AP - 056

STAGE 1 WORKPLAN

3/13/2007

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AP056

March 13, 2007

Reference No. 046121(3)

VIA FEDEX EXPRESS

Mr. Glenn von Gonten
NEW MEXICO OIL CONSERVATION DIVISION
1220 S. St. Francis Drive
Santa Fe, NM 87505

Re: Stage 1 Abatement Plan - Revised
Mark Owen #9 Reserve Pit
OGRID #4323
Lea County, New Mexico

Dear Mr. von Gonten:

Chevron Environmental Management Company (CEMC) is pleased to present this revised Stage 1 Abatement Plan (AP) for the subject project. The AP addresses comments in response to your February 12, 2007 correspondence in which three major issues were identified to require resolution. In addition, I met with you in Santa Fe on March 7 to further discussions on the AP content and site conditions associated with the Mark Owen #9 Reserve Pit. This revised Stage 1 Abatement Plan was prepared by CRA on behalf of CEMC.

One electronic and two paper copies of the report are enclosed for your records. We have also provided copy to the OCD Hobbs District 1 Office. Please feel free to contact the office if you have any questions at (432) 686-0086.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Thomas C Larson

Thomas C. Larson
Senior Project Manager

Enclosures

Cc: Mr. Steve Huddleson, CEMC Houston
Mr. Larry Johnson, OCD District 1 Hobbs

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MAR 15 2007

Oil Conservation Division
Environmental Bureau

STAGE 1 ABATEMENT PLAN (REVISED)

AP056

CHEVRON U.S.A., INC.
MARK OWEN #9 RESERVE PIT (O-GRID #4323)
NW/4 OF SE/4 (J) SECTION 34, T-21-S; R-37-E
LEA COUNTY, NEW MEXICO

STAGE 1 ABATEMENT PLAN (REVISED)

CHEVRON U.S.A., INC.
MARK OWEN #9 RESERVE PIT (O-GRID #4323)
NW/4 OF SE/4 (J) SECTION 34, T-21-S; R-37-E
LEA COUNTY, NEW MEXICO

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MARCH 13, 2007
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TABLE OF CONTENTS

PAGE

1.0 INTRODUCTION 1
1.1 PURPOSE OF STAGE I ABATEMENT PLAN 1
1.2 ORGANIZATION OF STAGE 1 ABATEMENT PLAN 1

2.0 SITE CONDITIONS 2
2.1 SITE LOCATION AND DESCRIPTION 2
2.2 ADJACENT LAND USE 2
2.3 SITE HISTORY 3
2.4 GEOLOGY AND HYDROGEOLOGY 5
2.4.1 REGIONAL GEOLOGY/HYDROGEOLOGY 5
2.4.2 SITE GEOLOGY/HYDROGEOLOGY 6
2.5 CURRENT SITE CONDITIONS 6
2.6 PREVIOUS SITE INVESTIGATIONS 7

3.0 SITE INVESTIGATION WORKPLAN 8
3.1 PROPOSED SOIL BORING PROGRAM 8
3.2 PROPOSED MONITORING WELL PROGRAM 9
3.2.1 MONITORING WELL INSTALLATIONS 9
3.2.2 MONITORING WELL SPECIFICATIONS 10
3.2.3 MONITORING WELL DEVELOPMENT 10
3.2.4 MONITORING WELL SAMPLING 11
3.3 WASTE MANAGEMENT 11
3.4 SOIL AND GROUNDWATER ABATEMENT 11
3.5 REPORTING REQUIREMENTS 13

4.0 GROUNDWATER MONITORING PLAN 15
4.1 GROUNDWATER ELEVATION AND FREE-PHASE PRODUCT GAUGING 15
4.2 SAMPLING PROTOCOL 15
4.3 DISSOLVED-PHASE HYDROCARBON MONITORING 15
4.3.1 SAMPLING LOCATIONS 15
4.3.2 SAMPLING FREQUENCY 16
4.3.3 DISSOLVED-PHASE ANALYTICAL PARAMETERS 16
4.4 WASTE MANAGEMENT 16

5.0 GROUNDWATER MONITORING SCHEDULE 17

6.0 QUALITY ASSURANCE PLAN 18
6.1 SAMPLING AND PRESERVATION PROCEDURES 18
6.2 LABORATORY ANALYTICAL PROCEDURES 18
6.3 QUALITY CONTROL 19
6.3.1 FIELD DUPLICATES 19
6.3.2 MATRIX SPIKE/MATRIX SPIKE DUPLICATE PAIRS 19
6.4 DECONTAMINATION/AMBIENT BLANKS 20

TABLE OF CONTENTS

PAGE

7.0 SITE HEALTH AND SAFETY PLAN 21
7.1 HAZARD ASSESSMENT AND MITIGATION 21
7.1.1 DESCRIPTION OF FIELD ACTIVITIES 21
7.1.2 PHYSICAL HAZARDS 21
7.1.3 SLIP/TRIP/HIT/FALL HAZARDS 22
7.1.4 NOISE 22
7.1.5 HEAT STRESS 22
7.1.6 CHEMICAL HAZARDS 24
7.1.7 BIOLOGICAL HAZARDS 26
7.2 PERSONAL PROTECTIVE EQUIPMENT (PPE) 27
7.2.1 GENERAL 27
7.2.2 TYPES OF PPE 27
7.2.3 TYPES OF PROTECTIVE MATERIAL 27
7.2.4 RESPIRATORY PROTECTION 29
7.3 EMERGENCY PROCEDURES 29

8.0 REFERENCES 31

LIST OF FIGURES

FIGURE 1 SITE LOCATION MAP

FIGURE 2 1997 AERIAL PHOTOGRAPH

FIGURE 3 CHLORIDE CONCENTRATIONS IN SOILS AT 19 FEET BELOW GROUND SURFACE

FIGURE 4 NW – SE CROSS SECTION – SITE CONDITIONS

FIGURE 5 PROPOSED SOIL BORINGS AND MONITORING WELL LOCATION MAP

LIST OF TABLES

TABLE I SAMPLE CONTAINER, PRESERVATION AND HOLDING TIME REQUIREMENTS

TABLE II FREQUENCY AND ESTIMATED TOTAL NUMBER OF QUALITY CONTROL SAMPLES

TABLE III EMERGENCY SITE CONTACTS

LIST OF APPENDICES

APPENDIX A	MARK OWEN #9 (REF. #200056), MAY 30, 2006 BY ENVIRONMENTAL PLUS, INC. (EPI).
APPENDIX B	NEW MEXICO OFFICE OF THE STATE ENGINEER WELL RECORDS
APPENDIX C	OCD FEBRUARY 12, 2007 CORRESPONDENCE

1.0 INTRODUCTION

This Revised Stage 1 Abatement Plan is submitted on behalf of Chevron Environmental Management Company (CEMC) for the Mark Owen #9 Reserve Pit (Site) located in Section 34, Township 21 South, Range 37 East, Lea County, New Mexico. The property is currently owned by the Owen family. The initial Stage 1 Abatement Plan (Stage 1 AP), dated September 11, 2006 was prepared at the request of, and submitted to the New Mexico Oil Conservation Division (OCD). Five months later, in an OCD correspondence to CEMC dated February 12, 2007 (APPENDIX C), the OCD determined that the proposed Stage 1 AP was not administratively complete and therefore, CEMC must revise and resubmit it by March 16, 2007.

1.1 PURPOSE OF STAGE 1 ABATEMENT PLAN

The purpose of this Plan is to provide the OCD with a Stage 1 AP as outlined in OCD Rule 19E(3).

1.2 ORGANIZATION OF STAGE 1 ABATEMENT PLAN

This Plan contains the following components:

- A Site description and information pertaining to previous investigations;
- A description of Site activities completed in the past six months;
- A description of proposed Site activities;
- A proposed groundwater monitoring plan;
- A quality assurance plan; and
- A Site health and safety plan.

A Stage 2 Abatement Plan will be prepared for the NMOCD within 60 days of the approval of the final Stage 1 Assessment report per NMOCD Rule 19.E(4)(a), to propose remedial measures to be implemented at the site following approval of this Plan.

2.0 SITE CONDITIONS

The following sections describe the Site location, adjacent land use, Site history, and regional and Site specific geology and hydrogeology. This section also provides references to and a summary of previous site investigations performed at the Site by Environmental Plus, Inc. (EPI) on behalf of Chevron USA (Chevron).

2.1 SITE LOCATION AND DESCRIPTION

The legal description of the Site is the NW/4 of the SE/4 of Section 34, Township 21 South, Range 37 East, Lea County, New Mexico (FIGURE 1). The Site is situated immediately southeast of the town of Eunice, New Mexico and is associated with a reserve pit utilized in the drilling of the Mark Owen #9 oil well by Chevron in 2005. Global Positioning System (GPS) coordinates for the site are Latitude 32° 25'56.49" North and Longitude 103° 08' 46.27 West. The O-GRID number assigned to the Site is reported as #4323. FIGURE 2 presents a 1997 aerial photograph of the Site. The Mark Owen #9 wellsite is currently operated by Chevron.

The topography in the Site area and adjoining land gently and regionally dip to the east. In general, the area is relatively flat and has a dry topography. The ground surface is mostly vegetated by native range grass. An arid climate predominates in the area with annual precipitation typically averaging approximately 12 inches per year.

A water well search performed by EPI utilizing New Mexico Office of the State Engineer and United States Geological Survey (USGS) databases, provided in APPENDIX A, did not identify any water wells within a 1000-foot radius of the Site.

2.2 ADJACENT LAND USE

The Site is surrounded by properties densely developed for the extraction of oil and gas in the Central Basin Platform area of the Permian Basin. More specifically, the Site is located south of the Central Drinkard Unit, operated by Chevron. Wells are spaced on 40-acre or less proration units in area. The Targa/Dynegy (Middle) Gas Processing Plant is located approximately one-half mile south of the Site. The City of Eunice is approximately one-half mile to the north of the Site.

2.3 SITE HISTORY

The Site is a former "horseshoe" reserve pit associated with the drilling of the Chevron USA #9 Mark Owen oil well installed in the second half of 2005. As illustrated in the various site figures and enclosures, the pit measures approximately 120 feet by 100 feet. The depth varies between approximately 5 to 10 feet. The pit formerly held ten pound/gallon brine water in the outer ring of the horseshoe and fresh water drilling fluids in the inner ring of the horseshoe for the Owen #9 pit. The capacity of the fresh and brine drilling fluids originally placed in the pit was approximately 2,600 barrels. According to Chevron drilling personnel, the pit was in operation for approximately two months before it was dewatered by hauling off the fluids. No leakage was suspected from the Owen #9 pit. The pit liner and approximately 520 cubic yards of drill cuttings were removed from the site in Spring 2006.

The APPENDIX A – *Mark Owen #9 (Ref. #200056)*, May 30, 2006 report by EPI documents work completed at the Site and the associated timeline for the work completed. CRA performed a review of the APPENDIX A document. A summary of pertinent report elements is provided in the following paragraphs.

In November 2005, EPI was retained by Chevron USA to perform pit closure activities associated with the Mark Owen #9 reserve pit in accordance to NMOCD Form C-144 *Pit or Below-Grade Tank Registration or Closure.* No releases from the pit were suspected. However , it was subsequently determined that the pit liner leaked – releases from the pit must be remediated in accordance with the OCD 1993 document *Guidelines for Remediation of Leaks, Spills and Releases.*

Soil sampling activities performed in March 2006 by EPI within the reserve pit indicated chloride-impacted soils exceeded NMOCD Site remedial guidelines at several locations. Approximately 520 cubic yards of drilling mud and cuttings were excavated and transported to the Sundance Services, Inc. facility in Lea County, New Mexico for disposal between March 15 and March 17, 2006. Subsequent over excavation, test trench excavation and soil sampling activities were performed in March and April 2006. Samples collected in the northwest portion of the reserve pit at EPI locations BH-1/TS-1, BH-2/TS-2 and BH-3/TS-3 at 11 feet below ground surface (bgs) had chloride concentrations of 8,317 milligrams per kilogram (mg/kg), 8,077 mg/kg and 13,916 mg/kg, respectively. Chloride concentrations collected from the same locations at 19 feet bgs had chloride concentrations of 3,839 mg/kg, 6,158 mg/kg and 4,958 mg/kg,

respectively. FIGURE 3 – Chloride Concentrations in Soils at 19 feet bgs presents an isopleth map of chloride soil concentrations from that depth interval. A soil sample analyzed from the bottom hole, test trench location BH-2/TS-2 in the northwest portion of the reserve pit at 11-feet was analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX) and total petroleum hydrocarbons (TPH). As shown on TABLE 2 of the EPI report, this sample did not detect hydrocarbon concentrations above the laboratory reporting limit. The sample was also analyzed to exhibit a chloride concentration of 8,077 mg/kg.

In April and May 2006, three soil borings were installed around the perimeter of the reserve pit – identified as SB-1, SB-2 and SB-3 (FIGURE 6 of EPI report). SB-1 and SB-2 were converted into temporary monitoring wells TMW-1 and TMW-2, respectively. Groundwater samples collected from TMW-1 and TMW-2 both had chloride concentrations of 80 milligrams per liter (mg/L). Groundwater samples analyzed for BTEX and TPH from these two temporary wells exhibited concentrations below laboratory reporting limits. SB-3, TMW-1 and TMW-2 were plugged and abandoned between April 28 and May 2, 2006. Groundwater elevation data was not presented in the EPI report for TMW-1 or TMW-2. APPENDIX B – New Mexico Office of the State Engineer Well Records presents the details of the soil boring and temporary monitoring well construction, plugging and other information.

On May 3, 2006, temporary monitoring well TMW-3 was installed within the northwest portion of the reserve pit. This is the only soil boring advanced within the confines of the reserve pit excavation. Soil samples analyzed in this boring from 13-14 feet and 23-24 feet did not detect BTEX or TPH above laboratory reporting limits and had chloride concentrations of 5,678 mg/kg and 6,830 mg/kg, respectively. A groundwater sample collected on May 3, 2006 was analyzed to have BTEX and TPH concentrations below laboratory reporting limits and a sulfate concentration of 240 mg/L. The sample was also analyzed to exhibit a chloride concentration of 9,697 mg/L. FIGURE 5 presents well/boring locations and illustrate Site data pertinent to this project.

Evaluation of historical data collected at the Site includes the following findings:

- Vadose zone chloride-impacts are concentrated in the northwest corner of the pit (FIGURES 3-5 and APPENDIX A). Chloride-impacts extend to groundwater at the TMW-3 location.
- Groundwater is impacted directly beneath the pit. Groundwater samples collected from temporary monitoring wells TMW-1 and TMW-

2, located approximately 100 feet northwest and southeast of the pit – did not exhibit chloride or hydrocarbon impacts. Samples collected from the vadose zone at the two locations did not indicate chloride or hydrocarbon impacts (FIGURES 4 and 5; APPENDIX A).

- Soil borings can not be advanced within the existing reserve pit excavation – due to safety concerns associated with erosion of excavation walls (cave-in), egress/ingress and confined space issues.

In June 2006, consulting services for this environmental project were transitioned from EPI to CRA. In addition, the Chevron's project management was transitioned from Chevron USA to CEMC group in Houston, Texas (Mr. Steve Huddleson). A site visit was performed on July 24, 2006 by CRA and Chevron personnel. The inspection noted the TMW-3 well location in the base of the reserve pit and that TMW-1, TMW-2 and SB-3 had been plugged and abandoned.

2.4 GEOLOGY AND HYDROGEOLOGY

2.4.1 REGIONAL GEOLOGY/HYDROGEOLOGY

The *Geologic Map of New Mexico (2003)* prepared by the New Mexico Bureau of Geology and Mineral Resources and *Geology and Ground-Water Conditions in Southern Lea County, New Mexico (Ground-Water Report 6)* prepared on behalf of the USGS was reviewed in association with the evaluation of regional geology and hydrogeology for the Site.

The surficial geologic unit *(Qep)* mapped for the location is described as Quaternary aged "Eolian and piedmont deposits (Holocene to middle Pleistocene) – Interlayered eolian sands and piedmont slope deposits along the eastern flank of the Pecos River valley, primarily between Carlsbad and Roswell. Typically capped by thin eolian deposits." This sediment ranges from zero to 20-feet in thickness in this portion of Lea County. The Quaternary sediment unconformably overlies the Tertiary age Ogallala Formation. The Ogallala Formation is comprised of sands, silts, indurated calcium carbonate, gravel, and some clays. Groundwater in this area is primarily produced from the Ogallala aquifer. The Ogallala Formation unconformably overlies the Triassic age Dockum group. The Dockum group consists of red shale and sandstone and is commonly referred to as "red beds". The red beds can exceed 1,000 feet in thickness in this region and may produce small amounts of water at the bottom of the formation.

The regional groundwater flow direction in the Ogallala is toward the east and south and follows the Triassic subcrop surface. Groundwater quality is very good with total dissolved solids (TDS) concentrations typically well below 1,000 mg/L. Recharge primarily occurs via infiltration from precipitation events.

2.4.2 SITE GEOLOGY/HYDROGEOLOGY

The surface soils encountered at the Site are silty sands approximately 2- to 3-feet thick. This surface soil is consistent with the surface soil description (Quaternary sediment) for this physiographic province. The soil types encountered below this surface layer at the Site are consistent with the description of the Ogallala formation (alluvial/eolian deposits and petrocalcic soils). This subsurface layer contains indurated (hardened) calcium carbonate intervals of variable thickness locally referred to as "caliche". The Dockum group was not encountered at the Site.

The EPI report includes an evaluation of water well information obtained from the New Mexico Office of the State Engineer and the USGS. No domestic, agricultural or public water supply wells were identified within a 1,000 foot radius of the Site; however, six water wells were located within a one-mile radius of the Site. Available depth to water information indicated the average depth to water in the area was approximately 78 feet bgs.

On July 24, 2006 CRA gauged the one existing onsite temporary monitoring well (TMW-3) to have a depth to groundwater (below top of casing – stickup 3.8 feet) of 25.76 feet. The top of casing is approximately seven feet below the natural grade of the Mark Owen #9 well pad. This first occurrence of groundwater encountered at the Site most likely would be classified as the Ogallala aquifer.

2.5 CURRENT SITE CONDITIONS

As shown on FIGURE 4 , the excavation for the Mark Owen #9 reserve pit is still open. Two clean soil stockpiles, containing soils from the initial reserve pit excavation and stockpiled, are situated northwest and northeast of the pit. Since these native soils were excavated prior to drilling operations – Chevron did not believe that sampling the soils was warranted. However, plans to sample these soils for chlorides prior to offsite removal or use as backfill/cover and provision of results to the OCD will be implemented as necessary. TMW-3 remains in the northwestern portion of the reserve pit excavation. The active Chevron USA Mark Owen #9 oil well, lease equipment and site features are also presented on the figure.

As documented in EPI's report and FIGURE 3, chloride-impacted soils are concentrated in the northwestern portion and outside ring of the reserve pit "horseshoe". Hydrocarbons (BTEX/TPH) were below laboratory detection limits in all of the soil and groundwater samples analyzed for BTEX/TPH at the site by EPI. The source material for the soil and groundwater impacts apparently is the result of the release of brine water (used in drilling operations) from a breach in the reserve pit liner. As detailed in the EPI report, numerous soil samples from the reserve pit excavation and surrounding area (including soil borings), as well as soil excavation activities, demonstrate that chloride-impacted soils are confined to the reserve pit excavation. The migration path for the released brine water is primarily vertical and affected by gravity and "loading" processes.

Chloride-impacted soils extend to groundwater at the TMW-3 location (FIGURE 4). A groundwater sample analyzed for chlorides at this location had a concentration of 9,697 mg/L. Groundwater samples analyzed from TMW-1 and TMW-2, located northwest and southeast, respectively, from TMW-3, each had chloride concentrations of 80 mg/L. Depth to water in TMW-3 is approximately 33 feet below the natural ground surface.

2.6 PREVIOUS SITE INVESTIGATIONS

The Mark Owen #9 reserve pit was the subject of one previous site investigation. Information pertaining to the soil and groundwater assessment activities and soil remediation tasks is presented in APPENDIX A.

3.0 SITE INVESTIGATION WORKPLAN

Existing soil and groundwater data and site conditions demonstrate that chloride-impacted soils are confined to, and associated with, the release of brine water from the reserve pit excavation. Hydrocarbon impacts were not identified from any soil and groundwater media analyzed at the sampled locations. Additional site investigation activities including soil boring and monitoring well programs, are proposed at this time for this Site to further evaluate the extent of vadose zone and groundwater impacts in accordance to OCD Rule 19E(3) and guidelines presented the OCD document entitled *Guidelines for Remediation of Leaks, Spills and Releases*. The proposed activities are based on site conditions presented in FIGURES 3-5 and APPENDIX A.

Section 3.3 – Soil and Groundwater Abatement proposes activities regarding how chloride-affected soil impacts will be addressed at the Site.

3.1 PROPOSED SOIL BORING PROGRAM

The primary objective of the proposed soil boring program is to further delineate the extent of vadose zone impacts. Numerous soil samples were collected using excavation equipment within the confines of the existing reserve pit excavation (see APPENDIX A). Nineteen feet below ground surface appeared to be the maximum depth for the excavation equipment for sampling purposes. However, obvious safety and access issues associated with drilling within the existing excavation floor currently preclude the installation of borings inside and beneath the pit. Erosion of the soils has weakened the excavation walls since the pit was over-excavated in April 2006. Consequently, four addition soil borings are proposed around the perimeter to the reserve pit excavation. One of the soil borings is proposed for conversion into monitor well PMW-5. Refer to FIGURE 4 and 5 for soil boring locations in association with site conditions.

The soil borings will be advanced using air-rotary methods. Discrete, undisturbed soil samples will be collected in 5-foot intervals. The samples will be collected by removing the drilling bit and installing a steel soil-sampling coring barrel (1-foot in length) and rotating it into the soil or by pushing a split-spoon device. A vertical distribution of soil samples will be collected in the respective soil borings. One soil sample from each of the following intervals: 0- to 10-feet bgs, 11- to 20-feet bgs, 21- to 30-feet bgs, and the vadose zone sample immediately above the phreatic zone will be submitted for laboratory analysis. Note that the sample collection interval and sample analysis intervals are different. Soil samples will be analyzed for BTEX by EPA Method 8021B, TPH

(GRO/DRO) by EPA Method 8015 Modified as shown in TABLE I. In addition, drill cuttings samples will be collected, logged, and field screened with a photo-ionization detector (PID) on a continuous basis during program – although hydrocarbons are not identified as chemicals of concern in association with this Stage 1 Abatement Plan. Drill cuttings will be placed on plastic and characterized for future waste management. The soil borings will be plugged and abandoned in accordance to applicable regulations.

3.2 PROPOSED MONITORING WELL PROGRAM

3.2.1 MONITORING WELL INSTALLATIONS

The primary objective of the proposed monitoring well program is to further evaluate the extent of existing chloride-affected groundwater at the location of the release. Monitoring well locations are selected based on approximately 150-foot spacing and taking into consideration proximity to overhead lines and operational areas. It should be noted for safety purposes and to comply with CEMC MidContinent Business Unit Contractor Handbook (January 2006) requirements, monitoring wells (or soil borings) cannot be placed within the following distances of overhead power lines based on the following kilovolt (KV) transmission ratings: <50 KV – 10 feet; 50-345 KV – 20 feet; and, 345-750 KV – 35 feet . CRA is proposing to install five, 4-inch diameter groundwater monitoring wells to an approximate depth of 60-feet below ground surface (bgs) utilizing air rotary methods (FIGURE 5). TMW-3 is proposed for plugging and abandonment as part of the Stage 1 activities. One groundwater monitoring/recovery well is proposed near the current location of TMW-3 as a replacement well. This well is can be installed subsequent to NMOCD approval of pit backfilling and capping activities proposed in Section 3.3. Four additional groundwater monitoring wells are proposed around the perimeter of the reserve pit to evaluate the nature and extent of chloride-impacted groundwater and the Site groundwater flow direction.

As part of the monitoring well installation operations, discrete, undisturbed soil samples will be collected in 5-foot intervals. The samples will be collected by removing the drilling bit and installing a steel soil-sampling coring barrel (1-foot in length) and rotating it into the soil or by pushing a split-spoon device. A vertical distribution of soil samples will be collected in the respective soil borings. One soil sample from each of the following intervals: 0- to 10-feet bgs, 11- to 20-feet bgs, 21- to 30-feet bgs, and the vadose zone sample immediately above the phreatic zone will be submitted for laboratory analysis. Soil samples will be analyzed for BTEX by EPA Method 8021B, TPH (GRO/DRO) by EPA

Method 8015 Modified as shown in TABLE I. In addition, drill cuttings samples will be collected, logged, and field screened with a photo-ionization detector (PID) on a continuous basis during program – although hydrocarbons are not identified as chemicals of concern in association with this Stage 1 Abatement Plan. Drill cuttings will be placed on plastic and characterized for future waste management.

3.2.2 MONITORING WELL SPECIFICATIONS

Monitoring wells will be drilled by a New Mexico-licensed water well driller and installed in accordance with the monitor well construction guidance in the 1993 OCD document entitled *Guidelines for Remediation of Leaks, Spills and Releases*. Four-inch, flush-threaded, Schedule 40 PVC casing is selected for use at the site for all wells. Each well will be constructed of 25-feet of 0.020-inch screened-casing placed at the bottom of each well, extending approximately 20-feet below the soil/groundwater interface and approximately 5-feet above the soil/groundwater interface. The total depth of the monitoring wells is estimated at approximately 60 feet bgs. The well annulus will be filled with a sand filter pack to approximately 2-feet above the top of the screen interval, a bentonite seal will be placed on top of the sand and the well annulus cemented to the surface to mitigate surface runoff from entering the water table through the annulus. In addition, a State of New Mexico licensed surveyor will be utilized to prepare a site map and determine horizontal and vertical control for each monitoring well. Monitoring well information will be documented in well record forms submitted to the New Mexico Office of the State Engineer.

3.2.3 MONITORING WELL DEVELOPMENT

Monitoring wells will be developed by removal of sufficient volumes of water to clear the well casing and annulus of sediment. Within 24-hours of completion of well development activities, the monitoring wells will be gauged with an oil/water interface probe to measure static water levels and measure any thickness of light, non-aqueous, phase liquids (LNAPL) encountered in the wells. Once static water levels have been obtained, groundwater samples will be purged and collected utilizing either the low-flow methodology (EPA/504/S-95/504) or by removing three well volumes with a new disposable bailer depending on Site conditions. Purge water from the sampling activities will be transferred to DOT-approved 55-gallon drums onsite for proper waste management and disposal.

3.2.4 MONITORING WELL SAMPLING

Representative groundwater samples will be collected, placed in appropriated laboratory supplied containers, and preserved on ice in insulated coolers. Groundwater samples will be chilled to a temperature of approximately 4° C (40°F) for laboratory analyses and will be submitted to Lancaster Laboratories for analyses of BTEX by EPA Method 8021B (as an supplementary hydrocarbon screening process), RCRA metals and general groundwater quality parameters (selected cations, anions and total dissolved solids (TDS). The selected cations and anions include total alkalinity (carbonate/bicarbonate), chloride, and sulfate (TABLE I).

3.3 WASTE MANAGEMENT

Drill cuttings generated during the soil boring/monitoring well installation program will be stockpiled on plastic in a central location pending waste characterization. A representative soil sample will be collected and submitted for laboratory analysis. The soils will be disposed of at an NMOCD-permitted facility or at an alternative/appropriate disposal facility. All purged water and decontamination fluids generated during the site investigation activities will be contained onsite in sealed and labeled drums pending management at a CEMC and NMOCD-permitted facility (such as a disposal well).

3.4 SOIL AND GROUNDWATER ABATEMENT

Releases from the Mark Owen #9 pit should be remediated in accordance with the OCD guidance in the 1993 document, *Guidelines for Remediation of Leaks, Spills and Releases.* Corrective action for releases should be addressed in accordance with an abatement plan pursant to OCD Rule 19.

CEMC and CRA understand that the NMOCD is requiring remedial activities to address the chloride impacts to the soil and groundwater for the Stage 2 Abatement Plan. CRA has completed a preliminary evaluation of the Site based on the limited information available. The remediation method ultimately presented in the Stage 2 Abatement Plan will be based on all available site information, including data from the Stage 1 Site Assessment Report – in association with this Stage 1 Abatement Plan.

Significant chloride soil sampling and removal activities already have been performed within the reserve pit excavation. Existing soil analytical data presented in APPENDIX A were reviewed and compiled utilized in the generation of FIGURE 4 (NW-SE Cross Section – Site Conditions). This information demonstrates residual chloride impacts are present in the reserve pit locations. The chloride soil impact occurs within the "caliche" interval

comprised of silty sands and indurated (hardened) calcium carbonate lithologies. Two options for soil abatement are provided as follows:

Option 1 – Soil Removal. This approach would involve excavation in excess of 20 feet bgs in the reserve pit. Excavation sloping requirements, associated safety concerns, and impact to oil/gas extraction activities at this active wellsite location present significant operational and financial challenges in relation to this option.

Option 2 – Reserve Pit Capping and Lining. This approach would involve the backfilling (with clean soils) of the reserve pit, installation of a liner (polyvinyl or geomembrane) and topping the line with a soil cover approximately 2-3 feet thick. The cap and liner will be designed to mitigate infiltration of precipitation above the chloride-impacted soils as well as to divert stormwater runoff away from the impacted area.

Option 3 – Soil Removal and Reserve Pit Capping and Lining. This combination approach would involve the removal of soils in the northwest portion of the outer ring of the reserve pit (area of highest impacts) to a depth above 20 feet bgs. Subsequently, the pit capping and lining procedures presented in Option 2 would be implemented as an additional control measure to further mitigate vadose zone impacts.

Note that in association with this Stage 1 Abatement Plan, a monitoring/recovery well has been proposed within the reserve pit location – to replace the existing TMW-3 monitoring well. This replacement well is proposed for installation subsequent to the NMOCD approval to plug TMW-3 and implementation of the proposed/selected soil abatement activities.

Options for groundwater abatement activities are provided as follows:

Option 1 – Groundwater (total fluids) Removal. This approach would involve the removal of chloride-impacted groundwater utilizing a down-hole pump or pumps. This conventional method would provide groundwater gradient control as a result of creating a localized cone of depression in impacted areas to mitigate the migration of the chloride-impacted groundwater. In addition, chloride-impacted groundwater would be removed from the affected aquifer. The groundwater could be stored at a proximate Chevron tank battery for offsite management.

Option 2 – Electro-Dialysis Reversal (EDR) Treatment. This approach involves the pilot testing and installation of a remediation system designed to strip out dissolved solids (such as chloride and other cations/anions) to treat the impacted groundwater. A high TDS waste stream requiring additional management is created by this process. The treated groundwater could be utilized for re-injection or some form of beneficial use.

Option 3 – Reverse Osmosis (RO) Treatment. This approach requires pilot testing and the installation of a remediation system designed to treat groundwater utilizing filters to remove dissolved solids (such as chlorides and other cations/anions). A high TDS waste stream requiring additional management is created by this process. The treated groundwater could be utilized for re-injection or some form of beneficial use.

The groundwater remediation method will have been tested at the site to determine the feasibility of the selected technology.

3.5 REPORTING REQUREMENTS

Pursuant to NMOCD Rule 19.E(3)e, CEMC and CRA will provide quarterly progress reports to the NMOCD detailing activities performed in the preceding quarter. The activities detailed may include details of seeking off-site access, drilling activities, groundwater gauging and sampling activities, soil disposal activities, and purge water reclamation activities. Other proposed activities such as TMW-3 abandonment and the backfilling of the reserved pit would be documented in NMOCD submittals for approvals (as appropriate). In addition, a Stage 1 Site Assessment Report should be submitted to the NMOCD no later than 60-days after completion of all Stage 1 Abatement Plan Activities. The Stage 1 Site Assessment Report will include at a minimum the following information:

- A comprehensive description and summary of the results of all past and present soil and ground water investigation activities;
- An inventory and map of water wells within 1-mile of the site;
- Geologic/lithologic logs and well construction diagrams for all site monitoring wells;
- Geologic cross-sections of the site created using the geologic/lithologic logs from all site monitoring wells and soil borings;
- Water table potentiometer contour maps showing the location of pipelines, excavations, spills, monitoring wells, recovery wells, and any other pertinent site features, as well as, the direction and magnitude of the hydraulic gradient;
- Isopleth maps for contaminants of concern;
- Summary tables of all past and present groundwater quality monitoring results including copies of newly generated laboratory analytical data associated QA/QC data; and
- The disposition of all waste generated.

The final, Stage 1 Site Investigation Report will be submitted to the NMOCD Director for approval. Subsequent to NMOCD determination that the subject report is administratively complete, CEMC is required to comply with stipulated public notification activities. These activities include: notification of surface owners within one-mile of the Site; notification of County Commissioner and City of Eunice (since Site appears to be within one-mile of the City limits); notification of "interested parties", as identified on NMOCD website and within 15 days – provide notification in Hobbs and Santa Fe newspapers.

4.0 GROUNDWATER MONITORING PLAN

The proposed monitoring plan for the Site includes the measurements of groundwater level elevations and free-phase product thickness in all monitoring wells at the Site, and monitoring of appropriate dissolved-phase parameters.

4.1 GROUNDWATER ELEVATION AND FREE-PHASE PRODUCT GAUGING

Groundwater levels and free-phase product thicknesses, if encountered, will be measured and recorded in all monitoring wells at the Site utilizing an electronic oil/water interface probe. The accuracy on the interface probe is to the nearest hundredth of a foot.

4.2 SAMPLING PROTOCOL

Subsequent to recording fluid levels as appropriate, groundwater samples will be purged and collected utilizing either the low-flow methodology (EPA/504/S-95/504) or by removing three well volumes with a new disposable bailer depending on Site conditions. If low-flow sampling is appropriate, the bladder pump will be decontaminated with a soap (Liquinox®)/potable water wash, a potable water rinse, and a final deionized water rinse after collecting samples from each well.

Groundwater samples collected from wells free of LNAPL will be submitted for laboratory analysis of dissolved-phase hydrocarbon parameters as discussed below.

4.3 DISSOLVED-PHASE HYDROCARBON MONITORING

4.3.1 SAMPLING LOCATIONS

Dissolved-phase groundwater monitoring at the Site will include collection of samples from all monitoring wells. Monitoring wells anticipated to be sampled are as follows:

- The five proposed monitoring wells (PMW-1, PMW-2, PMW-3, PMW-4 and PMW-5). See FIGURE 5 for proposed locations.

4.3.2 SAMPLING FREQUENCY

Dissolved-phase groundwater monitoring will be conducted on a quarterly basis as per NMOCD guidelines.

4.3.3 DISSOLVED-PHASE ANALYTICAL PARAMETERS

Dissolved-Phase groundwater monitoring samples will be submitted for laboratory analysis of the following:

- Benzene, Ethylbenzene, Toluene, and total Xylenes (BTEX) by EPA Method 8021B and Total Petroleum Hydrocarbons (TPH) by EPA Method 8015 modified) as an supplementary hydrocarbon screening procedure. Existing Site analytical data demonstrate that no hydrocarbon impact to groundwater was identified in three monitoring wells installed at site;
- If dissolved phase hydrocarbon concentrations are not encountered subsequent to the initial TPH/BTEX sampling and analysis of the five proposed groundwater monitoring wells – this evaluation may not be continued in subsequent monitoring activities;
- RCRA Total Metals by EPA Method 6010 and 7470; unfiltered and preserved with nitric acid as methods allow;
- If RCRA metal concentrations above regulatory levels are not encountered in the initial sampling and analysis of the four proposed groundwater monitoring wells – this evaluation may not be continued in subsequent monitoring activities; and,
- General groundwater quality parameters (i.e. total dissolved solids, total alkalinity, chloride & sulfate).

4.4 WASTE MANAGEMENT

All purged water generated from groundwater sampling activities will be stored in DOT-approved 55-gallon steel drums onsite. After each groundwater sampling event, the recovered fluids will be transported to an CEMC-approved facility for reclamation. Shipping documentation will be included in reports submitted to the NMOCD.

5.0 GROUNDWATER MONITORING SCHEDULE

The following groundwater monitoring activities will be conducted after the installation of the five proposed groundwater monitoring wells:

- Measurement of depth to free-phase product (if present) in all monitoring wells;
- Measurement of depth to groundwater in all wells; and
- Collection and analysis of groundwater samples using either three casing volumes or EPA-approved low-flow methodology depending upon field conditions.

Analytical samples will be collected and analyzed for dissolved-phase as described in Section 4.3.3. Modification to the groundwater monitoring schedule will be provided in the final Stage 1 Site Assessment report.

6.0 QUALITY ASSURANCE PLAN

6.1 SAMPLING AND PRESERVATION PROCEDURES

Sampling and preservation procedures will be mandated by each respective laboratory method. In order to preserve the integrity of the sample before it is analyzed, proper sample containment, preservation methods, holding times, and shipping and chain-of-custody procedures will be followed. Samples bottles, preservation methods, and holding times are given in TABLE I. All sample containers will be prepared according to EPA protocol. The laboratory will supply samples containers.

A sample label will be clearly marked with indelible ink and affixed to all sample containers before being preserved on ice. Sample labels will include sample type, sampler initials, sampling locations, sample identification number, time and date.

A chain-of-custody form will be used to record the number of samples collected and the corresponding laboratory analyses. Information on this form includes site name, time and date of sample, sample identification number, type of sample, analysis required, sampler's name, preservatives used, and any special instructions. Each chain-of-custody form will be signed by the sampler.

All groundwater samples will be chilled to a temperature of approximately 4° C (40° F) in insulated coolers. Sufficient packing material will be used to separate the bottles, filling any voids. The cooler will be sealed with a custody seal and the samples will be shipped for priority overnight delivery to the analytical laboratory. A chain-of-custody form in re-sealable plastic bag will accompany the samples in the cooler.

6.2 LABORATORY ANALTICAL PROCEDURES

Test methods for analytical procedures will be performed according to procedures outlined in EPA SW-846, *Test Methods for Evaluating Solid Waste,* November 1986.

6.3 QUALITY CONTROL

Quality control in the field begins with adherence to the specified sampling protocols presented in Section 3.0, but is monitored by a variety of samples taken with sufficient frequency to test the quality of measurement results. To measure field-related components of quality and reproducibility, field duplicates, matrix spike/matrix spike duplicate (MS/MSD) pairs, and decontamination (equipment) blanks will be collected. TABLE II lists the frequency and estimated total number of quality control samples. The purpose and procedures for these samples are described below.

6.3.1 FIELD DUPLICATES

Duplicate field samples provide a way to measure reproducibility of analytical results. The analysis of duplicate samples involves replicating sample collection and the associated sampling handing activities, as well as the sample preparation and analysis. Variability in duplicate sample results typically includes a component attributable to inherent non-homogeneity of the sample matrix. Duplicates will be collected at a 10% frequency (one duplicate per every 10 samples).

6.3.2 MATRIX SPIKE/ MATRIX SPIKE DUPLICATE PAIRS

Matrix spike samples are field samples in which known amounts of the analytes of interest are added at the Lancaster Laboratories laboratory prior to extraction for analysis. Both a spiked and an unspiked sample aliquot are analyzed and compared. Since actual samples are used for the recovery determination, any differences in recovery are accountable to matrix interference.

Spike recovery (usually expressed as a percentage of the amount spiked), can be considered a measure of accuracy of the sample matrix. For a single sample, this includes the combined effects of bias, or systematic error, or variability due to imprecision. Analytical precision is measure by calculating the relative percent difference between the analysis of a matrix spike sample and a matrix spike duplicate. MS/MSD will be collected at a 5% frequency (one MS/MSD for every 20 samples.

6.4 DECONTAMINATION/ AMBIENT BLANKS

Decontamination blanks, or equipment rinsates, are used to assess the thoroughness of field decontamination procedures. They also reflect the combined effects of sample collection, handling, transportation, storage, and analysis. They are collected by passing distilled water over or through decontaminated sampling equipment into a sample container.

Ambient blank samples are collected to determine whether ambient concentrations of target analytes are contributing to sample detections. Ambient blanks are collected by pouring deionized water directly into a sample container in the same manner that groundwater samples are collected.

Since it is often not feasible to resample when field blanks indicate possible cross-contamination, field blank data are used to estimate the limitations of the associated analytical data.

The presence of the analytes of interest in either the equipment, ambient, or laboratory blank suggests that corresponding field samples may have been similarly contaminated and that results for these analytes should be considered accordingly. If the blank data show a given analyte at widely varying concentrations, or at concentrations comparable to those for field samples, the field sample results are qualified with a "B" for that analyte to indicate its presence in blank samples. Field blanks will be collected at a 5% frequency (one for every 20 samples) or, one duplicate per sampling event.

7.0 SITE HEALTH AND SAFETY PLAN

The purpose of a Site-specific Health and Safety Plan (HASP) is to provide policies and procedures to protect personnel from potential health hazards during subsurface and surface investigations associated with work activities at the Site. Additionally, the HASP will be prepared to minimize accidents and injuries that may occur during normal daily activities. This HASP will be prepared in accordance with OSHA's 29 CFR Part 1910.120 (Hazardous Waste Operations and Emergency Response). Also incorporated into the document will be CEMC's Loss Prevention System (LPS) and CRA's behavior based Safety Means Awareness Responsibility and Teamwork (SMART) programs that define specific procedures and forms to assist in maintaining a safe work site.

The major components of the HASP will include hazards assessment and mitigation, personal protective equipment, and emergency procedures. Sections of this plan will provide specific guidance for conducting field activities as well as waste management.

7.1 HAZARD ASSESSMENT AND MITIGATION

This section of the Site Health and Safety Plan addresses potential on-site hazards that may be encountered during field activities described below. The section also summarizes tasks that will be performed and associated hazards that may be encountered.

7.1.1 DESCRIPTION OF FIELD ACTIVITIES

The HASP will cover the soil and groundwater investigation activities to be conducted by CRA and subcontractor personnel. These activities are as follows:

a) mobilization and demobilization of labor, materials, and equipment to and from the Site; and
b) soil and groundwater assessment activities.

7.1.2 PHYSICAL HAZARDS

Physical hazards that may be present during assessment activities at the Site include slip/trip/hit/fall injuries, noise, heat stress, chemical hazards, and biological hazards. In addition, personnel must be aware that the protective equipment worn may limit dexterity and visibility and may increase the difficulty of performing some tasks.

7.1.3 SLIP/TRIP/HIT/FALL HAZARDS

Slip/trip/hit/fall (S/T/H/F) injuries are the most frequent of all injuries to workers. They occur for a wide variety of reasons, but can be minimized by the following practices:

- spot check the work area to identify hazards;
- establish and utilize a pathway which is most free of slip and trip hazards;
- beware of trip hazards such as wet floors, slippery floors, and uneven surfaces or terrain;
- carry only loads which you can see over;
- keep work areas clean and free of clutter, especially in storage rooms and walkways; and
- communicate hazards to on-Site personnel.

7.1.4 NOISE

Project activities, such as use of power tools and material handling equipment that generate noise levels exceeding the decibel range (85dBA) will require the use of hearing protection with a Noise Reduction Rating (NRR) of at least 20 when noise levels exceed 85dBA. Hearing protection (earplugs/muffs) will be available to personnel and visitors who would require entry into these areas.

When it is difficult to hear a coworker at normal conversation distance, the noise level is approaching or exceeding 85dBA, and hearing protection is necessary. All Site personnel who may be exposed to noise must also receive baseline and annual audiograms and training as to the causes and prevention of hearing loss as part of their Corporate Hearing Conservation Program.

7.1.5 HEAT STRESS

Recognition and Symptoms

Temperature stress is one of the most common illnesses at work sites. Acclimatization and frequent rest periods must be established for conducting activities where temperature stress may occur. Below are listed signs and symptoms of heat stress. Personnel should follow appropriate guidelines if any site workers exhibit these symptoms:

- Heat Rash — Redness of skin. Frequent rest and change of clothing;
- Heat Cramps — Painful muscle spasms in hands, feet, and/or abdomen. Administer water and drinks containing electrolytes by mouth, unless there are medical restrictions;
- Heat Exhaustion — Clammy, moist, pale skin, along with dizziness, nausea, rapid pulse, fainting. Remove to cooler area and administer fluids; and
- Heat Stroke — Hot dry skin; red, spotted or bluish; high body temperature of 104°F, mental confusion, loss of consciousness, convulsions or coma. Immediately cool victim by immersion in cool water. Wrap with wet sheet while fanning, sponge with cool liquid while fanning; treat for shock. DO NOT DELAY TREATMENT. COOL BODY WHILE AWAITING AMBULANCE.

Work Practices

The following procedures will be carried out to reduce heat stress:

- acclimatization;
- work/rest regimes;
- liquids that replace electrolytes available during rest; and
- use of buddy system.

Acclimatization

The level of heat stress at which excessive heat strain will result depends on the heat tolerance capabilities of the worker. Each worker has an upper limit for heat stress beyond which the resulting heat strain can cause the worker to become a heat casualty. In most workers, appropriate repeated exposure to elevated heat stress causes a series of physiologic adaptations called acclimatization, whereby the body becomes more efficient in coping with the heat stress. Work/rest regimes will be partially determined by the degree of acclimatization provided.

Worker Information and Training

All new and current employees who work in areas where there is a reasonable likelihood of heat injury or illness should be kept informed, through continuing education programs:

- heat stress hazards;
- predisposing factors and relevant signs and symptoms of heat injury and illness;
- potential health effects of excessive heat stress and first aid procedures;
- proper precautions for work in heat stress areas;
- worker responsibilities for following proper work practices and control procedures to help protect the health and safety of themselves and their fellow workers, including instruction to immediately report to the employer the development of signs or symptoms of heat stress overexposure; and
- effects of therapeutic drugs, over-the-counter medications, or social drugs may increase the risk of heat injury or illness by reducing heat tolerance.

7.1.6 CHEMICAL HAZARDS

The chemical hazards associated with conducting Site operations include the potential contact with onsite chemicals including affected soil and groundwater, products used in decontamination of equipment, and support products such as fuel. Material Safety Data Sheets will be maintained by the project manager of the Site and will be included as an appendix in the HASP.

The potential routes of exposure from these products during normal use may occur through inhalation of vapors or direct contact with, or absorption of, the materials. Additional information regarding the Site Constituents of Concern (COCs) is presented below.

Crude Oil

The Site is located adjacent to an active oil well. TPH is a term used to describe a broad family of several hundred chemical compounds that originally come from crude oil. In this sense, TPH is really a mixture of chemicals. They are called hydrocarbons because almost all of them are made entirely from hydrogen and carbon. Crude oils can vary in how much of each chemical they contain. Most products that contain TPH will burn. Some are clear or light-colored liquids or semi-solids that do not evaporate. Many of these products have characteristic gasoline, kerosene, or oily odors. Because modern society uses so many petroleum-based products (for example, gasoline, kerosene, fuel oil, mineral oil, asphalt), contamination of the environment by them is potentially widespread. Contamination caused by petroleum products will contain a variety of these

hydrocarbons. Because there are so many, it is not usually practical to measure each one individually. However, it is useful to measure the total amount of all hydrocarbons found together in a particular sample of soil, water, or air.

High vapor concentrations are irritating to the eyes and respiratory tract and may cause headaches, dizziness, unconsciousness, and other central nervous system effects including death. Skin contact with hot products may cause thermal burns. Prolonged or repeated contact with this product at warm or ambient temperatures tends to remove skin oils, possibly leading to irritation and dermatitis. Eye contact with hot products may cause thermal burns. Contact with this product at warm or ambient temperatures may cause eye irritation but will not damage eye tissue.

Crude oil may contain benzene as a natural constituent. Benzene has been classified as a known human carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH) based on the increased incidence of leukemia in certain oil refinery workers. OSHA lists benzene as a human carcinogen and its exposure limit as a single chemical is 1.0 Parts per million (ppm)/8 hours. However, Chevron projects will follow the more stringent occupational exposure limit value of 0.5 ppm for an 8-hour time weighted average (TWA) and 2.5 ppm for a 15-minute short-term exposure limit (STEL).

Hydrogen Sulfide

Hydrogen sulfide is a colorless, toxic gas that is identified by the offensive odor of rotten eggs at low concentrations. It is heavier than air, flammable, and is generally a component of landfill gas. Hydrogen sulfide can cause irritation of eyes, nose and throat, beginning at approximately 10 ppm. Long-term exposure (30 minutes or longer) to high concentrations can cause drowsiness, staggering, and nausea which can lead to death, due to respiratory system failure.

The odor of hydrogen sulfide can be detected at approximately 0.03 ppm and become offensive at 3 ppm, and causes irritation at 10 ppm. An especially dangerous situation is brief exposure to concentrations of 50 ppm, which can cause a person to lose the sense of smell. This has been described in accident reports as "I first smelled hydrogen sulfide, and then it went away." This is called olfactory fatigue. The toxic effect of hydrogen sulfide paralyzes the respiratory control center, which leads to suffocation and then death.

Hydrogen sulfide has a wide flammable range (LEL 4.0%, UEL 44.0 %). This property, coupled with its heavier-than-air density, makes it a hazard in trenches and low-lying areas.

Hydrogen sulfide is regulated by OSHA on a 20 ppm ceiling concentration. A ceiling concentration means that this level can not be exceeded during any part of the work period. OSHA has also established a Permissible Exposure Limit (PEL) concentration at 10 ppm, and an Immediately Dangerous to Life or Health (IDLH) concentration of 100 ppm.

Employees are directed to shut down ignition sources and leave the area if hydrogen sulfide is detected above 10 ppm. Generally, natural cross-ventilation will reduce hydrogen sulfide to acceptable levels. Re-entry and continuation of work may be done only under controlled conditions involving monitoring equipment and in supplied air respirators if levels exceed, or are likely to exceed, 10 ppm.

Special precautions will need to be implemented when these types of materials are encountered. The SPM should be present to conduct air monitoring on a continuous basis so that the proper level of personal protection is established for the material handling activities.

Chlorides in Groundwater and Soil

The presence of chlorides in the Site soils and groundwater have been identified, see FIGURE 4 and APPENDIX A for concentration details. Chlorides have a corrosive characteristic and have been known to cause skin irritation, consequently the primary route of exposure would be dermal contact. Level D personal protection and groundwater sampling job safety analysis sheets developed for Site operations provides adequate control measures for hazards associated with chloride contact. Ingestion of groundwater at the Site is prohibited.

7.1.7 BIOLOGICAL HAZARDS

Biological hazards can include unfortunate contact with insects, poisonous plants, and reptiles. The following biological hazards may be encountered at this site:

- Mosquitoes;
- Wasps;

- Honey Bees;
- Mud Dauber Wasps;
- Fire Ants;
- Poisonous Spiders; and
- Snakes.

7.2 PERSONAL PROTECTIVE EQUIPMENT (PPE)

7.2.1 GENERAL

This section shall cover the applicable PPE requirements which shall include eye, face, head, foot, and respiratory protection. The purpose of PPE is to shield or isolate individuals from the chemical and physical hazards that may be encountered during work activities.

7.2.2 TYPES OF PPE

The following types of PPE will be available for use at the project Site:

- Hard Hats - Regulated by 29 CFR Part 1910.135; specified in the American National Standards Institute, Inc. (ANSI) Z89.1, Safety Requirements for Industrial Head Protection;
- Face Shields, Safety Glasses, and Safety Goggles - Regulated by 29 CFR Part 1910.133(a); specified in ANSI Z87.1, Eye and Face Protection;
- Foot Protection - Regulated by 29 CFR Part 1910.136; specified in ANSI Z41.1, Safety Toe Footwear;
- Hand Protection;
- Respiratory Protection - Regulated by 29 CFR Part 1910.134; specified in ANSI Z88.2, Standards for Respiratory Protection; and
- Protective Clothing.

In general, Site activities will be initiated in Level D. The level of protection selected must correspond to the known, or suspect, level of hazard in the work area.

7.2.3 TYPES OF PROTECTIVE MATERIAL

Protective clothing is constructed of a variety of different materials for protection against exposure to specific chemicals. No universal protective material exists.

All will decompose, be permeated, or otherwise fail to protect under certain circumstances.

Fortunately most manufacturers list guidelines for the use of their products. These guidelines usually concern gloves or coveralls and, generally, only measure rate of degradation (failure to maintain structure). It should be noted that a protective material may not necessarily degrade but may allow a particular chemical to permeate its surface.

For this reason, guidelines must be used with caution. When permeation tables are available, they should be used in conjunction with degradation tables.

In order to obtain optimum usage from PPE, the following procedures are to be followed by Site personnel using PPE:

- When using disposable coveralls, don a clean, new garment after each rest break or at the beginning of each shift;
- Inspect all clothing, gloves, and boots both prior to and during use for:
  - Imperfect seams;
  - Non-uniform coatings;
  - Tears;
  - Poorly functioning closures; and
- Inspect reusable garments, boots, and gloves both prior to and during use for:
  - Visible signs of chemical permeation;
  - Swelling;
  - Discoloration;
  - Stiffness;
  - Brittleness;
  - Cracks;
  - Any sign of puncture; and
  - Any sign of abrasion.

Reusable gloves, boots, or coveralls exhibiting any of the characteristics listed above will be discarded. PPE used in areas known or suspected to exhibit elevated concentrations of chemicals should not be reused.

7.2.4 RESPIRATORY PROTECTION

Under certain action levels, personnel conducting the Site activities may require respiratory protection. If required, personnel will wear an air-purifying respirator and follow the procedures and guidelines as described below and follow CRA's Respiratory Protection Program.

All personnel required to use this apparatus are instructed in how to properly fit a respirator to achieve the required face-piece-to-face seal for respiratory protective purposes. Conditions, which could affect this face seal, are the presence of beards, sideburns, eyeglasses, and the absence of upper or lower dentures.

All employees are subjected to a preliminary fit test with annual fit tests thereafter in accordance with OSHA regulations 29 CFR Part 1910.134. In addition employees are also required to be medically fit to wear a respirator as determined by a licensed physician.

The air-purifying respirator cartridges selected for use during work at this Site are a combination organic vapor cartridge with a P-100 particulate filter. This combination has the overall ability to protect against total organic vapors, dusts, mists, and fumes.

When air purifying respirators are in use for 8-hours of continuous use, all cartridges will be changed at a minimum of twice a day. Changes will also be made when personnel begin to experience increased inhalation resistance and prior to breakthrough.

7.3 EMERGENCY PROCEDURES

In the event of an emergency, site contacts will be notified as listed in Table III. Directions to the Lea Regional Medical Center are as follows:

- From the Mark Owen #9 wellsite, travel west on lease road for 0.1 miles to 4th Street;
- Proceed north on 4th Street 0.2 miles to Hwy 176/234 (major E-W throughfare in Eunice; (a.k.a. West Texas Avenue);
- Next travel east (right) on Hwy 176/234 1.3 miles to major intersection (Hwy 18);
- Then travel 20.1 miles north (left) toward Hobbs, NM and proceed into town;

- In the north portion of Hobbs, proceed left (NW) on Hwy 18 (E. Bender Blvd) for 4.3 miles; look for hospital facility entrance on west side of Highway 18
- Turn west across Highway into hospital entrance; and
- Finally travel northwest, looking for emergency signs 0.1-miles to west side of Lea Regional Medical Center.

8.0 REFERENCES

State of New Mexico Engineer Technical Report No. 13, 1951-1955. 1959. Reeder, H.O. and Others.

All of Which is Respectfully Submitted,
Conestoga-Rovers & Associates

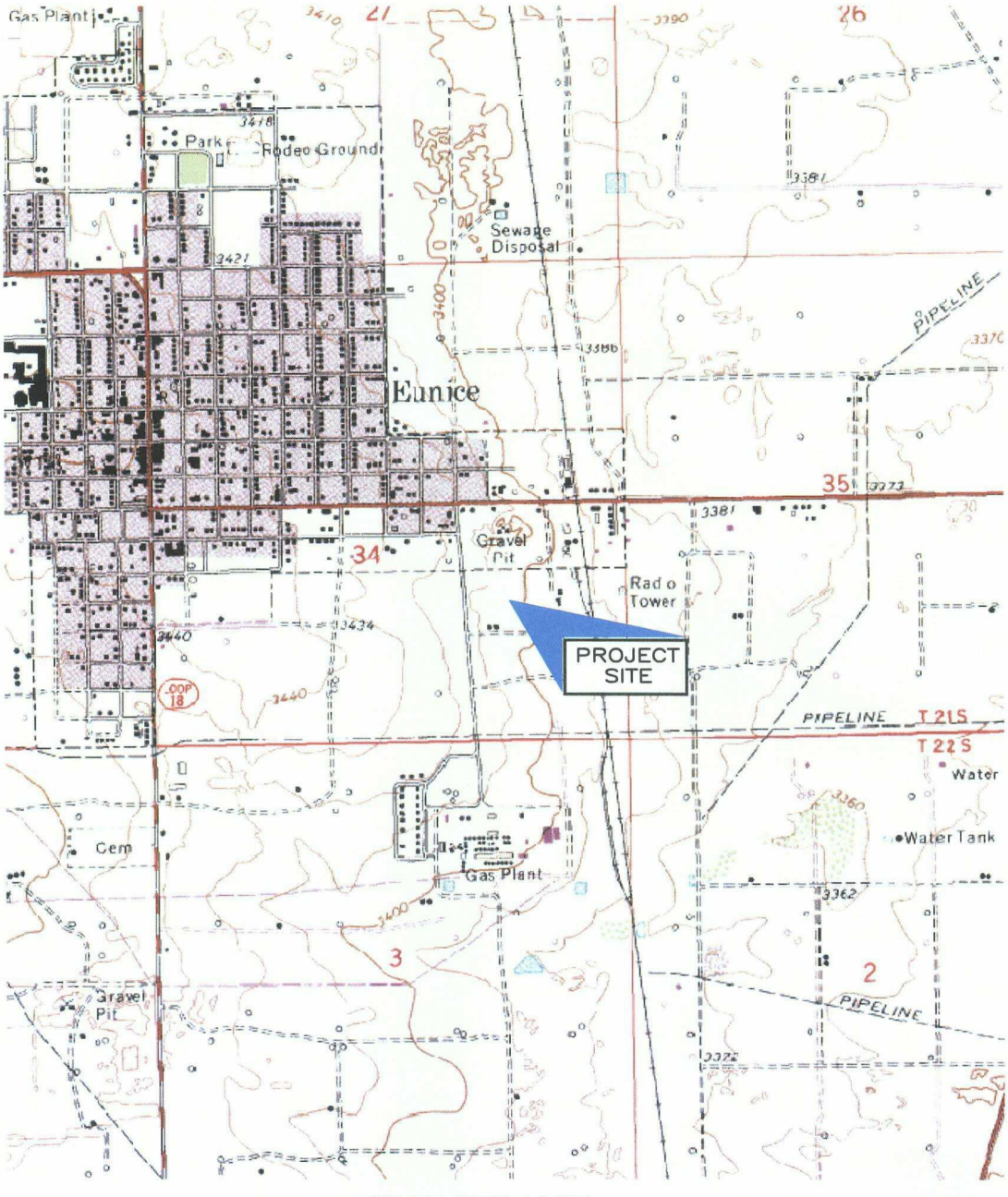
Aaron M. Hale
Project Geologist

Thomas C. Larson
Senior Project Manager

EUNICE QUADRANGLE
NEW MEXICO

LAT= 32° 25' 56.9" N
LONG= 103° 08' 47.9"W

PHOTOREVISED 1977



USGS MAP SERIES 1:24000

0 1/2 1 2
(Miles)

0 2000 4000 6000 8000
(Feet)

CONTOUR INTERVAL 5 FEET

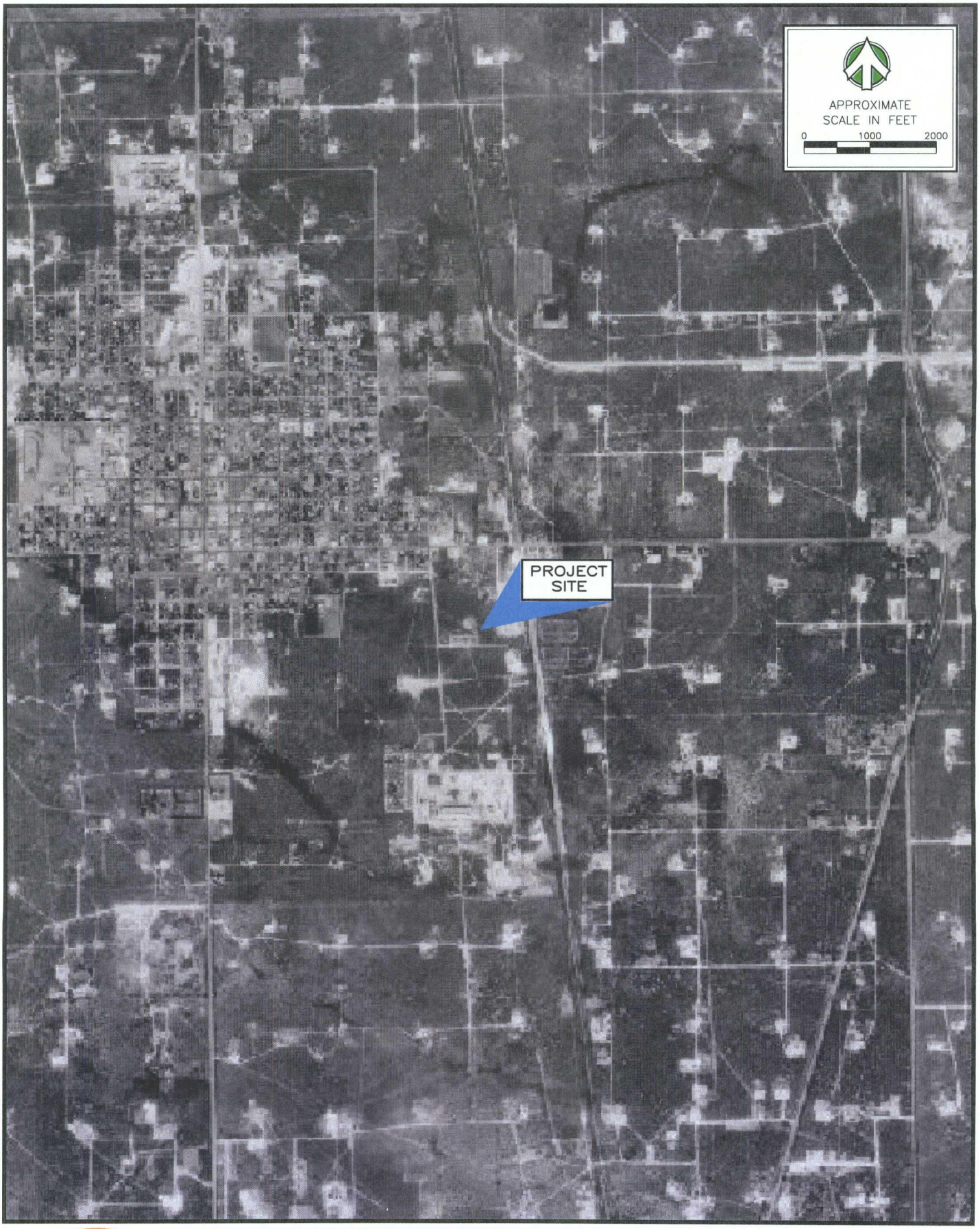
NORTH

046121 SLR 080706

SITE LOCATION MAP
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
MARK OWEN #9 RESERVE PIT
NW/4 OF SE/4 SECTION 34; T-21-S, R-37-E LEA COUNTY, NM

JOB No. 046121

FIGURE 1



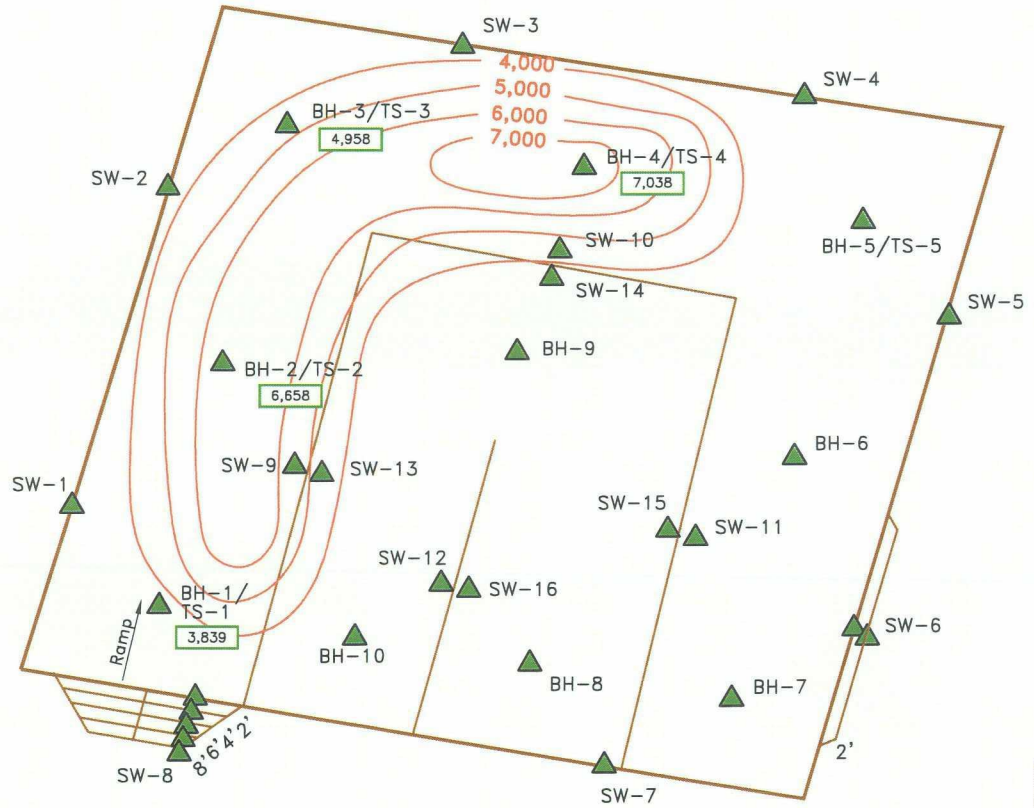
046121 SLR 080706

1997 AERIAL PHOTOGRAPH

CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
MARK OWEN #9 RESERVE PIT
NW/4 OF SE/4 SECTION 34; T-21-S, R-37-E LEA COUNTY, NM

JOB No.
046121

FIGURE
2



Approximate Scale In Feet

0 15 30

NOTES:

Analytical data referenced on Table 2 of EPI Report.
Sample locations referenced from EPI Report.

LEGEND

- Sample Location
- 3,839 Chloride Concentration in mg/kg at 19' bgs
- 4,000 Chloride Isopleth (Contour Interval = 1,000 mg/kg)

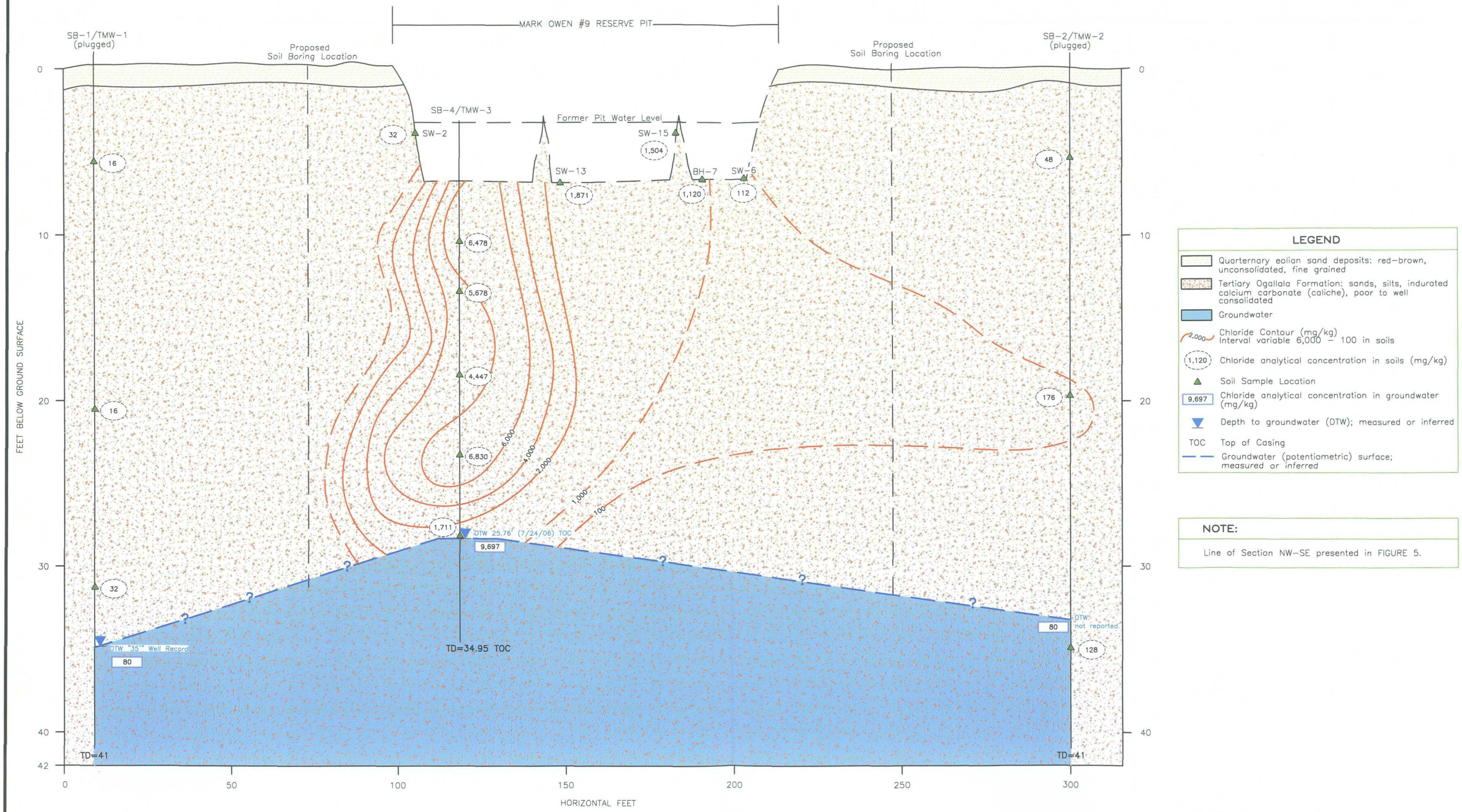
046121 SLR 082306

CHLORIDE CONCENTRATIONS IN SOILS AT 19 FEET BELOW GROUND SURFACE

CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
MARK OWEN #9 RESERVE PIT
NW/4 OF SE/4 SECTION 34; T-21-S, R-37-E LEA COUNTY, NM

JOB No. 046121

FIGURE 3



046121 SLR 030607

NW-SE CROSS SECTION - SITE CONDITIONS
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
MARK OWEN #9 RESERVE PIT
NW/4 OF SE/4 SECTION 34; T-21-S, R-37-E LEA COUNTY, NM

JOB No. 046121

FIGURE 4

LEGEND

●	Monitoring Well Location	•	Soil Boring Location	TD	Total Depth
●	Oil Well Location	bgs	Below Ground Surface	Cl⁻	Chlorides (groundwater)
×	Plugged Monitoring Well	DTW	Depth to Water	mg/Kg	Milligrams per Kilogram (soils)
⊕	Proposed Monitoring Well	TOC	Top of Casing	mg/L	Milligrams per Liter (groundwater)
◎	Proposed Soil Boring	———	Line of Section	▲	Soil Sample Location

NOTES:

1. TMW-1, TMW-2, and TMW-3 groundwater analyzed for benzene, toluene, ethylbenzene, and xylenes by EPA SW-846 Method 8260 in May 2006. Results were <0.002 mg/L for the respective analytes in all monitor wells.
2. NW-SE Cross Section – site conditions presented as FIGURE 4.

046121 SLR 030607

CRA

PROPOSED SOIL BORING AND MONITORING WELL LOCATION MAP
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
MARK OWEN #9 RESERVE PIT
NW/4 OF SE/4 SECTION 34; T-21-S, R-37-E LEA COUNTY, NM

JOB No. 046121

FIGURE 5

TABLE I

SAMPLE CONTAINER, PRESERVATION AND HOLDING TIME REQUIREMENTS
MARK OWEN #9 RESERVE PIT
LEA COUNTY, NEW MEXICO

Type	Analysis	Quantity	Container	Preservative	Holding Times
Soil	BTEX EPA Method 8021B	1 each	4 oz jar	Neat	14 days
Soil	TPH EPA Method 8015 Mod. (DRO/GRO)	1 each	4 oz jar	Neat	14 days
Soil	Chlorides EPA Method 9056	1 each	4 oz jar	Neat	28 days
Water	BTEX EPA Method 8021B	2 each	40-mL VOA Vials	HCL or HgCL	14 days
Water	RCRA Metals by EPA Methods 6010 and 7470	1 each	250-mL	Nitric Acid	180 days (28 days for Mercury)
General Groundwater Chemistry					
Water	Total Disolved Solids EPA Method 160.1	1 each	1-Liter	Neat	7 days
Water	Total Alkalinity EPA Method 9056	1 each	250-mL	Neat	14 days
Water	Chlorides EPA Method 9056	1 each	250-mL	Neat	28 days
Water	Sulfate EPA Method 9056	1 each	250-mL	Neat	28 days

TABLE II

FREQUENCY AND ESTIMATED TOTAL NUMBER OF QUALITY CONTROL SAMPLES
MARK OWEN #9 RESERVE PIT
LEA COUNTY, NEW MEXICO

Sample Type	Frequency	Water
Duplicate	10%	2
MS/MSD	5%	1
Decontamination/Ambient Blank	5%	1

TABLE III

EMERGENCY SITE CONTACTS
MARK OWEN #9 RESERVE PIT
LEA COUNTY, NEW MEXICO

Contact	Function	Telephone Number
Tom Larson	CRA Project Manager	Office: (432) 686-0086 Cell: (432) 553-1681
Steve Huddleson	CEMC Project Manager	Office: (281) 561-4995 Cell: (832) 771-3275
Vicky Pickard	CRA Health and Safety Officer	Office: (832) 485-5215 Cell: (832) 693-1177
James Ornelas	Alternate CRA Health and Safety Officer	Office: (432) 686-0086 Cell: (432) 559-9111
Lea Regional Medical Center	Hospital -Emergency Services	(505) 492-5000 or 911
Larry Williams	Chevron HES Champion Eunice , NM	Office: (505) 394-1237 Cell: (505) 390-7165

APPENDIX A

MARK OWEN #9 (REF. #200056), MAY 30, 2006, BY ENVIRONMENTAL PLUS, INC. (EPI)

30 May 2006

Mr. Steve Huddleson
Chevron Environmental Management Group
11111 S. Wilcrest
Houston, TX 77099

Re: Mark Owens #9 (Ref. #200056)

Dear Mr. Huddleson:

In November 2005, Environmental Plus, Inc. (EPI) was retained to conduct pit closure activities at the above-referenced site. This letter report is submitted to document the work completed at the site and the associated timeline for the work completed.

Background

On November 17, 2005, an EPI representative mobilized to the site to perform GPS surveying, photography and characterization of the site. The site is located in the NW ¼ of the SE ¼ of section 34, township 21 south, range 37 east within the city limits of Eunice, New Mexico (reference *Figures 1* and *2*). The pit was located along the northwest corner of the site and consisted of approximately 12,900 square feet (reference *Figure 3*). Based on information available from the Office of the New Mexico state Engineer and an United States Geological Survey (USGS) database, there are no domestic, agricultural or public water supply wells located within a 1,000-foot radius of the site; however, there are six wells located within a one-mile radius of the site (reference *Figure 2*). Available depth to water information indicated the average depth to groundwater in the area was approximately 78 feet below ground surface (reference *Figure 4* and *Table 1*). Due to the presence of water in the pit, closure activities were delayed until March 2006 to allow sufficient time for desiccation of the pit contents (i.e., drilling mud and cuttings).

Field Work

Approximately 520 cubic yards of drilling mud and cuttings were excavated from the drilling pit from March 15 through March 17 and transported to Sundance Services, Inc. for disposal. Upon removal of the pit contents, the sidewalls and floor of the former drilling pit were sampled from March 20 through April 4, 2006. Field analyses for initial sampling activities indicated chloride impacts exceeded site remedial guidelines beneath the former pit and in the southwest (SW-8) and southeast (SW-6) exterior sidewalls and in the northwest interior berm (SW-13) sidewall (reference *Figure 5*). Due to elevated chloride levels in the soil in the southwest sidewall (i.e., SW-8) excavation activities continued until such time field analyses indicated chloride concentrations were below New Mexico Oil Conservation Division (NMOCD) remedial guidelines for the site. An additional eight (8) feet of soil were excavated from the southwest sidewall and an additional two (2) feet were excavated from the southeast sidewall (reference *Figure 5*). Initial field analytical results for samples collected from the excavation floor indicated chloride concentrations exceeded NMOCD remedial goals for the site at sampling locations BH-1 through BH-7 and BH-10 (reference *Table 2* and *Figure 5*). To delineate the vertical extents of chloride impacts beneath the former pit, test trenches TS-1 through TS-4 were excavated in the vicinity of sampling points BH-1 through BH-4. During the excavation of these trenches, soil samples were collected at seven, eight, nine, eleven, fourteen and nineteen feet bgs. In addition, a test trench, TS-5, was excavated in the vicinity of sampling point BH-5 and samples collected at seven, eight and nine feet bgs. Field analyses of soil

ENVIRONMENTAL PLUS, INC.

samples collected from test trenches TS-1 through TS-4 indicated chloride concentrations exceeded New Mexico Water Quality Control Commission (NMWQCC) groundwater standards for all sampling intervals from all the trenches (reference *Table 2*). Field analyses of the soil samples collected from test trench TS-5 indicated chloride concentrations exceeded the NMWQCC groundwater standards for the samples collected at seven and eight feet bgs (reference *Table 2*).

Based on this information, and laboratory analytical results, a determination was made to advance soil borings in and around the former pit to delineate chloride impacts. On April 28, 2006 a soil boring was advanced approximately 130 feet northwest (i.e., upgradient) of the former pit (reference *Figure 6*). Field analyses of samples collected during the advancement of the soil boring indicated chloride concentrations were below the NMWQCC standard for chloride impacts to groundwater of 250 mg/Kg. A temporary groundwater monitoring well (TMW-1) was installed to determine the depth to groundwater and allow for the collection of a groundwater sample to determine if area groundwater was impacted due to exploration and production activities in the area.

On May 2, 2006, two additional soil borings were advanced around the perimeter of the site to determine if chloride impacts existed (reference *Figure 6*). Soil boring SB-2 was advanced at the southeast edge of the site and soil boring SB-3 was advanced near the southwest edge of the site. Again, field analyses of samples collected during the advancement of the soil borings indicated chloride concentrations were below the NMWQCC standard for chloride impacts to groundwater of 250 mg/Kg. A temporary groundwater monitoring well (TMW-2) was installed in soil boring SB-2 to determine the depth to groundwater and allow for the collection of a groundwater sample to determine if area groundwater was impacted due to exploration and production activities in the area.

On May 3, 2006, a fourth soil boring was advanced within the perimeter of the former pit to delineate the vertical extent of chloride impacts (reference *Figure 6*). Field analyses of soil samples collected during the advancement of this soil boring indicated chloride concentrations in excess of 4,000 mg/Kg to a depth of 24 feet below ground surface (bgs) with chloride impacts decreasing to 1,380 mg/Kg at 34 feet bgs. A temporary groundwater monitoring well (TMW-3) was installed in soil boring SB-4 to determine the depth to groundwater and allow for the collection of a groundwater sample to determine if area groundwater was impacted due to exploration and production activities in the area.

Analytical Results

Analytical results for the samples collected from the sidewalls, excavation floor and test trenches indicated chloride impacts in excess of 1,000 milligrams per kilogram (mg/Kg) remained in the soil in, around and beneath the former pit. Analytical results indicated chloride concentrations exceeded the NMWQCC groundwater standards for chloride in samples SW-5, SW-6, SW-13 and SW-15, collected from the sidewalls (reference *Figure 5* and *Table 2*). Analytical results for samples collected from the excavation floor and/or test trenches completed through the excavation floor indicated chloride concentrations exceeded NMWQCC groundwater standards in samples collected from TS-1, TS-2, TS-3, TS-4, BH-6, BH-7 and BH-10. These analytical results also indicated chloride impacts existed to depth of at least 19 feet bgs (reference *Figure 5* and *Table 2*). The soil sample collected from test trench TS-2 at a depth of eleven feet bgs was also submitted for quantification of total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene and total xylenes (BTEX constituents). Analytical results indicated that none of these analytes were detected at or above each analytes respective method detection limit (MDL).

Representative soil samples were collected during the advancement of the soil borings and submitted to an independent laboratory for quantification of TPH, BTEX constituents, chlorides and/or sulfates.

Analytical results (received on May 11, 2006) for all samples submitted for the quantification of TPH and BTEX constituents were reported as non-detectable (ND) for all analytes at or above each analytes respective MDL. Analytical results for soil samples collected from soil borings SB-1, SB-2 and SB-3 (i.e., soil borings advanced around the site perimeter) indicated chloride concentrations ranged from 16 mg/Kg to 176 mg/Kg and sulfate concentrations ranged from ND to 277 mg/Kg. These concentrations are below remedial goals for the site. Analytical results for soil samples collected from soil boring SB-4 (i.e., the soil boring advanced the pit floor) indicated chloride concentrations ranged from 1,711 mg/Kg to 6,830 mg/Kg and sulfate concentrations ranged from 59.2 mg/Kg to 246 mg/Kg.

On May 1 thru May 3, 2006, groundwater samples were collected from the three temporary groundwater monitoring wells and submitted to an independent laboratory for quantification of BTEX constituents, chlorides and sulfates. Analytical results (received on May 11, 2006) for samples collected from the three groundwater monitoring wells indicated BTEX constituents were reported as ND for all analytes at or above each analytes respective MDL. Analytical results for samples collected from the three groundwater monitoring wells indicated sulfate concentrations were below the NMWQCC groundwater standard for sulfates of 600 milligrams per liter (mg/L). Analytical results for groundwater samples collected from groundwater monitoring wells TMW-1 and TMW-2 (i.e., the perimeter wells) indicated chloride concentrations were below the NMWQCC groundwater standard for chlorides of 250 mg/L. However, analytical results for the groundwater sample collected from temporary groundwater monitoring well TMW-3 indicated chloride concentrations of 9,697 mg/L, in excess of the NMWQCC groundwater standard of 250 mg/L.

Discussion

On May 11, 2006, verbal notification of groundwater impacts was made to the NMOCD-Santa Fe per New Mexico statutes and this was followed up with written notification of groundwater impacts on May 19, 2006.

On May 19, 2006, Mr. Wayne Price, NMOCD Environmental Bureau Chief, issued a letter, via e-mail requiring Chevron to complete an abatement plan within thirty (30) days of the letter.

On May 24, 2006, EPI was notified that Chevron was turning over the remediation project to Chevron Environmental Management Company and that it would eventually be turned over to another consultant.

Should you have any questions, or if EPI can be of further assistance, please feel free to contact Pat McCasland or me at (505) 394-3481.

Sincerely,

ENVIRONMENTAL PLUS, INC.

Iain Olness, P.G.
Technical Manager

cc: Larry Williams, ChevronUSA – Eunice, NM
Nathan Mauser, ChevronUSA – Eunice, NM
File

Encl. Figure 1 Figure 2 Figure 3
Figure 4 Figure 5 Figure 6
Table 1 Table 2 Table 3
Appendix I

FIGURES

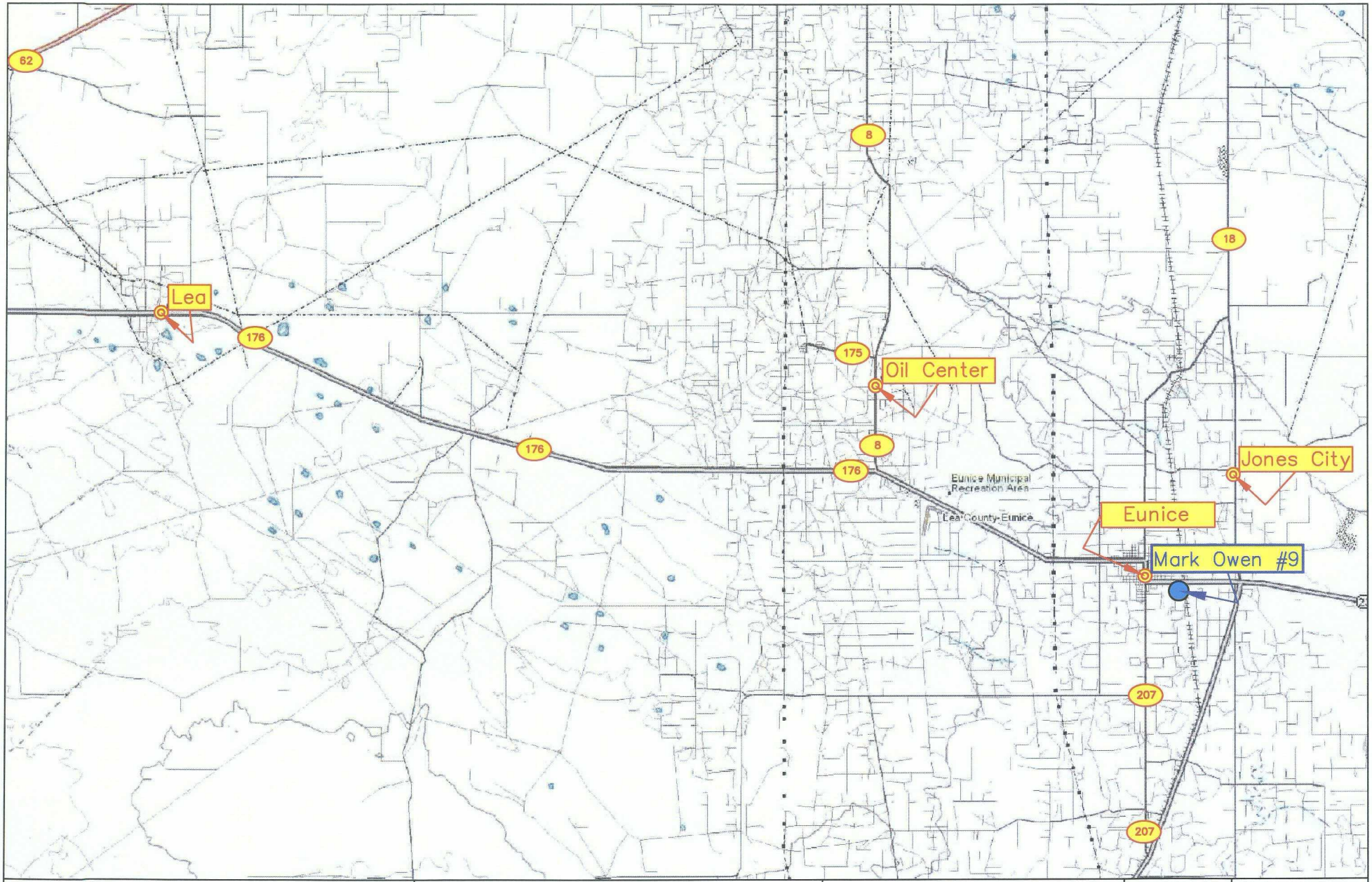


Figure 1
Area Map
Chevron Corporation
Mark Owen #9

Lea County, New Mexico
NW 1/4 of the SE 1/4, Sec. 34, T21S, R37E
N 32° 25' 56.9" W 103° 08' 47.9"
Elevation: 3,405 feet amsl

DWG By: Daniel Dominguez
November 2005

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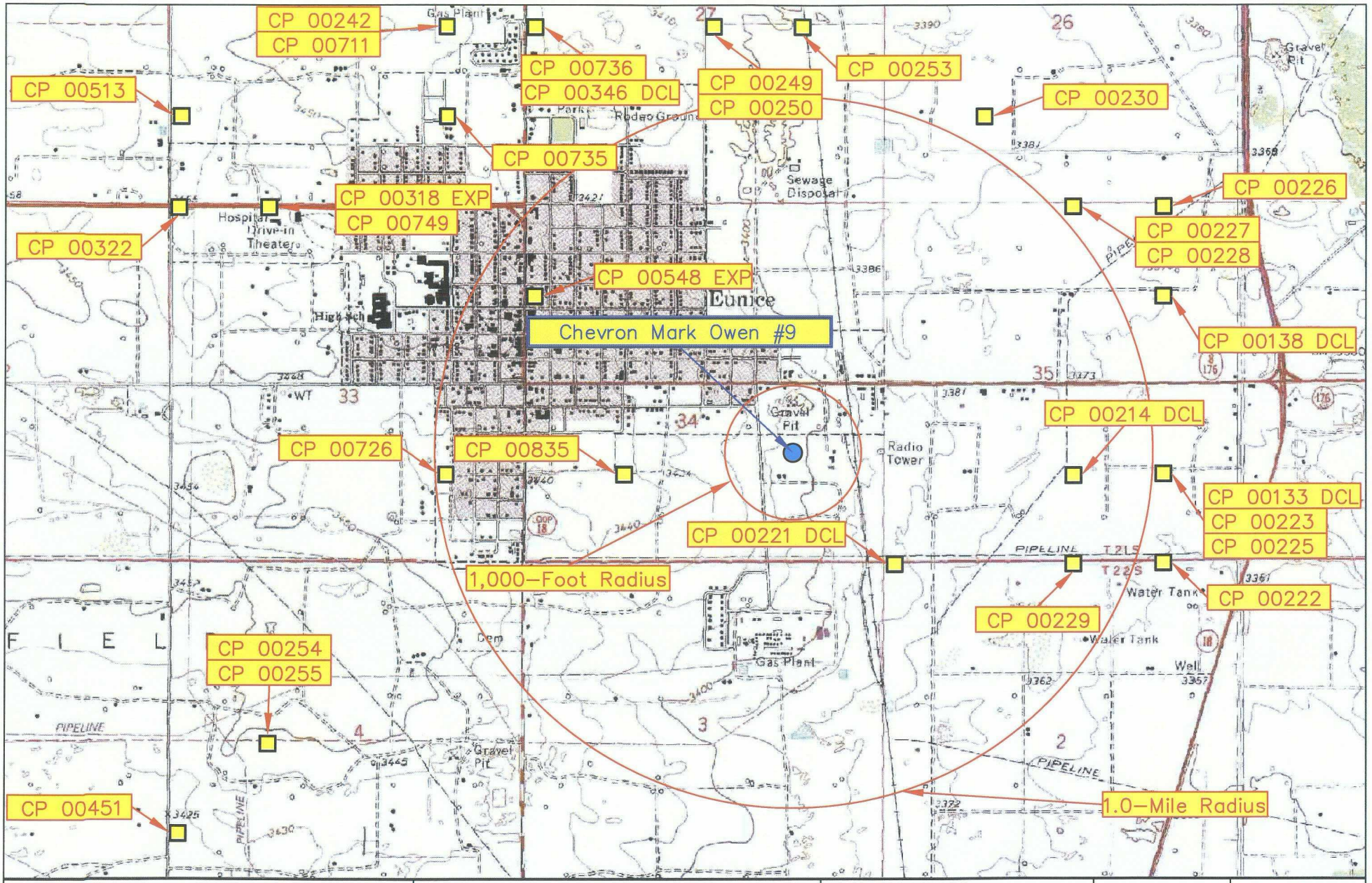

Figure 2 Site Location Map Chevron Corporation Mark Owen #9	Lea County, New Mexico NW 1/4 of the SE 1/4, Sec. 34, T21S, R37E N 32° 25' 56.9" W 103° 08' 47.9" Elevation: 3,405 feet amsl	DWG By: Daniel Dominguez November 2005	REVISED: SHEET 1 of 1

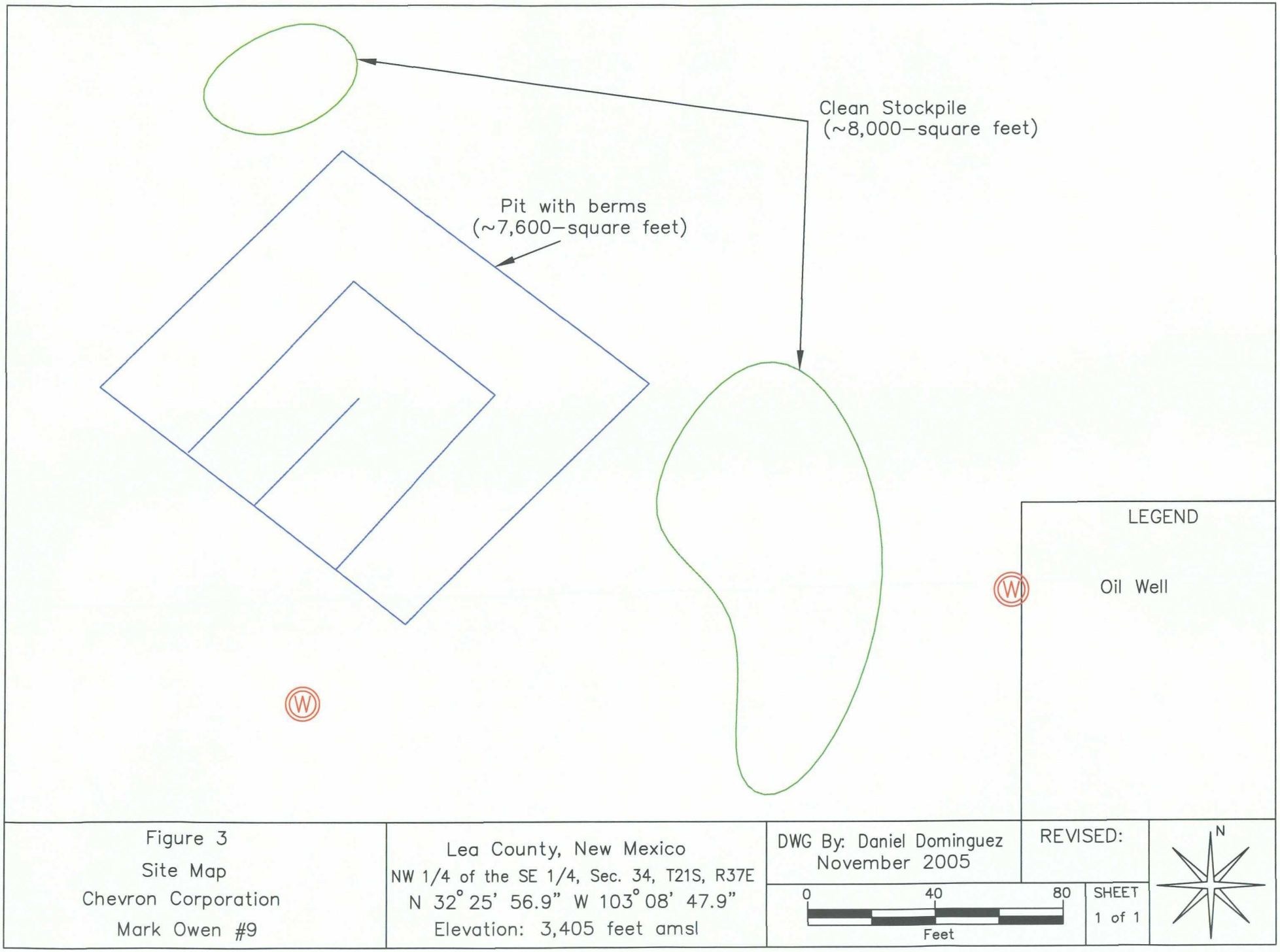

Figure 3 Site Map Chevron Corporation Mark Owen #9	Lea County, New Mexico NW 1/4 of the SE 1/4, Sec. 34, T21S, R37E N 32° 25' 56.9" W 103° 08' 47.9" Elevation: 3,405 feet amsl	DWG By: Daniel Dominguez November 2005	REVISED:	SHEET 1 of 1

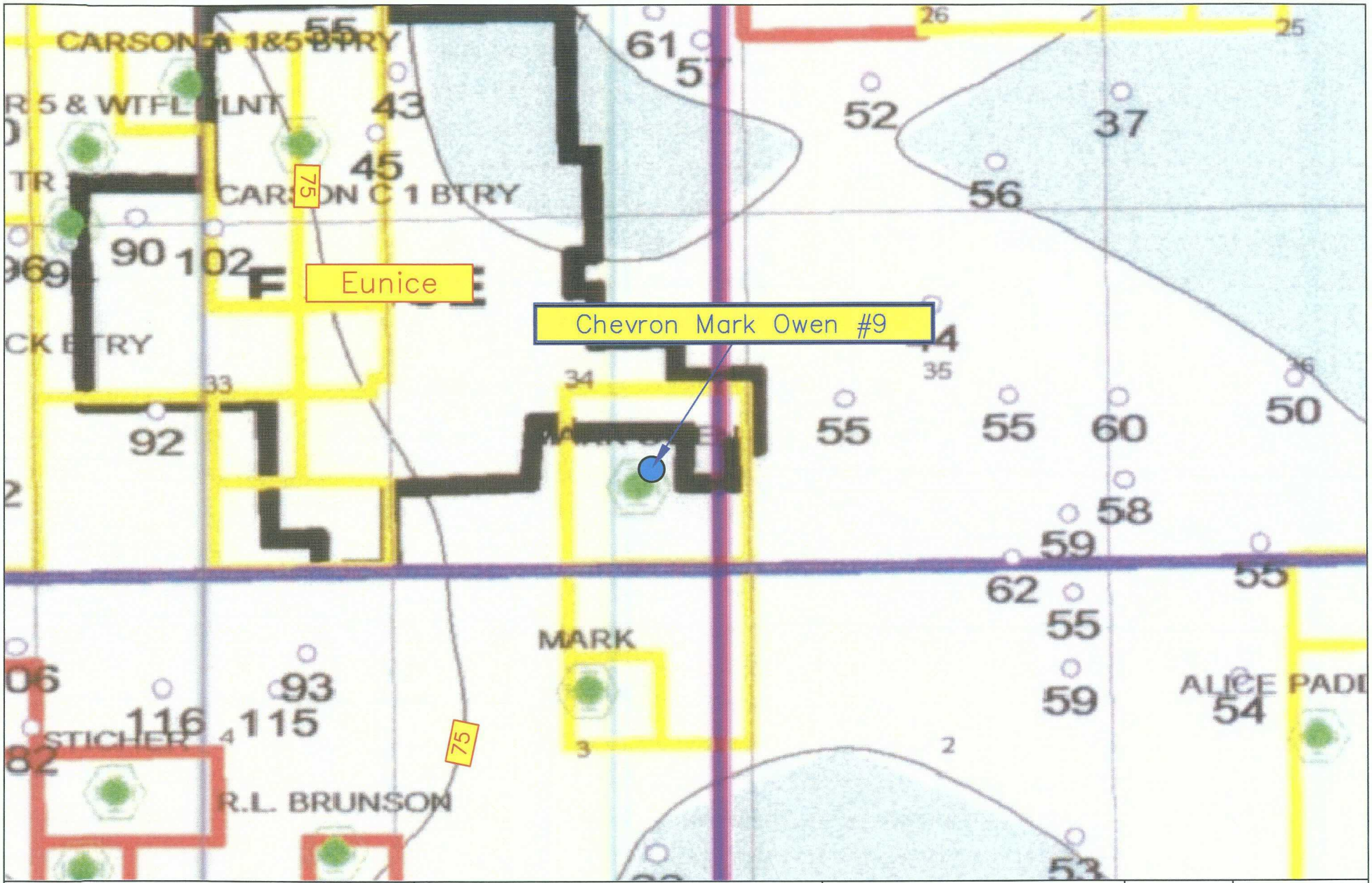

Figure 4
Groundwater Gradient Map
Chevron Corporation
Mark Owen #9

Lea County, New Mexico
NW 1/4 of the SE 1/4, Sec. 34, T21S, R37E
N 32° 25' 56.9" W 103° 08' 47.9"
Elevation: 3,405 feet amsl

DWG By: Daniel Dominguez
November 2005

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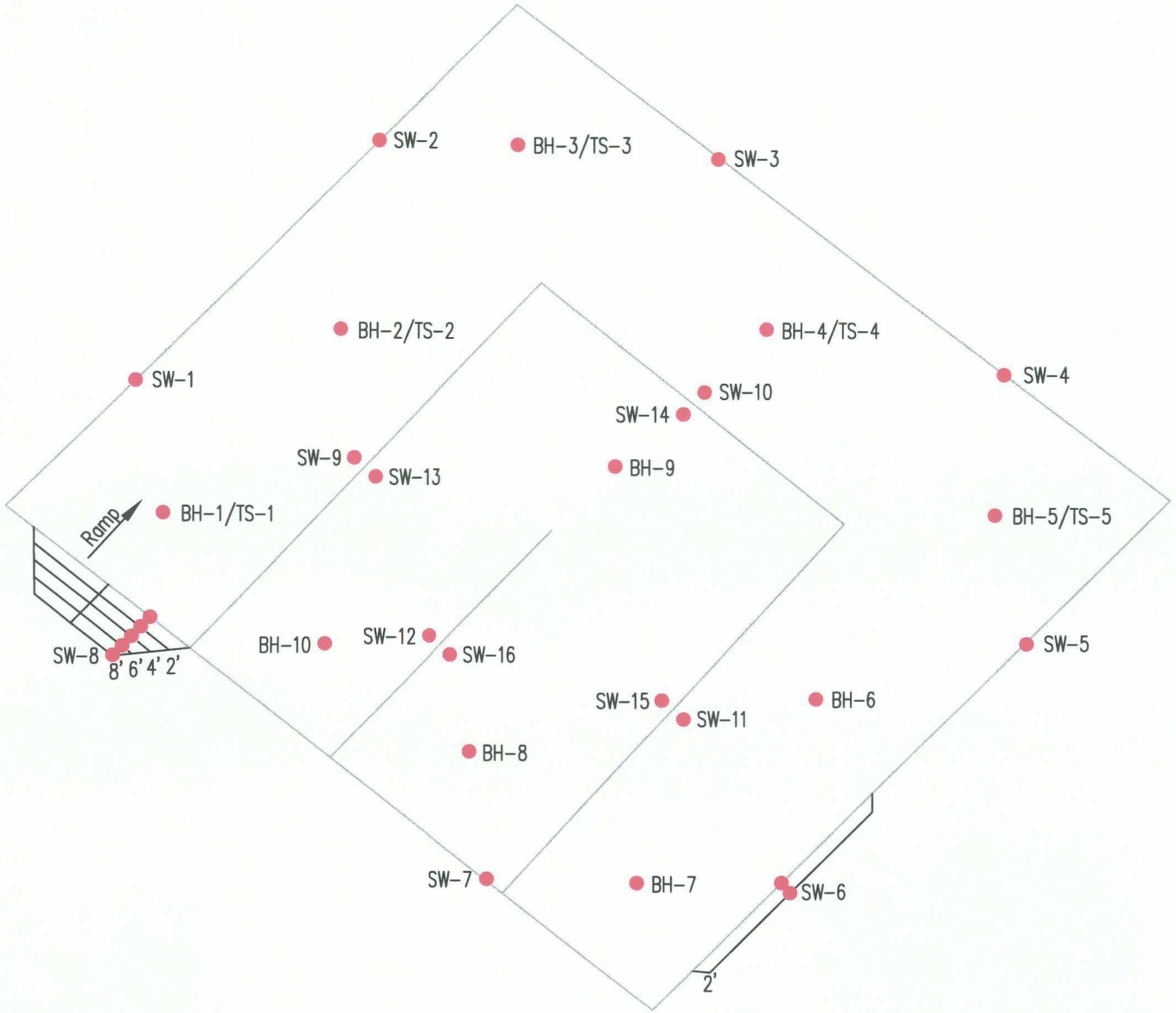

LEGEND

Sample Location

Note: Analytical data referenced on Table 2.

Figure 5 Sample Location Map Chevron Corporation Mark Owen #9	Lea County, New Mexico NW 1/4 of the SE 1/4, Sec. 34, T21S, R37E N 32° 25' 56.9" W 103° 08' 47.9" Elevation: 3,405 feet amsl	DWG By: Daniel Dominguez November 2005	REVISED: May 2006	N
		0 25 50 Feet	SHEET 1 of 1	

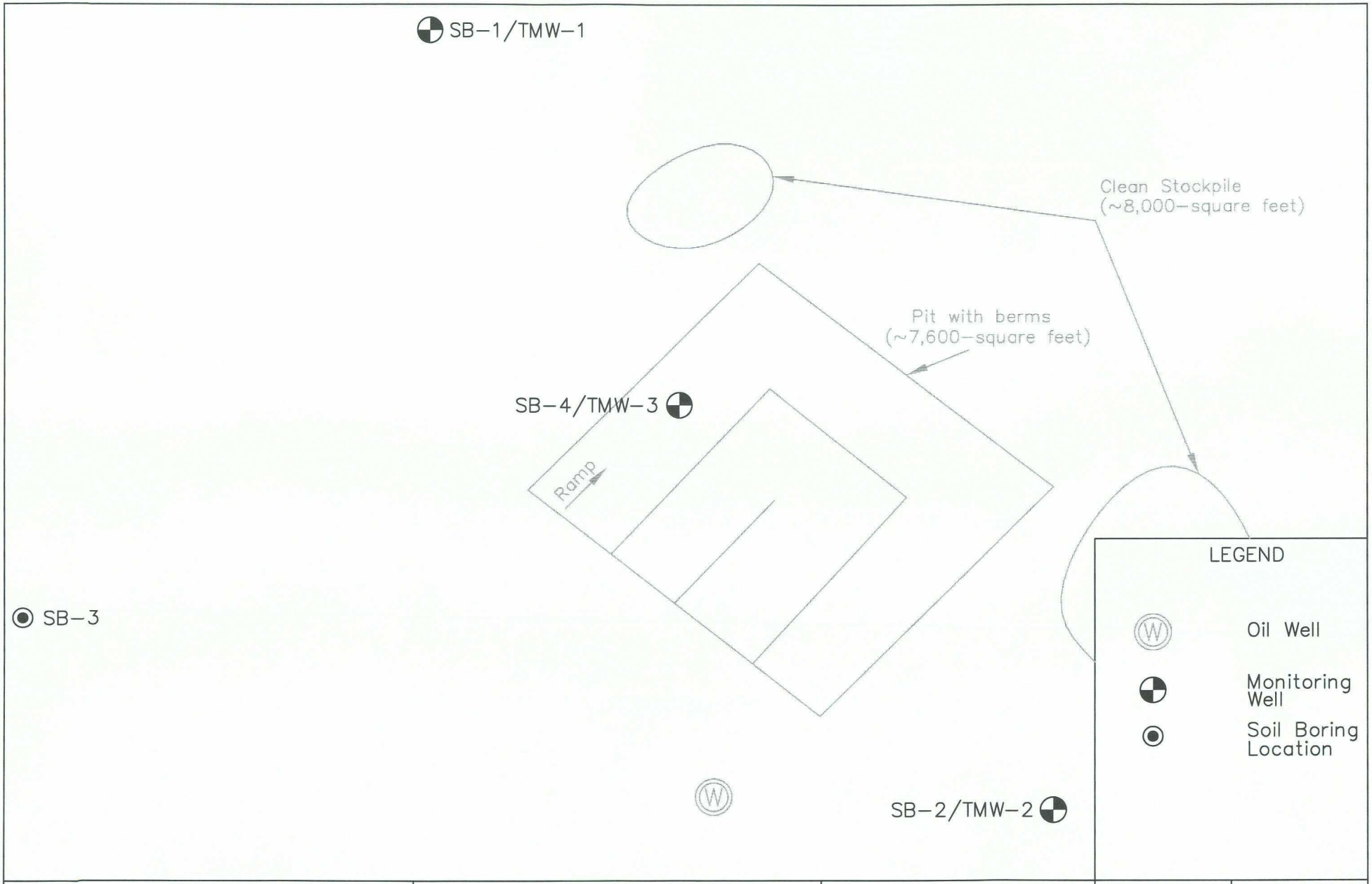

Figure 6 Soil Boring Location/Monitor Well Map Chevron Corporation Mark Owen #9	Lea County, New Mexico NW 1/4 of the SE 1/4, Sec. 34, T21S, R37E N 32° 25' 56.9" W 103° 08' 47.9" Elevation: 3,405 feet amsl	DWG By: Daniel Dominguez November 2005	REVISED: May 2006	N 0 45 90 Feet SHEET 1 of 1

TABLES

TABLE 1

WELL INFORMATION REPORT*

Chevron Mark Owen #9 - Ref #200056

Well Number	Diversion[A]	Owner	Use	Twsp	Rng	Sec q q q	Latitude	Longitude	Date Measured	Surface Elevation[B]	Depth to Water (ft bgs)
CP 00548 EXP	0	A.J. REDDEN	DOM	21S	37E	34 1 1 3	N32° 26' 19.86"	W103° 09' 32.11"		3,444	
CP 00835	3	PAUL D PRATHER	STK	21S	37E	34 3 2 3	N32° 25' 53.75"	W103° 09' 16.72"	25-Feb-94	3,445	
CP 00226	48.39	VERSADO GAS PROCESSORS, LLC	IND	21S	37E	26 4 4 1	N32° 26' 32.94"	W103° 07' 44.41"	11-Jun-62	3,379	
CP 00227	32.26	VERSADO GAS PROCESSORS, LLC	IND	21S	37E	26 4 3 2	N32° 26' 32.93"	W103° 07' 59.80"	30-Jun-62	3,382	
CP 00228	24.2	VERSADO GAS PROCESSORS, LLC	IND	21S	37E	26 4 3 4	N32° 26' 32.93"	W103° 07' 59.80"	28-Feb-63	3,382	
CP 00230	48.39	VERSADO GAS PROCESSORS, LLC	IND	21S	37E	26 3 2 3	N32° 26' 45.99"	W103° 08' 15.19"	31-Jul-65	3,389	
CP 00017	75	VERSADO GAS PROCESSORS, LLC	IND	21S	37E	27 2 1 2	N32° 27' 12.09"	W103° 09' 1.36"	04-Dec-48	3,409	
CP 00249	40	VERSADO GAS PROCESSORS, LLC	IND	21S	37E	27 2 3 2	N32° 26' 59.03"	W103° 09' 1.35"	31-Dec-48	3,409	
CP 00250	24	VERSADO GAS PROCESSORS, LLC	IND	21S	37E	27 2 3 2	N32° 26' 59.03"	W103° 09' 1.35"	31-Dec-48	3,409	
CP 00253	61	VERSADO GAS PROCESSORS, LLC	IND	21S	37E	27 2 4 3	N32° 26' 59.04"	W103° 08' 45.97"	31-May-58	3,403	
CP 00346 DCL	0	H.A. BRAMLETT	DOM	21S	37E	27 1 3 1	N32° 26' 59.02"	W103° 09' 32.12"		3,425	
CP 00736	3	RONALD K. WORDEN	DOM	21S	37E	27 1 3	N32° 26' 59.02"	W103° 09' 32.12"	10-Sep-88	3,425	76
CP 00242	96	VERSADO GAS PROCESSORS, LLC	IND	21S	37E	28 2 4 3	N32° 26' 59.02"	W103° 09' 47.52"	31-Dec-64	3,439	
CP 00318 EXP	0	INC MCCASLAND HOT OIL SERVICE	SAN	21S	37E	28 3 4	N32° 26' 32.92"	W103° 10' 18.29"		3,465	
CP 00322	3	MILLARD DECK	DOM	21S	37E	28 3	N32° 26' 32.92"	W103° 10' 33.69"	10-Jun-66	3,475	73
CP 00513	0	CORPORATION GULF OIL	SRO	21S	37E	28 3 1 3	N32° 26' 45.98"	W103° 10' 33.70"		3,471	
CP 00711	3	FLOYD G. BLOCK	DOM	21S	37E	28 2 4	N32° 26' 59.02"	W103° 09' 47.52"	02-Oct-87	3,439	65
CP 00735	3	CHARLES W. JENNINGS	DOM	21S	37E	28 4 2	N32° 26' 45.97"	W103° 09' 47.51"	27-Jul-88	3,435	
CP 00749	3	D.M. CRISWELL	DOM	21S	37E	28 3 4 2	N32° 26' 32.92"	W103° 10' 18.29"	22-Jun-90	3,465	75
CP 00726	3	CLAYTON L. WOOTEN	DOM	21S	37E	33 4 2	N32° 25' 53.76"	W103° 09' 47.50"	23-Feb-88	3,445	100
CP 00133 DCL	0	HARIEN STEPHENS	DOM	21S	37E	35 4 2 2	N32° 25' 53.75"	W103° 07' 44.38"		3,369	
CP 00138 DCL	0	MARION AND WILLIAM O STEPHENS	STK	21S	37E	35 2 2 3	N32° 26' 19.87"	W103° 07' 44.40"		3,376	
CP 00214 DCL	0	J. M. AND M. W. OWEN	DOM	21S	37E	35 4 1 2	N32° 25' 53.75"	W103° 07' 59.77"		3,373	
CP 00221 DCL	0	J. M. OWEN	DOM	21S	37E	35	N32° 25' 40.70"	W103° 08' 30.55"		3,389	
CP 00222	15	VERSADO GAS PROCESSORS, LLC	IND	21S	37E	35 4 4 2	N32° 25' 40.69"	W103° 07' 44.37"		3,366	
CP 00223	69	VERSADO GAS PROCESSORS, LLC	IND	21S	37E	35 4 2 3	N32° 25' 53.75"	W103° 07' 44.38"	15-Mar-49	3,369	
CP 00225	32.38	VERSADO GAS PROCESSORS, LLC	IND	21S	37E	35 4 2 2	N32° 25' 53.75"	W103° 07' 44.38"	31-Jul-57	3,369	
CP 00229	19.36	VERSADO GAS PROCESSORS, LLC	IND	21S	37E	35 4 3 4	N32° 25' 40.69"	W103° 07' 59.76"	17-Mar-63	3,369	
CP 00929 EXPLORE	0	STATE OF NM STATE ENGINEER	EXP	22S	37E	02 3 3 3	N32° 24' 48.58"	W103° 08' 30.64"		3,379	
CP 00254	64	VERSADO GAS PROCESSORS, LLC	IND	22S	37E	04 1 4 2	N32° 25' 14.63"	W103° 10' 18.31"	31-Aug-50	3,438	
CP 00255	60	VERSADO GAS PROCESSORS, LLC	IND	22S	37E	04 1 4 1	N32° 25' 14.63"	W103° 10' 18.31"	31-May-54	3,438	
CP 00451	0	SKELLY OIL COMPANY	PUB	22S	37E	04 3 1 3	N32° 25' 1.55"	W103° 10' 33.70"		3,434	
CP 00468 DCL	0	L. W. FRISTOE	DOM	22S	37E	04 4 4 3	N32° 24' 48.55"	W103° 09' 47.56"		3,425	

* = Data obtained from the New Mexico Office of the State Engineer Website (http://iwaters.ose.state.nm.us:7001/iWATERS/wr_RegisServlet) and USGS Database.

Shaded well information indicates well location shown on Figure 2

[A] = in acre feet per annum

[B] = Interpolated from USGS Topographical Map

Shaded area indicates wells not shown on Figure 2

IND = Industrial

STK = Livestock Watering

EXP = Exploration

PUB = Construction of Public Works

SRO = Secondary recovery of oil

SAN = Sanitary in conjunction with commercial use

DOM = Domestic one household

(quarters are 1=NW, 2=NE, 3=SW, 4=SE)

(quarters are biggest to smallest - X Y are in Feet - UTM are in Meters)

TABLE 2

Summary of Soil Sample Analytical Results

Chevron, USA - Mark Owen #9 (Ref. #200056)

Sample ID	Depth (feet)	Sample Date	Chloride Field Analysis (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethyl-benzene (mg/Kg)	Total Xylenes (mg/Kg)	Total BTEX (mg/Kg)	TPH (as gasoline) (mg/Kg)	TPH (as diesel) (mg/Kg)	TPH (mg/Kg)	Chlorides (mg/Kg)
SW-1	4'	20-Mar-06	160									32
SW-2	4'	20-Mar-06	80									32
SW-3	4'	20-Mar-06	160									96
SW-4	4'	20-Mar-06	240									112
SW-5	4'	20-Mar-06	240									**512**
SW-6	4'	20-Mar-06	**1,600**									
	7'	3-Apr-06	80									**624**
SW-7	4'	20-Mar-06	120									112
SW-8	4'	20-Mar-06	**2,320**									
	7'	3-Apr-06	**1,200**									
	7'	4-Apr-06	**1,200**									
	7'	4-Apr-06	**2,480**									
	7'	4-Apr-06	**2,640**									
	7'	4-Apr-06	160									80
SW-9	4'	20-Mar-06	240									96
SW-10	4'	20-Mar-06	160									16
SW-11	4'	20-Mar-06	160									128
SW-12	4'	20-Mar-06	160									48
SW-13	4'	20-Mar-06	**1,200**									
	7'	3-Apr-06	80									**1,871**
SW-14	7'	20-Mar-06	160									
SW-15	4'	20-Mar-06	160									**1,504**
SW-16	4'	20-Mar-06	160									48
BH-1/TS-1	7'	20-Mar-06	**4,000+**									
	7'	3-Apr-06	**1,360**									
	8'	3-Apr-06	**1,280**									
	9'	3-Apr-06	**3,440**									
	11'	4-Apr-06	**2,400**									**8,317**
	14'	4-Apr-06	**2,320**									**6,398**
	19'	4-Apr-06	**4,000+**									**3,839**
BH-2/TS-2	7'	20-Mar-06	**3,120**									
	7'	3-Apr-06	**3,200**									
	8'	3-Apr-06	**2,640**									
	9'	3-Apr-06	**4,000**									
	11'	4-Apr-06	**2,320**	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0	**8,077**
	14'	4-Apr-06	**1,440**									**5,198**
	19'	4-Apr-06	**4,000+**									**6,158**

TABLE 2

Summary of Soil Sample Analytical Results

Chevron, USA - Mark Owen #9 (Ref. #200056)

Sample ID	Depth (feet)	Sample Date	Chloride Field Analysis (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethyl-benzene (mg/Kg)	Total Xylenes (mg/Kg)	Total BTEX (mg/Kg)	TPH (as gasoline) (mg/Kg)	TPH (as diesel) (mg/Kg)	TPH (mg/Kg)	Chlorides (mg/Kg)
BH-3/TS-3	7'	20-Mar-06	**4,000+**									
	7'	3-Apr-06	**3,200**									
	8'	3-Apr-06	**2,560**									
	9'	3-Apr-06	**2,560**									
	11'	4-Apr-06	**4,000+**									**13,916**
	14'	4-Apr-06	**4,000+**									**8,797**
	19'	4-Apr-06	**4,000+**									**4,958**
BH-4/TS-4	7'	20-Mar-06	**1,200**									
	7'	3-Apr-06	**1,680**									
	8'	3-Apr-06	**2,560**									
	9'	3-Apr-06	**2,400**									
	11'	4-Apr-06	**1,680**									**5,518**
	14'	4-Apr-06	**4,000+**									**5,758**
	19'	4-Apr-06	**4,000+**									**7,038**
BH-5/TS-5	7'	20-Mar-06	**4,000+**									
	7'	3-Apr-06	480									
	8'	3-Apr-06	800									
	9'	3-Apr-06	160									
BH-6	7'	20-Mar-06	960									**1,200**
BH-7	7'	20-Mar-06	840									**1,120**
BH-8	7'	20-Mar-06	160									112
BH-9	7'	20-Mar-06	200									128
BH-10	7'	20-Mar-06	880									**1,376**
NMOCD and NMWQCC Remedial Thresholds				10				50			100	250*

Bold values are in excess of NMOCD Remediation Threshold Limits and/or NMWQCC Groundwater Standards

**Chloride residuals may not be capable of impacting groundwater above the NMWQCC Groundwater Standards of 250 ppm.*

If the cell is blank, field analyses and/or lab analyses were not conducted.

TABLE 3

Summary of Soil Boring Sample Analytical Results

Chevron, USA - Mark Owen #9 (Ref. #200056)

Soil Boring	Depth (feet)	Sample Date	PID Field Analysis (ppm)	Chloride Field Analysis (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethyl-benzene (mg/Kg)	Total Xylenes (mg/Kg)	Total BTEX (mg/Kg)	TPH (as gasoline) (mg/Kg)	TPH (as diesel) (mg/Kg)	TPH (mg/Kg)	Sulfates (mg/Kg)	Chlorides (mg/Kg)
SB-1/TMW-1	5'-6'	28-Apr-06		160									<1	16
	10'-11'			160										
	15'-16'			160										
	20'-21'			160	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0	27.3	16
	25'-26'			160										
	30'-31'			160										
	35'-36'			160									58.8	32
	40'-41'													
SB-2/TMW-2	2'-3'	2-May-06		160										
	5'-6'			240									128	48
	10'-11'			200										
	15'-16'			320										
	20'-21'			320	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0	<1	176
	25'-26'			240										
	30'-31'			200										
	35'-36'			160									54.2	128
	40'-41'													
SB-3	2'-3'	2-May-06		160										
	5'-6'			160									27.3	16
	10'-11'			160										
	15'-16'			160										
	20'-21'			160										
	25'-26'			160										
	30'-31'			160									277	16
	35'-36'			160										
SB-4/TMW-3	10'-11'	3-May-06		**4000+**									246	**6,478**
	13'-14'			**4000+**	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0	124	**5,678**
	18'-19'			**3,360**									116	**4,447**
	23'-24'			**4000+**	<0.005	<0.005	<0.005	<0.015	<0.030	<10.0	<10.0	<20.0	161	**6,830**
	28'-29'			**2,160**									59.2	**1,711**
	33'-34'			**1,280**										
NMOCD Remedial Thresholds			100		10				50			100	600	250

Bold values are in excess of NMOCD Remediation Threshold Limits and/or NMWQCC Groundwater Standards

If the cell is blank, field analyses and/or lab analyses were not conducted.

APPENDIX I

LABORATORY ANALYTICAL RESULTS

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
ENVIRONMENTAL PLUS, INC.
ATTN: PAT McCASLAND
P.O. BOX 1558
EUNICE, NM 88231
FAX TO: (505) 394-2601

Receiving Date: 04/06/06
Reporting Date: 04/07/06
Project Owner: CHEVRON USA (#200056)
Project Name: MARK OWEN #9 PIT
Project Location: NOT GIVEN

Analysis Date: 04/07/06
Sampling Date: 03/20/06
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: HM
Analyzed By: AB

LAB NO.	SAMPLE ID	Cl^- (mg/kg)
H10991-1	BH6-7'	1200
H10991-2	BH7-7'	1120
H10991-3	BH8-7'	112
H10991-4	BH9-7'	128
H10991-5	BH10-7'	1376
H10991-6	SW1-4'	32
H10991-7	SW2-4'	32
H10991-8	SW3-4'	96
H10991-9	SW4-4'	112
H10991-10	SW5-4'	512
Quality Control		510
True Value QC		500
% Recovery		102
Relative Percent Difference		2.0

METHOD: Standard Methods	4500-ClˉB

NOTE: Analyses performed on 1:4 w:v aqueous extracts.

Chemist

04-07-06
Date

H10991

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
ENVIRONMENTAL PLUS, INC.
ATTN: PAT McCASLAND
P.O. BOX 1558
EUNICE, NM 88231
FAX TO: (505) 394-2601

Receiving Date: 04/06/06
Reporting Date: 04/07/06
Project Owner: CHEVRON USA (#200056)
Project Name: MARK OWEN #9 PIT
Project Location: NOT GIVEN

Analysis Date: 04/07/06
Sampling Date: 04/04/06
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: HM
Analyzed By: AB

LAB NO.	SAMPLE ID	Cl^- (mg/kg)
H10992-1	TS1-11'	8317
H10992-2	TS1-14'	6398
H10992-3	TS1-19'	3839
H10992-4	TS2-11'	8077
H10992-5	TS2-14'	5198
H10992-6	TS2-19'	6158
H10992-7	TS3-11'	13916
H10992-8	TS3-14'	8797
H10992-9	TS3-19'	4958
Quality Control		510
True Value QC		500
% Recovery		102
Relative Percent Difference		2.0

METHOD: Standard Methods	4500-Cl^-B

NOTE: Analyses performed on 1:4 w:v aqueous extracts.

Chemist

04-10-06
Date

H10992

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
ENVIRONMENTAL PLUS, INC.
ATTN: PAT McCASLAND
P.O. BOX 1558
EUNICE, NM 88231
FAX TO: (505) 394-2601

Receiving Date: 04/06/06
Reporting Date: 04/10/06
Project Owner: CHEVRON USA (#200056)
Project Name: MARK OWEN #9 PIT
Project Location: NOT GIVEN

Sampling Date: 04/04/06
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: HM
Analyzed By: BC

LAB NO. SAMPLE ID	GRO (C_6-C_{10}) (mg/Kg)	DRO (>C_{10}-C_{28}) (mg/Kg)	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DATE:	04/07/06	04/07/06	04/06/06	04/06/06	04/06/06	04/06/06
H10992-4 TS2-11'	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
Quality Control	758	775	0.092	0.090	0.089	0.270
True Value QC	800	800	0.100	0.100	0.100	0.300
% Recovery	94.8	96.9	92.1	90.1	88.7	90.0
Relative Percent Difference	2.5	1.9	1.6	<0.1	1.8	4.4

METHODS: TPH GRO & DRO - EPA SW-846 8015 M; BTEX - SW-846 8260.

Burgess J. A. Cooke, Ph. D.

4/10/06
Date

H10992A

CARDINAL LABORATORIES

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ANALYTICAL RESULTS FOR
ENVIRONMENTAL PLUS, INC.
ATTN: PAT McCASLAND
P.O. BOX 1558
EUNICE, NM 88231
FAX TO: (505) 394-2601

Receiving Date: 04/06/06
Reporting Date: 04/07/06
Project Owner: CHEVRON USA (#200056)
Project Name: MARK OWEN #9 PIT
Project Location: NOT GIVEN

Analysis Date: 04/07/06
Sampling Date: 04/03/06, 04/04/06
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: HM
Analyzed By: AB

LAB NO.	SAMPLE ID	Cl^- (mg/kg)
H10993-1	TS4-11'	5518
H10993-2	TS4-14'	5758
H10993-3	TS4-19'	7038
Quality Control		510
True Value QC		500
% Recovery		102
Relative Percent Difference		2.0

METHOD: Standard Methods	4500-Cl^-B

NOTE: Analyses performed on 1:4 w:v aqueous extracts.

Chemist

04-10-06
Date

H10993

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
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ANALYTICAL RESULTS FOR
ENVIRONMENTAL PLUS, INC.
ATTN: PAT McCASLAND
P.O. BOX 1558
EUNICE, NM 88231
FAX TO: (505) 394-2601

Receiving Date: 04/06/06
Reporting Date: 04/07/06
Project Owner: CHEVRON USA (#200056)
Project Name: MARK OWEN #9 PIT
Project Location: NOT GIVEN

Analysis Date: 04/07/06
Sampling Date: 03/20/06, 04/03/06
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: HM
Analyzed By: AB

LAB NO.	SAMPLE ID	Cl^- (mg/kg)
H10994-1	SW7-4'	112
H10994-2	SW9-4'	96
H10994-3	SW10-4'	16
H10994-4	SW11-4'	128
H10994-5	SW12-4'	48
H10994-6	SW15-4'	1504
H10994-7	SW16-4'	48
H10994-8	SW6-7'	624
H10994-9	SW13-7'	1871
H10994-10	SW8-7'	80
Quality Control		510
True Value QC		500
% Recovery		102
Relative Percent Difference		2.0

METHOD: Standard Methods	4500-Cl^-B

NOTE: Analyses performed on 1:4 w:v aqueous extracts.

Chemist

04-10-06
Date

H10994

Cardinal Laboratories Inc.

101 East Marland, Hobbs, NM 88240
505-393-2326 Fax 505-393-2476

2111 Beechwood, Abilene, TX 79603
915-673-7001 Fax 915-673-7020

Company Name	Environmental Plus, Inc.
EPI Project Manager	Pat McCasland
Billing Address	P.O. BOX 1558
City, State, Zip	Eunice New Mexico 88231
EPI Phone#/Fax#	505-394-3481 / 505-394-2601
Client Company	Chevron USA
Facility Name	Mark Owen #9 Pit
Project Reference	#200056
EPI Sampler Name	Jacob Melancon

Bill To

Chevron USA
P. O. Box 1949
Eunice, NM 88231
Attention: Mr. Larry Williams

ANALYSIS REQUEST

LAB I.D.	SAMPLE I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUND WATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE	ICE/COOL	OTHER	SAMPLING: DATE	TIME	BTEX 8021B	TPH 8015M	CHLORIDES (Cl^-)	SULFATES (SO_4^{-2})	pH	TCLP	OTHER >>>				
H10991 — 1	BH6-7'	X	1			X					X		3/20/06	7:17			X								
— 2	BH7-7'	X	1			X					X		3/20/06	7:21			X								
— 3	BH8-7'	X	1			X					X		3/20/06	7:24			X								
— 4	BH9-7'	X	1			X					X		3/20/06	7:27			X								
— 5	BH10-7'	X	1			X					X		3/20/06	7:32			X								
— 6	SW1-4'	X	1			X					X		3/20/06	7:40			X								
— 7	SW2-4'	X	1			X					X		3/20/06	7:43			X								
— 8	SW3-4'	X	1			X					X		3/20/06	7:47			X								
— 9	SW4-4'	X	1			X					X		3/20/06	7:49			X								
— 10	SW5-4'	X	1			X					X		3/20/06	7:53			X								

Sampler Relinquished:	Date 4-6-06 Time	Received By:	Fax Results To Pat McCasland - EPI @ 505-394-2601
Relinquished by:	Date 4-6-06 Time 4:25	Received By: (lab staff) Hope S. Moreno	REMARKS: Chain of custody requested. Send original reports to Pat McCasland - EPI.
Delivered by:	Sample Cool & Intact (Yes) No	Checked By:	

Cardinal Laboratories Inc.

101 East Marland, Hobbs, NM 88240
505-393-2326 Fax 505-393-2476

2111 Beechwood, Abilene, TX 79603
915-673-7001 Fax 915-673-7020

Company Name	Environmental Plus, Inc.
EPI Project Manager	Pat McCasland
Billing Address	P.O. BOX 1558
City, State, Zip	Eunice New Mexico 88231
EPI Phone#/Fax#	505-394-3481 / 505-394-2601
Client Company	Chevron USA
Facility Name	Mark Owen #9 Pit
Project Reference	#200056
EPI Sampler Name	Jacob Melancon

Bill To

Chevron USA
P. O. Box 1949
Eunice, NM 88231
Attention: Mr. Larry Williams

ANALYSIS REQUEST

LAB I.D.	SAMPLE I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUND WATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE	ICE/COOL	OTHER	SAMPLING: DATE	TIME	BTEX 8021B	TPH 8015M	CHLORIDES (Cl^-)	SULFATES (SO_4^{2-})	pH	TCLP	OTHER >>>
H10994 — 1	SW7-4'	X	1			X					X		3/20/06	7:59			X				
— 2	SW9-4'	X	1			X					X		3/20/06	8:04			X				
— 3	SW10-4'	X	1			X					X		3/20/06	8:07			X				
— 4	SW11-4'	X	1			X					X		3/20/06	8:10			X				
— 5	SW12-4'	X	1			X					X		3/20/06	8:12			X				
— 6	SW15-4'	X	1			X					X		3/20/06	8:23			X				
— 7	SW16-4'	X	1			X					X		3/20/06	8:25			X				
— 8	SW6-7'	X	1			X					X		4/3/06	2:45			X				
— 9	SW13-7'	X	1			X					X		4/3/06	3:00			X				
— 10	SW8-7'	X	1			X					X		4/3/06	3:20			X				

Sampler Relinquished:	Date 4-6-06 Time	Received By:
Relinquished by:	Date 04-06-06 Time 4:25	Received By: (lab staff) Hope S. M Arenas
Delivered by:	Sample Cool & Intact: Yes / No	Checked By:

Fax Results To Pat McCasland - EPI @ 505-394-2601

REMARKS: Chain of custody requested. Send original reports to Pat McCasland - EPI.

Cardinal Laboratories Inc.

101 East Marland, Hobbs, NM 88240
505-393-2326 Fax 505-393-2476

2111 Beechwood, Abilene, TX 79603
915-673-7001 Fax 915-673-7020

Company Name	Environmental Plus, Inc.
EPI Project Manager	Pat McCasland
Billing Address	P.O. BOX 1558
City, State, Zip	Eunice New Mexico 88231
EPI Phone#/Fax#	505-394-3481 / 505-394-2601
Client Company	Chevron USA
Facility Name	Mark Owen #9 Pit
Project Reference	#200056
EPI Sampler Name	Jacob Melancon

Bill To

Chevron USA
P. O. Box 1949
Eunice, NM 88231
Attention: Mr. Larry Williams

ANALYSIS REQUEST

LAB I.D.	SAMPLE I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUND WATER	MATRIX: WASTEWATER	MATRIX: SOIL	MATRIX: CRUDE OIL	MATRIX: SLUDGE	MATRIX: OTHER:	PRESERV.: ACID/BASE	PRESERV.: ICE/COOL	PRESERV.: OTHER	SAMPLING: DATE	SAMPLING: TIME	BTEX 8021B	TPH 8015M	CHLORIDES (Cl^-)	SULFATES ($SO_4^{=}$)	pH	TCLP	OTHER >>>				
H10992 1	TS1-11'	X	1			X					X		4/4/06	8:00			X								
2	TS1-14'	X	1			X					X		4/4/06	9:40			X								
3	TS1-19'	X	1			X					X		4/4/06	11:00			X								
4	TS2-11'	X	1			X					X		4/4/06	8:30	X	X	X								
5	TS2-14'	X	1			X					X		4/4/06	10:05			X								
6	TS2-19'	X	1			X					X		4/4/06	11:15			X								
7	TS3-11'	X	1			X					X		4/4/06	8:50			X								
8	TS3-14'	X	1			X					X		4/4/06	10:27			X								
9	TS3-19'	X	1			X					X		4/4/06	11:30			X								
10		~~X~~	~~1~~			~~X~~					~~X~~						~~X~~								

Sampler Relinquished:	Date 4-6-06	Received By:	Fax Results To Pat McCasland - EPI @ 505-394-2601
	Time		REMARKS: Chain of custody requested. Send original reports to Pat McCasland - EPI.
Relinquished by:	Date 04-06-06	Received By: (lab staff)	
	Time 4:25		
Delivered by:	Sample Cool & Intact (Yes) No	Checked By:	

Cardinal Laboratories Inc.

101 East Marland, Hobbs, NM 88240
505-393-2326 Fax 505-393-2476

2111 Beechwood, Abilene, TX 79603
915-673-7001 Fax 915-673-7020

Company Name	Environmental Plus, Inc.
EPI Project Manager	Pat McCasland
Billing Address	P.O. BOX 1558
City, State, Zip	Eunice New Mexico 88231
EPI Phone#/Fax#	505-394-3481 / 505-394-2601
Client Company	Chevron USA
Facility Name	Mark Owen #9 Pit
Project Reference	#200056
EPI Sampler Name	Jacob Melancon

Bill To

Chevron USA
P. O. Box 1949
Eunice, NM 88231
Attention: Mr. Larry Williams

ANALYSIS REQUEST

LAB I.D.	SAMPLE I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUND WATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE	ICE/COOL	OTHER	SAMPLING: DATE	TIME	BTEX 8021B	TPH 8015M	CHLORIDES (Cl^-)	SULFATES ($SO_4^=$)	pH	TCLP	OTHER >>>
H10993 - 1	TS4-11'	X	1			X					X		4/4/06	9:10			X				
- 2	TS4-14'	X	1			X					X		4/4/06	10:41			X				
- 3	TS4-19'	X	1			X					X		4/4/06	11:39			X				
4	~~TS5-7~~'	X	1			X					X		4/3/06	9:35			X				
5	~~TS5-9~~'	X	1			X					X		4/3/06	2:25			X				
6																					
7																					
8																					
9																					
10																					

Sampler Relinquished:	Date 4-6-06	Received By:	Fax Results To Pat McCasland - EPI @ 505-394-2601
	Time		REMARKS: Chain of custody requested. Send original reports to Pat McCasland - EPI.
Relinquished by:	Date 04-06-06	Received By: (lab staff)	
	Time 4:25		
Delivered by:	Sample Cool & Intact (Yes) No	Checked By:	

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
ENVIRONMENTAL PLUS, INC.
ATTN: PAT McCASLAND
P.O. BOX 1558
EUNICE. NM 88231
FAX TO: (505) 394-2601

Receiving Date: 05/04/06
Reporting Date: 05/08/06
Project Owner: CHEVRON USA (#200056)
Project Name: MARK OWEN #9 PIT
Project Location: NOT GIVEN

Sampling Date: 05/01, 05/02, & 05/03/06
Sample Type: GROUNDWATER
Sample Condition: COOL & INTACT
Sample Received By: AB
Analyzed By: BC

LAB NUMBER	SAMPLE ID	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL BENZENE (mg/L)	TOTAL XYLENES (mg/L)
ANALYSIS DATE		05/05/06	05/05/06	05/05/06	05/05/06
H11087-4	TMW1	<0.002	<0.002	<0.002	<0.006
H11087-8	TMW2	<0.002	<0.002	<0.002	<0.006
H11087-16	TMW3	<0.002	<0.002	<0.002	<0.006
Quality Control		0.094	0.092	0.093	0.294
True Value QC		0.100	0.100	0.100	0.300
% Recovery		94.4	92.0	93.4	97.9
Relative Percent Difference		1.3	0.4	1.9	3.0

METHOD: EPA SW-846 8260

Chemist

5/8/06
Date

H11087B2

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
ENVIRONMENTAL PLUS, INC.
ATTN: PAT McCASLAND
P.O. BOX 1558
EUNICE, NM 88231
FAX TO: (505) 394-2601

Receiving Date: 05/04/06
Reporting Date: 05/10/06
Project Owner: CHEVRON USA (#200056)
Project Name: MARK OWEN #9 PIT
Project Location: NOT GIVEN

Sampling Date: 04/28, 05/02, & 05/03/06
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AB
Analyzed By: BC

LAB NO.	SAMPLE ID	GRO (C_6-C_{10}) (mg/Kg)	DRO (>C_{10}-C_{28}) (mg/Kg)	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DATE:		05/08/06	05/08/06	05/08/06	05/08/06	05/08/06	05/08/06
H11087-2	TMW1-20'	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
H11087-6	TMW2-20'	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
H11087-12	TMW3-13'	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
H11087-14	TMW3-23'	<10.0	<10.0	<0.005	<0.005	<0.005	<0.015
Quality Control		553	517	0.095	0.092	0.092	0.277
True Value QC		500	500	0.100	0.100	0.100	0.300
% Recovery		111	103	95.0	92.4	92.0	92.3
Relative Percent Difference		5.8	9.0	0.6	0.5	1.6	6.1

METHODS: TPH GRO & DRO - EPA SW-846 8015 M; BTEX - SW-846 8260.

Burgess J. A. Cooke, Ph. D.

5/10/06
Date

H11087A

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
ENVIRONMENTAL PLUS, INC.
ATTN: PAT McCASLAND
P.O. BOX 1558
EUNICE, NM 88231
FAX TO: (505) 394-2601

Receiving Date: 05/04/06
Reporting Date: 05/09/06
Project Owner: CHEVRON USA (#200056)
Project Name: MARK OWEN #9 PIT
Project Location: NOT GIVEN

Sampling Date: 04/28/06, 05/01/06 & 05/02/06
Sample Type: SOIL & WATER
Sample Condition: COOL & INTACT
Sample Received By: AB
Analyzed By: AB

LAB NUMBER	SAMPLE ID	SO_4 (ppm)	Cl (ppm)
ANALYSIS DATE:		05/05/06	05/05/06
H11087-1	TMW1-5'	< 1	16
H11087-2	TMW1-20'	27.3	16
H11087-3	TMW1-35'	58.8	32
H11087-4	TMW1	181	80
H11087-5	TMW2-5'	128	48
H11087-6	TMW2-20'	< 1	176
H11087-7	TMW2-35'	54.2	128
H11087-8	TMW2	116	80
H11087-9	SB3-5'	27.3	16
H11087-10	SB3-30'	277	16
Quality Control		27.3	960
True Value QC		25.0	1000
% Recovery		109.0	96
Relative Percent Difference		1.6	3.0

METHODS: EPA 600/4-79-020	375.4	SM 4500 Cl⁻B

NOTE: Analyses performed on 1:4 w:v aqueous extracts.

Chemist

05-09-06
Date

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
ENVIRONMENTAL PLUS, INC.
ATTN: PAT McCASLAND
P.O. BOX 1558
EUNICE, NM 88231
FAX TO: (505) 394-2601

Receiving Date: 05/04/06
Reporting Date: 05/09/06
Project Owner: CHEVRON USA (#200056)
Project Name: MARK OWEN #9 PIT
Project Location: NOT GIVEN

Sampling Date: 05/03/06
Sample Type: SOIL & WATER
Sample Condition: COOL & INTACT
Sample Received By: AB
Analyzed By: AB

LAB NUMBER	SAMPLE ID	SO_4 (ppm)	Cl (ppm)
ANALYSIS DATE:		05/05/06	05/05/06
H11087-11	TMW3-10'	246	6478
H11087-12	TMW3-13'	124	5678
H11087-13	TMW3-18'	116	4447
H11087-14	TMW3-23'	161	6830
H11087-15	TMW3-28'	59.2	1711
H11087-16	TMW3	240	9697
Quality Control		27.3	960
True Value QC		25.0	1000
% Recovery		109.0	96
Relative Percent Difference		1.6	3.0

METHODS: EPA 600/4-79-020	375.4	SM 4500 Cl⁻B

NOTE: Analyses performed on 1:4 w:v aqueous extracts.

Chemist

05-09-06
Date

H11087A

Cardinal Laboratories Inc.

101 East Marland, Hobbs, NM 88240
505-393-2326 Fax 505-393-2476

2111 Beechwood, Abilene, TX 79603
915-673-7001 Fax 915-673-7020

Company Name	Environmental Plus, Inc.
EPI Project Manager	Pat McCasland
Billing Address	P.O. BOX 1558
City, State, Zip	Eunice New Mexico 88231
EPI Phone#/Fax#	505-394-3481 / 505-394-2601
Client Company	Chevron USA
Facility Name	Mark Owen #9 Pit
Project Reference	#200056
EPI Sampler Name	Geroge Blackburn

Bill To

Chevron

Chevron USA
P. O. Box 1949
Eunice, NM 88231
Attention: Mr. Larry Williams

ANALYSIS REQUEST

LAB I.D.	SAMPLE I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUND WATER	MATRIX: WASTEWATER	MATRIX: SOIL	MATRIX: CRUDE OIL	MATRIX: SLUDGE	MATRIX: OTHER:	PRESERV.: ACID/BASE	PRESERV.: ICE/COOL	PRESERV.: OTHER	SAMPLING: DATE	SAMPLING: TIME	BTEX 8021B	TPH 8015M	CHLORIDES (Cl^-)	SULFATES ($SO_4^=$)	pH	TCLP	OTHER >>>					
H11687 – 1	TMW1-5'	G	1			X							4/28/06	11:47			X	X								
– 2	TMW1-20'	G	1			X							4/28/06	11:58	X	X	X	X								
– 3	TMW1-35'	G	1			X							4/28/06	12:21			X	X								
– 4	TMW1	G	3	X									5/1/06	9:00	X		X	X								
– 5	TMW2-5'	G	1			X							5/2/06	9:36			X	X								
– 6	TMW2-20'	G	1			X							5/2/06	9:51	X	X	X	X								
– 7	TMW2-35'	G	1			X							5/2/06	10:10			X	X								
– 8	TMW2	G	3	X									5/2/06	12:00	X		X	X								
– 9	SB3-5'	G	1			X							5/2/06	10:54			X	X								
– 10	SB3-30'	G	1			X							5/2/06	11:28			X	X								

Sampler Relinquished:
Date 5-04-06
Time
Received By:

Relinquished by:
Date 5-4-06
Time 4:20
Received By: (lab staff)

Delivered by:
Sample Cool & Intact
Yes No
Checked By:

Fax Results To Pat McCasland - EPI @ 505-394-2601

REMARKS: Chain of custody requested. Send original reports to Pat McCasland - EPI.

Cardinal Laboratories Inc.

101 East Marland, Hobbs, NM 88240
505-393-2326 Fax 505-393-2476

2111 Beechwood, Abilene, TX 79603
915-673-7001 Fax 915-673-7020

Company Name	Environmental Plus, Inc.
EPI Project Manager	Pat McCasland
Billing Address	P.O. BOX 1558
City, State, Zip	Eunice New Mexico 88231
EPI Phone#/Fax#	505-394-3481 / 505-394-2601
Client Company	Chevron USA
Facility Name	Mark Owen #9 Pit
Project Reference	#200056
EPI Sampler Name	Geroge Blackburn

Bill To

Chevron

Chevron USA
P. O. Box 1949
Eunice, NM 88231
Attention: Mr. Larry Williams

ANALYSIS REQUEST

LAB I.D.	SAMPLE I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUND WATER	MATRIX: WASTEWATER	MATRIX: SOIL	MATRIX: CRUDE OIL	MATRIX: SLUDGE	MATRIX: OTHER:	PRESERV.: ACID/BASE	PRESERV.: ICE/COOL	PRESERV.: OTHER	SAMPLING: DATE	SAMPLING: TIME	BTEX 8021B	TPH 8015M	CHLORIDES (Cl^-)	SULFATES ($SO_4^=$)	pH	TCLP	OTHER >>>
H11087 - 1	TMW3-10'	G	1			X							5/3/06	4:42			X	X			
2	TMW3-13'	G	1			X							5/3/06	4:49	X	X	X	X			
3	TMW3-18'	G	1			X							5/3/06	4:59			X	X			
4	TMW3-23'	G	1			X							5/3/06	5:10	X	X	X	X			
5	TMW3-28'	G	1			X							5/3/06	5:20			X	X			
6	TMW3	G	3	X									5/3/06	6:00	X		X	X			
7																					
8																					
9																					
10																					

Sampler Relinquished:	Date 5-04-06	Received By:	
	Time		
Relinquished by:	Date 5-4-06	Received By: (lab staff)	
	Time 4:20		
Delivered by:	Sample Cool & Intact: Yes / No	Checked By:	

Fax Results To Pat McCasland - EPI @ 505-394-2601

REMARKS: Chain of custody requested. Send original reports to Pat McCasland - EPI.

APPENDIX B

NEW MEXICO OFFICE OF THE STATE ENGINEER WELL RECORDS

Mark Owen # 9 SB-1

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Chevron Work Phone: _____
Contact: _____ Home Phone: _____
Address: P.O. Box 1949
City: Eunice State: NM, 88231

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

A. ____1/4 ____1/4 ____1/4 Section:____ Township:____ Range:____ N.M.P.M.
in _____ County.
B. X =_____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____
C. Latitude: 32 d 25 m 59 N s Longitude: 103 d 08 m 49 w
D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)
_____s
E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey
F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.
G. Other: _____
H. Give State Engineer File Number if existing well: _____
I. On land owned by (required): _____

3. DRILLING CONTRACTOR

License Number: WD1478
Name: Straub Corporation Work Phone: 432-756-3489
Agent: Edward Bryan Home Phone: _____
Mailing Address: PO Box 192
City: Stanton , State: TX Zip : 79782

4. DRILLING RECORD

Drilling began: 4-28-06 ; Completed: 4-28-06 ; Type tools: Air Rotary Drilling Rig
Size of hole: 5 in.; Total depth of well: 40 ft.;
Completed well is: _____ (shallow, artesian);
Depth to water upon completion of well: 35 ft.
File Number: _____ Trn Number: _____

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

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

6. RECORD OF CASING

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

7. RECORD OF MUDDING AND CEMENTING

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

8. PLUGGING RECORD

Plugging Contractor: Straub Corporation
Address: P.O. Box 192, Stanton, TX 79782
Plugging Method: Pouring Bentonite Holeplug/ Cement Grout
Date Well Plugged: 4-28-06
Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feet of Cement
	0	2	1 bag of cement
	2	40	7 bag of holeplug

File Number: _____ Trn Number: _____

Mark Owen # 9 SB-1

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	1	1	red fine sand – caliche
1	9	8	tan fine sand – caliche – sandstone
9	26	17	tan fine sand – sandstone
26	35	9	tan fine sand – pure sandstone (hard)
35	40	5	tan fine sand – sandstone
TD	40		

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

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

Edward Bryan 4-28-06
Driller (mm/dd/year)

FOR STATE ENGINEER USE ONLY
Quad _____; FWL _____; FSL _____; Use _____; Location No. _____
File Number: _____ Trn Number: _____

Mark Owen # 9 SB-3

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Chevron Work Phone: _____
Contact: _____ Home Phone: _____
Address: P.O. Box 1949
City: Eunice State: NM , 88231

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

A. ____1/4 ____1/4 ____1/4 Section:____ Township:____ Range:____ N.M.P.M.
in _____ County.
B. X =_____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____
C. Latitude: 32 d 25 m 59 N s Longitude: 103 d 08 m 49 w
D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)
_____s
E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey
F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.
G. Other: _____
H. Give State Engineer File Number if existing well: _____
I. On land owned by (required): _____

3. DRILLING CONTRACTOR

License Number: WD1478
Name: Straub Corporation Work Phone: 432-756-3489
Agent: Edward Bryan Home Phone: _____
Mailing Address: PO Box 192
City: Stanton , State: TX Zip : 79782

4. DRILLING RECORD

Drilling began: 5-2-06 ; Completed: 5-2-06 ; Type tools: Air Rotary Drilling Rig
Size of hole: 5 in.; Total depth of well: 37 ft.;
Completed well is: _____ (shallow, artesian);
Depth to water upon completion of well:_____ ft.
File Number: _____ Trn Number: _____

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

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

6. RECORD OF CASING

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

7. RECORD OF MUDDING AND CEMENTING

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

8. PLUGGING RECORD

Plugging Contractor: Straub Corporation
Address: P.O. Box 192, Stanton, TX 79782
Plugging Method: Pouring Bentonite Holeplug/ Cement Grout
Date Well Plugged: 5-2-06
Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feet of Cement
	0	2	1 bag of cement
	2	37	6 bag of holeplug

File Number: _____ Trn Number: _____

Mark Owen # 9 SB-3

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	1	1	red fine sand – caliche
1	15	14	tan fine sand – caliche – hard sandstone
15	20	5	red – tan fine sand – sandstone
20	24	4	red fine sand
24	34	10	tan fine sand – cal. sandstone (hard)
34	37	3	tan fine sand – sandstone (soft)
TD	37		

Mark Owen # 9 SB-3

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

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

Edward Bryan 5-2-06
Driller (mm/dd/year)

FOR STATE ENGINEER USE ONLY
Quad _____; FWL _____; FSL _____; Use _____; Location No. _____
File Number: _____ Trn Number: _____

Mark Owen # 9 SB-2

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Chevron Work Phone: _____
Contact: _____ Home Phone: _____
Address: P.O. Box 1949
City: Eunice State: NM , 88231

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

A. ____1/4 ____1/4 ____1/4 Section:____ Township:____ Range:____ N.M.P.M.
in _____ County.
B. X =_____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____
C. Latitude: 32 d 25 m 59 N s Longitude: 103 d 08 m 49 w
D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83)
_____s
E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey
F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.
G. Other: _____
H. Give State Engineer File Number if existing well: _____
I. On land owned by (required): _____

3. DRILLING CONTRACTOR

License Number: WD1478
Name: Straub Corporation Work Phone: 432-756-3489
Agent: Edward Bryan Home Phone: _____
Mailing Address: PO Box 192
City: Stanton , State: TX Zip : 79782

4. DRILLING RECORD

Drilling began: 5-2-06 ; Completed: 5-2-06 ; Type tools: Air Rotary Drilling Rig
Size of hole: 5 in.; Total depth of well: 40 ft.;
Completed well is: _____ (shallow, artesian);
Depth to water upon completion of well:_____ ft.
File Number: _____ Trn Number: _____

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

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

6. RECORD OF CASING

Diameter (Inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
2	sch 40 pvc	fj	40	30		.010 2" screen		
2	sch 40 pvc	fj	30	0		sch 40 riser		

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud & Cement	Cubic Feet	Method of Placement
0	2	5	1 bag of cement		topload
2	40	5	7 bag of 3/8 holeplug		topload

8. PLUGGING RECORD

Plugging Contractor: Straub Corporation
Address: P.O. Box 192, Stanton, TX 79782
Plugging Method: Pouring Bentonite Holeplug/ Cement Grout
Date Well Plugged: 5-2-06
Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet Top	Bottom	Cubic Feet of Cement
	0	2	1 bag of cement
	2	40	7 bag of holeplug

File Number: _____ Trn Number: _____

Mark Owen # 9 SB-2

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	3	3	red fine sand – caliche
3	14	11	tan fine sand – caliche – sandstone
14	40	26	tan fine sand – sandstone
TD	40		

Mark Owen # 9 SB-2

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

temp well

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

Edward Bryan 5-2-06
Driller (mm/dd/year)

FOR STATE ENGINEER USE ONLY
Quad _____; FWL _____; FSL _____; Use _____; Location No. _____
File Number: _____ Trn Number: _____

Mark Owen #9 SB-4 – MW-1

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

1. OWNER OF WELL

Name: Chevron Work Phone: _____
Contact: _____ Home Phone: _____
Address: P.O. Box 1949
City: Eunice State: NM , 88231

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

A. ____1/4 ____1/4 ____1/4 Section:____ Township:____ Range:____ N.M.P.M.
in _____ County.
B. X =_____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____
C. Latitude: 32 d 25 m 59 N s Longitude: 103 d 08 m 49 w
D. East _____ (m), North _____ (m), UTM Zone 13, NAD __ (27 or 83
_____s
E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey
F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.
G. Other: _____
H. Give State Engineer File Number if existing well: _____
I. On land owned by (required): _____

3. DRILLING CONTRACTOR

License Number: WD1478
Name: Straub Corporation Work Phone: 432-756-3489
Agent: Edward Bryan Home Phone: _____
Mailing Address: PO Box 192
City: Stanton , State: TX Zip : 79782

4. DRILLING RECORD

Drilling began: 5-3-06 ; Completed: 5-3-06 ; Type tools: Air Rotary Drilling Rig
Size of hole: 5 in.; Total depth of well: 30 ft;
Completed well is: _____ (shallow, artesian);
Depth to water upon completion of well: _____ ft.
File Number: _____ Trn Number: _____

Mark Owen #9 SB-4 – MW-1

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

5. PRINCIPAL WATER-BEARING STRATA

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

_____ _____ _____ _____ _____
_____ _____ _____ _____ _____
_____ _____ _____ _____ _____
_____ _____ _____ _____ _____

6. RECORD OF CASING

Diameter (Inches)	Pounds per ft.	Threads per in.	Depth in Feet Top	Bottom	Length (feet)	Type of Shoe	Perforations From	To
2	sch 40 pvc	fj	30	18			.010 screen	
2	sch 40 pvc	fj	18	+3			sch 40 riser	

7. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	To	Hole Diameter	Sacks of mud & Cement	Cubic Feet	Method of Placement
0	2	5	1 bag of cement		topload
2	30	5	3 bags of 3/8 holeplug		topload

8. PLUGGING RECORD

Plugging Contractor: _____
Address: _____
Plugging Method: _____
Date Well Plugged: _____
Plugging approved by: _____
State Engineer Representative

No. Depth in Feet Top Bottom Cubic Feet of Cement

_____
_____

File Number: _____ Trn Number: _____

Mark Owen #9 SB-4 – MW-1

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

9. LOG OF HOLE

Depth in Feet From	To	Thickness in feet	Color and Type of Material Encountered
0	5	5	tan fine sand – sandstone - caliche
5	13	8	red tan fine sand – sandstone
13	18	5	tan fine sand – sandstone
18	30	12	(hard) cal. sandstone – tan fine sand
TD	30		

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL RECORD

10. ADDITIONAL STATEMENTS OR EXPLANATIONS:

monitor well conversion SB-4 to MW-1

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

Edward Bryan 5-3-06
Driller (mm/dd/year)

FOR STATE ENGINEER USE ONLY
Quad _____; FWL _____; FSL _____; Use _____; Location No. _____
File Number: _____ Trn Number: _____

APPENDIX C

OCD FEBRUARY 12, 2007 CORRESPONDENCE

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON
Governor
Joanna Prukop
Cabinet Secretary

Mark E. Fesmire, P.E.
Director
Oil Conservation Division

FEBRUARY 12, 2007

Mr. Steve Huddleson
Chevron Environmental Management Company
11111 S. Wilcrest
Houston, Texas 77099

RE: STAGE 1 ABATEMENT PLAN - MARK OWEN NO. 9 RESERVE PIT
SECTION 34, TOWNSHIP 21 SOUTH, RANGE 37 EAST
LEA COUNTY, NEW MEXICO
ADMINISTRATIVE COMPLETENESS DETERMINATION
AP056

Dear Mr. Huddleson:

The New Mexico Oil Conservation Division (OCD) has completed its administrative review of the *Stage 1 Abatement Plan - Chevron U.S.A., Inc. - Mark Owen #9 Reserve Pit,* submitted on September 11, 2006, by Conestoga-Rovers & Associates on behalf of Chevron Environmental Management Company (CEMC). OCD has determined that the proposed Stage 1 Abatement Plan (Stage 1 AP) is not administratively complete and therefore, CEMC must revise and resubmit it by March 16, 2007.

OCD has identified three major issues that CEMC must address when it revises its Stage 1 AP. First, CEMC must completely define the extent of the vadose zone contamination as well as any ground water contamination. Second, it must revise the Stage 1 AP with the understanding that pit closure activities will not be addressed in accordance with OCD's pit closure guidance, but rather during the Stage 2 (remediation/closure) of the Abatement Plan, pursuant to OCD Rule 19. OCD's pit closure guidance is only appropriate for sites at which a release has not occurred. Third, CEMC appears to be confused about soil cleanup standards for chlorides. The Water Quality Control Commission numerical ground water protection standards specified at 20.6.2.3103 NMAC apply only to ground water – not to soil. OCD's 1993 guidance (*Guidelines for Remediation of Leaks, Spills and Releases*) does not specify a soil cleanup standard for chlorides.

Vadose Zone Contamination OCD Rule 19B(1) specifies that "*The vadose zone shall be abated so that water contaminants in the vadose zone will not with reasonable probability contaminate ground water or surface water ....*" Given that vadose zone (*i.e.*, soil) standards are general performance standards rather than numerical standards, OCD requires operators to completely define the extent of any vadose zone contamination before making a site-specific determination as to how much vadose zone remediation is required to ensure that ground water will not be impacted by continued releases. At sites where ground water has been impacted by a release, OCD generally requires that the source be removed whenever possible.

OCD Rule 19.E(3) specifies that the investigatory work proposed by the responsible person in a Stage 1 AP must adequately define the site conditions and provide the data necessary to select and design an effective abatement option. Section 3.0 of the Stage 1 AP states that CEMC will not conduct additional site investigation activities, such as a soil boring program. However, CEMC has not yet delineated the full extent of the soil contamination beneath the drill pit; therefore, CEMC must revise Section 3.0 to include a soil boring program as well as a ground water monitoring program. CEMC must install a sufficient number of soil borings to delineate the vadose zone contamination and must justify the proposed locations of soil borings and monitor wells based on contour maps and cross sections using all available data. CEMC did not justify its interpretation of the site conditions by providing cross sections in either its proposed Stage 1 Abatement Plan or its Attachment A (2006 EPI Report). CEMC did provide one contour map at the 19-foot bgs interval. This map is based only on four soil borings and it is not clear why the other borings were not advanced deeper.

OCD suggests that CEMC re-title Section 3.0 as "Site Investigation Work Plan" to conform with OCD Rule 19E(3)(b).

Remediation/Closure Section 3.3 indicates that residual chloride-impacted soils will be addressed in accordance with OCD's 2004 *Pit or Below-Grade Tank Guidelines.* However, following that guidance is only appropriate "...if the liner has maintained its integrity." OCD's pit guidance also states that releases from pits must be remediated in accordance with its 1993 "*Guidelines For Remediation Of Leaks, Spills And Releases.*" Operators are required to comply with the release reporting requirements of OCD Rule 116. Please note that any detrimental impact to ground water is a major release. Corrective action for releases must be addressed in accordance with an abatement plan pursuant to OCD Rule 19.

Soil Cleanup Standard For Chlorides As noted above, OCD does not have numerical cleanup standards for soil. OCD's 1993 guidelines provide recommended remediation action levels for soils contaminated with petroleum hydrocarbons. OCD's guidelines note that soils contaminated with substances other than petroleum hydrocarbons (*e.g.*, chlorides) may be required to be remediated based upon the nature of the contaminant and it's potential to impact fresh waters, public health, and the environment. Given the shallow depth to ground water and

the fact that ground water has already been contaminated at concentrations that exceed the WQCC ground water protection standards, OCD may require removal of all remaining chloride contamination soil and bedrock.

OCD has several other issues with CEMC's Stage 1 AP that it would normally address during the technical review, but is briefly discussing them now to minimize the need for additional revisions.

1. Section 1.1 provides a statement of the purpose of the Stage 1 AP that differs from OCD Rule 19E(3). CEMC should revise this section accordingly.

2. Neither Section 2.3 nor Appendix A provide sufficient details on the drilling pit, such as the size of the drill pit, dates of operations, the volume and composition of drilling fluids used, the extent of contamination in the vadose zone and in ground water, the volume of soil excavated, disposed, or stored, *etc.* CEMC should revise this section accordingly.

3. Section 2.5 refers to "two clean soil stockpiles." CEMC should specify what the average chlorides concentration is at each stockpile and how this was determined.

4. Section 3.1.1 specifies on page 7 that soil samples will be collected in 5-foot intervals. However, on page 8, 10-foot intervals for analysis are specified. CEMC should review this section for consistency.

5. Section 3.1.2 indicates that monitor wells will be drilled and completed in accordance with the Office of the State Engineer's specifications. CEMC should follow OCD's 1993 guidelines for monitor well construction.

6. Section 3.2 indicates that CEMC will handle drill cuttings by either disposal at an OCD permitted facility or by thin-spreading on-site. OCD will not approve "thin-spreading" on-site of chlorides contaminated drill cuttings.

CEMC shall submit two paper copies and an electronic copy of its revised Stage 1 Abatement Plan to OCD's Santa Fe office by March 16, 2007, with a copy provided to the OCD Hobbs District Office.

If you have any questions, please contact me at 505-476-3488.

Sincerely,

Glenn von Gonten
Senior Hydrologist

cc: Mr. Larry Johnson, OCD Hobbs District Office