1R - 238

GENERAL CORRESPONDENCE

YEAR(S):

1995 - 1993

Shell Oil Company

Two Shell Plaza
P. O. Box 2099
Houston, Texas 77252-2099

January 6, 1995

REGISTERED MAIL

William Olson
State of New Mexico Oil Conservation Division
Environmental Bureau
2040 S. Pacheco St.
Santa Fe, New Mexico 87504

SUBJECT: HUGH STATION, LEA COUNTY, NEW MEXICO

Dear Mr. Olson,

Enclosed is Shell Pipe Line Corporation's final report on soil remediation at Hugh Station. The affected soils were remediated as proposed in Shell's letters of November 10, 1993 and September 30, 1994. The affected soils were remediated to a level recommended for those with a Total Ranking Score >19 according to the New Mexico Oil Conservation Division's "Guidelines for Remediation of Leaks, Spills, and Releases". I believe that, based upon the success of the remedial activities, the site can be closed and no further action required. If you do not concur with our conclusion, please let me know. If I do not hear from your office within 45 days, I will consider that you agree with our conclusion.

If you have any questions, please call me at 713-241-2961.

Sincerely,

Neal Stidham

cc: Paul Newman
EOTT Energy Corporation
Jerry Sexton-OCD Hobbs

CURA INC.
Environmental Consultants, Engineers & Scientists
2735 Villa Creek Drive • Building C • Suite 250 • Dallas, Texas 75234 • 214/620-7117 • FAX 620-8219

December 20, 1994

Mr. Neal D. Stidham
Environmental & Technical
Shell Oil Company
Two Shell Plaza, Room 1452
777 Walker Street
Houston, Texas 77002

RE: SOIL EXCAVATION AND REMEDIATION OPERATIONS
HUGH STATION
LEA COUNTY, NEW MEXICO

CURA PROJECT NO. 24-94167.4

Mr. Stidham:

CURA, Inc. (CURA) has completed delineation, excavation, and remediation operations at the above-referenced facility. The purpose of this investigation was to excavate the previously-identified hydrocarbon-affected soils, including any affected soils discovered during field activities and remediate the soils in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills, and Releases, dated August 13, 1993.

The site assessments previously provided to the NMOCD for the active Hugh Pump Station indicated hydrocarbon impacted soils in the vicinity of borings B-2 and B-4 (Figure 1, Appendix A). Depth to groundwater below ground surface is unknown but based on published data (Geology and Ground-Water Conditions in Southern Lea County, New Mexico, USGS Ground-Water Report 6, 1961), the depth is estimated to be 55 feet to 60 feet.

SOIL EXCAVATION OPERATIONS

Between November 11, 1994 and November 28, 1994, CURA supervised excavation, soil mixing, confirmatory soil sampling, and backfill operations of the soils previously identified in borings B-2 and B-4. Excavation operations were performed at two areas, area E-1 centered on boring B-4 and area E-2 in the vicinity of boring B-2 (Figure 2, Appendix A).

Excavation E-1 extended to an average depth of 3.0 feet and measured approximately 25.0 feet by 18.0 feet. Hydrocarbon staining was observed north and east of boring B-4 in an area approximately 12.0 feet long by 12.0 feet wide. The visible staining extended to a depth of approximately 2.0 feet below ground surface. During the excavation of E-2, minor hydrocarbon staining was observed in an area approximately 2.0 feet in diameter and extending from ground surface to a depth of approximately 2.5 feet. Excavation E-2 measured approximately 6.0 feet by 11.0 feet and extended to a depth of 5.0 feet. Excavation operations generated approximately 15 cubic yards of loose soil from E-2 and approximately 60 cubic yards from E-1. The soil was staged along the margins of the excavations pending mixing operations. During excavation operations soil samples were obtained from the walls and bottom of the excavations to verify the affected soils had been removed. After removal, the soils were mixed on-site and composite samples of the mixed material was obtained to verify hydrocarbon concentrations were in accordance with NMOCD guidelines. Confirmatory sampling operations were conducted using observed staining, field soil vapor headspace, and soil analysis for TPH to aid in the determination of the vertical and horizontal extent of the affected soils and the hydrocarbon reduction achieved in the mixed soils.

SOIL SAMPLING OPERATIONS

During this investigation, the sampled soils were field-screened with a flame ionization detector (FID) Century 128 OVA to aid in the determination of the lateral and vertical extent of the hydrocarbon-affected materials. Field screening was performed using soil vapor headspace procedures outlined in NMOCD's Guidelines for Remediation of Leaks,

Spills, and Releases. Composite samples obtained from the bottom and walls of the excavations were analyzed for TPH using EPA Method 418.1.

SOIL SAMPLE ANALYTICAL RESULTS

OVA readings measured less than 1 ppm in the soil samples obtained from excavations E-1 and E-2. The composite samples of the excavated soil material from E-1 and E-2 after mixing recorded OVA readings of 7 ppm and less than 1 ppm, respectively. Complete OVA readings are presented in Table 1, Appendix B.

TPH concentrations in the composite soil samples obtained from the bottom and sides of excavation E-1 recorded levels ranging from 13 ppm to 97 ppm. The TPH concentration in the composite soil sample obtained from the excavated materials after mixing measured 870 ppm. TPH concentrations in the samples obtained from the bottom and sides of E-2 recorded levels ranging from 24 ppm to 11 ppm. The TPH concentrations in the excavated material after mixing measured 28 ppm.

A summary of the soil sample analytical results from the excavations is presented in Table 1, Appendix B. The sample key is presented in Table 2. A summary of the soil sample analytical results from the borings B-2 and B-4 is presented in Table 3. Laboratory reports and the chain-of-custody are included in Appendix C.

CONCLUSIONS

- The soil sample analytical results indicate that the extent of hydrocarbon-affected soils previously identified in borings B-2 and B-4 have been defined and the TPH concentrations in the impacted soils reduced to average levels of 28 ppm (B-2) and 870 ppm (B-4).

CURA appreciates the opportunity to provide you with our professional consulting services. If you have any questions or concerns, please do not hesitate to contact us at (915) 570-8408.

Respectfully,
CURA, Inc.

For F. Wesley Root
Environmental Geologist

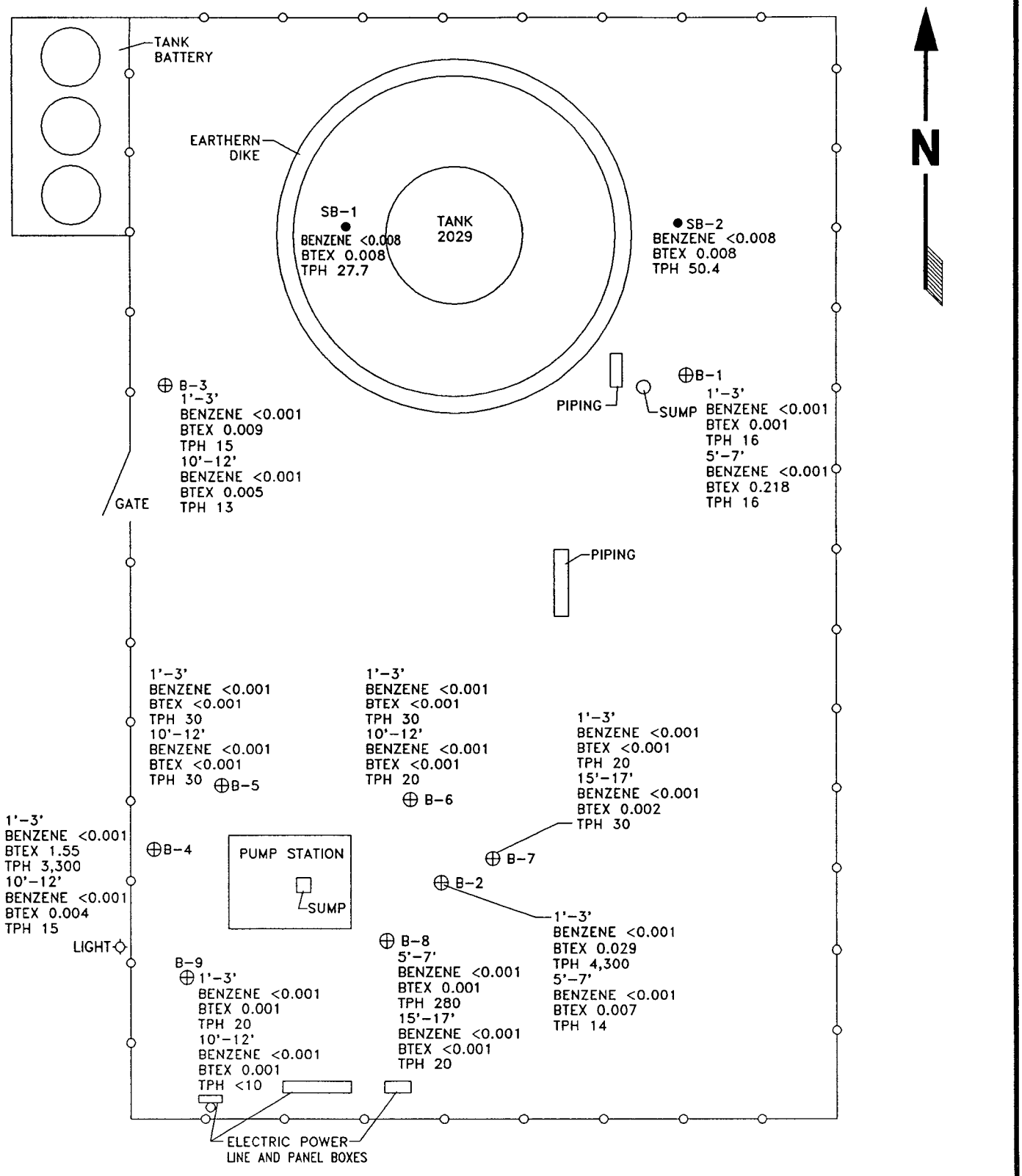
Charles D. Harlan
Project Manager

FWR/chs

Enclosures

APPENDIX A

FIGURES



SOIL HYDROCARBON CONCENTRATION MAP

-BORINGS B-1, B-2, B-3 AND B-4 SAMPLED ON 12/09/92
-BORINGS B-5, B-6, B-7, B-8 AND B-9 SAMPLED 02/04/93

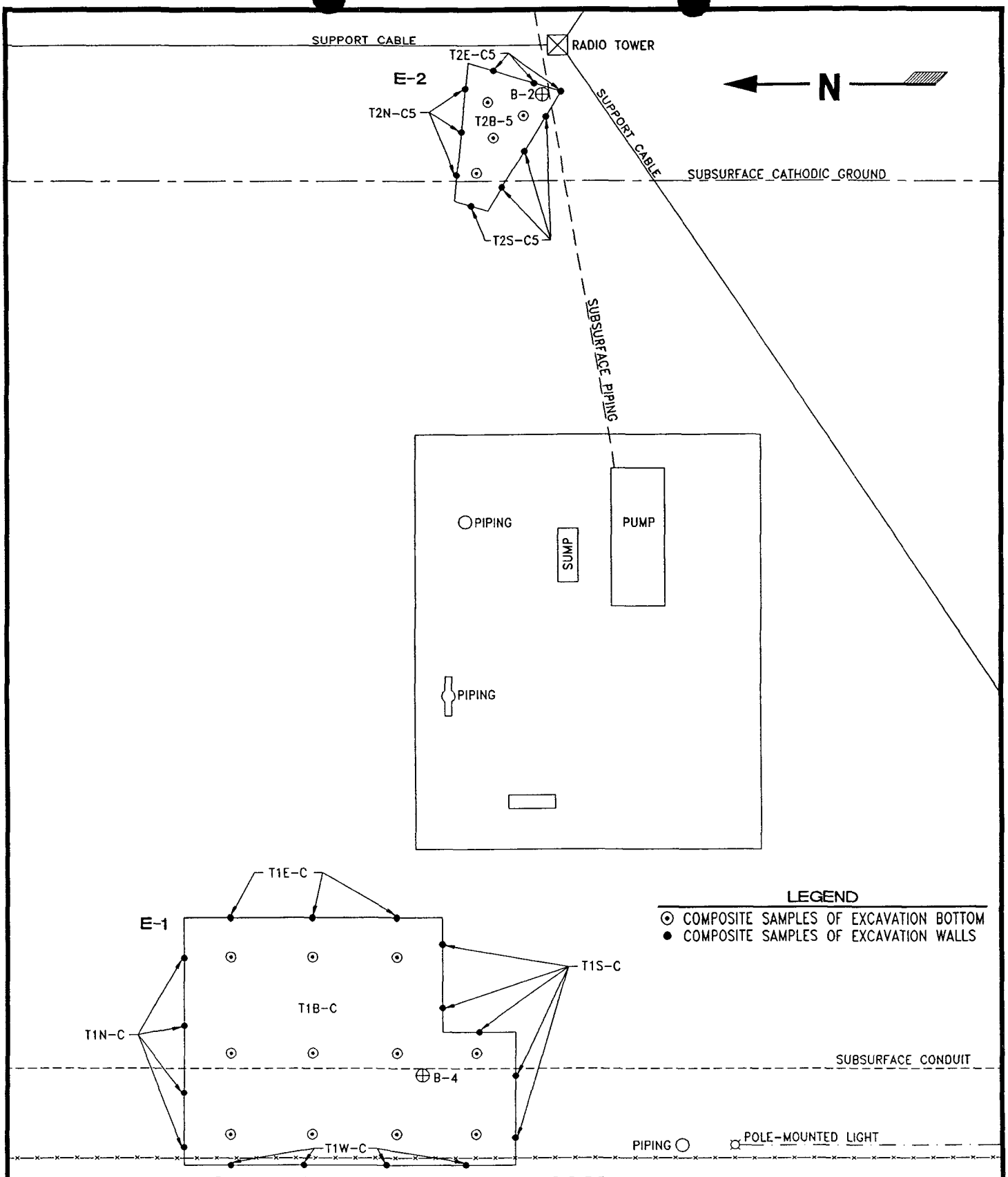
NUMBERS INDICATE: BENZENE, TOTAL BTEX AND THP CONCENTRATIONS IN mg/kg (ppm)

0 30'
APPROXIMATE SCALE

CURA INC.
2735 VILLA CREEK DRIVE - TWO METRO SQUARE
BLDG C - SUITE 250 - DALLAS, TX 75234
620-7117 FAX - 620-8219

HUGH STATION
SHELL PIPE LINE CORPORATION
LEA COUNTY, NEW MEXICO

DATE:	SCALE:
DEC 1994	SEE ABOVE
PROJECT NO.	FIGURE NO.
15-94167	1



SOIL SAMPLE LOCATION MAP

-E-1 SOIL SAMPLES OBTAINED ON 11/28/94
-E-2 SOIL SAMPLES OF OBTAINED 11/11/94

0 10'
APPROXIMATE SCALE

CURA INC.
2735 VILLA CREEK DRIVE - TWO METRO SQUARE
BLDG. C - SUITE 250 - DALLAS, TX 75234
620-7117 FAX - 620-8219

HUGH STATION
SHELL PIPE LINE CORPORATION
LEA COUNTY, NEW MEXICO

DATE:	SCALE:
DEC 1994	SEE ABOVE
PROJECT NO.	FIGURE NO.
15-94167	2

APPENDIX B

TABLES

TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS
EXCAVATION AT HUGH STATION

Sample ID	Sample Date	OVA (ppm)	TPH (ppm)
Excavation E-1			
T1B-C	11/28/94	<1	22
T1W-C	11/28/94	<1	45
T1E-C	11/28/94	<1	97
T1S-C	11/28/94	<1	13
T1N-C	11/28/94	<1	22
T1-SRD1	11/28/94	7	870
Excavation E-2			
T2E-C5	11/11/94	<1	24
T2N-C5	11/11/94	<1	28
T2S-C5	11/11/94	<1	110
T2-B5	11/11/94	<1	37
T2-C	11/11/94	<1	28

TPH results in mg/kg (parts per million; ppm) with a method detection limit of 10 ppm.
Analyses were conducted using EPA Method 418.1 (TPH) by SPL - Houston Laboratory.

TABLE 2
SAMPLE KEY
EXCAVATION SAMPLES FROM HUGH STATION

SAMPLE ID	DESCRIPTION
Excavation E-1 (soils identified in boring B-4)	
T1N-C	Composite sample of the north wall
T1S-C	Composite sample of the south wall
T1E-C	Composite sample of the east wall
T1W-C	Composite sample of the west wall
T1B-C	Composite sample of the bottom of the excavation
T1-SRD1	Composite sample of the excavated soil after shredding
Excavation E-2 (soils identified in boring B-2)	
T2E-C5	Composite sample of the east wall
T2W-C5	Composite sample of the west wall
T2S-C5	Composite sample of the south wall
T2-B5	Composite sample of the bottom of the excavation
T2-C	Composite sample of the excavated soil after mixing

TABLE 3
SOIL SAMPLE ANALYTICAL RESULTS
BORINGS AT HUGH STATION
Soil Samples Obtained on December 9, 1992

Boring	Sample Interval (feet)	OVA Reading	Benzene	Toluene	Ethyl-benzene	Xylenes	Total BTEX	TPH
B-2	1.0 - 3.0	6	<0.001	<0.001	0.019	<0.001	0.019	4,300
B-4	1.0 - 3.0	31	<0.001	0.250	0.450	0.850	1.550	3,300

BTEX and TPH results in mg/kg (parts per million; ppm).
Information obtained from CURA, Inc.'s Preliminary Site Assessment (report dated January 15, 1993).

APPENDIX C

SOIL ANALYSIS

AND

CHAIN-OF-CUSTODY

HOUSTON LABORATORY
8880 INTERCHANGE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

SPL, INC.

REPORT APPROVAL SHEET

WORK ORDER NUMBER: 94-12-050

Approved for release by:

Date: 12/13/94

Brent Barron, Project Manager

Date: 12/13/94

S. Sample, Laboratory Director

Southern Petroleum Laboratories
****SUMMARY REPORT*****

12/13/94

Company: Shell Pipe Line Corporation
Site: Lea County, New Mexico
Project No: 15-94167
Project: Hugh Station

ANALYTICAL DATA
NOTE: ND - Not Detected

SPL ID MATRIX	CLIENT ID DATE SAMPLED	BENZENE	TOLUENE	ETHYLBENZ.	XYLENE	TPH-IR	TPH-GC	LEAD	MTBE
9412050-01 SOIL	TIN-C 11/28/94 16:15:00					22 10mg/Kg			
9412050-02 SOIL	TIS-C 11/28/94 16:25:00					13 10mg/Kg			
9412050-03 SOIL	TIE-C 11/28/94 16:35:00					97 10mg/Kg			
9412050-04 SOIL	TIW-C 11/28/94 16:45:00					45 10mg/Kg			
9412050-05 SOIL	TIB-C 11/28/94 16:50:00					22 10mg/Kg			
9412050-06 SOIL	TI-SRD1 11/28/94 17:00:00					870 10mg/Kg			

TPH-IR - METHOD Mod. 418.1*

SPL, Inc., - Project Manager

Certificate of Analysis No. H9-9412050-01

Shell Pipe Line Corporation
P.O. Box 2648
Houston, TX 77252
ATTN: Neil Stidham

DATE: 12/13/94

PROJECT: Hugh Station
SITE: Lea County, New Mexico
SAMPLED BY: Cura, Inc.
SAMPLE ID: TIN-C

PROJECT NO: 15-94167
MATRIX: SOIL
DATE SAMPLED: 11/28/94 16:15:00
DATE RECEIVED: 12/01/94

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum Extractables METHOD Mod. 418.1* Analyzed by: RN Date: 12/05/94	22	10	mg/Kg

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

SPL, Inc., - Project Manager

Certificate of Analysis No. H9-9412050-02

Shell Pipe Line Corporation
P.O. Box 2648
Houston, TX 77252
ATTN: Neil Stidham

DATE: 12/13/94

PROJECT: Hugh Station
SITE: Lea County, New Mexico
SAMPLED BY: Cura, Inc.
SAMPLE ID: TIS-C

PROJECT NO: 15-94167
MATRIX: SOIL
DATE SAMPLED: 11/28/94 16:25:00
DATE RECEIVED: 12/01/94

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum Extractables METHOD Mod. 418.1* Analyzed by: RN Date: 12/05/94	13	10	mg/Kg

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

SPL, Inc., - Project Manager

Certificate of Analysis No. H9-9412050-03

Shell Pipe Line Corporation
P.O. Box 2648
Houston, TX 77252
ATTN: Neil Stidham

DATE: 12/13/94

PROJECT: Hugh Station
SITE: Lea County, New Mexico
SAMPLED BY: Cura, Inc.
SAMPLE ID: TIE-C

PROJECT NO: 15-94167
MATRIX: SOIL
DATE SAMPLED: 11/28/94 16:35:00
DATE RECEIVED: 12/01/94

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum Extractables METHOD Mod. 418.1* Analyzed by: RN Date: 12/05/94	97	10	mg/Kg

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

SPL, Inc., - Project Manager

Certificate of Analysis No. H9-9412050-04

Shell Pipe Line Corporation
P.O. Box 2648
Houston, TX 77252
ATTN: Neil Stidham

DATE: 12/13/94

PROJECT: Hugh Station
SITE: Lea County, New Mexico
SAMPLED BY: Cura, Inc.
SAMPLE ID: TIW-C

PROJECT NO: 15-94167
MATRIX: SOIL
DATE SAMPLED: 11/28/94 16:45:00
DATE RECEIVED: 12/01/94

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum Extractables METHOD Mod. 418.1* Analyzed by: RN Date: 12/05/94	45	10	mg/Kg

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

SPL, Inc., - Project Manager

Certificate of Analysis No. H9-9412050-05

Shell Pipe Line Corporation
P.O. Box 2648
Houston, TX 77252
ATTN: Neil Stidham

DATE: 12/13/94

PROJECT: Hugh Station
SITE: Lea County, New Mexico
SAMPLED BY: Cura, Inc.
SAMPLE ID: TIB-C

PROJECT NO: 15-94167
MATRIX: SOIL
DATE SAMPLED: 11/28/94 16:50:00
DATE RECEIVED: 12/01/94

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum Extractables METHOD Mod. 418.1* Analyzed by: RN Date: 12/05/94	22	10	mg/Kg

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

SPL, Inc., - Project Manager

Certificate of Analysis No. H9-9412050-06

Shell Pipe Line Corporation
P.O. Box 2648
Houston, TX 77252
ATTN: Neil Stidham

DATE: 12/13/94

PROJECT: Hugh Station
SITE: Lea County, New Mexico
SAMPLED BY: Cura, Inc.
SAMPLE ID: TI-SRD1

PROJECT NO: 15-94167
MATRIX: SOIL
DATE SAMPLED: 11/28/94 17:00:00
DATE RECEIVED: 12/01/94

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Petroleum Extractables METHOD Mod. 418.1* Analyzed by: RN Date: 12/05/94	870	10	mg/Kg

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

SPL, Inc., - Project Manager

QUALITY CONTROL DOCUMENTATION

** SPL QUALITY CONTROL REPORT **
TOTAL PETROLEUM HYDROCARBONS [TPH]

SPL sample Id: 9412136-1A
Matrix: SOIL

Reported on: 12/13/94
Analyzed on: 12/05/94

This sample was randomly selected for use in the SPL quality control program. One in ten samples is fortified with a known concentration of the substance being analyzed and one in ten samples is analyzed in duplicate. The result are as follows:

-- **SPIKE ANALYSIS** --

Sample Id	Blank Value	Spike Added mg/L	Original Sample Concentration mg/Kg	MS Concentration mg/Kg	MS % Rec
9412136-1A	ND	201	12	199.4	93

-- **SPIKE DUPLICATE ANALYSIS** --

Sample Id	Spike Added mg/L	MSD Concentration mg/Kg	MSD % Rec	% RPD
9412136-1A	201	202.8	95	2

SPL, Incorporated

Idelis Williams, QC Officer

CHAIN OF CUSTODY

AND

SAMPLE RECEIPT CHECKLIST

4412050

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING

CHAIN OF CUSTODY RECORD NO. H 11969

Date: 11-30-94
Page 1 of 1

Shell Pipe Line Corp
SITE ADDRESS: Hugh Station
Lea County, New Mexico
WIC #: Project # 15-94167
CONSULTANT NAME & ADDRESS: CURA, INC,
731 W. Wadley, Bldg, Ste 200, Midland TX 79705
CONSULTANT CONTACT: F. Wesley Root
PHONE: 915-570-8408 FAX: 915-570-8409
SAMPLED BY: F. Wesley Root

CHECK ONE BOX ONLY CT/DT

- QUARTERLY MONITORING ☐ 5461
- SITE INVESTIGATION ☒ 5441
- SOIL FOR DISPOSAL ☐ 5442
- WATER FOR DISPOSAL ☐ 5443
- AIR SAMPLER - SYS O+M ☐ 5452
- WATER SAMPLE - SYS O+M ☐ 5453
- OTHER ☐

SAMPLE I.D.	DATE	TIME	COMP.	GRAB	MATRIX: H2O	SOIL	AIR	SLUDGE	OTHER	METHOD PRESERVED: HCl	HNO3	H2SO4	NONE	OTHER	NO. OF CONTAINERS	CONTAINER SIZE	BTEX 602 ☐ 8020 ☐	BTEX/GAS HYDROCARBONS PID/FID ☐	VOL 624/PPL ☐	PNA/PAH 8310 ☐	SEMI - VOL 625/PPL ☐	TPH/IR 418.1 ☒	TPH/GC 8015 Mod. GAS ☐	TCLP METALS ☐	EP TOX METALS ☐	REACTIVITY ☐	OTHER	REMARKS
TIN-C	11-28-94	16:15	X			X								ICE	1	4oz						V						
TIS-C	11-28-94	16:25	X			X								ICE	1	4oz						V						
TIE-C	11-28-94	16:35	X			X								ICE	1	4oz						V						
TIW-C	11-28-94	16:45	X			X								ICE	1	4oz						V						
TIB-C	11-28-94	16:50	X			X								ICE	1	4oz						V						
TI-SRO1	11-28-94	17:00	X			X								ICE	1	4oz						V						
TI-SRO2	11-28-94	17:10	X			X								ICE	1	4oz												Hold Sample

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
F. Wesley Root	11/30/94	6:00	[signature]	11/30/94	8:25
[signature]	11/30/94	11:00	Mart	4'6	
			[signature]	12/1/94	10:00

BILL NO.:
LABORATORY:
SHELL CONTACT: Neal Stidham PHONE: FAX:

TURN AROUND TIME (CHECK ONE)
7 DAYS ☐ (NORMAL) 14 DAYS ☐ Normal per Shell
48 HOURS ☐ OTHER ☐ Contract

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN OF CUSTODY WITH INVOICE AND RESULTS

DISTRIBUTION: PINK Sampling Coordinator - WHITE & YELLOW Accompanies Shipment - WHITE Returned with Report

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL PACKAGE TRACKING NUMBER 3140261110

3140261110

RECIPIENT'S COPY

1 Date 11/30/94

From (Your Name) Please Print: E. WESLEY KOOT — Your Phone Number (Very Important): (915) 570-5405

Company: ALEX, INC. — Department/Floor No.:

Street Address: 731 W WADLEY L-200

City: MIDLAND — State: TX — ZIP Required: 79705

2 To (Recipient's Name) Please Print: SAMPLE RECIPIENT — Recipient's Phone Number (Very Important): (713) 660-0000

Company: SPL INCORPORATED — Department/Floor No.:

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 9990 SATTELCHASE

City: HOUSTON — State: TX — ZIP Required: 77054

YOUR INTERNAL BILLING REFERENCE INFORMATION (First 24 characters will appear on invoice.): IS-94167

H IF HOLD FOR PICK-UP, Print FEDEX Address Here

Street Address: 4702 TRAVIS

City: HOUSTON — State: TX — ZIP Required: 77002

3 PAYMENT 1 ☐ Bill Sender 2 ☐ Bill Recipient's FedEx Acct. No. 3 ☒ Bill 3rd Party FedEx Acct. No. 4 ☐ Bill Credit Card 5 ☐ Cash/Check

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning †)	Standard Overnight (Delivery by next business afternoon †)
11 ☒ YOUR PACKAGING	51 ☐ YOUR PACKAGING
16 ☐ FEDEX LETTER *	56 ☐ FEDEX LETTER *
12 ☐ FEDEX PAK *	52 ☐ FEDEX PAK *
13 ☐ FEDEX BOX	53 ☐ FEDEX BOX
14 ☐ FEDEX TUBE	54 ☐ FEDEX TUBE
Economy Two-Day (Delivery by second business day †)	**Government Overnight** (Restricted for authorized users only)
30 ☐ ECONOMY	46 ☐ GOVT LETTER
	41 ☐ GOVT PACKAGE

Freight Service (for Extra Large or any package over 150 lbs.)

70 ☐ OVERNIGHT FREIGHT ** (Confirmed reservation required)

80 ☐ TWO-DAY FREIGHT **

† Delivery commitment may be later in some areas.

*Declared Value Limit $100.

**Call for delivery schedule.

5 DELIVERY AND SPECIAL HANDLING (Check services required)

1 ☒ HOLD FOR PICK-UP (Fill in Box H) ☐ DELIVER WEEKDAY

3 DELIVER SATURDAY (Extra charge) (Not available to all locations) ☐

4 ☐ DANGEROUS GOODS (Extra charge)

5 ☐

6 ☐ DRY ICE _____ Lbs

7 ☐ OTHER SPECIAL SERVICE

8 ☐

9 ☐ SATURDAY PICK-UP (Extra charge)

10 ☐

11 ☐ DESCRIPTION

12 ☐ HOLIDAY DELIVERY (If offered) (Extra charge)

6 PACKAGES	WEIGHT in Pounds Only
1	
Total 1	Total 18

DIM SHIPMENT (Chargeable Weight)

☐ _____ lbs.

___ x ___ x ___ = _____

Received At

1 ☐ Regular Stop 3 ☐ Drop Box

2 ☐ On-Call Stop 4 ☐ B.S.C. 5 ☐ Station

7 Release Signature: [signature]

FedEx Emp. No. Date/Time

Emp. No. Date

☐ Cash Received

☐ Return Shipment

☐ Third Party ☐ Chg. To Del. ☐ Chg. To Hold

Street Address

City State Zip

Received By: X

Date/Time Received FedEx Employee Number

Federal Express Use

Base Charges

Declared Value Charge

Other 1

Other 2

Total Charges

REVISION DATE 4/91
PART #137205 GBFE
FORMAT #082

082

SPL HOUSTON ENVIRONMENTAL LABORATORY

SAMPLE LOGIN CHECKLIST

DATE: 12/1/94 TIME: 10:00 CLIENT NO. _____
LOT NO. _____ CONTRACT NO. _____

CLIENT SAMPLE NOS. _____

SPL SAMPLE NOS.: 9412080

		YES	NO
1.	Is a Chain-of-Custody form present?	/	
2.	Is the COC properly completed?	/	
	If no, describe what is incomplete:		
	If no, has the client been contacted about it?		
	(Attach subsequent documentation from client about the situation)		
3.	Is airbill/packing list/bill of lading with shipment?	/	
	If yes, ID#: FedEX: 3140261110		
4.	Is a USEPA Traffic Report present?		/
5.	Is a USEPA SAS Packing List present?		/
6.	Are custody seals present on the package?	/	
	If yes, were they intact upon receipt?	/	
7.	Are all samples tagged or labeled?	/	
	Do the sample tags/labels match the COC?	/	
	If no, has the client been contacted about it?		
	(Attach subsequent documentation from client about the situation)		
8.	Do all shipping documents agree?	/	
	If no, describe what is in nonconformity:		

9. Condition/temperature of shipping container: Intact 4°C
10. Condition/temperature of sample bottles: Good
11. Sample Disposal?: SPL disposal ___ Return to client ___

NOTES (reference item number if applicable): _____

ATTEST: M Taylor DATE: 12/1/94
DELIVERED FOR RESOLUTION: REC'D _____ DATE: _____
RESOLVED: _____ DATE: _____

LAFAYETTE AREA LAB
500 AMBASSADOR CAFFERY PKWY
SCOTT, LOUISIANA
ZIP 70583-8544
PHONE: (318) 237-4775

Certificate of Analysis No. 9411622-10

SHELL OIL COMPANY
P.O. BOX 2648
HOUSTON, TX 77252
ATTN: NEAL STIDHAM

DATE: 11/16/94

PROJECT: SHELL P/L HUGH STATION
SITE: LEA COUNTY, NEW MEXICO
SAMPLED BY: CURA, INC.
SAMPLE ID: T2C

PROJECT NO: 15-94167
MATRIX: SOIL
DATE SAMPLED: 11/11/94 12:00:00
DATE RECEIVED: 11/15/94

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Total Petroleum Hydrocarbons Method Mod. 418.1 * Analyzed by: DB Date: 11/15/94 18:00:00	28	10 P	mg/Kg

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: This analysis was performed in accordance with EPA guidelines for analysis and quality control.
Results reported on a Wet Weight Basis unless otherwise noted.

C. A. Guardia, Laboratory Manager

LAFAYETTE AREA LAB
500 AMBASSADOR CAFFERY PKWY.
SCOTT, LOUISIANA
ZIP 70583-8544
PHONE: (318) 237-4775

Certificate of Analysis No. 9411622-09

SHELL OIL COMPANY
P.O. BOX 2648
HOUSTON, TX 77252
ATTN: NEAL STIDHAM

DATE: 11/16/94

PROJECT: SHELL P/L HUGH STATION
SITE: LEA COUNTY, NEW MEXICO
SAMPLED BY: CURA, INC.
SAMPLE ID: T2-B5

PROJECT NO: 15-94167
MATRIX: SOIL
DATE SAMPLED: 11/11/94 11:30:00
DATE RECEIVED: 11/15/94

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Total Petroleum Hydrocarbons Method Mod. 418.1 * Analyzed by: DB Date: 11/15/94 18:00:00	37	10 P	mg/Kg

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: This analysis was performed in accordance with EPA guidelines for analysis and quality control.
Results reported on a Wet Weight Basis unless otherwise noted.

C. A. Guardia, Laboratory Manager

LAFAYETTE AREA LAB
500 AMBASSADOR CAFFERY PKWY
SCOTT, LOUISIANA
ZIP 70583-8544
PHONE: (318) 237-4775

Certificate of Analysis No. 9411622-08

SHELL OIL COMPANY
P.O. BOX 2648
HOUSTON, TX 77252
ATTN: NEAL STIDHAM

DATE: 11/16/94

PROJECT: SHELL P/L HUGH STATION
SITE: LEA COUNTY, NEW MEXICO
SAMPLED BY: CURA, INC.
SAMPLE ID: T2S-C5

PROJECT NO: 15-94167
MATRIX: SOIL
DATE SAMPLED: 11/11/94 11:15:00
DATE RECEIVED: 11/15/94

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Total Petroleum Hydrocarbons Method Mod. 418.1 * Analyzed by: DB Date: 11/15/94 18:00:00	110	10 P	mg/Kg

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: This analysis was performed in accordance with EPA guidelines for analysis and quality control.
Results reported on a Wet Weight Basis unless otherwise noted.

C. A. Guardia, Laboratory Manager

LAFAYETTE AREA LAB
500 AMBASSADOR CAFFERY PKWY.
SCOTT, LOUISIANA
ZIP 70583-8544
PHONE: (318) 237-4775

Certificate of Analysis No. 9411622-07

SHELL OIL COMPANY
P.O. BOX 2648
HOUSTON, TX 77252
ATTN: NEAL STIDHAM

DATE: 11/16/94

PROJECT: SHELL P/L HUGH STATION
SITE: LEA COUNTY, NEW MEXICO
SAMPLED BY: CURA, INC.
SAMPLE ID: T2N-C5

PROJECT NO: 15-94167
MATRIX: SOIL
DATE SAMPLED: 11/11/94 11:10:00
DATE RECEIVED: 11/15/94

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Total Petroleum Hydrocarbons Method Mod. 418.1 * Analyzed by: DB Date: 11/15/94 18:00:00	28	10 P	mg/Kg

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: This analysis was performed in accordance with EPA guidelines for analysis and quality control.
Results reported on a Wet Weight Basis unless otherwise noted.

C. A. Guardia, Laboratory Manager

LAFAYETTE AREA LAB
500 AMBASSADOR CAFFERY PKWY.
SCOTT, LOUISIANA
ZIP 70583-8544
PHONE: (318) 237-4775

Certificate of Analysis No. 9411622-06

SHELL OIL COMPANY
P.O. BOX 2648
HOUSTON, TX 77252
ATTN: NEAL STIDHAM

DATE: 11/16/94

PROJECT: SHELL P/L HUGH STATION
SITE: LEA COUNTY, NEW MEXICO
SAMPLED BY: CURA, INC.
SAMPLE ID: T2E-C5

PROJECT NO: 15-94167
MATRIX: SOIL
DATE SAMPLED: 11/11/94 11:05:00
DATE RECEIVED: 11/15/94

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Total Petroleum Hydrocarbons Method Mod. 418.1 * Analyzed by: DB Date: 11/15/94 18:00:00	24	10 P	mg/Kg

(P) - Practical Quantitation Limit

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: This analysis was performed in accordance with EPA guidelines for analysis and quality control.
Results reported on a Wet Weight Basis unless otherwise noted.

C. A. Guardia, Laboratory Manager

9411622

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING

CHAIN OF CUSTODY RE

RUSH

Date: 11-14-94
Page 1 of 1

Shell Pipe Line Corp
SITE ADDRESS: Hugh Station
Lea County, New Mexico
WIC #: Proj # 15-94167
CONSULTANT NAME & ADDRESS: CURA Inc,
731 W. Wadley, Bldg, Ste 200, Midland, TX 79705
CONSULTANT CONTACT: F. Wesley Root
PHONE: 915-570-8408 FAX: 570-8409
SAMPLED BY: F. Wesley Root

CHECK ONE BOX ONLY CT/DT

- QUARTERLY MONITORING ☐ 5461
- SITE INVESTIGATION ☒ 5441
- SOIL FOR DISPOSAL ☐ 5442
- WATER FOR DISPOSAL ☐ 5443
- AIR SAMPLER - SYS O+M ☐ 5452
- WATER SAMPLE - SYS O+M ☐ 5453
- OTHER ☐

SAMPLE I.D.	DATE	TIME	COMP.	GRAB	MATRIX: H2O	SOIL	AIR	SLUDGE	OTHER	METHOD PRESERVED: HCl	HNO3	H2SO4	NONE	OTHER	NO. OF CONTAINERS	CONTAINER SIZE	(CHECK APPROPRIATE BOX) BTEX 602 ☐ 8020 ☐ WITH MTBE ☐	BTEX/GAS HYDROCARBONS PID/FID ☐ WITH MTBE	VOL 624/PPL ☐ 8240/TAL ☐ NBS (+15) ☐	PNA/PAH 8310 ☐ 8100 ☐ 610 ☐	SEMI - VOL 625/PPL ☐ 8270/TAL ☐ NBS (+25) ☐	TPH/IR 418.1 ☐ SM503 ☐ ☐ ☐	TPH/GC 8015 Mod. GAS ☐ 8015 Mod DIESEL ☐	TCLP METALS ☐ VOL ☐ SEMI-VOL ☐ PEST ☐ HERB ☐	EP TOX METALS ☐ PESTICIDES ☐ HERBICIDES ☐	REACTIVITY ☐ CORROSIVITY ☐ IGNITABILITY ☐	OTHER	REMARKS
✓ TIN-1	11-11-94	10:45	X			X								ICE	1	4oz						V						Rush 24hr
✓ TIS-1	11-11-94	10:50	X			X								ICE	1	4oz						V						Rush 24hr
✓ TIW-1	11-11-94	10:55	X			X								ICE	1	4oz						V						Rush 24hr
✓ TIE-1	11-11-94	14:30	X			X								ICE	1	4oz						V						Rush 24hr
✓ TIB-C4	11-11-94	14:45	X			X								ICE	1	4oz						V						Rush 24hr
✓ T2E-C5	11-11-94	11:05	X			X								ICE	1	4oz						V						Rush 24hr
✓ T2N-C5	11-11-94	11:10	X			X								ICE	1	4oz						V						Rush 24hr
✓ T2S-C5	11-11-94	11:15	X			X								ICE	1	4oz						V						Rush 24hr
✓ T2-B5	11-11-94	11:30	X			X								ICE	1	4oz						V						Rush 24hr
✓ T2C	11-11-94	12:00	X			X								ICE	1	4oz						V						Rush 24hr

PENS 11/15

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
F. Wesley Root	11-14-94	6:30			
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
			Mark M Kruger	11-15-94	0930

BILL NO.: PER SPLC CONTRACT
LABORATORY:
SHELL CONTACT: Neal Stidham PHONE: 713-241-2961 FAX: 241-1129

TURN AROUND TIME (CHECK ONE)
7 DAYS ☐ (NORMAL) 14 DAYS ☐
48 HOURS ☐ OTHER ☒ 24 hr Turn

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN OF CUSTODY WITH INVOICE AND RESULTS

DISTRIBUTION: PINK Sampling Coordinator - WHITE & YELLOW Accompanies Shipment - WHITE Returned with Report

LAFAYETTE AREA LAB
500 AMBASSADOR CAFFERY PKWY.
SCOTT, LOUISIANA
ZIP 70583-8544
PHONE: (318) 237-4775

** SPL QUALITY CONTROL REPORT **

Matrix: Soil

Reported on: 11/16/94
Analyzed on: 11/15/94
Analyst: DB

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Total Petroleum Hydrocarbons
Method Mod. 418.1 *

SPL Sample ID Number	Blank Value mg/Kg	Amt Added mg/Kg	Matrix Spike Recovery %	Matrix Spike Duplicate Recovery %	Relative Percent Difference %
9411622-10A	ND	300	92.3	94.7	2.6

IRS1941115180000-9411663

Samples in batch:

9411620 9411621 9411622 9411569

Comments:

SPL, Incorporated

Karen Grizzaffi

Karen Grizzaffi, QC Officer

LAFAYETTE LAB
P.O. BOX 31780
LAFAYETTE, LA
ZIP 70593-1780
PHONE: (318) 984 23

SPL CHEST # Hou ENVIRONMENTAL LABORATORY DATE 11-15-94

CLIENT CHEST: YES (NO) SAMPLE LOGIN CHECKLIST

	YES	NO
1) IS A CHAIN-OF CUSTODY FORM PRESENT:	✓	
2) IS THE COC PROPERLY COMPLETED:	✓	
IF NO, DESCRIBE WHAT IS INCOMPLETE:		
3) HAS CLIENT BEEN CONTACTED ABOUT INCOMPLETE COC:		
4) IS AIRBILL/PACKING LIST/BILL OF LADING ATTACHED TO SHIPMENT:	✓	
IF YES, ID# 115903593 6 Fed Ex		
5) ARE CUSTODY SEALS PRESENT ON THE PACKAGE:		—
IF YES, ARE THEY INTACT UPON RECEIPT:		✓
6) ARE ALL SAMPLES TAGGED OR LABELED:	✓	
DO THE LABELS MATCH THE COC:	✓	
IF NO, HAS CLIENT BEEN CONTACTED ABOUT IT:		
(PLACE SUBSEQUENT DOCUMENTATION FROM CLIENT IN REMARKS)		
7) DO ALL SHIPPING DOCUMENTS AGREE:	✓	
IF NO, DESCRIBE WHAT IS IN NONCONFORMITY:		

8) CONDITION/TEMPERATURE OF SHIPPING CONTAINER:
Ok/2C

9) CONDITION OF SAMPLE CONTAINERS:
ok

RUSH

10) SAMPLE DISPOSAL: SPL ✓ RETURN TO CLIENT

REMARKS/CONTACT/PHONE/DATE:

BB-1
WS

CO.: Shell REPTS TO: INV.TO:

PROJ #: 1594167 ATTN: ATTN:

PROJ LOC.: NM ADDR: ADDR:

SPL REP.: Mmm CTY/ST CTY/ST

APPENDIX D

QUALITY ASSURANCE/QUALITY CONTROL

SAFETY PLAN, AND LIMITATIONS

QUALITY ASSURANCE/QUALITY CONTROL

A strict Quality Assurance Plan was incorporated throughout all phases of the on-site operations and sampling procedures. Soil or solid material samples were collected using new disposable or properly decontaminated reusable stainless steel equipment. Water or liquid samples were collected with new disposable bailers or decontaminated pump equipment. All non-reusable equipment was disposed of and reusable equipment was decontaminated between sampling stations to eliminate the potential of cross-contamination. The water samples were transferred from the bailers into airtight septum-sealed 40-ml glass VOA vials, one-liter amber glass jars with Teflon-lined lids, or other sample containers appropriate for the required analyses.

The samples were sealed with QA/QC seals, preserved with acid (if required), and maintained at 4°C in accordance with Environmental Protection Agency (EPA) requirements (EPA 600/4-82-029) for shipment to the laboratory. A chain-of-custody (COC) which documents sample collection times and delivery times to the laboratory was completed for each set of samples. The COC is included with the analytical results in the Appendix.

CURA utilizes laboratories that maintain strict quality controls, i.e. equipment calibration and standardization, appropriate analytical methods, preparation of quality control samples, and complete chains-of-custody. Analyses were performed on all samples using the EPA-, state-, or local agency-directed methods. The maximum recommended holding times were not exceeded unless noted in the text.

SAFETY PLAN

The sampling operations were performed at level D personal protection. CURA personnel involved in on-site activities have completed the Occupational Safety and health for Hazardous Waste Field Operation training course (OSHA 29 CFR 1910.120). Applicable safety equipment was on site to CURA personnel.

LIMITATIONS

It should be noted that all subsurface investigations are inherently limited in the sense that conclusions are drawn and recommendations are developed from samples which depict subsurface conditions at representative locations over relatively short periods of time. Subsurface conditions elsewhere may differ from those at the sampling locations. In addition, subsurface conditions at sampling locations may vary over longer periods of time than can be observed in a study of this type. The passage of time, manifestation of latent conditions, or occurrence of future events may require further site exploration, data collection and analysis, and reevaluation of the findings, observations, conclusions, and recommendation expressed in this report.

Shell Oil Company

Two Shell Plaza
P. O. Box 2099
Houston, Texas 77252-2099

November 22, 1994

William Olson
State of New Mexico Oil Conservation Division
Environmental Bureau
2040 S. Pacheco St.
Santa Fe, New Mexico 87504

SUBJECT: HUGH STATION, DELAWARE STATION, AND ANDERSON RANCH STATION, LEA COUNTY NEW MEXICO, SOIL REMEDIATION

Dear Mr. Olson,

Shell Oil Company plans to conduct the soil excavation and remediation at the above locations according to the following schedule:

Hugh Station- start in the afternoon on Monday November 28,

Delaware Station- start in the morning of Wednesday November 30,

Anderson Ranch- start in the morning of December 5

Should something happen to alter this schedule I will let you know immediately.

If you have any questions, please do not hesitate to call me at 713-241-2961.

Sincerely,

Neal Stidham

CC: Paul Newman
EOTT Energy Corp.

Jerry Sexton
OCD-Hobbs

Shell Oil Company

Two Shell Plaza
P. O. Box 2099
Houston, Texas 77252-2099

December 19, 1994

William Olson
State of New Mexico Oil Conservation Division
Environmental Bureau
2040 S. Pacheco St.
Santa Fe, New Mexico 87504

SUBJECT: HUGH STATION, ANDERSON RANCH, DELAWARE STATION, AND DUBLIN STATION REPORTS

Dear Mr. Olson,

I respectfully request a delay until January 12, 1995 to submit the activity reports for the above referenced stations. The work at these stations, as discussed in previous letters, has been completed. However the delay in finalizing the graphics and reproduction will preclude me from submitting the reports by December 20, as I had planned.

If you have any questions, please call me at 713-241-2961.

Sincerely,

Neal Stidham

cc: Paul Newman
EOTT Energy Corp.

12/20/94
Verbal Approval
Will Olson

Shell Oil Company

Two Shell Plaza
P. O. Box 2099
Houston, Texas 77252-2099

November 22, 1994

William Olson
State of New Mexico Oil Conservation Division
Environmental Bureau
2040 S. Pacheco St.
Santa Fe, New Mexico 87504

SUBJECT: HUGH STATION, DELAWARE STATION, AND ANDERSON RANCH STATION, LEA COUNTY NEW MEXICO, SOIL REMEDIATION

Dear Mr. Olson,

Shell Oil Company plans to conduct the soil excavation and remediation at the above locations according to the following schedule:

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If you have any questions, please do not hesitate to call me at 713-241-2961.

Sincerely,

Neal Stidham

CC: Paul Newman
EOTT Energy Corp.

Jerry Sexton
OCD-Hobbs

Shell Oil Company

Two Shell Plaza
P. O. Box 2099
Houston, Texas 77252-2099

September 30, 1994

Mr. William Olson

State of New Mexico Oil Conservation Division
Environmental Bureau
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

SUBJECT: HUGH STATION

Dear Mr. Olson,

The following is in response to the comments in your letter of of December 2, 1993, to Shell Oil Company regarding Hugh Station.

Comment 1-a soil sample designated as SS-1A was collected from the same location and depth as sample SS-1(June 1993) and was analyzed for leachable lead (TCLP). The results, <0.1 mg/L lead, are below the threshold concentration for hazardous waste.

Comment 2-the affected soils around B-2 and B-4 will be tilled in-place where possible or excavated and landfarmed on site or mixed with clean sols and backfilled. The soils will be tilled or mixed to achieve a TPH level of 5,000 ppm or less and a benzene/BTEX level not exceeding 10/50ppm or a field headspace measurement of 100 ppm Total Organic Vapor.

If you have any questions please call me at 713-241-2961.

Sincerely,

Neal Stidham

cc: Mr. Paul Newman
EOTT Energy Corporation

CURA INC.
Environmental Consultants, Engineers & Scientists
3001 North Big Spring, Suite 101 • Midland, Texas 79705 • 915/570-8408 • FAX 570-8409

September 7, 1994

Mr. Neal D. Stidham
Environmental & Technical
Shell Oil Company
Room 1452, Two Shell Plaza
777 Walker Street
Houston, Texas 77002

RE: SOIL SAMPLING
HUGH STATION
LEA COUNTY, NEW MEXICO

CURA PROJECT NO. 15-94167C.3

Mr. Stidham:

CURA, Inc. has completed soil sampling operations at the above-referenced facility as requested by Shell Oil Company. On July 22, 1994, CURA, Inc. performed soil sampling operations at Hugh Station to characterize soils on site with respect to lead toxicity in accordance with the Resource Conservation and Recovery Act (RCRA). The soil samples were analyzed by the Toxicity Characteristic Leaching Procedure (TCLP) as requested by the New Mexico Oil Conservation Division (OCD).

BACKGROUND

A previous investigation conducted by Weston in June 1993 identified a total lead concentration of 20.6 mg/kg in sample SS-01 adjacent to Tank 811. The OCD requested additional soil sampling for confirmatory analysis by TCLP.

SOIL SAMPLING PROCEDURES AND ANALYTICAL RESULTS

On July 22, 1994, soil sample SS-1A was collected from the surface (0 to 0.3 foot depth) adjacent to the north side of Tank 811 in the immediate vicinity of Weston sample SS-1 as indicated on the attached site map (Figure 11-2) in Attachment A. The samples were obtained with a decontaminated sample trowel and placed into 8-ounce jars with a teflon-lined lids. The recorded TCLP levels were below the method detection limits for each

constituent. A summary of analytical results for soil samples obtained by CURA is presented in Table 1. The laboratory report and the chain-of-custody are included in Attachment B.

TABLE 1
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS

Sample Identification	Date	Sampled Interval (feet)	TCLP Lead (mg/l)
SS-1A	07/22/94	0 - 0.3	<0.1

Analyses listed in milligrams per kilogram (mg/kg) and milligrams per liter (mg/l) which is equivalent to parts per million (ppm).

CONCLUSIONS

The analyses of the soil sample obtained from the vicinity of Tank 811 indicate leachable concentrations well below the current Toxicity Characteristic (TC) hazardous waste limits of 0.5 mg/l (ppm) for TCLP lead as defined by Subtitle C regulations.

CURA appreciates the opportunity to provide you with our professional consulting services. If you have any questions or concerns, please do not hesitate to contact us at (915) 570-8408.

Respectfully,
CURA, Inc.

F. Wesley Root
Project Manager

for Michael A. Clark, P.E.
Vice President/Operations

FWR/chs

Enclosures

15941673.LTC

ATTACHMENT A

SITE MAP

ATTACHMENT B

LABORATORY REPORT AND

CHAIN-OF-CUSTODY

SPL, INC.

REPORT APPROVAL SHEET

WORK ORDER NUMBER: 94-04-043

Approved for release by:

M. Scott Sample Date: 4/12/94

S. Sample, Laboratory Director

Barbara Martinez Date: 4/12/94

Barbara Martinez, Client Services Representative

Certificate of Analysis No. 9404043-01

Shell Pipe Line Corporation
P.O. Box 2648
Houston, TX 77252
ATTN: Neil Stidham

DATE: 04/08/94

PROJECT: Hugh Station
SITE: Lea County, New Mexico
SAMPLED BY: CURA, Inc.
SAMPLE ID: SB-1A

PROJECT NO:
MATRIX: SOIL
DATE SAMPLED: 03/29/94 10:00:00
DATE RECEIVED: 04/01/94

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Acid Digestion - ICP/TCLP METHOD 3010 *** Analyzed by: PB Date: 04/06/94	04/06/94		
Lead, TCLP Leachate METHOD 6010 *** Analyzed by: DQ Date: 04/07/94	ND	0.1	mg/L
TCLP Leachate extraction METHOD 1311 *** Analyzed by: MO Date: 04/04/94	04/04/94		

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

** SPL QUALITY CONTROL REPORT **
TCLP LEAD

SPL sample Id: 9404043-1A **Reported on:** 04/12/94
Matrix: WATER **Analyzed on:** 04/07/94

This sample was randomly selected for use in the SPL quality control program. One in ten samples is fortified with a known concentration of the substance being analyzed and one in ten samples is analyzed in duplicate. The result are as follows:

-- **SPIKE ANALYSIS** --

Sample Id	Blank Value	Spike Added mg/L	Original Sample Concentration mg/L	MS Concentration mg/L	MS % Rec
9404043-1A	ND	1.0	ND	0.92	92

-- **SPIKE DUPLICATE ANALYSIS** --

Sample Id	Spike Added mg/L	MSD Concentration mg/L	MSD % Rec	% RPD
9404043-1A	1.0	0.96	96	4

SPL, Incorporated

Idelis Williams, QC Officer

9404043

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING

CHAIN OF CUSTODY RECORD NO. 04891

Date:
Page 1 of 1

SITE ADDRESS: Hugh Station
Lea County, New Mexico
WIC # Project #
CONSULTANT NAME & ADDRESS: CURA, Inc
731 W. Wadley, Suite L-200 Midland, Tx 79705
CONSULTANT CONTACT: F. Wes Root
PHONE: 915-570-8408 FAX: 915-570-8409
SAMPLED BY: Gil Van Deventer

CHECK ONE BOX ONLY CT/DT

- QUARTERLY MONITORING ☐ 5461
- SITE INVESTIGATION ☒ 5441
- SOIL FOR DISPOSAL ☐ 5442
- WATER FOR DISPOSAL ☐ 5443
- AIR SAMPLER - SYS O+M ☐ 5452
- WATER SAMPLE - SYS O+M ☐ 5453
- OTHER ☐

ANALYSIS REQUEST: (CHECK APPROPRIATE BOX)

BTEX 602 ☐ 8020 ☐ WITH MTBE ☐
BTEX/GAS HYDROCARBONS PID/FID ☐ WITH MTBE ☐
VOL 624/PPL ☐ 8240/TAL ☐ NBS (+15) ☐
PNA/PAH 8310 ☐ 8100 ☐ 610 ☐
SEMI-VOL 625/PPL ☐ 8270/TAL ☐ NBS (+25) ☐
TPH/IR 418.1 ☐ SM503 ☐ ☐ ☐
TPH/GC 8015 Mod GAS ☐ 8015 Mod DIESEL ☐
TCLP METALS ☐ VOL ☐ SEMI-VOL ☐ PEST ☐ HERB ☐
EP TOX METALS ☐ PESTICIDES ☐ HERBICIDES ☐
REACTIVITY ☐ CORROSIVITY ☐ IGNITABILITY ☐

OTHER

TCLP Lead (Pb)

REMARKS

P 4/4

SAMPLE I.D.	DATE	TIME	COMP.	GRAB	MATRIX: H2O	SOIL	AIR	SLUDGE	OTHER	METHOD PRESERVED: HCl	HNO3	H2SO4	NONE	OTHER: ice	NO. OF CONTAINERS	CONTAINER SIZE (ounces)
SB-1A	3/29/94	1000		✓		✓								✓	2	8oz

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
[signature]	3/29/94	1800	J. Wesley Root	3/27/94	1800
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
J. Wesley Root	3/31/94	6:00 PM	(INTACT 3°C)		
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
			[signature]	4/1/94	9:00

BILL NO.:
LABORATORY: SPL - Houston
SHELL CONTACT: Neal Stidham PHONE: 713 241-2961 FAX: 713 241-1124

TURN AROUND TIME (CHECK ONE)
7 DAYS ☐ (NORMAL) 14 DAYS ☐
48 HOURS ☐ OTHER: ☒ per SPLC

FED EX: 809039486

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN OF CUSTODY WITH INVOICE AND RESULTS
DISTRIBUTION: PINK Sampling Coordinator - WHITE & YELLOW Accompanies Shipment - WHITE Returned with Report

SPL HOUSTON ENVIRONMENTAL LABORATORY

SAMPLE LOGIN CHECKLIST

DATE: 4/1 TIME: 9:00 CLIENT NO. _____
LOT NO. _____ CONTRACT NO. _____

CLIENT SAMPLE NOS. _____

SPL SAMPLE NOS.: 9404043

		YES	NO
1.	Is a Chain-of-Custody form present?	✓	
2.	Is the COC properly completed?	✓	
	If no, describe what is incomplete:		
	If no, has the client been contacted about it?		
	(Attach subsequent documentation from client about the situation)		
3.	Is airbill/packing list/bill of lading with shipment?		✓
	If yes, ID#: By Fed Ex		
4.	Is a USEPA Traffic Report present?		✓
5.	Is a USEPA SAS Packing List present?	✓	✓
6.	Are custody seals present on the package?	✓	
	If yes, were they intact upon receipt?	✓	
7.	Are all samples tagged or labeled?	✓	
	Do the sample tags/labels match the COC?	✓	
	If no, has the client been contacted about it?		
	(Attach subsequent documentation from client about the situation)		
8.	Do all shipping documents agree?	✓	
	If no, describe what is in nonconformity:		

9. Condition/temperature of shipping container: INTACT 3°C
10. Condition/temperature of sample bottles: GOOD 3°C
11. Sample Disposal?: SPL disposal ✓ Return to client _____

NOTES (reference item number if applicable): _____

ATTEST: _____ DATE: 4/1/94
DELIVERED FOR RESOLUTION: REC'D _____ DATE: _____
RESOLVED: _____ DATE: _____

APPENDIX C

QUALITY ASSURANCE/QUALITY CONTROL

SAFETY PLAN, AND LIMITATIONS

QUALITY ASSURANCE/QUALITY CONTROL

A strict Quality Assurance Plan was incorporated throughout all phases of the on-site operations and sampling procedures. Soil or solid material samples were collected using new disposable or properly decontaminated reusable stainless steel equipment. Water or liquid samples were collected with new disposable bailers or decontaminated pump equipment. All non-reusable equipment was disposed of and reusable equipment was decontaminated between sampling stations to eliminate the potential of cross-contamination. The water samples were transferred from the bailers into airtight septum-sealed 40-ml glass VOA vials, one-liter amber glass jars with Teflon-lined lids, or other sample containers appropriate for the required analyses.

The samples were sealed with QA/QC seals, preserved with acid (if required), and maintained at 4°C in accordance with Environmental Protection Agency (EPA) requirements (EPA 600/4-82-029) for shipment to the laboratory. A chain-of-custody (COC) which documents sample collection times and delivery times to the laboratory was completed for each set of samples. The COC is included with the analytical results in the Appendix.

CURA utilizes laboratories that maintain strict quality controls, i.e. equipment calibration and standardization, appropriate analytical methods, preparation of quality control samples, and complete chains-of-custody. Analyses were performed on all samples using the EPA-, state-, or local agency-directed methods. The maximum recommended holding times were not exceeded unless noted in the text.

SAFETY PLAN

The sampling operations were performed at level D personal protection. CURA personnel involved in on-site activities have completed the Occupational Safety and health for Hazardous Waste Field Operation training course (OSHA 29 CFR 1910.120). Applicable safety equipment was on site to CURA personnel.

LIMITATIONS

It should be noted that all subsurface investigations are inherently limited in the sense that conclusions are drawn and recommendations are developed from samples which depict subsurface conditions at representative locations over relatively short periods of time. Subsurface conditions elsewhere may differ from those at the sampling locations. In addition, subsurface conditions at sampling locations may vary over longer periods of time than can be observed in a study of this type. The passage of time, manifestation of latent conditions, or occurrence of future events may require further site exploration, data collection and analysis, and reevaluation of the findings, observations, conclusions, and recommendation expressed in this report.

SPL, INC.

REPORT APPROVAL SHEET

WORK ORDER NUMBER: 94-08-720

Approved for release by:

Date: 9/1/94

Brent Barron, Project Manager

Date: 9/1/94

S. Sample, Laboratory Director

Certificate of Analysis No. 9408720-01

Shell Pipe Line Corporation
P.O. Box 2648
Houston, TX 77252
ATTN: Neal Stidham

P.O.# MESA-CAO-B-131201-PX-4204-NS
DATE: 09/01/94

PROJECT: Hugh Station
SITE:
SAMPLED BY: CURA, Inc.
SAMPLE ID: SS-1

PROJECT NO: 15-94167.2
MATRIX: SOIL
DATE SAMPLED: 07/22/94 16:00:00
DATE RECEIVED: 08/19/94

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Acid Digestion - ICP/TCLP METHOD 3010 *** Analyzed by: AM Date: 08/23/94	08/23/94		
Lead, TCLP Leachate METHOD 7420 *** Analyzed by: JM Date: 08/31/94	ND	0.1	mg/L
TCLP Leachate extraction METHOD 1311 *** Analyzed by: MO Date: 08/22/94	08/22/94		

ND - Not detected.

Notes: *Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
**Ref: Standard Methods for Examination of Water & Wastewater, 17th ed.
***Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.

QUALITY CONTROL DOCUMENTATION

** SPL QUALITY CONTROL REPORT **
TCLP LEAD

SPL sample Id: 9408720-1A **Reported on:** 09/01/94
Matrix: LEACHATE **Analyzed on:** 08/31/94

This sample was randomly selected for use in the SPL quality control program. One in ten samples is fortified with a known concentration of the substance being analyzed and one in ten samples is analyzed in duplicate. The result are as follows:

-- SPIKE ANALYSIS --

Sample Id	Blank Value	Spike Added mg/L	Original Sample Concentration mg/L	MS Concentration mg/L	MS % Rec
9408720-1A	ND	1.00	ND	0.77	77

-- SPIKE DUPLICATE ANALYSIS --

Sample Id	Spike Added mg/L	MSD Concentration mg/L	MSD % Rec	% RPD
9408720-1A	1.00	0.80	80	4

SPL, Incorporated

Idelis Williams, QC Officer

CHAIN OF CUSTODY

AND

SAMPLE RECEIPT CHECKLIST

9408720

Page 1 of 1 BB

Environmental Laboratory
8880 Interchange Drive
Houston, Texas 77054
713/660-0901

Analysis Request and Chain of Custody Record

Project No.	Client/Project Name	Project Location
15-94167.2	Shell Pipe Line	Hugh Station

Field Sample No./ Identification	Date and Time	Grab	Comp	Sample Container (Size/Mat'l)	Sample Type (Liquid, Sludge, Etc.)	Preservative	ANALYSIS REQUESTED	LABORATORY REMARKS
SS-1	7-22-94 1600		X	4 oz/glass	Soil	ICE	LEAD TCLP EPA Method 1311	

Samplers: (Signature)	Relinquished by: (Signature)	Date: 8-18-94 Time: 1530	Received by: (Signature)	Date: Time:	Intact
Affiliation	Relinquished by: (Signature)	Date: Time:	Received by: (Signature)	Date: Time:	Intact
CURA INC	Relinquished by: (Signature)	Date: Time:	Received by: (Signature)	Date: Time:	Intact 3°C
SAMPLER REMARKS:			Received for laboratory: (Signature)	Date: 8/19/94 Time: 10:00	Laboratory No.
Seal #			Data Results to:		

8533601672

SPL HOUSTON ENVIRONMENTAL LABORATORY

SAMPLE LOGIN CHECKLIST

DATE: 8/19 TIME: 10:00 CLIENT NO. _____
LOT NO. _____ CONTRACT NO. _____

CLIENT SAMPLE NOS. _____

SPL SAMPLE NOS.: 9408720

		YES	NO
1.	Is a Chain-of-Custody form present?	✓	
2.	Is the COC properly completed?	✓	
	If no, describe what is incomplete:		
	If no, has the client been contacted about it?		
	(Attach subsequent documentation from client about the situation)		
3.	Is airbill/packing list/bill of lading with shipment?	✓	
	If yes, ID#: FEDEX: 853360167 2		
4.	Is a USEPA Traffic Report present?		✓
5.	Is a USEPA SAS Packing List present?		✓
6.	Are custody seals present on the package?	✓	
	If yes, were they intact upon receipt?	✓	
7.	Are all samples tagged or labeled?	✓	
	Do the sample tags/labels match the COC?	✓	
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	(Attach subsequent documentation from client about the situation)		
8.	Do all shipping documents agree?	✓	
	If no, describe what is in nonconformity:		

9. Condition/temperature of shipping container: INTACT 3°C
10. Condition/temperature of sample bottles: ✓ (505) 3°C
11. Sample Disposal?: SPL disposal ✓ Return to client ____

NOTES (reference item number if applicable): _____

ATTEST: _____ DATE: 8/19/94
DELIVERED FOR RESOLUTION: REC'D _____ DATE: _____
RESOLVED: _____ DATE: _____

Shell Oil Company

Two Shell Plaza
P.O. Box 2099
Houston, TX 77252

January 5, 1994

State of New Mexico
Oil Conservation Division
ATTN Mr. Roger C. Anderson
P. O. Box 2088
Land Office Building
Santa Fe, NM 87504-2088

Gentlemen:

SUBJECT: SITE ASSESSMENTS AND ACTION PLANS
LEA COUNTY, NEW MEXICO

Thank you for meeting with us on December 15, 1993. The meeting was informative and will help us in our remediation activities.

I have been assigned to another department and Mr. Neal Stidham will be handling the environmental matters for the New Mexico locations. His telephone number is (713) 241-2961.

It has been my pleasure to work with you and Mr. Olson to develop action plans on these locations. I appreciate the help and guidance you both have provided.

Please thank Mr. Olson for me.

Again, thank you for your help and I hope both of you have a great 1994.

I enjoyed my trip to Santa Fe. It was all you said it would be.

Sincerely,

John B. Hite

cc: SHELL PIPE LINE CORPORATION
G. H. Sherwin, Manager Environmental & Technical
N. D. Stidham, Staff Engineer

DG400503.JBH

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

December 2, 1993

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

CERTIFIED MAIL
RETURN RECEIPT NO. P-667-242-418

Mr. John B. Hite
Engineering Advisor
General Engineering
Shell Oil Company
Two Shell Plaza
P.O. Box 2099
Houston, Texas 77252

RE: SITE ASSESSMENT AND REMEDIATION PLAN
SHELL HUGH CRUDE STATION
LEA COUNTY, NEW MEXICO

Dear Mr. Hite:

The New Mexico Oil Conservation Division (OCD) is in the process of reviewing the following documents submitted by the Shell Oil Company on November 15, 1993:

a. November 11, 1993 "GENERAL LANDFARMING PROCEDURES FOR LOCATIONS REQUIRING ACTION".

b. November 10, 1993 "SITE ASSESSMENT, HUGH CRUDE OIL GATHERING AND PUMP STATION, LEA COUNTY, NEW MEXICO".

c. September 10, 1993 "SITE ASSESSMENT, HUGH CRUDE OIL GATHERING AND PUMP STATION, LEA COUNTY, NEW MEXICO".

d. August 1993 "FINAL REPORT ENVIRONMENTAL DUE DILIGENCE ASSESSMENT, NEW MEXICO SWEET SYSTEM AND NEW MEXICO SOUR SYSTEM".

e. March 3, 1993 "PHASE II ENVIRONMENTAL SITE ASSESSMENT, HUGH STATION, LEA COUNTY, NEW MEXICO, CURA PROJECT NO.15-9256714.3".

The OCD has the following comments, questions and requests for information regarding the above referenced documents:

1. The August 1993 investigation report documented total lead present in the soil of boring SB-1. adjacent to the crude storage tank, in excess of Toxic Characteristic (TC) hazardous

waste limits as defined under federal RCRA Subtitle C regulations. Since crude oil pump stations are not exempt from these regulations, the OCD requires that Shell provide the OCD with a Toxic Characteristic Leaching Procedure (TCLP) lead analysis of the soils from this area.

2. The November 10, 1993 report proposes enhanced insitu bioremediation of contaminated soils in the vicinity of boreholes B-2 and B-4. However, the proposal does not contain a method for documenting the final contaminant level upon completion of the project. Please supply the OCD with a method for confirming that this remedial action will meet the OCD's recommended soil remediation levels or an approved alternate risk based remediation level.

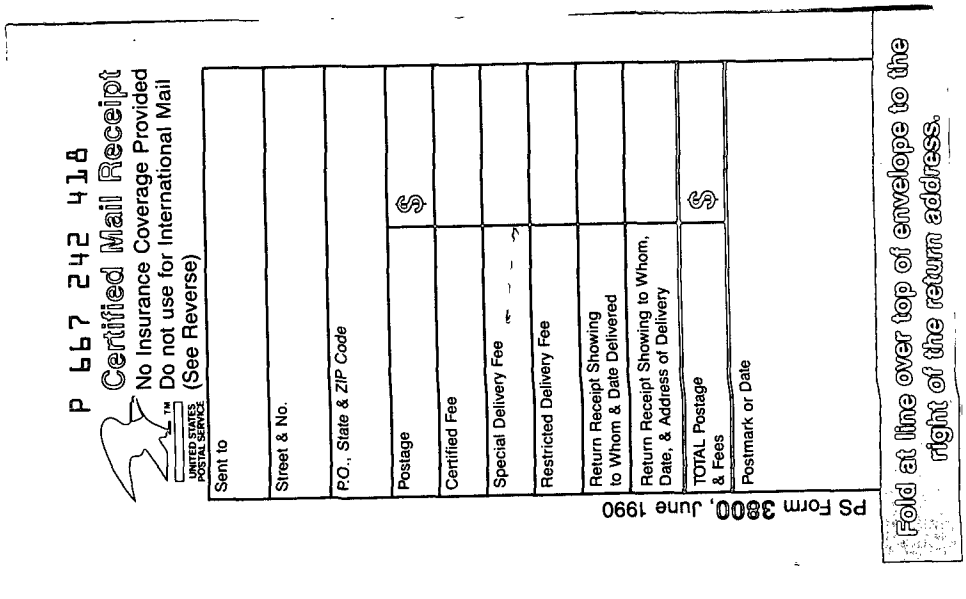
Receipt of the above information will allow the OCD to complete a review of the above referenced documents.

If you have any questions, please contact me at (505) 827-5885.

Sincerely,

William C. Olson
Hydrogeologist
Environmental Bureau

xc: OCD Hobbs District Office



Shell Oil Company

Two Shell Plaza
P.O. Box 2099
Houston, TX 77252

November 11, 1993

State of New Mexico
Energy, Minerals and Natural Resource Dept.
Oil Conservation Division
ATTN Mr. William C. Olson
Hydrogeologist - Environmental Bureau
P. O. Box 2088
Santa Fe, NM 87504

Gentlemen:

SUBJECT: GENERAL LAND FARMING PROCEDURES FOR LOCATIONS REQUIRING ACTION

The site assessments and proposed action plans have been sent to you on the following locations:

Denton
Eunice
Dublin
Hugh
Anderson Ranch
Delaware

Land farming was a part of each of these locations remedial action plans. The areas to be land farmed are relatively small and all are inside the fenced station locations. We propose to till and/or disk the soil to 12 inches to 18 inches deep and add a high nitrogen content fertilizer at a rate of 200 to 250 pounds per acre and retill or disk the fertilizer into the soil. There are several areas that may require some spot excavation (primarily around the sumps). The excavated soils will be placed with the soils in the land farm areas. All of the sites will be land farmed in place. At the Delaware location, we propose to place some of the impacted soils on the tank dikes.

The soils in all cases are unsaturated contaminated soils. Our primary concern is with TPH levels. We will remediate until the soil TPH values are below 5000 ppm. At each of the facilities listed, the areas to be land farmed are located in places where any rainfall runoff will not be a concern.

DG331503.JBH

Attached is a paper (No. WRC-49-89 Land Farming) that was prepared by Shell and we will use it as a guide.

Please advise if these procedures will be acceptable to the Oil Conservation Division (OCD) for Shell to use on the subject locations.

The Denton Station will require a system to remove the crude oil found on an abandoned water well. The site assessment and proposed action plan sent to the OCD address it.

The Dublin Station has a hot spot that goes down to the groundwater at 103 feet. The groundwater was not impacted above your regulatory limit and our proposed plan sent to the OCD addresses it.

At the Lea Station, we are in the process of doing additional feasibility testing and you will receive a proposed action plan on it in the near future.

Shell would like to schedule a meeting with you after you have had a chance to review our proposed action plans. I will call you and see when it would be convenient for you to meet with us.

If you have any questions, please call me at (713) 241-1001. We look forward to working with the OCD to remediate the sites.

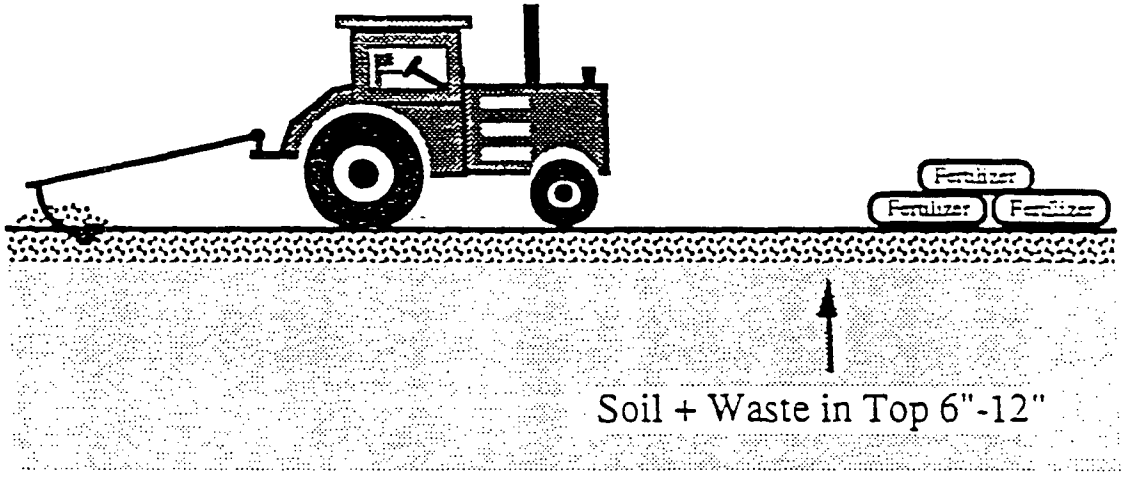
Sincerely,

John B. Hite
Engineering Advisor
General Engineering

Attachment

DG331503.JBH

Landfarming



Process Description

"Landfarming" refers to the practice of spreading organic wastes over an area of land, then relying on natural microbial action to degrade the waste. It is a widely accepted and cost-effective practice for the treatment of petroleum hydrocarbons, chlorinated compounds, and pesticides. In this process soil-associated microorganisms (bacteria and fungi) degrade the organic compounds to CO_2, water, and biomass.

An efficient and effective land treatment process involves optimizing the bacterial degradative activity by controlling soil aeration (discing, rotatilling), nutrient addition (NH_4^+ or NO_3^- - nitrogen, PO_4^{3-} - phosphorous, Fe - iron, fertilizer), and pH and moisture control.

A petroleum industry review on the treatment of waste oily sludges at refineries indicated that substantial hydrocarbon removal efficiencies of 70% - 90% can be achieved at loading rates of 1% - 5% (w/v) in surface soils.

Applications

Types of petroleum industry wastes that can be treated include refinery oily sludges, tank bottoms, crude oil, and gasoline. Landfarming has also been used to treat drilling mud pit sludges, and accidental releases of crude oil from pipelines.

Limitations

Landfarming is generally limited to wastes containing smaller hydrocarbon molecules. Medium chain length alkanes and aromatic fractions are degraded nearly completely, while polynuclear aromatic hydrocarbons (PAH's) are degraded very slowly in soil (0-10% total). Examples of PAH's include: chrysene, pyrene, fluoranthene, benzo (a) anthracene, and perylene. The presence of salts and/or metals may inhibit microbial activity.

Typical Operating Conditions

During landfarming, soil aeration (discing, rotatilling), nutrient addition (NH_4^+ or NO_3^- - nitrogen, PO_4^{3-} - phosphorous, Fe - iron, fertilizer), and pH and moisture are controlled to maximize the rate of biodegradation.

Soil pH:	6 to 8. If soil is too acidic (<pH 6), it can be treated with lime.
Waste Level:	0.5% - 5% by weight as oil and grease (O&G), incorporated into top six inches of soil.
Fertilizer Addition:	Approximately 50 - 500 lbs Nitrogen (as NH_4^+ or NO_3^- per acre, and 5 - 50 lbs Phosphorous (as PO_4^{3-}) per acre.
Other Amendments:	a) Mulch (bark, wood chips, straw, etc.) to facilitate mixing and soil aeration. b) Microbes and organic nutrients (i.e. animal manure) to enhance degradation.
Tilling Frequency:	For aeration, once every two to four weeks during growing season.
Water Application:	Soil should be maintained in a moist state, but not flooded. Spray irrigation may be required in dry climates.
Revegetation:	Plant regrowth (seeding) can occur after 0.5 to 3 years. Weeds or local crops can be used.
Sampling:	Composite samples from several representative plot areas. For example, soil might be analyzed for oil and grease if petroleum hydrocarbons are being treated.
Performance Evaluation:	Waste degradation occurs more rapidly when soil temperatures are ≥ 50°F. Decreases in the oil and grease content should decrease with a half-life ($t_{1/2}$) of 50 - 60%/month during the growing season, and $t_{1/2}$=0 - 20%/month during winter months.

Process Economics

Depending upon the extent of contamination, waste type, and biodegradation rates, costs are $5 - $50 per yd^3.

Waste Streams

Wastes streams are not usually generated, and often the hydrocarbons do not migrate beyond the root zone (6 - 12 inches below surface) before they are degraded. If the waste contains highly volatile or soluble compounds, the possibility of vapor emissions or migration to groundwater must be considered.

Permitting

Permits are not usually required for a one-time treatment, unless controlled substances are present in air emissions.

As with all ex-situ treatment processes, there will be permitting requirements for the vapors, odors, and dust associated with digging, storing, and feeding the soils.

Associated Factors

Depending on the location, surface water run-on/run-off controls may be required. While landfarming is an attractive remediation technology because it does not require sophisticated machinery, and the operating costs are low, the costs associated with permitting may increase the total treatment cost significantly. Large areas must also be dedicated for landfarming.

Contacts Within Shell

Joe P. Salanitro	- Westhollow Research Center (Room EC-661) - SSN-433-7552
Curtis C. Stanley	- Shell Oil Co. Head Office (Room TSP 2236) - SSN-241-6094

Shell Applications

Crude Oil Spill Release (Pipeline) Remediations:

(1)	Location:	Milepole 526 Capline Karmak, Illinois (Massac County).
	Date:	October 1988
	Spill:	Unknown amount released. Landfarmed 0.8 -3.6% by weight oil in soil.
	Remediation:	Fertilizer - at 300 lbs/acre Nitrogen, bark mulch, lime, and manure added. Soil was tilled once a week for six weeks.
	Results:	95% reduction in oil and grease content (degradation rate of 63% per month). Revegetation occurred with planted wheat and native grasses.
	Contact:	R. Williams, Shell Pipeline Co., Mid-Continent Division, Wood River, Illinois.
(2)	Location:	Everidge Cotton Farm, Upton County, West Texas
	Date:	November 1986
	Spill:	50 barrels crude oil in 0.2 acre of land. The contaminated area was landfarmed at 0.3 - 8.6% by weight oil and grease levels in soil.
	Remediation:	Fertilizer - 150 lbs/acre. The area was spray irrigated and tilled about once a month.
	Results:	Reduction rate for oil and grease content was about 4 - 10% per month during 15 months of treatment. Some vegetation (cotton) was observed at the edges of the treatment zone after one year.
	Contact:	C. D. Simons, Shell Pipeline Co., Mid-Continent, West Texas Unit, Midland, Texas.

OIL CONSERVATION DIVISION
RECEIVED
'93 NOV 15 AM 9 01

Shell Oil Company

Two Shell Plaza
P.O. Box 2099
Houston, TX 77252

November 10, 1993

State of New Mexico
Energy, Minerals and Natural Resource Department
Oil Conservation Division
ATTN Mr. William C. Olson
Hydrogeologist - Environmental Bureau
P. O. Box 2088
Santa Fe, NM 87504

RECEIVED
NOV 15 1993
OIL CONSERVATION DIV.
SANTA FE

Gentlemen:

SUBJECT: SITE ASSESSMENT
HUGH CRUDE OIL GATHERING AND PUMP STATION
LEA COUNTY, NEW MEXICO

Please find enclosed a copy of Shell Pipe Line Corporation environmental contractor's (CURA, Inc.) site assessment report and EOTT Energy Corp. environmental contractor's (Roy F. Weston, Inc.) due diligence assessment for Hugh Station.

CURA advanced 9 soil borings in areas where crude oil impact to the environment was likely to occur. A minimum of two samples per boring was analyzed for TPH and BTEX. Monitoring wells were to be installed if groundwater was encountered. No groundwater was encountered at the site.

Hugh Station is located approximately 3.5 miles south-southeast of the city of Eunice in Lea County, New Mexico. The site is surrounded by a barbed wire fence with a locked gate and is located in a rural area within the Monument - Jal oil field. No residences, public buildings, surface bodies of water or water wells were observed within a 1,000 foot radius of the facility.

The closest known water well is located approximately 3,000 feet southwest of the site. The well was drilled to a total depth of 77 feet and completed in Quaternary Alluvium with reported depth to water of 55 feet in 1953. The current status and construction data on the well are unknown.

Currently the groundwater in the site area is used primarily for livestock and industrial use. The drinking water in Eunice, the nearest municipality, is supplied from a well field about 16 miles north-northwest of the site that produces from the Ogallala Formation at a depth of 80 to 120 feet.

HughSite.jbh

No samples analyzed had TPH values above 4,300 ppm. Only three samples were above 30 ppm TPH. These were: B-2 at 1-3 feet, 4,300; B-4 at 1-3 feet, 3,300; and B-8 at 5-7 feet, 280. All benzene values were less than 0.001 ppm.

Based on the data obtained, the extent of hydrocarbon impacted soils near the sump and pump equipment in the southwest corner of the site is limited to an area less than 110 feet by 60 feet with a maximum depth of 5 to 7 feet. Based on the analytical results and field observations, the crude oil contamination was absorbed by the impacted soils and did not migrate downward to groundwater. The majority of the impacted soils in B-2 (4,300 ppm TPH) and B-4 (3,300 ppm TPH) is in the top 1 to 3 feet and the values drop rapidly with depth.

Shell proposes to land farm the soil around B-2 and B-4 (B-2 approximately 60 feet by 60 feet; B-4 approximately 60 feet by 30 feet). The areas will be tilled or disked and fertilizer added at 200 lbs/acre.

Shell believes this is a low risk location and that the hydrocarbon is contained in the shallow soils and will not impact the water, public health or the environment.

Please advise if this proposed plan is acceptable to the New Mexico Oil Conservation Division. Upon receiving your approval, we will implement the plan.

If you have any questions, please contact me at (713) 241-1001.

Sincerely,

J. B. Hite

John B. Hite
Engineering Advisor
General Engineering

Attachment

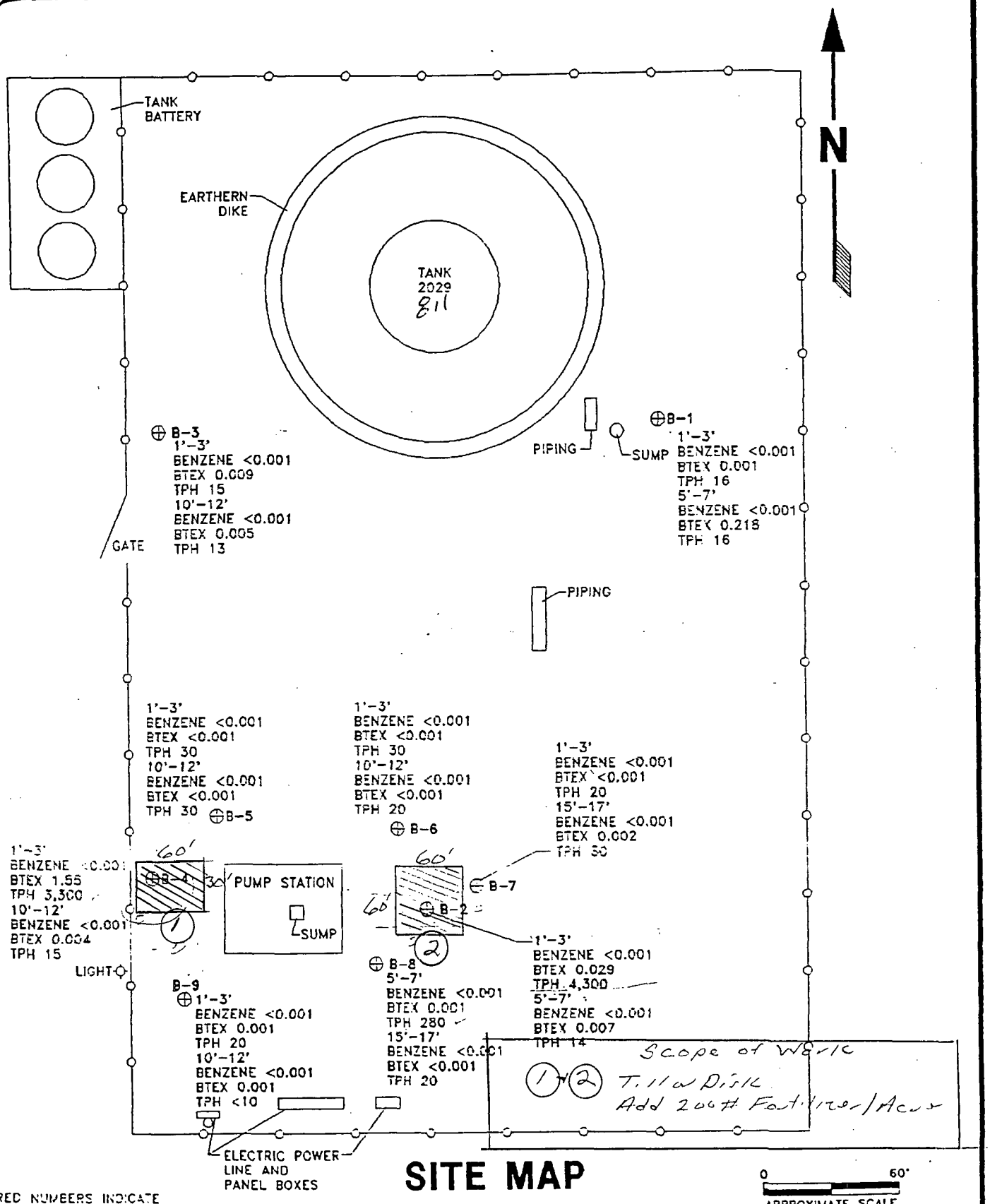
HughSite.jbh

Hugh Station

RANKING CRITERIA

	Ranking Score	Score
Depth to Groundwater		
< 50 feet or unknown	20	
50 - 99	10	
100 - 200	5	5
> 200	0	
Wellhead Protection Area		
< 1000 feet from a water source or,		
< 200 feet from domestic water source		
Yes	20	
No	0	0
Distance to Surface Water Body		
< 500 horizontal feet	20	
500 - 1000 horizontal feet	10	
> 1000 horizontal feet	0	0
Native Soil Type		
Low permeability	0	0
Moderate permeability	5	
High permeability	10	
Total		5

DG330101.JBH



SITE MAP

RED NUMBERS INDICATE
BENZENE, TOTAL BTEX, AND TPH CONCENTRATIONS IN mg/kg (ppm)

CURA INC. 2735 VILLA CREEK DRIVE - TWO METRO SQUARE BLDG. C - SUITE 250 - DALLAS, TX 75234 620-7117 FAX - 620-8219	HUGH STATION SHELL PIPE LINE CORPORATION LEA COUNTY, NEW MEXICO	DATE: MAR 1993	SCALE: SEE ABOVE
		PROJECT NO. 15-92567	FIGURE NO. 2

State of New Mexico
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
Santa Fe, New Mexico 87505

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☑ Telephone ☐ Personal	Time 1100	Date 9/27/93

Originating Party	Other Parties
Bill Olson - Envir. Bureau	John Hite - Shell Pipeline

Subject

Pump Station Environmental Assessments

Discussion

Told him OCD needs TCLP analyses on any constituents with totals above TC limits
OCD will also need MW construction details

Conclusions or Agreements

Shell is currently completing work referenced in the reports. Final reports on sites and proposed remediation will be submitted to OCD in approx. 30 days

Distribution

Signed Bill Olson

Shell Oil Company

Two Shell Plaza
P.O. Box 2099
Houston, TX 77252

September 10, 1993

State of New Mexico
Energy, Minerals and Natural Resource Department
Oil Conservation Division
ATTN Mr. William C. Olson
Hydrogeologist - Environmental Bureau
P. O. Box 2088
Santa Fe, NM 87504

Gentlemen:

SUBJECT: SITE ASSESSMENT
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LEA COUNTY, NEW MEXICO

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HughSite.jbh

No samples analyzed had TPH values above 4,300 ppm. Only three samples were above 30 ppm TPH. These were: B-2 at 1-3 feet, 4,300; B-4 at 1-3 feet, 3,300; and B-8 at 5-7 feet, 280. All benzene values were less than 0.001 ppm.

Based on the data obtained, the extent of hydrocarbon impacted soils near the sump and pump equipment in the southwest corner of the site is limited to an area less than 110 feet by 60 feet with a maximum depth of 5 to 7 feet. Based on the analytical results and field observations, the crude oil contamination was absorbed by the impacted soils and did not migrate downward to groundwater. The majority of the impacted soils in B-2 (4,300 ppm TPH) and B-4 (3,300 ppm TPH) is in the top 1 to 3 feet and the values drop rapidly with depth.

After we have conducted the pilot test, Shell will provide the Oil Conservation Division with a proposed remedial plan.

If you have any questions, please contact me at (713) 241-1001.

Sincerely,

John B. Hite
Engineering Advisor
General Engineering

Attachment

HughSite.jbh

FINAL REPORT

ENVIRONMENTAL DUE DILIGENCE ASSESSMENT NEW MEXICO SWEET SYSTEM AND NEW MEXICO SOUR SYSTEM

Submitted by:

Roy F. Weston, Inc.
5599 San Felipe, Suite 700
Houston, Texas 77056
(713) 621-1620

AUGUST 1993

SECTION 6

HUGH STATION

6.1 SITE LOCATION AND DESCRIPTION

The Hugh Station is located approximately 4 miles south-southeast of Eunice, Lea County, New Mexico off of State Highway 18. The site location is shown in Figure 6-1. The Hugh Station is a crude oil pumping station and storage facility where oil from gathering lines is pumped into a trunk line.

The Hugh Station layout is shown in Figure 6-2. Above-ground facilities at the 1.4-acre site include a 5,000 BBL cone-top tank (tank 811), two scraper traps, pump, and two sumps. Three transformers attached to a utility pole along the southern fence are unlabeled. Ownership of the transformers could not be determined. A rectifier is also located along the southern fence.

Nearly all of the surface soils inside of the tank dike are hydrocarbon-stained. SPLC personnel did not know the source of the hydrocarbon staining. Soils west, east and northeast of tank 811 and an area at the southeast corner of the site were also hydrocarbon-stained. The extent of hydrocarbon staining in soils is depicted in Figure 6-2.

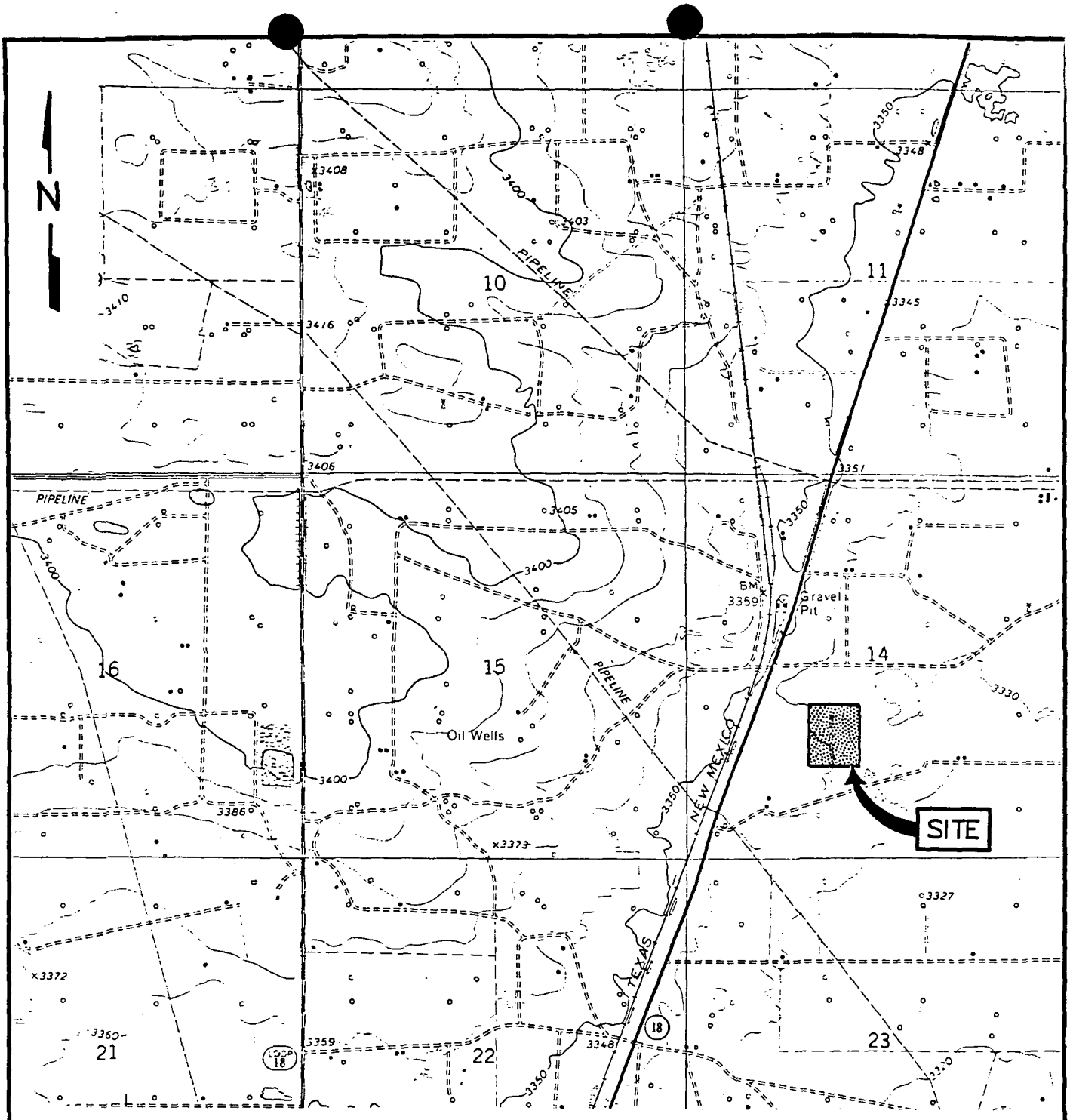
A small tank battery consisting of three tanks is situated at the northwest corner of the site just across the site fence. The tank battery is owned by Petro Source Injection. Producing wells are located within 1,500 feet north and south of the site.

SPLC owns tank 811 and leases a right-of-way easement from the Hugh family. The station has always been a pump station. The tank battery across the northwest corner of the site was erected in 1992. The crude oil pump was replaced in 1992.

6.2 PREVIOUS INVESTIGATION RESULTS AND CONCLUSIONS

CURA, Inc. performed a baseline assessment of soil and groundwater conditions at the Hugh Station in December, 1992, followed by a Phase II environmental site assessment in February, 1993. CURA advanced a total of nine borings in the southwest corner of the site and south of the tank dike. The CURA boring locations are shown in Figure 6-2.

Soil samples were collected from the borings and analyzed for BTEX and TPH. BTEX concentrations ranged from <0.001 mg/kg to 1.55 mg/kg. TPH concentrations ranged from 14 mg/kg to 4,300 mg/kg. The highest hydrocarbon concentrations were limited to the upper 3 feet of soil. Only one soil sample collected below 3 feet contained greater than 30 mg/kg TPH. CURA estimated that 6,600 square feet of soils had been impacted by hydrocarbons to a depth of 5 to 7 feet. CURA recommended additional borings west of the site to define the extent of hydrocarbon-impacted soils at the southwest corner of the site. Based on the data collected in the investigations, CURA reported that the crude oil contamination was absorbed by the site soils and did not migrate downward to groundwater.



0 1000 2000

SCALE IN FEET

BASE MAP FROM:
U.S. DEPT. OF THE INTERIOR
GEOLOGICAL SURVEY
EUNICE QUADRANGLE
NEW MEXICO
7.5 MINUTE SERIES (TOPOGRAPHIC)
1969 SERIES (REV. 1979)
SCALE 1:24,000

WESTON
MANAGERS DESIGNERS/CONSULTANTS

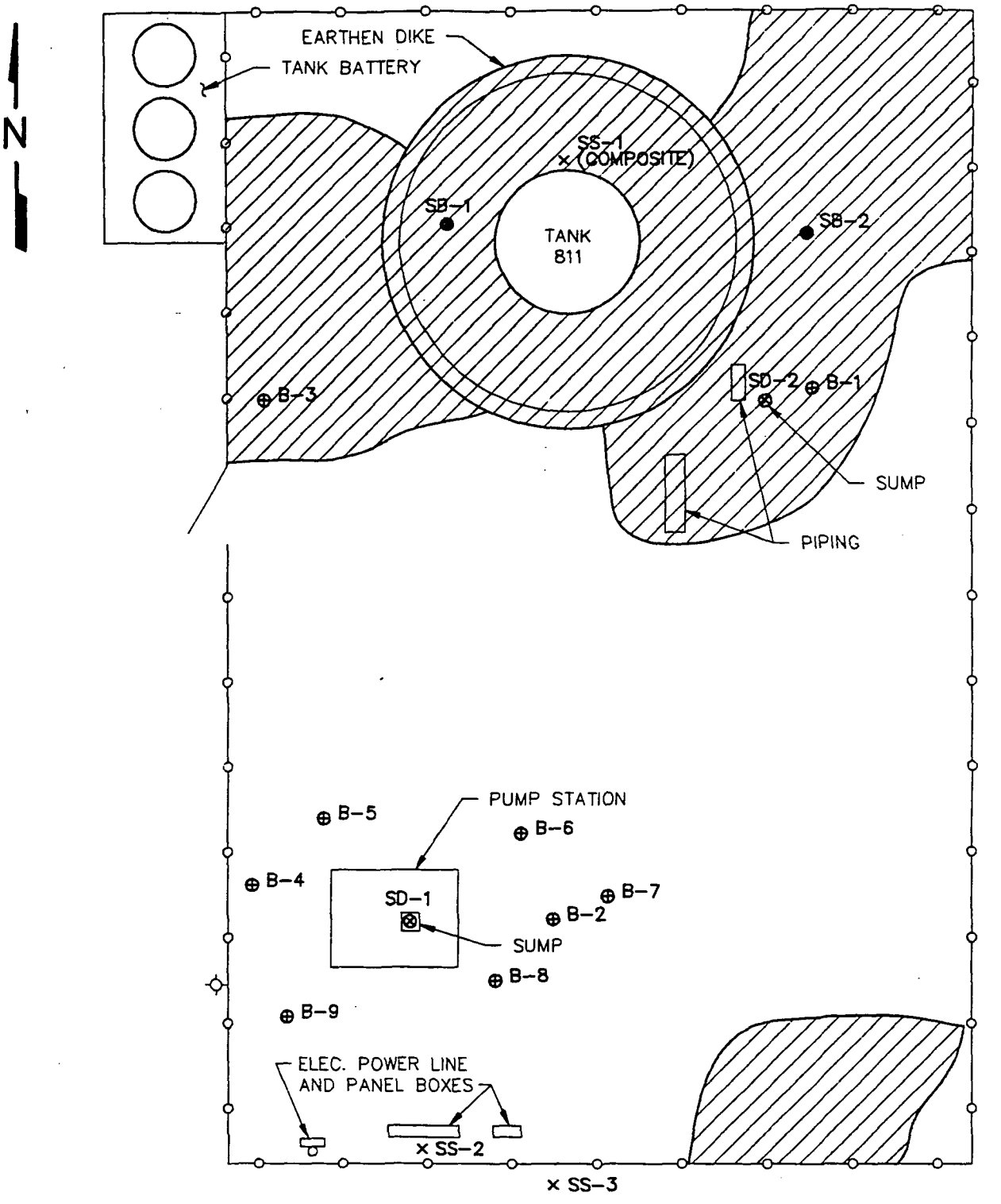
FIGURE 6-1

HUGH STATION LOCATION
LEA COUNTY, NEW MEXICO

EOTT ENERGY CORPORATION
SPLC PIPELINE ENVIRONMENTAL ASSESSMENT

W.O. NO. : 10326-001-001-0010

H:\DWG\EOTT\SITES1.PB 1=1 07-20-93



NOT TO SCALE

LEGEND

⊕ B-1	CURA SOIL BORING LOCATION
× SS-1	SURFACE SOIL SAMPLE LOCATION
⊗ SD-1	SEDIMENT SAMPLE LOCATION
● SB-1	WESTON SOIL BORING LOCATION
▨	HYDROCARBON STAINING

WESTON MANAGERS DESIGNERS/CONSULTANTS

FIGURE 6-2

HUGH STATION
SITE PLAN

EOTT ENERGY CORPORATION
SPLC PIPELINE ENVIRONMENTAL ASSESSMENT

W.O. NO. : 10326-001-001-0010

H:\DWG\EOTT\SP4.PB 1=1 07-21-93

6.3 SITE SAMPLING

After the records review, site inspection and CURA report review, WESTON recommended sampling at Hugh Station to address the following environmental issues:

- potential lead contamination of soil surrounding tank,
- potential PCB contamination beneath electrical equipment,
- potential PCB contamination of sumps from PCB oils,
- soil staining inside tank dike, and
- soil staining east of tank dike.

The sample locations are shown on Figure 6-2. Analytical results are provided in Table 6-1.

SS-01 collected from surface soils adjacent to the tank contained 20.6 mg/kg total lead. Background sample SS-03 collected approximately 5 feet south of the south fence contained 4.9 mg/kg lead. Although SS-01 contained a higher lead concentration than the background sample, the magnitude of the lead concentration is sufficiently low that lead contamination of the surface soils around the tank does not warrant further action.

No PCBs were detected in SS-02 collected from beneath the transformers and rectifier. No PCBs were detected in SD-01 or SD-02 collected from the two sumps.

Boring SB-01 was advanced into stained soils inside the tank dike. A description of the soils encountered in this boring is as follows:

0 in. - 6 in.	Oil-stained sand
6 in. - 1.5 ft.	Reddish sand, possible hydrocarbon staining **OVA = 0 ppm off cuttings**
1.5 ft. - 2.0 ft.	Reddish sand
2.0 ft. - 3.0 ft.	Light red sand

Sample SB-01 was collected at a depth between 2.5 and 3.0 feet. No BTEX or TPH was detected in SB-01.

Boring SB-02 was advanced into stained soils east of the tank dike. A description of the soils encountered in this boring is as follows:

0 in. - 4 in.	Medium brown sand. No staining
4 in. - 1.3 ft.	Reddish sand
1.3 ft. - 3.0 ft.	Tannish-gray sand **OVA = 0 ppm in headspace sample**

Sample SB-02 was collected between 2.5 and 3.0 feet. No BTEX was detected in SB-02. The TPH concentration of the sample was 50.4 mg/kg.

6.4 COMPLIANCE ISSUES

Air Issues for Tank 811

Based on the available information, an air permit is not required for this tank. If the tank is not operated at a constant crude oil level, an air permit could probably be required at the current throughput. The tank appears to be in compliance with other New Mexico and federal regulations.

6.5 LIABILITY ISSUES

Hydrocarbon Contaminated Soil

The CURA investigation identified an area of hydrocarbon-contaminated soil at the southwest corner of the site. Additional work is needed to identify the horizontal and vertical extent of this hydrocarbon-impacted soil.

The WESTON sampling and site inspection identified other areas of hydrocarbon-impacted soil. Based on the WESTON samples, hydrocarbon impacts to soils within and east of the tank dikes are limited to shallow soils. The OCD is unlikely to require remediation of these soils, however, since the data suggest that groundwater is not threatened.

Regulatory Database Search

The regulatory database search identified one environmental risk site near Hugh Station. A 600-BBL oil spill was reported by Conoco 2 miles south of Eunice off Highway 18. Although the exact spill location could not be determined, the spill may have occurred in the vicinity of the Hugh Station. Additional work is needed to identify the exact location of the spill and determine whether or not it represents an environmental liability at the station.

TABLE 6-1
HUGH STATION ANALYTICAL RESULTS
EOTT ENVIRONMENTAL ASSESSMENT OF THE
SPLC ZONE III PIPELINE

SAMPLE NUMBER: LOCATION: DATE COLLECTED:	SS-01 ADJACENT TO TANKS 6/23/93	SS-02 BENEATH ELECT. EQUIP. 6/23/93	SS-03 BACKGROUND 6/23/93	SB-01 INSIDE TANK DIKE 6/23/93	SB-02 E OF TANK DIKE 6/23/93	SD-01 PUMP SUMP 6/23/93	SD-02 SCRAPER SUMP 6/23/93
ORGANICS (mg/kg):[1]							
Benzene	NA	NA	NA	<0.00088	<0.0008	NA	NA
Toluene	NA	NA	NA	<0.00088	<0.0008	NA	NA
Ethylbenzene	NA	NA	NA	<0.00088	<0.0008	NA	NA
Total Xylenes	NA	NA	NA	<0.00088	<0.0008	NA	NA
TOTAL BTEX[2]	NA	NA	NA	<0.00088	<0.0008	NA	NA
TPH[3]	NA	NA	NA	<27.7	50.4	NA	NA
TOTAL PCBs[4]	NA	<0.00083	NA	NA	NA	<1.4	<10
METALS (mg/kg):							
Silver	NA	NA	NA	NA	NA	NA	NA
Arsenic	NA	NA	NA	NA	NA	NA	NA
Barium	NA	NA	NA	NA	NA	NA	NA
Cadmium	NA	NA	NA	NA	NA	NA	NA
Chromium	NA	NA	NA	NA	NA	NA	NA
Mercury	NA	NA	NA	NA	NA	NA	NA
Lead	20.6	NA	4.9	NA	NA	NA	NA
Selenium	NA	NA	NA	NA	NA	NA	NA

1 "NA" = not analyzed.
2 "BTEX" = total benzene, toluene, ethylbenzene, and xylenes.
3 "TPH" = total petroleum hydrocarbons.
4 "PCBs" = polychlorinated biphenyls.

Shell Oil Company

Two Shell Plaza
P.O. Box 2099
Houston, TX 77252

January 21, 1993

New Mexico Oil Conservation Commission
Environmental Bureau
ATTN Mr. Bill Olson
P. O. Box 2088
Santa Fe, NM 87504-2008

Gentlemen:

SUBJECT: SHELL PIPE LINE CORPORATION - SITE ASSESSMENTS OF FIVE CRUDE OIL GATHERING AND TRANSPORTATION LOCATIONS - HOBBS AREA

I contacted Mr. Jerry Sexton of your Hobbs office on December 7, 1992 to advise that we would be conducting site assessments on five locations that we plan to sell in the Hobbs area. These locations are:

Denton Station
Hugh Station
Lea Station
Dublin Station
Anderson Ranch Station

We have completed the initial phase of the site assessments. Contamination was found at each site and we are planning to do additional assessment work to determine the extent of the contamination and other site data. We encountered groundwater at the Lea Station in one boring and installed a monitoring well.

The TPH values of the soil at the five locations ranged between N.D and 15,000 ppm. Benzene concentrations were all less than .001 ppm. The analytical results in ppm of the monitoring well water sample at Lea Station were .44 benzene, .005 toluene, 0.120 ethyl/benzene, .063 xylene, 0.628 total BTEX, 3 TPH and 2,380 TDS.

Your agency will be contacted after the data is compiled.

If you have any questions, please contact me at (713) 241-1001.

Sincerely,

John B. Hite, Engineering Advisor
General Engineering

cc: New Mexico Oil Conservation Department
Jerry Sexton
P. O. Box 1980
Hobbs, NM 88240

CURA, Inc.
Greg C. Walterscheid, R.E.M.
2735 Villa Creek Drive
Building C, Suite 250
Dallas, TX 75234