AP - 33

STAGE 1 & 2 REPORTS

DATE: 5/14/2001

Larson & Associates, Inc.
Environmental Consultants

May 14, 2001

Mr. William C. Olson, Hydrologist
Environmental Bureau
Oil Conservation Division
New Mexico Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Re: Pipeline Assessment Report, Dynegy Midstream Services. L.P., NW/4, SW/4, Section 21, Township 19 South, Range 37 East, Lea County, New Mexico

Dear Mr. Olson:
This report presents findings of a subsurface investigation of an inactive gas-gathering pipeline owned by Dynegy Midstream Services, L.P. (Dynegy), and located in the northwest quarter (NW/4) of the southwest quarter (SW/4), Section 21, Township 19 South, Range 37 East, Lea County, New Mexico. Larson and Associates, Inc. (LA) conducted the investigation on March 27, 2001, to determine if the gathering line was a source for hydrocarbon impacts identified in a domestic well and irrigation well located approximately ¾-mile east of the investigation area. The investigation consisted of collecting soil samples for field and laboratory analysis from nine (9) rotary-drilled borings (BH-1 through BH-9). Figure 1 presents a location and topographic map. Figure 2 presents a drawing of the investigation area.

Setting
The investigation area is located approximately 0.6-mile northeast of Monument, New Mexico, at an elevation approximately 3670 feet above mean sea level (AMSL). The area is underlain by the Ogallala formation consisting of poorly to well-cemented sand and sandstone, interbedded with clay, silt and gravel. The Ogallala formation is underlain by the Triassic-age Chinle formation (commonly referred to as "red bed") and consisting of mudstone. The Chinle formation is present at approximately 3550 feet AMSL or 120 feet below ground surface (BGS), according to published information (Nicholson and Clebsch, 1961).

Several wells have been drilled in the vicinity of the investigation area, and are identified as "dry holes" or do not specify depth-to-groundwater data specified, according to the published data (Nicholson and Clebsch, 1961). The wells were drilled north and northwest of the area to depths of 67 and 80 feet BGS. A verbal request was submitted to Office of the State Engineer, located in Roswell, New Mexico, for information pertaining to water wells in Section 21, Township 19 South, and Range 37 East (verbal communication between Mr. Juan Hernandez and Mr. Mark Larson, May 8, 2001). Mr. Hernandez reported that the Office of the State Engineer had issued permits for an irrigation well, and 3 domestic wells. The wells were drilled in the SW/4 and SE/4 of Section 21, Township 19 South and Range 37 East to depths from about 55 to 70 feet BGS. Groundwater was recorded from 30 to 47 feet BGS. The wells are likely located in areas topographically lower than the investigation area, based on the legal descriptions, and encountered groundwater at shallower depths. Appendix A presents copies of the well records.

Current Investigation
Nine (9) borings were drilled to assess potential leakage from approximately 1,300 linear-feet of pipeline on March 27, 2001. The borings were drilled by Scarborough Drilling, Inc., located in Lamesa, Texas. Boring BH-1 was drilled to approximately 21 feet BGS at the location of a non-reportable spill to assess the vertical

extent of the spill. Borings BH-2 through BH-8 were drilled adjacent to the pipeline, and were spaced approximately 250 apart. These borings were drilled to approximately 6 feet BGS to assess potential leakage from the pipeline. Boring BH-9 was drilled to approximately 21 feet BGS east of a gas meter and the east end of the pipeline to confirm that no impacts were present east of the pipeline. Soil samples were collected approximately every 5 feet (i.e., 1 to 2', 5 to 6', 10 to 11', 15 to 16', etc.) using a split-spoon and core sampler. Caliche was encountered at approximately 2 feet BGS, and prevented use of the split-spoon sampler. The samples were placed in clean glass sample jars, labeled, chilled in an ice chest, and delivered under chain-of-custody control to Environmental Lab of Texas, Inc., located in Odessa, Texas. A sample was also collected in a clean glass sample jar for headspace analysis. The jars were filled approximately ¾ full, and a layer of aluminum foil was placed over the opening of the sample jar before securing the cap. The headspace samples were set aside and allowed to warm up to ambient temperature before a RAE Instruments, Model 2000 photoionization detector (PID) was used to measure the concentration of organic vapors in the sample headspace. The PID probe was inserted into the headspace of the sample jars (through the aluminum foil), and the concentration of organic vapors was measured, and displayed in parts per million (ppm). The headspace measurements were recorded on boring logs. The PID was calibrated to isobutylene. The borings were filled with cement grout after drilling was completed. The PID readings are summarized on Table 1, and graphically displayed on the boring logs presented in Appendix B.

The New Mexico Oil Conservation Division (NMOCD) has established soil remediation action levels (RRALs) for benzene, total BTEX (sum of benzene, toluene, ethylbenzene and xylenes) and total petroleum hydrocarbons (TPH) resulting from spills of oil and gas producing operations ("Guidelines for Remediation of Leaks, Spills and Releases, August 13, 1993"). Remediation levels for benzene, total BTEX and TPH were calculated using the following NMOCD criteria:

Criteria	Result	Ranking Score
Depth-to-Groundwater	50 – 99 Feet	10
Wellhead Protection Area	No	0
Distance to Surface Water Body	>1000 Horizontal Feet	0
		Total: 10

The following RRALs have been assigned based on NMOCD criteria:

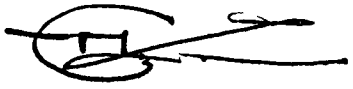
Benzene	**10 mg/kg**
Total BTEX	**50 mg/kg**
TPH	**1000 mg/kg**

The NMOCD does allow a field soil vapor headspace measurement to substitute a laboratory analysis for benzene and total BTEX (sum of benzene, toluene, ethylbenzene and xylenes) if the headspace reading is less than 100 parts per million (ppm). The only sample reporting field headspace measurement above 100 ppm were from 1 to 2 feet BGS from boring BH-1 (1325 ppm). The remaining samples recorded field headspace measurements below 100 ppm. The background concentrations ranged from 3 to 7 ppm. Soil samples from boring BH-1, 1 to 2 feet and the next lower sample interval were analyzed for BTEX by EPA methods SW-846-8021B, and TPH using EPA test method SW-846-8015. Samples from borings BH-2 through BH-8 (1 to 2 feet BGS), and from boring BH-9, 1 to 2 feet BGS, 10 to 11 feet BGS and 20 to 21 feet BGS were analyzed for TPH using EPA method SW-846-8015. Table 1 presents a summary of the BTEX and TPH analyses. Appendix C presents the laboratory report. Appendix D presents photographs.

Referring to Table 1, benzene was not reported above the test method detection limit of 0.025 milligrams per kilogram (mg/kg) in samples 1 to 2 feet and 5 to 6 feet from boring BH-1. The concentration of total BTEX in the sample from boring BH-1, 1 to 2 feet BGS was 1.501 mg/kg. No BTEX compounds were detected in the sample from boring BH-1, 5 to 6 feet. The concentration of total BTEX was well below the RRAL (50 mg/kg). The only detectable concentration of TPH was in the sample from boring BH-1, 1 to 2 feet (555 mg/kg). The TPH concentration was well below the RRAL (1,000 mg/kg). No TPH was reported in the remaining samples.

Dynegy feels that it has adequately investigated its pipeline, and demonstrated that no hydrocarbons from its pipeline have contributed to the impact identified in groundwater at the domestic and irrigation wells located east of the area of investigation. Impacts identified at the non-reportable spill are well below remediation action levels established by the NMOCD. Dynegy requests that the NMOCD consider its investigation adequate, and requests approval to cover the former spill area. Please contact Mr. Cal Wrangham at (915) 688-0555 or myself at (915) 687-0901 if you have questions.

Sincerely,
Larson & Associates, Inc.



Mark J. Larson, CPG, CGWP
President

Encl.

cc: Mr. Cal Wrangham - Dynegy
Mr. Dave Harris – Dynegy
Mr. E. L. Gonzales – NMOCD District I

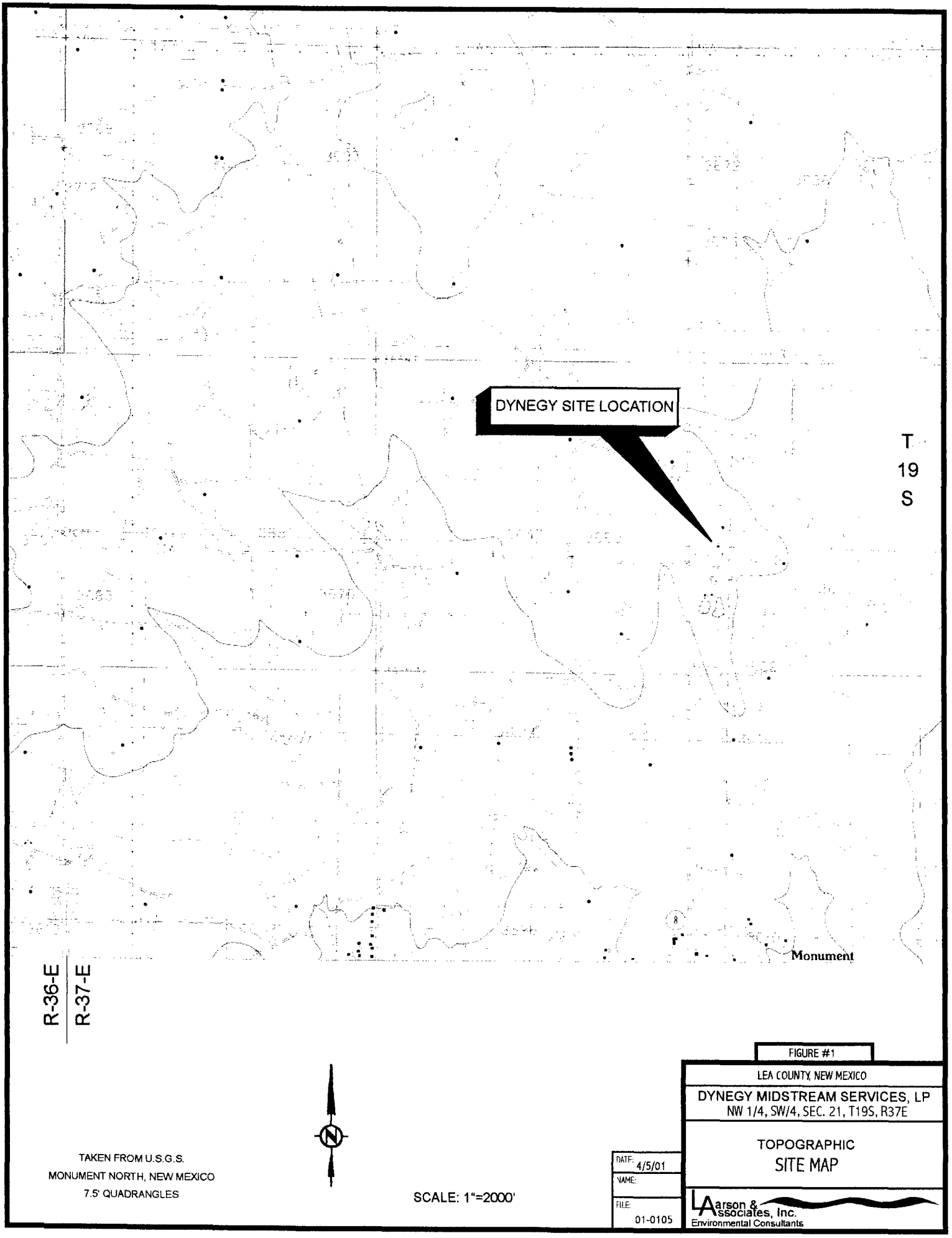
Table 1: **Summary of Headspace and Laboratory Analyses of Soil Samples**
Dynegy Midstream Services, L.P.
NW/4, SW/4, Section 19, Township 21 South, Range 37 East
Lea County, New Mexico

Date Sampled	Soil Boring	Sample Interval Feet (BGS)	PID (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	BTEX (mg/kg)	GRO C6 - C10 (mg/kg)	DRO >C10 - C28 (mg/kg)	TPH C6 - C28 (mg/kg)
27-Mar-01	BH-1	1 - 2	1325	<0.025	0.113	0.125	1.501	1.793	310	245	555
		5 - 6	65.1	<0.025	<0.025	<0.025	<0.025	<0.10	<10	<10	<20
		10 - 11	24.0	--	--	--	--	--	<10	<10	<20
		15 - 16	15.7	--	--	--	--	--	<10	<10	<20
		20 - 21	7.0	--	--	--	--	--	<10	<10	<20
27-Mar-01	BH-2	1 - 2	1.2	--	--	--	--	--	<10	<10	<20
		5 - 6	0.5	--	--	--	--	--	--	--	--
27-Mar-01	BH-3	1 - 2	9.3	--	--	--	--	--	<10	<10	<20
		5 - 6	5.3	--	--	--	--	--	--	--	--
27-Mar-01	BH-4	1 - 2	6.6	--	--	--	--	--	<10	<10	<20
		5 - 6	5.1	--	--	--	--	--	--	--	--
27-Mar-01	BH-5	1 - 2	6.2	--	--	--	--	--	<10	<10	<20
		5 - 6	4.7	--	--	--	--	--	--	--	--
27-Mar-01	BH-6	1 - 2	5.6	--	--	--	--	--	<10	<10	<20
		5 - 6	3.8	--	--	--	--	--	--	--	--
27-Mar-01	BH-7	1 - 2	4.5	--	--	--	--	--	<10	<10	<20
		5 - 6	3.7	--	--	--	--	--	--	--	--
27-Mar-01	BH-8	1 - 2	5.0	--	--	--	--	--	<10	<10	<20
		5 - 6	2.9	--	--	--	--	--	--	--	--
27-Mar-01	BH-9	1 - 2	3.4	--	--	--	--	--	<10	<10	<20
		5 - 6	2.6	--	--	--	--	--	--	--	--
		10 - 11	1.6	--	--	--	--	--	<10	<10	<20
		15 - 16	2.6	--	--	--	--	--	--	--	--
		20 - 21	1.9	--	--	--	--	--	<10	<10	<20

Notes: Analysis performed by Environmental Lab of Texas, Inc., Odessa, Texas

1. BGS: Sample depth in feet below ground surface
2. ppm: Parts per million
3. GRO Gasoline range hydrocarbons
4. DRO: Diesel range hydrocarbons
5. TPH: Total petroleum hydrocarbons (Sum of DRO + GRO)
6. mg/kg: Milligrams per kilogram
7. --: No data available
8. <: Less than the test method detection limit

FIGURES



TAKEN FROM U.S.G.S.
MONUMENT NORTH, NEW MEXICO
7.5' QUADRANGLES

SCALE: 1"=2000'

FIGURE #1

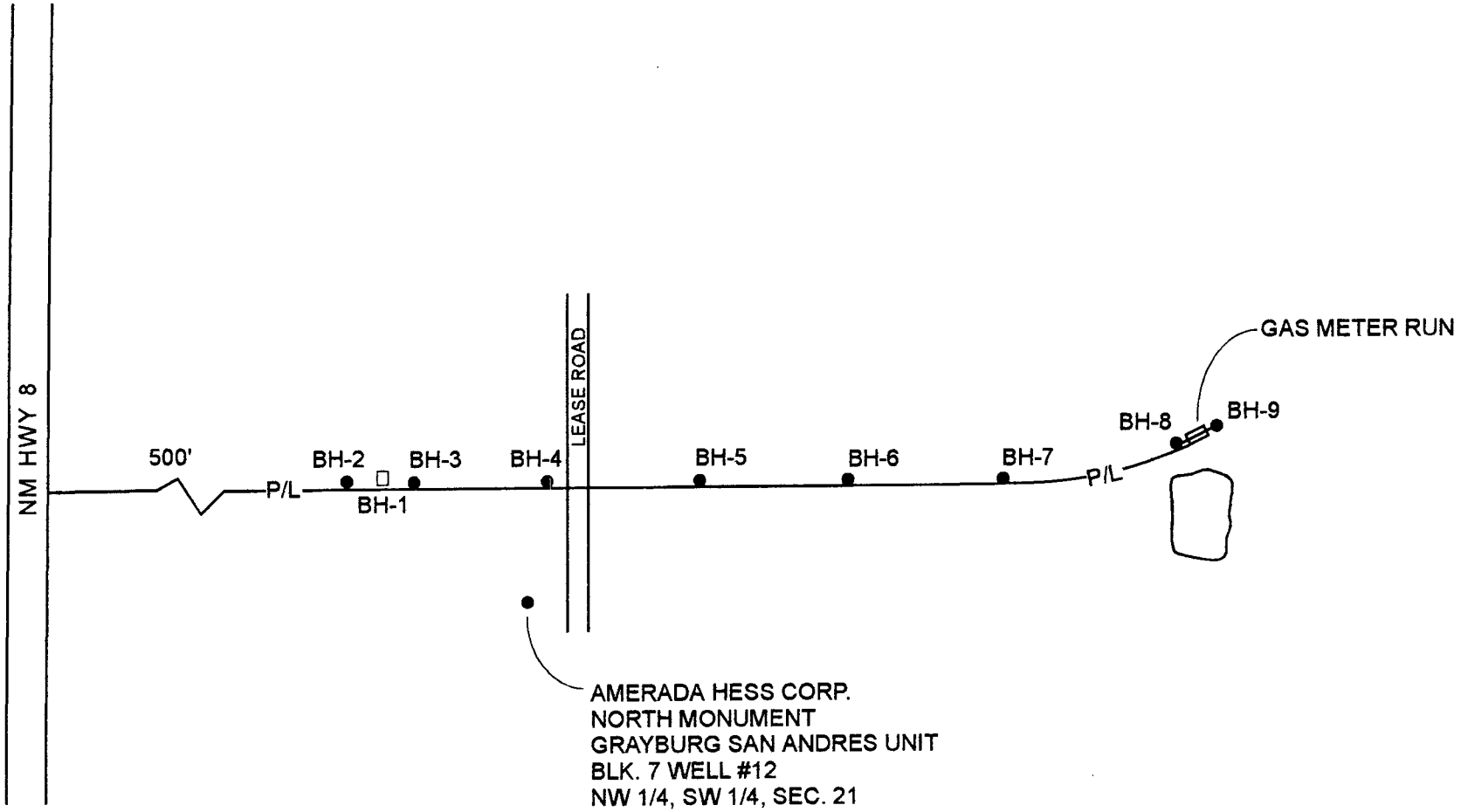
LEA COUNTY, NEW MEXICO

DYNEGY MIDSTREAM SERVICES, LP
NW 1/4, SW/4, SEC. 21, T19S, R37E

TOPOGRAPHIC
SITE MAP

DATE: 4/5/01
NAME:
FILE: 01-0105

Larson & Associates, Inc.
Environmental Consultants



LEGEND

● SOIL BORING LOCATION

SCALE: 1"=250'

FIGURE #2

LEA COUNTY, NEW MEXICO

DYNEGY MIDSTREAM SERVICES, LP

NW 1/4, SW/4, SEC. 21, T19S, R37E

SITE MAP

DATE: 4/5/01

NAME:

FILE: 01-0105

Larson & Associates, Inc.
Environmental Consultants

APPENDIX A

Well Records

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

FIELD FILE

Section 1. GENERAL INFORMATION

(A) Owner of well Leroy Lott Owner's Well No. _____

Street or Post Office Address _____

City and State Hobbs, N.M.

Well was drilled under Permit No. L-9163 and is located in the:

a. _____ ¼ NE ¼ SW ¼ NE ¼ of Section 21 Township 19S Range ~~XXX~~ 37-E N.M.P.M

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in Lea County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor Oldaker & Sons License No. WD-657

Address P.O.Box 2321, Hobbs, N.M

Drilling Began 4-15-83 Completed 4-16-83 Type tools Cable Size of hole 9½ in.

Elevation of land surface or 3650 at well is 3650 ft. Total depth of well 60 ft.

Completed well is ☑ shallow ☐ artesian. Depth to water upon completion of well 47 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
47	60	12	Water Sand	25 G P M

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
5 5/8			0	60	60	NOne	11040	60

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor _____

Address _____

Plugging Method _____

Date Well Plugged _____

Plugging approved by:

_____
State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received October 31, 1983

Quad _____ FWL _____ FSL _____

File No. L-9163 Use DOMESTIC Location No. 19 [illegible]

Section 6. LOG OF HOLE

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color and Type of Material Encountered
0	3	3	Top Brown Soil
3	18	15	Caliehe
18	21	3	Gray Soil
21	59	38	Water Sand
59	60	1	Red Bed
60			

Section 7. REMARKS AND ADDITIONAL INFORMATION

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

G. D. Alderson
Driller

INSTRUCTIONS: This form executed in triplicate, preferably typewritten, and submitted to state district office

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well W. S. ISRAEL Owner's Well No. _____
Street or Post Office Address %TERRY ISREAL P. O. BOX 159
City and State MONUMENT, NM 88265

Well was drilled under Permit No. L-10,238 and is located in the:

a. ____ ¼ ____ ¼ SE ¼ SW ¼ of Section 21 Township 19-S Range 37-E N.M.P.M.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in LEA County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor W. L. VAN NOY License No. WD-208

Address P. O. BOX 7, OIL CENTER, NM 88266

Drilling Began 3-18-92 Completed 3-19-92 Type tools cable Size of hole 8 in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 60 ft.

Completed well is [X] shallow [ ] artesian. Depth to water upon completion of well 30 ft

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
25	60	35	sand rock water bearing sand	

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
5"	PVC		0	60	60		41	56

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:
_____ State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received March 25, 1992

Quad _____ FWL _____ FSL _____

File No. L-10,238 Use DOM & STK Location No. 19.37.21.34332

T.SN

Section 6. LOG OF HOLE

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color and Type of Material Encountered
0	25	25	caliche
25	60	35	sand rock- water bearing sand
60			red bed

Section 7. REMARKS AND ADDITIONAL INFORMATION

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

W L Van Zo

Driller

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well Terry Israel Owner's Well No. _____
Street or Post Office Address P.O.Box 139
City and State Monument, NM 88265

Well was drilled under Permit No. L-10, 295 and is located in the:

a. _____ ¼ SE ¼ SW ¼ _____ ¼ of Section 21 Township 19-S Range 37-E N.M.P.M.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in LEA County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor Billy Bentle/ W.L. VanNoy License No. WD208

Address Box 533, Jal, NM 88252

Drilling Began 10-26-92 Completed 10-29-92 Type tools _____ Size of hole 8 in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 70 ft.

Completed well is xx shallow ☐ artesian. Depth to water upon completion of well 30 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
40	70	30	water-bearing sand	

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To
5"	PVC		0	70			45	65

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by:
_____
State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received November 19, 1992

Quad _____ FWL _____ FSL _____

File No. L-10,295 Use DOM & STK Location No. 19.37.21.34314

Section 6. LOG OF HOLE

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color and Type of Material Encountered
0	3	3	top soil
3	35	32	cliche
35	40	5	brown-sand rock
40	70	30	sand-rock, water-bearing sand
70	———	-----	red-bed

Section 7. REMARKS AND ADDITIONAL INFORMATION

STATE ENGINEER OFFICE
ROSWELL NEW MEXICO
'92 NOV 19 AM 10 41

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Billy J. Beattie
Driller

WELL RECORD

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the nearest district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1A and Section 5 need be completed.

Section 1

(Plat of 640 acres)

(A) Owner of well H. E. Hinson

Street and Number 507 W. Dunham

City Hobbs, State New Mexico

Well was ~~drilled~~ repaired under Permit No. L-66 and is located in the ¼ SE ¼ SE ¼ of Section 21 Twp. 18 S Rge. 37 E

(B) Drilling Contractor H. L. Van Ray License No. [illegible]

Street and Number P. O. Box 71

City Oil Center, State New Mexico

~~Drilling~~ Repairing was commenced July 22, 19 59

~~Drilling~~ Repairing was completed July 23, 19 59

Elevation at top of casing in feet above sea level ____ Total depth of well 52 ft

State whether well is shallow or artesian Shallow Depth to water upon completion 36 ft

Section 2 PRINCIPAL WATER-BEARING STRATA

No.	Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation
1				Same as when drilled
2				
3				
4				
5				

Section 3 RECORD OF CASING

Dia in.	Pounds ft.	Threads in.	Depth Top	Depth Bottom	Feet	Type Shoe	Perforations From	Perforations To
					Same as when drilled			

Section 4 RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Diameter Hole in in.	Tons Clay	No. Sacks of Cement	Methods Used
					None.

Section 5 PLUGGING RECORD

Name of Plugging Contractor ____ License No. ____

Street and Number ____ City ____ State ____

Tons of Clay used ____ Tons of Roughage used ____ Type of roughage ____

Plugging method used ____ Date Plugged ____ 19 ____

Plugging approved by:

____
Basin Supervisor

Cement Plugs were placed as follows:

No.	Depth of Plug From	Depth of Plug To	No. of Sacks Used

FOR USE OF STATE ENGINEER ONLY

Date Received FILED JUL 21 1959 GROUND WATER OFFICE ROSWELL, NEW MEXICO

File No. L-66 Use Irr. Location No. 19.37.21.430

Section 6

LOG OF WELL

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color	Type of Material Encountered
				Work I did in repairing well,
				Pulled a 12" Peerless Pump out
				of well it was sanded up, bailed out
				sand down to 55' and rerun pump.

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described well.

W. P. Van Dorn
Well Driller

APPENDIX B

Boring Logs

507 North Marienfeld, Suite 202 ◆ Midland, Texas 79701 ◆ Ph. (915) 687-0901 ◆ Fax (915) 687-0456

Client: Dynegy Midstream Services, L.P.

Project: Monument Pipeline Assessment

Location: NW/4, NW/4, Sec. 19, Township 21 South, Range 37 East

Project No: # 01-0105

Log: BH-1

Geologist: M. J. Larson

Page: 1 of 1

SUBSURFACE PROFILE			SAMPLE			PID Readings (ppm)	
Depth	Symbol	Description	Number	Type	Recovery	500 1000	Notes
0		***Silty Clay*** 7.5YR 3/2, dark brown, very fine grained quartz sand, moist	1		50%	1325	
		Caliche 7.5YR 8/2, pinkish white, indurated, hard				65.1	
5			2		100		
						24	
10			3		100		
						15.7	
15			4		100		
		Sand 7.5YR 7/3 to 7/4, pink, very fine grained quartz sand, loose, interbedded with thin layers of quartzite, hard				7	
20			5		100		
25		TD: 20 Feet BGS Groundwater Not Observed					
30							

Drilling Method: Rotary (air)

Date Drilled: 27 - Mar - 01

Hole Diameter: 5"

Larson and Associates, Inc.
507 N. Marienfeld St., Suite 202
Midland, Texas 70701
(915) 687-0901

Datum: Ground Surface

Checked by: MJL

Drilled by: Scarborough

Client: Dynegy Midstream Services, L.P.

Project: Monument Pipeline Assessment

Location: NW/4, NW/4, Sec. 19, Township 21 South, Range 37 East

Project No: # 01-0105

Log: BH-2

Geologist: M. J. Larson

SUBSURFACE PROFILE			SAMPLE			PID Readings (ppm)	
Depth	Symbol	Description	Number	Type	Recovery	2 4 6 8	Notes
		Silty Clay 10YR 3/3, dark brown, very fine grained quartz sand, moist				1.2	
		Caliche 7.5YR 8/2, pinkish white, indurated, hard	1		100		
5			2		100	0.5	
		TD: 6 Feet BGS Groundwater Not Observed					
10							

Drilling Method: Rotary (air)

Date Drilled: 27 - Mar - 01

Hole Diameter: 5"

Larson and Associates, Inc.
507 N. Marienfeld St., Suite 202
Midland, Texas 70701
(915) 687-0901

Datum: Ground Surface

Checked by: MJL

Drilled by: Scarborough

Client: Dynegy Midstream Services, L.P.

Project: Monument Pipeline Assessment

Location: NW/4, NW/4, Sec. 19, Township 21 South, Range 37 East

Project No: # 01-0105

Log: BH-3

Geologist: M. J. Larson

Page: 1 of 1

SUBSURFACE PROFILE			SAMPLE			PID Readings (ppm) 2 4 6 8	Notes
Depth	Symbol	Description	Number	Type	Recovery		
		Silty Clay 7.5YR 3/2, dark brown, very fine grained quartz sand, moist					
		Caliche 7.5YR 8/2, pinkish white, indurated, hard	1		100	9.3	
5			2		100	5.3	
		TD: 6 Feet BGS Groundwater Not Observed					
10							

Drilling Method: Rotary (air)

Date Drilled: 27 - Mar - 01

Hole Diameter: 5"

Larson and Associates, Inc.
507 N. Marienfeld St., Suite 202
Midland, Texas 70701
(915) 687-0901

Datum: Ground Surface

Checked by: MJL

Drilled by: Scarborough

Client: Dynegy Midstream Services, L.P.

Project: Monument Pipeline Assessment

Location: NW/4, NW/4, Sec. 19, Township 21 South, Range 37 East

Project No: # 01-0105

Log: BH-4

Geologist: M. J. Larson

Page: 1 of 1

SUBSURFACE PROFILE			SAMPLE			PID Readings (ppm)	
Depth	Symbol	Description	Number	Type	Recovery	2 4 6 8	Notes
		Silty Clay 7.5YR 3/2, dark brown, very fine grained quartz sand, moist					
		Caliche 7.5YR 8/2, pinkish white, indurated, hard	1		100	6.6	
5			2		100	5.1	
		TD: 6 Feet BGS Groundwater Not Observed					
10							

Drilling Method: Rotary (air)

Date Drilled: 27 - Mar - 01

Hole Diameter: 5"

Larson and Associates, Inc.
507 N. Marienfeld St., Suite 202
Midland, Texas 70701
(915) 687-0901

Datum: Ground Surface

Checked by: MJL

Drilled by: Scarborough

Client: Dynegy Midstream Services, L.P.

Project: Monument Pipeline Assessment

Location: NW/4, NW/4, Sec. 19, Township 21 South, Range 37 East

Project No: # 01-0105

Log: BH-5

Geologist: M. J. Larson

Page: 1 of 1

SUBSURFACE PROFILE			SAMPLE			PID Readings (ppm) 2 4 6 8	Notes
Depth	Symbol	Description	Number	Type	Recovery		
		Silty Clay 7.5YR 3/2, dark brown, very fine grained quartz sand, moist				6.2	
		Caliche 7.5YR 8/2, pinkish white, indurated, hard	1		100		
5			2		100	4.7	
		TD: 6 Feet BGS Groundwater Not Observed					
10							

Drilling Method: Rotary (air)

Date Drilled: 27 - Mar - 01

Hole Diameter: 5"

Larson and Associates, Inc.
507 N. Marienfeld St., Suite 202
Midland, Texas 70701
(915) 687-0901

Datum: Ground Surface

Checked by: MJL

Drilled by: Scarborough

Client: Dynegy Midstream Services, L.P.

Project: Monument Pipeline Assessment

Location: NW/4, NW/4, Sec. 19, Township 21 South, Range 37 East

Project No: # 01-0105

Log: BH-6

Geologist: M. J. Larson

Page: 1 of 1

SUBSURFACE PROFILE			SAMPLE			PID Readings (ppm)	
Depth	Symbol	Description	Number	Type	Recovery	2 4 6 8	Notes
		Silty Clay 7.5YR 3/2, dark brown, very fine grained quartz sand, moist				5.6	
		Caliche 7.5YR 8/2, pinkish white, indurated, hard	1		100		
5		***Sand*** 7.5YR 7/3, pink, very fine grained quartz sand, loose, dry	2		100	3.8	
		TD: 6 Feet BGS Groundwater Not Observed					
10							

Drilling Method: Rotary (air)

Date Drilled: 27 - Mar - 01

Hole Diameter: 5"

Larson and Associates, Inc.
507 N. Marienfeld St., Suite 202
Midland, Texas 70701
(915) 687-0901

Datum: Ground Surface

Checked by: MJL

Drilled by: Scarborough

Client: Dynegy Midstream Services, L.P.

Project: Monument Pipeline Assessment

Location: NW/4, NW/4, Sec. 19, Township 21 South, Range 37 East

Project No: # 01-0105

Log: BH-7

Geologist: M. J. Larson

Page: 1 of 1

SUBSURFACE PROFILE			SAMPLE			PID Readings (ppm) 2 4 6 8	Notes
Depth	Symbol	Description	Number	Type	Recovery		
		Silty Clay 7.5YR 3/2, dark brown, very fine grained quartz sand, moist				4.5	
		Caliche 7.5YR8/2, pinkish white, indurated, hard	1		100		
5			2		100	3.7	
		TD: 6 Feet BGS Groundwater Not Observed					
10							

Drilling Method: Rotary (air)

Date Drilled: 27 - Mar - 01

Hole Diameter: 5"

Larson and Associates, Inc.
507 N. Marienfeld St., Suite 202
Midland, Texas 70701
(915) 687-0901

Datum: Ground Surface

Checked by: MJL

Drilled by: Scarborough

Client: Dynegy Midstream Services, L.P.

Project: Monument Pipeline Assessment

Location: NW/4, NW/4, Sec. 19, Township 21 South, Range 37 East

Project No: # 01-0105

Log: BH-8

Geologist: M. J. Larson

SUBSURFACE PROFILE			SAMPLE			PID Readings (ppm)	
Depth	Symbol	Description	Number	Type	Recovery	2 4 6 8	Notes
		Silty Clay 7.5YR 3/2, dark brown, very fine grained quartz sand, moist				5	
		Caliche 7.5YR 8/2, pinkish white, indurated, hard	1		100		
5		***Sand*** 7.5YR 7/3, pink, very fine grained quartz sand, loose, some thin quartzite beds, hard	2		100	2.9	
		TD: 6 Feet BGS Groundwater Not Observed					
10							

Drilling Method: Rotary (air)

Date Drilled: 27 - Mar - 01

Hole Diameter: 5"

Larson and Associates, Inc.
507 N. Marienfeld St., Suite 202
Midland, Texas 70701
(915) 687-0901

Datum: Ground Surface

Checked by: MJL

Drilled by: Scarborough

Client: Dynegy Midstream Services, L.P.

Project: Monument Pipeline Assessment

Location: NW/4, NW/4, Sec. 19, Township 21 South, Range 37 East

Project No: # 01-0105

Log: BH-9

Geologist: M. J. Larson

Page: 1 of 1

SUBSURFACE PROFILE			SAMPLE			PID Readings (ppm)	
Depth	Symbol	Description	Number	Type	Recovery	2 4 6 8	Notes
		Silty Clay 7.5YR 3/2, dark brown, very fine grained quartz sand, moist	1		100	3.4	
		Caliche 7.5YR 8/2, pinkish white, indurated, hard					
5			2		100	2.6	
		Sand 7.5YR 7/4, pink, very fine grained quarz sand, loose, some thin beds of quartzite					
10			3		100	1.6	
15			4		100	2.6	
20			5		100	1.9	
		TD: 21 Feet BGS Groundwater Not Observed					
25							
30							

Drilling Method: Rotary (air)

Date Drilled: 27 - Mar - 01

Hole Diameter: 5"

Larson and Associates, Inc.
507 N. Marienfeld St., Suite 202
Midland, Texas 70701
(915) 687-0901

Datum: Ground Surface

Checked by: MJL

Drilled by: Scarborough

APPENDIX C

Laboratory Report

ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

LARSON AND ASSOCIATES, INC.
ATTN: MR. MARK LARSON
507 N. MARIENFELD ST., STE. 202
MIDLAND, TEXAS 79701
FAX: 687-0456

Sample Type: Soil
Sample Condition: Intact/ Iced/ 3.0 deg. C
Project #: 01-0105
Project Name: Dynegy-Monument
Project Location: Lea County, N.M.

Sampling Date: 03/27/01
Receiving Date: 03/28/01
Analysis Date: 03/29/01

ELT#	FIELD CODE	BENZENE mg/kg	TOLUENE mg/kg	ETHYLBENZENE mg/kg	m,p-XYLENE mg/kg	o-XYLENE mg/kg
38559	BH-1, 1-2'	<0.025	0.113	0.125	0.600	0.901
38560	BH-1, 5-6'	<0.025	<0.025	<0.025	<0.025	<0.025
%IA		91	95	100	107	100
%EA		85	87	92	98	94
BLANK		<0.025	<0.025	<0.025	<0.025	<0.025

METHODS: EPA SW 846-8021B ,5030

Raland K. Tuttle

3-30-01
Date

ENVIRONMENTAL LAB OF TEXAS, INC.

"Don't Treat Your Soil Like Dirt!"

LARSON AND ASSOCIATES, INC.
ATTN: MR. MARK LARSON
507 N. MARIENFELD ST., STE. 202
MIDLAND, TEXAS 79701
FAX: 687-0456

Sample Type: Soil
Sample Condition: Intact/Iced/ 3.0 deg C
Project #: 01-0105
Project Name: Dynegy-Monument
Project Location: Lea County, N.M.

Sampling Date: 03/27/01
Receiving Date: 03/28/01
Analysis Date: 03/28/01

ELT#	FIELD CODE	GRO C6-C10 mg/kg	DRO >C10-C28 mg/kg
38559	BH-1, 1-2'	310	245
38560	BH-1, 5-6'	<10	<10
38561	BH-1, 10-11'	<10	<10
38562	BH-1, 15-16'	<10	<10
38563	BH-1, 20-21'	<10	<10
38564	BH-2, 1-2'	<10	<10
38566	BH-3, 1-2'	<10	<10
38568	BH-4, 1-2'	<10	<10
38570	BH-5, 1-2'	<10	<10
38572	BH-6, 1-2'	<10	<10
38574	BH-7, 1-2'	<10	<10
38576	BH-8, 1-2'	<10	<10
38578	BH-9, 1-2'	<10	<10
38580	BH-9, 10-11'	<10	<10
38582	BH-9, 20-21'	<10	<10
	% IA	92	106
	%EA	90	102
	BLANK	<10	<10

Methods: EPA SW 846-8015M GRO/DRO

Raland K. Tuttle

3-30-01
Date

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Mark Larson
Company Name: Larson and Associates, Inc.
Company Address: 507 N. Marienfeld St., Ste 202
City/State/Zip: Midland, TX 79701
Telephone No: (915) 687-0901 Fax No: (915) 687-0456
Sampler Signature:

Project Name: Pyramy - Monument
Project #: 01-0105
Project Loc: Lea County, NM
PO #:

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO_3	HCl	NaOH	H_2SO_4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify)	Analyze For: TCLP/TOTAL: TDS / CL / SAR / EC	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	Hold						RUSH TAT (Pre-Schedule)	Standard TAT
38569	BH-4, 5-6'	3/27/01	1120	1	✓																		✓								
38570	BH-5, 0-1'-2'		1132	1	✓													✓	✓												
38571	" 5-6'		1138	1	✓																		✓								
38572	BH-6, 0-1'-2'		1243	1	✓													✓	✓												
38573	" 5-6'		1246	1	✓																		✓								
38574	BH-7, 0-1'-2'		1300	1	✓													✓	✓												
38575	" 5-6'		1305	1	✓																		✓								
38576	BH-8 0-1'-2'		1320	1	✓													✓	✓												
38577	" 5-6'		1325	1	✓																		✓								
38578	BH-9 1-2'	↓	1338	1	✓													✓	✓												

Special Instructions:

Sample Containers Intact? (Y) N
Temperature Upon Receipt:
Laboratory Comments: 3.0°C

Relinquished by:	Date	Time	Received by:	Date	Time
	3/28/01	0900			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Jeanne McMurrey	03-28-01	0900

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Mark Larson
Company Name: Larson and Associates, Inc.
Company Address: 507 N. Marienfeld St, Ste 202
City/State/Zip: Midland, Tx 79701
Telephone No: (915) 687-0901 Fax No: (915) 687-0456
Sampler Signature:

Project Name: Dynegy - Monument
Project #: 01-0105
Project Loc: Lea County, NM
PO #:

Page 3 of 3

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	Preservative: HNO_3	Preservative: HCl	Preservative: NaOH	Preservative: H_2SO_4	Preservative: None	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify)	Analyze For: TDS / CL / SAR / EC	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	Hold	RUSH TAT (Pre-Schedule)	Standard TAT
38579	BH-9 5-6'	3/27/01	1345	1	✓																		✓			
38580	" 10-11'	"	1350	1	✓													✓	✓							
38581	" 15-16'	"	1400	1	✓																		✓			
38582	" 20-21'	"	1410	1	✓													✓	✓							
	No Samples Follow																									

Special Instructions:

Sample Containers Intact? (Y) N
Temperature Upon Receipt:
Laboratory Comments: 3.0°C

Relinquished by:	Date	Time	Received by:	Date	Time
	3/28/01	0900			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Jeanne McMurrey	03-28-01	0900

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Mark Larson
Company Name: Larson and Associates, Inc.
Company Address: 507 N. Marienfeld St., Ste 202
City/State/Zip: Midland, Tx 79701
Telephone No: (915) 687-0901 Fax No: (915) 687-0456
Sampler Signature:

Project Name: Dynegy - Monument
Project #: 01-0105
Project Loc: Lea County, NM
PO #:

Analyze For:

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO3	HCl	NaOH	H2SO4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify)	TCLP: TDS / CL / SAR / EC	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	TOTAL: Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	Hold	RUSH TAT (Pre-Schedule)	Standard TAT
38559	BH-1	1-2'	3/27/01	0917	1	✓												✓				✓				
38560	"	5-6'		0930	1	✓												✓				✓				
38561	"	10-11'		0934	1	✓												✓								
38562	"	15-16'		0940	1	✓												✓								
38563	"	20-21'		0950	1	✓												✓								
38564	BH-2	0-1'-2'		1015	1	✓												✓								
38565	"	5-6'		1020	1	✓																✓				
38566	BH-3	0-1'-2'		1050	1	✓												✓								
38567	"	5-6'		1055	1	✓																✓				
38568	BH-4	0-1'-2'		1115	1	✓												✓								

Special Instructions:

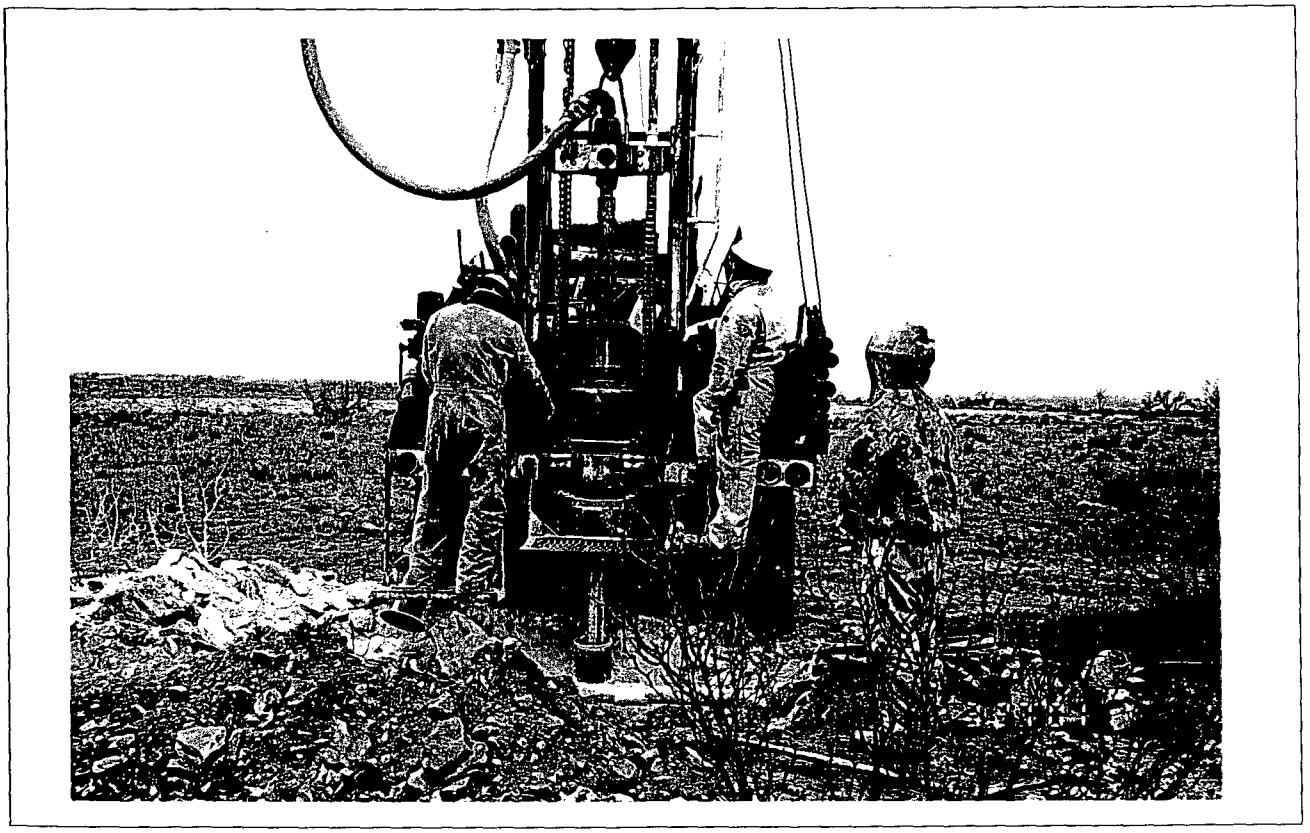
Sample Containers Intact? (Y) N
Temperature Upon Receipt: 3.0°C
Laboratory Comments:

Relinquished by:	Date	Time	Received by:	Date	Time
	3/28/01	0900			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Jeanne McMurray	03-28-01	0900

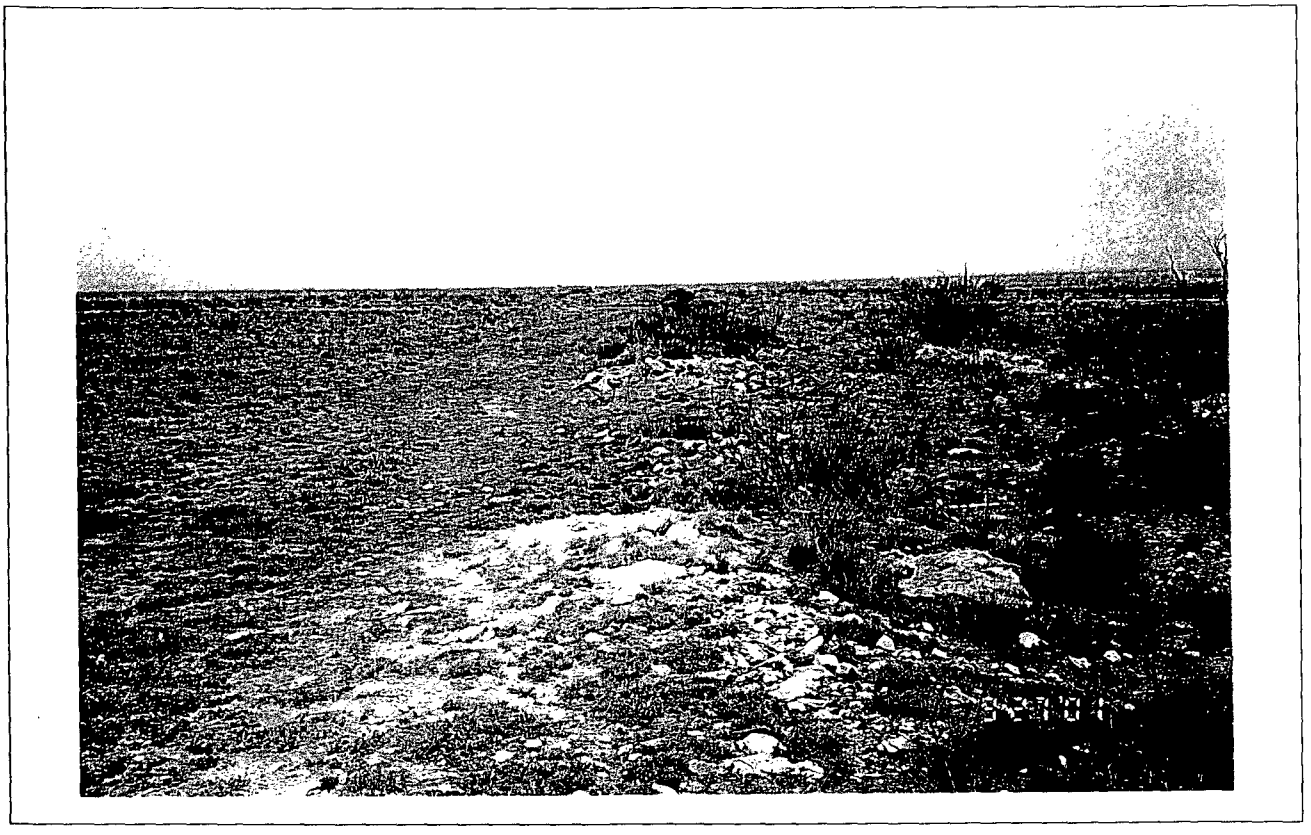
APPENDIX D

Photographs

DYNEGY MIDSTREAM SERVICES, L.P.
MONUMENT PIPELINE ASSESSMENT REPORT
PHOTOGRAPHS

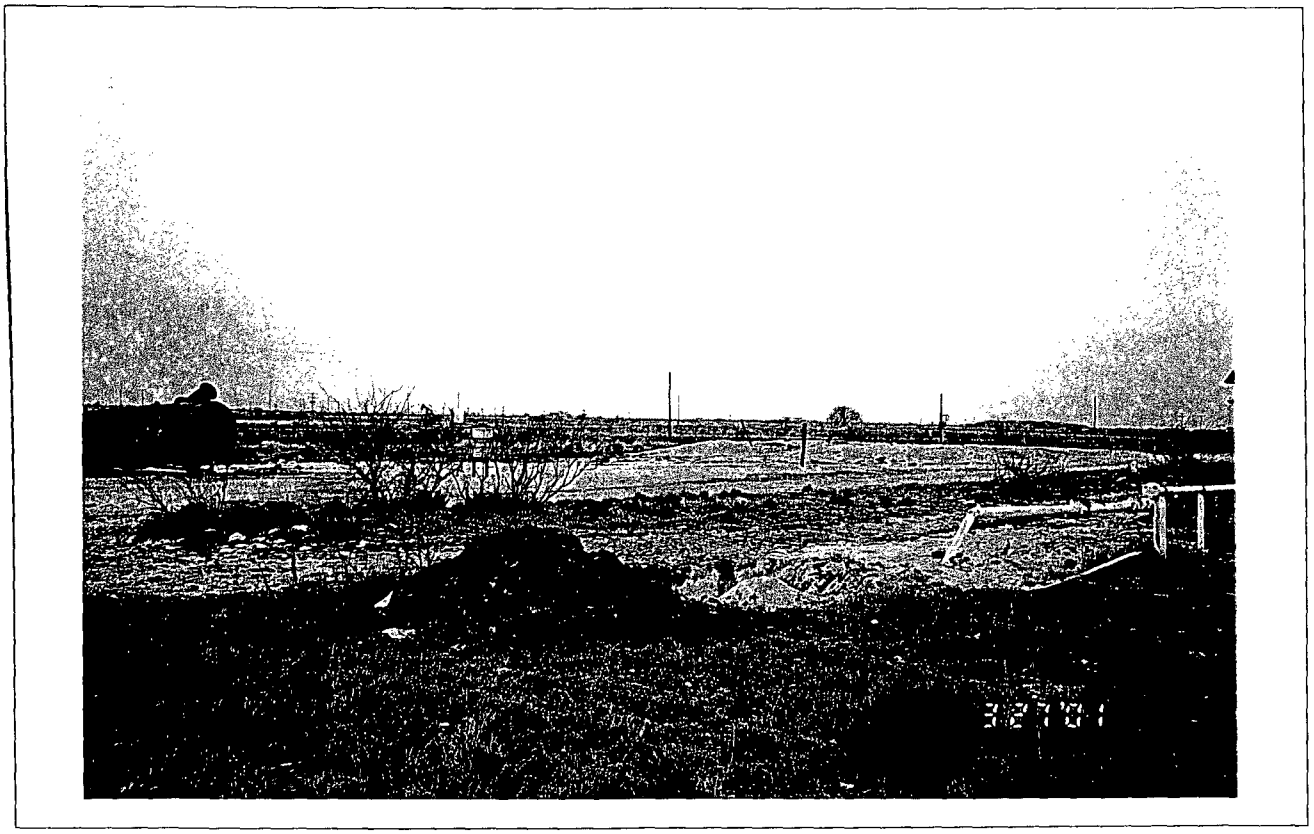


1. Boring BH-1



2. Pipeline Right-of-Way (Looking West from Boring BH-7)

3. Borings BH-9 (Foreground) and BH-8 (Background)



4. Boring BH-9 and Abandoned Tank Battery Location (Looking Southwest)

5. Boring Location BH-9

6. Soil Sample from Boring BH-9 (20 to 21 Feet BGS)