

1R - 426-107

**GENERAL  
CORRESPONDENCE**

**YEAR(S):**  
2007

**Gilbert Van Deventer**

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**From:** "Gilbert Van Deventer" <gilbertvandeventer@cox.net>  
**To:** "Hansen, Edward J., EMNRD" <edwardj.hansen@state.nm.us>  
**Cc:** "Scott Curtis" <scurtis@riceswd.com>; "Wayne Price" <wayne.price@state.nm.us>; "Kristin Pope" <kpope@riceswd.com>; "Carolyn Haynes" <chaynes@riceswd.com>  
**Sent:** Monday, February 12, 2007 6:08 PM  
**Attach:** P-26-2\_ICP.pdf  
**Subject:** Investigation & Characterization Plan; BD Jct. P-26-2 Site

Attention: Edward Hansen, New Mexico Oil Conservation Division - Environmental Bureau

Subject: Investigation & Characterization Plan

Site Name: BD Jct. P-26-2 Site

Site Location: T21S-R37E-Section 26, Unit Letter P

Site Agent: RICE Operating Company

Hello Edward:

Trident Environmental is pleased to submit the attached *Investigation & Characterization Plan* (ICP) for the above-referenced site. One hard copy and one copy on compact disk is being sent via USPS Certified Mail (# 7099 3400 0017 1737 2251).

Thank you for your consideration of this ICP. If you have any questions, please contact me at 432-638-8740, or Kristin Pope at ROC, 505-393-9174.

Sincerely,  
Gilbert J. Van Deventer, PG, REM  
Trident Environmental  
[www.trident-environmental.com](http://www.trident-environmental.com)  
Work/Mobile: 432-638-8740  
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CERTIFIED MAIL  
RETURN RECEIPT NO. 7099 3400 0017 1737 2251

February 12, 2007

Mr. Edward Hansen  
New Mexico Energy, Minerals, & Natural Resources  
Oil Conservation Division, Environmental Bureau  
1220 S. St. Francis Drive  
Santa Fe, New Mexico 87504

RE: **INVESTIGATION & CHARACTERIZATION PLAN**  
**BD P-26-2 Junction Box Site**  
**T21S-R37E-Section 26, Unit Letter P**

Mr. Hansen:

RICE Operating Company (ROC) has retained Trident Environmental to address potential environmental concerns at the above-referenced site. ROC is the service provider (agent) for the Blinberry-Drinkard (BD) SWD System and has no ownership of any portion of the pipeline, well, or facility. The System is owned by a consortium of oil producers, System Partners, who provide all operating capital on a percentage ownership/usage basis. Environmental projects of this magnitude require System Partner AFE approval and work begins as funds are received. In general, project funding is not forthcoming until NMOCD approves the work plan. Therefore, your timely review of this submission is requested.

For all environmental projects, ROC will choose a path forward that:

- protects public health,
- provides the greatest net environmental benefit,
- complies with NMOCD Rules, and
- is supported by good science.

Each site shall have three submissions or a combination of:

1. This Investigation and Characterization Plan (ICP) is a proposal for data gathering and site characterization and assessment.
2. Upon evaluating the data and results from this ICP, a recommended remedy will be submitted in a Corrective Action Plan (CAP).
3. Finally, after implementing the remedy, a closure report with final documentation will be submitted.

## BACKGROUND

The P-26-2 Junction Box (Jct. P-26-2) site is located at township 21 south, range 37 east, section 26, unit letter P approximately 1.7 miles east of Eunice, NM as shown on the attached Site Location Map (Figure 1). According to the Lea County Tax Assessor's Office, the land is owned by Delrose Scott. Land in the site area is primarily utilized for crude oil production and cattle ranching.

Groundwater in the site area occurs within the High Plains aquifer under water table (unconfined) conditions (Hart & McAda, 1985). The saturated portion of the High Plains aquifer is estimated to be approximately 34 ft thick in the site area (Nicholson and Clebsch, 1961). Depth to groundwater in the site area is estimated at approximately 46 feet below ground surface (bgs) based on nearby well data.

## PREVIOUS WORK

On June 2, 2004, ROC initiated replacement activities of Jct. P-26-2 as part of the approved Junction Box Upgrade Program. Jct. P-26-2 was rebuilt at a location approximately 67 feet to the north.

Soil sampling activities were conducted from June 2 to 4, 2004 and included the installation of four (4) twelve foot deep trenches and one (1) sixteen foot deep trench from which soil samples were collected and two-foot intervals beginning at 4 feet below ground surface (bgs). On June 7, 2004, a 10 feet wide by 12 feet long area was excavated to a depth of 12 feet bgs. Composite soil samples were recovered from the floor of the excavation, from each of the four walls of the excavation, and from the excavated soil. Figure 2 indicates the soil sample locations and provides a summary of all field and laboratory analyses.

Following the characterization of the soil, the excavated soil was blended and returned to the excavation up to a depth of 6 feet bgs. A 1-foot thick compacted clay barrier was installed to prevent potential downward migration of any residual contaminants and the remaining soil was placed above the clay. An identification plate was placed on the surface to mark to location of the clay barrier.

Notice of potential groundwater impact was emailed to the NMOCD on August 25, 2004. A Junction Box Disclosure Report (attached) was submitted to the OCD on March 18, 2005 along with all 2004 junction box reports to disclose the site as having potential for adverse impact to the vadose zone and groundwater. The site was placed on a prioritized list of similar sites for further consideration.

## RECOMMENDATION FOR FURTHER ACTIONS

Construction of the new watertight junction box 67 ft north of this site has minimized the threat of additional impact from the vadose zone, however further investigation and characterization of the site is necessary to delineate the vadose zone below twelve feet and evaluate the potential for groundwater impact. The additional assessment is also necessary to assist ROC in selecting the appropriate soil and/or groundwater remedy.

### *Task 1      Evaluate Concentrations of Constituents of Concern in the Vadose Zone*

Subsurface soil samples for characterization of the lateral and vertical extent of hydrocarbon- and chloride-impacted soil will be collected at a maximum of 5-foot intervals in accordance with the procedures explained in QP-02, QP-03, and QP-07 (attached). Soil samples will be field-tested for chloride content using the titration method. Soil samples submitted to the laboratory shall be analyzed for gas and diesel range organics (GRO and DRO) using EPA Method 8015 to determine TPH concentrations. Samples will also be collected for headspace analysis using an organic vapor meter (OVM), which will be calibrated to assume a benzene response factor.

Select samples with headspace readings or GRO levels above 100 ppm will also be analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method 8021B.

The following concentrations of analytes will be used to delineate the lateral and vertical extent of impact to the vadose zone:

- 100 ppm OVM, and/or 10 mg/kg benzene and 50 mg/kg BTEX
- 1,000 ppm chloride

Soil borings will be placed appropriately to evaluate the subsurface chloride and TPH impacts. If three successive soil samples taken at 5-foot intervals test below 1,000 ppm chloride and below 100 ppm total volatile organic compounds for any boring, further advance will be terminated. However, all borings will penetrate at least 30 feet of the vadose zone.

*Task 2                      Evaluate Concentrations of Constituents of Concern in the Groundwater*

If we detect evidence of groundwater impact, one monitoring well will be placed in the area with the greatest potential for groundwater impact, will be converted to a monitoring well in accordance with EPA and industry standards and developed by bailing with a rig or hand bailer, or pumping with a submersible pump to remove fine-grained sediment disturbed during drilling and to ensure collection of representative samples. If data suggest ground water impairment we plan to conduct two quarters of ground water monitoring to confirm any initial result. If groundwater impact is confirmed, additional monitoring wells may be installed to determine the local groundwater gradient direction and lateral extent of groundwater impact. Additional monitoring wells might not be necessary due to the close proximity of monitoring wells at two sites under the direction of Plains Petroleum (DS Hugh Gathering site and Vacuum to Jal Mainline #3 site), a site under the direction of ROC (Jct. J-26, 1R0426-40), and another ROC site (P-26-1 Vent) in which an ICP similar to this one is under NMOCD review. The location of these nearby investigation sites are shown within the photodocumentation attachment to this ICP. Groundwater samples will be collected in accordance with procedures explained in QP-04 and QP-05 (attached), and analyzed for BTEX, major ions, and total dissolved solids (TDS).

The information gathered from tasks 1 and 2 will be evaluated and utilized to design a soil and/or ground water remedy if needed. The remedy that offers the greatest environmental benefit while causing the least environmental impairment will be selected. Such recommendations and findings will be presented to NMOCD in a subsequent Corrective Action Plan (CAP). When evaluating any proposed remedy or investigative work, ROC will confirm that there is a reasonable relationship between the benefits created by the proposed remedy or assessment and the economic and social costs.

We appreciate the opportunity to work with you on this project. Please feel free to call me at 432-638-8740 or Kristin Pope at 505-393-9174, if you have any questions.

Sincerely,



Gilbert J. Van Deventer, REM, PG, NMCS  
Trident Environmental - Project Manager

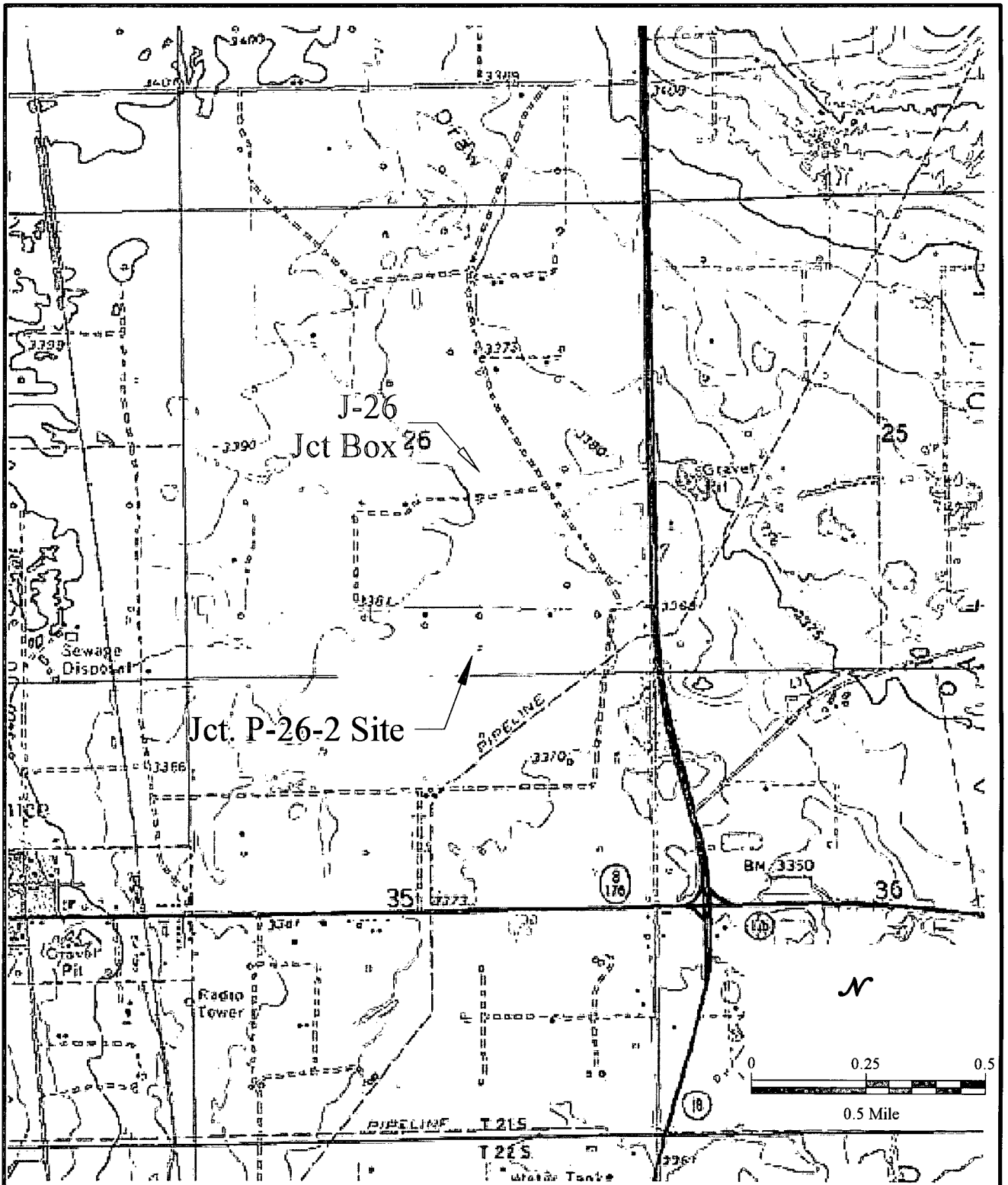
cc: CDH, JSC, KFP, file

*enclosures: site location map, photos, junction box disclosure report, and sampling procedures*

**Site Location Map**

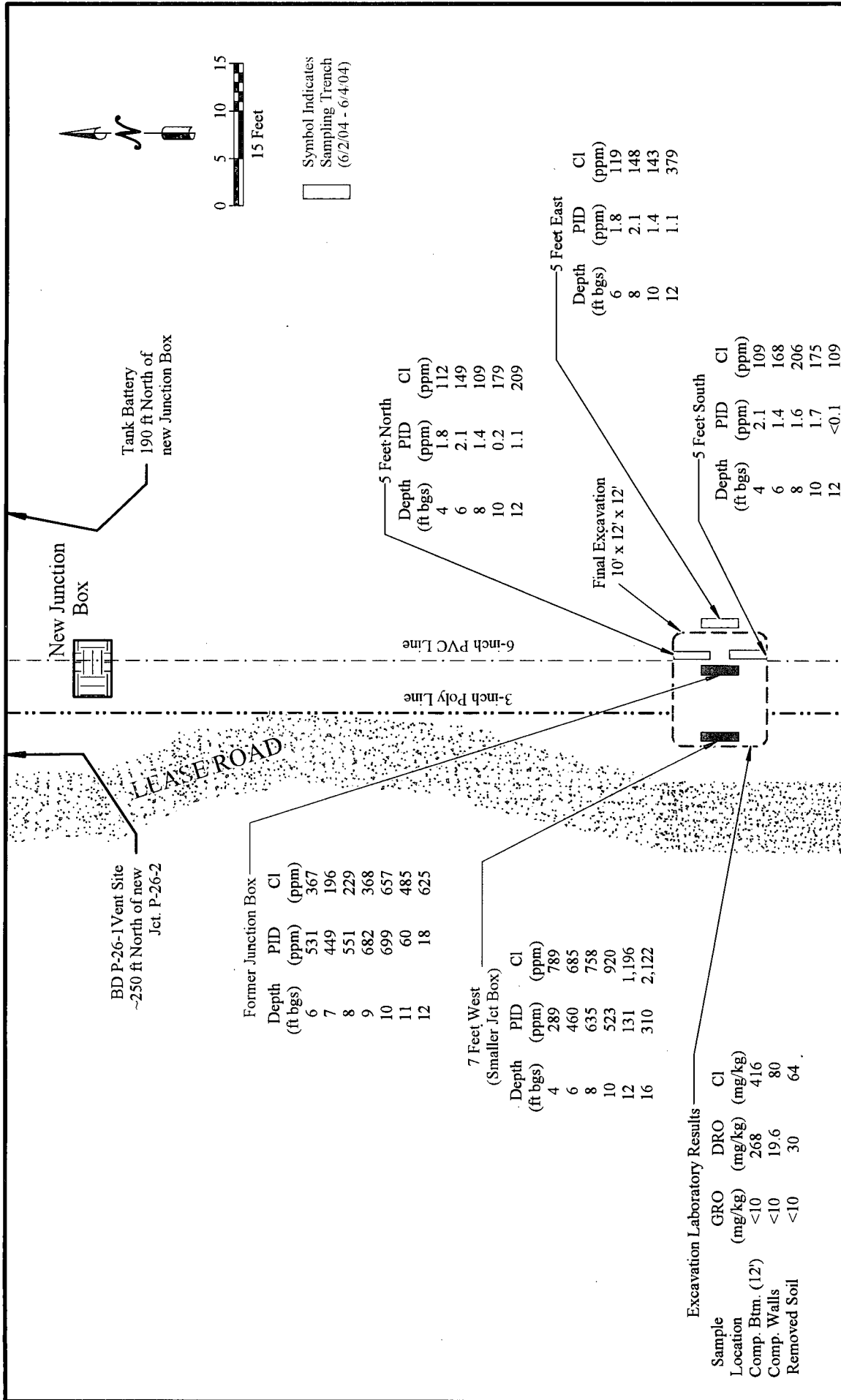
**And**

**Site Map of Soil Sampling Results**



BD Jct. P-26-2 Site  
T21S - R37E - Section 26, Unit P  
**RICE** *operating company*

FIGURE 1  
SITE LOCATION MAP



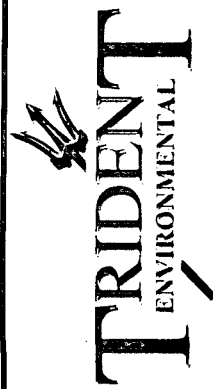
**FIGURE 2**

**SOIL SAMPLE RESULTS**

**BD Jct. P-26-2 Site**

**T21S - R37E - Section 26, Unit P**

**RICE Operating Company**





**Photodocumentation**



View facing west showing final excavation and initial backfilling activities. (07-07-2004).



View facing east showing compacted clay barrier at 5 ft below ground surface (07-07-2004).





View facing north showing raking & seeding activities with marker plate over former junction box (center) and the new junction box in background (01-07-2005).



Aerial view of Jct. P-26-2 site showing close vicinity of other monitoring sites (2005).

## **Junction Box Disclosure Report**

**RICE OPERATING COMPANY  
JUNCTION BOX DISCLOSURE\* REPORT**

**BOX LOCATION**

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
BD	P-26-2	P	26	21S	37E	Lea	Length	Width	Depth
							moved 67 ft north		

LAND TYPE: BLM \_\_\_\_\_ STATE \_\_\_\_\_ FEE LANDOWNER Delrose Scott OTHER \_\_\_\_\_

Depth to Groundwater 45 feet NMOCD SITE ASSESSMENT RANKING SCORE: 20

Date Started 06/02/04 Date Completed 07/08/04 OCD Witness No

Soil Excavated 53 cubic yards Excavation Length 10 Width 12 Depth 12 feet

Soil Disposed 0 cubic yards Offsite Facility n/a Location n/a

FINAL ANALYTICAL RESULTS: Sample Date 06/07/04 Sample Depth 12 ft

Procure 5-point composite sample of bottom and 4-point composite sample of sidewalls. TPH and Chloride laboratory test results completed by using an approved lab and testing procedures pursuant to NMOCD guidelines.

**CHLORIDE FIELD TESTS**

Sample Location	PID ppm	GRO mg/kg	DRO mg/kg	Chloride mg/kg
4-WALL COMP.	43.0	<10.0	19.6	80
BOTTOM @ 12 ft	64.9	<10.0	268.0	416
REMED. BACKFILL	37.0	<10.0	30.0	64

LOCATION	DEPTH (ft)	ppm
vertical trench at larger junction box	6	367
	7	196
	8	229
	9	368
	10	657
	11	485
7 ft west at smaller junction box	12	625
	4	789
	6	685
	8	758
	10	920
	12	1196
4-wall comp.	16	2122
	n/a	550
	12	438
bottom comp.	n/a	296
backfill	n/a	296

General Description of Remedial Action: This site contained two junction boxes, one of which contained a vent. The site was delineated using a backhoe while PID field screenings and chloride field tests were conducted at regular intervals. The vertical and lateral extent in the western direction was not found within the 10 x 12 x 12-ft-deep excavation. Bottom, wall, and backfill composite samples were collected on 6/7/2004 and the bottom sample at 12 ft BGS did not meet NMOCD guidelines. The excavation was backfilled up to 6 ft BGS with excavated soils that were blended on site. At 6 ft, a 1-ft-thick compacted clay barrier was installed to impede further downward chloride migration. The remaining spoils were backfilled on top of the clay and contoured to the surface. The disturbed surface was seeded with a blend of native vegetation on 1/7/2005. An identification plate has been placed on the surface to mark the clay below and to identify the site for future environmental considerations. A new watertight replacement junction box was built 67 ft north of this location. NMOCD has been notified of potential groundwater impact at this location.

**ADDITIONAL EVALUATION IS MEDIUM PRIORITY**

enclosures: chloride graphs, photos, lab results, clay test, PID screenings, diagram

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

SITE SUPERVISOR Joe Gatts SIGNATURE \_\_\_\_\_ COMPANY RICE Operating Company

REPORT ASSEMBLED BY Kristin Farris Pope SIGNATURE \_\_\_\_\_

DATE 1/21/2005 TITLE Project Scientist

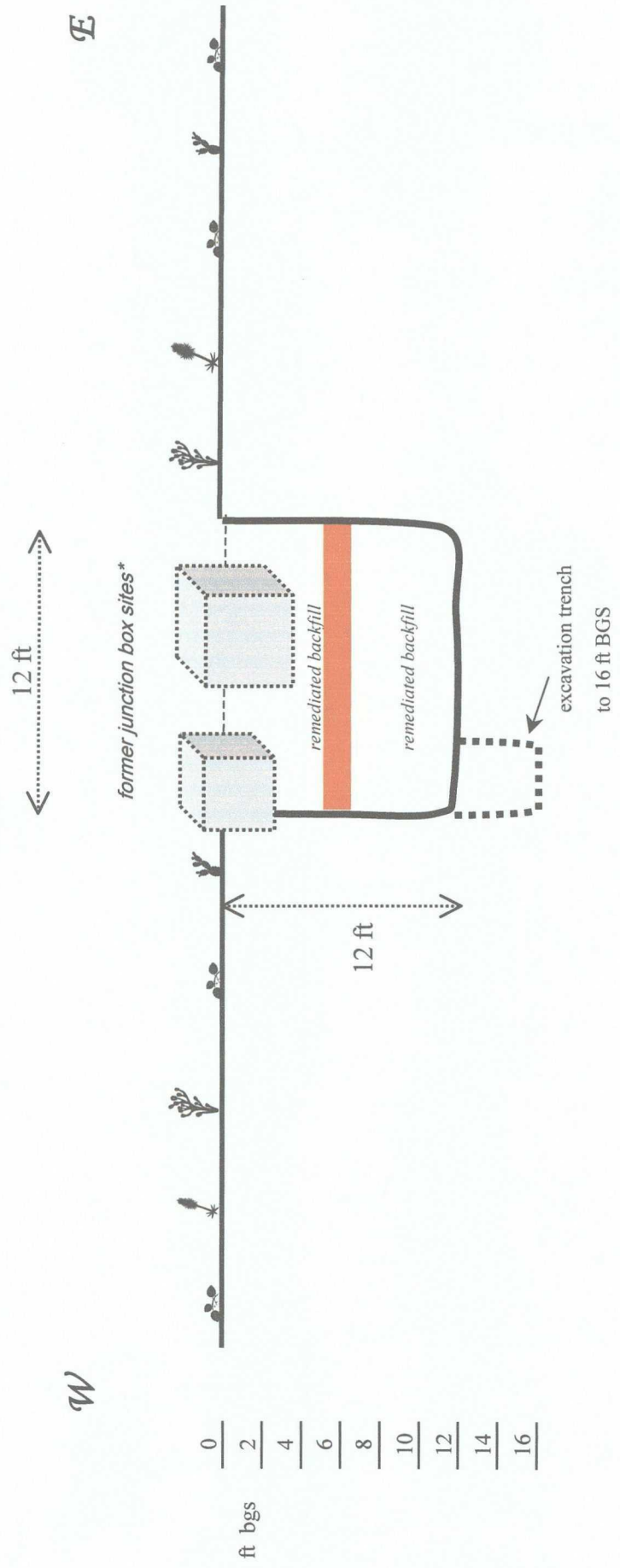
*\* This site is a "DISCLOSURE." It will be placed on a prioritized list of similar sites for further consideration.*



# BD jct. P-26-2

## 10 x 12 x 12-ft-deep

### Excavation Cross-Section



\* A new watertight junction box has been built to replace these 67 ft North of this location.



## **RICE *Operating Company*** **Quality Procedures**

QP-02: Procedure for Obtaining Soil Samples for Transportation to a Lab

QP-03: Sampling and Testing Protocol for Chloride Titration

QP-04: Development of Cased Water-Monitoring Wells

QP-05: Procedure for Obtaining Water Samples (Cased Wells)

QP-07: Sampling and Testing Protocol for VOC in Soil

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**Rice Operating Company**

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**Quality Procedure**

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

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**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.

**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.



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### **5.0 Sampling Procedure**

- 5.1. Do not touch the soil with your bare hands. Use new latex gloves with each sample to help minimize any cross-contamination.
- 5.2. Go to the sampling point with the sample container. If not analyzing for ions or metals, use a trowel to obtain the soil.
- 5.3. 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.
- 5.4. Place the sample directly on ice for transport to the laboratory if required.
- 5.5. 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. Project and sample name.
  - b. Signed copy of the original Chain of Custody Form including 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

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**Rice Operating Company**

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**QUALITY PROCEDURE**

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**Sampling and Testing Protocol  
Chloride Titration Using .282 Normal  
Silver Nitrate Solution**

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**1.0 Purpose**

This procedure is to be used to determine the concentration of chloride in soil.

**2.0 Scope**

This procedure is to be used as the standard field measurement for soil chloride concentrations.

**3.0 Sample Collection and Preparation**

- 3.1 Collect at least 80 grams 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 for 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).
- 3.2 The soil sample(s) shall be immediately inserted into a one-quart or larger polyethylene freezer bag. Care should be taken to insure that no cross-contamination occurs between the soil sample and the collection tools or sample processing equipment.
- 3.3 The sealed sample bag should be massaged to break up any clods.

**4.0 Sample Preparation**

- 4.1 Tare a clean glass vial having a minimum 40 ml capacity. Add at least 10 grams of the soil sample and record the weight.
- 4.2 Add at least 10 grams of reverse osmosis water to the soil sample and shake for 20 seconds.
- 4.3 Allow the sample to set for a period of 5 minutes or until the separation of soil and water.
- 4.4 Carefully pour the free liquid extract from the sample through a paper filter into a clean plastic cup if necessary.

### 5.0 Titration Procedure

- 5.1 Using a graduated pipette, remove 10 ml extract and dispense into a clean plastic cup.
- 5.2 Add 2-3 drops potassium chromate ( $K_2CrO_4$ ) to mixture.
- 5.3 If the sample contains any sulfides (hydrogen or iron sulfides are common to oilfield soil samples) add 2-3 drops of hydrogen peroxide ( $H_2O_2$ ) to mixture.
- 5.4 Using a 1 ml pipette, carefully add .282 normal silver nitrate (one drop at a time) to the sample while constantly agitating it. Stop adding silver nitrate when the solution begins to change from yellow to red. Be consistent with endpoint recognition.
- 5.5 Record the ml of silver nitrate used.

### 6.0 Calculation

To obtain the chloride concentration, insert measured data into the following formula:

$$\frac{.282 \times 35,450 \times \text{ml AgNO}_3}{\text{ml water extract}} \times \frac{\text{grams of water in mixture}}{\text{grams of soil in mixture}}$$

Using Step 5.0, determine the chloride concentration of the RO water used to mix with the soil sample. Record this concentration and subtract it from the formula results to find the net chloride in the soil sample.

Record all results on the delineation form.

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## Rice Operating Company

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### Quality Procedure Development of Cased Water-Monitoring Wells

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#### 1.0 Purpose

This procedure outlines the methods to be employed to develop cased monitoring wells.

#### 2.0 Scope

This procedure shall be used for developed, cased water monitoring wells. It is not to be used for standing water samples such as ponds or streams.

#### 3.0 Sample Collection and Preparation

- 3.1 Prior to development, the static water level and height of the water column within the well casing will be measured with the use of an electric D.C. probe or a steel engineer's tape and water sensitive paste.
- 3.2 All measurements will be recorded within a field log notebook.
- 3.3 All equipment used to measure the static water level will be decontaminated after each use by means of Liquinox, a phosphate free laboratory detergent, and water to reduce the possibility of cross-contamination. The volume of water in each well casing will be calculated.

#### 4.0 Purging

- 4.1 Wells will be purged by using a 2" decontaminated submersible pump or dedicated one liter Teflon bailer. Wells should be purged until the pH and conductivity are stabilized and the turbidity has been reduced to the greatest extent possible.
- 4.2 If a submersible is used the pump will be decontaminated prior to use by scrubbing the outside surface of tubing and wiring with a Liquinox water mixture, pumping a Liquinox-water mixture through the pump, and a final flush with fresh water.

#### 5.0 Water Disposal

- 5.1 All purge and decontamination water will be temporarily stored within a portable tank to be later disposed of in an appropriate manner.

#### 6.0 Records

- 6.1 Rice Operating Company will record the amount of water removed from the well during development procedures. The purge volume will be reported to the appropriate regulatory authority when filing the closure report.

## Rice Operating Company

### Quality Procedure

#### Procedure for Obtaining Water Samples (Cased Wells) Using One Liter Bailer

#### 1.0 Purpose

This procedure outlines the methods to be employed in obtaining water samples from cased monitoring wells.

#### 2.0 Scope

This procedure shall be used for developed, cased water monitoring wells. It is not to be used for standing water samples such as ponds or streams.

#### 3.0 Preliminary

3.1 Obtain sterile sampling containers from the testing laboratory designated to conduct analyses of the water. 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 The following table shall be used to select the appropriate sampling container, preservative method and holding times for the various elements and compounds to be analyzed.

Compound to be Analyzed	Sample Container Size	Sample Container Description	Cap Requirements	Preservative	Maximum Hold Time
BTEX	40 ml	VOA Container	Teflon Lined	HCl	7 days
TPH	1 liter	clear glass	Teflon Lined	HCl	28 days
PAH	1 liter	amber glass	Teflon Lined	Ice	7 days
Cation/Anion	1 liter	clear glass	Teflon Lined	None	48 Hrs
Metals	1 liter	HD polyethylene	Any Plastic	Ice/HNO <sub>3</sub>	28 Days
TDS	300 ml	clear glass	Any Plastic	Ice	7 Days

#### **4.0 Chain of Custody**

- 4.1 Prepare a Sample Plan. The plan will list the well identification and the individual tests to be performed at that location. 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 Bailing Procedure**

- 5.1 Identify the well from the sites schematics. Place pre-labeled jar(s) next to the well. Remove the plastic cap from the well bore by first lifting the metal lever and then unscrewing the entire assembly.
- 5.2 Using a dedicated one liter Teflon bailer, purge a minimum of three well volumes. Place the water in storage container for transport to a ROC disposal facility.
- 5.3 Take care to insure that the bailing device and string do not become cross-contaminated. A clean pair of rubber gloves should be used when handling either the retrieval string or bailer. The retrieval string should not be allowed to come into contact with the ground.

#### **6.0 Sampling Procedure**

- 6.1 Once the well has been bailed in accordance with 5.2 of this procedure, a sample may be decanted into the appropriate sample collection jar directly from the bailer. The collection jar should be filled to the brim. Once the jar is sealed, turn the jar over to detect any bubbles that may be present. Add additional water to remove all bubbles from the sample container.
- 6.2 Note the time of collection on the sample jar with a fine Sharpie.

6.3 Place the sample directly on ice for transport to the laboratory. The preceding table shows the maximum hold times between collection and testing for the various analyses.

6.4 Complete the Chain of Custody form to include the collection times for each sample. Deliver all samples to the laboratory.

## 7.0 Documentation

7.1 The testing laboratory shall provide the following minimum information:

- A. Project and sample name.
- B. Signed copy of the original Chain of Custody Form including 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

## Calculation for Determining the Minimum Bailing Volume for Monitor Wells

$$\text{Formula } V = (\pi r^2 h)$$

2" well  $[V/2.31 = \text{gal}] \times 3 = \text{Purge Volume}$

V=Volume

$\pi = \text{pi}$

r=inside radius of the well bore

h=maximum height of well bore in water table

Example:

$\pi$	$r^2$	h(in)	V(cu.in)	V(gal)	X 3 Volumes	Actual
3.1416	1	180	565.488	2.448	7.34 gal	>10 gal

## Rice Operating Company

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### QUALITY PROCEDURE

#### Sampling and Testing Protocol for VOC in Soil

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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 Analytical 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 Celsius, (59-77°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 Environmental Instruments 13471 OVM / Datalogger or a similar PID-type instrument. (Device will be identified on VOC Field Test Report Form.) Prior to use, the instrument shall be zeroed-out in accordance with the appropriate maintenance and calibration procedure outlined in the instrument operation manual. The PID device will be calibrated each day it's used.

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 sidewalls of the bag.

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

3.2.4 If the instrument provides a reading exceeding 100 ppm, proceed to conduct BTEX Speciation in accordance with QP-02 and QP-06. If the reading is 100 ppm or less, NMOCD BTEX guideline has been met and no further testing for BTEX is necessary. File the Field Test Report Form in the project file.

### 4.0 Clean-up

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.**