



**Whole Earth Environmental, Inc.**

2103 Arbor Cove  
Katy, Tx. 77494  
281.394.2050  
whearth@msn.com

October 29, 2007

Devon Energy Corporation  
P.O. Box 250  
Artesia, NM 88211

Attn: Jerry Mathews

Dear Mr. Mathews:

Enclosed, please find a copy of the proposed Pure Gold 17C Fed # 1 remediation plan to be submitted to the NMOCD. A copy of the plan was e-mailed to Jerry Guy of the NMOCD this morning with a hard copy and CD version sent out by Fed-X.

Thank you again for the opportunity of working with you on this very interesting project.

Warmest personal regards,

Mike Griffin  
President  
Whole Earth Environmental, Inc.



## **Executive Summary**

### **Location**

The site is located approximately nine miles southwest of the City of Carlsbad, Eddy County, New Mexico on BLM lands. The primary land use is grazing of cattle however extensive oil and gas operations are prevalent in the area. The area is semi-arid with a net precipitation / evaporation amount of  $-73''$  per year. The legal description of the site is Sec. 17, T-23S, R-31E.

### **Site History**

The well produced 240 barrels of oil over the evening of September 12, 2007 though for the past three years it did not produce any oil (condensate) at all. The fluids over-ran available storage and spilled approximately fifteen barrels of condensate within the containment berms. Approximately ten barrels were vacuumed up immediately upon discovery.

### **Previous Site Investigations**

Whole Earth Environmental, Inc. obtained two soil samples from the surface and at a depth of approximately twenty-four inches below ground surface and submitted them for analysis of BTEX and chlorides. The laboratory analytical results are contained within this report.

### **Remediation Plan**

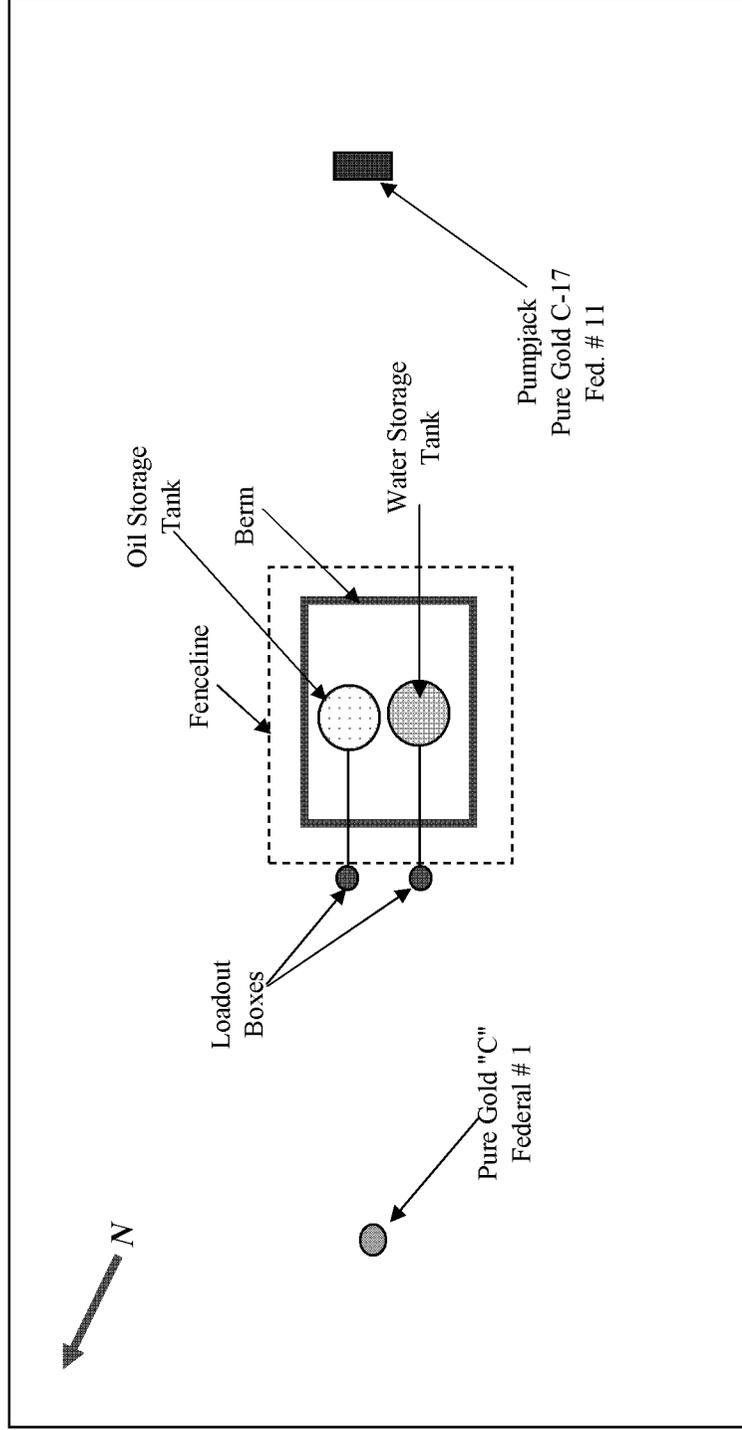
The site is situated adjacent to condensate storage tanks precluding mechanical excavation. Since condensate typically consists of lighter-end hydrocarbon fractions, we can safely and effectively remediate the affected area through injecting nutrients, fertilizer and microbial amendments directly into the zone of interest.

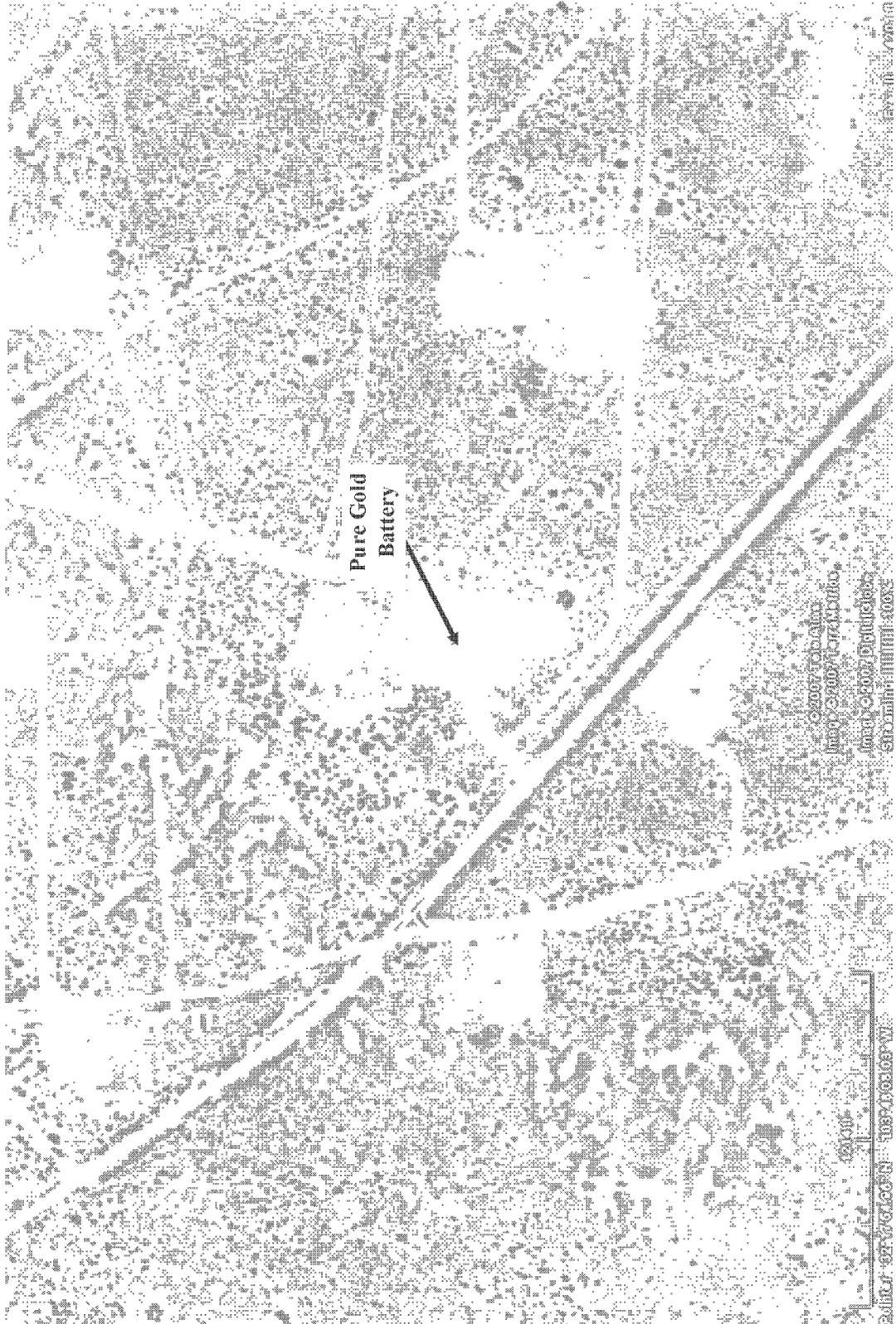


## **Exhibit Index**

1. Plat Map of Surface Features
2. Satellite View of Location
3. Detail of Surface Inside Containment Berm
4. Detail of Manual Excavation to 2' Depth
5. Detail of Surface Inside Containment Berm
6. NMOCD C-141 dated October 05,2007

Devon Energy Company  
Pure Gold "C" Federal  
Well # 1 Battery  
Site Diagram





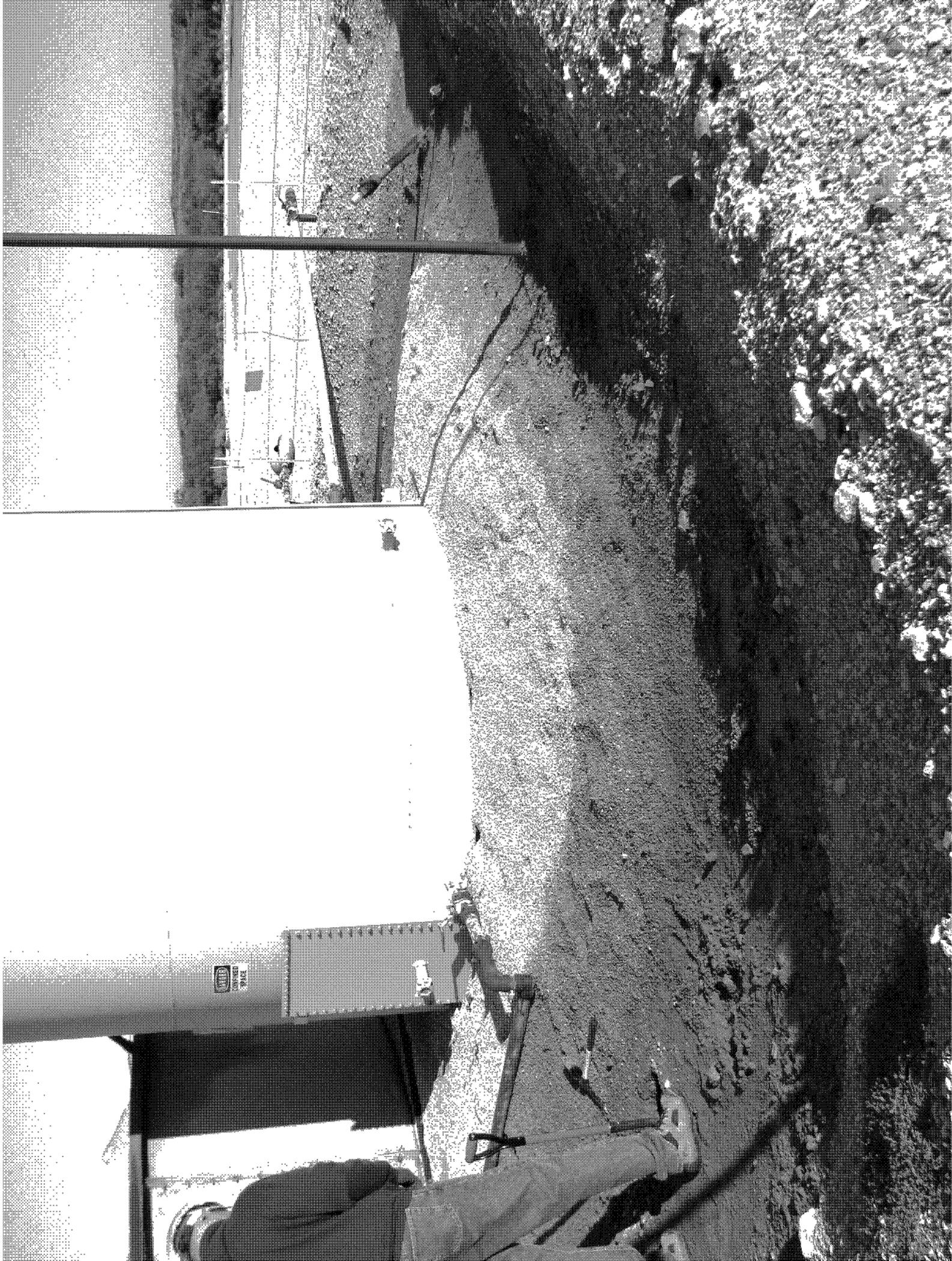
Pure Gold  
Battery



© 2007 Terra Firma  
Map by Google Earth  
Satellite Imagery by DigitalGlobe

421315  
© 2007 Terra Firma  
Map by Google Earth  
Satellite Imagery by DigitalGlobe







PRODUCED WATER

C7000

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
1301 W. Grand Avenue, Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy Minerals and Natural Resources

Oil Conservation Division  
1220 South St. Francis Dr.  
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**

**OPERATOR**  Initial Report  Final Report

Name of Company Devon Energy Production Company, LP	Contact <input type="checkbox"/> Jerry Mathews
Address P. O. Box 250 Artesia, NM 88211	Telephone No. <input type="checkbox"/> (505) 748-5234
Facility Name Pure Gold 17C Federal #1	Facility Type <input type="checkbox"/> Oil Well

Surface Owner	Mineral Owner	Lease No. <input type="checkbox"/> NM-45235
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**LOCATION OF RELEASE**

Unit Letter	Section 17	Township 23S	Range 31E	Feet from the 660	North/South Line South	Feet from the 1980	East/West Line West	County Eddy
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**NATURE OF RELEASE**

Type of Release Spill – Oil Tank	Volume of Release 15	Volume Recovered <input type="checkbox"/> 10
Source of Release Oil Tank	Date and Hour of Occurrence Sept. 12, 2007 12:30PM	Date and Hour of Discovery Sept. 12, 2007 12:30PM
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Mike Bratcher OCD 2:10 PM Paul Evans BLM 2:00 PM	
By Whom? <input type="checkbox"/> Jerry Mathews	Date and Hour <input type="checkbox"/> Sept. 12, 2007 2:10 PM	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.\*  
N/A

Describe Cause of Problem and Remedial Action Taken.\*  
Well unloaded 240 bbls oil and made 81 MCF overnight, for the past 3 yrs it had been making 0 oil, and 31 MCF/d. Line pressure has been from 45 to 98 psi. Well filled up oil tank and water tank, got 15 bbls. of oil out inside of dike.

Describe Area Affected and Cleanup Action Taken.\*  
45'x30' inside dike. Shut well in pull oil level down to keep from running more oil out on ground. Called for vacuum truck picked up 10 bbls of oil from inside tank.. Tilled, fertilized, and took soil sample.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature:	<u>OIL CONSERVATION DIVISION</u>		
Printed Name: Jerry Mathews	Approved by <input type="checkbox"/> District Supervisor:		
Title: Production Foreman	Approval Date:	Expiration Date:	
Date: Oct. 5, 2007 Phone(505)748-5234	Conditions of Approval:	Attached <input type="checkbox"/>	

\* Attach Additional Sheets If Necessary



PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603

PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

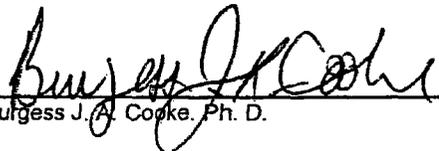
ANALYTICAL RESULTS FOR  
 DEVON ENERGY  
 ATTN: JERRY MATHEWS  
 P.O. BOX 250  
 ARTESIA, NM 88210  
 FAX TO: (505) 746-9072

Receiving Date: 09/18/07  
 Reporting Date: 09/19/07  
 Project Number: NOT GIVEN  
 Project Name: PURE GOLD 17C FED #1  
 Project Location: NOT GIVEN

Sampling Date: 09/17/07  
 Sample Type: SOIL  
 Sample Condition: INTACT  
 Sample Received By: SB  
 Analyzed By: BC

LAB NO.	SAMPLE ID	GRO (C <sub>8</sub> -C <sub>10</sub> ) (mg/Kg)	DRO (>C <sub>10</sub> -C <sub>28</sub> ) (mg/Kg)	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DATE:		09/18/07	09/18/07	09/18/07	09/18/07	09/18/07	09/18/07
H13322-1	SURFACE BACKGROUND	<10.0	<10.0	<0.002	<0.002	<0.002	<0.006
H13322-2	1 FOOT	1150	12700	0.206	3.46	0.958	24.4
H13322-3	2 FOOT	300	7200	0.007	0.199	0.023	1.17
H13322-4	3 FOOT	32.0	3790	<0.002	0.004	0.005	0.046
Quality Control		535	566	0.092	0.094	0.093	0.261
True Value QC		600	600	0.100	0.100	0.100	0.300
% Recovery		89.1	94.4	91.7	94.3	93.4	86.9
Relative Percent Difference		3.8	3.7	6.4	2.5	2.3	4.2

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

  
 Burgess J. A. Cooke, Ph. D.

9/19/07  
 Date

H13322 DEVON

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## **Protocol**

This section contains a copy of PR-81, the site remediation protocol employed on this project.



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**Spill Remediation Protocol  
Phoenix Devon Energy Corporation  
Pure Gold Fed. C # 1 Remediation Project**

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**1.0 Purpose**

This protocol is to provide a detailed outline of the steps to be employed in the remediation of a condensate spill location located near Carlsbad, New Mexico.

**2.0 Scope**

This protocol is site specific for the above project.

**3.0 Preliminary**

Prior to any field operations, Whole Earth Environmental shall conduct the following activities:

**3.1 Client Review**

- 3.1.1 Whole Earth shall meet with appointed personnel within Devon to review this protocol and make any requested modifications or alterations.
- 3.1.2 Changes to this protocol will be documented and submitted for final review by Devon prior to the initiation of actual fieldwork.
- 3.1.3 Upon client approval, the protocol will be submitted to the NMOCD for review and approval.

**4.0 Safety**

- 4.1 Prior to work on the site, Whole Earth shall obtain the location and phone numbers of the nearest emergency medical treatment facility. We will review all safety related issues with the appropriate Devon personnel, sub-contractors and exchange phone numbers.
- 4.2 A tailgate safety meeting shall be held and documented each day. All sub-contractors must attend and sign the daily log-in sheet.
- 4.3 Anyone allowed on to location must be wearing sleeved shirts, steel toed boots, and long pants. Each vehicle must be equipped with two way communication capabilities.

4.4 Prior to any field activities, the area shall be surveyed with a line finder. If lines are discovered within the area to be excavated they shall be marked with pin flags on either side of the line at maximum five foot intervals.

### **5.0 Site Preparation**

5.1 Prior to injection, the project manager will select a location for the injection trailer at a sufficient distance from any fumes or explosive vapors. The injection trailer operator will use a VOC analyzer at all times to insure that no volatile concentrations exceeding 2 ppm are within ten feet of the compressor engine.

5.2 The injection trailer operator shall maintain a clear line of sight to the injection technician at all times.

5.3 "Starting holes" may be manually excavated at various points within the containment to penetrate the caliche pad.

### **6.0 Remediation Procedure**

6.1 The injection process will be conducted in two stages. In the first stage, three hundred gallons of molasses, water and high nitrate fertilizer will be injected within the zone of interest and will be allowed to diffuse within the soil profile for a minimum of twenty-four hours.

6.2 The second stage of injection will consist of a nutrient and microbe mixture derived from freeze dried spores grown from Environoc 101. The volume of microbial agents will be sufficient to insure a minimum concentration of  $10^6/g$ . The injection points will be spaced to insure that visual returns are observed from the previous injection point.

6.3 Within two weeks of the second injection, soil samples from four points within the containment berm will be manually excavated at maximum two-foot intervals to a maximum depth of six-foot below ground surface in accordance with WEQP-77 and analyzed for the presence and concentrations of BTEX.

If necessary, the sampling process will be repeated on a monthly basis until such concentrations fall below the NMWQCC standards for potable water.

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## **7.0 Closure Report**

**7.1** At the conclusion of the project, Whole Earth shall prepare a closure report which contains the following minimum information:

- Photographs of the location prior to remediation
- Photographs of the injection activity
- Photographs of the location at time of final closure
- All pre-closure contaminant concentrations
- Contaminant concentrations at the conclusion of the project
- Copies of this protocol and all testing procedures
- Independent split sample laboratory analyses
- MSDS reports of all amendments used during the project



## **Procedures**

This section contains a copy of QP-18A, the field VOC sampling procedure and QP-77, the sample collection and transportation procedure to be employed on this project.



QP-18A

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**WHOLE EARTH ENVIRONMENTAL  
QUALITY PROCEDURE**

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**Sampling and Testing Protocol  
VOC in Soil**

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Completed By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Effective Date:    /    /

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**1.0 Purpose**

This procedure is to be used to determine the concentrations of Volatile Organic Compounds in soils.

**2.0 Scope**

This procedure is to be used as the standard field measurement for soil VOC concentrations. It is not to be used as a substitute for full spectrographic speciation of organic compounds.

**3.0 Procedure**

**3.1 Sample Collection and Preparation**

3.1.1 Collect at least 500 g. of soil from the sample collection point. Take care to insure that the sample is representative of the general background to include visible concentrations of hydrocarbons and soil types. If necessary, prepare a composite sample of soils obtained at several points in the sample area. Take care to insure that no loose vegetation, rocks or liquids are included in the sample(s).

3.1.2 The soil sample(s) shall be immediately inserted into a one quart or larger polyethylene freezer bag and sealed. When sealed, the bag should contain a nearly equal space between the soil sample and trapped air. Record the sample name and the time that the sample was collected on the Field Report Form.

3.1.3 The sealed samples shall be allowed to set for a minimum of five minutes at a temperature of between 10-15<sup>0</sup> Celsius, (59-77<sup>0</sup> F). The sample temperatures may be adjusted by cooling the sample in ice, or by heating the sample within a generally controlled environment such as the inside of a vehicle. The samples should not be placed directly on heated surfaces or placed in direct heat sources such as lamps or heater vents.

3.1.4 The sealed sample bag should be massaged to break up any clods, and to provide the soil sample with as much exposed surface area as practically possible.

### 3.2 Sampling Procedure

3.2.1 The instrument to be used in conducting VOC concentration testing shall be an RAE Systems Model PGM-7600 or equivalent. Prior to use the instrument shall be zeroed out in accordance with the appropriate maintenance and calibration procedure.

3.2.2 Carefully open one end of the collection bag and insert the probe tip into the bag taking care that the probe tip not touch the soil sample or the side walls of the bag.

3.2.3 Set the instrument to retain the highest result reading value. Record the reading onto the Field Report Form.

3.2.4 If the instrument provides a reading exceeding 100 ppm, proceed to conduct BTEX Speciation in accordance with Whole Earth **QP-19**.

**4.0** After testing, the soil samples shall be returned to the sampling location, and the bags collected for off-site disposal. **IN NO CASE SHALL THE SAME BAG BE USED TWICE. EACH SAMPLE CONTAINER MUST BE DISCARDED AFTER EACH USE.**



QP-77

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**WHOLE EARTH ENVIRONMENTAL  
QUALITY PROCEDURE**

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**Procedure for Obtaining  
Soil Samples for Transportation to a Laboratory**

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Completed By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Effective Date:    /    /

---

**1.0 Purpose**

This procedure outlines the methods to be employed when obtaining soil samples to be taken to a laboratory for analysis.

**2.0 Scope**

This procedure is to be used when collecting soil samples intended for ultimate transfer to a testing laboratory.

**3.0 Preliminary**

3.1 Obtain sterile sampling containers from the testing laboratory designated to conduct analyses of the soil. The shipment should include a Certificate of Compliance from the manufacturer of the collection bottle or vial and a Serial Number for the lot of containers. Retain this Certificate for future documentation purposes.

3.2 If collecting TPH, BTEX, RCRA 8 metals, cation / anions or O&G, the sample jar may be a clear 4 oz. container with Teflon lid. If collecting PAH's, use an amber 4 oz. container with Teflon lid.

**4.0 Chain of Custody**

4.1 Prepare a Sample Plan. The plan will list the number, location and designation of each planned sample and the individual tests to be performed on the sample. The sampler will check the list against the available inventory of appropriate sample collection bottles to insure against shortage.

4.2 Transfer the data to the Laboratory Chain of Custody Form. Complete all sections of the form except those that relate to the time of delivery of the samples to the laboratory.

- 4.3 Pre-label the sample collection jars. Include all requested information except time of collection. (Use a fine point Sharpie to insure that the ink remains on the label). Affix the labels to the jars.

### **5.0 Sampling Procedure**

- 5.1 Go to the sampling point with the sample container. If not analyzing for ions or metals, use a trowel to obtain the soil. Do not touch the soil with your bare hands. Use new latex gloves with each sample to help minimize any cross-contamination. Try to avoid collecting rocks or vegetation.
- 5.2 Pack the soil tightly into the container leaving the top slightly domed. Screw the lid down tightly. Enter the time of collection onto the sample collection jar label.
- 5.3 Place the sample directly on ice for transport to the laboratory.
- 5.4 Complete the Chain of Custody form to include the collection times for each sample. Deliver all samples to the laboratory.

### **6.0 Documentation**

- 6.1 The testing laboratory shall provide the following minimum information:
  - A. Client, Project and sample name.
  - B. Signed copy of the original Chain of Custody Form including data on the time the sample was received by the lab.
  - C. Results of the requested analyses
  - D. Test Methods employed
  - E. Quality Control methods and results



## **Laboratory Analytical Results**

This section contains a copy the chain of custody, laboratory analytical results and quality control information for soil samples processed during this project.



# ARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603

PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

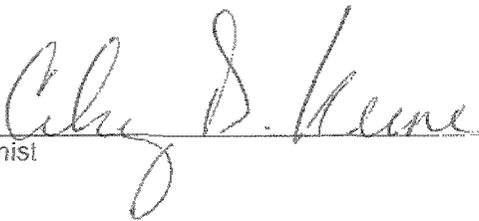
ANALYTICAL RESULTS FOR  
WHOLE EARTH ENVIRONMENTAL  
ATTN: ELLIOT WERNER  
2103 ARBOR COVE  
KATY, TX 77494  
FAX TO: (281) 394-2051

Receiving Date: 10/16/07  
Reporting Date: 10/18/07  
Project Owner: DEVON ENERGY  
Project Name: PURE GOLD FED. C #1  
Project Location: CARLSBAD, NM

Sampling Date: 10/16/07  
Sample Type: SOIL  
Sample Condition: COOL & INTACT  
Sample Received By: SB  
Analyzed By: CK/AB

LAB NUMBER	SAMPLE ID	BENZENE (mg/kg)	TOLUENE (mg/kg)	ETHYL BENZENE (mg/kg)	TOTAL XYLENES (mg/kg)
ANALYSIS DATE		10/17/07	10/17/07	10/17/07	10/17/07
H13521-1	SURFACE COMP.	0.944	6.60	1.66	22.6
H13521-2	2' COMP.	0.224	5.95	0.558	31.6
Quality Control		0.115	0.108	0.108	0.328
True Value QC		0.100	0.100	0.100	0.300
% Recovery		115	108	108	109
Relative Percent Difference		3.5	2.8	2.8	2.7

METHOD: EPA SW-846 8021B

  
\_\_\_\_\_  
Chemist

  
\_\_\_\_\_  
Date

H13521B WEE

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# ARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603

PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR  
WHOLE EARTH ENVIRONMENTAL  
ATTN: ELLIOT WERNER  
2103 ARBOR COVE  
KATY, TX 77494  
Fax: (281) 394-2051

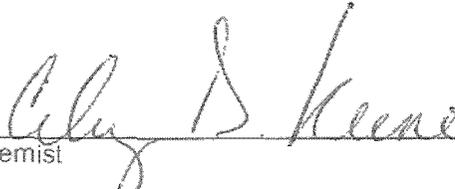
Receiving Date: 10/16/07  
Reporting Date: 10/18/07  
Project Owner: DEVON ENERGY  
Project Name: PURE GOLD FED. C #1  
Project Location: CARLSBAD, NM

Sampling Date: 10/16/07  
Sample Type: SOIL  
Sample Condition: COOL & INTACT  
Sample Received By: SB  
Analyzed By: CK/HM

LAB NUMBER	SAMPLE ID	GRO (C <sub>6</sub> -C <sub>12</sub> ) (mg/kg)	DRO (>C <sub>12</sub> -C <sub>28</sub> ) (mg/kg)	Cl* (mg/kg)
ANALYSIS DATE		10/17/07	10/17/07	10/16/07
H13521-1	SURFACE COMP.	<125	16800	<16
H13521-2	2' COMP.	134	6420	<16
Quality Control		473	533	500
True Value QC		500	500	500
% Recovery		94.6	107	100
Relative Percent Difference		11.8	14.6	<0.1

METHODS: TPH GRO & DRO: EPA SW-846 8015 M; Std. Methods 4500-CFB

\*Analyses performed on 1:4 w:v aqueous extracts.

  
\_\_\_\_\_  
Chemist

  
\_\_\_\_\_  
Date

H13521TCL WEE

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