# GW-163

# Site Assessment Workplan

# DATE:
# Nov. 4, 2010

370 17th Street, Suite 2500
Denver, Colorado 80202
303-595-3331 – main
303-605-1957 – fax



November 4, 2010

Mr. Leonard Lowe
Environmental Engineer
New Mexico Oil Conservation Division
1220 S. St. Francis Dr.
Santa Fe, NM 87505

**RE: Supplemental Site Assessment Workplan for Apex Compressor Station**
**– GW-163 -**
**Lea County, New Mexico**
**NE ¼ Section 36, Township 18 South, Range 36 East (NM Meridian)**

Dear Mr. Lowe:

DCP Midstream, LP (DCP) is submitting the attached Supplemental Site Assessment Workplan for the referenced site.

Although phase-separated hydrocarbons are still present in MW01, RW03 and RW04, downgradient monitor wells remain non-detect or below regulatory standards. As discussed previously in your offices, DCP needs to perform further site characterization at Apex, both to the east and south. DCP is proposing 3 additional groundwater monitor wells. The results will allow us to determine corrective action and confirm that the current groundwater plume is stable.

Please call me at 303-605-1893 if you have any questions regarding this workplan. I will be contacting you before field activities start, should you want to send a field inspector during monitor well installation.

Sincerely,

DCP Midstream, LP

Daniel Dick
Sr. Environmental Engineer

Enclosures

cc: Larry Johnson, OCD District I, Hobbs
DCP Midstream Environmental Files

# SUPPLEMENTAL SITE ASSESSMENT WORKPLAN

DCP APEX COMPRESSOR STATION
GW-163
LATITUDE: N 32.708700° LONGITUDE: W 103.3089°
LEA COUNTY, NEW MEXICO

# SUPPLEMENTAL SITE ASSESSMENT WORKPLAN

## DCP APEX COMPRESSOR STATION
## GW-163
## LATITUDE: N 32.708700° LONGITUDE: W 103.3089°
## LEA COUNTY, NEW MEXICO

**Prepared For:**
Mr. Daniel Dick
DCP Midstream, LP
370 17th Street, Suite 2500
Denver, Colorado 80202


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**Prepared by:**
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CONESTOGA-ROVERS
& ASSOCIATES

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& ASSOCIATES

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## 1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA) is submitting this *Supplemental Site Assessment Workplan* to DCP Midstream, LP (DCP) for the Apex Compressor Station located in Lea County, New Mexico. CRA proposes to install two monitoring wells for additional horizontal delineation of benzene and xylenes in groundwater. The site background, proposed scope of work and schedule are described below.

This workplan was prepared in accordance with the New Mexico Oil Conservation Division's (NMOCD) August 13, 1993 *Guidelines for Remediation of Leaks, Spills, and Releases.*

## 2.0 SITE BACKGROUND

### 2.1 SITE CHARACTERIZATION

The site is located approximately nine miles west of Hobbs, New Mexico (Figure 1). The site occupies approximately 1.8 acres in an undeveloped area. Benzene, xylenes and total petroleum hydrocarbons as gasoline range organics (TPH-GRO) were discovered in soil and groundwater beneath a former tank battery during a 2004 subsurface investigation. The site environmental history is presented as Appendix A.

### 2.2 CONSTITUENTS OF CONCERN AND CLEANUP LEVELS

NMOCD guidelines require groundwater to be analyzed for potential constituents of concern (COC) as defined by the NMWQCC regulations. The COC in site groundwater is benzene and light non-aqueous phase liquids (LNAPL) in the form of natural gas condensate. NMWQCC human heath standards for groundwater (*Title 20, Chapter 6, Part 2, Section 3103, Subsection A*) are:

| Analyte | NMWQCC Standard for Groundwater (µg/l) |
|---|---|
| Benzene | 10 |
| Toluene | 750 |
| Ethylbenzene | 750 |
| Total xylenes | 620 |

## 2.4 REGIONAL GEOLOGY

Bedrock in the Hobbs area consists primarily of the Tertiary Ogallala Formation. The Ogallala Formation is generally composed of unconsolidated and poorly sorted gravel, sand, silt and clay deposited by ancient streams flowing east out of the Rocky Mountains. The local Ogallala Formation is underlain by less permeable Jurassic and Triassic sedimentary rocks, primarily shale and sandstone.

## 2.5 SITE LITHOLOGY

Subsurface sediments are dominated by sandy, deep to shallow caliche soils formed from wind-worked deposits of the Simona-Pajarito association. Boring logs indicate subsurface soils to include pink to brown sand with interbedded layers of caliche to approximately 60 feet below ground surface (ft bgs).

## 2.6 HYDROGEOLOGY

Historical static groundwater depths have ranged between 51.69 (RW-06) and 65.87 ft bgs (MW-10). Groundwater flows to the south-southeast with a general gradient of 0.0085 ft/ft.

## 2.7 SURFACE WATER BODIES

No surface waters were observed within a ½ mile radius of the site.

## 2.8 SENSITIVE RECEPTORS

According to the New Mexico Office State Engineer there are several wells located within one mile of the site. Two wells are located downgradient of the site, Well 07843 and Well 03079. Based on distance and local topography it is unlikely that either well has been affected by site activities. Wells within a one mile radius are presented on Table 1.

## 2.9 PETROLEUM HYDROCARBON DISTRIBUTION

### Soil

No petroleum hydrocarbons were detected above cleanup levels in soil samples collected in 2004. TPH-GRO was detected at a maximum concentration of

6.500 milligrams per kilogram (mg/kg) in sample SB-H. No soil samples were collected along the northeast property boundary.

**Groundwater**
Benzene concentrations are below NMWQCC cleanup levels in groundwater samples collected from MW-4, MW-5, MW-9, MW-10, MW-B, MW-C, and RW-9 through RW-12. The maximum benzene concentration detected during the March 2010 sampling event was 5,140 micrograms per liter (µg/l) in remediation well RW-5; LNAPL was measured in wells MW-01, RW-03 and RW-04.

## 3.0 PROPOSED SCOPE OF WORK

### 3.1 WELL INSTALLATION RATIONALE

Benzene and xylenes in groundwater have not been delineated south of well MW-7 and north/northeast of well RW-2. CRA proposes to install two monitoring wells to horizontally define the southern and north/northeast extent of benzene and xylenes in groundwater. One monitoring well will be installed north/northeast of MW-01 to assess for offsite migration. One monitoring well will be installed between MW-07 and RW-12, to the south. CRA proposes to install a third well between RW-12 and the newly installed south well if field screenings indicate the presence of petroleum hydrocarbons. The proposed monitoring well locations are presented on Figure 2.

### 3.2 PRE-FIELD COORDINATION

CRA will obtain necessary permits and coordinate site activities with all associated laboratories, contractors, and DCP. CRA will conduct a pre-field safety meeting with DCP and all appropriate parties prior to the start of field work.

**Underground Utility Location**
CRA will notify New Mexico One Call prior to drilling to clear boring locations with utility companies. A hydrovac truck will be used to clear boring locations to 5 ft bgs prior to drilling.

**Site Health and Safety Plan (HASP)**
CRA will prepare a site-specific HASP to inform all site workers of known hazards and provide health and safety guidance. CRA will review DCP and CRA safety protocols at daily tailgate meetings.

## 3.3 DRILLING AND SAMPLING

A CRA geologist will supervise the drilling. One soil boring will be logged continuously to the total explored depth to identify the site stratigraphy. Soil samples will be collected for analysis based on lithological changes, signs of subsurface impact, and the capillary fringe. Soil samples will be screened with a photoionization detector (PID) and described using the Unified Soil Classification System. Select soil samples will be analyzed for petroleum hydrocarbon constituents based on field screening and observations.

**Monitoring Well Installation**

The boring will be advanced to 10 ft below first encountered groundwater and completed as a 2-inch well, screened from 5 ft above to 10 ft below the potentiometric surface. The well will be constructed of Schedule 40 polyvinyl chloride (PVC) with a 0.010-inch slotted screen. The well annulus will have a filter pack of clean silica sand from 1 ft below the screen bottom to 2 ft above the screen top. Above the filter pack the well annulus will have a 3-ft-thick bentonite seal covered by bentonite grout to within 3 inches of the ground surface. The monitoring well will be sealed in a standing well vault with three safety bollards around the well.

**Monitoring Well Development**

The groundwater monitoring well will be developed by surge block agitation and submersible groundwater pump evacuation. Turbidity, pH, dissolved oxygen, temperature, and specific conductivity will be measured during evacuation. CRA will develop the wells no sooner than 12 hours following installation.

**Soil Analytical Methods**

Select soil samples will be analyzed for:

- TPH by SW-846 8015B
- BTEX by SW-846 8021B

**Soil and Purged Groundwater Disposal**

Soil cuttings produced during drilling will be temporarily stored onsite in 55-gallon United States Department of Transportation (USDOT) approved drums with appropriate labeling. Soil cuttings will be transported to a treatment and disposal facility following review of laboratory analytical results and disposal approval from DCP. Groundwater purged during well development will be temporarily stored in a

USDOT approved drum. Purged groundwater will be transported and disposed of at the DCP Linam Ranch facility. Drums will be labeled with contents, date of generation, generator identification and consultant contact information. A cost estimate to dispose of the soils will be presented to DCP after review of laboratory results.

### 3.4 REPORTING

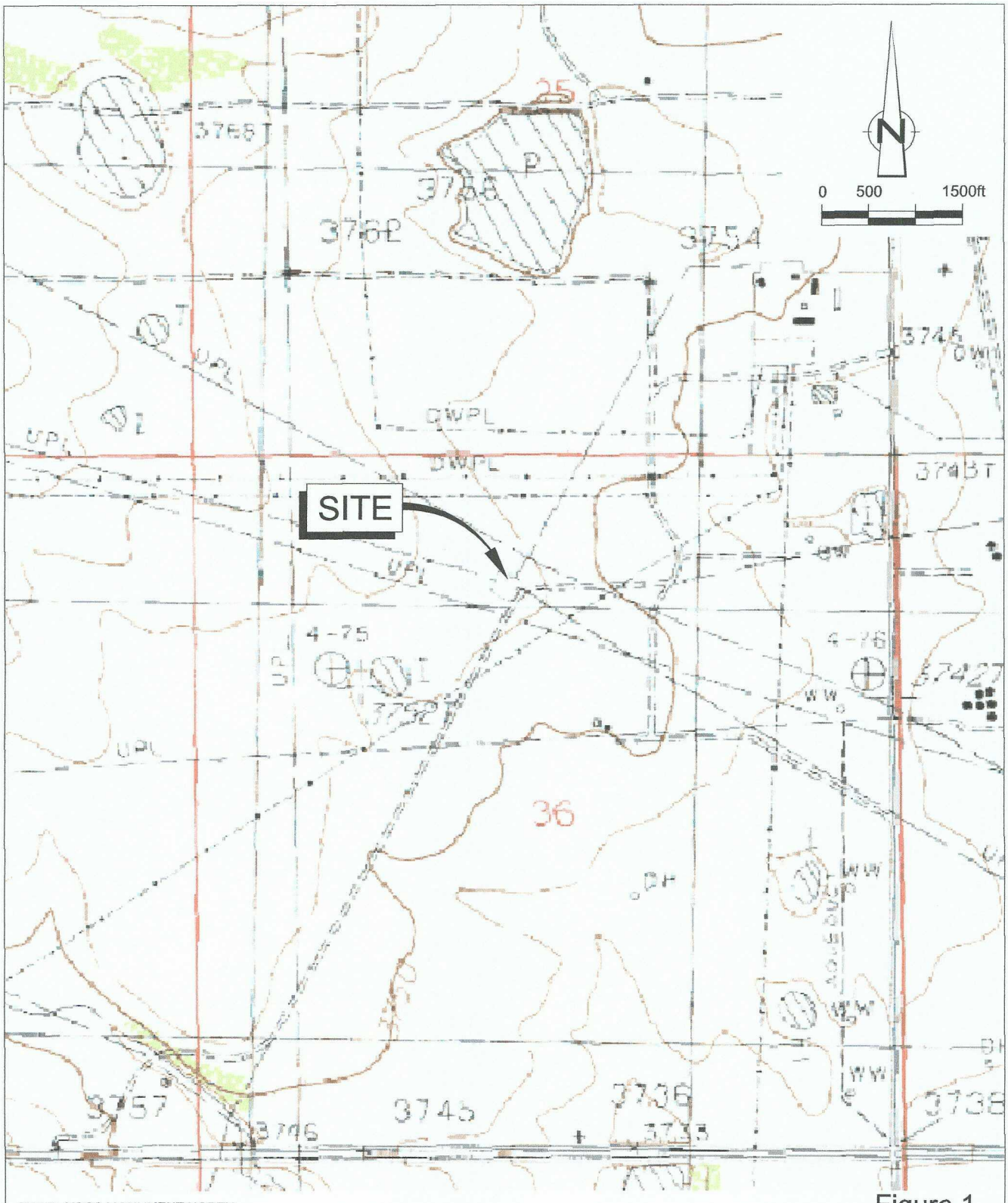
CRA will prepare a Supplemental Site Assessment Report presenting the investigation results and recommendations. The report, at a minimum, will contain:

- Summary of the site background and history
- Descriptions of drilling and soil sampling methods
- Descriptions of well installation methods
- Boring logs
- Figures and tables
- Analytical reports and chain-of-custody forms
- Soil and groundwater disposal methods
- Discussion of petroleum hydrocarbon distribution
- Conclusions

FIGURES

FIGURE 1: VICINITY MAP

FIGURE 2: PROPOSED BORING LOCATION MAP




QUAD: USGS MONUMENT NORTH

Figure 1

VICINITY MAP
APEX COMPRESSOR STATION
LEA COUNTY, NEW MEXICO
*DCP Midstream*

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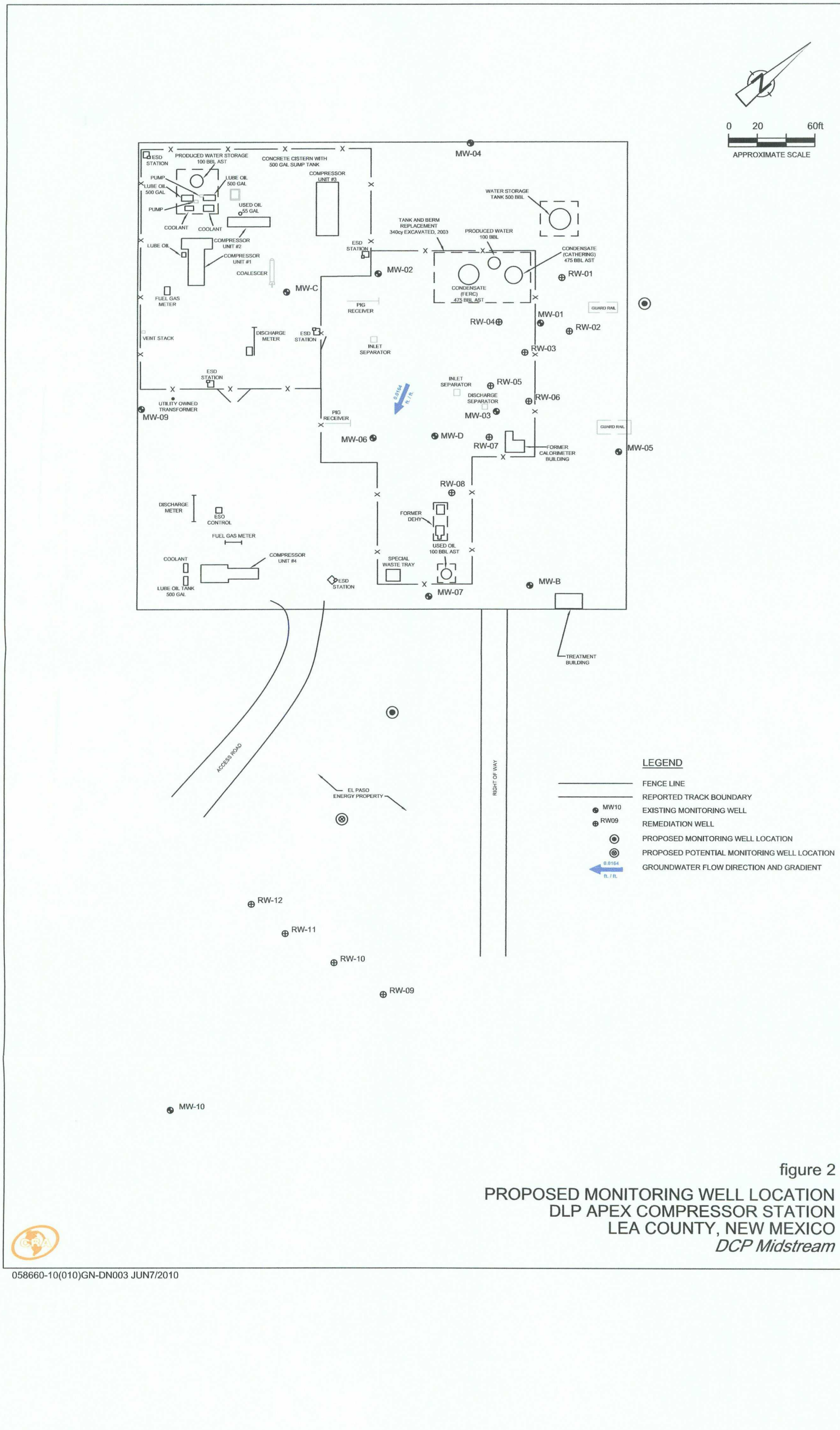


figure 2

PROPOSED MONITORING WELL LOCATION
DLP APEX COMPRESSOR STATION
LEA COUNTY, NEW MEXICO
*DCP Midstream*

058660-10(010)GN-DN003 JUN7/2010

# TABLES

## TABLE 1: WELLS WITHIN ONE MILE RADIUS

**Table 1.** **Wells Within a One-Mile Radius** - Apex Compressor Station, Lea County, New Mexico

| Well Number | Use | Township | Range | Section | Easting | Northing | Start Date | Finish Date | Well Depth ft bgs | Depth to Water ft bgs |
|---|---|---|---|---|---|---|---|---|---|---|
| L 03079 | PRO | 18S | 36E | 36 | 658865 | 3619347 | 1/10/1956 | 1/11/1956 | 122 | 65 |
| L 03079 APPRO | PRO | 18S | 36E | 36 | 658865 | 3619347 | 1/10/1956 | 1/11/1956 | 122 | 65 |
| L 03166 | PRO | 18S | 37E | 31 | 660066 | 3619769 | 4/8/1956 | 3/30/1956 | 108 | 35 |
| L 03166 APPRO | PRO | 18S | 37E | 31 | 660066 | 3619769 | 4/8/1956 | 3/30/1956 | 108 | 35 |
| L 04665 | PRO | 18S | 36E | 25 | 658830 | 3621358 | 6/23/1961 | 6/23/1961 | 125 | 60 |
| L 04665 (1) EXP | PRO | 18S | 36E | 25 | 658830 | 3621358 | NR | NR | 0 | 0 |
| L 04665 (2) EXP | PRO | 18S | 36E | 25 | 658830 | 3621358 | NR | NR | 0 | 0 |
| L 04665 (3) EXP | PRO | 18S | 36E | 25 | 658830 | 3621358 | NR | NR | 0 | 0 |
| L 04665 (4) EXP | PRO | 18S | 36E | 25 | 658830 | 3621358 | NR | NR | 0 | 0 |
| L 04665 APPRO | PRO | 18S | 36E | 25 | 658830 | 3621358 | 6/23/1961 | 6/23/1961 | 125 | 60 |
| L 05176 | IND | 18S | 36E | 25 | 659045 | 3620754 | 2/1/1965 | 2/10/1965 | 206 | 84 |
| L 05176 X-4 | IND | 18S | 36E | 35 | 657054 | 3619503 | 2/6/1965 | 2/11/1965 | 177 | 70 |
| L 05189 | PRO | 18S | 37E | 31 | 659657 | 3620165 | 7/12/1963 | 7/13/1963 | 120 | 65 |
| L 05189 (1) | PRO | 18S | 37E | 31 | 659657 | 3620165 | NR | NR | 0 | 0 |
| L 05189 (2) EXP | PRO | 18S | 37E | 31 | 659657 | 3620165 | NR | NR | 0 | 0 |
| L 05509 | PRO | 18S | 36E | 25 | 659247 | 3620560 | 12/4/1964 | 12/5/1964 | 103 | 45 |
| L 06856 S | IRR | 18S | 37E | 30 | 659535 | 3621269 | NR | NR | 0 | 0 |
| L 07843 | SAN | 18S | 36E | 36 | 658757 | 3619648 | 7/25/1978 | 8/1/1978 | 181 | 55 |

**Notes and Abbreviations:**
ft bgs = feet below ground surface
PRO = 72-12-1 Prospecting or development of natur.
NR = Not recorded
IND = Industrial
IRR = Irrigation
SAN = 72-12-0 Sanitary in conjucntion with a commercial use
NR = Not reported
Information source: New Mexico State Engineer Office W.A.T.E.R.S. program
Table based on information from Arcadis Stage 1 Abatement Plan, November 2004

# APPENDIX A

# ENVIRONMENTAL HISTORY

## ENVIRONMENTAL HISTORY
## APEX COMPRESSOR STATION

**2000 Environmental Assessment**

Benzene was detected above groundwater cleanup levels beneath the tank battery during a due diligence site assessment. Analytical data was not available at the time of this report.

**2001 Well Installation**

Eight groundwater monitoring wells were installed to delineate the horizontal extent of petroleum hydrocarbons in groundwater. Analytical data was not available at the time of this report.

**2003 Well Installation**

Eight remediation wells were installed onsite and four remediation wells were installed offsite. LNAPL was encountered on the water table during the investigation. Analytical data was not available at the time of this report.

**2003 Excavation**

Approximately 350 cubic yards of condensate saturated soil were excavated from beneath the tank battery. The excavation was backfilled with compacted clay and the tank battery was replaced.

**2004 Subsurface Investigation**

Eleven soil borings were advanced and four completed as groundwater monitoring wells to delineate petroleum hydrocarbons in soil. No TPH-GRO or benzene was detected above soil cleanup levels.

## REFERENCES

Arcadis, *Stage 1 Abatement Plan,* Apex Compressor Station, Lea County, New Mexico, November, 2004.

Arcadis, Incorporated, *Additional Site Investigation Work Plan,* Apex Compressor Station, Lea County, New Mexico, November 17, 2008.