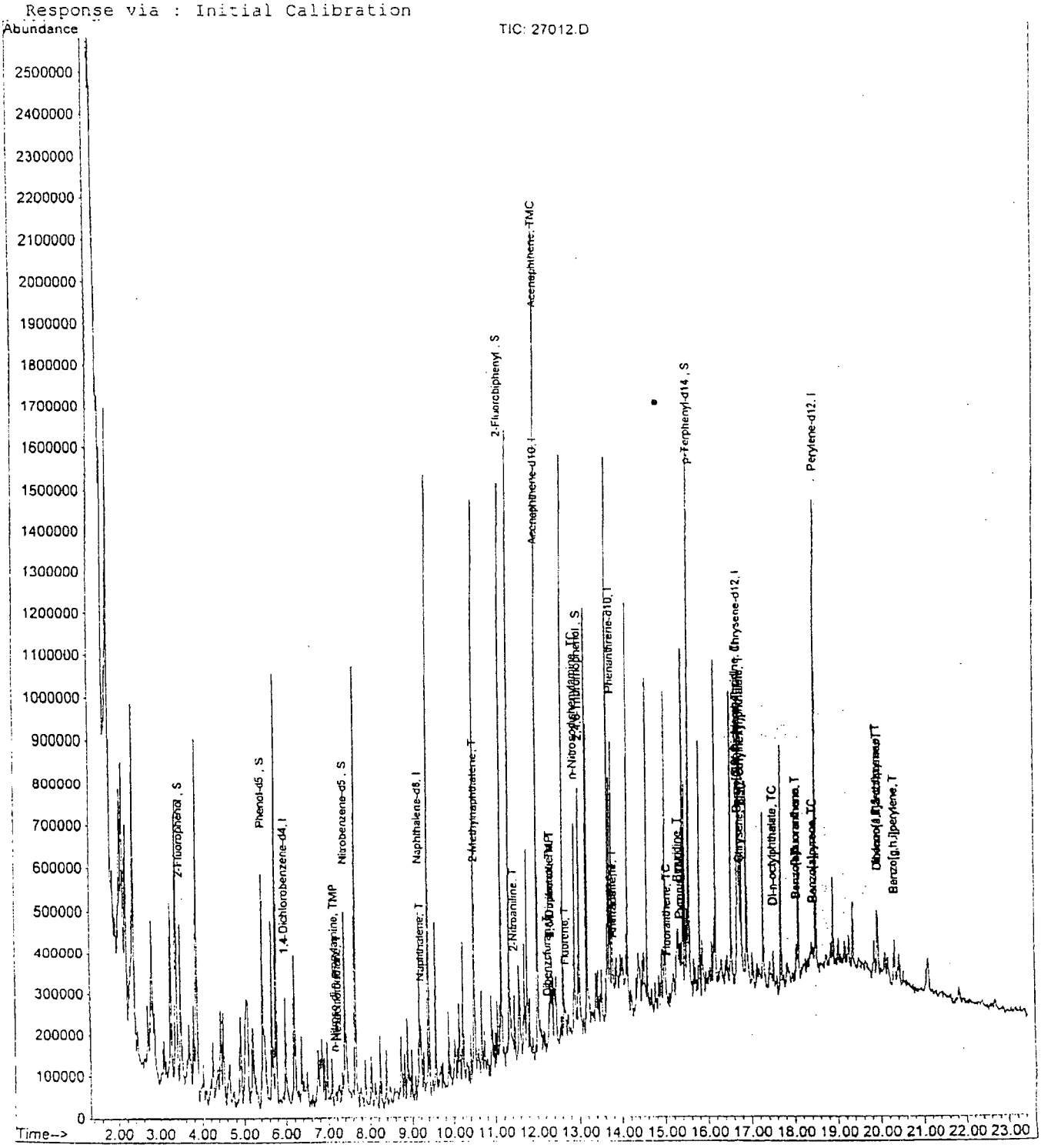
Raland K. Tuttle

7-3-00
Date

Quantitation Report

Data File : C:\HPCHEM\1\DATA\062300\27012.D Vial: 12
Acq On : 25 Jun 2000 12:53 pm Operator:
Sample : GC/MS SCAN Inst : GC/MS Ins
Misc : Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Jun 25 13:17 19100 Quant Results File: 8270U.RES

Method : C:\HPCHEM\1\METHODS\8270GLY.M (RTE Integrator)
Title : GC-MS Semivolatiles SOP no. 506
Last Update : Wed Apr 19 18:26:25 2000
Response via : Initial Calibration



Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

COC 161

Project Manager: Jesse Tavar

Phone #: (505) 397 4882

FAX #: (505) 397-4701

Company Name & Address: ETGI
2540 W Marland Hobbs NM

Project #: EOT 2020R

Project Name: DAVE ANGELL 2 #

Project Location: LEA COUNTY NM

Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8021(1)	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI	Fingerprint (GC/MS)	PAH 8100	Cations 6010	Anions 300.0	TDS 160.1	Heavy Metals 6010
	RW1	1	1					X			X			6-16	1230													
	MW1	5	V	X					X	X	X			6-16	1030	X								X	X	X	X	X
	MW2	↓	↓	↓					↓	↓	↓			↓	1100	↓								↓	↓	↓	↓	↓
	MW3	↓	↓	↓					↓	↓	↓			↓	1000	↓								↓	↓	↓	↓	↓

Relinquished by:	Date:	Times:	Received by:
	6-16-00	1606	
	6-17-00	1400 pm	

REMARKS

E.L. HOBBS OFFICE

29°F

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
2540 W. MARLAND
HOBBS,N.M. 88242
FAX: 505-397-4701
FAX: 915-520-4310

SampleType: Soil
Sample Condition: Intact/ Iced/ 30 deg. F
Project #: EOT 2020R
Project Name: DARR ANGELL #2
Project Location: Lea County, N.M.

Sampling Date: 07/11/00
Receiving Date: 07/12/00
Analysis Date: 07/14/00

ELT#	FIELD CODE	GRO C6-C10 mg/kg	DRO >C10-C28 mg/kg
28063	MW4 0-2'	<10	<10
28064	MW4 3-5'	<10	<10
28065	MW4 8-10'	<10	<10
28066	MW4 13-15'	<10	<10
28067	MW4 18-20'	<10	<10
28068	MW4 23-25'	<10	<10
28069	MW4 28-30'	<10	<10
28070	MW4 33-35'	<10	<10
28071	MW4 38-40'	<10	<10
28072	MW4 43-45'	<10	<10
28073	MW4 48-50'	<10	<10
28074	MW4 53-55'	<10	<10
28075	MW4 58-60'	<10	<10
	% IA	85	105
	% EA	91	111
	BLANK	<10	<10

METHODS: SW 846-8015M GRO/DRO

Raland K. Tuttle

7-18-00
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

1062

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

COC 185

Project Manager: JESSE TAYLOR

Phone #: (505) 397-4882

FAX #: (505) 397-4701

Company Name & Address: ETGT
2540 W MARLAND HOBBS NM 88242

Project #: EOT 2020R

Project Name: DARR ANGELL #2

Project Location: LEA COUNTY NM

Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX 8021B/5030	TPH 8015 DRO/GRO	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
28063	MW 4 0'-2'	1	4oz		X						X			7-11	0848		X						
28064	MW 4 3'-5'														0900								
28065	MW 4 8'-10'														0907								
28066	MW 4 13'-15'														0912								
28067	MW 4 18'-20'														0915								
28068	MW 4 23'-25'														0926								
28069	MW 4 28'-30'														0942								
28070	MW 4 33'-35'														1005								
28071	MW 4 38'-40'														1022								
28072	MW 4 43'-45'														1040								
28073	MW 4 48'-50														1100								

Relinquished by:	Date:	Times:	Received by:
Simon Casas	7-12-00	0800	Jacy Peterson
Relinquished by:	Date:	Times:	Received by:
Relinquished by: Jacy Peterson	Date: 7/12/00	Times: 16:30	Received by Laboratory: Clyde Keene

REMARKS: FAX RESULTS: HOBBS OFFICE 30°F

INVOICE: EOT

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

COC 185

Project Manager: JESSE TAYLOR	Phone #: (505) 397-4882 FAX #: (505) 392-4701
Company Name & Address: E.T.G.I. 2540 MARLAND HOBBS NM 88242	
Project #: EOT 2020R	Project Name: DARK ANGEL #2
Project Location: LEA COUNTY	Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: BTEX 8021B/5030	TPH 8015 Modified	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS	RCI
28074	MW 55-55	1	40z		X						X			7-11	1294		X						
28075	MW 58-60	1	40z		X						X			7-11	1230		X						

Relinquished by:	Date:	Time:	Received by:
Tomas Casas	7-12-00	0800	
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date: 7/12/00	Time: 16:30	Received by Laboratory:

REMARKS

3 of

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
P.O. BOX 4845
MIDLAND, TEXAS 79704
FAX: 915-520-4310
FAX: 505-397-4701

SampleType: Water
Sample Condition: Intact/ Iced/ HCl/ 34 deg. F
Project #: EOT 2020R
Project Name: Darr Angell 2
Project Location: Lovington

Sampling Date: 07/14/00
Receiving Date: 07/14/00
Analysis Date: 07/20/00

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L
28201	MW-4	<0.001	<0.001	<0.001	<0.001	<0.001
% IA		95	94	94	105	95
% EA		93	90	93	102	94
BLANK		<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: SW 846-8021B,5030

Raland K Tuttle

Raland K. Tuttle

7-27-00

Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
P.O. BOX 4845
MIDLAND, TEXAS 79704
FAX: 505-397-4701
FAX: 915-520-4310

Sample Type: Water
Sample Condition: Intact/ Iced/ 34 deg. F
Project #: EOT 2020R
Project Name: Darr Angell 2
Project Location: Lovington

Sampling Date: 07/14/00
Receiving Date: 07/14/00
Analysis Date: See Below

ELT#	FIELD CODE	Sulfate mg/L	Chloride mg/L	Carbonate mg/L	Bicarbonate mg/L	TDS mg/L
28201	MW 4	137	40	0	166	389
	QUALITY CONTROL	47.7	5406	*	*	*
	TRUE VALUE	50.0	5000	*	*	*
	% PRECISION	95	108	*	*	*
	ANALYSIS DATE	07/19/00	07/18/00	7/18/00	07/18/00	07/19/00

METHODS: EPA 375.4, 325.3, 310, 160.1

Raland K. Tuttle

7-27-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
2540 MARLAND
HOBBS, N.M. 88240
FAX: 505-397-4701
FAX: 915-520-4310

Sample Type: Water
Sample Condition: Intact/Iced/HNO3/ 34 deg. F
Project #: EOT 2020R
Project Name: Darr Angell 2
Project Location: Lovington

Sample Date: 07/14/00
Receiving Date: 07/14/00
Analysis Date: 07/25/00
Analysis Date: Hg 07/26/00

Analyte (mg/L)	MW4 28201	Report Limit	%IA	%EA	BLANK	RPD
Aluminum	27.4	0.0500	96	101	<0.0500	4.04
Arsenic	0.0130	0.0050	100	104	<0.0050	1.90
Barium	1.150	0.0100	100	109	<0.0100	2.54
Beryllium	ND	0.0040	96	102	<0.0040	1.98
Cadmium	ND	0.0010	100	108	<0.0010	1.87
Calcium	702.0	1.000	94	N/A	<1.000	3.12
Chromium	0.0450	0.0050	94	104	<0.0050	2.93
Cobalt	0.0300	0.0200	94	100	<0.0200	2.63
Copper	0.0520	0.0100	98	110	<0.0100	3.31
Iron	18.45	0.0500	104	108	<0.0500	4.65
Lead	0.0080	0.0030	98	106	<0.0030	1.90
Magnesium	48.10	1.000	97	N/A	<1.000	3.39
Manganese	0.2870	0.0150	94	99	<0.0150	2.44
Mercury	ND	0.002	99	107	<0.002	10.70
Molybdenum	ND	0.050	95	101	<0.050	2.19
Nickel	0.0430	0.0100	95	103	<0.0100	2.37
Potassium	11.20	1.000	84	N/A	<1.000	4.98
Selenium	ND	0.0050	106	112	<0.0050	5.50
Silver	ND	0.00500	82	98	<0.0050	10.75
Sodium	67.80	1.000	81	N/A	<1.000	7.00
Tin	ND	0.0500	97	104	<0.0500	2.44
Vanadium	0.0970	0.0200	91	98	<0.0200	2.90
Zinc	0.0550	0.0200	101	108	<0.0200	2.25
Boron	0.189	0.050	106	118	<0.050	2.13
Strontium	0.934	0.050	102	109	<0.050	2.08

ND = Below Reporting Limit
METHOD: EPA SW846-6010B, 7470

Raland K. Tuttle

7-27-00
Date

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
2540 W. MARLAND
HOBBS, N.M. 88240
FAX: 505-397-4701
FAX: 915-520-4310

Sample Type: Water
Sample Condition: Intact/ Iced/ 34 deg. F
Project #: EOT 2020R
Project Name: Darr Angell 2
Project Location: Lovington
Field Code: MW 4

Sampling Date: 07/14/00
Receiving Date: 07/14/00
Analysis Date: 07/14/00

EPA SW846 8270 (mg/L)	REPORT LIMIT	ELT# 28201	RPD	%EA	%DEV
Naphthalene	0.005	ND			2.1
Acenaphthylene	0.005	ND			1.8
Acenaphthene	0.005	ND	19	106	-5.4
Fluorene	0.005	ND			4.0
Phenanthrene	0.005	ND			2.5
Anthracene	0.005	ND			1.1
Fluoranthene	0.005	ND			8.8
Pyrene	0.005	ND	21	84	-4.4
Benzo[a]anthracene	0.005	ND			-2.8
Chrysene	0.005	ND			2.3
Benzo[b]fluoranthene	0.005	ND			-5.2
Benzo[k]fluoranthene	0.005	ND			9.2
Benzo [a]pyrene	0.005	ND			0.8
Indeno[1,2,3-cd]pyrene	0.005	ND			15.4
Dibenz[a,h]anthracene	0.005	ND			12.9
Benzo[g,h,i]perylene	0.005	ND			23.4#

	% RECOVERY
Nitrobenzene-d5 SURR	20
2-Fluorobiphenyl SURR	28
p-Terphenyl-d14 SURR	44

ND= not detected at report limit.
Method: EPA SW 846 8270C , 3510

Raland K. Tuttle

7-27-00
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

COC# 190

Project Manager: J TAYLOR

Phone #: (505) 397-4882

FAX #: (505) 397-4701

Company Name & Address: ETGI, 2540 W. Marland, Hobbs, NM 88240

Project #: 2020 R

Project Name: Darr Angel 2

Project Location: Lovington

Sampler Signature: [signature]

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	Matrix: WATER	Matrix: SOIL	Matrix: AIR	Matrix: SLUDGE	Matrix: OTHER	Preservative Method: HCL	Preservative Method: HNO3	Preservative Method: ICE	Preservative Method: NONE	Preservative Method: OTHER	Sampling: DATE	Sampling: TIME
28201	MW 4	5	V/Ltr .5ml	X					X	X	X			7-14	11:00

Analysis Request:

LAB #	BTEX 8021/~~5031~~	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TDS EPA 160.1	RCI	PAH EPA 8100	Cations EPA 6010	Anions EPA 300	Heavy metals (TCLP Scan) EPA 6010
28201	X					~~X~~	X		X	X	X	X

Relinquished by:	Date:	Time:	Received by:
[signature]	7-14-00	12:30	[signature]
[signature]	7-14-00	1700	Received by Laboratory: [signature]

REMARKS: 34°

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

FILE

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: BETH ALDRICH
P.O. BOX 4845
MIDLAND, TEXAS 79704
FAX: 915-520-4310
FAX: 505-397-4701

SampleType: Water
Sample Condition: Intact/ Iced/ HCl/ -1 deg. C
Project #: EOT 2020R
Project Name: Darr Angell 2
Project Location: Lea County, N.M.

Sampling Date: 09/13/00
Receiving Date: 09/16/00
Analysis Date: 09/21/00

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L	TOTAL BTEX mg/L
31018	MW 1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
31019	MW 3	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
31020	MW 4	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
31021	EB 1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
% IA		98	96	95	96	90	
% EA		92	90	91	92	86	
BLANK		<0.001	<0.001	<0.001	<0.001	<0.001	

METHODS: SW 846-8021B,5030

Raland K. Tuttle

9-25-00
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East Odessa, Texas 79763
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

COC # 229

Project Manager: BETH ALDRICH

Phone #: (505) 397-4882

FAX #: (505) 397-4781

Company Name & Address: ETGI
2540 W MARLAND HOBBS NM

Project #: EOT 2020R

Project Name: DARR ANGELL 2

Project Location: LEA COUNTY NM

Sampler Signature: Simon Casas

ANALYSIS REQUEST

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	OTHER	SAMPLING: DATE	TIME	BTEX 8020	TPH 418.1	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	TOS	RCI
31018	MW 1	2	V	X					X		X			9-13	1530	X							
31019	MW 3														1612								
31020	MW 4														1552								
31021	EB1														1640								

Relinquished by:	Date:	Time:	Received by:
Simon Casas	9-15-00	1500	
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date: 9/16/00	Time: 14:55	Received by Laboratory: Celia Keene

REMARKS

-10C

INVOICE: EOTT

FAX RESULTS: HOBBS OFFICE

MAIL RESULTS: EOTT

Sep 25 00 11:48a

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ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.
ATTN: MR. JESSE TAYLOR
2540 W. MARLAND
HOBBS, N.M. 88240
FAX: 915-397-4701

Sample Type: Water
Sample Condition: Intact/ Iced/ HCl/ -3 deg. C
Project #: EOT 2020R
Project Name: Darr Angell 2
Project Location: Lea Co., N.M.

Sampling Date: 02/14/01
Receiving Date: 02/21/01
Analysis Date: 02/22/01

ELT#	FIELD CODE	BENZENE mg/L	TOLUENE mg/L	ETHYLBENZENE mg/L	m,p-XYLENE mg/L	o-XYLENE mg/L
37554	MW 1	<0.001	<0.001	<0.001	<0.001	<0.001
37555	MW 3	<0.001	<0.001	<0.001	<0.001	<0.001
37556	MW 4	<0.001	<0.001	<0.001	<0.001	<0.001
37557	EB 1	<0.001	<0.001	<0.001	<0.001	<0.001
%IA		91	95	97	95	97
%EA		87	90	89	86	88
BLANK		<0.001	<0.001	<0.001	<0.001	<0.001

METHODS: EPA SW 846-8021B ,5030

Raland K. Tuttle

2-23-01
Date