1R - 296

REPORTS

DATE:

2001

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STATE APPROVED LAND FARM AND ENVIRONMENTAL SERVICES

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APR 2 2001

March 28, 2001

Mr. Wayne Price
NMOCD Environmental Bureau
P.O. Box 6429
1220 South Saint Francis Drive
Santa Fe, New Mexico 87505

Subject: Chevron/Anadarko West Hugh Lease Railroad Conduit Remediation

OCD Case #: 1R0296

Dear Mr. Price,

Environmental Plus, Inc. of Eunice, New Mexico on behalf of Mr. Rick Massey, Chevron USA and Mr. Larry Pickerel, Anadarko Petroleum Corporation is submitting the enclosed final New Mexico Oil Conservation Division (NMOCD) form C-141 and a copy of the report titled, " Remediation Work Plan and Closure Report for the production fluid release associated with the West Hugh Lease Railroad Conduit," that documents successful remediation of the site. An initial form C-141 was not required or submitted. A copy of the form and report are also being transmitted to Mr. Chris Williams at the NMOCD Hobbs Office.

If more information is required, please contact Mr. Massey, Mr. Pickerel, or myself at 505.394.1237, 915.425.4208, or 505.390.7864, respectively.

Sincerely,

Pat McCasland
EPI Technical Services Manager

cc: Chris Williams, NMOCD Hobbs
Rick Massey, Chevron
Larry Pickerel, Anadarko
Ben Miller, EPI Vice President and General Manager
Sherry Miller, EPI President
file

ENVIRONMENTAL PLUS, INC.

P.O. BOX 1558 ••• 1524 NORTH MAIN ••• EUNICE, NEW MEXICO 88231
TELEPHONE 505•394•3481 FAX 505•394•2601

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
2040 South Pacheco
Santa Fe, NM 87505

Form C-141
Revised March 17, 1999

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

Release Notification and Corrective Action

OCD CASE # 1R0296

OPERATOR

☐ Initial Report ☑ Final Report

Name: Chevron USA & Anadarko Petroleum Corp.	Contact: Larry Pickerel - Anadarko Rick Massey - Chevron
Address: 2401 Ave O, Eunice, NM 88231	Telephone No.: R. Massey 394-1237 L. Pickerel 915-425-4208
Facility Name: West Hugh Lease Railroad Conduit	Facility Type: Flowline Gallery Conduit

Surface Owner	Mineral Owner	Lease No.
Sims/Kennann	Sims/Kennann	Hugh

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
F	14	T22S	37E					Lea

NATURE OF RELEASE

Type of Release: Crude oil & Formation Water	Volume of Release: Unknown	Volume Recovered: None.
Source of Release: Production Flowline	Date and Hour of Occurrence: Unknown	Date and Hour of Discovery: October 2000
Was Immediate Notice Given? ☐ Yes ☐ No ☑ Not Required	If YES, To Whom? NA	
By Whom? NA	Date and Hour NA	
Was a Watercourse Reached? ☐ Yes ☑ No	If YES, Volume Impacting the Watercourse. NA	

If a Watercourse was Impacted, Describe Fully.* NA

Describe Cause of Problem and Remedial Action Taken.*
Release caused by Flowline pipe failure due to corrision. Visibly contaminated soil removed to an approved NMOCD approval facility (Refer to Work Plant Closure Report)

Describe Area Affected and Cleanup Action Taken.*
~20' diameter horizontal
~37' vertical
Soil to 20' bgs removed to NMOCD disposal facility
~1504 yd³ Engineered barrier installed below pipelines to ameliorate contamination potential of remaining Hydrocarbon & Chloride.

Describe General Conditions Prevailing (Temperature, Precipitation, etc.)*
NA

I hereby certify that the information given above is true and complete to the best of my knowledge and belief.

Signature: Pat McCasland on behalf of Chevron & Anadarko

Printed Name: Pat McCasland

Title: Technical Manager, Environmental Plus, Inc.

Date: 3-28-01 Phone: 505-394-3481

OIL CONSERVATION DIVISION

Approved by District Supervisor:

Approval Date: Expiration Date:

Conditions of Approval: Attached ☐

* Attach Additional Sheets If Necessary

CHEVRON USA
AND
ANADARKO PETROLEUM CORP.

REMEDIATION WORK PLAN
AND
CLOSURE REPORT

FOR THE
PRODUCTION FLUID RELEASE
ASSOCIATED WITH THE

WEST HUGH LEASE RAILROAD CONDUIT
New Mexico Oil Conservation Division Case # 1R0296

NW¼ SECTION 14, T22S, R37E
~3 miles southeast of Eunice
Lea County, New Mexico

[illegible] 2001

Prepared by

Environmental Plus, Inc.
1324 North Main Street
P.O. Box 1558
Eunice, New Mexico 88231
Tele 505•394•3481 FAX 505•394•2601

Table of Contents

1 WEST HUGH LEASE CONDUIT REMEDIATION WORK PLAN

This plan will restore the impacted surface area to an acceptable agricultural state and remove or isolate soil contaminated above New Mexico Oil Conservation Division (NMOCD) guidelines by historical oil and gas production and handling activities. Of main concern will be the concentration of Chloride, Total Petroleum Hydrocarbon (TPH) and Benzene, Toluene, Ethyl Benzene, and m & p Xylene (BTEX). This Site Specific Remediation Work Plan will provide information and identify activities necessary to;

1. Restore the impacted surface area to an acceptable agricultural state
2. Document final achievement of acceptable environmental thresholds established by the NMOCD

1.1 Site Description

This site is associated with a gallery of five 2" diameter production flow lines owned by Chevron USA and Anadarko Petroleum Corporation that carries production fluid from the Hugh Lease wells east of Highway 18 and the Texas-New Mexico Railroad to the tank batteries on the west via a common conduit under the Texas-New Mexico Railroad right of way. The leak occurred inside the conduit where one or more of the flow lines failed, resulting in production fluid being released to the surface via the east end of the conduit. The decision was made by Chevron and Anadarko managers to first replace or repair the flow lines inside the conduit and then proceed with site remediation. The leak origin lies on the northwest corner of a caliche barrow pit that also received historic run-in from the location. Discovery of the Hugh Lease Top West Conduit site occurred in July 2000, when contractors involved in remediating the Anadarko Top East site located on the northeast corner of the caliche barrow pit, observed crude oil pooling on the surface near the east end of the railroad conduit. Both leaks developed respective flow paths that end in a common pooling area in the bottom of the 25' deep caliche pit. The Top East Anadarko site, flow path, and half the pooling area were remediated to NMOCD standards in August 2000. Details are presented in the "Anadarko West Hugh Highway 18 Conduit Remediation Report, EPI, October 2000." Significant run-in during storm events from the open conduit excavation may have resulted in contaminated fluid recontaminating the pooling area in the bottom of the caliche pit. A site map is included as Attachment I.

1.1.1 Historical Use

This land surface is owned by Sims/Kennann and used for livestock grazing, caliche sales, and oil and gas production facilities access.

1.1.2 Legal Description

The site is located approximately 3 miles southeast of Eunice, Lea County, New Mexico. The legal description is NW¼ S14 T22S R37E. Latitude 32°23'39"N and Longitude 103°08'18"W.

1.1.3 Photographic documentation

Photographs of the site are included as Attachment II.

1.1.4 Ecological Description

The area is typical of the Upper Chihuahuan Desert Biome consisting primarily of hummocky sand hills covered with Harvard Shin Oak (Querqus harvardi) interspersed with Honey Mesquite (Prosopis glandulosa) along with typical desert grasses and weeds. Mammals present, include Orrd's and Merriam's Kangaroo Rat, Deer Mouse, White Throated Wood Rat, Cottontail Rabbit, Black Tailed Jackrabbit, and the Mule Deer. Reptiles, Amphibians, and Birds are numerous and typical of area. A survey of Listed, Threatened, or Endangered species has not been conducted.

1.1.5 Environmental Media Characterization

Chemical parameters of the soil were characterized consistent with the New Mexico Oil Conservation Division (NMOCD) guidelines published in the following documents;

- Guidelines for Remediation of Leaks, Spills and Releases (August 13, 1993)
- Unlined Surface Impoundment Closure Guidelines (February 1993)

Acceptable "Site Specific" thresholds for contaminants of concern, i.e., Chloride, TPH and BTEX, were determined based on the following;

- Depth to Ground water, i.e., distance from the lower most acceptable concentration to the ground water.
- Wellhead Protection Area, i.e., distance from fresh water supply wells.
- Distance to Surface Water Body, i.e., horizontal distance to all down gradient surface water bodies.

1.1.5.1 Ground Water Level

According to the Office of the New Mexico State Engineer ground water level database, there are three water wells with known levels in section 14 of T22S R37E, i.e., 60.76, 68, 54.06 feet below ground surface (bgs). This averages to 60.94'bgs or 61' bgs.

1.1.5.2 Depth to Ground Water Calculation

Depth to ground water, i.e., "the vertical distance from the lowermost contaminants to the seasonal high water elevation of the ground water." For the hydrocarbon source term, i.e., TPH, Benzene, and BTEX, this was determined to be 34' and for chloride 21' bgs.

1.1.5.3 Ground Water Gradient

According to the USGS (Nicholson & Clbesch), the gradient is to the southeast.

1.1.5.4 Wellhead Protection Area

There is one domestic use well located upgradient but within a 1000' radius of the site.

1.1.5.5 Distance to Nearest Surface Water Body

There are no naturally occurring surface water bodies located within a 1 mile radius of the site.

1.1.5.6 Soil Assessment

The site was divided into 3 areas and considered separately, i.e., Conduit Area, Flow Path, and Pooling Area (Caliche Pit Bottom). The VOC headspace threshold of 200 ppm was used to determine when samples should be ascensioned to the laboratory for analysis and is not implied to be an acceptable remedial goal.

1.1.5.6.1 Conduit Area

Soil was excavated to 20' below ground surface and the side walls to the horizontal interval where the VOC readings were <200 ppm and chloride is <1000 mg/Kg. "Five-Point" composite samples of the 4 sidewalls and the bottom hole were collected and ascensioned to the laboratory for Chloride, TPH, and BTEX analyses. Refer to Attachment I, Site Map.

1.1.5.6.2 Flow Path

The slope leading from the Top West Conduit Area was sampled at the 0-1' interval below ground surface and surveyed. There were no samples >200 ppm and chloride >1000 mg/Kg. Collecting "Five-Point" composite samples of the sidewalls and the bottom hole was no necessary. Refer to Attachment I, Site Map.

1.1.5.6.3 Pooling Area (Pit Bottom)

The East half of the Pooling Area is the responsibility of Anadarko and had been remediated in October 2000. NMOCD remedial goals required excavation to ~4 feet below the bottom surface. Storm events have occurred during the interim and washed contamination from the Top West Conduit site into the pit bottom. Three east/west sampling trenches will be

excavated and sampled to determine acceptable intervals. Only surface samples were collected as all were surveyed to be <200 ppm and chloride <1000 mg/Kg.

1.1.5.7 Ground Water Assessment

The ground water level is conservatively estimated to occur at ~61 feet bgs. If the soil assessment indicates that the ground water has been not been impacted by the hydrocarbon source term. Elevated chloride levels exist at the 40' bgs interval..

1.2 Data Quality

All laboratory analytical results were within the data quality objectives listed below.

- Laboratory data must have > 85% recovery for TPH and BTEX and >75% recovery for general chemistry parameters.
- Laboratory data must have <15% Relative Percent Difference
- Field headspace analyses must be supported with instrument calibration data and calibration gas certification.

Duplicates or blanks were not submitted to the laboratory.

1.3 Project Safety

Hazards that will be encountered at this site include the following;

- Moving equipment
- Buried pipelines
- Highway ingress/egress
- Excavation
- Potential Hydrogen Sulfide Gas

Employees and subcontractors will be required to confirm current training in these hazards. Standard personal protective equipment will include;

- Personal H_2S Monitor
- Hard-hat
- Safety Glasses
- Excavation Safety
- Steel Toed Boots/Shoes

1.4 Process/Procedure

The following sequence was used to guide project implementation.

1. Site visit: Photograph and map
2. Issue "One Call" and notifying utilities
3. Locate, hand spot, and mark buried lines or other structures
4. Overhead powerlines are present just beyond the east perimeter and will not be a hazard.
5. Lockout/Tagout: Pipeline companies notified of activity but LO/TO unnecessary
6. Procedure: Equipment required will be: Backhoe, Excavator, Dump Trucks
    - Daily Tail gate safety meetings and PPE check
    - Excavate visibly contaminated soil and stockpile
    - Haul stockpiled soil to NMOCD approved facility
    - Conduct field VOC headspace analyses on selected samples
    - Collect Composite Sample of the selected areas for laboratory analysis
    - Review data and determine "Depth to Ground Water"
    - Backfill excavations with volume consistent with disposal volume
    - Photograph
    - Develop and issue site specific report
    - Reseed surface

2 WORK PLAN IMPLEMENTATION

The process of excavating and disposing of contaminated soil and field surveying began on February 15, 2001.

2.1 Origin Trench Sampling

Preliminary trench sampling, to 25' bgs, with the excavator revealed hydrocarbon and chloride contamination above the NMOCD guidelines. However, due to the increased occupational safety hazards, the presence of the foundation sensitive railroad bed, and the increased difficultly and expense involved in excavating more than 20' of soil, it was agreed to backfill the excavation to 4' below the flow lines and advance a sampling borehole to determine the vertical extent of contamination.

2.2 Origin Borehole 1 Sampling

The drill rig successfully advanced the borehole collecting discrete soil samples at 5' intervals to 40' bgs. Field VOC Headspace and chloride surveys detected hydrocarbon only nominally and decreasing concentrations of chloride.

2.3 Risk Assessment and Clay Barrier Installation

Acknowledging hydrocarbon and chloride contamination below 20' bgs, a proposal to leave the remaining source terms in place and install an engineered barrier to eliminate the vertical transport mechanism was made and accepted. The barrier is 2' thick and constructed of compacted red Triassic clay. The barrier was installed and compacted in 1' thick lifts at ~10'bgs and just below the flow lines and conduit. To prevent transverse or lateral infiltration by water into the remaining contaminants, an additional 8'-10' of the excavation perimeter was pulled into the excavation to extend the lateral border beyond the horizontal zone of contamination. The barrier was also compacted to >95% Proctor of the clay. The Proctor and density tests were performed by Pettigrew and Associates, Hobbs, New Mexico, refer to the original reports in Attachment IV. It should be noted that the barrier is covered with at least 8' of clean soil and will not be susceptible to human intrusion or natural weathering.

2.4 Discussion of Data

Samples were collected to verify status of the caliche pit bottom, the flow path into the caliche pit from the surface, and the vertical and horizontal extents of contamination associated with the leak origin. The original laboratory analytical reports and data summary are included as Attachment III.

2.4.1 Caliche Pit Bottom Status

Laboratory results from analysis of samples collected from strategic areas in the caliche pit bottom indicate that the TPH, Benzene, and BTEX are below the NMOCD regulatory guidelines and chloride can be considered to be nominally above background levels.

2.4.2 Flow Path Status

The flow path was sampled to determine contamination status. Laboratory analytical results indicate that the TPH, Benzene, and BTEX are below the NMOCD regulatory guidelines and chloride can be considered to be nominally above background levels.

2.4.3 Leak Origin Sampling

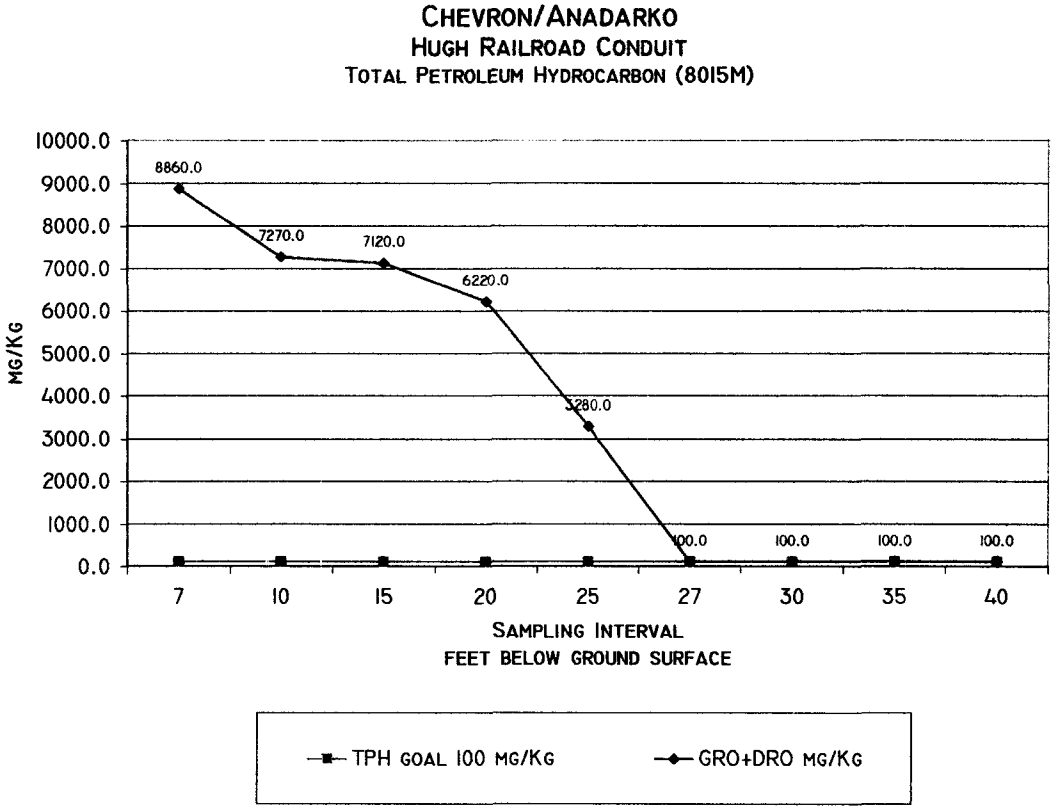
The sidewalls and subsurface were sampled and analyzed.

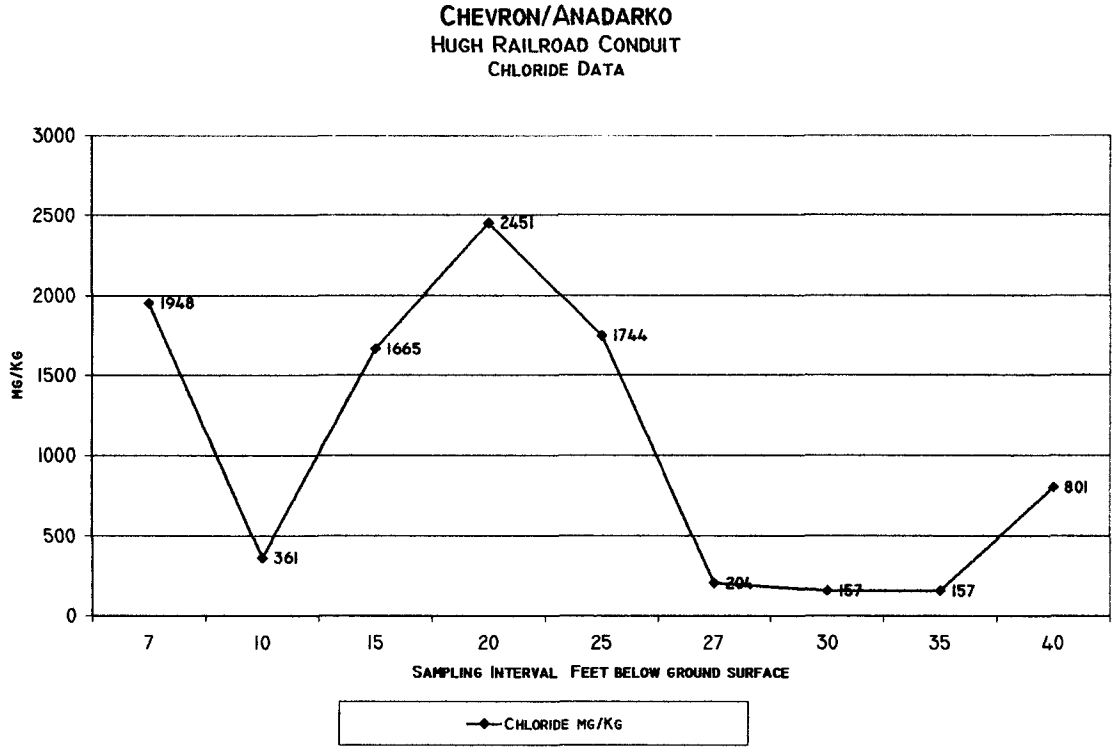
2.4.3.1 Sidewall Assessment

Sidewall sample chloride analyses were slightly elevated but were collected before the excavation perimeter was extended ~8-10'to accommodate the barrier. The presence of vegetation indicates it should not be of concern. Sidewall hydrocarbon results were nominal.

2.4.3.2 Subsurface Sampling

Laboratory results indicate that hydrocarbon contamination persists to ~ 27'bgs in the central part of the excavated area. Chloride decreases markedly from 25' to 35' bgs but increases at the 40' bgs interval. The charts below illustrate the concentrations relative to the subsurface interval.





2.5 Soil Disposal and Backfilling

Various volumes of soil, totaling 1,520 yd^3 were disposed of at Sundance, Rhino, and Environmental Plus, Inc. NMOCD approved facilities. A similar volume of clean backfill was used to bring the excavation to grade.

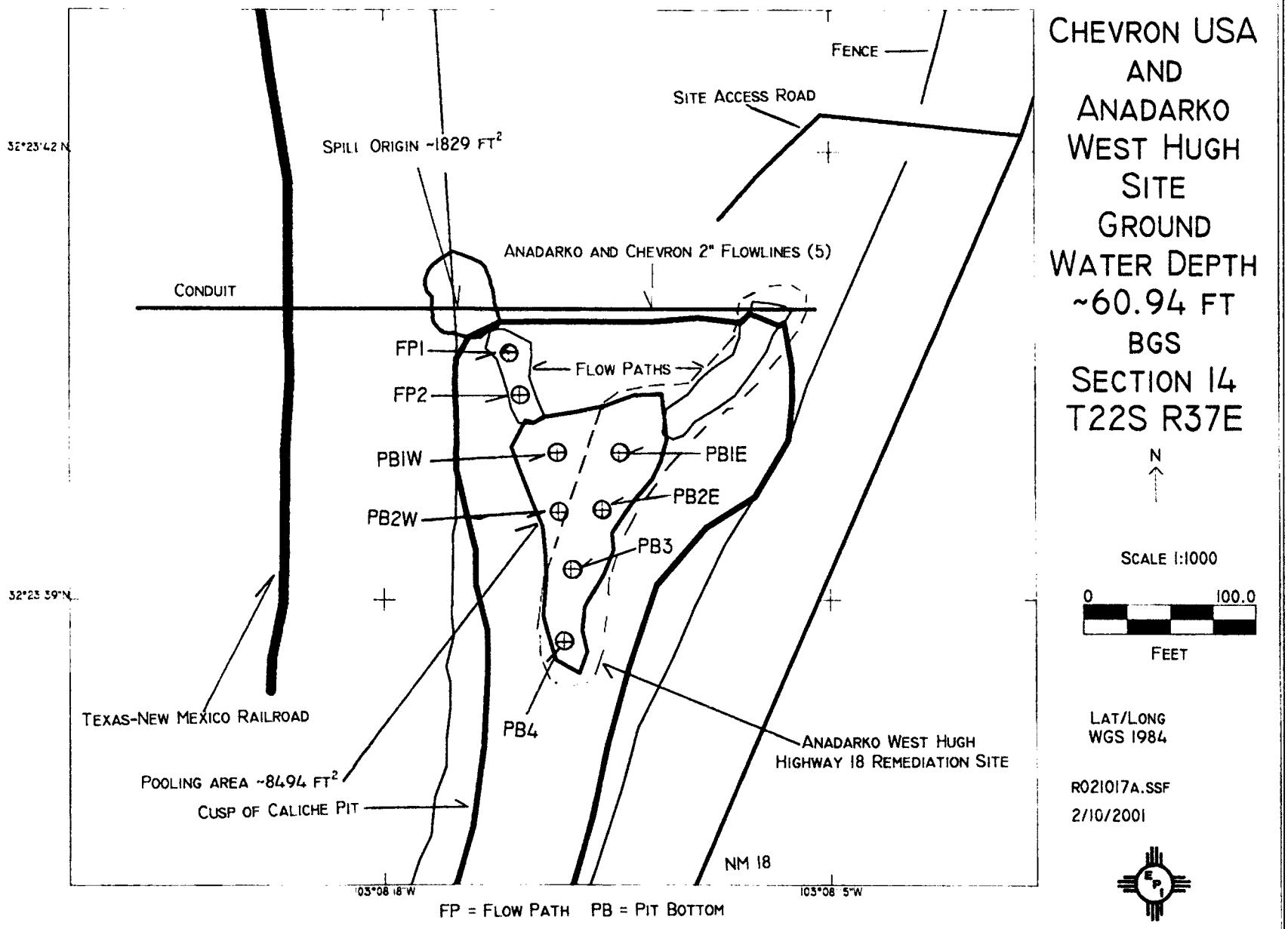
2.6 Surface Restoration

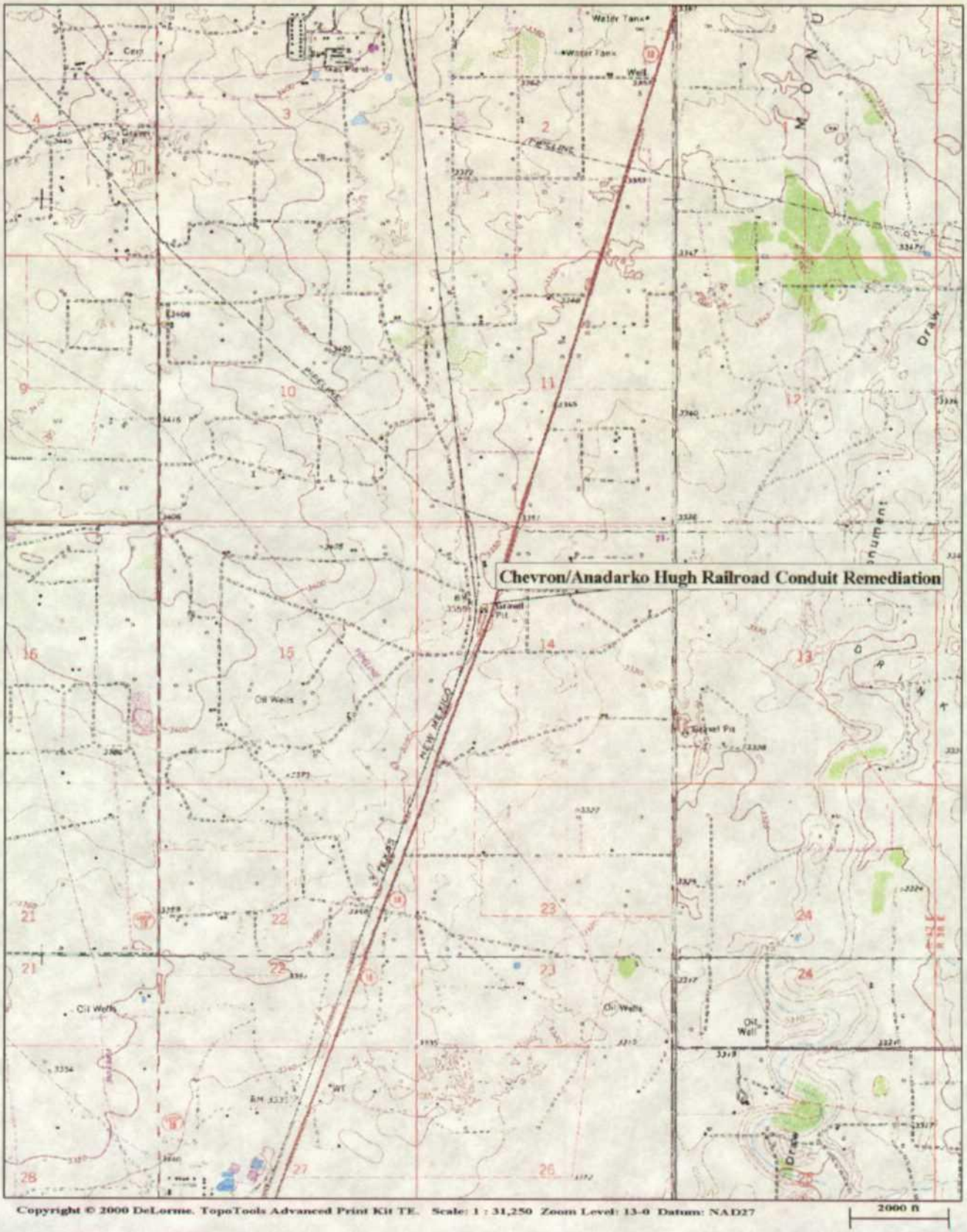
The site will possibly be reseeded with native grasses during the Spring of 2001.

2.7 Conclusion

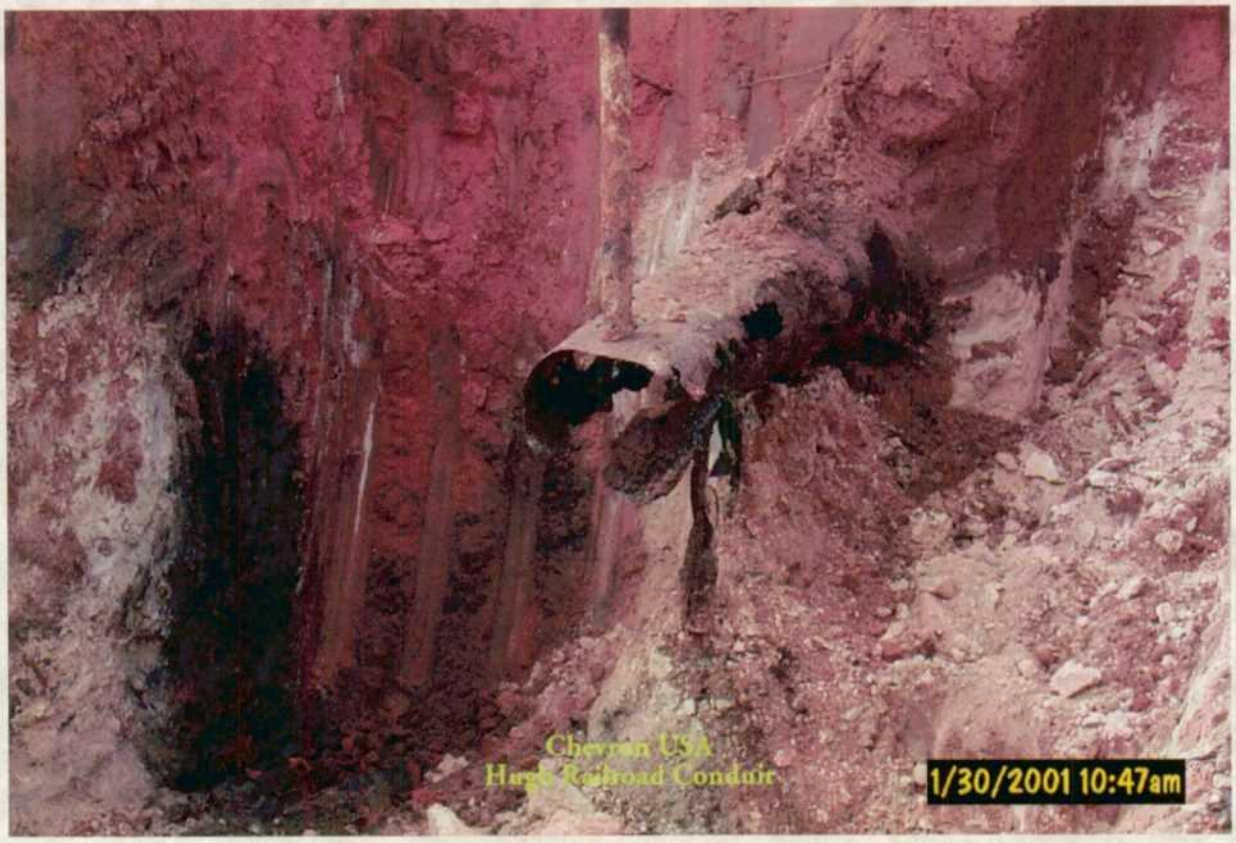
Production fluid contamination at this site resulted in hydrocarbon contamination above the NMOCD remedial guidelines. Contaminated soil was excavated down to 20' bgs and disposed of. It was at this interval the decision was made to install an engineered barrier consisting of a 2' thick compacted clay barrier instead of excavating the remaining contaminated soil. It was determined that approximately 7' of soil beneath the barrier was contaminated above the NMOCD TPH threshold for TPH but not for Benzene and BTEX. Chloride persists but decreases from 25' to 35' bgs but increases at 40'bgs. An anomalous sample or analysis could explain this but more likely is due to a red clay interbed that occurs in the area, i.e., the lithology at an excavation site ~1500' to northeast identified a red clay interbed at ~37'-42'bgs. This is consistent with the borelog information for the origin borehole, i.e., reddish brown sand. These red clay interbeds serve as retarding barriers to the vertical transport of highly soluble ions like chloride and would cause an increase at that interval similar to what the data indicates at the 40' bgs interval origin borehole sample. Based on the information collected during the investigation the barrier will function adequately to protect the ground water at this site and closure is reasonable and justified.

Attachment I: Site Map


CHEVRON USA AND ANADARKO WEST HUGH SITE GROUND WATER DEPTH ~60.94 FT BGS SECTION 14 T22S R37E
FENCE
SITE ACCESS ROAD
SPILL ORIGIN ~1829 FT²
32°23'42 N
ANADARKO AND CHEVRON 2" FLOWLINES (5)
CONDUIT
FP1
FP2
FLOW PATHS
PB1W
PB1E
PB2W
PB2E
PB3
PB4
32°23 39"N
TEXAS-NEW MEXICO RAILROAD
POOLING AREA ~8494 FT²
CUSP OF CALICHE PIT
ANADARKO WEST HUGH HIGHWAY 18 REMEDIATION SITE
NM 18
103°08 18"W
103°08 5"W
N
SCALE 1:1000
0
100.0
FEET
LAT/LONG WGS 1984
R021017A.SSF
2/10/2001
FP = FLOW PATH PB = PIT BOTTOM


Chevron/Anadarko Hugh Railroad Conduit Remediation
Copyright © 2000 DeLorme. TopoTools Advanced Print Kit TE. Scale: 1 : 31,250 Zoom Level: 13-0 Datum: NAD27
2000 ft

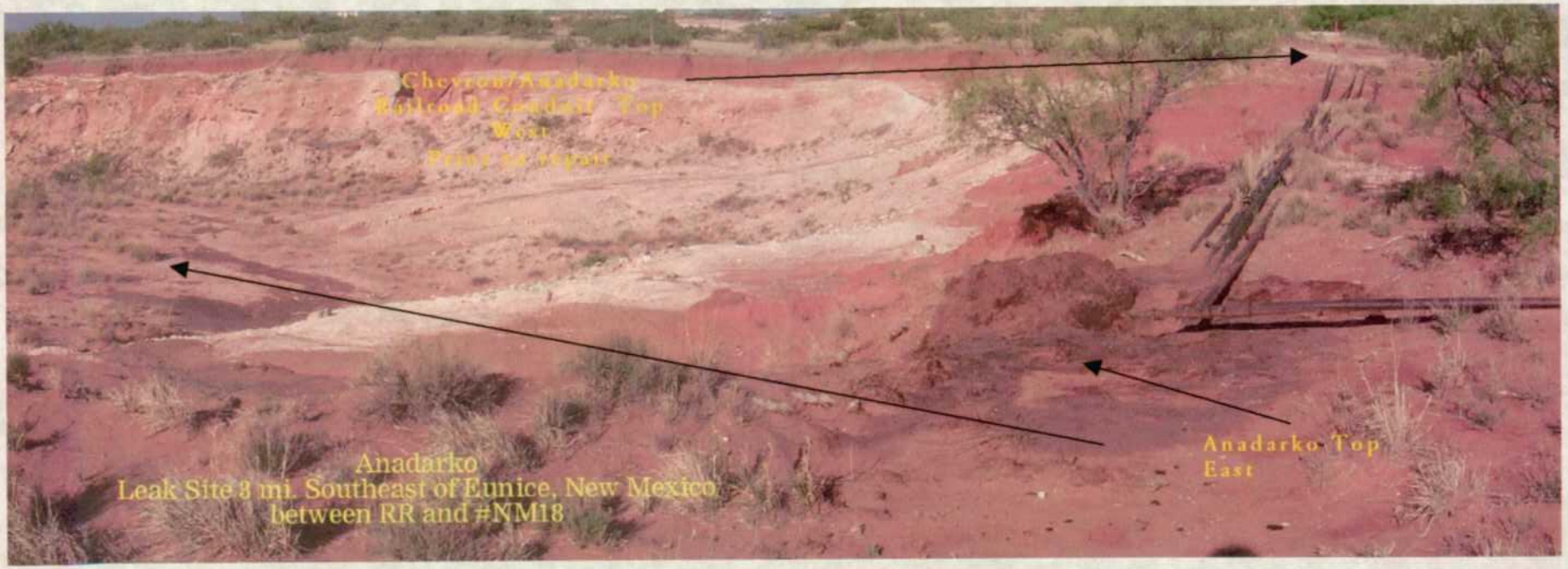
Attachment II: Photographs



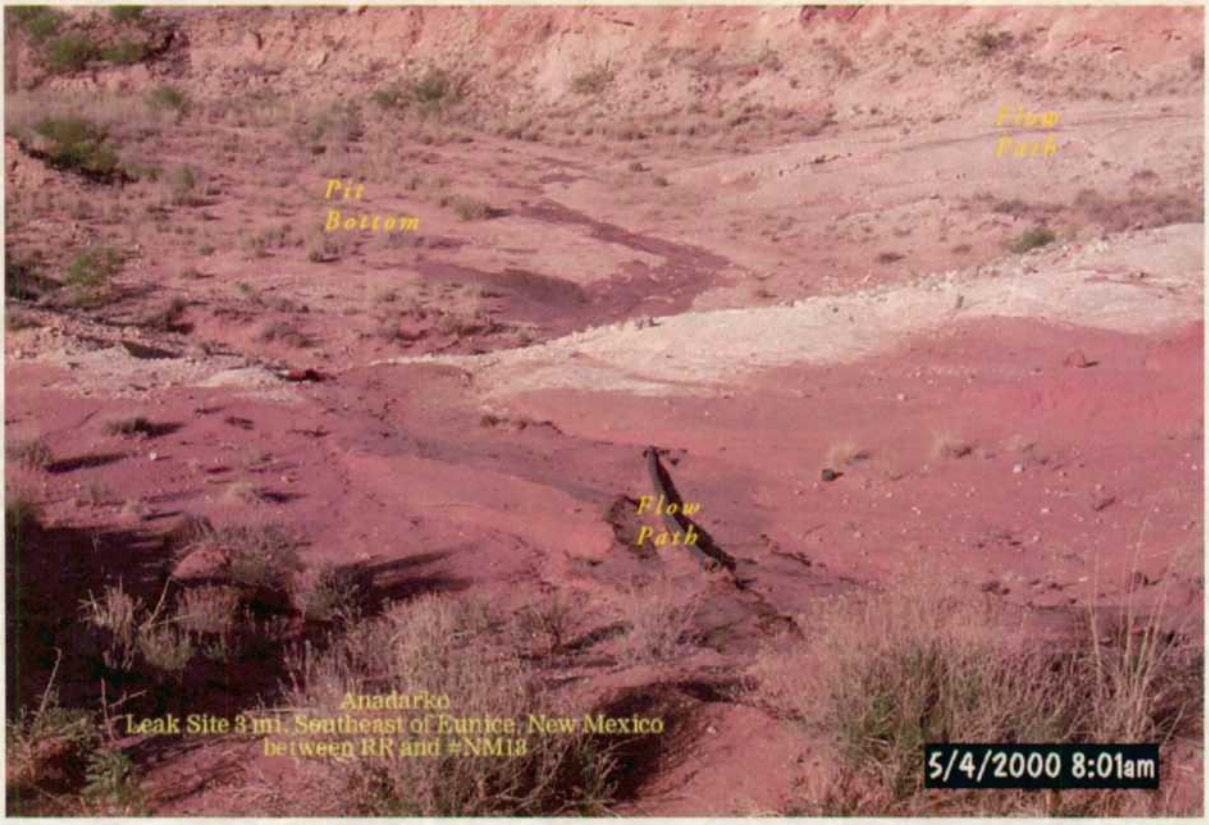
Hugh Lease Conduit

Hugh Lease Conduit

Caliche Pit to the left/Railroad Conduit to the right (photo looking southwest)



Caliche Pit to the left/Railroad Conduit to the right (photo looking southwest)



Run-in area from the Railroad Conduit showing historical hydrocarbon impact

Final Contour

Attachment III: Analyses

CHEVRON/ANADARKO

HUGH RAILROAD CONDUIT REMEDIATION

LIGHTED CELLS INDICATE VALUES IN EXCESS OF THE NMOCD REMEDIAL ACTION GUIDELINE THRESHOLDS, I.E., TPH=100 MG/KG, BENZENE=10.0 MG/KG, AND BTEX=50.0 MG
DETECTION LIMITS ARE ITALICIZED

LOCATION	DESCRIPTION	SAMPLING INTERVAL FEET BELOW GROUND SURFACE	SAMPLE DATE	SAMPLE ID# SAMPLE#/INTERVAL	LITHOLOGY	VOC (PPM)	GRO MG/KG	DRO MG/KG	GRO+DRO MG/KG	CHLORIDE MG/KG
ORIGIN	TRENCH	7	2/15/2001	SCAH21501-7	RED SAND/CLAY	1240.0	3620.0	5240.0	8860.0	1948
	TRENCH	10	2/15/2001	SCAH21501-10	TAN CALICHE	1965.0	3560.0	3710.0	7270.0	361
	TRENCH	15	2/15/2001	SCAH21501-15	TAN CALICHE SAND	1812.0	3540.0	3580.0	7120.0	1665
	TRENCH	20	2/15/2001	SCAH21501-20	TAN CALICHE SAND	2285.0	2930.0	3290.0	6220.0	2451
	TRENCH	25	2/15/2001	SCAH21501-25	TAN CALICHE SAND	2036.0	1110.0	2170.0	3280.0	1744
	BOREHOLE 1	27	2/21/2001	SCAH22101-25	TAN SAND	4.7	*50.0*	*50.0*	*100.0*	204
	BOREHOLE 1	30	2/21/2001	SCAH22101-30	TAN SAND	3.4	*50.0*	*50.0*	*100.0*	157
	BOREHOLE 1	35	2/21/2001	SCAH22101-35	TAN SAND	2.1	*50.0*	*50.0*	*100.0*	157
	BOREHOLE 1	40	2/21/2001	SCAH22101-40	REDDISH BROWN SAND	1.2	*50.0*	*50.0*	*100.0*	801
EXCAVATION	COMPOSITE	EAST SIDEWALL	2/15/2001	S02150ICHESW	TAN CALICHE SAND	NA	*50.0*	80.2	130.2	2510
	COMPOSITE	SOUTH SIDEWALL	2/15/2001	S02150ICHSSW	TAN CALICHE SAND	NA	*50.0*	63.5	113.5	2420
	COMPOSITE	NORTH SIDEWALL	2/15/2001	S02150ICHNSW	TAN CALICHE SAND	NA	*50.0*	*50.0*	*100.0*	581
	COMPOSITE	BOTTOM HOLE	2/16/2001	S021600ICHBH	TAN CALICHE SAND	NA	*50.0*	408.0	458.0	1350
	COMPOSITE	WEST SIDEWALL	2/16/2001	S021601 WSW	TAN CALICHE SAND	NA	*50.0*	*50.0*	*100.0*	1380
CALICHE PIT	FLOWPATH TRENCH 1	0-1'	2/16/2001	S02160IFP1	TAN CALICHE SAND	0.4	*50.0*	*50.0*	*100.0*	79
	FLOWPATH TRENCH 2	0-1'	2/16/2001	S02160IFP2	TAN CALICHE SAND	0.0	*50.0*	*50.0*	*100.0*	79
	BOTTOM TRENCH 1 WEST	0-1'	2/16/2001	S02160IPB1W	TAN CALICHE SAND	0.9	*50.0*	*50.0*	*100.0*	63
	BOTTOM TRENCH 1 EAST	0-1'	2/16/2001	S02160IPB1E	TAN CALICHE SAND	71.0	*50.0*	*50.0*	*100.0*	47
	BOTTOM TRENCH 2 WEST	0-1'	2/16/2001	S02160IPB2W	TAN CALICHE SAND	66.9	*50.0*	*50.0*	*100.0*	47
	BOTTOM TRENCH 2 EAST	0-1'	2/16/2001	S02160IPB2E	TAN CALICHE SAND	46.4	*50.0*	*50.0*	*100.0*	63
	BOTTOM TRENCH 3	0-1'	2/16/2001	S02160IPB3	TAN CALICHE SAND	5.7	*50.0*	*50.0*	*100.0*	31
	BOTTOM TRENCH 4	0-1'	2/16/2001	S02160IPB4	TAN CALICHE SAND	10.8	*50.0*	*50.0*	*100.0*	63

CHEVRON/ANADARKO

HUGH RAILROAD CONDUIT REMEDIATION

LIGHTED CELLS INDICATE VALUES IN EXCESS OF THE NMOCD REMEDIAL ACTION GUIDELINE THRESHOLDS, I.E., TPH=100 MG/KG, BENZENE=10.0 MG/KG, AND BTEX=50.0 MG

DETECTION LIMITS ARE ITALICIZED

LOCATION	DESCRIPTION	SAMPLING INTERVAL FEET BELOW GROUND SURFACE	SAMPLE DATE	SAMPLE ID# SAMPLE#/INTERVAL	LITHOLOGY	BTEX MG/KG	BENZENE MG/KG	TOLUENE MG/KG	EHTYL BENZENE MG/KG	TOTAL XYLENE MG/KG
ORIGIN	TRENCH	7	2/15/2001	SCAH21501-7	RED SAND/CLAY	95.880	49.400	5.280	3.800	37.400
	TRENCH	10	2/15/2001	SCAH21501-10	TAN CALICHE	107.110	5.310	25.000	15.900	60.900
	TRENCH	15	2/15/2001	SCAH21501-15	TAN CALICHE SAND	104.400	10.900	22.100	15.300	56.100
	TRENCH	20	2/15/2001	SCAH21501-20	TAN CALICHE SAND	88.870	5.270	19.400	13.500	50.700
	TRENCH	25	2/15/2001	SCAH21501-25	TAN CALICHE SAND	37.270	3.380	6.020	5.570	22.300
	BOREHOLE 1	27	2/21/2001	SCAH22101-25	TAN SAND	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*
	BOREHOLE 1	30	2/21/2001	SCAH22101-30	TAN SAND	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*
	BOREHOLE 1	35	2/21/2001	SCAH22101-35	TAN SAND	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*
	BOREHOLE 1	40	2/21/2001	SCAH22101-40	REDDISH BROWN SAND	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*
EXCAVATION	COMPOSITE	EAST SIDEWALL	2/15/2001	S021501CHESW	TAN CALICHE SAND	0.031	*0.005*	0.006	*0.005*	*0.015*
	COMPOSITE	SOUTH SIDEWALL	2/15/2001	S021501CHSSW	TAN CALICHE SAND	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*
	COMPOSITE	NORTH SIDEWALL	2/15/2001	S021501CHNSW	TAN CALICHE SAND	0.045	*0.005*	0.010	*0.005*	0.025
	COMPOSITE	BOTTOM HOLE	2/16/2001	S021600ICHBH	TAN CALICHE SAND	0.681	*0.005*	0.032	0.110	0.534
	COMPOSITE	WEST SIDEWALL	2/16/2001	S021601 WSW	TAN CALICHE SAND	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*
CALICHE PIT	FLOWPATH TRENCH 1	0-1'	2/16/2001	S021601FP1	TAN CALICHE SAND	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*
	FLOWPATH TRENCH 2	0-1'	2/16/2001	S021601FP2	TAN CALICHE SAND	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*
	BOTTOM TRENCH 1 WEST	0-1'	2/16/2001	S021601PB1W	TAN CALICHE SAND	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*
	BOTTOM TRENCH 1 EAST	0-1'	2/16/2001	S021601PB1E	TAN CALICHE SAND	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*
	BOTTOM TRENCH 2 WEST	0-1'	2/16/2001	S021601PB2W	TAN CALICHE SAND	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*
	BOTTOM TRENCH 2 EAST	0-1'	2/16/2001	S021601PB2E	TAN CALICHE SAND	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*
	BOTTOM TRENCH 3	0-1'	2/16/2001	S021601PB3	TAN CALICHE SAND	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*
	BOTTOM TRENCH 4	0-1'	2/16/2001	S021601PB4	TAN CALICHE SAND	*0.030*	*0.005*	*0.005*	*0.005*	*0.015*

CARDINAL LABORATORIES

PHONE (915) 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: 02/16/01
Reporting Date: 02/20/01
Project Number: NOT GIVEN
Project Name: HUGH
Project Location: NOT GIVEN

Sampling Date: 02/16/01
Sample Type: SOIL
Sample Condition: COOL, INTACT
Sample Received By: AH
Analyzed By: JA

LAB ID	SAMPLE ID	GRO (C6-C10) (mg/Kg)	DRO (>C10-C28) (mg/Kg)
H5623-1	5021601 FP1	<50.0	<50.0
H5623-2	5021601 FP2	<50.0	<50.0
H5623-3	5021601 PB1W	<50.0	<50.0
H5623-4	5021601 PB1E	<50.0	<50.0
H5623-5	5021601 PB2W	<50.0	<50.0
H5623-6	5021601 PB2E	<50.0	<50.0
H5623-7	5021601 PB3	<50.0	<50.0
H5623-8	5021601 PB4	<50.0	<50.0
H5623-9	5021601 WSW	<50.0	<50.0

Extraction Date:	02/19/01	02/19/01
Analysis Date:	02/19/01	02/19/01
Method Blank	<50.0	<50.0
Quality Control	107	92
True Value QC	100	100
% Recovery	107.0%	91.7%
Relative Percent Difference	6.5%	3.8%

METHODS: TPH GRO & DRO - EPASW-846 8015M

Jim Armstrong

2-20-01
Date

CARDINAL LABORATORIES

PHONE (915) 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: 02/16/01
Reporting Date: 02/19/01
Project Number: NOT GIVEN
Project Name: HUGH
Project Location: NOT GIVEN

Sampling Date: 02/16/01
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: AH/BC

LAB NO.	SAMPLE ID	Cl* (mg/Kg)	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DATE:		2/19/01	02/16/01	02/16/01	02/16/01	02/16/01
H5623-1	S021601FP1	79	<0.005	<0.005	<0.005	<0.015
H5623-2	S021601FP2	79	<0.005	<0.005	<0.005	<0.015
H5623-3	S021601PB1W	63	<0.005	<0.005	<0.005	<0.015
H5623-4	S021601PB1E	47	<0.005	<0.005	<0.005	<0.015
H5623-5	S021601PB2W	47	<0.005	<0.005	<0.005	<0.015
H5623-6	S021601PB2E	63	<0.005	<0.005	<0.005	<0.015
H5623-7	S021601PB3	31	<0.005	<0.005	<0.005	<0.015
H5623-8	S021601PB4	63	<0.005	<0.005	<0.005	<0.015
H5623-9	S021601WSW	1380	<0.005	<0.005	<0.005	<0.015
Quality Control		1031	0.107	0.106	0.109	0.327
True Value QC		1000	0.100	0.100	0.100	0.300
% Recovery		103	107	106	109	109
Relative Percent Difference		1.9	3.4	4.2	1.6	2.8

METHODS: Cl-Std. Methods 4500-Cl⁻B; BTEX-EPA SW-846 8260

Chemist

02/20/2001
Date

file: H5623A.XLS

CARDINAL LABORATORIES, INC.

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(915) 673 7001 Fax (915) 673 7020 (505) 393 2326 Fax (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page 1 of 1

Company Name:	Hilcorp EPI
Project Manager:	Attn Rick PAT McGRAND
Address:	
City:	State: Zip:
Phone #:	Fax #:
Project #:	Project Owner:
Project Name:	Hugh
Project Location:	
Sampler Name:	R. Boone

BILL TO

P.O. #:	
Company:	EPI
Attn:	P. McGrand
Address:	P. O. Box 1598
City:	Eunice
State: NM	Zip: 88231
Phone #:	394-3481
Fax #:	394-2601

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	TPH 8015M	BTEX	Chlorides
H5623-1	SO21601 FP1	✓	1			✓					✓		2-16-01	8:20	✓	✓	✓
-2	SO21601 FP2	✓	1			✓					✓		2-16-01	8:25	✓	✓	✓
-3	SO21601 PB1W	✓	1			✓					✓		2-16-01	8:30	✓	✓	✓
-4	SO21601 PB1E	✓	1			✓					✓		2-16-01	8:35	✓	✓	✓
-5	SO21601 PB 2W	✓	1			✓					✓		2-16-01	8:40	✓	✓	✓
-6	SO21601 PB 2E	✓	1			✓					✓		2-16-01	8:45	✓	✓	✓
-7	SO21601 PB 3	✓	1			✓					✓		2-16-01	8:50	✓	✓	✓
-8	SO21601 PB4	✓	1			✓					✓		2-16-01	9:00	✓	✓	✓
-9	SO21601 WSW	✓	1			✓					✓		2-16-01	10:20	✓	✓	✓

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Terms and Conditions: Interest will be charged on all accounts unpaid more than 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collections, including attorney's fees.

Sampler Relinquished:	Roger Boone	Date: 2-16-01	Time: 12:35
Relinquished By:	Cody Miller	Date: 2-16-01	Time:
Received By:	Cody Miller		
Received By: (Lab Staff)			
Delivered By: (Circle One)	Sampler - UPS - Bus - Other:		

Sample Condition: Cool: Yes / No; Intact: Yes / No

CHECKED BY: (Initials)

Phone Result: ☐ Yes ☐ No Add'l Phone #:

Fax Result: ☐ Yes ☐ No Add'l Fax #:

REMARKS:

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

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ANALYTICAL RESULTS FOR
ENVIRONMENTAL PLUS, INC.
ATTN: PAT McCASLAND
P.O. BOX 1558
EUNICE, NM 88231
FAX TO:

Receiving Date: 02/21/01
Reporting Date: 02/22/01
Project Number: NOT GIVEN
Project Name: HUGH
Project Location: S24 T22S R37E

Sampling Date: 02/21/01
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: BC

LAB NO.	SAMPLE ID	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DATE		02/21/01	02/21/01	02/21/01	02/21/01
H5638-1	SCAH22101-25	<0.005	<0.005	<0.005	<0.015
H5638-2	SCAH22101-30	<0.005	<0.005	<0.005	<0.015
H5638-3	SCAH22101-35	<0.005	<0.005	<0.005	<0.015
H5638-4	SCAH22101-40	<0.005	<0.005	<0.005	<0.015
Quality Control		0.101	0.101	0.102	0.301
True Value QC		0.100	0.100	0.100	0.300
% Recovery		101	101	102	100
Relative Percent Difference		7.2	6.8	7.0	6.2

METHOD: EPA SW-846 8260

Burgess J.A. Cooke
Chemist

02/22/01
Date

H5638B.XLS

CARDINAL LABORATORIES

PHONE (915) 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:

Receiving Date: 02/21/01
Reporting Date: 02/22/01
Project Number: NOT GIVEN
Project Name: HUGH
Project Location: S24 T22S R37E

Sampling Date: 02/21/01
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: BC

LAB NUMBER	SAMPLE ID	GRO (C_6-C_{10}) (mg/Kg)	DRO (>C_{10}-C_{28}) (mg/Kg)	Cl* (mg/Kg)
ANALYSIS DATE		02/21/01	02/21/01	02/22/01
H5638-1	SCAH22101-25	<50	<50	204
H5638-2	SCAH22101-30	<50	<50	157
H5638-3	SCAH22101-35	<50	<50	157
H5638-4	SCAH22101-40	<50	<50	801
Quality Control		755	808	1031
True Value QC		800	800	1000
% Recovery		94.4	101.0	103
Relative Percent Difference		1.9	0.4	1.9

METHODS: TPH GRO & DRO: EPA SW-846 8015 M; Cl^-: Std. Methods 4500-Cl^-B
*Analyses performed on 1:4 w:v aqueous extracts.

Burgess J. Cooke
Chemist

02/22/01
Date

H5638A.XLS

CARDINAL LABORATORIES, INC.

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page of

Company Name:	ENVIRONMENTAL PLUS, INC.
Project Manager:	PAT McCASLAND
Address:	P.O. BOX 1558
City:	EUNICE State: NM Zip: 88231
Phone #:	505-394-2600 Fax #: 505-394-2601
Project #:	Project Owner:
Project Name:	Hugh
Project Location:	S/4 T22S R37E
Sampler Name:	Bradley Blevins

BILL TO

P.O. #:	Same
Company:	
Attn:	
Address:	
City:	
State:	Zip:
Phone #:	
Fax #:	

ANALYSIS REQUEST

TPH 8015M | Chloride | BTEX 8260/8020

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	TPH 8015M	Chloride	BTEX 8260/8020
45638-1	SCAH22101-25	G	1			1					X		2-21-01	9:23	✓	✓	✓
-2	SCAH22101-30	G	1			1					X		2-21-01	10:00	✓	✓	✓
-3	SCAH22101-35	G	1			1					X		2-21-01	10:35	✓	✓	✓
-4	SCAH22101-40	G	1			1					X		2-21-01	11:00	✓	✓	✓

Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collections, including attorney's fees.

Sampler Relinquished: Bradley Blevins	Date: 2-21-01 Time:	Received By:	Phone Result: ☐ Yes ☐ No Add'l Phone #:
Relinquished By:	Date: 2/21/01 Time: 2:43	Received By: (Lab Staff)	Fax Result: ☒ Yes ☐ No Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:		Sample Condition: Cool ☒ Yes ☐ No; Intact ☒ Yes ☐ No	CHECKED BY: (Initials)

REMARKS:

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CARDINAL LABORATORIES

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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:

Receiving Date: 02/19/01
Reporting Date: 02/21/01
Project Number: NOT GIVEN
Project Name: HUGH ROAD CROSSING
Project Location: NOT GIVEN

Sampling Date: 02/15 & 02/16/01
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: BC/AH

LAB NUMBER	SAMPLE ID	GRO (C_6-C_{10}) (mg/Kg)	DRO (>C_{10}-C_{28}) (mg/Kg)	Cl* (mg/Kg)
ANALYSIS DATE		02/20/01	02/20/01	02/20/01
H5628-1	S021501CHESW	<50	80.2	2510
H5628-2	S021501CHSSW	<50	63.5	2420
H5628-3	S021501CHNSW	<50	<50	581
H5628-4	S021601CHBH	<50	408	1350
Quality Control		749	752	1031
True Value QC		800	800	1000
% Recovery		93.6	94.0	103
Relative Percent Difference		4.1	8.9	1.9

METHODS: TPH GRO & DRO: EPA SW-846 8015 M; Cl⁻: Std. Methods 4500-Cl⁻B
*Analyses performed on 1:4 w:v aqueous extracts.

Burgess J. A. Cooke
Chemist

2/21/01
Date

H5628A.XLS

CARDINAL LABORATORIES

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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:

Receiving Date: 02/19/01
Reporting Date: 02/21/01
Project Number: NOT GIVEN
Project Name: HUGH ROAD CROSSING
Project Location: NOT GIVEN

Sampling Date: 02/15 & 02/16/01
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: BC

LAB NO.	SAMPLE ID	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DATE		02/20/01	02/20/01	02/20/01	02/20/01
H5628-1	S021501CHESW	<0.005	0.006	<0.005	<0.015
H5628-2	S021501CHSSW	<0.005	<0.005	<0.005	<0.015
H5628-3	S021501CHNSW	<0.005	0.010	<0.005	0.025
H5628-4	S021601CHBH	<0.005	0.032	0.110	0.534
Quality Control		0.094	0.094	0.095	0.283
True Value QC		0.100	0.100	0.100	0.300
% Recovery		94.0	94.4	95.1	94.2
Relative Percent Difference		6.4	5.9	5.2	6.1

METHOD: EPA SW-846 8260

Burgess J. A. Cooke
Chemist

2/21/01
Date

H5628B.XLS

CARDINAL LABORATORIES, INC.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240
(915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476

Page ____ of ____

Company Name: Chevron	**BILL TO**
Project Manager: Bill Beck	P.O. #:
Address:	Company: EPI
City: State: Zip:	Attn: Pat McCasland
Phone #: Fax #:	Address:
Project #: Project Owner:	City:
Project Name: Hugh Road Crossing	State: Zip:
Project Location:	Phone #:
Sampler Name:	Fax #:

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		ANALYSIS REQUEST											
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	ACID/BASE:	ICE / COOL	OTHER:	DATE	TIME	TPH 8015M	BTEX	Chloride									
H9628-1	S 021501 CH ESW	✓	1			✓					✓		2-15	3:05	✓	✓	✓									
-2	S021501CHSSW	✓	1			✓					✓		2:15	3:10	✓	✓	✓									
-3	S021501CH NSW	✓	1			✓					✓		2:15	3:15	✓	✓	✓									
-4	S021601CH BH	✓	1			✓					✓		2:16	10:25	✓	✓	✓									

Sampler Relinquished: Roger Beane	Date: 2-19	Received By:	
	Time:		
Relinquished By:	Date: 2-19-01	Received By: (Lab Staff) Amie Hill	
	Time: 4:10		
Delivered By: (Circle One) Sampler - UPS - Bus - Other:		Sample Condition Cool: Yes / No; Intact: Yes / No	CHECKED BY: (Initials)

Phone Result:	☐ Yes	☐ No	Add'l Phone #:
Fax Result:	☐ Yes	☐ No	Add'l Fax #:
REMARKS:			

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CARDINAL LABORATORIES

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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: 02/16/01
Project Owner: CHEV/ANARDARKO
Project Number: NOT GIVEN
Project Name: HUGH
Project Location: SEC14 T22S R37E

Sampling Date: 02/15/01
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: GAP
Analyzed By: JA

LAB ID	SAMPLE ID	GRO (C6-C10) (mg/Kg)	DRO (>C10-C28) (mg/Kg)	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL-BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
H5625-1	SCAH21501 - 7	3620	5240	4.94	5.28	3.80	37.4
H5625-2	SCAH21501 - 10	3560	3710	5.31	25.0	15.9	60.9
H5625-3	SCAH21501 - 15	3540	3580	10.9	22.1	15.3	56.1
H5625-4	SCAH21501 - 20	2930	3290	5.27	19.4	13.5	50.7
H5625-5	SCAH21501 - 25	1110	2170	3.38	6.02	5.57	22.3
Extraction Date:		02/19/01	02/19/01	02/19/01	02/19/01	02/19/01	02/19/01
Analysis Date:		02/19/01	02/19/01	02/19/01	02/19/01	02/19/01	02/19/01
Method Blank		<50.0	<50.0	<0.002	<0.002	<0.002	<0.006
Quality Control		107	92	0.097	0.100	0.088	0.275
True Value QC		100	100	0.100	0.100	0.100	0.300
% Recovery		107%	92%	97%	100%	88%	92%
Relative Percent Difference		6.5%	3.8%	4.1%	0.7%	1.6%	0.2%

METHODS: TPH GRO & DRO - EPASW-846 8015M; BTEX--EPA SW-846 8021B, 5030B

Jim Armstrong

2-20-01
Date

CARDINAL LABORATORIES

PHONE (915) 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

Receiving Date: 02/16/01
Reporting Date: 02/20/01
Project Owner: CHEVRON/ANADARKO
Project Name: HUGH
Project Location: SEC 14 T22S R37E

Analysis Date: 02/19/01
Sampling Date: 02/15/01
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: GP
Analyzed By: AH

LAB NUMBER	SAMPLE ID	Cl^- (mg/Kg)
H5625-1	SCAH21501-7	1948
H5625-2	SCAH21501-10	361
H5625-3	SCAH21591-15	1665
H5625-4	SCAH21501-20	2451
H5625-5	SCAH21501-25	1744
Quality Control		1031
True Value QC		1000
% Recovery		103
Relative Percent Difference		1.9

METHOD: Standard Methods	4500-Cl^-B

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

Chemist

02/20/2001
Date

H5625.XLS

CARDINAL LABORATORIES, INC.

2111 Beechwood, Abilene, TX 79603 (915) 673-7001 Fax (915) 673-7020
101 East Marland, Hobbs, NM 88240 (505) 393-2326 Fax (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page 1 of 1

Company Name:	Environmental Plus, Inc.
Project Manager:	Pat McCasland
Address:	P.O. Box 1558
City:	Eunice State: NM Zip: 88231
Phone #:	505.394.2600 Fax #: 505.394.2601
Project #:	Project Owner: Chevron Pipeline Co.
Project Name:	Hugh
Project Location:	Sec 14 T22S R37E
Sampler Name:	Pat McCasland

BILL TO

P.O. #:	SAME
Company:	
Attn:	
Address:	
City:	
State:	Zip:
Phone #:	
Fax #:	

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	PRESERV: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	TPH 8015M	Chloride	BTEX 8260/8020	TDS	Anions/Cations							
H35625-1	SCAH21501-7					X					X		2-15	0720	✓	✓	✓									
-2	SCAH21501-10					X					X		2-15	0725	X	X	X									
-3	SCAH21501-15					X					X		2-15	0830	X	X	X									
-4	SCAH21501-20					X					X		2-15	0835	X	X	X									
-5	SCAH21501-25					X					X		2-15	0840	X	X	X									

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collections, including attorney's fees.

Sampler Relinquished: Pat McCasland	Date: 2-16-01	Received By: Cody Miller	
Relinquished By: Cody Miller	Time: 3:00	Received By: (Lab Staff)	
Delivered By: (Circle One) Sampler - UPS - Bus - (Other)	Date: 2-16-01 Time: 04:00 PM	Sample Condition Cool: Yes / No Intact: Yes / No	CHECKED BY: (Initials)

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☑ Yes ☐ No Add'l Fax #:
REMARKS: C of C requested

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476.

Attachment IV: Proctor and Density Report

LABORATORY TEST REPORT

PETTIGREW and ASSOCIATES
1110 N. GRIMES
HOBBS, NM 88240
(505) 393-9827

DEBRA P. HICKS, P.E./L.S.I.
WILLIAM M. HICKS, III, P.E./P.S.

TO: Environmental Plus, Inc.
P.O. Box 1558
Eunice, NM 88231
Attn: Roger Boone

MATERIAL: Red Clay

PROJECT: Chevron W. Hugh

TEST METHOD: ASTM D 2922

DATE OF TEST: February 23, 2001

DEPTH: See Below

TEST NO.	LOCATION	DRY DENSITY % Maximum	% MOISTURE	DEPTH
SG-1	N. Side of Contaminated Area	105.3	13.7	1' Below Finished Subgrade
SG-2	N. Side of Contaminated Area	98.8	13.0	Finished Subgrade
SG-3	S. Side of Contaminated Area	104.8	15.01	1' Below Finished Subgrade
SG-4	S. Side of Contaminated Area	99.0	12.3	Finished Subgrade

CONTROL DENSITY: 107.2
ASTM D 698

OPTIMUM MOISTURE: 18.0%

REQUIRED COMPACTION: 95%

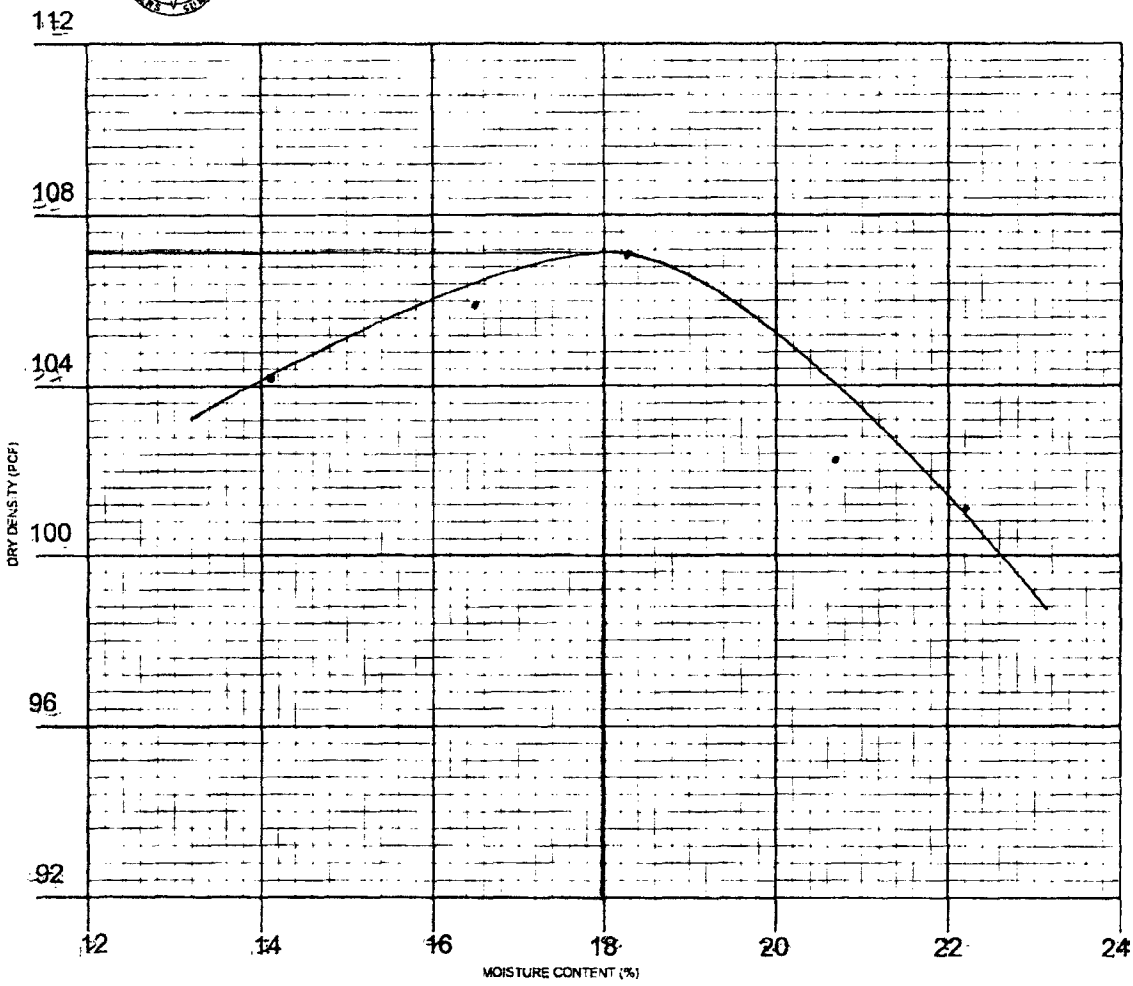
LAB NO.: 01 487-492

COPIES TO: SPS

PETTIGREW and ASSOCIATES

BY: [signature]

PETTIGREW and ASSOCIATES
CONSULTING ENGINEERS



CLIENT: Environmental Plus, Inc. PROJECT: General Information

SAMPLE LOCATION: Stockpile

SOIL DESCRIPTION: Red Clay

SOIL CLASSIFICATION: _____ TEST METHOD: ASTM D 698
Sampled & Delivered 02/21/01

ATTERBERG: LL ___ PI ____

DATE: February 23, 2001 LAB NO. 01 493-494

DRY WEIGHT LB/CU. FT. 107.2 MOISTURE CONTENT % 18.0

SIEVE ANALYSIS - % PASSING									

Environmental Plus, Inc.

COPIES:

PETTIGREW and ASSOCIATES

BY: S.E.T.