2R - 48

REPORTS

DATE:

MAY 2001

MAXIM TECHNOLOGIES INC®

May 3, 2001

Mr. Wayne Price
New Mexico Oil Conservation Division
Environmental Bureau
2040 S. Pacheco
Santa Fe, New Mexico 87505

RE: Soil Investigation Cedar Lake Draw, New Mexico
Maxim Project No. 2007215

Dear Mr. Price:

On behalf of Conoco Inc. (Conoco), Maxim Technologies, Inc. (Maxim) prepared this letter report for your review and approval detailing the subsurface investigations performed during January 24 and 25, 2001 and on February 15, 2001 at the site of a release in the Skelly Gathering System pipeline near Cedar Lake Draw, New Mexico. These subsurface investigations were conducted to satisfy two major objectives:

1) Conduct a limited shallow soil investigation of the horizontal and vertical extent of any impacts related to the release, and any other historical petroleum impacts in the immediate area.

2) Monitor the excavation during the relocation of a replacement pipeline through the impacted area to ensure that impacted soils were not used for backfill.

BACKGROUND

The Skelly Gathering System pipeline release site is within a dry portion of a playa in the NW4 of Section 30, T17S, R31E. The playa is connected to the playa at Cedar Lake, roughly 1.6 miles to the southwest, by Cedar Lake Draw. Conoco estimated that approximately 15 barrels of condensate, oil, and water were released to the shallow soil. Conoco immediately removed 72 yards of affected soil to CRI, Inc. a soil recovery farm located in Hobbs, NM. Following the excavation, four soils samples were collected from the excavation, adjacent to the release point. Two samples were from the base of the excavation and two from the sidewalls.

The samples were analyzed for Total Petroleum Hydrocarbon (TPH) Method 418.1 at Cardinal Laboratories in Hobbs, and the following results were obtained:

Sample #1 Side – 9,000 mg/kg
Sample #2 Side – 27,100 mg/kg
Sample #3 Bottom – 12,100 mg/kg
Sample #4 Bottom – 8,320 mg/kg

JANUARY 24 AND 25, 2001 INVESTIGATION

In order to investigate the horizontal and vertical extent of any impacts related to the Skelly Gathering System pipeline release, and any other historical petroleum impacts in the immediate area, the following scope of work was implemented.

1. The OCD's *Guidelines for Remediation of Leaks, Spills and Releases* was consulted to determine cleanup guidelines. Since we are dealing with unsaturated contaminated soils, as defined by the OCD, the ranking criteria were applied. Based on the criteria, a total ranking score of 20 was determined:

   - Groundwater was determined to be at approximately 235 feet below ground surface by consulting the NM State Engineer (see Conoco letter to the OCD dated 10/11/99). **Score: 0**
   - Wellhead Protection Area is <1000 feet from a water source and <200 feet from any private domestic wells. **Score: 0**
   - Distance to a surface water body is <200 horizontal feet (the release is within a playa associated with Cedar Lake). **Score: 20**.
   - Therefore the cleanup guidelines consist of:
     - Benzene – 10 ppm
     - BTEX – 50 ppm
     - TPH – 100 ppm

   A field soil vapor headspace measurement of 100 ppm was substituted for a laboratory analysis of the benzene and BTEX concentration limits Per OCD Guidance.

2. Maxim advanced ten (10) soil borings around the perimeter (total includes "step-out" borings and one background boring) of the existing excavation to determine the vertical and horizontal extent of any residual hydrocarbon impacts not captured during the initial excavation efforts. Figure 1 shows the locations of soil borings, their total depth, and the highest photoionization detector (PID) reading that was encountered in each hole.

3. With the exception of two that were hand augered, the borings were advanced with a truck-mounted drill rig.

4. The borings were continuously sampled and logged. Observations concerning soil types, lithologic changes, and the environmental condition of the encountered soil were noted and are shown on soil boring logs presented in Attachment 1.

5. The soil samples were field screened with a PID to detect the presence of volatile organic vapors. Results from each boring are presented in Table 1.

Table 1. Soil boring observations and PID readings from January 24 and 25, 2001 Investigation at site of a release from the Skelly Gathering System pipeline at Cedar Lake Draw, New Mexico.*

Depth (feet bgs)	B-1**	B-2**	B-3	B-4	B-5	B-6	B-7	B-8	B-9	B-10	B-11	B-12
0-2	ns	ns	0.2	2.4	2.5	5.2	4.7	1.5	10.7	152	5.1	3.2
2-4	ns	ns	24.6	0.5	11	1.6	11.5	1.7	14.3	434	5	3.5
4-6	ns	ns	79.7	2.2	2.3	1.8	4.4	1.4	367.9	847	4.6	3
6-8	SO	SO	230.4	0.5	8.3	1.6	13.8	1.1	102.1	948	4.5	2.7
8-10	SO	SO	283	4.2	8.3	6.4	2.5	1.7	10.2	972	4.2	2.6
10-12	SO	SO	122.9	4.4	3.6	12.4	41.7	1.4	4.7	784	3.9	3
12-14	ns	ns	1.11	ns	ns	11.9	56.5	ns	ns	332	ns	ns
14-16	ns	ns	5.6	ns	ns	ns	20.4	ns	ns	903	ns	ns
16-18	ns	ns	ns	ns	ns	ns	ns	ns	ns	770	ns	ns
18-20	ns	ns	ns	ns	ns	ns	ns	ns	ns	543	ns	ns
20-22	ns	ns	ns	ns	ns	ns	ns	ns	ns	150	ns	ns
ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
27-29	ns	ns	ns	ns	ns	ns	ns	ns	ns	108	ns	ns
29-34	ns	ns	ns	ns	ns	ns	ns	ns	ns	24.3	ns	ns

* PID Readings in parts per million (ppm).
** Soil borings B-1 and B-2 were hand augered and not sampled with a PID, therefore, only qualitative observations are recorded.
SO = Stong Odor
ns = Not sampled.
bgs = below ground surface.

6. All sampling equipment was cleaned between each boring installation.

7. Split spoon sampling continued until PID readings were significantly below 100 ppm, at which point a soil sample was collected and analyzed for TPH (USEPA Method 8015). If field screening of samples from a boring were all significantly below 100 ppm, no soil samples were collected from that boring. The soil samples were placed in 4-oz. glass sample jars, sealed with Teflon-lined lids, and

placed on ice for transportation to an analytical laboratory. Laboratory results are presented in Table 2.

Table 2. Laboratory results from January 24 and 25, 2001 Investigation at the site of a release from the Skelly Gathering System pipeline at Cedar Lake Draw, New Mexico.

Sample	GRO (ppm)
B3 14'-16'	not detected
B4 10'-12'	0.11
B5 10'-12'	not detected
B6 12'-14'	not detected
B7 14'-16'	not detected
B8 10'-12'	0.35
B9 10'-12'	not detected
B10 32'-34'	not detected
B11 10'-12'	not detected
B12 10'-12'	not detected

8. Soil cuttings generated by soil boring activities were stockpiled adjacent to the open excavation until such time a decision is made regarding additional remediation measures, including but not limited to excavation or in-situ methods.

FEBRUARY 15, 2001 INVESTIGATION

A trackhoe was employed to dig a test ditch, 60 feet to the east from the location of the pipeline release (Figure 2). Excavation was started approximately 15 feet north of the existing pipeline near the point of release. The ditch was excavated to a depth of approximately 6-feet and twelve soil samples were obtained from the excavated material at approximately 5-foot intervals to the east along the ditch. These samples were field tested with a PID in accordance with OCD guidelines for soil sampling. Readings from this material ranged from 7.8 parts per million (ppm) in the sample nearest the pipeline release to 0.4 ppm 60 feet to the east. PID results for the eastern test ditch are presented in Table 3.

Excavation to the west was also started approximately 15 feet north of the existing pipeline near the point of release (Figure 2). Field testing of excavated material from the west test ditch yielded PID readings above 100 ppm from the release area to a point about 90 feet west of the site. At that point, PID readings dropped below 100 ppm. The excavation was continued another 40 – 45 feet to the west to ensure that additional impacts were not present. PID results for the western test ditch are presented in Table 4.

Table 3. Eastern Trench PID readings from February 15, 2001 Investigation at the site of a release from the Skelly Gathering System pipeline at Cedar Lake Draw, New Mexico.

Distance along trench east from release (feet)	PID Reading (ppm)
5	7.8
10	0.6
15	5.0
20	0.0
25	0.0
30	0.0
35	0.0
40	0.0
45	1.2
50	0.0
55	0.1
60	0.4

Table 4. Western Trench PID readings from February 15, 2001 Investigation at the site of a release from the Skelly Gathering System pipeline at Cedar Lake Draw, New Mexico.

Distance along trench west from release (feet)	PID Reading (ppm)
5	224
10	136
15	627
20	174
25	111
30	190
35	168
40	486
45	32.1
50	110
55	108.1
60	334
65	932
70	321
75	103
80	37.1
85	102.3
90	34.5
95	35.1
100	21.9
105	2.9
110	0

Distance along trench west from release (feet)	PID Reading (ppm)
115	2.8
120	9.7
125	6.2
130	49.8
135	4.9

OCD FILE SEARCH

On February 27, 2001 a Maxim representative searched the OCD files in Artesia to determine if any historic releases occurred in the immediate vicinity, which may have overprinted, or previously impacted soils in the area of the current investigation. Record of a 1995 Texas-New Mexico Pipeline Company rupture was found in the same area. The release of 150 barrels of sour crude affected an area of approximately 10,000 square feet. According to OCD files the release was remediated as follows: "oil soaked earth covered with fresh soils in the prospect of full remediation."

RESULTS OF INVESTIGATIONS

The soil borings typically encountered moist unconsolidated silty sand in the upper eight to ten feet of the soil column with caliche interbeds becoming common below that depth. Soil boring B-7, directly to the north of the pipeline release, bottomed at 16 feet in sandy clay with caliche stringers. The deepest and most highly impacted soil boring, B-10, directly to the south of the pipeline release, encountered a zone of silty clay with caliche stringers from 22 to 29 feet bgs that required air rotary drilling techniques to penetrate. B-10 bottomed at 33.75 feet bgs in silty clay that contained a one-inch thick, hard caliche layer.

Soil concentration observations and PID readings from January 24 and 25, 2001 Investigation are presented in Table 1. Laboratory analysis of confirmatory samples from the bottom of each boring were all below detection for GRO with the exception of 0.11 mg/Kg GRO in the 10-12 foot interval of soil boring B-4 and 0.35 mg/Kg in the 10-12 foot interval of B-8 (Table 2). These results were all well below OCD cleanup guidelines. Table 3 contains PID readings from soil samples of material excavated from the trench 15 feet north of the pipeline (February 15, 2001 Investigation), taken at the distance specified in the table to the west of the pipeline release. Figure 1 presents the total depth of each soil boring and the highest PID reading encountered in each boring. This data from the January 24 and 25, 2001 Investigation combined with trenching data from the February 15, 2001 Investigation allows the estimate of the horizontal extent of soil impacts shown in Figure 3. A surface area of approximately 130 feet by 110 feet contains the impacted soils for a total surface area of approximately 14,300 square feet.

A cross section was prepared along the North-South line shown in Figure 4 and PID values with depth were plotted (Figure 5). The cross section gives an estimate of the vertical extent of impacted soils with a total depth of approximately 30 feet. Therefore the total volume of impacted soils is approximately 429,000 cubic feet or 15,889 cubic yards.

CONCLUSIONS

- Impacted soils extend to a depth of approximately 30 feet.
- The volume of impacted soil is nearly 16,000 cubic yards.
- Soil types become increasingly impermeable with depth and soils below 22 feet are particularly impermeable.
- Groundwater was not encountered during soil boring activities and regional information suggests that groundwater is approximately 235 feet bgs in the area.
- The soils in and around the Conoco 15 barrel condensate release are overprinted by a 150 barrel sour crude release in 1995.

RECOMENDATIONS

The migration of constituents to groundwater is unlikely at this location due to the thickness of the unsaturated zone. This assumption is supported by the fact that relatively impermeable caliche horizons were encountered during the installation of soil borings, and specifically by the dense clay/caliche horizon encountered at a depth of 33 feet in boring B-10. At this horizon, PID readings decreased significantly and it is assumed that migration of organic constituents did not continue beyond this zone.

The significant volume and depth of impacted soils at this location makes excavation and landfarming an impractical alternative for remediation at this site. However, as an alternative, we propose a form of enhanced in-situ bioremediation to reduce concentrations of organic constituents in the soil. This proposed process will also aid in the bioremediation of the historic Texas-New Mexico Pipeline Company release impacts overprinting the Conoco condensate release.

Bioremediation will occur naturally in shallow soils with access to oxygen. Deeper organic materials will quickly use up all the available oxygen and the system will become anaerobic (oxygen depleted) causing bioremediation to slow down. While oxygen is the electron acceptor with the most powerful affinity for electrons in the oxidation of organic material, nitrate is also an electron acceptor. Nitrate's affinity for electrons is only slightly less than that of oxygen and serves as a substitute for oxygen in the bioremediation process.

We propose that solid nitrate fertilizer be mixed with soil in the upper six feet of the soil column overlying the delineated horizontal extent of the condensate release (Figure 3) to support microbial degradation of the organic material. Distribution in the upper six feet of the soil column will ensure that fertilizer will not blow away and will provide optimal leachability of nitrate. During storm infiltration events some nitrate and associated nutrients (phosphorous, etc.) will dissolve and be transported to deeper levels of the soil profile. Caliche layers are an indication of the depth that can be attained by these soluble constituents. Caliches are characteristic of arid areas and the depth of caliche horizons are typically determined by the amount of rainfall in a given region; the less rain an area receives, the shallower its caliche horizons are. Caliche layers are formed when water from infiltration events leaches constituents from the upper levels and deposits them at deeper levels when capillary action and evaporation stop the downward movement of water. The caliche layers act as a barrier to downward migration of organic constituents and as a container for nitrate laden water to assure that nitrate and nutrients are in contact with organic constituents and conditions for microbial degradation are optimal.

The advantage of nitrate is that, unlike oxygen, it has a high solubility in water, making it possible to get large concentrations of electron acceptor in contact with deeper organic material. At Cedar Lake Draw, soluble nitrate will be distributed to deeper zones by infiltration of precipitation. Subsequent infiltration events will leach more nitrate and replenish the supply of electron acceptors at depth. We know the depths to which infiltration will supply nitrate because the caliche zones are records of the depth attained by previous infiltration events. These are the same caliche zones that provide a barrier to downward migration of organic constituents.

We are prepared to initiate these actions as soon as we receive your approval to proceed. If you have any questions or comments regarding this report, please do not hesitate to contact Clyde Yancey (Maxim) at 505-237-8440 or John Skopak (Conoco) at 281-293-5584. We would appreciate your review and approval of the plan we have presented at your earliest convenience.

Sincerely,

MAXIM TECHNOLOGIES, INC.

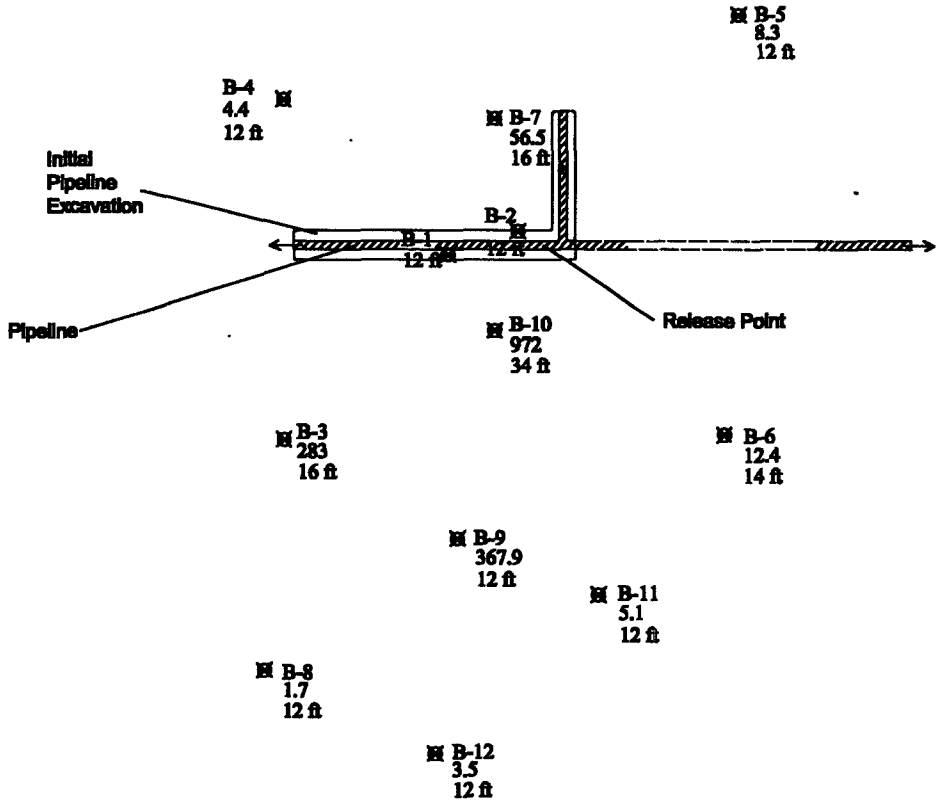
Clyde L. Yancey, P.G.
Senior Project Manager

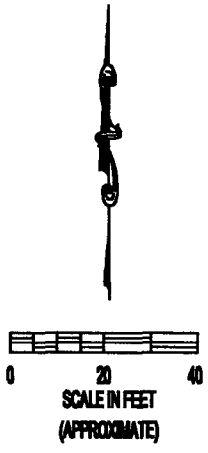
Daniel W. Erskine, Ph.D.
Senior Geochemist

Attachments

Copy:
John E. Skopak, Conoco Remediation Technology/Houston, TX
Joyce M. Miley, Conoco NG&GP/Houston, TX
Mark Bishop, Conoco NG&GP/Maljamar, NM
Mike Stubblefield, OCD/Artesia, NM

FIGURES





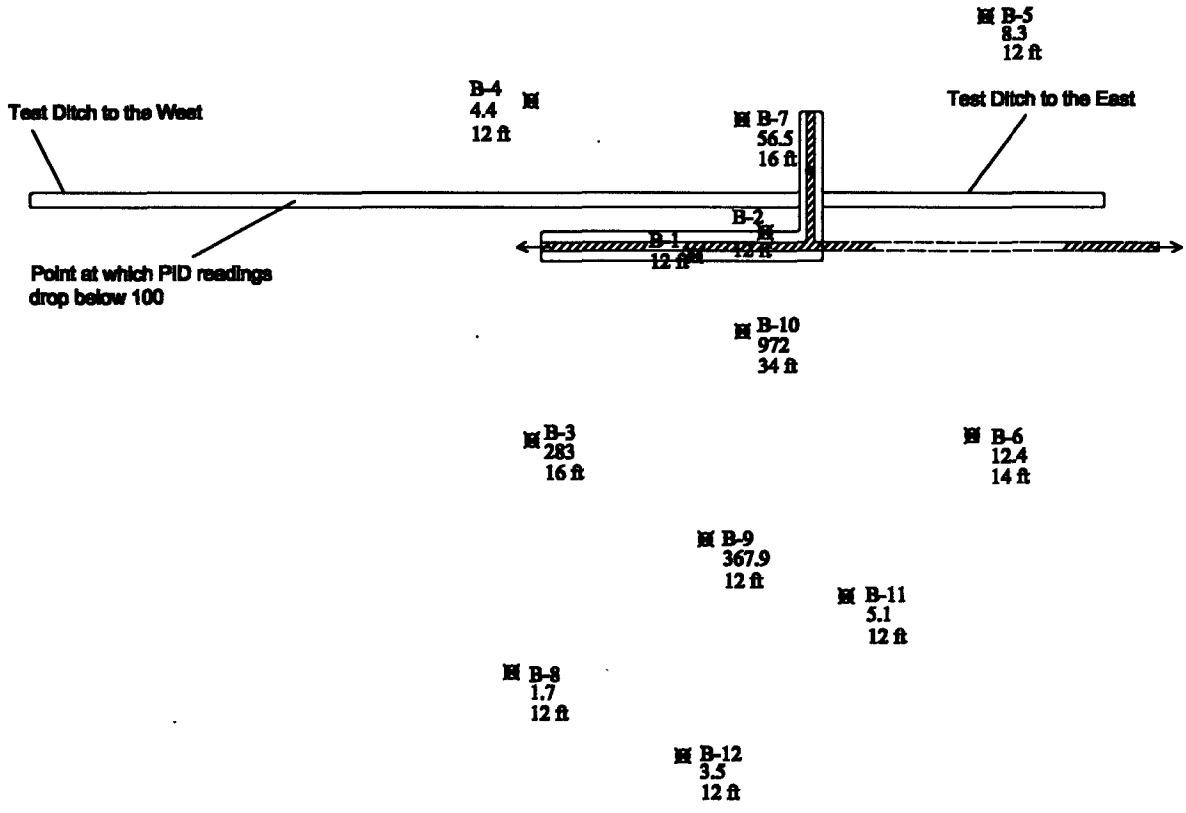
LEGEND:

B-1 Soil Boring ID
1.7 Highest PID Value Observed In Boring
12 ft Total Depth of Boring

LOCATION OF SOIL BORINGS CEDAR LAKE DRAW, NEW MEXICO

MAXIM TECHNOLOGIES INC

PROJECT No. 2007215	DRAWING BY: RLH DATE: 04/2/01	
FILE NAME: Fig 1.DWG	CHECKED BY: DWE DATE 04/2/01	FIGURE 1



LEGEND:

B-1 Soil Boring ID
1.7 Highest PID Value Observed In Boring
12 ft Total Depth of Boring

LOCATION OF TEST DITCHES CEDAR LAKE DRAW, NEW MEXICO

MAXIM TECHNOLOGIES INC

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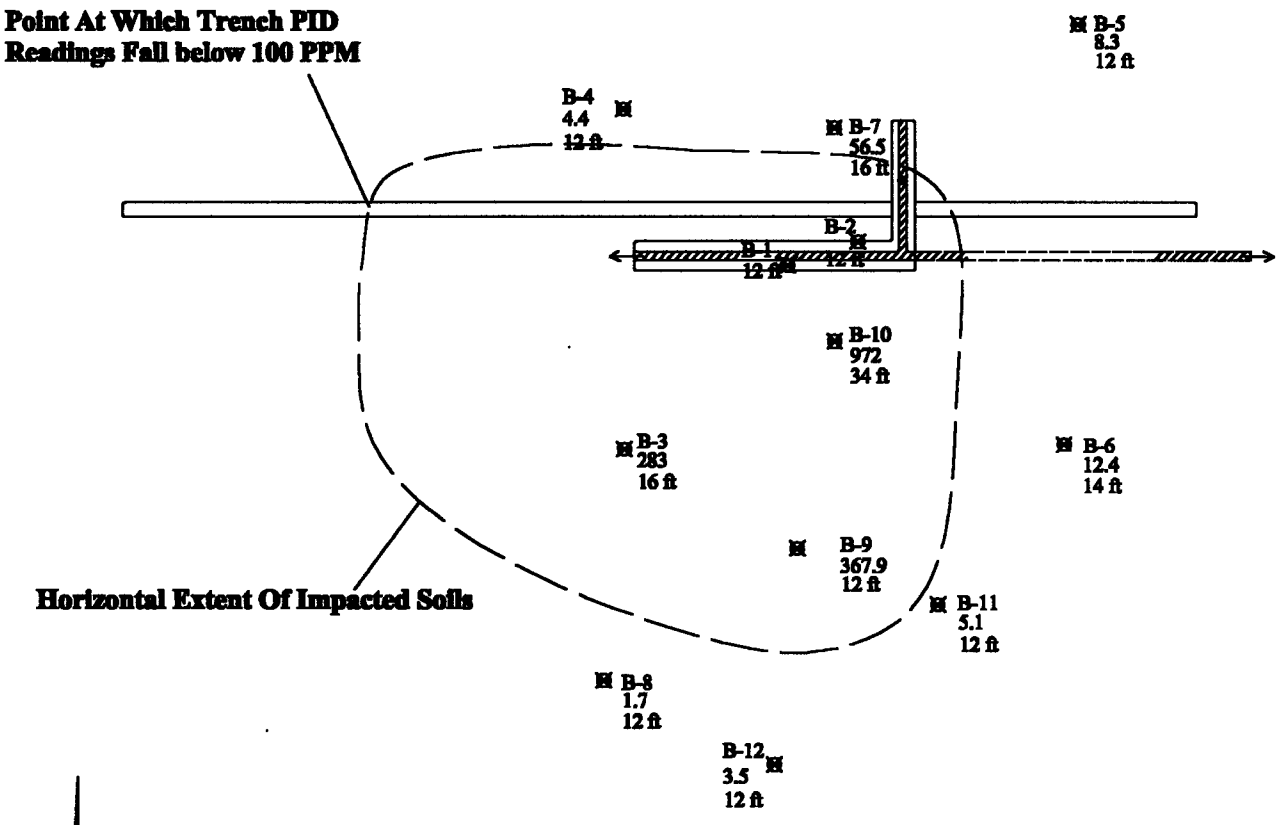
FILE NAME: Fig 2.DWG	CHECKED BY: DWE DATE 04/2/01	FIGURE 2



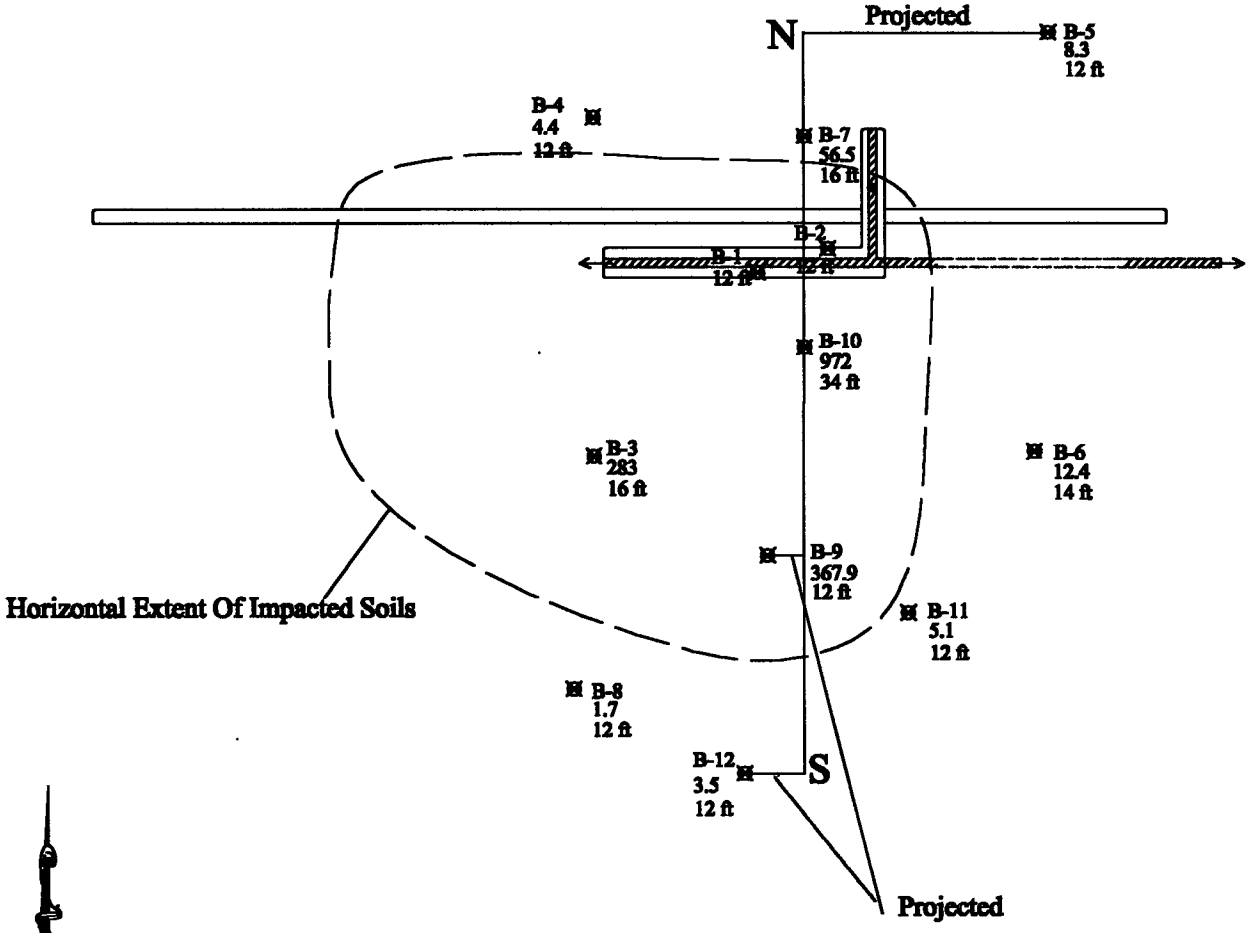
LEGEND:

B-1 Soil Boring ID
1.7 Highest PID Value Observed In Boring
12 ft Total Depth of Boring

HORIZONTAL EXTENT OF IMPACTED SOIL
CEDAR LAKE DRAW, NEW MEXICO

MAXIM TECHNOLOGIES INC

PROJECT No. 2007215	DRAWING BY: RLH DATE: 04/2/01	
FILE NAME: Fig 3.DWG	CHECKED BY: DWE DATE 04/2/01	FIGURE 3



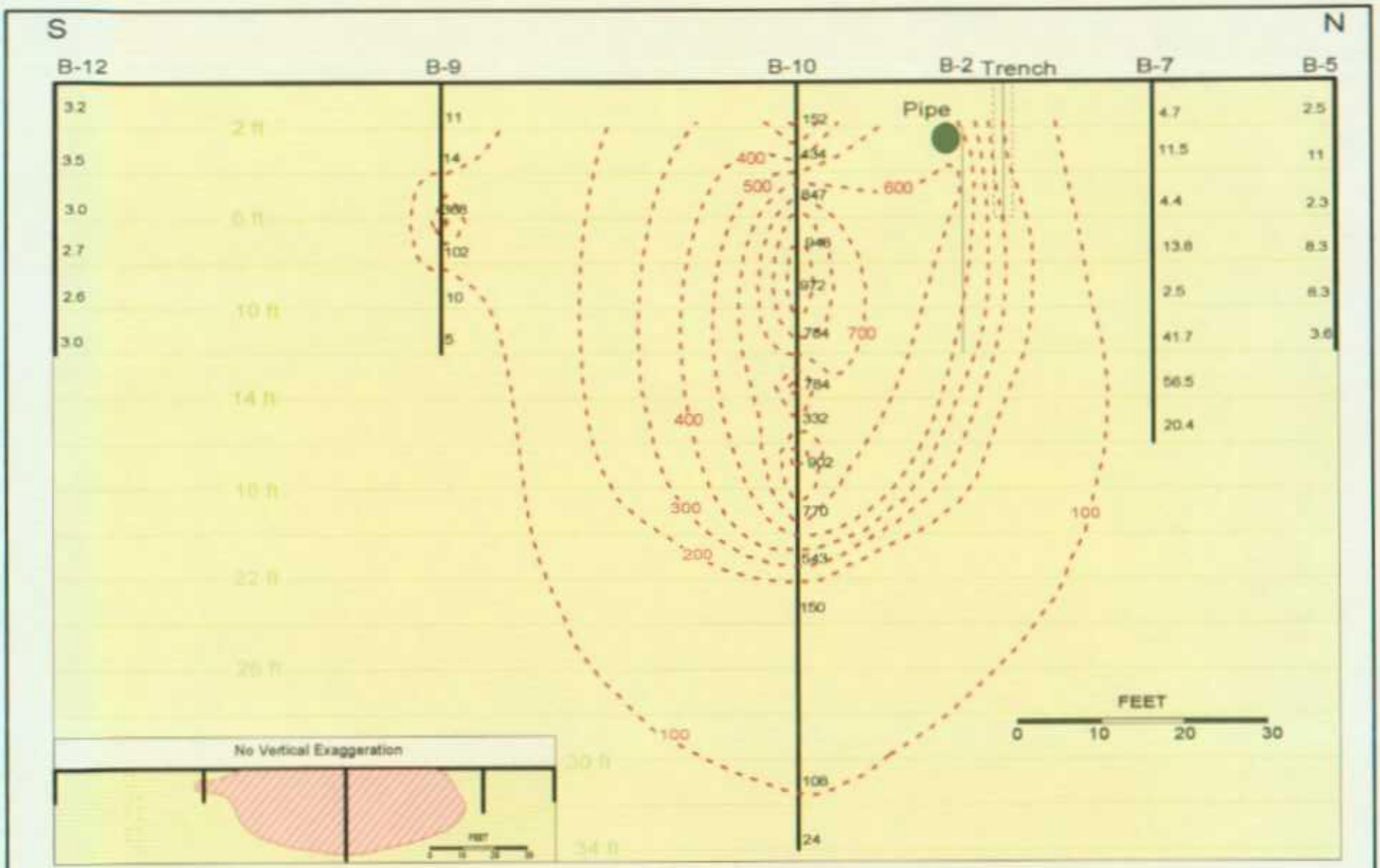
LEGEND:

B-1 Soil Boring ID
1.7 Highest PID Value Observed In Boring
12 ft Total Depth of Boring

LOCATION OF CROSS SECTION CEDAR LAKE DRAW, NEW MEXICO

MAXIM TECHNOLOGIES INC

PROJECT No. 2007215	DRAWING BY: RLH DATE: 04/2/01	
FILE NAME: Fig 4.DWG	CHECKED BY: DWE DATE 04/2/01	FIGURE 4



MAXIM TECHNOLOGIES INC

56.5 PID Value

B-9 Soil Boring ID

200 PID value isopleth (ppm)

Project No. 2007215	Drawing By: DWE	Date: 02/22/01
File Name: Figure 3.dsf	Checked By: DWE	Date: 02/22/01

Figure 5. Cross section showing contours of PID readings, Cedar Lake Draw, New Mexico.

ATTACHMENT 1
Soil Boring Logs

PROJECT NAME: CEDAR LAKE PIPELINE

LOCATION: Cedar Lake, Eddy County, New Mexico

DRILL TYPE: Hand Auger

DRILLED BY: HARRISON & COOPER, INC.

LOGGED BY: Anne Stewart

REMARKS: ND=Non Detect
bgs=below ground surface

MONITORING WELL NO. B-1

ELEVATION: TOP OF BORING (MSL): (ft)

GROUNDWATER ELEVATION (MSL): Dry (ft)

BORE HOLE DIAMETER: 4 3/4 (in)

DATE: HOLE STARTED: 1/23/01

COMPLETED: 1/23/01

NS=No Sample

ELEVATION (MSL) - ft	SAMPLE INTERVAL	CLASSIFICATION AND DESCRIPTION	USCS SYMBOL	BLOW COUNT	SAMPLE TO LAB	TIME	% RECOVERY	FID RESULT (ppm)
0.0		Excavation - No Sampling						
-5.0		Silty SAND, loose to medium dense, reddish brown, moist, strong odor	SM	Hand Auger			100	NS
		Silty SAND, loose to medium dense, reddish brown, moist, strong odor with staining	SM	Hand Auger			100	NS
-10.0		Silty SAND, loose to medium dense, reddish brown, moist, strong odor with staining	SM	Hand Auger			100	NS

PROJECT NAME: CEDAR LAKE PIPELINE

LOCATION: Cedar Lake, Eddy County, New Mexico

DRILL TYPE: Hand Auger

DRILLED BY: HARRISON & COOPER, INC.

LOGGED BY: Anne Stewart

REMARKS: ND=Non Detect
bgs=below ground surface

MONITORING WELL NO. B-2

ELEVATION: TOP OF BORING (MSL): (ft)

GROUNDWATER ELEVATION (MSL): Dry (ft)

BORE HOLE DIAMETER: 4 3/4 (in)

DATE: HOLE STARTED: 1/23/01
COMPLETED: 1/23/01

NS=No Sample

ELEVATION (MSL) - ft	SAMPLE INTERVAL	CLASSIFICATION AND DESCRIPTION	USCS SYMBOL	BLOW COUNT	SAMPLE TO LAB	TIME	% RECOVERY	FID RESULT (ppm)
0.0		*Excavation - No Sample*						
-5.0		Silty SAND, loose to medium dense, reddish brown, moist, strong odor	SM	PUSHED			100	NS
		Silty SAND, loose to medium dense, reddish brown, moist, strong odor	SM	PUSHED			100	NS
-10.0		Silty SAND, loose to medium dense, reddish brown, moist, strong odor with black taining	SM	PUSHED			100	NS

Split Spoon Sample (ASTM D1586)

PROJECT NAME: CEDAR LAKE PIPELINE

LOCATION: Cedar Lake, Eddy County, New Mexico

DRILL TYPE: Dry Air Rotary

DRILLED BY: HARRISON & COOPER, INC.

LOGGED BY: Anne Stewart

REMARKS: ND=Non Detect
bgs=below ground surface

MONITORING WELL NO. B-3

ELEVATION: TOP OF BORING (MSL): (ft)

GROUNDWATER ELEVATION (MSL): Dry (ft)

BORE HOLE DIAMETER: 4 3/4 (in)

DATE: HOLE STARTED: 1/23/01

COMPLETED: 1/23/01

ELEVATION (MSL) - ft	SAMPLE INTERVAL	CLASSIFICATION AND DESCRIPTION	USCS SYMBOL	BLOW COUNT	SAMPLE TO LAB	TIME	% RECOVERY	FID RESULT (ppm)
0.0		Silty SAND, loose to medium dense, reddish brown, damp	SM	PUSHED			100	0.2
		Silty SAND, loose to medium dense, reddish brown, moist, slight odor	SM	PUSHED			100	24.6
-5.0		Silty SAND, loose to medium dense, reddish brown, moist, stained 5 to 6 ft, odor	SM	PUSHED			100	79.7
		Silty SAND, loose to medium dense, reddish brown, moist, stained 6 to 7 ft with strong odor, odor decreasing from 7 to 8 ft	SM	PUSHED			100	230.4
		Silty SAND, loose to medium dense, reddish brown, moist, stained, slight odor	SM	PUSHED			100	283
-10.0		Silty SAND grading to SAND, loose to medium dense, reddish brown, moist, stained 11 to 12 ft, cleaning with depth	SM	PUSHED			75	122.9
		Silty SAND grading to SAND, loose to medium dense, reddish brown with some gray interbedded sands, moist, cleaning with depth	SM	PUSHED			100	1.4
-15.0		Silty SAND grading to SAND, loose to medium dense, reddish brown with some gray interbedded sands, moist, cleaning with depth	SM	PUSHED			100	5.6

Split Spoon Sample (ASTM D1586)

2007219-100 | MAXIM TECHNOLOGIES INC | EXPLORATORY BORING LOG | B-3

PROJECT NAME: CEDAR LAKE PIPELINE

LOCATION: Cedar Lake, Eddy County New Mexico

DRILL TYPE: Dry Air Rotary

DRILLED BY: HARRISON & COOPER, INC.

LOGGED BY: Anne Stewart

REMARKS: ND=Non Detect
bgs=below ground surface

MONITORING WELL NO. B-4

ELEVATION: TOP OF BORING (MSL): (ft)

GROUNDWATER ELEVATION (MSL): Dry (ft)

BORE HOLE DIAMETER: 4 3/4 (in)

DATE: HOLE STARTED: 1/23/01

COMPLETED: 1/23/01

ELEVATION (MSL) - ft	SAMPLE INTERVAL	CLASSIFICATION AND DESCRIPTION	USCS SYMBOL	BLOW COUNT	SAMPLE TO LAB	TIME	% RECOVERY	FID RESULT (ppm)
0.0		Silty SAND grading to SAND with depth, loose to medium dense, reddish brown to red, dry, no odor, roots at 2.0 ft	SM	PUSHED			100	2.4
		SAND, loose to medium dense, reddish brown, dry	SP	PUSHED			25	0.5
-5.0		SAND, loose to medium dense, reddish brown, dry, no odor	SP	PUSHED			50	2.2
		SAND with caliche interbedded, loose to medium dense, reddish brown, dry	SP	PUSHED			100	0.5
		SAND with caliche stingers, loose to medium dense, reddish brown, dry, no odor	SP	PUSHED			100	4.2
-10.0		SAND with caliche stingers, loose to medium dense, reddish brown, dry, no odor	SP	PUSHED			50	4.4

PROJECT NAME: CEDAR LAKE PIPELINE

LOCATION: Cedar Lake, Eddy County, New Mexico

DRILL TYPE: Dry Air Rotary

DRILLED BY: HARRISON & COOPER, INC.

LOGGED BY: Anne Stewart

REMARKS: ND=Non Detect
bgs=below ground surface

MONITORING WELL NO. B-5

ELEVATION: TOP OF BORING (MSL): (ft)

GROUNDWATER ELEVATION (MSL): Dry (ft)

BORE HOLE DIAMETER: 4 3/4 (in)

DATE: HOLE STARTED: 1/23/01

COMPLETED: 1/23/01

ELEVATION (MSL) - ft	SAMPLE INTERVAL	CLASSIFICATION AND DESCRIPTION	USCS SYMBOL	BLOW COUNT	SAMPLE TO LAB	TIME	% RECOVERY	FID RESULT (ppm)
0.0		SAND with slight caliche interbedded, loose to medium dense, reddish brown, dry, no odor, roots	SP	PUSHED			100	2.5
		SAND, loose to medium dense, reddish brown, damp	SP	PUSHED			50	11.0
-5.0		SAND, loose to medium dense, reddish brown, dry	SP	PUSHED			50	2.3
		SAND, loose to medium dense, reddish brown, dry	SP	PUSHED			100	8.3
		SAND, loose to medium dense, reddish brown, dry	SP	PUSHED			100	8.3
-10.0		SAND with caliche stringers from 11.0 to 12.0, loose to medium dense, reddish brown, dry, dark staining at 10.5 ft, approximately 2 in. thick	SP	PUSHED			100	3.6

PROJECT NAME: CEDAR LAKE PIPELINE
MONITORING WELL NO. B-6
LOCATION: Cedar Lake, Eddy County, New Mexico
DRILL TYPE: Dry Air Rotary
ELEVATION: TOP OF BORING (MSL): (ft)
GROUNDWATER ELEVATION (MSL): Dry (ft)
DRILLED BY: HARRISON & COOPER, INC.
BORE HOLE DIAMETER: 4 3/4 (in)
LOGGED BY: Anne Stewart
DATE: HOLE STARTED: 1/23/01
COMPLETED: 1/23/01
REMARKS: ND=Non Detect
bgs=below ground surface

ELEVATION (MSL) - ft	SAMPLE INTERVAL	CLASSIFICATION AND DESCRIPTION	USCS SYMBOL	BLOW COUNT	SAMPLE TO LAB	TIME	% RECOVERY	FID RESULT (ppm)
0.0		Silty SAND grading to SAND with interbedded clay balls, loose to medium dense, reddish brown, damp, no odor	SM	PUSHED			100	5.2
		SAND with some caliche, loose to medium dense, reddish brown, damp	SP	PUSHED			50	1.6
-5.0		SAND grading to sandy SILT, loose to medium dense, brownish red, damp	SP	PUSHED			100	1.8
		Sandy SILT grading to SAND and caliche at 6.0 ft, loose to medium dense, reddish brown, damp, slight odor	SM	PUSHED			100	1.6
		SAND with caliche at 8.4 ft, loose to medium dense, reddish brown, damp	SP	PUSHED			100	6.4
-10.0		SAND with caliche at 11.0 ft, loose to medium dense, reddish brown, damp, staining at 10..3 ft	SP	PUSHED			100	12.4
		SAND with caliche, loose to medium dense, reddish brown, damp, staining from 12 to 12.5 ft, slight odor	SP	PUSHED			100	11.9

Split Spoon Sample (ASTM D1586)
2007219-100 | MAXIM TECHNOLOGIES INC® | EXPLORATORY BORING LOG | B-6

PROJECT NAME: CEDAR LAKE PIPELINE

LOCATION: Cedar Lake, Eddy County, New Mexico

DRILL TYPE: Dry Air Rotary

DRILLED BY: HARRISON & COOPER, INC.

LOGGED BY: Anne Stewart

REMARKS: ND=Non Detect
bgs=below ground surface

MONITORING WELL NO. B-7

ELEVATION: TOP OF BORING (MSL): (ft)

GROUNDWATER ELEVATION (MSL): Dry (ft)

BORE HOLE DIAMETER: 4 3/4 (in)

DATE: HOLE STARTED: 1/23/01

COMPLETED: 1/23/01

ELEVATION (MSL) - ft	SAMPLE INTERVAL	CLASSIFICATION AND DESCRIPTION	USCS SYMBOL	BLOW COUNT	SAMPLE TO LAB	TIME	% RECOVERY	FID RESULT (ppm)
0.0		Silty SAND, loose to medium dense, reddish brown, damp, odor	SM	PUSHED			100	4.7
		SAND, loose to medium dense, reddish brown, damp, slight odor	SP	PUSHED			50	11.3
-5.0		SAND, loose to medium dense, reddish brown, damp, slight odor	SP	PUSHED			75	4.4
		SAND, loose to medium dense, reddish brown, damp, odor from 7 to 8 ft	SM	PUSHED			100	13.8
		SAND, loose to medium dense, reddish brown, damp, staining from 8.0 to 8.5 ft	SP	PUSHED			100	2.5
-10.0		SAND with caliche from 10.5 to 11.0 ft grading to clay with caliche at11.5 ft, loose to medium dense, reddish brown to red, damp	SP	PUSHED			100	41.7
		SAND with clay and caliche stringers from 13.5 to 14.0 ft, loose to medium dense, reddish brown, damp	SP	PUSHED			75	56.5
-15.0		Sandy CLAY with caliche stringers, stiff, reddish brown, moist	CL	PUSHED			100	20.4

Split Spoon Sample (ASTM D1586)

2007219-100 | MAXIM TECHNOLOGIES INC | EXPLORATORY BORING LOG | B-7

PROJECT NAME: CEDAR LAKE PIPELINE

LOCATION: Cedar Lake, Eddy County, New Mexico

DRILL TYPE: Dry Air Rotary

DRILLED BY: HARRISON & COOPER, INC.

LOGGED BY: Anne Stewart

REMARKS: ND=Non Detect
bgs=below ground surface

MONITORING WELL NO. B-8

ELEVATION: TOP OF BORING (MSL): (ft)

GROUNDWATER ELEVATION (MSL): Dry (ft)

BORE HOLE DIAMETER: 4 3/4 (in)

DATE: HOLE STARTED: 1/23/01

COMPLETED: 1/23/01

ELEVATION (MSL) - ft	SAMPLE INTERVAL	CLASSIFICATION AND DESCRIPTION	USCS SYMBOL	BLOW COUNT	SAMPLE TO LAB	TIME	% RECOVERY	FID RESULT (ppm)
0.0		Silty SAND, loose to medium dense, reddish brown, damp	SM	PUSHED			100	1.5
		SAND, loose to medium dense, white/red to reddish brown, dry	SP	PUSHED			50	1.7
-5.0		SAND, loose to medium dense, reddish brown, dry, no odor	SP	PUSHED			40	1.4
		SAND, loose to medium dense, reddish brown, moist, then lens of sandy clay from 6.5 to 7.0 ft, no odor	SP	PUSHED			100	1.1
		SAND with some caliche, loose to medium dense, reddish brown, moist	SP	PUSHED			100	1.7
-10.0		SAND, loose to medium dense, reddish brown, moist	SP	PUSHED			75	1.4

PROJECT NAME: CEDAR LAKE PIPELINE

LOCATION: Cedar Lake, Eddy County, New Mexico

DRILL TYPE: Dry Air Rotary

DRILLED BY: HARRISON & COOPER, INC.

LOGGED BY: Anne Stewart

REMARKS: ND=Non Detect
bgs=below ground surface

MONITORING WELL NO. B-9

ELEVATION: TOP OF BORING (MSL): (ft)

GROUNDWATER ELEVATION (MSL): Dry (ft)

BORE HOLE DIAMETER: 4 3/4 (in)

DATE: HOLE STARTED: 1/23/01

COMPLETED: 1/23/01

ELEVATION (MSL) - ft	SAMPLE INTERVAL	CLASSIFICATION AND DESCRIPTION	USCS SYMBOL	BLOW COUNT	SAMPLE TO LAB	TIME	% RECOVERY	FID RESULT (ppm)
0.0		Silty SAND, loose to medium dense, reddish brown, damp	SM	PUSHED			100	10.7
		SAND, loose to medium dense, white to red, dry	SP	PUSHED			40	14.3
-5.0		SAND, loose to medium dense, reddish brown, moist, strong odor	SP	PUSHED			100	367.9
		SAND, loose to medium dense, reddish brown, moist, strong odor with staining from 6.0 to 7.5 ft	SP	PUSHED			100	102.1
		SAND, loose to medium dense, reddish brown, moist, staining 8.5 ft	SP	PUSHED			100	10.2
-10.0		SAND, loose to medium dense, reddish brown, moist, caliche from 11.0 to 12.0	SP	PUSHED			100	4.7

PROJECT NAME: CEDAR LAKE PIPELINE
MONITORING WELL NO. B-10
LOCATION: Cedar Lake, Eddy County, New Mexico
DRILL TYPE: Dry Air Rotary
ELEVATION: TOP OF BORING (MSL): (ft)
GROUNDWATER ELEVATION (MSL): Dry (ft)
DRILLED BY: HARRISON & COOPER, INC.
BORE HOLE DIAMETER: 4 3/4 (in)
LOGGED BY: Anne Stewart
DATE: HOLE STARTED: 1/23/01
COMPLETED: 1/23/01
REMARKS: ND=Non Detect
bgs=below ground surface

ELEVATION (MSL) - ft	SAMPLE INTERVAL	CLASSIFICATION AND DESCRIPTION	USCS SYMBOL	BLOW COUNT	SAMPLE TO LAB	TIME	% RECOVERY	FID RESULT (ppm)
0.0		Silty SAND, loose to medium dense, reddish brown, damp, strong odor	SM	PUSHED			100	152.0
		SAND, loose to medium dense, reddish brown, moist, staining of top 3" of sample, slight odor	SP	PUSHED			100	434.0
-5.0		SAND, loose to medium dense, reddish brown, moist, stained 5 to 6 ft, slight odor	SP	PUSHED			100	847.0
		SAND, loose to medium dense, reddish brown, moist, stained, odor	SP	PUSHED			100	948.0
-10.0		SAND, loose to medium dense, reddish brown, moist, stained, odor	SP	PUSHED			100	972.0
		SAND, loose to medium dense, reddish brown, moist, stained, odor	SP	PUSHED			100	784.0
-15.0		SAND, loose to medium dense, reddish brown, moist, black stained and strong odor from 12.4 to 14 ft	SP	PUSHED			100	332.0
		SAND, loose to medium dense, reddish brown, moist, black stained, odor	SP	PUSHED			100	903.0
		SAND, loose to medium dense, reddish brown, moist, decreased staining with depth, odor	SP	PUSHED			100	770.0
-20.0		SAND, loose to medium dense, reddish brown, moist, decreased staining, odor	SP	PUSHED			100	543.0
		SAND with caliche, loose to medium dense, reddish brown, moist, slight staining, odor	SP	PUSHED			100	150.0
		SAND with caliche, loose to medium dense, reddish brown, moist, slight staining, odor						
-25.0		Silty CLAY, loose to medium dense, reddish brown with white caliche stringers, 1" solid caliche at 33.75 ft						
			SP	Air Rotary			60	108.8
-30.0			CL-ML	PUSHED			95	24.3

Split Spoon Sample (ASTM D1586)
2007219-100 | MAXIM TECHNOLOGIES INC | EXPLORATORY BORING LOG | B-10

PROJECT NAME: CEDAR LAKE PIPELINE
MONITORING WELL NO. B-11
LOCATION: Cedar Lake, Eddy County, New Mexico
DRILL TYPE: Dry Air Rotary
ELEVATION: TOP OF BORING (MSL): (ft)
GROUNDWATER ELEVATION (MSL): Dry (ft)
DRILLED BY: HARRISON & COOPER, INC.
BORE HOLE DIAMETER: 4 3/4 (in)
LOGGED BY: Anne Stewart
DATE: HOLE STARTED: 1/23/01
COMPLETED: 1/23/01
REMARKS: ND=Non Detect
bgs=below ground surface

ELEVATION (MSL) - ft	SAMPLE INTERVAL	CLASSIFICATION AND DESCRIPTION	USCS SYMBOL	BLOW COUNT	SAMPLE TO LAB	TIME	% RECOVERY	FID RESULT (ppm)
0.0		Silty SAND, loose to medium dense, reddish brown, damp	SM	PUSHED			100	5.1
		SAND, loose to medium dense, reddish brown, moist	SP	PUSHED			25	5.0
-5.0		SAND, loose to medium dense, reddish brown, moist, no odor	SP	PUSHED			50	4.6
		SAND, loose to medium dense, reddish brown, moist, no odor	SP	PUSHED			100	4.5
		SAND with some caliche, loose to medium dense, reddish brown, moist, no odor	SP	PUSHED			100	4.2
-10.0		SAND with some caliche, loose to medium dense, reddish brown, moist, no odor	SP	PUSHED			100	3.9

Split Spoon Sample (ASTM D1586)
2007219-100 | MAXIM TECHNOLOGIES INC® | EXPLORATORY BORING LOG | B-11

ATTACHMENT 2
Laboratory Report

Certificate of Analysis

STL Austin
14046 Summit Drive
Austin, Texas 78728

Tel: 512 310 5202
Fax: 512 244 0160
www.stl-inc.com

SEVERN TRENT SERVICES

STL Austin

ANALYTICAL REPORT

PROJECT NO. NG00003 NM

Skelly Pipline-Cedar Lake

Lot #: I1A260129

Clyde Yancey

Maxim Technologies
10601 Lomas NE Ste 106
Albuquerque, NM 87112

SEVERN TRENT LABORATORIES, INC.

Carla M. Butler
Project Manager

February 12, 2001

CASE NARRATIVE

I1A260129

Samples received in good condition within acceptable cooler temperature.

Although listed on the Chain of Custody, B1 4-6 and B2 4-6 were not analyzed at the request of Ms. Anne Stewart. The other samples were analyzed by 8015B GRO.

Recovery was outside limits for the Matrix Spike Duplicate of sample 001.

EXECUTIVE SUMMARY - Detection Highlights

I1A260129

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
B8 10'-12' 01/24/01 12:15 005				
Gasoline Range Organics	350	100	ug/kg	SW846 8015B
B4 10'-12' 01/24/01 10:00 009				
Gasoline Range Organics	110	100	ug/kg	SW846 8015B

ANALYTICAL METHODS SUMMARY

I1A260129

PARAMETER	ANALYTICAL METHOD
Volatile Petroleum Hydrocarbons	SW846 8015B

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

METHOD / ANALYST SUMMARY

I1A260129

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 8015B	Mark Shafer	001952

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

I1A260129

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
DT64V	001	B12 10'-12'	01/24/01	15:30
DT640	002	B11 10'-12'	01/24/01	15:00
DT641	003	B10 32'-34'	01/24/01	14:30
DT642	004	B9 10'-12'	01/24/01	13:00
DT643	005	B8 10'-12'	01/24/01	12:15
DT644	006	B7 14'-16'	01/24/01	11:45
DT645	007	B6 12'-14'	01/24/01	11:15
DT646	008	B5 10'-12'	01/24/01	10:30
DT647	009	B4 10'-12'	01/24/01	10:00
DT648	010	B3 14'-16'	01/24/01	09:30

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

CONOCO INC.

Client Sample ID: B12 10'-12'

GC Volatiles

Lot-Sample #...: I1A260129-001	**Work Order #...:** DT64V1AC	**Matrix.....:** SOLID	
Date Sampled...: 01/24/01 15:30	**Date Received..:** 01/26/01		
Prep Date.....: 02/05/01	**Analysis Date..:** 02/05/01		
Prep Batch #...: 1037464			
Dilution Factor: 1			
% Moisture.....:	**Method.....:** SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Gasoline Range Organics	ND	100	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	84	(14 - 165)

CONOCO INC.

Client Sample ID: B11 10'-12'

GC Volatiles

Lot-Sample #...: I1A260129-002	**Work Order #...:** DT6401AA	**Matrix.....:** SOLID	
Date Sampled...: 01/24/01 15:00	**Date Received..:** 01/26/01		
Prep Date.....: 02/05/01	**Analysis Date..:** 02/05/01		
Prep Batch #...: 1037464			
Dilution Factor: 1			
% Moisture.....:	**Method.....:** SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Gasoline Range Organics	ND	100	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	76	(14 - 165)

CONOCO INC.

Client Sample ID: B10 32'-34'

GC Volatiles

Lot-Sample #...:	I1A260129-003	**Work Order #...:**	DT6411AC	**Matrix.....:**	SOLID
Date Sampled...:	01/24/01 14:30	**Date Received..:**	01/26/01		
Prep Date.....:	02/05/01	**Analysis Date..:**	02/05/01		
Prep Batch #...:	1037464				
Dilution Factor:	1				
% Moisture.....:		**Method.....:**	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Gasoline Range Organics	ND	100	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	76	(14 - 165)

CONOCO INC.

Client Sample ID: B9 10'-12'

GC Volatiles

Lot-Sample #...:	I1A260129-004	**Work Order #...:**	DT6421AC	**Matrix.....:**	SOLID
Date Sampled...:	01/24/01 13:00	**Date Received..:**	01/26/01		
Prep Date.....:	02/05/01	**Analysis Date..:**	02/05/01		
Prep Batch #...:	1037464				
Dilution Factor:	1				
% Moisture.....:		**Method.....:**	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Gasoline Range Organics	ND	100	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	76	(14 - 165)

CONOCO INC.

Client Sample ID: B8 10'-12'

GC Volatiles

Lot-Sample #...:	I1A260129-005	**Work Order #...:**	DT6431AC	**Matrix.....:**	SOLID
Date Sampled...:	01/24/01 12:15	**Date Received..:**	01/26/01		
Prep Date.....:	02/05/01	**Analysis Date..:**	02/05/01		
Prep Batch #...:	1037464				
Dilution Factor:	1				
% Moisture.....:		**Method.....:**	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Gasoline Range Organics	**350**	**100**	**ug/kg**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	84	(14 - 165)

CONOCO INC.

Client Sample ID: B7 14'-16'

GC Volatiles

Lot-Sample #...: I1A260129-006	**Work Order #...:** DT6441AC		**Matrix.....:** SOLID
Date Sampled...: 01/24/01 11:45	**Date Received..:** 01/26/01		
Prep Date.....: 02/05/01	**Analysis Date..:** 02/05/01		
Prep Batch #...: 1037464			
Dilution Factor: 1			
% Moisture.....:	**Method.....:** SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Gasoline Range Organics	ND	100	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	81	(14 - 165)

CONOCO INC.

Client Sample ID: B6 12'-14'

GC Volatiles

Lot-Sample #...:	I1A260129-007	**Work Order #...:**	DT6451AC	**Matrix.....:**	SOLID
Date Sampled...:	01/24/01 11:15	**Date Received..:**	01/26/01		
Prep Date.....:	02/05/01	**Analysis Date..:**	02/05/01		
Prep Batch #...:	1037464				
Dilution Factor:	1				
% Moisture.....:		**Method.....:**	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Gasoline Range Organics	ND	100	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	73	(14 - 165)

CONOCO INC.

Client Sample ID: B5 10'-12'

GC Volatiles

Lot-Sample #...:	I1A260129-008	**Work Order #...:**	DT6461AC	**Matrix.....:**	SOLID
Date Sampled...:	01/24/01 10:30	**Date Received..:**	01/26/01		
Prep Date.....:	02/05/01	**Analysis Date..:**	02/05/01		
Prep Batch #...:	1037464				
Dilution Factor:	1				
% Moisture.....:		**Method.....:**	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Gasoline Range Organics	ND	100	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	93	(14 - 165)

CONOCO INC.

Client Sample ID: B4 10'-12'

GC Volatiles

Lot-Sample #...:	I1A260129-009	**Work Order #...:**	DT6471AC	**Matrix.....:**	SOLID
Date Sampled...:	01/24/01 10:00	**Date Received..:**	01/26/01		
Prep Date.....:	02/05/01	**Analysis Date..:**	02/05/01		
Prep Batch #...:	1037464				
Dilution Factor:	1				
% Moisture.....:		**Method.....:**	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Gasoline Range Organics	**110**	**100**	**ug/kg**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	84	(14 - 165)

CONOCO INC.

Client Sample ID: B3 14'-16'

GC Volatiles

Lot-Sample #...:	I1A260129-010	**Work Order #...:**	DT6481AC	**Matrix.....:**	SOLID
Date Sampled...:	01/24/01 09:30	**Date Received..:**	01/26/01		
Prep Date.....:	02/05/01	**Analysis Date..:**	02/06/01		
Prep Batch #...:	1037464				
Dilution Factor:	1				
% Moisture.....:		**Method.....:**	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Gasoline Range Organics	ND	100	ug/kg

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	84	(14 - 165)

QC DATA ASSOCIATION SUMMARY

I1A260129

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	SOLID	SW846 8015B		1037464	1037225
002	SOLID	SW846 8015B		1037464	1037225
003	SOLID	SW846 8015B		1037464	1037225
004	SOLID	SW846 8015B		1037464	1037225
005	SOLID	SW846 8015B		1037464	1037225
006	SOLID	SW846 8015B		1037464	1037225
007	SOLID	SW846 8015B		1037464	1037225
008	SOLID	SW846 8015B		1037464	1037225
009	SOLID	SW846 8015B		1037464	1037225
010	SOLID	SW846 8015B		1037464	1037225

METHOD BLANK REPORT

GC Volatiles

Client Lot #...: I1A260129 **Work Order #...:** DVM071AA **Matrix.....:** SOLID
MB Lot-Sample #: I1B060000-464

Prep Date.....: 02/05/01
Analysis Date..: 02/05/01 **Prep Batch #...:** 1037464
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Gasoline Range Organics	ND	100	ug/kg	SW846 8015B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	89	(14 - 165)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Volatiles

Client Lot #...: I1A260129 **Work Order #...:** DVM071AC **Matrix.....:** SOLID
LCS Lot-Sample#: I1B060000-464
Prep Date.....: 02/05/01 **Analysis Date..:** 02/05/01
Prep Batch #...: 1037464
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Gasoline Range Organics	**92**	**(70 - 134)**	**SW846 8015B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	114	(14 - 165)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC Volatiles

Client Lot #...: I1A260129 **Work Order #...:** DT64V1AD-MS **Matrix.....:** SOLID
MS Lot-Sample #: I1A260129-001 DT64V1AE-MSD
Date Sampled...: 01/24/01 15:30 **Date Received..:** 01/26/01
Prep Date.....: 02/05/01 **Analysis Date..:** 02/05/01
Prep Batch #...: 1037464
Dilution Factor: 1 **% Moisture.....:**

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Gasoline Range Organics	**76**	**(70 - 134)**			**SW846 8015B**
	68 a,MSC	**(70 - 134)**	**10**	**(0-30)**	**SW846 8015B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	100	(14 - 165)
	95	(14 - 165)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

MSC The percent recovery of this analyte in the associated laboratory control sample is within control limits.

[redacted]

Chain of Custody Record

I1A260129

SEVERN TRENT SERVICES

66800

Severn Trent Laboratories, Inc.

STL4149 (0700)

Client	Project Manager	Date	Page 1 of 1
Maxum Tech. Inc.	Clyde Yancey	1/25/01	
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Location**	**Analysis**
10601 Lomas NE #106	505 237 8440	STL Austin	
City / **State** / **Zip Code**	**Site Contact**		
Albuq NM / / 87112	Clyde Yancey		
Project Number/Name	**Carrier/Waybill Number**		
Cedar Lake (Skelly)			
Contract/Purchase Order/Quote Number			

Sample I.D. Number and Description	Date	Time	Sample Type	Containers: Volume	Containers: Type	Containers: No.	Preservative	Condition on Receipt/Comments	8015 TPH
B12 10'-12'	1/24/01	1530	Soil	4oz jar		1	cold		X
B11 10'-12'	1/24/01	1500	Soil			1	cold		X
B10 32'-34'	1/24/01	1430	Soil			1	cold	~~1000~~ / 4.0°C	X
B9 10'-12'	1/24/01	1300	Soil			1	cold	CURVE	X
B8 10'-12'	1/24/01	1215	Soil			1	cold		X
B7 14'-16'	1/24/01	1145	Soil			1	cold		X
B6 12-14'	1/24/01	1115	Soil			1	cold	PD 01/26/01	X
B5 10'-12'	1/24/01	1030	Soil			1	cold		X
B4 10'-12'	1/24/01	1000	Soil			1	cold		X
B3 14'-16'	1/24/01	0930	Soil			1	cold		X
B2 4-6	1/24/01	0900	Soil			1	cold		X
B1 4-6	1/24/01	0815	Soil	4oz jar		1	cold		X

Special Instructions

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required
☒ Normal ☐ Rush ☐ Other _____

QC Level
☐ I. ☐ II. ☐ III.

Project Specific Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: Mark Stewart	1/25/01	1600	1. Received By:	01/26/01	0815
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy