RECR - 2

REPORTS

YEAR:
2008

INTERA Incorporated
6000 Uptown Blvd NE
Suite 100
Albuquerque, NM 87110
Telephone: 505 246 1600
Fax: 505 246 2600

June 30, 2007

Mr. Jim Griswold
Hydrologist
Oil Conservation Division
1220 South Saint Francis Drive
Santa Fe, NM 87505

RE: Phase II Remediation, Cockburn State "B" Well Site Pit, Lea County, New Mexico

Dear Mr. Griswold:

INTERA Incorporated has completed Phase II remediation services at the Cockburn State "B" Well Site Pit and a report detailing these activities has been developed. One hard copy and one electronic copy of this report are enclosed. An electronic version will be provided under separate cover.

INTERA appreciates the opportunity to work with the New Mexico Oil Conservation Division. If you have any questions, please do not hesitate to contact us at (505) 246-1600. Thank you very much.

Sincerely,
INTERA Inc.

David Lawler
Staff Scientist

Joe Galemore, P.G.
Project Manager

Enclosures

Report on Phase II Remediation Activities at the Cockburn State "B" Well Site Pit, Lea County, New Mexico

Prepared for:

New Mexico Energy, Minerals,
& Natural Resources Department
Oil Conservation Division

Prepared by:

INTERA, Inc.
6000 Uptown Boulevard NE
Suite 100
Albuquerque, New Mexico 87110

June 30, 2008

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

ACRONYMS AND ABBREVIATIONS

AES	Advanced Environmental Solutions of Belen, New Mexico
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CRI	Controlled Resources, Incorporated of Hobbs, New Mexico
EPA	United States Environmental Protection Agency
INTERA	INTERA, Inc.
mg/kg	milligrams per kilogram
NMED	New Mexico Environment Department
OCD	New Mexico Oil Conservation Division
PID	photoionization detector
ppm	parts per million
Site	Cockburn State "B" Well Site Pit
TPH	total petroleum hydrocarbons
UWB	Underground Water Basin
VOC	volatile organic compound

1.0 INTRODUCTION

Intera, Inc. (INTERA) was contracted by the State of New Mexico Oil Conservation Division (OCD) to perform remediation services at the Cockburn State "B" Well Site Pit (Site) located approximately 30 miles west/northwest of Hobbs, New Mexico. Work was authorized by the OCD through purchase order number 52100-0000012853 dated May 20, 2008, and was a continuation of work completed in June 2007. The work was completed in general accordance with INTERA's Work Plan dated May 19, 2008 (INTERA, 2008) and State of New Mexico General Services Department Price Agreement number 61-805-09-18553.

The work plan included the removal of 1,000 cubic yards of petroleum-contaminated soils. The excavation was to be backfilled with clean soil and compacted to grade, and the excavated area was to be reseeded. Some deviations to the work plan were experienced during field activities. Only 960 cubic yards of soils were removed from the Site instead of 1,000. It appeared that the contaminated soil had been removed and that the excavation was advancing in clean soil, so the decision was made to stop excavating. Also, due to the instrument and method sensitivity, a decision was made to conduct the chloride and PetroFLAG total petroleum hydrocarbons (THP) testing at an off-site location. These deviations are discussed further below.

Prior to performing field work, INTERA created a Health and Safety Plan for field activities, which was signed and acknowledged by all on-Site personnel. Advanced Environmental Services (AES) of Belen, New Mexico was subcontracted for excavation, backfill, disposal related services, and reseeding operations at the Site. INTERA contacted One-Call (New Mexico underground utility locating service ticket number 2008232196) in order for utility companies to map the buried pipelines and electrical hazards on the Site.

1.1. Summary of Phase I Activities

The first phase of this project was conducted in June 2007. INTERA mobilized to the Site on June 19, 2007, and field work was conducted on June 19 and 20, 2007. The first field activity of this phase consisted of the removal of 75 barrels (2,513 gallons) of petroleum-contaminated water from the pit by a 4,000-gallon capacity vacuum truck. The waste was hauled to Controlled Recovery Incorporated's (CRI) Halfway facility located in Halfway, New Mexico, about 30 miles west-southwest of Hobbs along New Mexico highway 62/180 between Hobbs and Carlsbad, New Mexico. In addition, 650 cubic yards of petroleum-contaminated soil was removed and disposed of at CRI. Contaminated soil (as determined by visual evidence, olfactory observation, and laboratory data) was still present after the 650 cubic yards of material were removed. Soil samples obtained from the south end of the excavation at approximately six feet below ground surface (bgs) were found to contain diesel range organics and chloride at levels as high as 25,000 milligrams per kilogram (mg/kg) and 300 mg/kg, respectively. Furthermore, the contamination appeared to extend well beyond the excavated limits. Due to time and budget

constraints, and concerns regarding utilities in the area, excavation activities were terminated. Prior to backfilling the excavation, a layer of Visqueen® plastic sheeting was placed along the bottom and sides of the pit in order to keep contaminated material from coming in contact with clean fill material and to mark the extent of the excavation in the event further remediation was necessary. An excess of 50 cubic yards of clean fill material was stockpiled at the Site after backfilling was complete.

1.2. Site Description

The Site is located in Lea County in southeast New Mexico, approximately 30 miles west/northwest of Hobbs. It lies within the Llano Estacado ("Palisaded Plain"), a geologic feature bound to the east by the Pecos River, to the west by the Permian Plains of Texas, to the north by the Canadian River, and to the south by Interstate 20, or roughly between Midland and Amarillo, Texas ("Llano Estacado"). The Site is located within Township 18 South, Range 33 East, Section 1; the latitude of the site is 32 degrees, 46 minutes, 50.30 seconds North, and the longitude is 103 degrees 36 minutes, 51.40 seconds West (Figures 1 and 2). The Site is located on the Buckeye, New Mexico 7.5-minute topographic quadrangle. The elevation at the Site is approximately 4,100 feet above mean sea level.

1.3. Hydrogeology

The Site is located within the Ogallala Formation, which is characterized by sand, silt, clay, gravel, and caliche. The thickness of this formation is up to 350 feet, and is further described as follows:

> *"Sand, fine- to coarse-grained quartz, silty in part, cemented locally by calcite and silica, locally crossbedded, various shades of gray and red. Minor silt and clay with caliche nodules, massive, white, gray, olive green, maroon. Gravel, not everywhere present, composed of pebbles and cobbles of quartz, quartzite, minor chert, igneous rock, metamorphic rock, limestone, and abraded Gryphaea in intraformational channel deposits and in basal conglomerate. Caliche, sandy, pisolitic, forms caprock, may include some caliche of Pleistocene age. Where stippled pattern shown, overlain sporadically by 14 to 30 inches of brownish gray to brown to reddish brown, calcareous sand and silt of pre-Illinoian age..."* (Leedshill-Herkenhoff, Inc., et al. 2000).

Ground water within Lea County exists within five separate basins. From north to south, these include the Lea County Underground-Water Basin (UWB), the Capitan UWB, and Carlsbad UWB, the Jal UWB, and the Roswell UWB. The Site is located within the Lea County UWB, which extends east to west across the width of Lea County and terminates to the south along the Mescalero Ridge escarpment. The primary aquifer of the Lea County UWB is the Ogallala Formation, the sediments of which include sands, silts, clay and gravel. The maximum saturated thickness of the Ogallala Aquifer in the Lea County UWB is 250 feet, and the cities of Hobbs,

Lovington, and Tatum utilize the Ogallala for irrigation and municipal uses. As of 1998, depth to water at the Site is estimated to be 130 feet below ground surface (bgs) (Leedshill-Herkenhoff, Inc., et al. 2000).

2.0 FIELD ACTIVITIES

Phase II field work commenced on June 9, 2008 and ended on June 12, 2008. Field Activities consisted of the four tasks described below.

2.1. Excavation

Excavation was performed with a track-hoe and took place from June 9 to June 11. The excavation work commenced at the approximate center of the June 2007 excavation and the clean soil overburden was removed to the point where the Visqueen® sheeting was visible and/or to where soil contamination was evident through visual or olfactory evidence (Figure 3). An estimated total of 650 cubic yards of clean overburden was removed from the pit and stockpiled for backfilling operations. After the overburden was removed, a total of 960 cubic yards of contaminated soil were excavated and removed from the Site. The resulting excavation was approximately 54 feet by 49 feet by 17 feet deep (Figures 3 and 4). The work plan specified 1,000 cubic yards; however, it appeared that clean soil was encountered prior to the 1,000 yard total so the decision was made to cease excavation activities and begin backfilling the pit.

"Belly-dump" type haulers were utilized to remove contaminated soil from the Site to the CRI facility and to transport clean fill material from CRI to the Site. The round-trip distance from the Site to CRI's facility was approximately 80 miles and travel time for the trucks ranged from between two and two-and-a-half hours. Waste Manifests are provided in Appendix A. A complete photographic log of field activities at the Site is provided in Appendix B. A copy of the field notes for Site activities is included in Appendix C.

2.2. Field Soil Screening and Soil Sampling Methods

During the excavation, visual and olfactory evidence of contamination was noted and documented in the field book (Appendix C). A hydrocarbon odor emanated from the excavation during Site excavation and the south and east walls of the excavation were observed to contain stained soils; the north and west walls appeared less impacted. Field screening for volatile organic compounds (VOCs) was used as confirmation of visual and olfactory evidence as well as to help determine the direction in which the excavation should proceed. In order to perform field screening of the soils for VOCs, 29 grab soil samples were obtained during excavation and backfilling activities on June 10, June 11, and June 12, 2008. Grab samples were collected from the contaminated soil stockpile used to load each truck. VOCs were analyzed in the field using a photoionization detector (PID) and the heated headspace method according to OCD's "Guidelines for Remediation of Leaks, Spills, and

releases" (OCD, 1993). The PID used for field screening was a MiniRAE 2000 with a 10.6 eV lamp. Results of the PID analysis for the soil samples obtained are shown in Table 1.

In order to screen the soils for chloride, six soil samples were obtained and analyzed using a Hach® chloride field kit; laboratory chloride analysis was also performed on these soil samples. Due to high winds and the need for a relatively clean work environment, chloride was analyzed off-site using the field kit. In order to show a comparison between field methods and laboratory methods, the results of chloride screening are presented in Table 2 alongside the laboratory results for chloride.

As part of the Work Plan, soil samples were to be tested in the field for TPH using the PetroFLAG Analyzer System®. However, because of high winds and the necessity of having a clean working environment, it was agreed that the test would be run off-site. Six samples were collected for analysis using PetroFLAG; laboratory analysis was also performed on these samples. The samples were prepped following the directions provided by Dexsil, the maker of the PetroFLAG kit. However, when the samples were tested for TPH using the PetroFLAG meter, an error message was returned. The error message, according to the PetroFLAG users manual, indicated that the sensor was out of range, meaning the sample concentration was too high. In a phone interview, a Dexsil representative stated that the unit cannot read concentrations greater than 3,000 parts per million (ppm). To resolve the problem, the test should be run again using a smaller aliquot (i.e., applying a dilution factor). However, additional re-agents were not available. Therefore, the results for PetroFLAG field analysis for these samples is reported as greater than 3,000 ppm (Table 2).

Twelve soil samples were also collected for laboratory analysis. Two soil samples were obtained from each of the four walls of the excavation, three soil samples were obtained from the bottom of the excavation, and one soil sample was collected from the southeast corner of the excavation. Soil samples were analyzed in the laboratory for TPH using United States Environmental Protection Agency (EPA) Method 418.1; for chloride using EPA Method 9056A; and for benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method 8021B. Laboratory results are shown in Table 2 and the laboratory report is provided in Appendix D. See Figure 3 for sample locations relative to the excavation.

2.3. Backfilling

Backfilling activities took place on June 12, 2008, and were performed with the front-end loader and track-hoe. Backfill material was composed primarily of caliche material transported from CRI. Approximately 650 cubic yards of clean overburden was removed prior to excavation of contaminated soils. Approximately 50 cubic yards of clean backfill was left over at the Site from the June 2007 excavation. A total of 480 cubic yards of clean fill was delivered to the Site from CRI on June 9 and June 10, 2008. Therefore, an estimated total of 1,180 cubic yards of clean backfill

material was deposited in the pit during backfilling. The 50 cubic yards of fill that was left over from the June 2007 excavation was just an estimate of the amount left over. It is likely that there was much more than 50 cubic yards of fill left over and that the total amount of backfill material deposited in the pit was more than 1,180 cubic yards.

The pit was initially backfilled using the excavator to create an entry ramp into the pit. Once the operator could maneuver the excavator into the pit, material was added and compacted by running both the excavator and front-end loader over the fresh material. Using this method, the pit was backfilled in successive 2-foot lifts. When the pit had been filled, the front-end loader spread the remaining clean fill material thin over the Site and the excavator compacted it by driving back and forth across the top of the pit.

2.4. Reseeding

Reseeding of the excavated area and other areas de-vegetated during the remediation process, which totaled approximately 1 acre, took place on June 25, 2008. Reseeding consisted of first disking the de-vegetated area to a depth of approximately 6 inches. This step was followed by spraying a seed, water, and fertilizer slurry onto the disked area, which was then covered with a wood fiber mulch and tackifier. Approximately 20 pounds of the following seed mix were used:

- Sideoats Grama
- Sand Dropseed
- Little Bluestem
- Indian Grass
- Switchgrass

Seed and mulch specifications are provided in Appendix E and photos of the reseeding operation are included in Appendix B. A few hundred gallons of water were then sprayed onto the reseeded area on the following day.

3.0 ANALYTICAL RESULTS

During excavation activities, twenty-nine grab samples were collected for field analysis, and twelve samples were collected for laboratory analysis. Results of sampling activities are discussed below and are presented in Table 1 and Table 2.

3.1. Excavation Samples

During excavation activities, twenty-five grab samples were collected from the contaminated soil stockpile and tested for VOCs with the PID. Field results ranged from 5.4 ppm in a sample obtained from the stockpile at 15:35 on June 10, to 1,919 ppm in a sample obtained from the

stockpile at 11:14 on June 10. The highest VOCs readings were found in samples collected during the early stages of the excavation. VOC concentrations generally decreased as the excavation progressed into cleaner material. Results of field sampling for VOCs are presented in Table 1.

Six samples were collected for analysis using a Hach® field kit. Chloride concentrations measured using the field kit ranged from less than 90 mg/kg (the detection limit for chloride in field kit samples) to 141 mg/kg in Cockburn 11.

Six samples were also collected for analysis of TPH using the PetroFLAG test kit. All six samples tested outside the range of the PetroFLAG unit of 3,000 ppm.

3.2. Confirmation Sampling

After excavation activities were halted, twelve samples were collected for laboratory analysis of VOCs, chloride, and TPH. Results of confirmation sampling are presented in Table 2. Laboratory analysis did not detect VOCs in any sample. Benzene, toluene, ethylbenzene and xylenes in soils were all below their respective practical quantification limits (PQLs) in all soil samples.

There was a substantial difference between chloride values obtained through use of the chloride field kit versus chloride values obtained through laboratory techniques. The field results were found to both over-estimate and under-estimate chloride concentrations compared to laboratory results. Laboratory chloride values ranged from 5.3 mg/kg in the Cockburn 2 sample to 190 mg/kg in the Cockburn 7 sample.

Concentrations of TPH in the twelve confirmation samples ranged from less than 20 mg/kg (the TPH practical quantitation limit, or PQL for this sample) in the Cockburn 10 sample to 39,000 mg/kg in the Cockburn 4 sample. The samples with the two highest TPH values, Cockburn 4 and Cockburn 11, were both collected from the floor of the pit. The floor of the pit was a layer of impenetrable caliche and the excavator was unable to dig any deeper. It is likely that soil collected from the floor represents material that sloughed in from the surrounding walls. Therefore, contamination found in the floor of the pit may actually be more representative of contamination in the surrounding walls.

The sample with the third highest TPH value, Cockburn 6, was collected on the west wall of the pit. This is in contrast to what was found in the west wall of the pit during the June 2007 excavation. The sample collected from the west wall during the June 2007 excavation had a TPH value of 150 mg/kg, which is below the clean-up standard for this site. According to the most recent data, soil in the west wall has a TPH concentration of 26,000 mg/kg, which is in excess of the cleanup standard for TPH.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on work conducted at the Site, the following conclusions can be made:

- 960 cubic yards of petroleum-contaminated soil were removed from the Site during this excavation. Previously, in June 2007, 650 cubic yards of contaminated soil were removed. In total, 1,610 cubic yards of contaminated soil have been removed from the Site.
- 480 cubic yards of clean fill material were delivered to the Site. Approximately 650 cubic yards of clean overburden were stockpiled prior to beginning excavation of contaminated soils, and 50 cubic yards of clean fill material were on Site prior to the start of work. This material was backfilled and compacted in the pit after excavation activities had ended.
- Soil contamination extends beyond the excavation boundaries. TPH concentrations in excess of the cleanup standard of 2,500 mg/kg were found in seven out of twelve soil samples (Table 2). These seven samples were collected from the center of the south wall, the south side of the east wall, the north side of the east wall, the north side of the west wall, the east side of the north wall, the northwest side of the pit floor, and the center of the east side of the floor. However, it is likely that contamination on the floor of the pit is actually from material that sloughed in from the surrounding walls.
- Chloride does not exceed clean up standard of 1,000 mg/kg for the Site (Table 2).
- Chloride field kits did not show agreement with laboratory chloride results. Chloride field kits both over-estimated and under-estimated chloride concentrations.
- No VOCs were detected in any of the 12 confirmation soil samples (Table 2).

Following the OCD "Guidelines for Remediation of Leaks, Spills, and Releases" (OCD, 1993) for remediation of unsaturated contaminated soils, the ranking score for the Site is zero. Ranking criteria includes the following factors:

- *Depth to ground water*: The depth to water at the Site is estimated to be 130 bgs at the Site. The ranking score for this depth is zero.
- *Distance from a water source or private domestic water well*: If the site to be remediated is less than 1,000 feet from a water source or less than 200 feet from a private domestic water source, the ranking score is 20, otherwise it is zero. INTERA performed a search of the Office of the State Engineer's WATERS database and concluded that there are no private domestic water wells in the area and that there are no irrigation and production wells within 1,000 feet of the Site. Therefore the ranking score for this factor is also zero.

- *Distance to a surface water body:* The nearest surface water body to the Site is more than 1,000 feet, and the ranking score for this distance is zero.

Following the OCD "*Guidelines for Remediation of Leaks, Spills, and Releases*" (OCD, 1993) for remediation of unsaturated contaminated soils, the ranking score for the Site is in the 0-9 range. Based on the meeting between the OCD and INTERA staff on May 9, 2008, the assessment levels for the Site are:

- TPH (EPA Method 418.1) – 100 mg/kg
- Chlorides (EPA Method 9056A or equivalent) – 250 mg/kg

The cleanup standards for the Site are:

- Benzene (EPA Method 8260B or 8021B) – 0.2 mg/kg
- BTEX (EPA Method 8260B or 8021B) – 50 mg/kg
- TPH (EPA 418.1) – 2,500 mg/kg
- Chlorides (EPA 9056A or equivalent) – 1,000 mg/kg

Based on the project findings, INTERA recommends that soil borings be advanced in all directions from the excavation in order to delineate the horizontal and vertical extent of TPH contamination at the Site. Once the extent of the contamination has been defined, a feasibility study should be performed that evaluates various technologies suitable for the remediation of the remaining contamination.

5.0 REFERENCES

"Llano Estacado." <http://en.wikipedia.org/wiki/Llano_Estacado> (accessed June 29, 2008).

INTERA, 2008. "Work Plan and Cost Proposal for Phase II Site Remediation. Cockburn State "B" Well Site Pit, Buckeye Area, Lea County, New Mexico." May 19.

Leedshill-Herkenhoff, Inc., John Shomaker & Associates, Inc., and Montgomery and Andrews, P.A. 2000. "Final Report, Lea County Regional Water Plan."

New Mexico Oil Conservation Division (OCD). 1993. "Guidelines for Remediation of Leaks, Spills, and Releases."

Figures

Cockburn State B Well Site Pit

Figure 2 Area

NM 529

MESCALERO RIDGE

QUERECHO PLAINS

OIL FIELD

CHAVES COUNTY

EDDY COUNTY

LEA COUNTY

NEW MEXICO

TEXAS

LOVINGTON

HOBBS

EUNICE

US 82

US 62

NM 529

NM 18

NM 8

NM 176

Cockburn State B Well Site Pit

Millard Deck Estate Pit

0 10 20 Miles

N

S

0 1,000 2,000 4,000 Feet

USGS 7.5 Minute Topographic Map:
Buckeye Quadrangle, 5' Contours, 1985;
Ironhouse Well Quadrangle, 10' Contours, 1984;
Laguna Gatuna NW Quadrangle, 10' Contours, 1984;
Dog Lake Quadrangle, 10' Contrours, 1985
Scale: 1:24,000

Location: T18S, R33E, Sec.1

Source(s): Top maps – MapTech;
administrative boundries, roads – RGIS website.

Figure 1
Project Location Map

Cockburn State B Well Site Pit – Lea Co., NM

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Source(s): 2004 aerial map – RGIS website.

N

S

Legend

Plugged & Abandoned Oil Well

0 150 300 600

Feet

INTERA

Figure 2
Project Location – Aerial View

Cockburn State B Well Site Pit – Lea Co., NM

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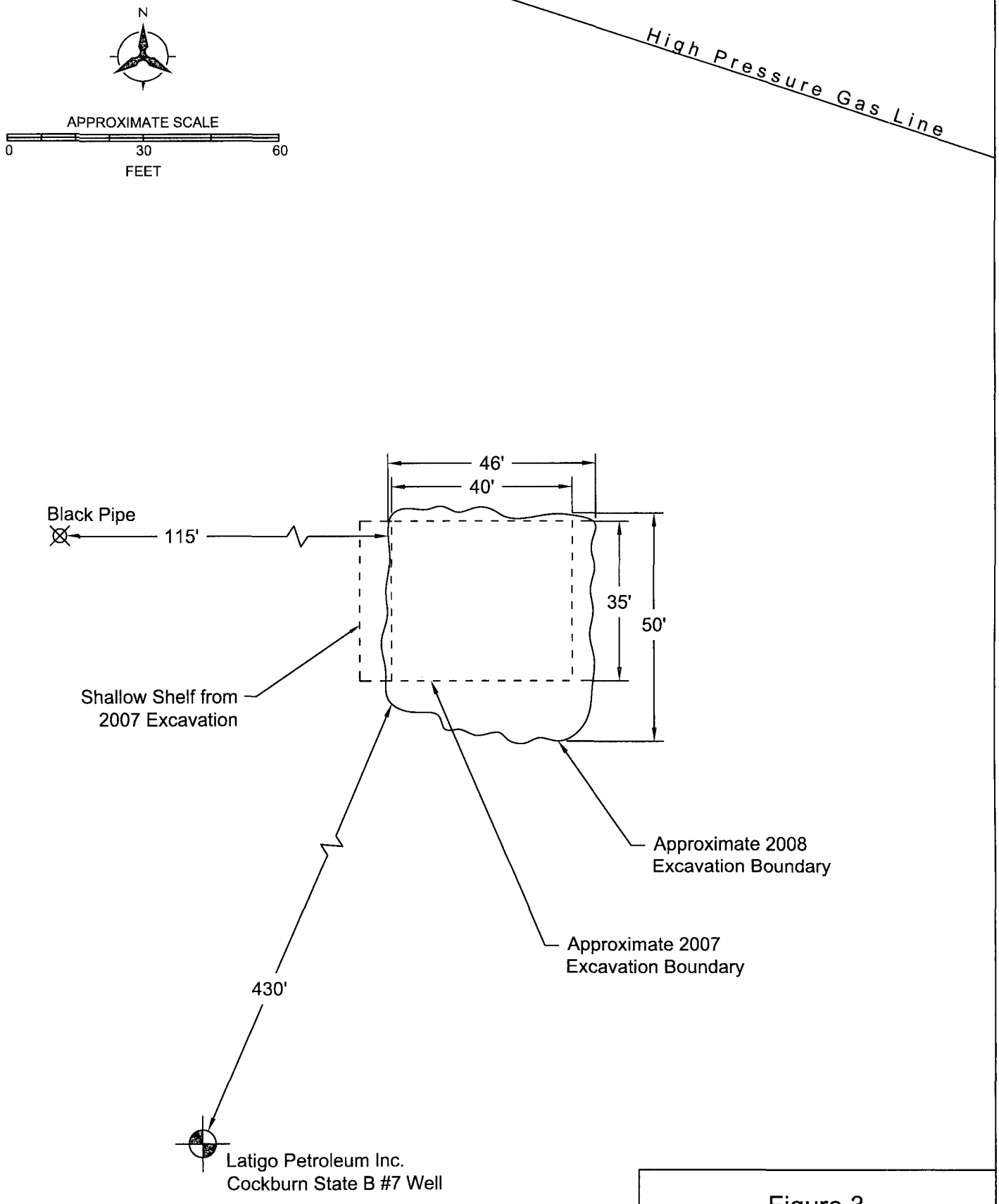

Figure 3
Site Plan

Cockburn State B Well Site Pit - Lea Co., NM

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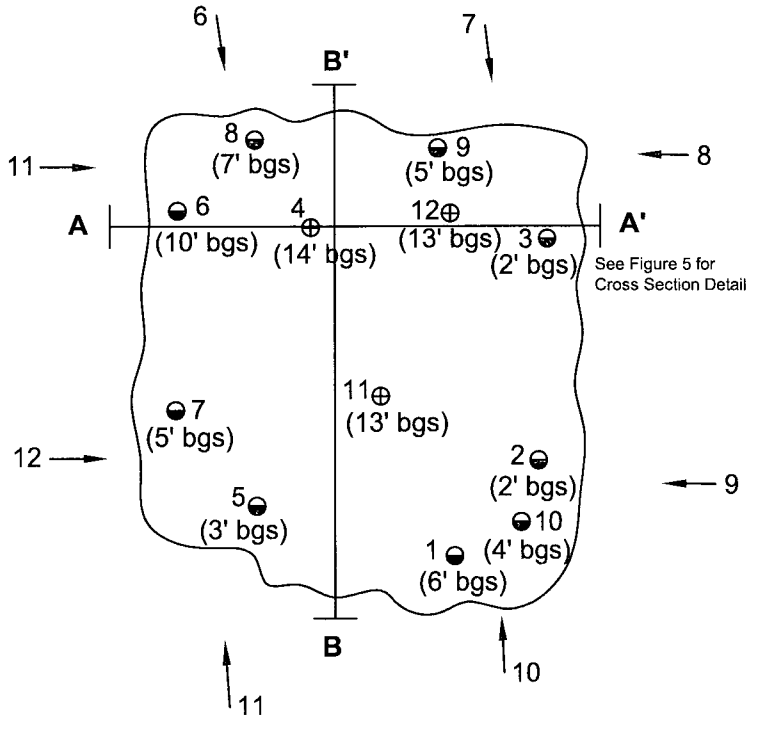

Legend

11 — Photograph ID and Direction

2 (10' bgs) — Wall Sample ID and Depth (feet)

4 (14' bgs) — Excavation Bottom Sample ID and Depth (feet)

Notes:
bgs = below ground surface
Sample Dates: June 11 and 12, 2008

N

APPROXIMATE SCALE

0 20 40

FEET

Figure 4
Excavation Detail / Sample & Photograph Locations

Cockburn State B Well Site Pit - Lea Co., NM

INTERA

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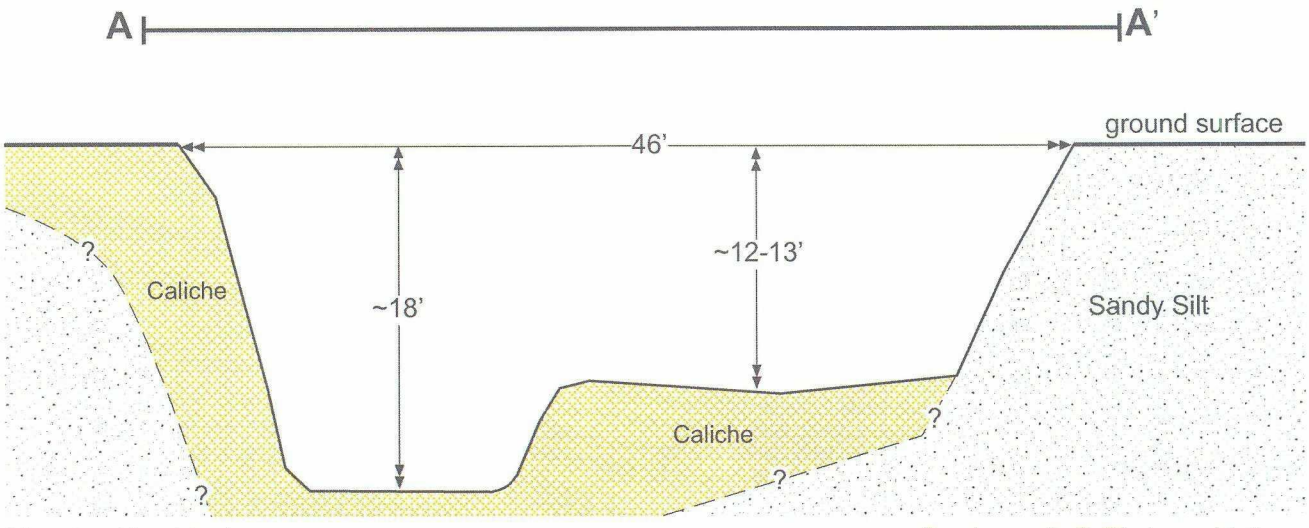
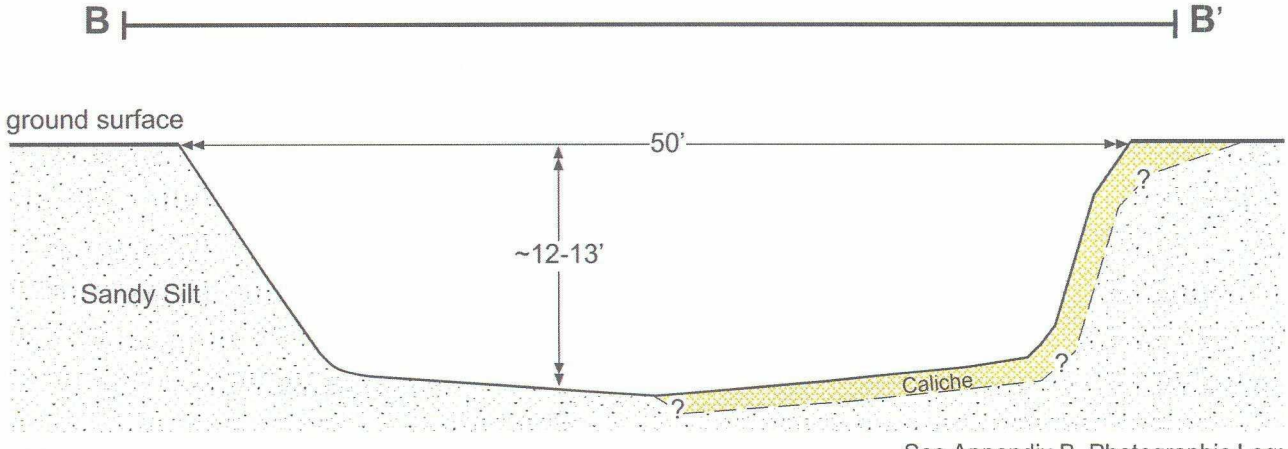


View Looking North

Approx. Scale: 1" =10'

See Appendix B, Photographic Log; photograph number 11.



View Looking West

Approx. Scale: 1" =10'

See Appendix B, Photographic Log; photograph number 8.

Notes: Cross sections are of pit area after excavation.
See Figure 4 for cross section lines.

Figure 5

Schematic Cross Sections for A-A' and B-B'

Cockburn State B Well Site Pit - Lea Co., NM

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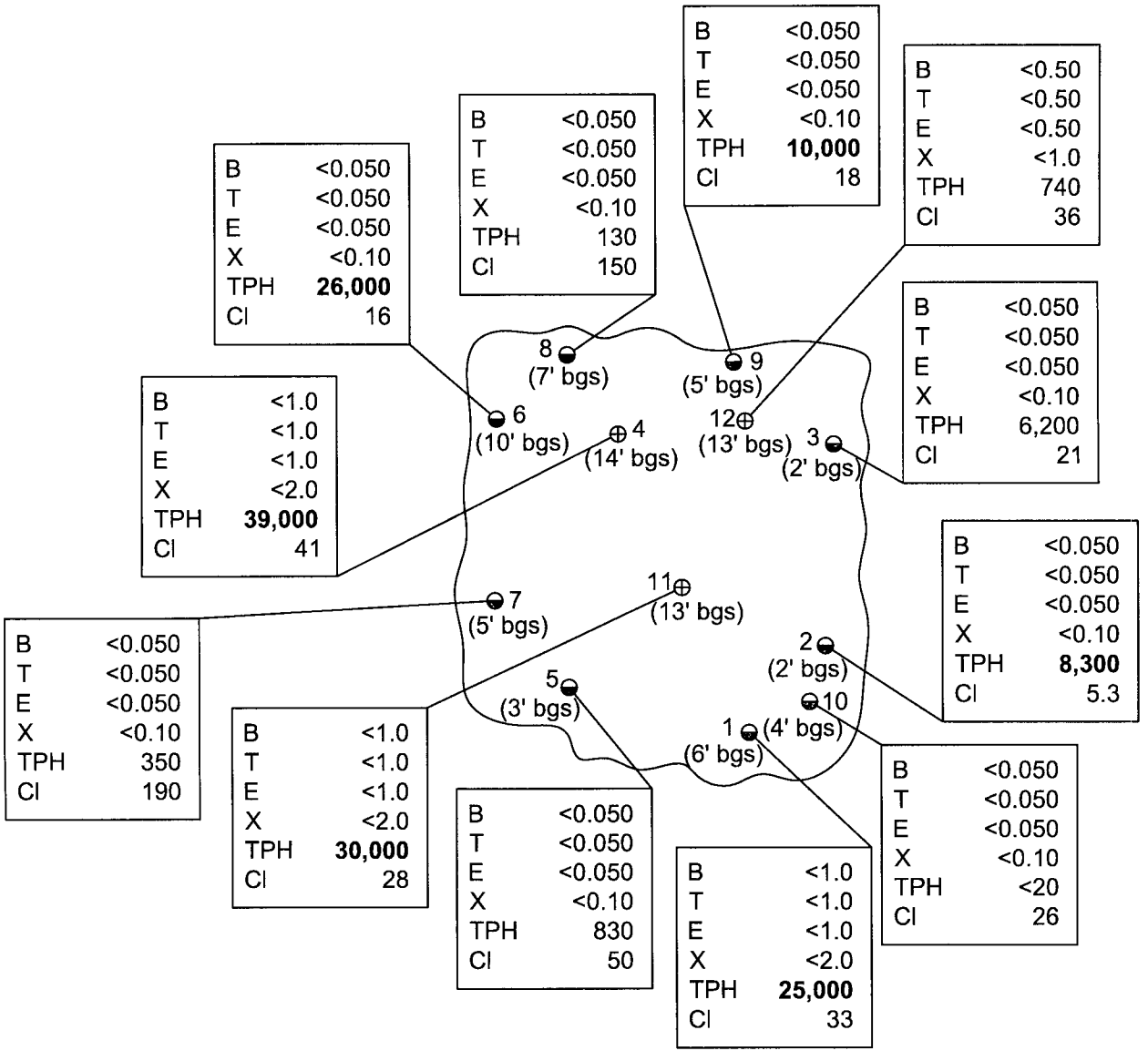

Legend

2 (10' bgs) Wall Sample ID and Depth (feet)

4 (14' bgs) Excavation Bottom Sample ID and Depth (feet)

N

APPROXIMATE SCALE

0 20 40

FEET

Notes:
All concentrations shown are in milligrams/kilogram
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylenes
TPH = Total Petroleum Hydrocarbons
Cl = Chloride
Sample Dates: June 11 and 12, 2008
Results in **bold** indicate a concentration above Site cleanup standards

INTERA

Figure 6
Sample Results

Cockburn State B Well Site Pit - Lea Co., NM

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Tables

Table 1
Field Analysis for Volatile Organic Compounds

Report on Phase II Remediation Activities at the Cockburn State "B" Well Site Pit
Lea County, New Mexico

Sample Type	Sample Location	Date	Time	PID Reading (ppm)
Excavation Samples	Stockpile	6/10/2008	9:22	710
	Stockpile	6/10/2008	9:22	285
	Stockpile	6/10/2008	9:22	636
	Stockpile	6/10/2008	9:22	107
	Stockpile	6/10/2008	11:14	180
	Stockpile	6/10/2008	11:14	279
	Stockpile	6/10/2008	11:14	583
	Stockpile	6/10/2008	11:14	1,919
	Stockpile	6/10/2008	13:30	261
	Stockpile	6/10/2008	13:30	21.4
	Stockpile	6/10/2008	13:30	22.6
	Stockpile	6/10/2008	13:30	15
	Stockpile	6/10/2008	13:30	40.2
	Stockpile	6/10/2008	15:35	239
	Stockpile	6/10/2008	15:35	13.4
	Stockpile	6/10/2008	15:35	5.4
	Stockpile	6/10/2008	15:35	58.7
	Stockpile	6/11/2008	9:55	223
	Stockpile	6/11/2008	9:55	83
	Stockpile	6/11/2008	9:55	31.3
	Stockpile	6/11/2008	9:55	116
	Stockpile	6/11/2008	15:20	13.8
	Stockpile	6/11/2008	15:20	53.5
	Stockpile	6/11/2008	15:20	12.2
	Stockpile	6/11/2008	15:20	214
Confirmation Samples	Floor of pit (Depths)	6/12/2008	10:10	200
	West Wall (Depths)	6/12/2008	10:10	39.8
	East Wall (Depths)	6/12/2008	10:10	15.4
	North Wall (Depths)	6/12/2008	10:10	18.1

Notes:

ppm = parts per million by volume

bgs = below ground surface

Table 2
Field and Laboratory Results of Confirmation Soil Samples

Report on Phase II Remediation Activities at the Cockburn State "B" Well Site Pit
Lea County, New Mexico

Sample ID	Location & (Depth [feet bgs])	Sample Date	Field Analysis			Laboratory Analysis						
			VOCs, Photo Ionization Detector (ppm)	PetroFLAG Field Kit (ppm)	Chloride, Field Kit (mg/kg)	Chloride by 9056A (mg/kg)	TPH by 418.1 (mg/kg)	BTEX by 8021B (mg/kg)				
								Benzene	Toluene	Ethyl-benzene	Xylenes	Total BTEX
Cockburn 1	Center of south wall (6)	6/11/08	N/A	>3,000	<90	33	**25,000**	<1.0	<1.0	<1.0	<2.0	<5.0
Cockburn 2	South side of east wall (2)	6/11/08	N/A	>3,000	<90	5.3	**8,300**	<0.050	<0.050	<0.050	<0.10	<0.25
Cockburn 3	North side of east wall (2)	6/11/08	N/A	>3,000	99	21	**6,200**	<0.050	<0.050	<0.050	<0.10	<0.25
Cockburn 4	Caliche ledge on NW end (14)	6/11/08	N/A	N/A	N/A	41	**39,000**	<1.0	<1.0	<1.0	<2.0	<5.0
Cockburn 5	West side of south wall (3)	6/11/08	N/A	N/A	N/A	50	830	<0.050	<0.050	<0.050	<0.10	<0.25
Cockburn 6	North side of west wall (10)	6/12/08	N/A	>3,000	99	16	**26,000**	<0.050	<0.050	<0.050	<0.10	<0.25
Cockburn 7	South side of west wall (5)	6/12/08	39.8	N/A	N/A	190	350	<0.050	<0.050	<0.050	<0.10	<0.25
Cockburn 8	West side of north wall (7)	6/12/08	18.1	>3,000	99	150	130	<0.050	<0.050	<0.050	<0.10	<0.25
Cockburn 9	East side of the north wall (5)	6/12/08	N/A	N/A	N/A	18	**10,000**	<0.050	<0.050	<0.050	<0.10	<0.25
Cockburn 10	SE corner of excavation (4)	6/12/08	15.4	N/A	N/A	26	<20	<0.050	<0.050	<0.050	<0.10	<0.25
Cockburn 11	Floor of pit, center of east side (13)	6/12/08	200	>3,000	141	28	**30,000**	<1.0	<1.0	<1.0	<2.0	<5.0
Cockburn 12	Floor of the pit, NE corner (13)	6/12/08	N/A	N/A	N/A	36	740	<0.50	<0.50	<0.50	<1.0	<2.5
Site Cleanup Standards[1]						1,000	2,500	0.2	---	---	---	50

Notes:

1 = Site Cleanup Standards as agreed upon on a meeting between OCD and INTERA on May 9, 2008 and as specified in the Work Plan for the Site (INTERA, 2008)

Values listed with a "<"symbol show that the analyte was not detected above its respective practical quantitation limit

Values that are bolded and highlighted are in excess of the cleanup standard

bgs = below ground surface

BTEX = benzene, toluene, ethyl benzene, and total xylenes

mg/kg = milligrams per kilogram

N/A = not analyzed

ppm = parts per million

VOC = volatile organic compounds

Appendix A

Waste Manifests
(Provided Electronically)

Appendix B

Photographic Log

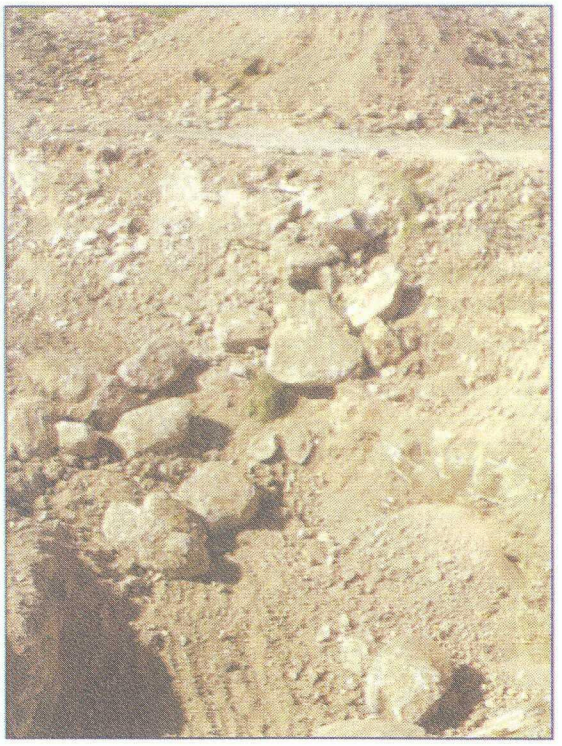
No. 1 – Beginning to excavate the overburden from the 2007 excavation.

No. 2 – The view of the pit once the overburden was removed.

No. 3 – Beginning to excavate contaminated soil.

No. 4 – Loading a belly dump truck to haul the contaminated soil to the CRI facility.

No. 5 – Nearing the end of the excavation.

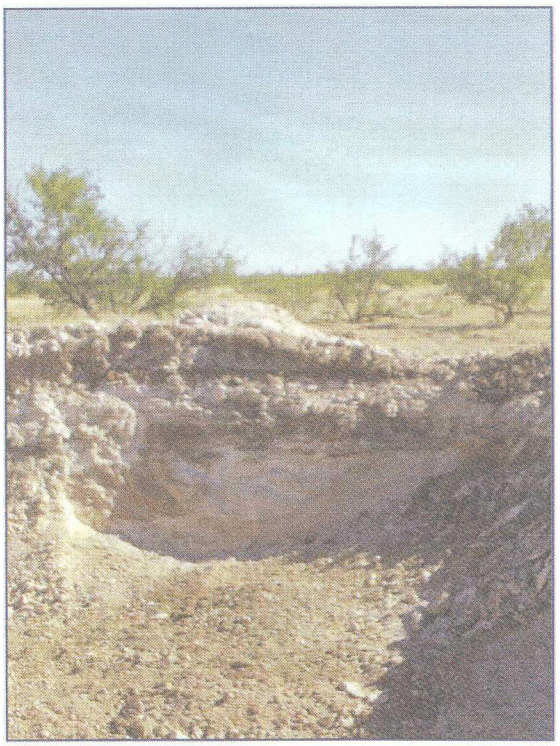


No. 6 – Looking south from the northwest corner to the southwest corner of the pit.

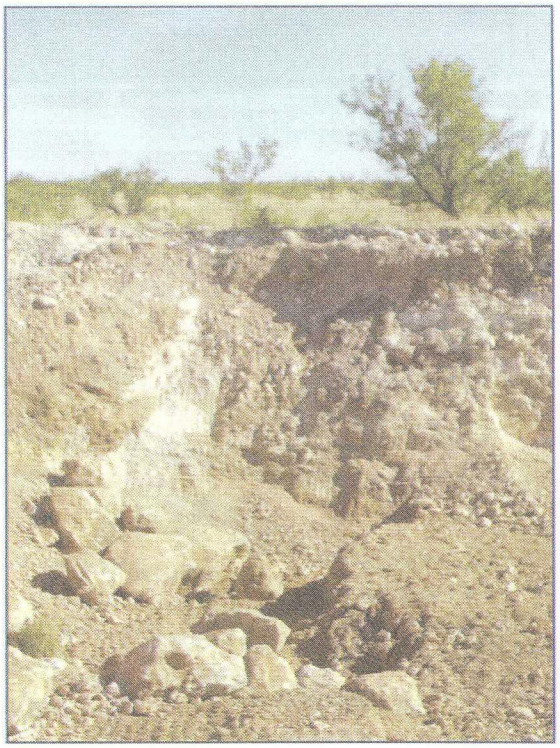
No. 7 – Looking south from the northeast corner to the southeast corner of the pit.

No. 8 – Looking west from the northeast corner to the northwest corner of the pit.

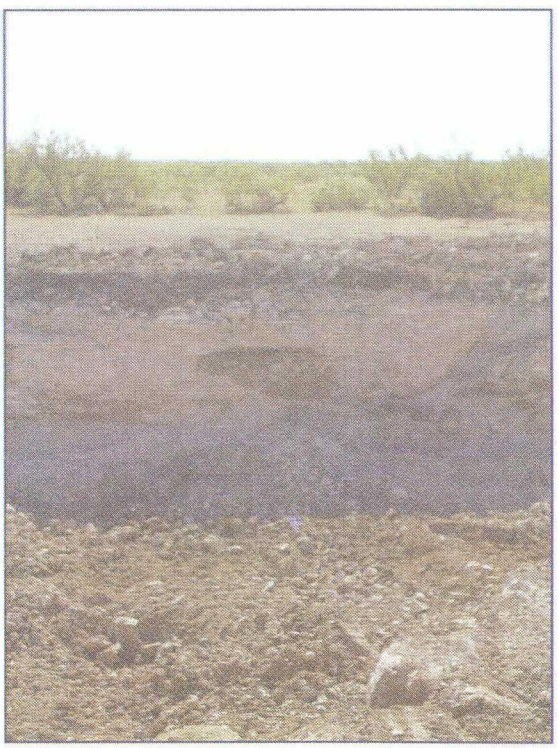
No. 9 – Looking west from the southeast corner to the southwest corner of the pit.



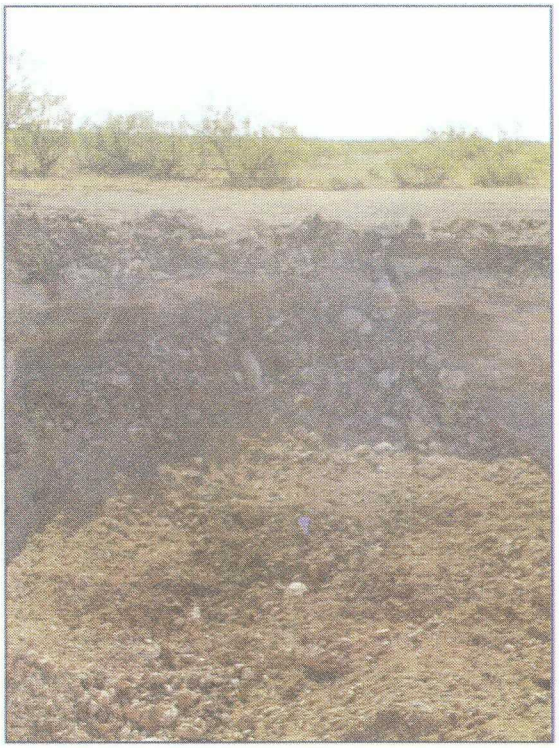
No. 10 – Looking north from the southeast corner to the northeast corner of the pit.



No. 11 – Looking north from the southwest corner to the northwest corner of the pit.



No. 12 – Looking east from the southwest corner to the southeast corner of the pit.



No. 13 – Looking east from the northwest corner to the northeast corner of the pit.

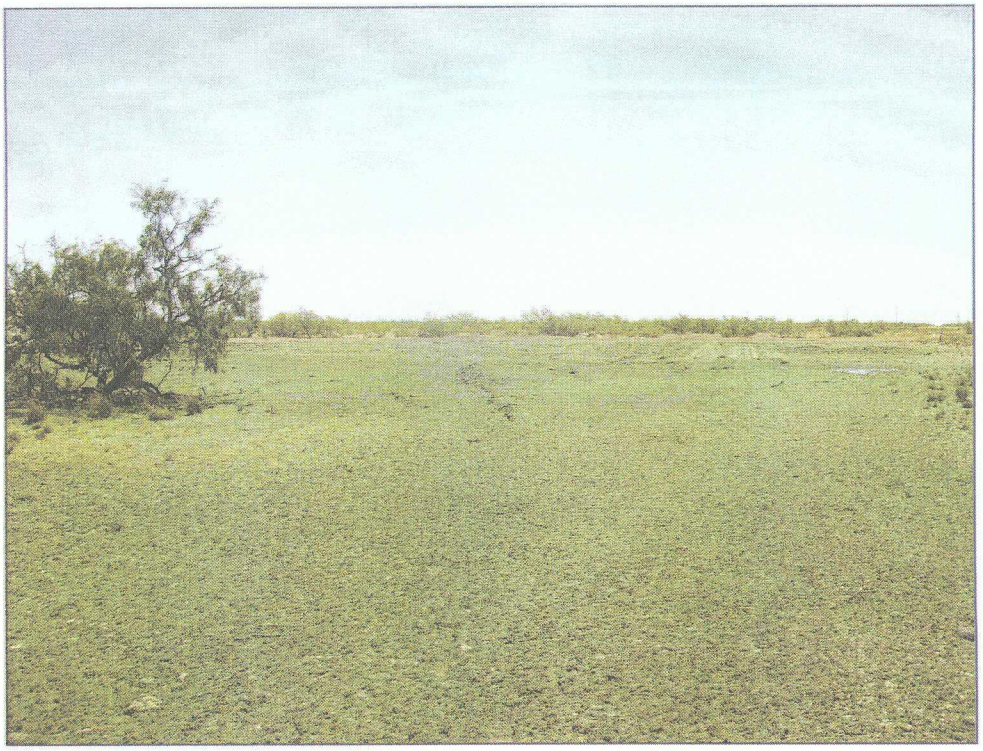
No. 14 – The caliche shelf at the bottom of the pit on the northwest side.

No. 15 – Beginning to backfill the pit.

No. 16 – Looking south from the northern edge of the backfilled pit.

No. 17 – Looking east from the western edge of the backfilled pit

No. 18 – Beginning to hydroseed the Site.



No. 19 – Looking south over the area covered in hydroseed.

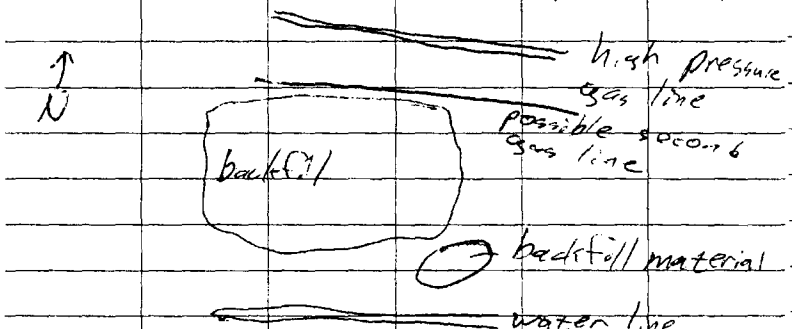
No. 20 – Looking east over the area covered in hydroseed.

Appendix C

Field Notes

D. Lawler Cockburn 15 6/9/08

1130 D. Lawler and G. Desselle arrive at Cockburn B lease site.
Weather: Sunny, calm, 80's, humid
Objectives: begin pit remediation and soil removal
D Lawler and G Desselle walk around the site and examine last year's work



1201 Gary receives a call from Felix of AES saying they are delayed in Hobbs
1235 AES shows up. The two operators are Billy and Felix. A third operator, Anton, shows up a few minutes later. We go investigate the site and discuss the plan for today.

6/9/08 Cockburn B D. Lawler

We decide to stay at Cockburn and excavate the dd backfill because AES is down one opperator. They start mobilizing the equipment down to the pit.

1320 Have safety meeting with crew

1340 The crew starts excavating over the overburden. Felix is running the excavator and Billy is running the loader

1400 Gary talks to the opperators and asks them to begin moving the pile of clean backfill material to a new location because it may be sitting on top of where we are excavating later in the week

1535 We appear to be reaching the extent of the original excavation

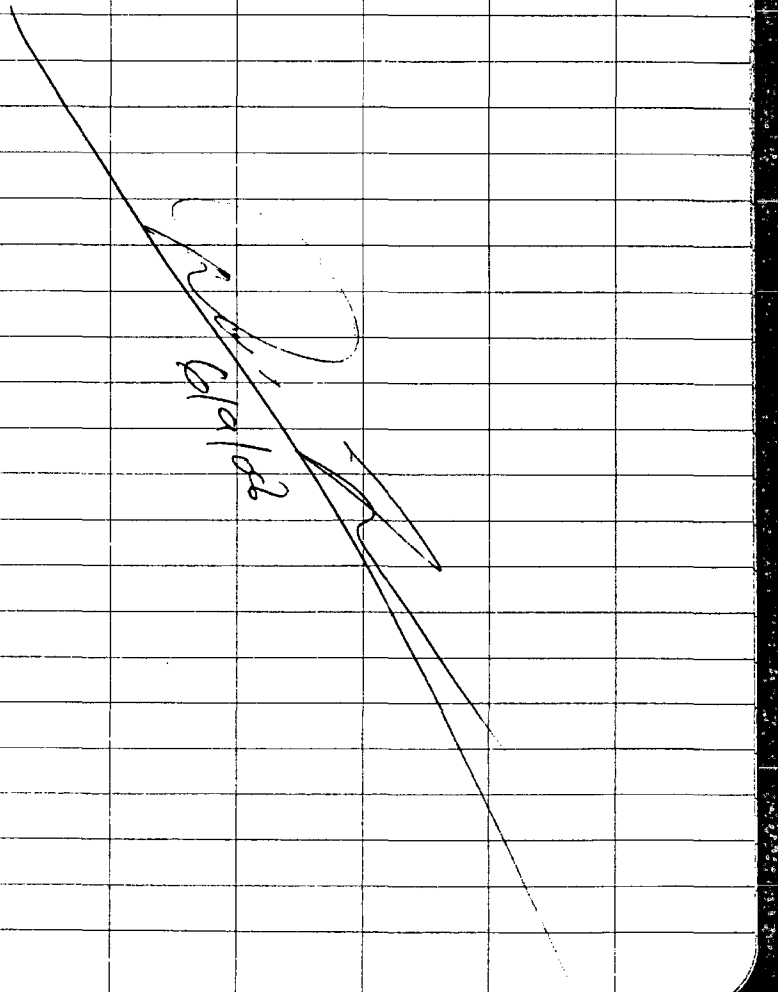
1550 We decide to stop for the day because we have removed all the clean backfill and are getting into the contaminated soil

1600 The crew is filling their trucks with diesel

D. Lawler Cockburn B 6/9/08

1600 We agree to meet at 730 the following morning

1610 Off site to Hobbs



6/10/08 Cockburn B. D Lawler

730 Arrive on site
Crew is Anton and Billy
Objectives: Begin soil removal
Weather: Clear, windy, hot
740 Conduct Safety meeting
745 Crew begins excavating
0750 Calibrate the PID
0800 Take a PID reading at the edge of the excavation
0815 Billy leaves to meet the truckers at the highway, Anton continues excavating
0825 Take 4 Samples from the stockpile for headspace analysis
0830 Billy arrives with the truckers Javier, one of the truckers, says there are 8 total trucks
truck 1 - Vazquez Trucking # 504, Javier
truck 2 - Anchando Trucking # 309, Renaldo
truck 3 - Wild Cat # 21 Alejandro

D. Lawler Cockburn B 6/10/08

0900 Truck 1 off site to CRI, 20yd³
0904 Truck 2 off site, 20yd³
0910 Truck 3 off site, 20yd³
0915 Truck 4 off site, 20yd³
Truck 4 is Anchando # 12 driver is Saul
0918 Billy departs to bring the other four truckers to the site
0922 Take headspace readings from stockpile samples

Sample	reading (ppm)
1	710
2	285
3	636
4	107

0930 Informed that Billy had a blow-out and needs to be picked up
0932 Depart to get Billy
0937 Find the other 4 truckers
0945 Back on site
0947 Billy starts loading truck #5
Truck 5 - Vazquez # 9
driver - Pablo

6/10/08 Cockburn B D. Cowles

0953 Truck 5 off site, 20 yds³
0955 Billy is loading Truck 6
Truck 6 - Glezz Trucking #04
Driver - Tim
1000 Truck 6 off site, 20 yds³
Truck 7 is Glezz Trucking #01
Driver - Jeff
1006 Truck 7 being loaded
1012 Truck 7 off site, 20 yds³
1014 Truck 8 being loaded
Truck 8 is J+J #12
driver - Jose
1025 Truck 8 off site, 20 yds³
So far 8 trucks have left
160 yds³ have been removed
to the landfill
All trucks are still off site
1100 Collect 4 more samples from
the stockpile for heated headspace
analysis
1114 Test samples for heated headspace

1	180 ppm
2	279 ppm
3	563 ppm
4	1,919

D.Cowles Cockburn B 6/10/08

1116 Truck # 1 back on site
travel time was 2:15
Bill, begins loading the truck
1118 Truck # 2 back on site
travel time was ≈ 2:15
1124 Truck # 3 back on site
travel time less than 2:15
1125 Truck # 1 off site, 20 yds³
Billy starts loading truck # 2
1130 Truck # 4 back on site
travel time ≈ 2:15
1134 Truck # 2 off site, 20 yds³
loading on # 3
1138 Truck # 5 back on site
travel time ≈ 1:45
1143 Truck # 3 off site, 20 yds³
loading # 4
1155 Truck # 6 returns 1:45
travel time was ~~1:55~~ ~~1:30~~
1202 Truck # 4 off site, 20 yd³
1207 Truck # 5 off site, 20 yds³
loading on # 7
1209 Truck # 6 back on site
travel time ≈ 2 hours

6/10/08 Cockburn B D. Lawler

1216 Truck #7 off site, 20 yds³ loading on #6
Truck # 8 back on site travel time 1:45
1224 Truck #6 off site 20 yds³ loading on # 8
1245 Talk to Joe Galemore about the day's progress
Note: Truck # 8 was off site at 12:30
1310 Collect 5 samples for heated headspace analysis from the pit walls. Anton will keep excavating the south and east walls
1330 Take PID readings on heated headspace samples

Sample	reading (ppm)
1	26.1
2	21.4
3	22.6
4	15.0
5	40.2

D. Lawler Cockburn B 6/10/08

1340 Anton continues to excavate on the SE side
1355 Truck #1 returns travel time 2:30
Billy starts loading bkm up
1400 Truck # 2 returns travel time 2:30
1405 Truck # 1 off site loading truck # 2
1410 Truck # 3 returns travel time = 2:15
1413 Truck # 2 off site loading on # 3
1415 Truck # 4 returns ~~to~~ travel time 2:30
1421 Truck # 3 off site loading on truck # 4
1422 Truck ~~# #~~ 5 returns travel time = 2:15
1429 Truck # 4 off site ~~travel time 2:30~~ BL 6/11/08 loading on # 5
1430 Truck # 7 returns travel time 2:30

6/10/08 Cockburn B O. Lawler

1436 Truck # 5 off site loading on # 7
1436 Truck # 6 returns travel time 2:15
1446 Truck # 7 off site loading on # 6
1448 Truck # 8 returns travel time 2:15
1457 Truck # 6 leaves loading on truck # 8
1515 Truck # 8 off site
All 8 trucks will return with backfill material
Anton stops excavating, the AES crew need to change a tire on their pickup
1520 Collect 4 more PID samples
1535 Take headspace readings

Sample	Reading (ppm)
1	239
2	13.4
3	5.4
4	58.7

O. Lawler Cockburn B 6/10/08

1600 Trucks 1 and 2 return with backfill material
1604 Truck 1 unloads 20 yds^3
1608 Truck 2 unloads 20 yds^3
1618 Truck 3 returns with 20 yds^3 of back fill and unloads
1621 Truck 5 returns with backfill
1629 Truck 4 returns with backfill
1651 Truck 7 returns with backfill
1703 Truck 8 returns with backfill
1712 Truck 6 returns with backfill
All trucks have returned
Daily numbers:
loads off site - 24
yds^3 removed - 480 yds^3
backfill delivered - 160 yds^3
All truckers were told to return between 8 and 8:30 in the morning on Wednesday
1714 Truck 6 dumps his backfill
Begin shutting down for the day
1730 Waiting for Felix to come so we can change the tire on Billy's pickup

6/10/08 Cockburn B D. Lawler

1740 Felix shows up to help
Change the tire
1755 D Lawler off site to Hobbs

[signature] 6/10/08

D. Lawler Cockburn B 6/11/08

0705 D. Lawler on site from Hobbs
Crew is not yet on site
wait for crew to show up
weather: Clear, calm, highs ≈ 100
Objectives: Finish excavating soil
0715 Crew arrives on site
have safety meeting
0720 Discuss with Antone where
we need to be excavating
today. He will concentrate
on the east wall
0730 Talk to Joe Galemore about
lack of Petroflag and a
scale. He will talk to Jeff
Fitz to see if he can bring
them down
740 6 trucks on site already
0745 Discuss with Billy and the
trucker Javier the best route
for loading trucks
0745 Loading truck # 1
0757 Truck # 1 off site
Loading on # 3

6/11/08 Cockburn B D. Lawler

0800 Calibrate PID
0809 Truck # 2 off site
loading on # 4
0811 The doors on the belly of truck 4 are not closing so he dumps his load and tries to fix it
0815 Billy begins loading # 4 again, the doors are staying shut now.
0827 Truck # 4 off site
Loading on truck # 5 from the eastern stockpile
0835 Truck # 3 off site
loading on # ~~2~~ 3 (4/11/08 PL)
842 Truck # 3 off site
loading on # 8
853 Truck # 8 off site
loading on truck # 6
0904 Truck # 6 off site
truck # 7 is still missing
All trucks are off site and will return with Caliche

C. Lawler Cockburn B 6/11/08

0905 Anyone will start excavating the east wall of the pit and continue stockpiling material
Talk to Dexil and order the Retrofit kit to be delivered overnight priority. Andrea from Dexil says delivery will be by 10:30 Thursday morning to the Hobbs Family Inn. They were not shipped on Monday because they were not in stock
0911 Truck # 7 arrives on site and Billy starts loading him
0914 Talking to Joe Gulemore about the plan for the next two days He is on route and we will discuss plan further when he arrives.
0924 Truck # 7 off site
Billy is off site also to get more ~~deisd~~ diesel for the equipment. Anton will load trucks when they return
0945 Collect 4 samples for heated headspace from the stockpile.

6/11/08 Cockburn B D. Lawler

0955 Take PID readings from heated headspace samples

Sample	Reading (ppm)
1	223
2	83
3	31.3
4	116

1015 Antone is still excavating and Billy and all the truckers are still off site

1020 Talk to Antone about where we should be excavating and he moves a little bit to the west

1035 Truck # 1 returns with a load of caliche
Antone will load the trucks while Billy is off site

1039 Truck # 2 returns
Antone is loading # 1
Truck # 2 dumps caliche

1050 Truck # 1 off site
Loading truck # 2
Truck # 4 back on site with caliche

D. Lawler Cockburn B 6/11/08

1057 Truck # 2 off site
Loading on # 4
Truck # 5 returns and un loads caliche

1105 Truck # 4 off site
loading on # 5

1113 Truck # 3 returns
Truck # 8 returns

1118 Truck # 5 off site
Antone begins moving the caliche the truckers are delivering so they can keep unloading

1122 Truck # 6 returns
Truck # 7 returns

1130 Antone is still moving the clean caliche backfill

1145 Antone finishes moving the caliche pile
Starts loading truck # 3

1156 Truck # 3 off site
Loading on # 5

1205 Truck # 8 off site
Loading on # 6

6/11/08 Cockburn B D. Lawler

1212 Truck # 6 off site loading on # 7

1228 Antone starts excavating again Truck # 7 off site

1235 J. Gilmore and D Lawler inspect the pit and discuss where to dig next

1304 Billy back on site

1340 Truck #1 returns with backfill material
Truck # 2 returns with backfill material

1352 Truck #1 off site Loading on # 2
Trucks # 6/11/08 DSL, 4 and 5 are all back with caliche

1418 Truck # 4 off site Loading on # 5 on the 6/11/08 DSL ~~East~~ west side of ~~the~~ pit

1430 Trucks # 3, 8, and 6 are qued up on the road

1445 Truck # 3 is off site loading on # 8
Truck # 7 arrives

D Lawler Cockburn B 6/11/08

1506 Truck # 8 is off site Begin loading on # 7

1507 Collect 4 Samples from the stockpile for PID readings

1520 Take PID readings

Sample	reading (ppm)
1	138
2	535
3	72-2
4	214

1523 Truck # 7 off site loading on truck # 6

1531 Truck # 6 off site
Daily tally:
24 trips
480 yds^3 hauled off
320 yds^3 backfill brought in

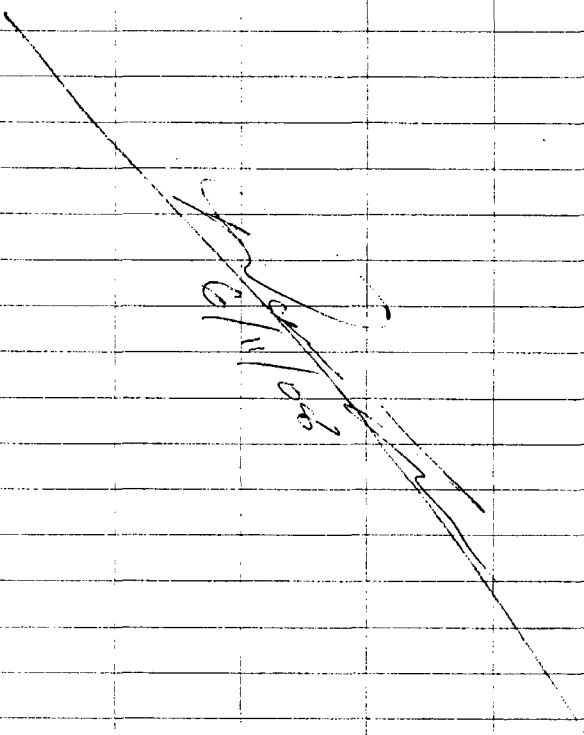
1545 All trucks are off site and Billy and Antone move some boulders out of the way and power down the equipment to refuel. Begin prepping to take samples

6/11/08 Cockburn 15 D. Lawler

1555 Collect Sample 1
Collected at the middle of the south wall at 6' bgs
Collected from excavator bucket.
Soil jar and methanol jars filled
Also fill a second jar for petroflex and Chloride field analysis
1605 Sample 2 collected from the south side of the east wall at about 2 feet bgs from the excavator bucket where some discoloration is still present
1613 Sample 3 collected from the north side of the east wall about 2' bgs from the excavator bucket
1620 Sample 4 collected at the floor from the caliche ledge on the NW side.
Collected from the bucket
1625 Sample 5 from the south wall on the west side about 3' bgs from the bucket

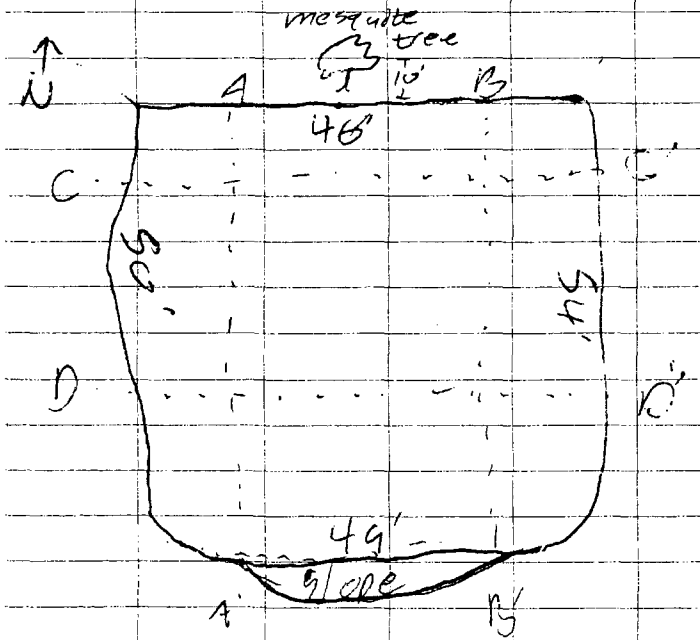
D. Lawler Cockburn 15 6/11/08

1630 Take 5 GPS points from where the samples were collected on the pit rim
1640 D. Lawler and Crew off site
1715 Stop at a gas station to get ice for samples
1740 Arrive at hotel in Hobbs



6/12/08 Cockburn B D. Lawler

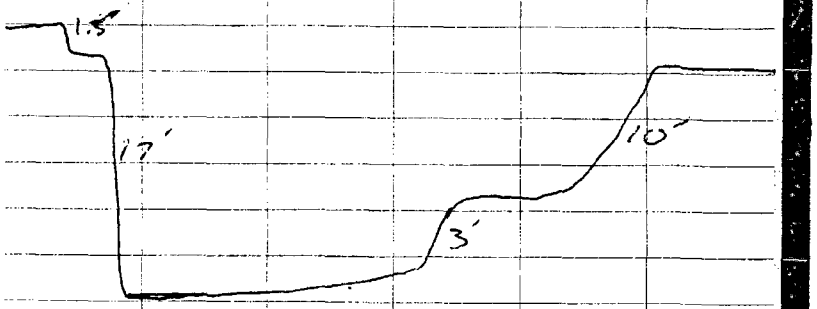
0800 D. Lawler on site
AES crew not on site yet
Objectives: Collect Samples and backfill the pit
Weather: Clear, hot, Slightly windy
0815 Begin measuring the size of the pit while waiting for the AES crew



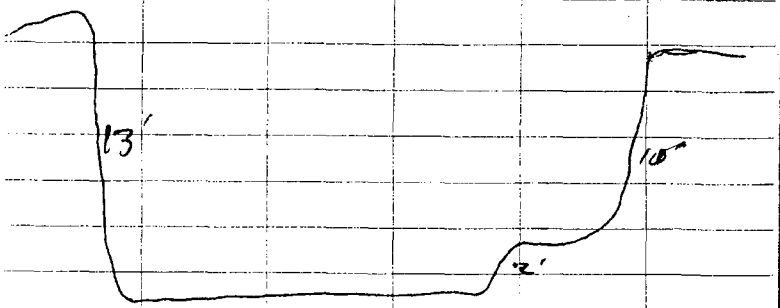
D. Lawler Cockburn B 6/12/08

Cross Sections:

A to A'

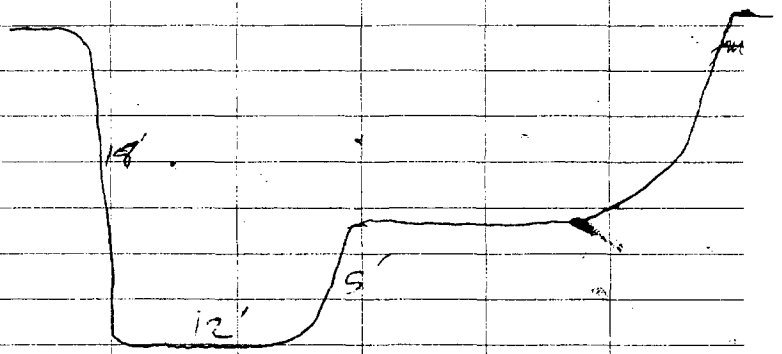


B to B'

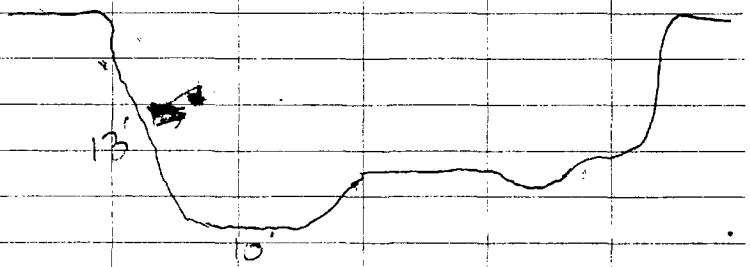


6/12/00 Cockburn B D. Lawler

C to C'

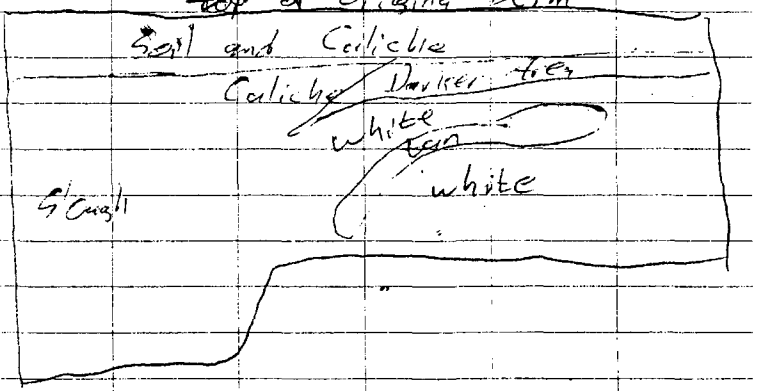


D to D'

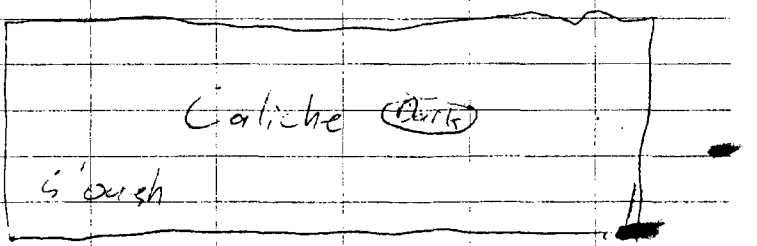


D. Lawler Cockburn B 6/12/00

North Wall

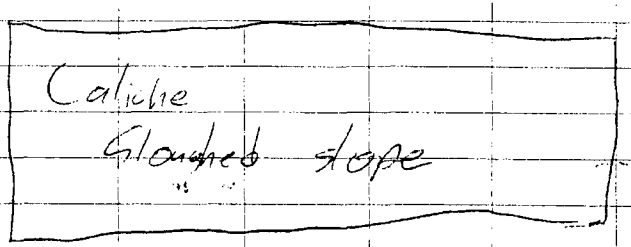


East Wall

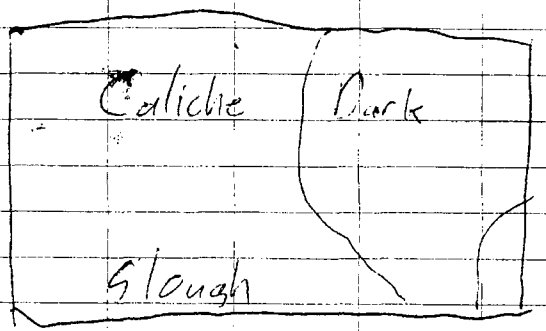


6/12/08 Cockburn G D. Lawler

South wall



~~West~~ North wall



D. Lawler Cockburn B 6/12/08

0830 Taking photos of the pit
from A to A'
from B to B'
from C' to C
from D' to D
from B' to B
from A' to A
from D to D'
From C to C'
At caliche shelf in the bottom
from the NW corner

Next 12 photos are
of the sampling locations

6/12/08 Cockburn B. D. Lawler

0850 AES Crew shows up
Billy and Antone
Have safety meeting
0855 Calibrate PID
0900 Discuss with Antone how
and where to collect samples
0910 Begin sampling
0915 Sample 6 collected from
the west wall on the north
side about 10' bgs from
the excavator bucket
0920 Sample 7 collected from the
west wall on the south side
about 5' bgs from the
excavator bucket
0925 Sample 8 collected from
the north wall on the west
side at about 7' bgs from
the excavator bucket
0932 Sample 9 collected from
the north wall on the east
side from the bucket at
about ~~13'~~ 5' bgs

DSC 6/12/08

D. Lawler Cockburn B. 6/12/08

0940 Sample 10 from the SE
corner of the pit at about
4' bgs from the excavator bucket
0945 Sample 11 from the floor
of the pit on the middle of
the east side, from the
excavator bucket
0950 Sample 12 from the NE
corner on the floor from
the excavator bucket
1000 Collect 4 samples for PID
headspace from the
leftover piles from the
excavator bucket
1010 Read PID samples

Sample	reading (ppm)
1	200
2	39.8
3	15.4
4	16.1

1015 AES crew starts backfilling
the pit
1100 Forrest Tire arrive from Hobbs
to fix the flat on AES's truck

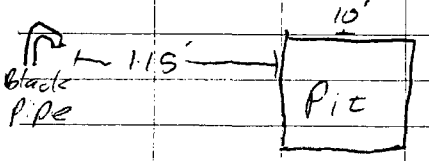
6/12/08 Cockburn B D. Lawler

1125 Forrest Tire leaves AES crew continues to backfill the pit

1130 Talk to Joe Galemore. He is leaving Miller Deck soon to come to Cockburn

1245 Take a GPS point at the center of the pit location: N 32.78082°
W 103.61407°

1255 Take distance measurements



there is a sign on the high pressure gas line that is about 110' to the north of the mesquite tree in the center of the north wall

There are no other "permanent" locations to tie the pit to

D. Lawler Cockburn B 6/12/08

Directions to Cockburn B:
take NM 529 towards Eunice and just after mile marker 17 is Quercho Rd. turn north. GO down this dirt road for just less than 2 miles. There is a sign on the left (west) saying "Conoco Philips Cockburn B State Lease." Turn west and follow the road. It Curves back south but eventually curves back north to the site.

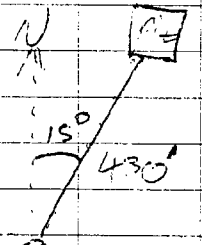
1310 Joe Galemore arrives on site measurements to well to the SW of pit

Info: Latigo Petroleum Inc.
ULG 1610 FNL 2050 FEL
Sec. 1 T18S R33E
Cockburn "B" #7
Lea Co. NM
30.025 29124

P+A 3.3.2006

6/12/08 Cockburn B P. Lawler

GPS coordinates of well:
N - 32.77401°
W - 103 61405°



1400 Joe Gedemore off site to ABQ Joe takes to soil samples with him to deliver to lab in ABQ

1430 Taking GPS points at the NE and NW corner of the pit

1545 Billy finishes spreading backfill over the pit. Antone begins running the excavator over the pit to increase compaction

1606 Antone finishes the compaction. Take some photos of the site

D Lawler Cockburn B 6/12/08

1615 Crew and D Lawler off site to Hobbs

1930 back at yard, begin running Chloride and Petroflag tests

time	Chlorid Sample	%HgCl	Cl⁻ ppm
2033	1	below range	
2058	2	below range	
2047	3	0.005	33
2052	6	0.005	33
2056	8	0.005	33
2041	11	0.008	47

1950 Chloride samples settling

2100 Start prepping FeroFlag samples

2200 The FeroFlag samples all failed when trying to read the device kept reporting "error" when a recalibration was attempted that also returned an error message. The holding time of the samples was exceeded trying to resolve the problem, therefore the test was a failure

6/12/08

Appendix D

Laboratory Report

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

COVER LETTER

Wednesday, June 18, 2008

Joe Galemore
Intera, Inc.
6000 Uptown Boulevard, NE Suite 100
Albuquerque, NM 87110

TEL: (505) 246-1600
FAX (505) 246-2600

RE: Cockburn B State Lease

Order No.: 0806197

Dear Joe Galemore:

Hall Environmental Analysis Laboratory, Inc. received 13 sample(s) on 6/13/2008 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent.

Reporting limits are determined by EPA methodology. No determination of compounds below these (denoted by the ND or < sign) has been made.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman, Business Manager
Nancy McDuffie, Laboratory Manager

NM Lab # NM9425
AZ license # AZ0682
ORELAP Lab # NM100001

Hall Environmental Analysis Laboratory, Inc.

Date: *18-Jun-08*

CLIENT:	Intera, Inc.	**Client Sample ID:**	Cockburn 1
Lab Order:	0806197	**Collection Date:**	6/11/2008 3:55:00 PM
Project:	Cockburn B State Lease	**Date Received:**	6/13/2008
Lab ID:	0806197-01	**Matrix:**	MEOH (SOIL)

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	2.0		mg/Kg	20	6/14/2008 7:27:20 AM
Benzene	ND	1.0		mg/Kg	20	6/14/2008 7:27:20 AM
Toluene	ND	1.0		mg/Kg	20	6/14/2008 7:27:20 AM
Ethylbenzene	ND	1.0		mg/Kg	20	6/14/2008 7:27:20 AM
Xylenes, Total	ND	2.0		mg/Kg	20	6/14/2008 7:27:20 AM
Surr: 4-Bromofluorobenzene	98.4	81.4-117		%REC	20	6/14/2008 7:27:20 AM
EPA METHOD 9056A: ANIONS						Analyst: **SLB**
Chloride	33	0.30		mg/Kg	1	6/17/2008 3:31:54 AM
EPA METHOD 418.1: TPH						Analyst: **JAT**
Petroleum Hydrocarbons, TR	25000	2000		mg/Kg	100	6/16/2008

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

Date: *18-Jun-08*

CLIENT:	Intera, Inc.	**Client Sample ID:**	Cockburn 2
Lab Order:	0806197	**Collection Date:**	6/11/2008 4:05:00 PM
Project:	Cockburn B State Lease	**Date Received:**	6/13/2008
Lab ID:	0806197-02	**Matrix:**	MEOH (SOIL)

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	0.10		mg/Kg	1	6/14/2008 7:57:33 AM
Benzene	ND	0.050		mg/Kg	1	6/14/2008 7:57:33 AM
Toluene	ND	0.050		mg/Kg	1	6/14/2008 7:57:33 AM
Ethylbenzene	ND	0.050		mg/Kg	1	6/14/2008 7:57:33 AM
Xylenes, Total	ND	0.10		mg/Kg	1	6/14/2008 7:57:33 AM
Surr: 4-Bromofluorobenzene	92.0	81.4-117		%REC	1	6/14/2008 7:57:33 AM
EPA METHOD 9056A: ANIONS						Analyst: **SLB**
Chloride	5.3	0.30		mg/Kg	1	6/17/2008 4:24:08 AM
EPA METHOD 418.1: TPH						Analyst: **JAT**
Petroleum Hydrocarbons, TR	8300	1000		mg/Kg	50	6/16/2008

Qualifiers:	*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

Date: *18-Jun-08*

CLIENT:	Intera, Inc.	**Client Sample ID:**	Cockburn 3
Lab Order:	0806197	**Collection Date:**	6/11/2008 4:13:00 PM
Project:	Cockburn B State Lease	**Date Received:**	6/13/2008
Lab ID:	0806197-03	**Matrix:**	MEOH (SOIL)

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	0.10		mg/Kg	1	6/14/2008 8:27:40 AM
Benzene	ND	0.050		mg/Kg	1	6/14/2008 8:27:40 AM
Toluene	ND	0.050		mg/Kg	1	6/14/2008 8:27:40 AM
Ethylbenzene	ND	0.050		mg/Kg	1	6/14/2008 8:27:40 AM
Xylenes, Total	ND	0.10		mg/Kg	1	6/14/2008 8:27:40 AM
Surr: 4-Bromofluorobenzene	91.1	81.4-117		%REC	1	6/14/2008 8:27:40 AM
EPA METHOD 9056A: ANIONS						Analyst: **SLB**
Chloride	21	0.30		mg/Kg	1	6/17/2008 4:41:32 AM
EPA METHOD 418.1: TPH						Analyst: **JAT**
Petroleum Hydrocarbons, TR	6200	400		mg/Kg	20	6/16/2008

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

Date: *18-Jun-08*

CLIENT:	Intera, Inc.	**Client Sample ID:**	Cockburn 4
Lab Order:	0806197	**Collection Date:**	6/11/2008 4:20:00 PM
Project:	Cockburn B State Lease	**Date Received:**	6/13/2008
Lab ID:	0806197-04	**Matrix:**	MEOH (SOIL)

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	2.0		mg/Kg	20	6/14/2008 8:57:47 AM
Benzene	ND	1.0		mg/Kg	20	6/14/2008 8:57:47 AM
Toluene	ND	1.0		mg/Kg	20	6/14/2008 8:57:47 AM
Ethylbenzene	ND	1.0		mg/Kg	20	6/14/2008 8:57:47 AM
Xylenes, Total	ND	2.0		mg/Kg	20	6/14/2008 8:57:47 AM
Surr: 4-Bromofluorobenzene	98.8	81.4-117		%REC	20	6/14/2008 8:57:47 AM
EPA METHOD 9056A: ANIONS						Analyst: **SLB**
Chloride	41	0.30		mg/Kg	1	6/17/2008 4:58:57 AM
EPA METHOD 418.1: TPH						Analyst: **JAT**
Petroleum Hydrocarbons, TR	39000	800		mg/Kg	40	6/16/2008

Qualifiers:	*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

Date: *18-Jun-08*

CLIENT:	Intera, Inc.	**Client Sample ID:**	Cockburn 5
Lab Order:	0806197	**Collection Date:**	6/11/2008 4:25:00 PM
Project:	Cockburn B State Lease	**Date Received:**	6/13/2008
Lab ID:	0806197-05	**Matrix:**	MEOH (SOIL)

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	0.10		mg/Kg	1	6/14/2008 9:27:51 AM
Benzene	ND	0.050		mg/Kg	1	6/14/2008 9:27:51 AM
Toluene	ND	0.050		mg/Kg	1	6/14/2008 9:27:51 AM
Ethylbenzene	ND	0.050		mg/Kg	1	6/14/2008 9:27:51 AM
Xylenes, Total	ND	0.10		mg/Kg	1	6/14/2008 9:27:51 AM
Surr: 4-Bromofluorobenzene	91.8	81.4-117		%REC	1	6/14/2008 9:27:51 AM
EPA METHOD 9056A: ANIONS						Analyst: **SLB**
Chloride	50	0.30		mg/Kg	1	6/17/2008 5:16:21 AM
EPA METHOD 418.1: TPH						Analyst: **JAT**
Petroleum Hydrocarbons, TR	830	20		mg/Kg	1	6/16/2008

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

Date: *18-Jun-08*

CLIENT:	Intera, Inc.	**Client Sample ID:**	Cockburn 6
Lab Order:	0806197	**Collection Date:**	6/12/2008 9:15:00 AM
Project:	Cockburn B State Lease	**Date Received:**	6/13/2008
Lab ID:	0806197-06	**Matrix:**	MEOH (SOIL)

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	0.10		mg/Kg	1	6/14/2008 10:27:50 AM
Benzene	ND	0.050		mg/Kg	1	6/14/2008 10:27:50 AM
Toluene	ND	0.050		mg/Kg	1	6/14/2008 10:27:50 AM
Ethylbenzene	ND	0.050		mg/Kg	1	6/14/2008 10:27:50 AM
Xylenes, Total	ND	0.10		mg/Kg	1	6/14/2008 10:27:50 AM
Surr: 4-Bromofluorobenzene	83.6	81.4-117		%REC	1	6/14/2008 10:27:50 AM
EPA METHOD 9056A: ANIONS						Analyst: **SLB**
Chloride	16	0.30		mg/Kg	1	6/17/2008 5:33:46 AM
EPA METHOD 418.1: TPH						Analyst: **JAT**
Petroleum Hydrocarbons, TR	26000	2000		mg/Kg	100	6/16/2008

Qualifiers:	*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

Date: *18-Jun-08*

CLIENT:	Intera, Inc.	**Client Sample ID:**	Cockburn 7
Lab Order:	0806197	**Collection Date:**	6/12/2008 9:20:00 AM
Project:	Cockburn B State Lease	**Date Received:**	6/13/2008
Lab ID:	0806197-07	**Matrix:**	MEOH (SOIL)

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	0.10		mg/Kg	1	6/14/2008 11:57:57 AM
Benzene	ND	0.050		mg/Kg	1	6/14/2008 11:57:57 AM
Toluene	ND	0.050		mg/Kg	1	6/14/2008 11:57:57 AM
Ethylbenzene	ND	0.050		mg/Kg	1	6/14/2008 11:57:57 AM
Xylenes, Total	ND	0.10		mg/Kg	1	6/14/2008 11:57:57 AM
Surr: 4-Bromofluorobenzene	98.5	81.4-117		%REC	1	6/14/2008 11:57:57 AM
EPA METHOD 9056A: ANIONS						Analyst: **SLB**
Chloride	190	3.0		mg/Kg	10	6/17/2008 11:56:49 AM
EPA METHOD 418.1: TPH						Analyst: **JAT**
Petroleum Hydrocarbons, TR	350	20		mg/Kg	1	6/16/2008

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

Date: *18-Jun-08*

CLIENT:	Intera, Inc.	**Client Sample ID:**	Cockburn 8
Lab Order:	0806197	**Collection Date:**	6/12/2008 9:25:00 AM
Project:	Cockburn B State Lease	**Date Received:**	6/13/2008
Lab ID:	0806197-08	**Matrix:**	MEOH (SOIL)

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	0.10		mg/Kg	1	6/14/2008 12:28:13 PM
Benzene	ND	0.050		mg/Kg	1	6/14/2008 12:28:13 PM
Toluene	ND	0.050		mg/Kg	1	6/14/2008 12:28:13 PM
Ethylbenzene	ND	0.050		mg/Kg	1	6/14/2008 12:28:13 PM
Xylenes, Total	ND	0.10		mg/Kg	1	6/14/2008 12:28:13 PM
Surr: 4-Bromofluorobenzene	94.1	81.4-117		%REC	1	6/14/2008 12:28:13 PM
EPA METHOD 9056A: ANIONS						Analyst: **SLB**
Chloride	150	3.0		mg/Kg	10	6/17/2008 12:14:13 PM
EPA METHOD 418.1: TPH						Analyst: **JAT**
Petroleum Hydrocarbons, TR	130	20		mg/Kg	1	6/16/2008

Qualifiers:	*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

Date: *18-Jun-08*

CLIENT:	Intera, Inc.	**Client Sample ID:**	Cockburn 9
Lab Order:	0806197	**Collection Date:**	6/12/2008 9:32:00 AM
Project:	Cockburn B State Lease	**Date Received:**	6/13/2008
Lab ID:	0806197-09	**Matrix:**	MEOH (SOIL)

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	0.10		mg/Kg	1	6/14/2008 12:58:26 PM
Benzene	ND	0.050		mg/Kg	1	6/14/2008 12:58:26 PM
Toluene	ND	0.050		mg/Kg	1	6/14/2008 12:58:26 PM
Ethylbenzene	ND	0.050		mg/Kg	1	6/14/2008 12:58:26 PM
Xylenes, Total	ND	0.10		mg/Kg	1	6/14/2008 12:58:26 PM
Surr: 4-Bromofluorobenzene	99.2	81.4-117		%REC	1	6/14/2008 12:58:26 PM
EPA METHOD 9056A: ANIONS						Analyst: **SLB**
Chloride	18	0.30		mg/Kg	1	6/17/2008 7:00:49 AM
EPA METHOD 418.1: TPH						Analyst: **JAT**
Petroleum Hydrocarbons, TR	10000	400		mg/Kg	20	6/16/2008

Qualifiers:

*	Value exceeds Maximum Contaminant Level
E	Value above quantitation range
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
S	Spike recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
MCL	Maximum Contaminant Level
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

Date: *18-Jun-08*

CLIENT:	Intera, Inc.	**Client Sample ID:**	Cockburn 10
Lab Order:	0806197	**Collection Date:**	6/12/2008 9:40:00 AM
Project:	Cockburn B State Lease	**Date Received:**	6/13/2008
Lab ID:	0806197-10	**Matrix:**	MEOH (SOIL)

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	0.10		mg/Kg	1	6/14/2008 1:58:54 PM
Benzene	ND	0.050		mg/Kg	1	6/14/2008 1:58:54 PM
Toluene	ND	0.050		mg/Kg	1	6/14/2008 1:58:54 PM
Ethylbenzene	ND	0.050		mg/Kg	1	6/14/2008 1:58:54 PM
Xylenes, Total	ND	0.10		mg/Kg	1	6/14/2008 1:58:54 PM
Surr: 4-Bromofluorobenzene	95.8	81.4-117		%REC	1	6/14/2008 1:58:54 PM
EPA METHOD 9056A: ANIONS						Analyst: **SLB**
Chloride	26	0.30		mg/Kg	1	6/17/2008 7:18:14 AM
EPA METHOD 418.1: TPH						Analyst: **JAT**
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	6/16/2008

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

Date: *18-Jun-08*

CLIENT:	Intera, Inc.	**Client Sample ID:**	Cockburn 11
Lab Order:	0806197	**Collection Date:**	6/12/2008 9:45:00 AM
Project:	Cockburn B State Lease	**Date Received:**	6/13/2008
Lab ID:	0806197-11	**Matrix:**	MEOH (SOIL)

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	2.0		mg/Kg	20	6/14/2008 2:28:55 PM
Benzene	ND	1.0		mg/Kg	20	6/14/2008 2:28:55 PM
Toluene	ND	1.0		mg/Kg	20	6/14/2008 2:28:55 PM
Ethylbenzene	ND	1.0		mg/Kg	20	6/14/2008 2:28:55 PM
Xylenes, Total	ND	2.0		mg/Kg	20	6/14/2008 2:28:55 PM
Surr: 4-Bromofluorobenzene	84.4	81.4-117		%REC	20	6/14/2008 2:28:55 PM
EPA METHOD 9056A: ANIONS						Analyst: **SLB**
Chloride	28	0.30		mg/Kg	1	6/17/2008 7:35:39 AM
EPA METHOD 418.1: TPH						Analyst: **JAT**
Petroleum Hydrocarbons, TR	30000	2000		mg/Kg	100	6/16/2008

Qualifiers:	*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

Date: *18-Jun-08*

CLIENT:	Intera, Inc.	**Client Sample ID:**	Cockburn 12
Lab Order:	0806197	**Collection Date:**	6/12/2008 9:50:00 AM
Project:	Cockburn B State Lease	**Date Received:**	6/13/2008
Lab ID:	0806197-12	**Matrix:**	MEOH (SOIL)

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	1.0		mg/Kg	10	6/14/2008 2:58:56 PM
Benzene	ND	0.50		mg/Kg	10	6/14/2008 2:58:56 PM
Toluene	ND	0.50		mg/Kg	10	6/14/2008 2:58:56 PM
Ethylbenzene	ND	0.50		mg/Kg	10	6/14/2008 2:58:56 PM
Xylenes, Total	ND	1.0		mg/Kg	10	6/14/2008 2:58:56 PM
Surr: 4-Bromofluorobenzene	89.0	81.4-117		%REC	10	6/14/2008 2:58:56 PM
EPA METHOD 9056A: ANIONS						Analyst: **SLB**
Chloride	36	0.30		mg/Kg	1	6/17/2008 7:53:03 AM
EPA METHOD 418.1: TPH						Analyst: **JAT**
Petroleum Hydrocarbons, TR	740	20		mg/Kg	1	6/16/2008

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

Date: *18-Jun-08*

CLIENT:	Intera, Inc.	**Client Sample ID:**	MeOH BLANK
Lab Order:	0806197	**Collection Date:**	
Project:	Cockburn B State Lease	**Date Received:**	6/13/2008
Lab ID:	0806197-13	**Matrix:**	MEOH (SOIL)

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	0.10		mg/Kg	1	6/14/2008 3:29:02 PM
Benzene	ND	0.050		mg/Kg	1	6/14/2008 3:29:02 PM
Toluene	ND	0.050		mg/Kg	1	6/14/2008 3:29:02 PM
Ethylbenzene	ND	0.050		mg/Kg	1	6/14/2008 3:29:02 PM
Xylenes, Total	ND	0.10		mg/Kg	1	6/14/2008 3:29:02 PM
Surr: 4-Bromofluorobenzene	84.3	81.4-117		%REC	1	6/14/2008 3:29:02 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike recovery outside accepted recovery limits		

QA/QC SUMMARY REPORT

Client: Intera, Inc.
Project: Cockburn B State Lease **Work Order:** 0806197

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: EPA Method 9056A: Anions									
Sample ID: 0806197-01AMSD		*MSD*			Batch ID:	**16220**	Analysis Date:		6/17/2008 4:06:43 AM
Chloride	45.19	mg/Kg	0.30	79.3	70.7	122	6.44	20	
Sample ID: 0806197-01AMS		*MS*			Batch ID:	**16220**	Analysis Date:		6/17/2008 3:49:18 AM
Chloride	48.20	mg/Kg	0.30	99.4	70.7	122			
Method: EPA Method 418.1: TPH									
Sample ID: MB-16209		*MBLK*			Batch ID:	**16209**	Analysis Date:		6/16/2008
Petroleum Hydrocarbons, TR	ND	mg/Kg	20						
Sample ID: LCS-16209		*LCS*			Batch ID:	**16209**	Analysis Date:		6/16/2008
Petroleum Hydrocarbons, TR	93.82	mg/Kg	20	93.8	82	114			
Sample ID: LCSD-16209		*LCSD*			Batch ID:	**16209**	Analysis Date:		6/16/2008
Petroleum Hydrocarbons, TR	93.82	mg/Kg	20	93.8	82	114	0	20	
Method: EPA Method 8021B: Volatiles									
Sample ID: 0806197-10A MSD		*MSD*			Batch ID:	**R28923**	Analysis Date:		6/14/2008 4:29:08 PM
Methyl tert-butyl ether (MTBE)	1.138	mg/Kg	0.10	114	67.9	135	1.31	28	
Benzene	1.037	mg/Kg	0.050	104	78.8	132	1.84	27	
Toluene	1.051	mg/Kg	0.050	105	78.9	112	1.17	19	
Ethylbenzene	1.066	mg/Kg	0.050	107	69.3	125	1.86	10	
Xylenes, Total	3.297	mg/Kg	0.10	110	73	128	1.21	13	
Sample ID: 0806197-10A MS		*MS*			Batch ID:	**R28923**	Analysis Date:		6/14/2008 3:59:02 PM
Methyl tert-butyl ether (MTBE)	1.153	mg/Kg	0.10	115	67.9	135			
Benzene	1.056	mg/Kg	0.050	106	78.8	132			
Toluene	1.064	mg/Kg	0.050	106	78.9	112			
Ethylbenzene	1.086	mg/Kg	0.050	109	69.3	125			
Xylenes, Total	3.337	mg/Kg	0.10	111	73	128			

Qualifiers:

E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	S	Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Sample Receipt Checklist

Client Name INT | Date Received: 6/13/2008

Work Order Number 0806197 | Received by: AMF

Sample ID labels checked by: _____ Initials

Checklist completed by: Tanya Shannon 6/13/08 (Signature / Date)

Matrix: | Carrier name Client drop-off

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☐	Not Shipped ☑
Custody seals intact on sample bottles?	Yes ☑	No ☐	N/A ☐	
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Water - VOA vials have zero headspace?	No VOA vials submitted ☑	Yes ☐	No ☐	
Water - Preservation labels on bottle and cap match?	Yes ☐	No ☐	N/A ☑	
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑	
Container/Temp Blank temperature?	6°	*<6° C Acceptable* If given sufficient time to cool.		

COMMENTS:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Chain-of-Custody Record

Client: INTERA Inc

Address: 6000 Uptown Blvd. #100
Albuquerque, NM 87110

Phone #: 505-246-1600

email or Fax#: 505-246-2600

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)
☐ Other
☐ EDD (Type)

Turn-Around Time:
☐ Standard ☑ Rush 48 hrs BTEX TPH

Project Name: Cockburn B State Lease

Project #:

Project Manager: Joe Galemore

Sampler: David Lawler

On Ice: ☑ Yes ☐ No

Sample Temperature: 6

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 0806197	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	EDC (Method 8260)	8310 (PNA or PAH)	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Chloride				Air Bubbles (Y or N)
6/11/08	1555	Cockburn 1	4oz Gal		1	X			X								X				
6/11/08	1605	Cockburn 2			2	X			X								X				
6/11/08	1613	Cockburn 3			3	X			X								X				
6/11/08	1620	Cockburn 4			4	X			X								X				
6/11/08	1625	Cockburn 5			5	X			X								X				
6/12/08	0915	Cockburn 6			6	X			X								X				
6/12/08	0920	Cockburn 7			7	X			X								X				
6/12/08	0925	Cockburn 8			8	X			X								X				
6/12/08	0932	Cockburn 9			9	X			X								X				
6/12/08	0940	Cockburn 10			10	X			X								X				
6/12/08	0945	Cockburn 11			11	X			X								X				
6/12/08	0950	Cockburn 12			12	X			X								X				

Date:	Time:	Relinquished by:	Received by:
6/12/08	1355		
6/13/08	0815		

Remarks: Meth. Blank - 13

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Appendix E

Reseeding Specifications

Form No. A-1086
Rev. 2

New Mexico Department of Transportation
MATERIALS CERTIFICATE OF COMPLIANCE

1 **PROJECT NUMBER:** Interra Hobbs
2 **CONTRACTOR:** Windswept Organix NM
3 **DATE:** 6-27-08
4 **ITEM No. & DESCRIPTION:** Tackifier
5 **QUANTITY:** 100 lbs. per acre

6 **SHIPMENT NUMBER:** NA
7 ***HEAT No. LOT No. BATCH No. :** NA
8 ***SEAL NUMBER:** NA
9 **MANUFACTURER OF MATERIAL:** M-Binder

As the Prime Contractor on this Project, I Certify the Following:

a. **That the material described in this document comply with the Department's Standard Specifications for Highway and Bridge Construction.**

b. **That when required, all Manufacturing Processes associated with the production of steel and iron materials comply with Subsection 106.4, Certificate of Compliance reference for domestic materials, of the Department's Standard Specifications for Highway and Bridge Construction, 2000 Edition, or that special waivers have been granted.**

c. **That Mill Test Reports, Manufacturer's Certificates of Compliance, and other pertinent documents concerning material incorporated into these items are on file at the Contractor's Office and will be made available to Department Personnel upon request. These documents will be held on file for three (3) years following Final Acceptance of the Project.**

PRINTED NAME OF COMPANY OFFICIAL: Kim Garcia

SIGNATURE OF COMPANY OFFICIAL: Kim Garcia

TITLE: Office Manager

*** THE NUMBER PLACED IN THESE SECTIONS WILL DEPEND ON THE TYPE OF MATERIAL BEING CERTIFIED**

M-BINDER

MULCH TACKIFIER / SOIL STABILIZER

A Naturally Perfect Tackifier

M-Binder is a botanical glue used as an aid in hydroseeding, to stabilize soils, and for dust control. M-Binder is unsurpassed as a tackifier setting the standard for the industry since the early 1970's. It is 100% organic, made from the p[l]antago (Plantago insularis) plant. The material used to make the glue is t[h]e protective coating of the plantago seed, known as psyllium. This outer coating's purpose in nature is to stick the seed to the soil to improve germination. M-Binder is composed of the finely ground outer coating of this seed. It works perfectly as a tackifier, doing exactly the job that nature intended.

Where to use M-Binder

M-Binder may be used anywhere you need to tack straw or mulch, or control dust and erosion, such as for highway, mine and pipeline reclamation, for revegetation and restoration projects, fire rehabilitation, landscaping and beautification.

Application

M-Binder may be applied as a dry powder or as a wet slurry to dry or wet surfaces. It may even be applied during rain. It does not require set-up or drying time because when it is wet it is a heavy muciloid material and when dry it is a firm but rewettable membrane.

M-binder may be used at varying rates depending on factors such as slope, porosity of the soil and wind conditions. We have found that a good general rate is 150 lb./acre.

- To tack straw: Apply M-Binder at 150-200 lbs./acre. We also recommend mixing with wood fiber at a rate of 200-300 lbs. per acre (to help keep tackifier on top of straw) and sufficient water to produce good slurry flow.
- For use with mulch: Apply M-Binder at 100-200 lbs./acre and wood fiber or paper mulch as specified.
- For use in dust control: Apply M-Binder at 100-200 lbs./acre depending on site conditions.

Cost Effective

Increases plant density and seed retention.

Easy...

to handle, to apply and easy to clean up

Versatile

Used for dust abatement, hydroseeding, straw and fiber tacking.

Improves...

slurry suspension and slurry flow

Durable

Forms a firm, resilient, rewettable membrane which fastens seed to soil surface.

Safe

All organic, non-toxic, non corrosive, safe for animals and plants.

Technical Specifications

Protein content	*1.6%*
Ash content	*2.3%*
Fiber	*[illegible]*
pH of 1% solution	*6.6%*
Settleable solids	*5.0%*

M-Binder is distributed by

granite SEED

1687 West 2100 North, Lehi, UT 84043 • (801) 768-4422 • Fax (801) 768-3967 • granite@graniteseed.com

Form No. A-1088
Rev. 2

New Mexico Department of Transportation
MATERIALS CERTIFICATE OF COMPLIANCE

1 PROJECT NUMBER: Interra Hobbs
2 CONTRACTOR: Windswept Dynamix NM
3 DATE: 6-27-08
4 ITEM No. & DESCRIPTION: Wood Fiber Mulch
5 QUANTITY: 3000 lbs. per acre

6 SHIPMENT NUMBER: NA
7 *HEAT No. LOT No. BATCH No. : NA
8 *SEAL NUMBER: NA
9 MANUFACTURER OF MATERIAL: Conwed

As the Prime Contractor on this Project, I Certify the Following:

a. That the material described in this document comply with the Department's Standard Specifications for Highway and Bridge Construction.

b. That when required, all Manufacturing Processes associated with the production of steel and iron materials comply with Subsection 106.4, Certificate of Compliance reference for domestic materials, of the Department's Standard Specifications for Highway and Bridge Construction, 2000 Edition, or that special waivers have been granted.

c. That Mill Test Reports, Manufacturer's Certificates of Compliance, and other pertinent documents concerning material incorporated into these items are on file at the Contractor's Office and will be made available to Department Personnel upon request. These documents will be held on file for three (3) years following Final Acceptance of the Project.

PRINTED NAME OF COMPANY OFFICIAL: Kim Garcia

SIGNATURE OF COMPANY OFFICIAL: Kim Garcia

TITLE: Office Manager

* THE NUMBER PLACED IN THESE SECTIONS WILL DEPEND ON THE TYPE OF MATERIAL BEING CERTIFIED

MATERIAL SAFETY DATA SHEET

CONWED FIBERS® HYDRO MULCH® 1000 w/SlikShot™

PROFILE PRODUCTS LLC
750 LAKE COOK ROAD - SUITE 440
BUFFALO GROVE, IL 60089

847-215-1144
800-366-1180
FAX 847-215-0577

HAZARDOUS COMPOUNDS	CAS NO	NIOSH	ACGIH	IDLH MG/CU METER
POPLAR, PINE & OAK WOOD DUST			5 MG / CUBIC METER	

HAZARDOUS RATINGS

HEALTH	FLAMMABILITY	REACTIVITY	DUST EXPLOSION
2	1	0	1

PHYSICAL / CHEMICAL CHARACTERISTICS

BOILING POINT	N/A	VAPOR PRESSURE	N/A
SPECIFIC GRAVITY	0.6444	VAPOR DENSITY	N/A
MELTING POINT	N/A	EVAPORATIVE RATE BuAc=1	N/A
SOLUBILITY IN WATER		"SLIGHT TO INSOLUBLE"	
APPEARANCE AND ODOR		"DARK GREEN WITH WOOD ODOR"	

FIRE AND EXPLOSION HAZARD DATA N/A **"NOT APPLICABLE"**

FLASH POINT	N/A	FLAMMABLE LIMITS	N/A	LEL	UEL
EXTINGUISHING MEDIA			"WATER"		
FIRE FIGHTING PROCEDURES			"NORMAL – AVOID FUMES (IF ANY)"		
UNUSUAL FIRE AND EXPLOSION HAZARDS			"DUST MAY FORM AN EXPLOSIVE MIXTURE IN AIR"		

REACTIVITY DATA

STABILITY		CONDITIONS TO AVOID	
STABLE	UNSTABLE	YES	"AVOID OXIDIZERS / REDUCERS"

INCOMPATIBLE MATERIALS "AVOID STRONG OXIDIZERS / REDUCERS"

MATERIAL SAFETY DATA SHEET

CONWED FIBERS® HYDRO MULCH® 1000 w/SlikShot™

PAGE 2

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS **NONE**

HAZARDOUS POLYMERIZATION	MAY OCCUR? "WILL NOT OCCUR"	CONDITIONS TO AVOID "WILL NOT OCCUR"	NONE

HEALTH HAZARDS DATA

ROUTE OF ENTRY: INHALATION? X SKIN? X INGESTION? X

HEALTH HAZARD: AVOID INHALATION OF ANY DUST, AVOID SKIN CONTACT, PROTECT EYES, AVOID INGESTION AND PROLONGED EXPOSURE.

OBSERVE FOR DEVELOPMENT OF ALLERGENIC REACTIONS AND CALL A PHYSICIAN

CARCINOGENICITY:	**NPT?**	**IARC MONOGRAPHS?**	**OSHA REGULATED?**
	"NO"	"NO"	"NO"

SYMPTOMS OF EXPOSURE IRRITATES SKIN, EYE IRRITATION; BURNING, TEARING, SWELLING.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

ALLERGIES, DERMATITIS

EMERGENCY FIRST AID PROCEDURES: USE WATER TO CLEANSE AREA, EYES FLUSH WITH WATER, CONTACT PHYSICIAN IF ALLERGIC REACTIONS OCCUR WITHIN 0-2 HOURS.

PRECAUTIONS FOR SAFE HANDLING AND USE

GOGGLES FOR EYES, GLOVES FOR HANDS, WEAR CLOTHING TO PREVENT SKIN CONTACT

STEPS TO BE TAKEN IN CASE OF SPILL

SPRINKLE SPILLAGE COMPOUND TO MINIMIZE DUST AND SWEEP UP SPILLED DEBRIS, ABSORB AND SWEEP UP / COLLECT; AVOID INHALATION AND / OR INGESTION OF ANY DUST.

WASTE DISPOSAL METHOD NO SPECIAL DISPOSAL METHOD STANDARD LANDFILL

DISPOSAL ACCORDING TO LOCAL, STATE AND FEDERAL ENVIRONMENTAL REQUIREMENTS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

"NO SPECIAL REQUIREMENTS EXCEPT FOR CONTAINER DAMAGE". 7-1-03

CURTIS & CURTIS, Inc.

4500 N. PRINCE
PHONE (505) 762-4758 | FAX (505) 763-4213
CLOVIS, NEW MEXICO 88101

IRRIGATED PASTURE GRASSES
MOUNTAIN PASTURE GRASSES
NATIVE PASTURE GRASSES
SORGHUMS

TURF SEED SPECIALISTS

YARD AND PLAYGROUND GRASSES
GOLF COURSE GRASSES
ALFALFA / CLOVERS
FORAGES

CERTIFICATION

June 16, 2008

Windswept Organix
120 Old Highway 66
Albuquerque, NM 87123

2 Acres Custom Mix
Job: Hobbs Reclamation

TO WHOM IT MAY CONCERN:

CURTIS & CURTIS, INC. CERTIFIES THAT EACH CONTAINER OF SEED IS MIXED AND LABELED IN ACCORDANCE WITH THE FEDERAL SEED ACT AND IS AT LEAST EQUAL TO THE REQUIREMENTS INDICATED BELOW:

KIND	ORIGIN	LOT#	PURITY OF MIX	GERM PURITY	X DORMANT	= PLS%
Sideoats Grama Vaughn	Texas	15733	27.60%	83.17%	82.00%	68.20%
Sand Dropseed Not Stated	Kansas	15968	06.02%	96.77%	94.00%	90.96%
Little Bluestem Aldous	Kansas	15925	23.91%	64.12%	71.00%(TZ)	45.53%
Indiangrass Cheyenne	Texas	15317	14.32%	85.67%	79.00%	67.68%
Switchgrass Blackwell	Texas	15476	06.58%	99.75%	86.00%	85.79%

Sincerely,

Leona Fleming

Leona Fleming

CURTIS & CURTIS, Inc.

4500 N. PRINCE
PHONE (505) 762-4759 / FAX (505) 763-4219
CLOVIS, NEW MEXICO 88101

IRRIGATED PASTURE GRASSES
MOUNTAIN PASTURE GRASSES
NATIVE PASTURE GRASSES
SORGHUMS

GRASS SEED SPECIALISTS

YARD AND PLAYGROUND GRASSES
GOLF COURSE GRASSES
ALFALFA / CLOVERS
FORAGES

CERTIFICATION

June 16, 2008

Windswept Organix
120 Old Highway 66
Albuquerque, NM 87123

2 Acres Custom Mix
Job: Hobbs Reclamation

TO WHOM IT MAY CONCERN:

CURTIS & CURTIS, INC. CERTIFIES THAT EACH CONTAINER OF SEED IS MIXED AND LABELED IN ACCORDANCE WITH THE FEDERAL SEED ACT AND IS AT LEAST EQUAL TO THE REQUIREMENTS INDICATED BELOW:

KIND	ORIGIN	LOT#	PURITY OF MIX	GERM PURITY X DORMANT = PLS%		
Sideoats Grama Vaughn	Texas	15733	27.60%	83.17%	82.00%	68.20%
Sand Dropseed Not Stated	Kansas	15968	06.02%	96.77%	94.00%	90.96%
Little Bluestem Aldous	Kansas	15925	23.91%	64.12%	71.00%(TZ)	45.53%
Indiangrass Cheyenne	Texas	15317	14.32%	85.67%	79.00%	67.68%
Switchgrass Blackwell	Texas	15476	06.58%	99.75%	86.00%	85.79%

Sincerely,

Leona Fleming

Curtis & Curtis Seed
4500 N. Prince
Clovis, NM 88101
Phone: 505-762-4759

Windswept Organix
2-1 Acre Bags @ 17.68 Bulk Pounds
2 Acre Custom Seed Mix
Job: Hobbs Reclamation

Lot#: M-8248

Item	Origin	Purity	Germ	Dormant	Germ & Dormant	Test Date	Total PLS Pounds
Sideoats Grama Vaughn	Texas	27.60%	77.00%	05.00%	82.00%	02/08	08.00
Sand Dropseed Not Stated	Kansas	06.02%	62.00%	32.00%	94.00%	05/08	02.00
Little Bluestem Aldous	Kansas	23.91%	71.00%	00.00%	71.00%(TZ)	11/07	06.00
Indiangrass Cheyenne	Texas	14.32%	14.00%	65.00%	79.00%	06/08	04.00
Switchgrass Blackwell	Texas	06.58%	48.00%	38.00%	86.00%	02/08	02.00

Other Crop: 00.49%
Weed Seed: 00.21%
Inert Matter: 20.87%

There Are 2 Bags For This Mix
This Bag Weighs 17.68 Bulk Pounds
Use This Bag For 1 Acre

Total Bulk Pounds: 35.36