April 1999

22603-HAG-0000-06000

(Rev. 1, July 21, 1999)

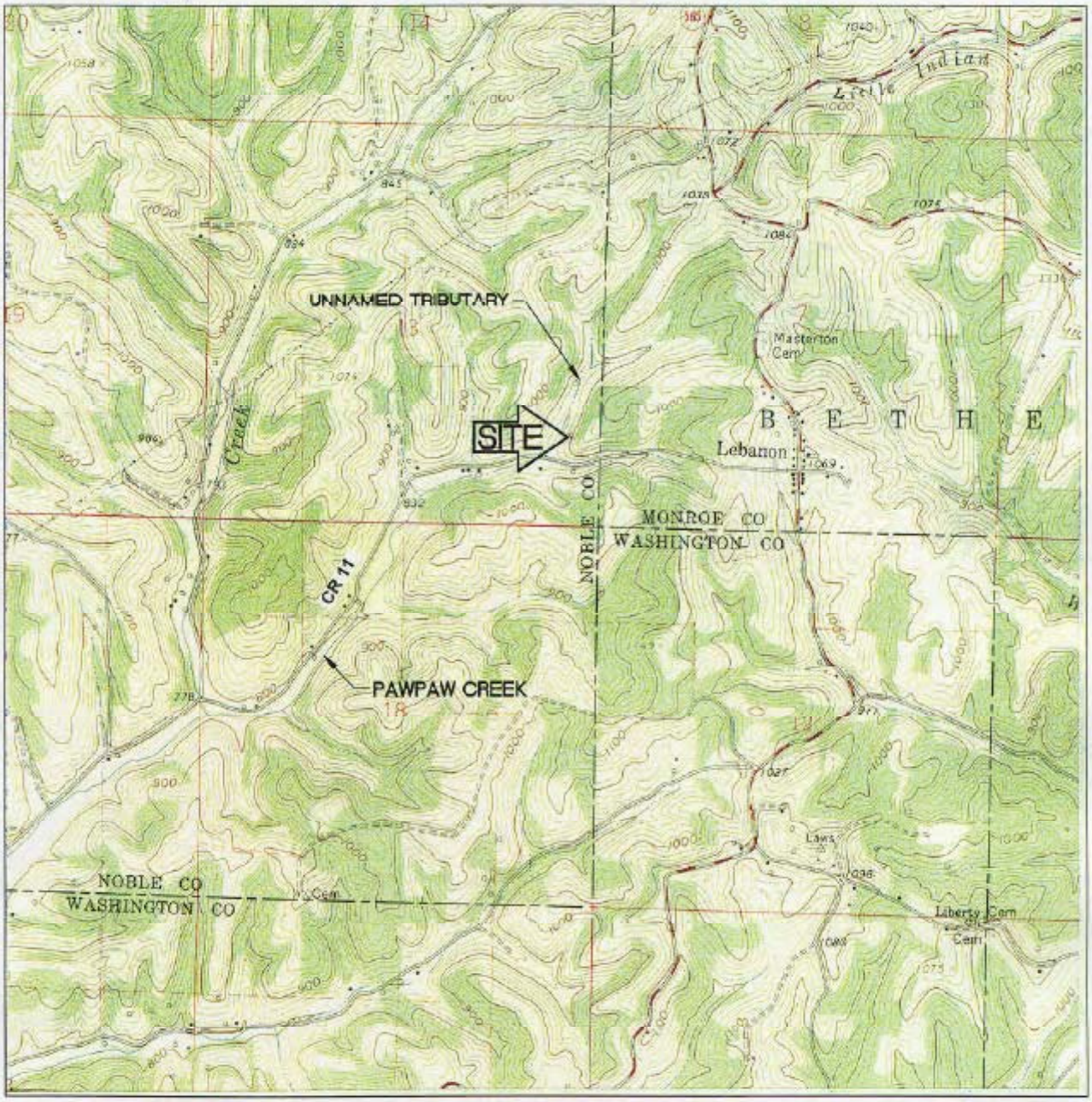
CHARACTERIZATION REPORT
FORMER HAGAN COMPRESSOR STATION
NOBLE COUNTY, OHIO

Prepared for

COLUMBIA GAS TRANSMISSION CORPORATION
Environmental Affairs-Remediation
P.O. Box 1273
1700 MacCorkle Avenue, SE
Charleston, West Virginia

Prepared by

Baker Environmental, Inc.
Coraopolis, Pennsylvania



SOURCE: U.S.G.S. 7.5 MINUTE TOPOGRAPHIC MAP DALZELL QUADRANGLE, OHIO

2000 0 1000 2000
1 inch = 2000 ft.

QUADRANGLE LOCATION

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FIGURE 1-1
SITE LOCATION MAP
FORMER HAGAN COMPRESSOR STATION

COLUMBIA GAS TRANSMISSION CORPORATION
NOBLE COUNTY, OHIO

2.0 ENVIRONMENTAL SETTING

2.1 Physical Setting

The operating portion of the Former Hagan CS (Figure 1-2) occupies less than one-quarter acre. It is a rectangular area approximately 107 feet by 93 feet surrounded by a 4-foot high wire fence. The property on which the station is located is in an undeveloped stream valley. Topographic relief in this area is moderately steep, however, the immediate area around the site is relatively flat. The station appears to be in a flood-prone area associated with a small unnamed tributary to Pawpaw Creek approximately 50 feet west of the compressor slab. Pawpaw Creek (located approximately 250 feet to the south) flows in a general southwest direction. The base levels of the unnamed tributary adjacent to the CS is approximately 860 feet above mean sea level (MSL), while ridge tops range from 1,000 feet to more than 1,100 feet MSL. The compressor station is approximately 1,000 feet above MSL (USGS, 1984).

The ground surface at the site is relatively flat, but slopes slightly decrease toward the unnamed tributary, and increase moderately to the east, and west beyond the unnamed tributary. Land use in the vicinity of the site (within 1,000 feet) includes an unrelated, abandoned oil/gas well, the unnamed tributary, and woodlands in all directions.

2.2 Climate

The portion of Ohio in which the CS is located receives a mean annual precipitation of approximately 38 inches. Prevailing winds are generally from the south-southwest. Temperatures vary widely, with average lows during the winter months reaching 20 degrees Fahrenheit to highs during the summer months reaching 83 degrees Fahrenheit. In general, the greatest levels of precipitation occur in the spring while the lowest levels occur in late summer (Soil Survey of Noble County, Ohio, 1990).

2.3 Surface Water Hydrology

The station appears to be in a flood-prone area associated with the small unnamed tributary to the west. This unnamed tributary flows southwest to Pawpaw Creek, which then flows southwest into Duck Creek, then to the Ohio River (DeLorme, 1995). Surface drainage flows westerly toward the unnamed tributary. However, there does not appear to be a predominant drainage pathway from the compressor station toward the unnamed tributary.

2.4 Geology and Soils

The Former Hagan CS is located on the unglaciated, dissected Allegheny Plateau Physiographic Province (Figure 2-1). The bedrock of this region is sedimentary, consisting of Pennsylvanian System/Monongahela Group bedrock. This bedrock can be greater than 350 feet in thickness and consists mainly of shale, siltstone, limestone, sandstone, and coal.

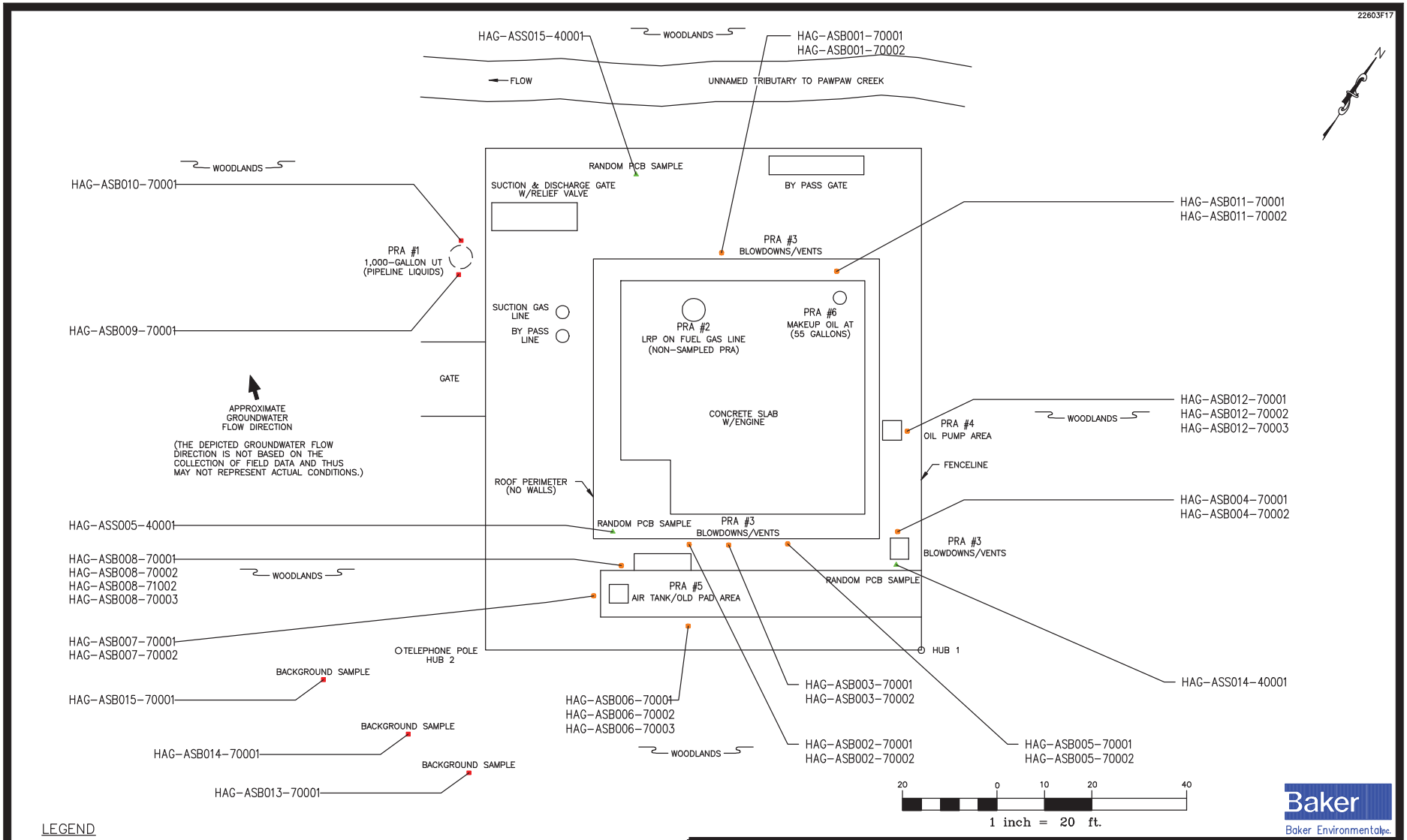
Soils at the Hagan CS are identified as the Gilpin silt loam series, 35 to 75 percent slopes (GdF) of the Lowell-Gilpin Association. This series consists of moderately deep, very steep, well drained soils on hillsides, deep ravines, slips, and benches (Soil Survey of Noble County, Ohio: 1990).

2.5 Hydrogeology and Groundwater Quality

In valley bottoms, useable quantities of groundwater are generally obtained from both shallow wells in unconsolidated deposits and/or deeper wells installed into bedrock formations. In other topographic areas, wells completed in bedrock or springs are a source of potable water supplies.

A high ridge in the central part of the county is the divide between drainage to the Muskingum River and drainage to the Ohio River. For the location of the compressor station, drainage is to the Ohio River by Duck Creek and its three main branches; East, Middle, and West Forks. Potable groundwater in the area occurs in the alternating layers of thin sandstones, limestones, and sandy shales of the Pennsylvanian system. The average yield for drilled wells is less than two gallons per minute (gpm). Average well depth is 95 feet bgs. Joints and openings along bedding planes yield most of the water in the Monongahela Formation (Walker, 1991).

22603F17



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LEGEND

- ● – SURFACE AND AT DEPTH SOIL SAMPLE LOCATION
- ▲ – SURFACE SOIL/SEDIMENT SAMPLE LOCATION
- ■ – AT DEPTH SOIL SAMPLE LOCATION

SCALE:	1" = 20'	DATE:	01/20/98
S.O. NO.:	22603-HAG-0000-06000	FILE:	22603F17
REV:	0, 10/28/97	CHK:	

FIGURE 3-1
SAMPLE LOCATION MAP
FORMER HAGAN COMPRESSOR STATION

Table 4-3
Summary of Analytical Results

		PRA	1				3	
		PRA Description	PRA #1 1000 GALLON UT				PRA #3 BLOWDOWNS/VENTS	
		Sample Type	Normal Sample				Normal Sample	
		Sample Id	HAG-ASB009-70001		HAG-ASB010-70001		HAG-ASB001-70001	
		Depth - ft bgs	3.6 - 4.6		5.6 - 6.6		0 - 1	
		Result Units	MG/KG		MG/KG		MG/KG	
Category	Analyte	Action Level	Result Flag	> CAL*	Result Flag	> CAL*	Result Flag	> CAL*
METAL	BARIUM, TOTAL	5500	137		109			
	BERYLLIUM, TOTAL	160	ND		ND			
	CHROMIUM, TOTAL	230	17.5		22.8			
	NICKEL, TOTAL	1600	20.0		24.1			
	ARSENIC, TOTAL	.43	8.1	X	12.4	X		
INORGANIC	PETROLEUM HYDROCARBON						2300	

Notes:

* "> CAL" equals "X" when reported value is above characterization action level for this locale.
J flag - Numerical value is an estimated quantity.
ND indicates Non-Detect
Blank cells in result column indicate an analysis was not performed for that analyte.

Table 4-3
Summary of Analytical Results

		PRA						
		PRA Description						
		Sample Type						
		Sample Id	**HAG-ASB001-70002**		**HAG-ASB002-70001**		**HAG-ASB002-70002**	
		Depth - ft bgs	**1.5 - 2.5**		**0 - 1**		**1.5 - 2.5**	
		Result Units	**MG/KG**		**MG/KG**		**MG/KG**	
Category	Analyte	Action Level	**Result Flag**	**> CAL***	**Result Flag**	**> CAL***	**Result Flag**	**> CAL***
METAL	**BARIUM, TOTAL**	5500						
	BERYLLIUM, TOTAL	160						
	CHROMIUM, TOTAL	230						
	NICKEL, TOTAL	1600						
	ARSENIC, TOTAL	.43						
INORGANIC	**PETROLEUM HYDROCARBON**		1600		ND		200	

Notes:

* "> CAL" equals "X" when reported value is above characterization action level for this locale.
J flag - Numerical value is an estimated quantity.
ND indicates Non-Detect
Blank cells in result column indicate an analysis was not performed for that analyte.

Table 4-3
Summary of Analytical Results

		PRA						
		PRA Description						
		Sample Type						
		Sample Id	**HAG-ASB003-70001**		**HAG-ASB003-70002**		**HAG-ASB004-70001**	
		Depth - ft bgs	**0 - 1**		**1.5 - 2.5**		**0 - 1**	
		Result Units	**MG/KG**		**MG/KG**		**MG/KG**	
Category	Analyte	Action Level	**Result Flag**	**> CAL***	**Result Flag**	**> CAL***	**Result Flag**	**> CAL***
METAL	**BARIUM, TOTAL**	5500						
	BERYLLIUM, TOTAL	160						
	CHROMIUM, TOTAL	230						
	NICKEL, TOTAL	1600						
	ARSENIC, TOTAL	.43						
INORGANIC	**PETROLEUM HYDROCARBON**		ND		ND		ND	

Notes:

* "> CAL" equals "X" when reported value is above characterization action level for this locale.
J flag - Numerical value is an estimated quantity.
ND indicates Non-Detect
Blank cells in result column indicate an analysis was not performed for that analyte.

Table 4-3
Summary of Analytical Results

		PRA						
		PRA Description						
		Sample Type						
		Sample Id	**HAG-ASB004-70002**		**HAG-ASB005-70001**		**HAG-ASB005-70002**	
		Depth - ft bgs	**1.5 - 2.5**		**0 - 1**		**1.5 - 2.5**	
		Result Units	**MG/KG**		**MG/KG**		**MG/KG**	
Category	Analyte	Action Level	**Result Flag**	**> CAL***	**Result Flag**	**> CAL***	**Result Flag**	**> CAL***
METAL	**BARIUM, TOTAL**	5500						
	BERYLLIUM, TOTAL	160						
	CHROMIUM, TOTAL	230						
	NICKEL, TOTAL	1600						
	ARSENIC, TOTAL	.43						
INORGANIC	**PETROLEUM HYDROCARBON**		ND		ND		ND	

Notes:

* "> CAL" equals "X" when reported value is above characterization action level for this locale.
J flag - Numerical value is an estimated quantity.
ND indicates Non-Detect
Blank cells in result column indicate an analysis was not performed for that analyte.

Table 4-3
Summary of Analytical Results

		PRA	4					
		PRA Description	PRA #4 OIL PUMP AREA					
		Sample Type	Normal Sample					
		Sample Id	HAG-ASB012-70001		HAG-ASB012-70002		HAG-ASB012-70003	
		Depth - ft bgs	0 - 1		1.5 - 2.5		4 - 5	
		Result Units	MG/KG		MG/KG		MG/KG	
Category	Analyte	Action Level	Result Flag	> CAL*	Result Flag	> CAL*	Result Flag	> CAL*
METAL	BARIUM, TOTAL	5500						
	BERYLLIUM, TOTAL	160						
	CHROMIUM, TOTAL	230						
	NICKEL, TOTAL	1600						
	ARSENIC, TOTAL	.43						
INORGANIC	PETROLEUM HYDROCARBON		ND		ND		29.0	

Notes:

* "> CAL" equals "X" when reported value is above characterization action level for this locale.
J flag - Numerical value is an estimated quantity.
ND indicates Non-Detect
Blank cells in result column indicate an analysis was not performed for that analyte.

Table 4-3
Summary of Analytical Results

		PRA	5					
		PRA Description	PRA #5 AIR TANK/OLD PAD AREA					
		Sample Type	Field Duplicate (Rep)		Normal Sample			
		Sample Id	HAG-ASB008-71002		HAG-ASB006-70001		HAG-ASB006-70002	
		Depth - ft bgs	1.5 - 2.5		0 - 1		1.5 - 2.5	
		Result Units	MG/KG		MG/KG		MG/KG	
Category	Analyte	Action Level	Result Flag	> CAL*	Result Flag	> CAL*	Result Flag	> CAL*
METAL	BARIUM, TOTAL	5500						
	BERYLLIUM, TOTAL	160						
	CHROMIUM, TOTAL	230						
	NICKEL, TOTAL	1600						
	ARSENIC, TOTAL	.43						
INORGANIC	PETROLEUM HYDROCARBON		88.0		ND		ND	

Notes:

* "> CAL" equals "X" when reported value is above characterization action level for this locale.
J flag - Numerical value is an estimated quantity.
ND indicates Non-Detect
Blank cells in result column indicate an analysis was not performed for that analyte.

Table 4-3
Summary of Analytical Results

		PRA						
		PRA Description						
		Sample Type						
		Sample Id	**HAG-ASB006-70003**		**HAG-ASB007-70001**		**HAG-ASB007-70002**	
		Depth - ft bgs	**4 - 5**		**0 - 1**		**1.5 - 2.5**	
		Result Units	**MG/KG**		**MG/KG**		**MG/KG**	
Category	Analyte	Action Level	**Result Flag**	**> CAL***	**Result Flag**	**> CAL***	**Result Flag**	**> CAL***
METAL	**BARIUM, TOTAL**	5500						
	BERYLLIUM, TOTAL	160						
	CHROMIUM, TOTAL	230						
	NICKEL, TOTAL	1600						
	ARSENIC, TOTAL	.43						
INORGANIC	**PETROLEUM HYDROCARBON**		ND		ND		ND	

Notes:

* "> CAL" equals "X" when reported value is above characterization action level for this locale.
J flag - Numerical value is an estimated quantity.
ND indicates Non-Detect
Blank cells in result column indicate an analysis was not performed for that analyte.

Table 4-3
Summary of Analytical Results

		PRA						
		PRA Description						
		Sample Type						
		Sample Id	**HAG-ASB008-70001**		**HAG-ASB008-70002**		**HAG-ASB008-70003**	
		Depth - ft bgs	**0 - 1**		**1.5 - 2.5**		**4 - 5**	
		Result Units	**MG/KG**		**MG/KG**		**MG/KG**	
Category	Analyte	Action Level	**Result Flag**	**> CAL***	**Result Flag**	**> CAL***	**Result Flag**	**> CAL***
METAL	**BARIUM, TOTAL**	5500						
	BERYLLIUM, TOTAL	160						
	CHROMIUM, TOTAL	230						
	NICKEL, TOTAL	1600						
	ARSENIC, TOTAL	.43						
INORGANIC	**PETROLEUM HYDROCARBON**		930		ND		16.0	

Notes:

* "> CAL" equals "X" when reported value is above characterization action level for this locale.
J flag - Numerical value is an estimated quantity.
ND indicates Non-Detect
Blank cells in result column indicate an analysis was not performed for that analyte.

Table 4-3
Summary of Analytical Results

		PRA	6					
		PRA Description	BACKGROUND					
		Sample Type	Normal Sample					
		Sample Id	HAG-ASB013-70001		HAG-ASB014-70001		HAG-ASB015-70001	
		Depth - ft bgs	1 - 3		1 - 3		1 - 3	
		Result Units	MG/KG		MG/KG		MG/KG	
Category	Analyte	Action Level	Result Flag	> CAL*	Result Flag	> CAL*	Result Flag	> CAL*
METAL	BARIUM, TOTAL	5500	140		151		81.8	
	BERYLLIUM, TOTAL	160	1.2		1.2		ND	
	CHROMIUM, TOTAL	230	22.8		23.0		22.1	
	NICKEL, TOTAL	1600	25.0		27.3		26.0	
	ARSENIC, TOTAL	.43	25.2	X	9.5	X	11.9	X
INORGANIC	PETROLEUM HYDROCARBON							

Notes:

* "> CAL" equals "X" when reported value is above characterization action level for this locale.
J flag - Numerical value is an estimated quantity.
ND indicates Non-Detect
Blank cells in result column indicate an analysis was not performed for that analyte.

Table 4-3
Summary of Analytical Results

		PRA	7					
		PRA Description	**PRA #7 RANDOM PCB SAMPLES**					
		Sample Type	**Normal Sample**					
		Sample Id	**HAG-ASS005-40001**		**HAG-ASS014-40001**		**HAG-ASS015-40001**	
		Depth - ft bgs	**0 - .5**		**0 - .5**		**0 - .5**	
		Result Units	**MG/KG**		**MG/KG**		**MG/KG**	
Category	Analyte	Action Level	**Result Flag**	**> CAL***	**Result Flag**	**> CAL***	**Result Flag**	**> CAL***
METAL	**BARIUM, TOTAL**	5500						
	BERYLLIUM, TOTAL	160						
	CHROMIUM, TOTAL	230						
	NICKEL, TOTAL	1600						
	ARSENIC, TOTAL	.43						
INORGANIC	**PETROLEUM HYDROCARBON**							

Notes:

* "> CAL" equals "X" when reported value is above characterization action level for this locale.
J flag - Numerical value is an estimated quantity.
ND indicates Non-Detect
Blank cells in result column indicate an analysis was not performed for that analyte.

Table 4-3
Summary of Analytical Results

		PRA	**8**			
		PRA Description	**PRA #8 MAKE UP OIL AT (55 GALLON)**			
		Sample Type	**Normal Sample**			
		Sample Id	**HAG-ASB011-70001**		**HAG-ASB011-70002**	
		Depth - ft bgs	**0 - 1**		**1.5 - 2.5**	
		Result Units	**MG/KG**		**MG/KG**	
Category	Analyte	Action Level	**Result Flag**	**> CAL***	**Result Flag**	**> CAL***
METAL	**BARIUM, TOTAL**	5500				
	BERYLLIUM, TOTAL	160				
	CHROMIUM, TOTAL	230				
	NICKEL, TOTAL	1600				
	ARSENIC, TOTAL	.43				
INORGANIC	**PETROLEUM HYDROCARBON**		540		ND	

Notes:

* "> CAL" equals "X" when reported value is above characterization action level for this locale.
J flag - Numerical value is an estimated quantity.
ND indicates Non-Detect
Blank cells in result column indicate an analysis was not performed for that analyte.

Figure 4-1 presents analytical results which exceeded the CALs and/or background on the CS base map to facilitate review. The results are discussed by PRA to facilitate review in the following subsections.

Columbia maintains a hard copy of all analytical data should additional review be needed.

4.3.1 Background Sampling Results

One background soil sample was collected from 1 to 3 feet bgs at three locations believed to not be affected by operations of the compressor station (Figure 4-1). These three samples were located topographically upgradient (south) of the various compressor station equipment on the valley hillside. All three of these samples were analyzed for Table 1 (CWP) constituents.

VOCs, SVOCs, PCBs, mercury, or cyanide were not detected in any of the three background samples (HAG-ASB013-70001, HAG-ASB014-70001, and HAG-ASB015-70001). However, laboratory analytical results indicated the presence of various metals at concentrations below the CALs with the exception of arsenic. Arsenic was detected above its corresponding CAL in all three background samples at concentrations of 25.2 mg/kg, 9.5 mg/kg, and 11.9 mg/kg respectively. These values are presented within Table 4-3. Because all three of the background borings are believed to be in locations not affected by compressor station operations, it is believed that the observed metal concentrations are indigenous to soil in the area.

As provided for in the CWP (June 1996) and in Section 4.1 of this report, the highest concentration of a constituent detected in the background samples is used to establish the background concentration for this constituent at the CS. Thus, the 25.2 mg/kg of arsenic in the background sample HAG-ASB013-70001 will be considered the background arsenic concentration.

4.3.2 Random PCB Sampling Results

Random PCB surface soil samples were collected from 0 to 6 inches bgs at three locations within the limits of CS operations. These three samples (HAG-ASS005-40001, HAG-ASS014-40001, and HAG-ASS015-40001), were collected to act as a check for PCB containing soils throughout the CS. PCB constituents were not detected in any of these soil samples.

4.3.3 Soil Potential Release Areas

PRA #1 - 1,000-Gallon Pipeline Liquids UT

Geoprobe® borings were advanced at each end of the UT (2 borings total) to depths different from those proposed in the original SAP because of bedrock (sandstone) refusal. The southeastern, upgradient boring had one subsurface soil sample (HAG-ASB009-70001) collected from 3.6 to 4.6 feet bgs. The northwestern, down gradient boring had one subsurface soil sample (HAG-ASB010-70001) collected from 5.6 to 6.6 feet bgs.

Laboratory analytical results of both soil samples indicated no detectable concentrations of Table 1 (CWP) VOCs, SVOCs, PCBs, mercury, or cyanide. However, several metals were detected in both samples below CALs. Arsenic was detected above its corresponding CAL (0.43 mg/kg) in both samples at concentrations of 8.1 mg/kg and 12.4 mg/kg, respectively. However, both of these arsenic concentrations are below maximum detected background arsenic concentration of 25.2 mg/kg.

PRA #2 - Fuel Gas 30-gallon AT and LRP on Fuel Gas Line (Non-sampled PRA)

Two Geoprobe® borings were proposed on each side of the LRP on the fuel gas tank to a depth of 5 feet bgs. Because this PRA was found to be inaccessible due to its proximity to other compressor equipment under the sheltered compressor engine concrete slab, and sampling of a nearby blowdown associated with PRA #3 would suffice for characterization of this PRA, it was agreed between Columbia, COE, and Baker that this PRA would be eliminated from the characterization process.

PRA #3 - Blowdowns/Vents

One Geoprobe® boring was advanced to 2.5 feet bgs at five blowdown/vent locations observed at the compressor station. Soil samples were collected at depths of 0 to 1 foot (HAG-ASB001-70001, HAG-ASB002-70001, HAG-ASB003-70001, HAG-ASB004-70001, and HAG-ASB005-70001), and 1.5 to 2.5 feet (HAG-ASB001-70002, HAG-ASB002-70002, HAG-ASB003-70002, HAG-ASB004-70002, and HAG-ASB005-70002) bgs.

APPENDIX F

CS Boring Logs

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TEST BORING RECORD

PROJECT: Site Characterization at Columbia Gas Transmission - Former Hagan Compressor Station

SO NO.: 22603-HAG | BORING NO.: PRA5-Boring A

COORDINATES: EAST: | NORTH:

ELEVATION: SURFACE: | TOP OF PVC CASING:

Rig: Geoprobe	MC Liners	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1-5/8" I.D.	---	--	--	2/7/97	0.0 - 5.0		--
Length	4.0 feet	---	--	--				
Type	---	---	--	--				
Hammer Wt.	---	--	--	--				
Fall	---	--	--	--				

Remarks: Airtank/Old Pad Area (BTEX, TPH)

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	Lab ID	PID (ppm)		Visual Description	Well Installation Detail	Elevation (Ft. MSL)
1	1.0	S-1		HAG-ASB-006-70001	0.0				
	1.5	N							
2	2.5	S-2		HAG-ASB-006-70002	0.0				
3		N							
4	4.0								
5	5.0	S-3		HAG-ASB-006-70003	0.0		5.0		
6							Bottom of Boring at 5.0'		
7									
8									
9									
10									

DRILLING CO.: Subsurface, Inc. | BAKER REP.: (b) (4) [redacted]

DRILLER: (b) (4) [redacted] | BORING NO.: PRA5-Boring A | SHEET 1 OF 1

Baker

Baker Environmental

TEST BORING RECORD

PROJECT: Site Characterization at Columbia Gas Transmission - Former Hagan Compressor Station

SO NO.: 22603-HAG BORING NO.: PRA5-Boring B

COORDINATES: EAST: NORTH:

ELEVATION: SURFACE: TOP OF PVC CASING:

Rig: Geoprobe	MC Liners	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1-5/8" I.D.	---	--	--	2/7/97	0.0 - 5.0		--
Length	4.0 feet	---	--	--				
Type	---	---	--	--				
Hammer Wt.	---	--	--	--				
Fall	---	--	--	--				

Remarks: Airtank/Old Pad Area (BTEX, TPH)

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	Lab ID	PID (ppm)		Visual Description	Well Installation Detail	Elevation (Ft. MSL)
1	1.0	S-1		HAG-ASB-007-70001	0.0		CLAY AND FINE SAND; moist to wet		
	1.5	N							
2	2.5	S-2		HAG-ASB-007-70002	0.0				
3									
4	4.0	N					Water at 3.5'		
5	5.0	S-3		No Sample	---		Sample Not Collected, Water Present 5.0		
6							Bottom of Boring at 5.0'		
7									
8									
9									
10									

DRILLING CO.: Subsurface, Inc. BAKER REP.: (b) (4) [redacted]

DRILLER: (b) (4) [redacted] BORING NO.: PRA5-Boring B SHEET 1 OF 1

Baker

Baker Environmental

TEST BORING RECORD

PROJECT: Site Characterization at Columbia Gas Transmission - Former Hagan Compressor Station

SO NO.: 22603-HAG BORING NO.: PRA5-Boring C

COORDINATES: EAST: NORTH:

ELEVATION: SURFACE: TOP OF PVC CASING:

Rig: Geoprobe	MC Liners	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1-5/8" I.D.	---	--	--	2/7/97	0.0 - 5.0		--
Length	4.0 feet	---	--	--				
Type	---	---	--	--				
Hammer Wt.	---	--	--	--				
Fall	---	--	--	--				

Remarks: Airtank/Old Pad Area (BTEX, TPH)

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	Lab ID	PID (ppm)		Visual Description	Well Installation Detail	Elevation (Ft. MSL)
1	1.0	S-1		HAG-ASB-008-70001	0.0		SILTY CLAY; golden brown; stiff		
	1.5	N							
2	2.5	S-2		HAG-ASB-008-70002	0.0		Collect Duplicate at S-2 (HAG-ASB008-71002)		
3		N							
4	4.0								
5	5.0	S-3		HAG-ASB-008-70003	0.0		Collect MS/MSD at S-3 5.0		
6							Bottom of Boring at 5.0'		
7									
8									
9									
10									

DRILLING CO.: Subsurface, Inc. BAKER REP.: (b) (4) [redacted]

DRILLER: (b) (4) [redacted] BORING NO.: PRA5-Boring C SHEET 1 OF 1

Baker
Baker Environmental

TEST BORING RECORD

PROJECT: Site Characterization at Columbia Gas Transmission - Former Hagan Compressor Station
SO NO.: 22603-HAG
BORING NO.: PRA3-Boring A
COORDINATES: EAST:
NORTH:
ELEVATION: SURFACE:
TOP OF PVC CASING:

Rig: Geoprobe	MC Liners	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1-5/8" I.D.	---	--	--	2/7/97	0.0 - 5.0		--
Length	4.0 feet	---	--	--				
Type	---	---	--	--				
Hammer Wt.	---	--	--	--				
Fall	---	--	--	--				

Remarks: Blowdowns/Vents

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	Lab ID	PID (ppm)		Visual Description	Well Installation Detail	Elevation (Ft. MSL)
1	1.0	S-1		HAG-ASB-002-70001	0.0				
	1.5	N							
2	2.5	S-2		HAG-ASB-002-70002	0.0				
3									
4	4.0	N					Water at 3.5' Sample Not Collected, Water Present		
5	5.0	S-3		No Sample	---		Sandstone at 5.0' 5.0		
6							Bottom of Boring at 5.0'		
7									
8									
9									
10									

DRILLING CO.: Subsurface, Inc.
DRILLER: (b) (4) [redacted]
BAKER REP.: (b) (4) [redacted]
BORING NO.: PRA3-Boring A
SHEET 1 OF 1

Baker

Baker Environmental

TEST BORING RECORD

PROJECT: Site Characterization at Columbia Gas Transmission - Former Hagan Compressor Station

SO NO.: 22603-HAG

BORING NO.: PRA3-Boring B

COORDINATES: EAST:

NORTH:

ELEVATION: SURFACE:

TOP OF PVC CASING:

Rig: Geoprobe	MC Liners	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1-5/8" I.D.	---	--	--	2/7/97	0.0 - 5.0		--
Length	4.0 feet	---	--	--				
Type	---	---	--	--				
Hammer Wt.	---	--	--	--				
Fall	---	--	--	--				

Remarks: Blowdowns/Vents

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)

Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
1 1.0	S-1		HAG-ASB-003-70001	0.0			
1.5	N						
2 2.5	S-2		HAG-ASB-003-70002	2.0	odor		
3 4.0	N				Water at 3.6'		
5 5.0	S-3		No Sample	---	Sample Not Collected, Water Present 5.0		
6 7 8 9 10					Bottom of Boring at 5.0'		

DRILLING CO.: Subsurface, Inc.

DRILLER: (b) (4) [redacted]

BAKER REP.: (b) (4) [redacted]

BORING NO.: PRA3-Boring B

SHEET 1 OF 1

Baker

Baker Environmental

TEST BORING RECORD

PROJECT: Site Characterization at Columbia Gas Transmission - Former Hagan Compressor Station

SO NO.: 22603-HAG | BORING NO.: PRA3-Boring C

COORDINATES: EAST: | NORTH:

ELEVATION: SURFACE: | TOP OF PVC CASING:

Rig: Geoprobe	MC Liners	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1-5/8" I.D.	---	--	--	2/7/97	0.0 - 5.0		--
Length	4.0 feet	---	--	--				
Type	---	---	--	--				
Hammer Wt.	---	--	--	--				
Fall	---	--	--	--				

Remarks: Blowdowns/Vents

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	Lab ID	PID (ppm)		Visual Description	Well Installation Detail	Elevation (Ft. MSL)
1	1.0	S-1		HAG-ASB-005-70001	0.0		SILTY CLAY; brown		
	1.5	N							
2	2.5	S-2		HAG-ASB-005-70002	0.0				
3		N							
4	4.0								
5	5.0	S-3		No Sample	---		Sample Not Collected, Water Present 5.0		
6							Bottom of Boring at 5.0'		
7									
8									
9									
10									

DRILLING CO.: Subsurface, Inc. | BAKER REP.: (b) (4) [redacted]

DRILLER: (b) (4) [redacted] | BORING NO.: PRA3-Boring C | SHEET 1 OF 1

Baker

Baker Environmental

TEST BORING RECORD

PROJECT: Site Characterization at Columbia Gas Transmission - Former Hagan Compressor Station

SO NO.: 22603-HAG BORING NO.: PRA3-Boring D

COORDINATES: EAST: NORTH:

ELEVATION: SURFACE: TOP OF PVC CASING:

Rig: Geoprobe	MC Liners	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1-5/8" I.D.	---	--	--	2/7/97	0.0 - 5.0		--
Length	4.0 feet	---	--	--				
Type	---	---	--	--				
Hammer Wt.	---	--	--	--				
Fall	---	--	--	--				

Remarks: Blowdowns/Vents

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	Lab ID	PID (ppm)		Visual Description	Well Installation Detail	Elevation (Ft. MSL)
1	1.0	S-1		HAG-ASB-004-70001	0.0		SILTY CLAY; brown		
	1.5	N							
2	2.5	S-2		HAG-ASB-004-70002	0.0				
3		N							
4	4.0						Sample Not Collected, Water Present		
5	5.0	S-3		No Sample	---		Sandstone at 5.0' 5.0		
6							Bottom of Boring at 5.0'		
7									
8									
9									
10									

DRILLING CO.: Subsurface, Inc. BAKER REP.: (b) (4) [redacted]

DRILLER: (b) (4) [redacted] BORING NO.: PRA3-Boring D SHEET 1 OF 1

Baker

Baker Environmental

TEST BORING RECORD

PROJECT: Site Characterization at Columbia Gas Transmission - Former Hagan Compressor Station

SO NO.: 22603-HAG BORING NO.: PRA1-Boring A

COORDINATES: EAST: NORTH:

ELEVATION: SURFACE: TOP OF PVC CASING:

Rig: Geoprobe	MC Liners	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1-5/8" I.D.	---	--	--	2/7/97	0.0 - 4.6		--
Length	4.0 feet	---	--	--				
Type	---	---	--	--				
Hammer Wt.	---	--	--	--				
Fall	---	--	--	--				

Remarks: Pipeline Liquid UST (Table 1)

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	Lab ID	PID (ppm)		Visual Description		Well Installation Detail	Elevation (Ft. MSL)
1										
2		N								
3										
	3.6						Water ~ 3.5'			
4		S-1		HAG-ASB-009-70001	0.0		Sample Wet			
	4.6						Spoon Refusal at 4.6'	4.6		
5							Bottom of Boring at 4.6'			
6										
7										
8										
9										
10										

DRILLING CO.: Subsurface, Inc. BAKER REP.: (b) (4) [redacted]

DRILLER: (b) (4) [redacted] BORING NO.: PRA1-Boring A SHEET 1 OF 1

Baker
Baker Environmental

TEST BORING RECORD

PROJECT: Site Characterization at Columbia Gas Transmission - Former Hagan Compressor Station
SO NO.: 22603-HAG
BORING NO.: PRA1-Boring B
COORDINATES: EAST:
NORTH:
ELEVATION: SURFACE:
TOP OF PVC CASING:

Rig: Geoprobe	MC Liners	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1-5/8" I.D.	---	--	--	2/7/97	0.0 - 6.6		--
Length	4.0 feet	---	--	--				
Type	---	---	--	--				
Hammer Wt.	---	--	--	--				
Fall	---	--	--	--				

Remarks: Pipeline Liquid UST (Table 1)

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)

Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	Lab ID	PID (ppm)	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
1							
2							
3	N						
4					Water at 4.0'		
5							
5.6							
6	S-1		HAG-ASB-010-70001	0.0			
6.6					Refusal at 6.6' 6.6		
7					Bottom of Boring at 6.6'		
8							
9							
10							

DRILLING CO.: Subsurface, Inc.
DRILLER: (b) (4) [redacted]
BAKER REP.: (b) (4) [redacted]
BORING NO.: PRA1-Boring B
SHEET 1 OF 1

Baker

Baker Environmental

TEST BORING RECORD

PROJECT: Site Characterization at Columbia Gas Transmission - Former Hagan Compressor Station

SO NO.: 22603-HAG BORING NO.: PRA 8

COORDINATES: EAST: NORTH:

ELEVATION: SURFACE: TOP OF PVC CASING:

Rig: Geoprobe	MC Liners	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1-5/8" I.D.	---	--	--	2/7/97	0.0 - 5.0		--
Length	4.0 feet	---	--	--				
Type	---	---	--	--				
Hammer Wt.	---	--	--	--				
Fall	---	--	--	--				

Remarks: Makeup Oil AT (BTEX, TPH)

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	Lab ID	PID (ppm)		Visual Description	Well Installation Detail	Elevation (Ft. MSL)
1	1.0	S-1		HAG-ASB-011-70001	0.0				
	1.5	N							
2	2.5	S-2		HAG-ASB-011-70002	0.0				
3		N							
4	4.0								
5	5.0	S-3		No Sample	---		Sample Not Collected, Water Present 5.0		
6							Bottom of Boring at 5.0'		
7									
8									
9									
10									

DRILLING CO.: Subsurface, Inc. BAKER REP.: (b) (4) [redacted]

DRILLER: (b) (4) [redacted] BORING NO.: PRA 8 SHEET 1 OF 1