D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

MR PIERCE STOCKMAN
STOCKMAN OIL TWO INCORPORATED
1138 REYNOLDS AVE
GREENWOOD SC 29646-2736

NOV 0 4 2008

Re: Monitoring Report Directive
Stockman Oil Two, Inc., 1138 Reynolds Ave, Greenwood, SC
UST Permit #04736; Cost Agreement #34296
Release reported December 27, 1989
Tier I Report received July 23, 2002
Greenwood County

Dear Mr. Stockman:

The Underground Storage Tank Program of the South Carolina Department of Health and Environmental Control (SCDHEC) understands you wish assessment activities to be conducted at the referenced facility on your behalf by KLM Environmental. The UST Program has reviewed the referenced report and believes that all wells should be sampled to document current environmental conditions.

Assessment activities at the site should begin immediately upon receipt of this letter. Groundwater samples should be collected from all four monitoring wells associated with the release and analyzed for BTEX, naphthalene, MtBE, lead, EDB 8 oxygenates, and 1,2 DCA in accordance with *Analytical Methodology* dated August 24, 2005. A copy of this publication is available on line at http://www.scdhec.gov/lwm/forms/analmet.pdf. Please note that all applicable South Carolina certification requirements apply to the laboratory services, well installation, and report preparation. All site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor. **The monitoring report** (a signed .pdf copy on a CD is preferred) **and associated invoice should be submitted on or before 60 days from the date of this letter** should include the following:

- A narrative portion documenting current site conditions and noting the names of field personnel, date, time, ambient air temperature, and general weather conditions during the sampling event. The report shall also contain well purging data, pH, specific conductivity, water temperature, PID readings (where applicable), levels of dissolved oxygen, and turbidity comments.
- Groundwater elevations, depth to groundwater, measurable free product thickness (where applicable), total well depth and screened interval for the specified monitoring wells associated with the site. Unless otherwise directed by the Program, all data shall be presented in tabular form. Groundwater laboratory analytical data for all monitoring wells for this and all previous sampling events shall also be presented in tabular format.
- A groundwater elevation contour map of the site based on current groundwater potentiometric data.
- A CoC map based on current groundwater laboratory analytical data. The groundwater data should be adjacent to the relevant monitoring well location.
- Manifests for any contaminated groundwater removed from the site for treatment and/or disposal.

Cost agreement number 34296 has been approved for the amount shown on the enclosed cost agreement form. KLM Environmental can submit an invoice for direct billing from the State Underground Petroleum Environmental Response Bank (SUPERB) Account. If the invoice and the

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completed report are not submitted within 120 days from the date of this letter, monies allocated to pay this invoice will be uncommitted. This means that the invoice will not be processed for payment until all other committed funds are paid or monies become available. Please be advised if the time frame exceeds 45 days between the date when the groundwater samples are collected and the date the report of findings is received, the analytical data will not be considered current and KLM Environmental will not be reimbursed for a personnel mobilization to collect the groundwater samples, sample collection costs, laboratory analyses, or associated disposal costs. Beginning in 2009, the UST Program will begin requiring that laboratories be certified through the SCDHEC Office of Environmental Laboratory Certification for the oxygenate compounds. The UST Program will require that laboratories submit the application for certification no later than December 31, 2008. Beginning April 1, 2009, the UST Program will no longer reimburse costs for oxygenate analysis for any laboratory that is not certified. Detailed information regarding the oxygenate certification can be found on the UST Guidance Documents webpage. (http://www.scdhec.net/environment/lwm/forms/Oxygenate_Certification.pdf). Any laboratory with questions regarding the certification requirements, should contact the Office of Environmental Laboratory Certification at (803) 896-0970.

Please note that Sections 44-2-110(4) and 44-2-130 of the SUPERB Statute state that no costs will be allowed unless prior approval from the Program is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be preapproved by the Program for the cost to be paid. The SCDHEC reserves the authority to pay only for work properly performed and/or technically justified and will only pay rates in accordance with established criteria. Further, SCDHEC reserves the right to question and/or reject costs if deemed unreasonable and the right to audit project records at any time during the project or after completion of work.

The Department grants pre-approval for transportation of virgin petroleum impacted soil and groundwater from the referenced site to a permitted treatment facility. There can be no spillage or leakage in transport. All investigation-derived waste (IDW) must be properly contained and labeled prior to disposal. IDW should not be stored on-site longer than ninety (90) days. A copy of the disposal manifest and/or acceptance letter from the receiving facility that clearly designates the quantity received must be included as an appendix to the report. If the CoC concentrations, based on laboratory analysis, are below RBSLs, please contact the project manager for approval to dispose of soil and/or groundwater on site. The SUPERB Account will not reimburse for transportation or treatment of soil and/or groundwater with concentrations below RBSLs.

On all correspondence regarding this site, please reference UST Permit number 04736. Should you have any questions regarding this correspondence, please feel free to contact me at (803) 896-6396, fax me at (803) 896-6245, or e-mail me at bosnicvj@dhec.sc.gov.

Sincerely,

Victoria F Bosnick

Victoria Bosnick, Hydrogeologist
Assessment Section
Assessment and Corrective Action Division
Bureau of Land and Waste Management

enc: Approved Cost Agreement (ACA)

cc: KLM Environmental, 137 Evergreen Magnolia Ave, Goose Creek, SC 29445 (with enc.)
Technical file (with enc.)

Approved Cost Agreement 34296

Facility: 04736 STOCKMAN OIL TWO INC
BOSNICVJ
PO Number:

Task / Description	Categories	Item Description	Qty / Pct	Unit Price	Amount
04 MOB/DEMOB					
		B PERSONNEL	2.0000	290.00	580.00
10 SAMPLE COLLECTION					
		D GW SAMPLE- NO PURGE	4.0000	35.00	140.00
11 ANALYSES					
	GW GROUNDWATER	A BTEX+NAPTH+MTBE	4.0000	100.00	400.00
		BB 1,2-DCA	4.0000	10.75	43.00
		E LEAD	4.0000	20.00	80.00
		F EDB	4.0000	55.00	220.00
		P 8 OXYGENATES	4.0000	85.00	340.00
17 DISPOSAL					
		A1 WASTEWATER - PURGING/SAMPLING	1.0000	90.00	90.00
19 RPT/PROJECT MNGT & COORDINATIO					
		PCT PERCENT	0.1500	1,893.00	283.95
			Total Amount		2,176.95

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C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

OCT 04 2010

10 Tech
UST
DOCKET

MR MARK KELLER
KLM ENVIRONMENTAL, LLC
PO BOX 2704
GOOSE CREEK SC 29445

Re: **Review Letter**
UST Permit # **04736, 04669, 03511, 08493, 04963, 04951, 05144, 03443, 06275, 11820, 06274, 08870, 08893, 08846, 08873, 07920,** and **19423**

Dear Mr. Keller:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (SCDHEC) has reviewed the Aggressive Fluid Vapor Recovery (AFVR) reports for the above referenced UST facilities. It is noted in the reports that the emissions calculations were based on data obtained after the airflow had passed through a carbon treatment unit. This data is not representative of the actual removal rates at the sites and is not as useful in determining the effectiveness of an AFVR event. The UST Division requests that emission calculations be based on airflow concentrations prior to the carbon treatment on all future AFVR events. **Failure to comply with this request may result in the denial of the associated costs of the 15% reporting and project management allowance.**

If you have any questions regarding this correspondence, please contact me at (803) 896-6649 or koonjt@dhec.sc.gov.

Sincerely,

Justin Koon, Engineer Associate
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: Lee A Monts, Manager
UST Project Managers
Technical file

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

OCT 2 0 2010

AP STOCKMAN III
STOCKMAN OIL TWO INC
1138 REYNOLDS AVENUE
GREENWOOD SC 29646

UST DOCKET 11T

Re: **Aggressive Fluid Vapor Recovery Directive**
Stockman Oil Two Inc: 1138 Reynolds Avenue, Greenwood, SC
UST Permit # **04736**; **CA # 40115**
Release reported December 27, 1989
AFVR Report received June 14, 2010
Greenwood County

Dear Mr. Stockman:

The Underground Storage Tank Management Division (UST Division) of the South Carolina Department of Health and Environmental Control (SCDHEC) has reviewed the file and determined the next necessary scope of work is to conduct two (2) Aggressive Fluid/Vapor Recovery (AFVR) events to remove free phase product. The first event is to be performed on MW5 and the second event is to be on MW6. These events can occur on consecutive days. **Contractor to calculate emissions based on airflow readings prior to off-gas treatment.**

Cost Agreement # **40115** has been approved in the amount shown on the enclosed cost agreement form for the aforementioned scope of work. The AFVR activities may proceed immediately upon receipt of this letter. The AFVR Report submitted at the completion of these activities should include the following:

- A narrative portion documenting the AFVR events noting site conditions, the name of the AFVR contractor, field personnel, date, time the AFVR events started and ended, ambient air temperature, and general weather conditions during the AFVR events.
- A brief description of the completed work scope and any relevant descriptions pertaining to the data tables.
- A table summarizing the airflow (in CFM) and volatile air emissions concentrations collected from the stack of the truck every thirty minutes through the duration of the events. The table shall also document which well(s) were being recovered from during that time interval.
- A table summarizing the magnehelic gauge measurements from all applicable wells on a thirty-minute time interval.
- The total volume of water recovered (gallons).
- The total volume of free phase product recovered (typically measured with a product/water interface device inserted into the top of the tanker at the completion of the event and then converted to an approximate volume).
- The total weight of petroleum removed as vapor. This is calculated based on the airflow rate and the concentration of vapor.
- A table documenting the free product thickness in each well before and after the recovery events.
- Scaled base map depicting the location of the extraction wells and the surrounding wells equipped with magnehelic gauges.
- Manifests for any contaminated soil and/or groundwater removed from the site for treatment and/or disposal.
- Signature and seal by a professional geologist or engineer registered in the State of South Carolina.

Magnehelic gauges must be installed on the extraction wells and monitoring wells immediately surrounding the extraction wells. The AFVR should be completed by establishing a vacuum on the subsurface through the existing monitoring wells. The unit must be capable of providing a minimum airflow of 250 cubic feet per minute (CPM) at 25 inches Mercury vacuum. An airtight seal must be established on the top of each extraction well. Drop tubes inserted in the well(s) should have an inside diameter of at least one (1) inch and should initially be installed six inches below the bottom of the product or the top of the well screen whichever is deeper. The drop tubes should be lowered deeper in the well only if the well exhibits slow recovery (repeatedly goes dry) or if it is deemed necessary to establish a steeper hydraulic gradient to enhance free product migration toward the well. The goal is to maximize the recovery of free product and petroleum vapors in the capillary fringe and minimize the recovery of ground water.

KLM Environmental can submit an invoice for direct billing from the SUPERB Account. Please note that all applicable South Carolina certification requirements apply to the laboratory services, well installation, and report preparation. All site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor.

An AFVR report and invoice are due within 90 days from the date of this letter. Interim invoices may be submitted for this scope of work. If the invoice is not submitted within 120 days from the date of this letter, monies allocated to pay this invoice will be uncommitted. This means that the invoice will not be processed for payment until all other committed funds are paid or monies become available.

Please note that Sections 44-2-110(4) and 44-2-130 of the SUPERB Statute state that no costs will be allowed unless prior approval from the UST Division is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the UST Division for the cost to be paid. The SCDHEC reserves the authority to pay only for work properly performed and/or technically justified and will only pay rates in accordance with established criteria. Further, SCDHEC reserves the right to question and/or reject costs if deemed unreasonable and the right to audit project records at any time during the project or after completion of work.

The Department grants pre-approval for transportation of virgin petroleum impacted groundwater from the referenced site to a permitted treatment facility. There can be no spillage or leakage in transport. All investigation derived waste (IDW) must be properly contained and labeled prior to disposal. IDW should not be stored on-site longer than ninety (90) days. A copy of the disposal manifest and/or acceptance letter from the receiving facility that clearly designates the quantity received must be included as an appendix to the report. If the COC concentrations, based on laboratory analysis, are below Risk Based Screening Levels (RBSLs), please contact the project manager for approval to dispose of soil and/or groundwater on site. The SUPERB Account will not reimburse for transportation or treatment of soil and/or groundwater with concentrations below RBSLs.

On all correspondence or inquiries regarding this project, please reference **UST Permit #04736 and CA#40115**. If you have any questions, please feel free to contact me by phone at (803) 896-6649, by fax at (803) 896-6245, or email at koonjt@dhec.sc.gov.

Sincerely,

Justin Koon, Engineer Associate
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

enc: Cost Agreement

cc: KLM Environmental: PO Box 2704, Goose Creek, SC 29445 (w/ enc)
Technical File (w/ enc)

Approved Cost Agreement 40115

Facility: 04736 STOCKMAN OIL TWO INC

KOONJT

PO Number:

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
04 MOB/DEMOB						
		A	EQUIPMENT	2.0000	575.00	1,150.00
		B	PERSONNEL	2.0000	290.00	580.00
17 DISPOSAL						
		A2	WASTEWATER - PUMPING TEST	2,000.0000	0.60	1,200.00
19 RPT/PROJECT MNGT & COORDINATIO						
		PCT	PERCENT	0.1500	9,490.00	1,423.50
23 EFR						
		A	8 HOUR EVENT	2.0000	3,000.00	6,000.00
		C	OFF GAS TREATMENT	16.0000	35.00	560.00
				Total Amount		10,913.50

KLM Environmental, LLC

Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation
PO Box 2704
Goose Creek, SC 29445
843-870-4285 Phone
843-797-1893 Fax

1 Attch
UST DOCKET
UST
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PROGRAM

November 23, 2010

Mr. Justin Koon
SCDHEC – BUSTM
2600 Bull Street
Columbia, S.C. 29201

Re: Stockman Oil Two, Inc.
Permit # 04736 CA # 40115

Dear Mr. Koon,

This letter, along with its attachments, is presented to document the results of the Aggressive Fluid Vapor Recovery (AFVR) events performed on November 11th and November 12th, 2010. As you requested, the AFVR events on each well were conducted for 8 hours on consecutive days. Monitoring wells MW-5 and MW-6 contained free phase product and were gauged prior to each event. The drop tube was installed to a depth of six inches below the bottom of the product during the AFVR events. Results from each event are provided on the attached tables. A total of 16.5 gallons of petroleum product was recovered during the AFVR events. Emissions calculations were performed for each event and a total of 0.284 gallons of petroleum product were recovered as vapor. KLM recommends continued AFVR events at the site in order to remove the free phase petroleum product.

All of the remaining information requested in the AFVR letter is provided as an attachment. It has been a pleasure working with you on this project. Please call me directly if you have any questions at 843-870-4285.

Sincerely,

KLM Environmental, LLC

Mark L. Keller, PG
President

Enclosures(7): AFVR information tables; Waste Manifests; Emissions Calculations; Site Map

cc: Chip Stockman, Stockman Oil Two, Inc. (1138 Reynolds Ave., Greenwood, SC)

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 11/11/10
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Wayne Infinger	General Weather Conditions: Sunny
Ambient Air Temperature: 75 Fahrenheit	Estimated Gallons of Product Removed: 7.5 gallons	Initial Product Thickness: MW-5 = 10.65
Final Product Thickness: MW-5 = 5.85	AFVR Start Time: 12:30	AFVR End Time: 20:00

Time(Readings Every 30 Minutes)	Recovery Rate				Air Emission Conc. Measurements in ppm (Carbon Filter on Exhaust Gas)*
	Vacuum Inches of Hg	Temp Degrees F	Stack Vel. mph	Humidity	
12:00	-21	77.3	3.6	49.5	118
12:30	-21	86.4	4.7	47.6	127
13:00	-21	94.6	3.9	39.9	116
13:30	-21	107.8	4.1	37.3	133
14:00	-21	119.3	4.3	33.5	111
14:30	-21	126.4	4.0	26.1	98
15:00	-21	130.2	3.8	23.0	104
15:30	-21	135.6	3.9	23.8	96
16:00	-21	138.2	4.5	22.9	101
16:30	-21	134.7	4.1	23.4	86
17:00	-21	139.6	4.3	22.6	115
17:30	-21	135.1	3.8	22.2	94
18:00	-21	138.6	4.4	21.9	81
18:30	-21	140.2	4.7	22.7	107
19:00	-21	137.5	4.2	30.1	74
19:30	-21	141.2	4.5	23.6	113
20:00	-21	139.8	4.6	21.5	69

	Start	End
MW-5	27.39 – 38.04	27.46 – 33.31

KLM Environmental, LLC

Phase I Phase II Underground Storage Tanks Soil & Water Sampling Well Installation

AFVR Table
Stockman Oil Two, Inc.
1138 Reynolds Ave
Greenwood, SC
Site ID 04736 11/11/10

11/11/2010

Equations to determine Pollutant Mass Removal rate as gasoline (PMRg):

$PPM_w = PPM_{measured} =$	102.5294118
$PPM_d = PPM_w / (1-Bws) =$	116.4927784
$PPM_c = (PPM_d)(K) =$	465.9711137
$C_{c:m} = PPM_c(M_c/K_3) =$	232.5015819
$C_c = C_{c:m}(62.43x10^{-9}) =$	1.45151E-05
$PMR_c = C_c(Qstd)(60) =$	0.089261179
$PMR_g = (PMR_c)(M_g/M_{cg}) =$	**0.103302263 lbs of emissions per hour**
	0.132226897 Gallons of emissions per 8 hours

US Water Recovery

Non-Hazardous Wastewater Manifest

Number:

1. Generator's EPA ID# (if applicable): Waste ID Number:

2. Generator's Name and Mailing Address: Phone ( )
Young's #8
P O #:

3. Agent of Generator and Mailing Address: Phone (843) 870-4285
KLM Enviromental
Po Box 2704 Goose Creek SC. 29445
P O #:

4. Transporter Company Name: Phone (843) 906-8759
Vaccum Recovery Tech
118 Spring Hall Dr. Suite E Goose Creek SC. 29445
Truck & Trailer License Number:

5. Transporter U.S. EPA ID#:

6. Facility Name and Site Address: Phone: (843) 797-8674
U S Water Recovery
435 Old Mt. Holly Rd.
Mt. Holly, SC 29445
Fax: (843) 797-2126

Mailing Address: Phone: (843) 797-3111
U S Water Recovery
210 S. Cedar Street
Summerville, SC 29483
Fax: (843) 797-1884

7. Facility U.S. EPA ID#:

Start Level: End Level: Total Gallons: Tank Number

8. U.S. DOT Desciption	Container No.	Container Type	Unit	Quantity
* Non-Hazardous, non-regulated waste water				105
Stockman Oil				88
Stockman Oil				170

9. Generator's Certification: I hereby declare that the contents of this consignment are not hazardous by definition or listing and are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and the laws of the State of South Carolina. I further certify that the contents of this consignment are as represented by the description contained on the Waste Profile Form previously submitted to and approved by the Designated Facility.

Printed/Typed Name: Jason Boots Signature: Jason Boots Date: 11-19-10

10. Transporter Acknowledgement of Receipt of Materials:
Printed/Typed Name: Wayne Tiffner Signature: Wayne Tiffner Date: 11-17-10

11. Discrepancy indication space:

12. Facility Owner or Operator: Certification of Receipt of Materials
Printed/Typed Name: Jonathan Goodbell Signature: [signature] Date: 11-19-10

White - Facility Yellow - Office Pink - Transporter Blue - Generator

7622

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 11/12/10
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Wayne Infinger	General Weather Conditions: Sunny
Ambient Air Temperature: 55 Fahrenheit	Estimated Gallons of Product Removed: 9 gallons	Initial Product Thickness: MW-6 = 10.12
Final Product Thickness: MW-6 = 3.74	AFVR Start Time: 7:00	AFVR End Time: 15:00

Time(Readings Every 30 Minutes)	Recovery Rate				Air Emission Conc. Measurements in ppm (Carbon Filter on Exhaust Gas)*
	Vacuum Inches of Hg	Temp Degrees F	Stack Vel. mph	Humidity	
7:00	-21	71.3	4.0	29.5	67
7:30	-21	81.5	3.9	28.6	53
8:00	-21	88.6	4.5	28.1	98
8:30	-21	91.7	4.2	29.8	104
9:00	-21	95.1	4.4	27.5	87
9:30	-21	105.6	4.8	23.2	157
10:00	-21	108.9	4.6	21.7	104
10:30	-21	119.8	4.1	19.6	111
11:00	-21	123.7	4.5	18.4	127
11:30	-21	131.4	4.3	17.6	119
12:00	-21	128.8	4.0	12.8	135
12:30	-21	133.4	4.6	12.1	147
13:00	-21	136.7	4.3	13.2	122
13:30	-21	132.6	4.4	12.6	161
14:00	-21	139.5	4.1	11.9	113
14:30	-21	141.8	4.0	12.7	144
15:00	-21	137.3	3.7	12.7	99

	Start	End
MW-6	26.62 – 36.74	27.82 – 31.56

11/12/2010

Equations to determine Pollutant Mass Removal rate as gasoline (PMRg):

$PPM_w = PPM_{measured} =$	114.5882353
$PPM_d = PPM_w / (1-Bws) =$	130.1938797
$PPM_c = (PPM_d)(K) =$	520.775519
$C_{c:m} = PPM_c(M_c/K_3) =$	259.8468626
$C_c = C_{c:m}(62.43x10^{-9}) =$	1.62222E-05
$PMR_c = C_c(Qstd)(60) =$	0.102756544
$PMR_g = (PMR_c)(M_g/M_{cg}) =$	**0.118920495 lbs of emissions per hour**
	0.152218233 Gallons of emissions per 8 hours

US Water Recovery

Non-Hazardous Wastewater Manifest

Number:

1. Generator's EPA ID# (if applicable): Waste ID Number:

2. Generator's Name and Mailing Address: Phone ( )
Young's #8
P O #:

3. Agent of Generator and Mailing Address: Phone (843) 870-4285
KLM Enviromental
Po Box 2704 Goose Creek SC. 29445
P O #:

4. Transporter Company Name: Phone (843) 906-8759
Vaccum Recovery Tech
118 Spring Hill Dr. Suite E Goose Creek SC. 29445
Truck & Trailer License Number:

5. Transporter U.S. EPA ID#:

6. Facility Name and Site Address: Phone: (843) 797-8674
U S Water Recovery
435 Old Mt. Holly Rd.
Mt. Holly, SC 29445
Fax: (843) 797-2126

Mailing Address: Phone: (843) 797-3111
U S Water Recovery
210 S. Cedar Street
Summerville, SC 29483
Fax: (843) 797-1884

7. Facility U.S. EPA ID#:

Start Level: End Level: Total Gallons: Tank Number

8. U.S. DOT Desciption	Container No.	Container Type	Unit	Quantity
* Non-Hazardous, non-regulated waste water				105
Stockman Oil				88
Stockman Oil				170

9. Generator's Certification: I hereby declare that the contents of this consignment are not hazardous by definition or listing and are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and the laws of the State of South Carolina. I further certify that the contents of this consignment are as represented by the description contained on the Waste Profile Form previously submitted to and approved by the Designated Facility.

Printed/Typed Name: Jason Boots Signature: Jason Boots Date: 11-17-10

10. Transporter Acknowledgement of Receipt of Materials:
Printed/Typed Name: Wayne Tatmer Signature: Wayne Tatmer Date: 11-17-10

11. Discrepancy indication space:

12. Facility Owner or Operator: Certification of Receipt of Materials
Printed/Typed Name: Jonathan Goodwell Signature: [signature] Date: 11-19-10

White - Facility Yellow - Office Pink - Transporter Blue - Generator

7622

FIGURE 2
SITE MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

KLM Environmental, LLC
Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation

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C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

STOCKMAN OIL TWO INC
1138 REYNOLDS AVE
GREENWOOD SC 29646

JAN 1 2 2012

Re: **AFVR Directive**
Stockman Oil Two Inc: 1138 Reynolds Ave, Greenwood, SC 29646
UST Permit #**04736**; Cost Agreement #**42634**
Release reported December 27, 1989
Aggressive Fluid Vapor Recovery Report received November 30, 2010
Greenwood County

Dear :

The Underground Storage Tank Management Division (UST Division) of the South Carolina Department of Health and Environmental Control (SCDHEC) has approved the following scope of work to remove free product:

Conduct two 8-hour AFVR events 15-20 days apart:
Event #1: MW-5 & MW-6
Event #2: MW-5 & MW-6 (to be conducted between 15 and 20 days after Event #1)

The AFVR events must be conducted and reported in accordance with the UST Quality Assurance Program Plan (QAPP) Revision 1.0 and in compliance with all applicable regulations. Cost Agreement #**42634** has been approved in the amount shown on the enclosed cost agreement form. The AFVR activities may proceed immediately upon receipt of this letter.

KLM Environmental may submit an invoice for direct billing from the State Underground Petroleum Environmental Response Bank (SUPERB) Account. Please Note that all site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor.

An AFVR report and invoice are due within 90 days from the date of this letter. Interim reports and invoices may be submitted for this scope of work. If the final invoice is not submitted within 120 days from the date of this letter, monies allocated to pay this invoice will be uncommitted. This means that the invoice will not be processed for payment until all other committed funds are paid or monies become available.

Please note that Sections 44-2-110(4) and 44-2-130 of the SUPERB Statute state that no costs will be allowed unless prior approval from the UST Division is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the UST Division for the cost to be paid. The SCDHEC reserves the authority to pay only for work properly performed and/or technically justified and will only pay rates in accordance with established criteria. Further, SCDHEC reserves the right to question and/or reject costs if deemed unreasonable and the right to audit project records at any time during the project or after completion of work.

On all correspondence or inquiries regarding this project, please reference **UST Permit #04736.** If you have any questions, please feel free to contact me by phone at (803) 896-6649, by fax at (803) 896-6245, or email at ebingedj@dhec.sc.gov.

Sincerely,

David J. Ebinger, Project Manager
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

enc: Cost Agreement

cc: KLM Environmental LLC: PO Box 2704, Goose Creek, SC 29445 (w/ enc)
Technical File (w/ enc)

Approved Cost Agreement 42634

Facility: 04736 STOCKMAN OIL TWO INC

EBINGEDJ

PO Number:

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
04 MOB/DEMOB						
		A	EQUIPMENT	2.0000	575.00	1,150.00
		B	PERSONNEL	2.0000	290.00	580.00
17 DISPOSAL						
		A	WASTEWATER	1,400.0000	0.80	1,120.00
19 RPT/PROJECT MNGT & COORDINATIO						
		PCT	PERCENT	0.1500	9,410.00	1,411.50
23 EFR						
		A	8 HOUR EVENT	2.0000	3,000.00	6,000.00
		C	OFF GAS TREATMENT	16.0000	35.00	560.00
				Total Amount		10,821.50

14-Tech

RECEIVED
JUL 23 2002
Underground Storage
Tank Program

TIER I ASSESSMENT

STOCKMAN OIL TWO
1138 REYNOLDS AVENUE
GREENWOOD, SOUTH CAROLINA

SCDHEC SITE ID #04736

Submitted to:

Bureau of Underground Storage Tank Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Prepared By:

FORCE & ASSOCIATES, INC.
147 Vera Road, Suite A
Lexington, South Carolina 29072
(803) 359-3200 (803) 359-6682-Fax

JULY 2002

Force & Associates, Inc.
147 Vera Road, Suite A, Lexington, South Carolina 29072 (803) 359-3200 (803) 359-6682 fax

July 23, 2002

RECEIVED
JUL 23 2002
Underground Storage
Tank Program

Ms. Debra L. Thoma, Hydrogeologist
Owner/Operator Assistance Section
Assessment & Corrective Action Division
UST Program
Bureau of Land and Waste Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

ATTN: Ms. Debra L. Thoma, Hydrogeologist

RE: Tier I Assessment
Stockman Oil Two, SCDHEC Site ID #04736
1138 Reynolds Avenue
Greenwood, South Carolina

Dear Ms. Thoma:

Force & Associates, Inc. is pleased to submit the results from our Tier I Assessment of the referenced facility for your review and approval. The assessment was performed to evaluate the impact of a petroleum release from the former underground storage tank (UST) system and to gain sufficient information for a Tier I risk-based corrective action (RBCA) evaluation. This work was performed in accordance with the South Carolina Department of Health and Environmental Control (SCDHEC) Tier I assessment guidance document.

Force & Associates, Inc. appreciates your assistance with this project. Please contact our office at (803) 359-3200 if you have any questions or require additional information pertaining to this project.

Sincerely,
FORCE & ASSOCIATES, INC.
SCDHEC UST Certified Contractor #17

Greg Force, P.G. (#675)
President

GF/sjs

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APPENDIX B WELL CONSTRUCTION LOGS
APPENDIX C CHAIN OF CUSTODY AND LABORATORY FORMS
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APPENDIX F COPY OF LOCAL ZONING REQUIREMENTS
APPENDIX G TAX MAP DATA

TIER I ASSESSMENT REPORT OF FINDINGS

I. INTRODUCTION

A. Property Owner Information

Stockman Oil Two, Inc.
Attn: Pierce Stockman
1138 Reynolds Avenue
Greenwood, SC 29649-2736
(864) 223-8486/(800) 868-7569

B. UST Owner Information

Stockman Oil Two, Inc.
Attn: Pierce Stockman
1138 Reynolds Avenue
Greenwood, SC 29649-2736
(864) 223-8486/(800) 868-7569

C. Contractor Information

Force & Associates, Inc.
SCDHEC Certification #: 17
147 Vera Road, Suite A
Lexington, South Carolina 29072
(803) 359-3200

D. Site Information

Stockman Oil Two
1138 Reynolds Avenue
Greenwood, SC 29649-2736
(864) 223-8486

Description of Adjacent Land Use: The site is bordered by commercial businesses to the north, a strip mall to the east, residential homes to the south, and a restaurant to the west.

UST Facilities Identified within 1,000 ft. radius of the site: Texaco Service Station, SCDHEC Site ID#11006, is located approximately 480-feet north of the site.

Predicted Future Land Use: The site is utilized as equipment, fuel storage, and refueling facility. To our knowledge there are no immediate plans to redevelop the property.

E. Site History

Date Release Reported to SCDHEC: The release was reported on December 27, 1989 and confirmed on June 20, 1990.

Estimated Quantity of Product Released: Based on the analytical results, it appears that the majority of the contaminants detected in the groundwater samples are gasoline range constituents, however, the estimated quantity of the release is unknown.

Cause of Release: The cause of the release is unknown.

UST #	Product	Date Installed	Currently in use (Yes or No)	Date Abandoned
001	6,000-gallon Kerosene	~1960	No	11/15/90
002	6,000-gallon Gasoline	~1960	No	11/15/90
003	6,000-gallon Gasoline	~1960	Yes	N/A
004	6,000-gallon Gasoline	~1960	Yes	N/A
005	6,000-gallon MO	~1960	No	11/15/90
006	15,000-gallon Diesel	~1960	No	9/15/91
007	15,000-gallon MO	~1960	No	9/15/91

Other Releases at this site? N/A
If yes, Date Release Reported to SCDHEC: N/A
Status of Release: N/A
No Further Action Date: N/A

II. SITE CHARACTERISTICS

A. Site Geography

The site is located within the Piedmont Physiographic Province. Topography in the assessment area slopes to the south. Surface runoff is removed by a storm water drainage system located along Highway 72 Bypass. The closest surface water body is Wilson Creek located approximately 2,000-feet southeast of the site.

The approximate elevation of the site is 610-feet (msl).

B. Exposure Analysis

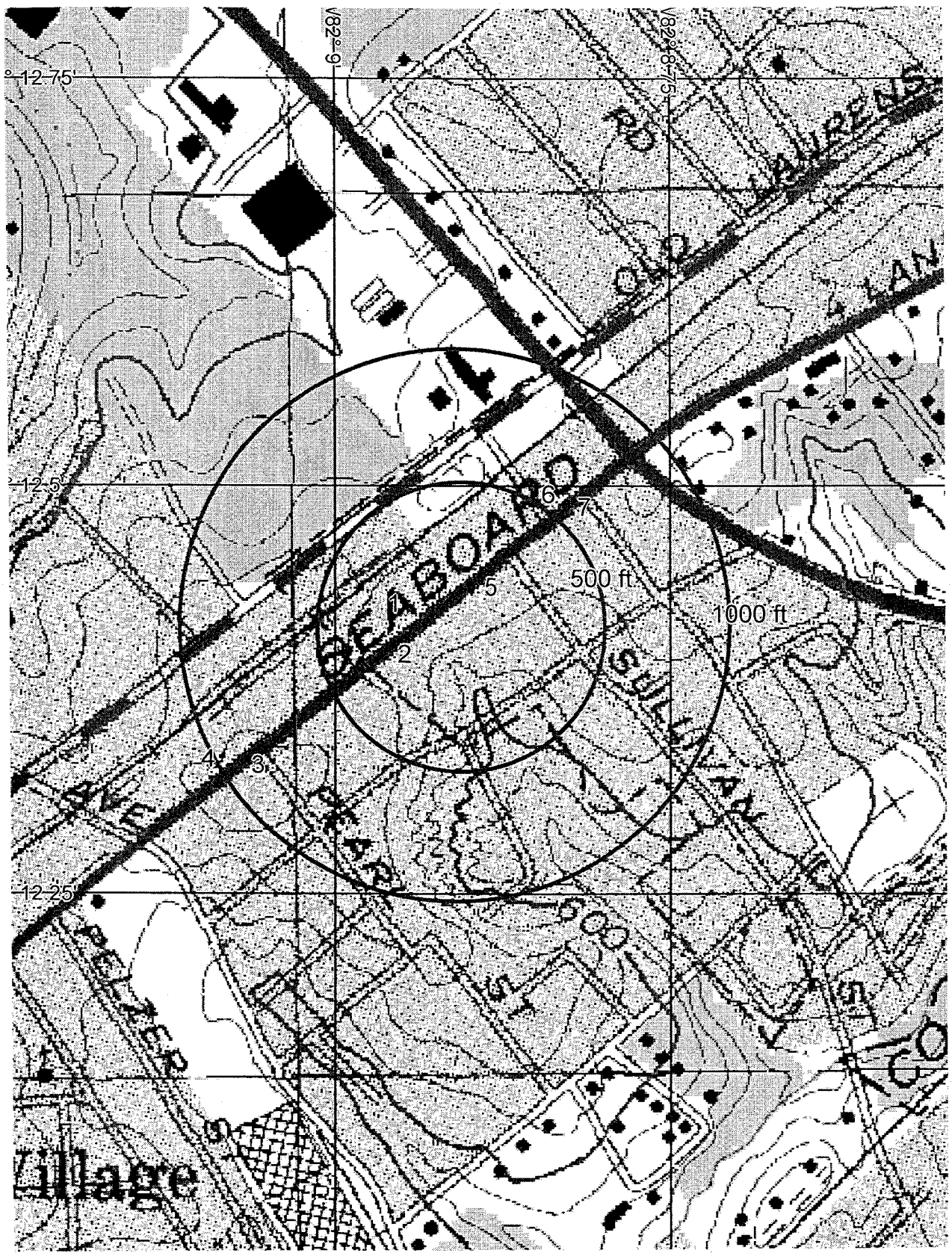
The following potential receptors and preferential pathways were identified within a 1,000-foot radius of the site.

RECEPTORS	DESCRIPTION	OVA	DISTANCE/DIRECTION FROM SITE
1	Storm Drain (4-5' depth)	0	140' Southwest
2	Storm Drain (4-5' depth)	0	175' Southwest
3	Storm Drain (4-5' depth)	0	480' Southwest
4	Storm Drain (4-5' depth)	0	500' Southwest
5	Storm Drain (4-5' depth)	0	340' North
6	Storm Drain (4-5' depth)	-	510' North
7	Storm Drain (4-5' depth)	-	550' North

C. Utilities Survey

Subsurface utilities identified near the source area include sewer and electric lines. The sewer line extends from the southwestern portion of the building to the western side of Sullivan Street. Electric lines extend from the AST and fuel truck loading area to the southwestern portion of the building.

The utilities identified on site could not serve as exposure points or as preferential pathways since groundwater is located approximately 17 to 20-feet deeper than the estimated depth of the utilities.



FORCE & ASSOCIATES, INC. Environmental & Hydrogeological Consulting 147 Vera Road, Suite A Lexington, SC 29072	FIGURE 1 TOPOGRAPHIC SITE MAP SCALE 1" = 500'	STOCKMAN OIL TWO 1138 REYNOLDS AVENUE GREENWOOD, SOUTH CAROLINA SCDHEC SITE ID #04736

D. Site Geology

The site is located in the Piedmont Physiographic Region. The geology consists of medium to high grade metamorphic rocks, which include gneiss, schist and amphibolite. This geologic region has been classified as the Charlotte Belt by Overstreet and Bell.

This portion of Greenwood County is within the Saluda River Sub-basin. Groundwater occurs in fractures within the rocks. Of the 54 wells surveyed, depths range from 42 to 300-feet with yields from two to 50 gpm. The South Carolina Water Resources Commission's 1983 State Water Assessment reports that groundwater supplies approximately one percent of the sub-basin gross water demands. Groundwater is the only source of self-supplied domestic water use in the sub-basin. Groundwater also supplies four percent of the self-supplied industrial water use and 45 percent of the livestock water use. Agricultural demands account for 20 percent of groundwater demands while irrigation represents four percent of groundwater utilization.

The general site stratigraphy, documented from the borehole soil samples, consists of clayey sand, sandy clay, clayey silt and sandy silt.

E. Soil Boring Data

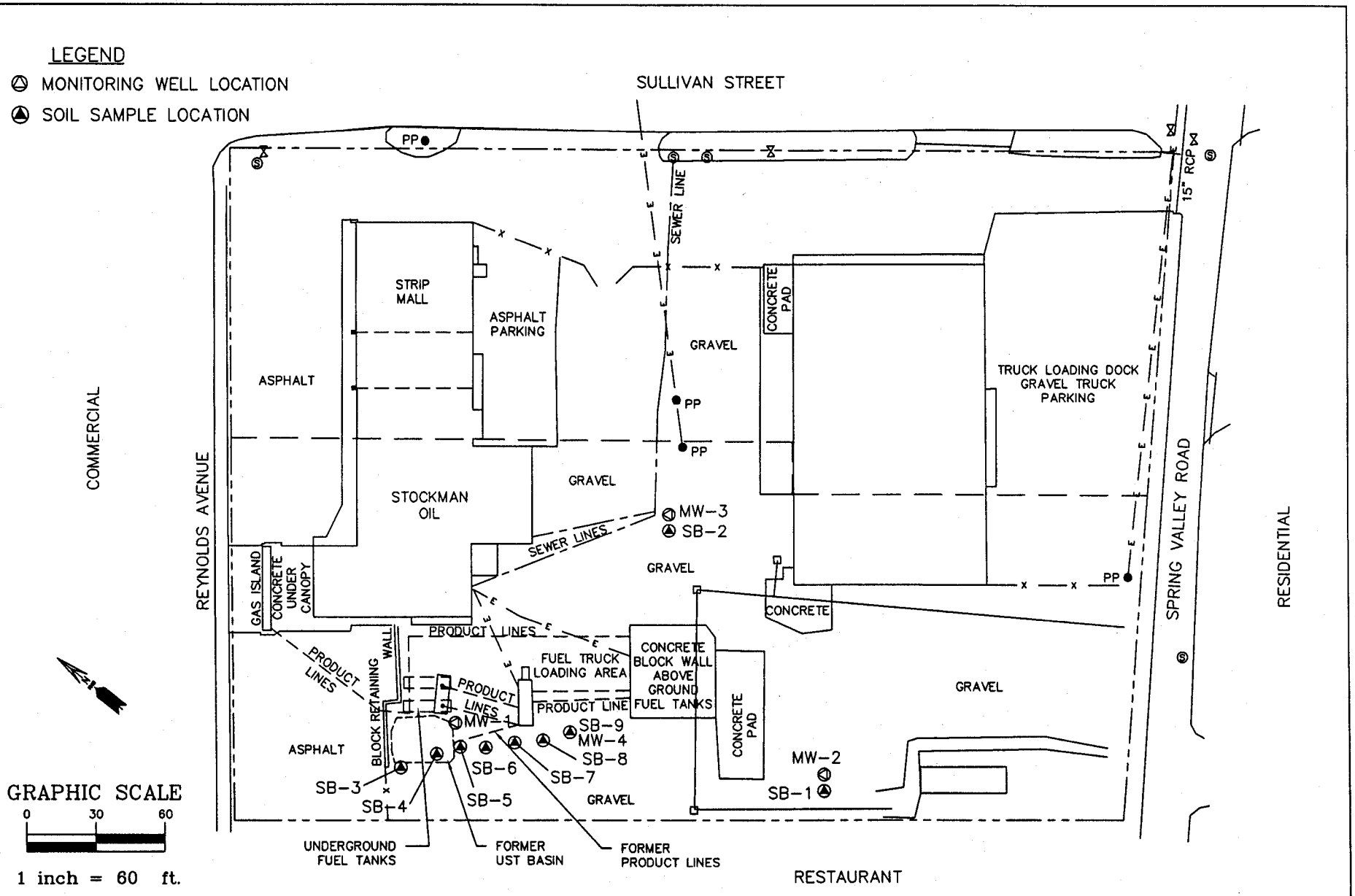
Drilling Date: June 10, 2002

Soil boring SB-1 was positioned near the southeastern portion of the property to collect a representative background sample for total organic carbon analysis.

Soil boring SB-2 was positioned near the eastern portion of the property.

Soil borings SB-3 and SB-4 were positioned southwest of the former UST basin.

Soil borings SB-5, SB-6, SB-7, SB-8 and SB-9 were positioned west of the dispenser island in the area of the former product lines.



Force & Associates, Inc. Environmental & Hydrogeological Consulting 147 Vera Road Lexington, SC 29072 Phone: 803-359-3200	SCALE 1"=60'±	SITE MAP SCDHEC SITE ID # 04736 STOCKMAN OIL TWO SULLIVAN STREET COLUMBIA, SOUTH CAROLINA	FIGURE NO. 2
	DRAWN BY CAB		CADD NO. stockman
	DESIGNED BY GLF		PROJ. NO. stockman
	DATE 7/18/02		

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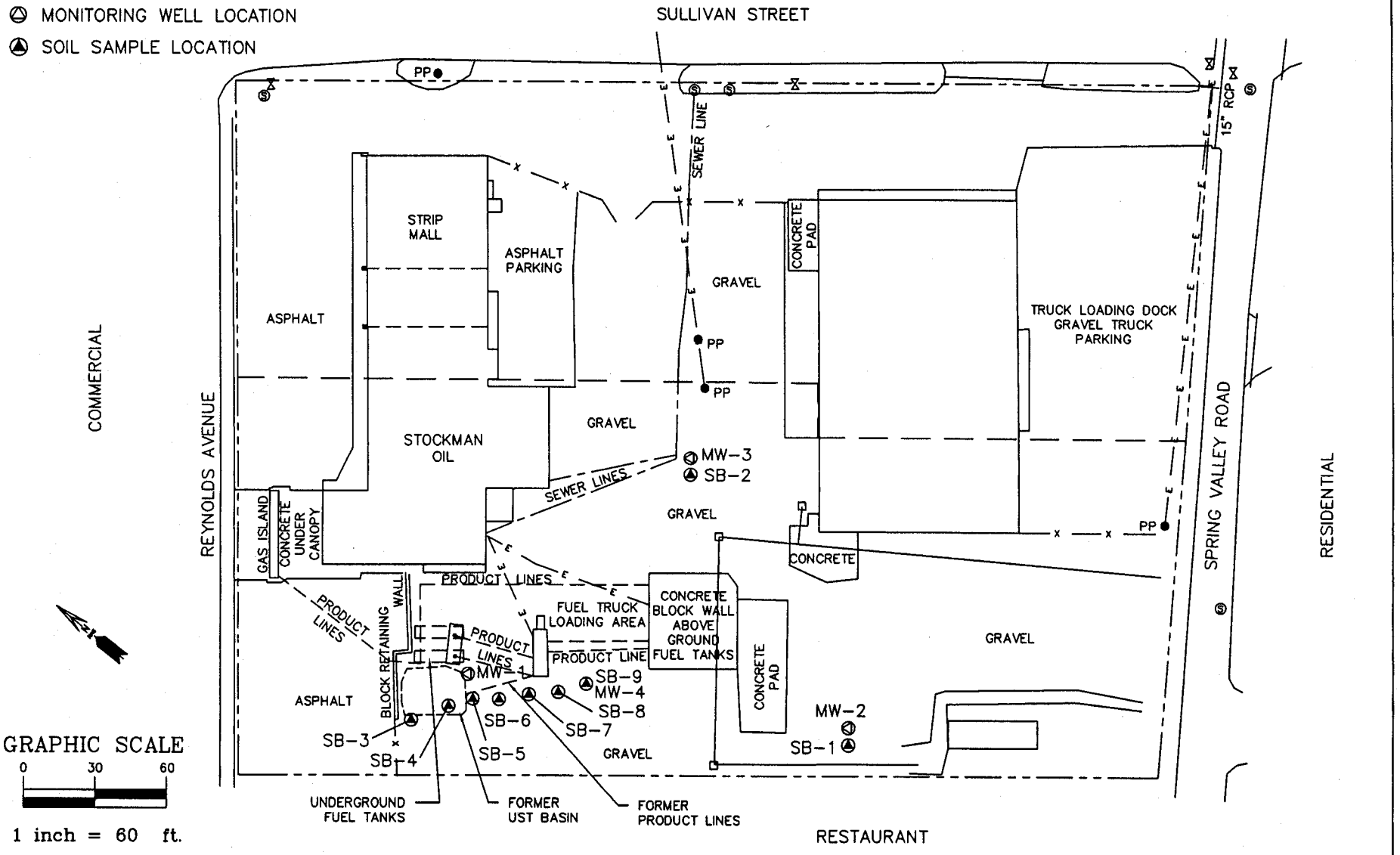


Force & Associates, Inc.
Environmental & Hydrogeological Consulting
147 Vera Road
Lexington, SC 29072
Phone: 803-359-3200

SCALE	1"=60'±
DRAWN BY	CAB
DESIGNED BY	GLF
DATE	7/18/02

SITE MAP
SCDHEC SITE ID # 04736
STOCKMAN OIL TWO
SULLIVAN STREET
COLUMBIA, SOUTH CAROLINA

FIGURE NO.	2
CADD NO.	stockman
PROJ. NO.	stockman

UST Area Borings –

Borehole SB-3 **Sampling Date-6/10/02** **Sample Depth-25.0 feet**

Sample Interval (ft.)	OVA Results	Lithology	Soil Conditions
5	4	Red/Brown Sandy Silt	Dry, No Odor
10	3	"	"
15	2	"	"
20	3	"	"
25*	4	Brown Sandy Silt	"

Borehole SB-4 **Sampling Date-6/10/02** **Sample Depth-25.0 feet**

Sample Interval (ft.)	OVA Results	Lithology	Soil Conditions
5	14	Brown Silty Sand	Dry, No Odor
10	41	"	"
15	37	Orange/Brown Sandy Silt	"
20	47	Brown Sandy Silt	"
25*	50	"	Dry, Odor

Piping and Dispenser Area Borings –

Borehole SB-5 **Sampling Date-6/10/02** **Sample Depth-2.0 feet**

Sample Interval (ft.)	OVA Results	Lithology	Soil Conditions
2*	5	Red/Brown Sandy Silt	Dry, No Odor
4	4	"	"
6	3	"	"
8	2	"	"
10	2	Brown Sandy Silt	"

Borehole SB-6 **Sampling Date-6/10/02** **Sample Depth-2.0 feet**

Sample Interval (ft.)	OVA Results	Lithology	Soil Conditions
2*	3	Red/Brown Sandy Silt	Dry, No Odor
4	2	"	"
6	1	"	"
8	1	"	"
10	1	"	"

Borehole SB-7 **Sampling Date-6/10/02** **Sample Depth-10.0 feet**

Sample Interval (ft.)	OVA Results	Lithology	Soil Conditions
2	1	Red/Brown Sandy Silt	Dry, No Odor
4	1	"	"
6	2	"	"
8	3	"	"
10*	9	"	"

Borehole SB-8 **Sampling Date-6/10/02** **Sample Depth-10.0 feet**

Sample Interval (ft.)	OVA Results	Lithology	Soil Conditions
2	2	Red/Brown Sandy Silt	Dry, No Odor
4	3	"	"
6	10	"	"
8	11	"	"
10*	20	Orange/Brown Sandy Silt	"

Borehole SB-9 **Sampling Date-6/10/02** **Sample Depth-6.0 feet**

Sample Interval (ft.)	OVA Results	Lithology	Soil Conditions
2	9	Red/Brown Sandy Silt	Dry, No Odor
4	18	"	"
6*	24	"	"
8	22	"	"
10	15	Orange/Brown Sandy Silt	"
15	17	Brown Silty Sand	"
20	19	"	"
25	28	Brown Sandy Silt	"
30	24	"	Moist, No Odor
35	—	"	Wet,

Background Boring –

Borehole SB-1 **Sampling Date-6/10/02** **Sample Depth-20.0 feet**

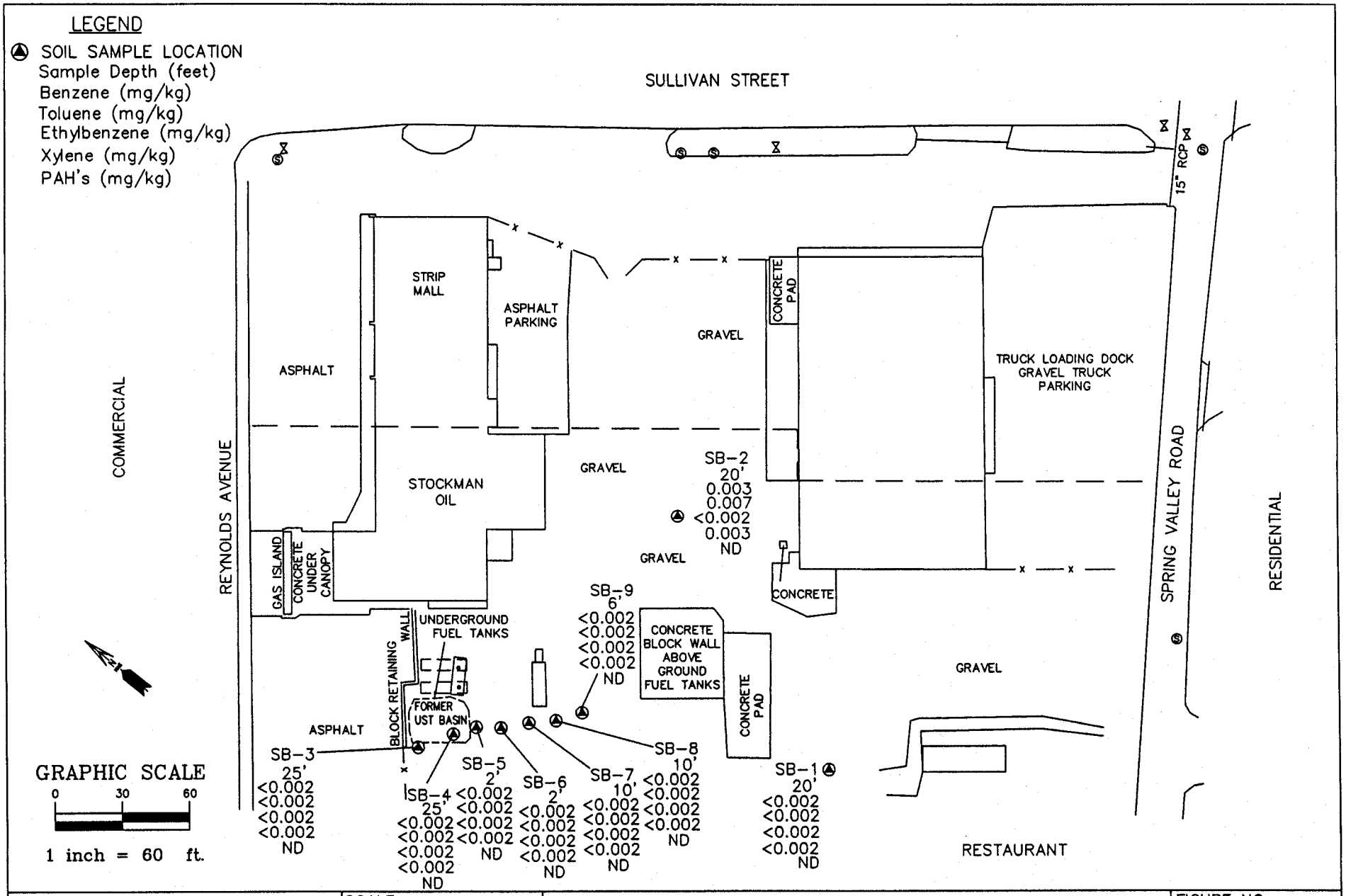
Sample Interval (ft.)	OVA Results	Lithology	Soil Conditions
5	0	Red/Brown Clayey Sand	Dry, No Odor
10	1	Orange/Brown Clayey Sand	"
15	4	Brown Sandy Clay	"
20*	9	"	"
25	13	Brown Clayey Sand	"
30	8	"	Moist, No Odor
35	5	"	Wet, No Odor

Cross Gradient Boring –

Borehole SB-2 **Sampling Date-6/10/02** **Sample Depth-20.0 feet**

Sample Interval (ft.)	OVA Results	Lithology	Soil Conditions
5	12	Orange/Brown Clayey Silt	Dry, No Odor
10	24	Brown Clayey Silt	"
15	60	"	Dry, Odor
20*	60	"	"
25	80	"	"
30	100	"	"
35	120	Light Brown Sandy Silt	Moist, Odor
40	190	"	Wet, Odor

* Samples submitted for chemical analysis.



Force & Associates, Inc.
Environmental & Hydrogeological Consulting
147 Vera Road
Lexington, SC 29072
Phone: 803-359-3200

SCALE	1"=60'±
DRAWN BY	CAB
DESIGNED BY	GLF
DATE	7/18/02

SOIL COC SITE MAP
SCDHEC SITE ID # 04736
STOCKMAN OIL TWO
SULLIVAN STREET
COLUMBIA, SOUTH CAROLINA

FIGURE NO.	3
CADD NO.	stockman
PROJ. NO.	stockman

CoC (mg/kg)	RBSL	SB-1 20'	SB-2 20'	SB-3 25'	SB-4 25'	SB-5 2'	SB-6 2'	SB-7 10'	SB-8 10'	SB-9 6'
Benzene	0.007	<0.002	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Toluene	1.450	<0.002	0.007	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Ethylbenzene	1.150	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Xylenes	14.500	<0.002	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Total BTEX		<0.002	0.013	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Naphthalene (8260B)	0.036	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Naphthalene (8270C)	0.036	<0.066	<0.066	<0.066	<0.066	<0.664	<0.066	<0.066	<0.066	<0.066
Anthracene		<0.066	<0.066	<0.066	<0.066	<0.664	<0.066	<0.066	<0.066	<0.066
Acenapthene		<0.066	<0.066	<0.066	<0.066	<0.664	<0.066	<0.066	<0.066	<0.066
Acenaphthylene		<0.066	<0.066	<0.066	<0.066	<0.664	<0.066	<0.066	<0.066	<0.066
Benzo(a)anthracene	0.066	<0.066	<0.066	<0.066	<0.066	<0.664	<0.066	<0.066	<0.066	<0.066
Benzo(a)pyrene		<0.066	<0.066	<0.066	<0.066	<0.664	<0.066	<0.066	<0.066	<0.066
Benzo(b)fluoranthene	0.066	<0.066	<0.066	<0.066	<0.066	<0.664	<0.066	<0.066	<0.066	<0.066
Benzo(g,h,i)perylene		<0.066	<0.066	<0.066	<0.066	<0.664	<0.066	<0.066	<0.066	<0.066
Benzo(k)fluoranthene	0.066	<0.066	<0.066	<0.066	<0.066	<0.664	<0.066	<0.066	<0.066	<0.066
Chrysene	0.066	<0.066	<0.066	<0.066	<0.066	<0.664	<0.066	<0.066	<0.066	<0.066
Dibenzo(a,h)anthracene	0.066	<0.066	<0.066	<0.066	<0.066	<0.664	<0.066	<0.066	<0.066	<0.066
Fluoranthene		<0.066	<0.066	<0.066	<0.066	<0.664	<0.066	<0.066	<0.066	<0.066
Fluorene		<0.066	<0.066	<0.066	<0.066	<0.664	<0.066	<0.066	<0.066	<0.066
Indeno(1,2,3-cd)pyrene		<0.066	<0.066	<0.066	<0.066	<0.664	<0.066	<0.066	<0.066	<0.066
Phenanthrene		<0.066	<0.066	<0.066	<0.066	<0.664	<0.066	<0.066	<0.066	<0.066
Pyrene		<0.066	<0.066	<0.066	<0.066	<0.664	<0.066	<0.066	<0.066	<0.066
TOC (Background boring)		<1000								
TPH (EPA 3550) (Diesel Range)			10.8							

No COC's were detected at concentrations greater than the soil RBSLs in the soil samples submitted for chemical analysis. Additional COC detected at concentrations less than the soil RBSLs included benzene, toluene and xylene in soil boring SB-2.

The soil sample collected from soil boring SB-2 was selected as the "worst case" based on the field screening results. This sample had a total petroleum hydrocarbon concentration of 10.8 parts per million (ppm). Soil boring SB-2 was positioned near the eastern portion of the property.

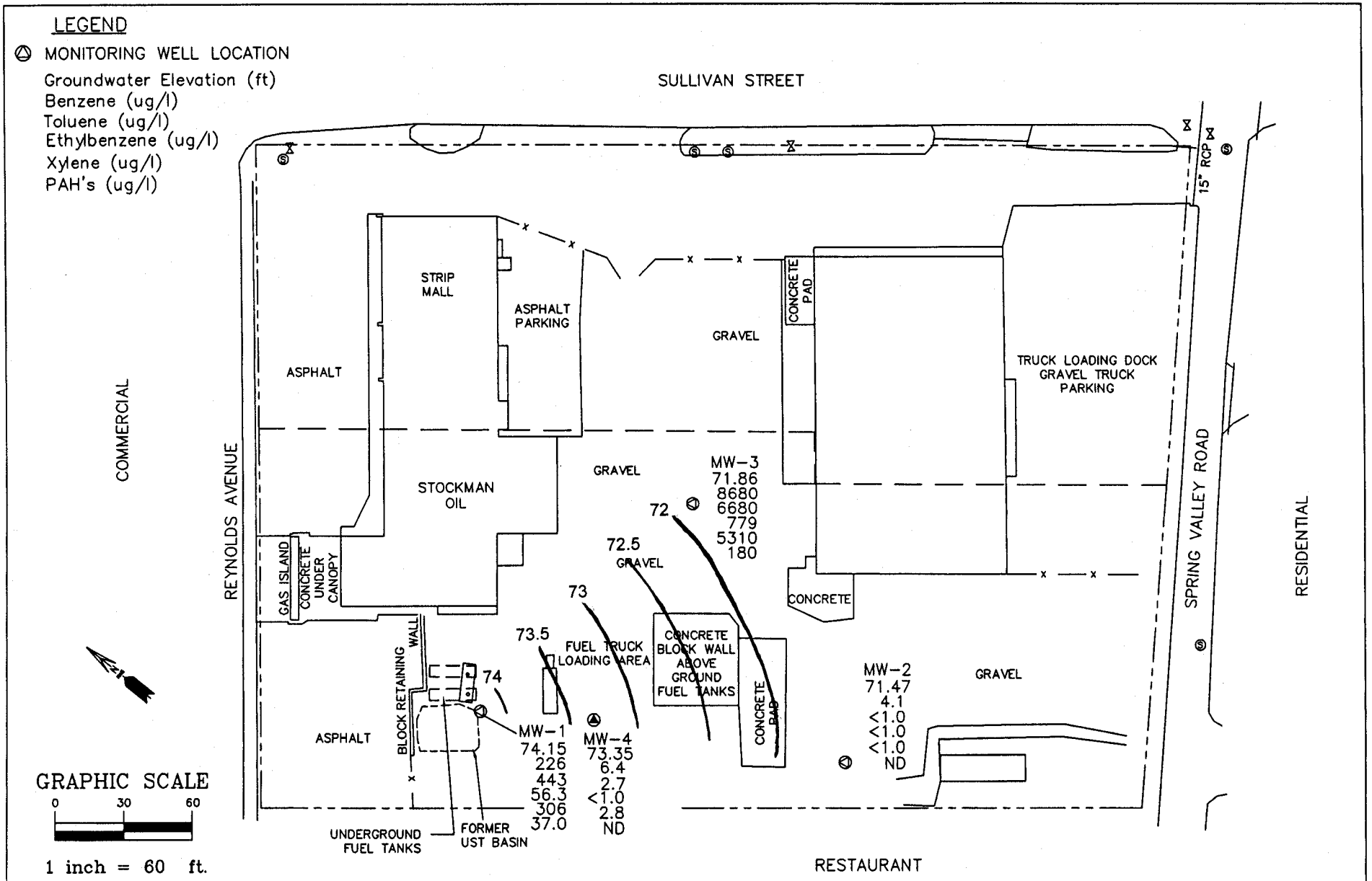
F. Chemicals of Concern - Ground Water

MW #	INSTALLATION DATE	DEVELOPMENT DATE	SAMPLING DATE
1	4/24/97	4/24/97	6/10/02
2	6/10/02	6/10/02	6/10/02
3	6/10/02	6/10/02	6/10/02
4	6/10/02	6/10/02	6/10/02

COC (mg/kg)	MW-1 (EXISTING)	MW-2 (SB-1)	MW-3 (SB-2)	MW-4 (SB-9)
Depth of sample	-	20'	20'	6'
Benzene	-	<0.002	0.003	<0.002
Toluene	-	<0.002	0.007	<0.002
Ethylbenzene	-	<0.002	<0.002	<0.002
Xylene	-	<0.002	0.003	<0.002
Total BTEX	-	<0.002	0.013	<0.002
Naphthalene (8260B)	-	<0.005	<0.005	<0.005
Naphthalene (8270C)	-	<0.066	<0.066	<0.066
Benzo(a)anthracene	-	<0.066	<0.066	<0.066
Benzo(b)flouranthene	-	<0.066	<0.066	<0.066
Benzo(k)flouranthene	-	<0.066	<0.066	<0.066
Chrysene	-	<0.066	<0.066	<0.066
Dibenz(a,h)anthracene	-	<0.066	<0.066	<0.066

MW #	TOC ELEVATION (FT)	SCREENED INTERVAL (FT)	DEPTH TO WATER (FT)	WATER TABLE ELEVATION (FT)
1	100.00	29.6 to 14.6	25.85	74.15
2	92.79	30 to 20	21.32	71.47
3	94.82	35 to 25	22.96	71.86
4	97.52	35 to 25	24.17	73.35

MONITORING WELL #	MW-1	MW-2	MW-3	MW-4
Temperature (^{o}C)	20.7	20.1	20.8	19.8
pH (s.u.)	5.2	5.5	6.1	6.4
Conductivity (umhos/cm)	58	110	157	128
Dissolved Oxygen (mg/l)	2.2	7.4	8.1	5.8



Force & Associates, Inc. Environmental & Hydrogeological Consulting 147 Vera Road Lexington, SC 29072 Phone: 803-359-3200	SCALE 1"=60'±	GROUNDWATER COC SITE MAP SCDHEC SITE ID # 04736 STOCKMAN OIL TWO SULLIVAN STREET COLUMBIA, SOUTH CAROLINA	FIGURE NO. 4
	DRAWN BY CAB		CADD NO. stockman
	DESIGNED BY GLF		PROJ. NO. stockman
	DATE 7/18/02		

CoC (ug/l)	RBSL (ug/l)	MW-1	MW-2	MW-3	MW-4
Free Product Thickness	None	None	None	None	None
Benzene	5	226	4.1	8,680	6.4
Toluene	1,000	443	<1.0	6,680	2.7
Ethylbenzene	700	56.3	<1.0	779	<1.0
Xylene	10,000	306	<1.0	5,310	2.8
Total BTEX	N/A	1,031.3	4.1	21,449	11.9
MTBE	40	751	12.4	3,290	<1.0
Naphthalene 8260B	25	39.4	<5.0	194	<5.0
Naphthalene 8270C	25	37.0	<5.0	180	<5.0
Anthracene	5	<5.0	<5.0	<5.0	<5.0
Acenaphthene	5	<5.0	<5.0	<5.0	<5.0
Acenaphthylene	5	<5.0	<5.0	<5.0	<5.0
Benzo(a)anthracene	5	<5.0	<5.0	<5.0	<5.0
Benzo(a)pyrene	5	<5.0	<5.0	<5.0	<5.0
Benzo(b)fluoranthene	10	<5.0	<5.0	<5.0	<5.0
Benzo(g,h,i)perylene	5	<5.0	<5.0	<5.0	<5.0
Benzo(k)fluoranthene	10	<5.0	<5.0	<5.0	<5.0
Chrysene	10	<5.0	<5.0	<5.0	<5.0
Dibenz(a,h)anthracene	10	<5.0	<5.0	<5.0	<5.0
Fluoranthene	10	<5.0	<5.0	<5.0	<5.0
Fluorene	5	<5.0	<5.0	<5.0	<5.0
Indeno(1,2,3-cd)pyrene	5	<5.0	<5.0	<5.0	<5.0
Phenanthrene	5	<5.0	<5.0	<5.0	<5.0
Pyrene	5	<5.0	<5.0	<5.0	<5.0
Sulfate	N/A	3600	5100	10800	< 1000
Lead	15	<3.0	<3.0	9.0	<3.0
Ethylene Dibromide (8011)	0.05	<0.02	<0.02	<0.02	<0.02
Ferrous Iron (mg/l)	N/A	0.8	<0.2	<0.2	<0.2
Nitrates (mg/l)	N/A	<0.088	<0.088	3.696	2.288

G. Aquifer Characteristics

Hydraulic Conductivity: 0.31 feet/day

Hydraulic Gradient: 0.018

Porosity: 10 %

Estimated Seepage Velocity: 20.37 feet/year

III. TIER I EVALUATION

A. Current Land Use

The following table identifies any potential receptors or human exposure pathways (e.g. basements, contaminated soils from UST closures, etc.) within a 1000-foot radius for current land use.

Media (for exposure)	Exposure Route	Pathway Selected for Evaluation? (Yes or No)	Exposure point or Reason for Non-Selection	Data Requirements (If pathway selected)
Air	Inhalation	No	COC's Too Low	
	Explosion Hazard	No		
Ground-Water	Ingestion	No	Municipal Water Supply	
	Dermal Contact	No		
	Volatile Inhalation	No		
Surface Water	Ingestion	No	No Surface Water Present On-Site	
	Dermal contact	No		
	Volatile Inhalation	No		
Surficial Soil	Ingestion	No	Surface Soil Not Impacted	Soil Leachability Model
	Dermal contact	No		
	Volatile Inhalation	No		
	Leaching to Ground-Water	Yes		

B. Future Land Use

The following table identifies any potential receptors or human exposure pathways (e.g. basements, contaminated soils from UST closures, etc.) within a 1000-foot radius for projected future land use.

Media (for exposure)	Exposure Route	Pathway Selected for Evaluation? (Yes or No)	Exposure point or Reason for Non-Selection	Data Requirements (If pathway selected)
Air	Inhalation	No	COC's Too Low	
	Explosion Hazard	No		
Ground-Water	Ingestion	No	Municipal Water Supply	
	Dermal Contact	No		
	Volatile Inhalation	No		
Surface Water	Ingestion	No	Surface Soil Not Impacted	
	Dermal contact	No		
	Volatile Inhalation	No		
Surficial Soil	Ingestion	No	Surface Soil Not Impacted	
	Dermal contact	No		
	Volatile Inhalation	No		
	Leaching to Ground-Water	No		
Subsurface Soil	Ingestion	No	Groundwater	Soil Leachability Model
	Dermal contact	No		
	Volatile Inhalation	No		
	Leaching to Ground-Water	Yes		

It is recommended that a Tier II assessment be implemented at the site since the concentrations for Benzene, Toluene, Ethylbenzene, MTBE, and Naphthalene are above the RBSLs.

APPENDIX A

SOIL BORING LOGS

Borehole SB-1 **Sampling Date-6/10/02** **Sample Depth-20.0 feet**

Sample Interval (ft.)	OVA Results	Lithology	Soil Conditions
5	0	Red/Brown Clayey Sand	Dry, No Odor
10	1	Orange/Brown Clayey Sand	"
15	4	Brown Sandy Clay	"
20*	9	"	"
25	13	Brown Clayey Sand	"
30	8	"	Moist, No Odor
35	5	"	Wet, No Odor

Borehole SB-2 **Sampling Date-6/10/02** **Sample Depth-20.0 feet**

Sample Interval (ft.)	OVA Results	Lithology	Soil Conditions
5	12	Orange/Brown Clayey Silt	Dry, No Odor
10	24	Brown Clayey Silt	"
15	60	"	Dry, Odor
20*	60	"	"
25	80	"	"
30	100	"	"
35	120	Light Brown Sandy Silt	Moist, Odor
40	190	"	Wet, Odor

Borehole SB-3 **Sampling Date-6/10/02** **Sample Depth-25.0 feet**

Sample Interval (ft.)	OVA Results	Lithology	Soil Conditions
5	4	Red/Brown Sandy Silt	Dry, No Odor
10	3	"	"
15	2	"	"
20	3	"	"
25*	4	Brown Sandy Silt	"

Borehole SB-4 **Sampling Date-6/10/02** **Sample Depth-25.0 feet**

Sample Interval (ft.)	OVA Results	Lithology	Soil Conditions
5	14	Brown Silty Sand	Dry, No Odor
10	41	"	"
15	37	Orange/Brown Sandy Silt	"
20	47	Brown Sandy Silt	"
25*	50	"	Dry, Odor

Borehole SB-5 **Sampling Date-6/10/02** **Sample Depth-2.0 feet**

Sample Interval (ft.)	OVA Results	Lithology	Soil Conditions
2*	5	Red/Brown Sandy Silt	Dry, No Odor
4	4	"	"
6	3	"	"
8	2	"	"
10	2	Brown Sandy Silt	"

Borehole SB-6 **Sampling Date-6/10/02** **Sample Depth-2.0 feet**

Sample Interval (ft.)	OVA Results	Lithology	Soil Conditions
2*	3	Red/Brown Sandy Silt	Dry, No Odor
4	2	"	"
6	1	"	"
8	1	"	"
10	1	"	"

Borehole SB-7 **Sampling Date-6/10/02** **Sample Depth-10.0 feet**

Sample Interval (ft.)	OVA Results	Lithology	Soil Conditions
2	1	Red/Brown Sandy Silt	Dry, No Odor
4	1	"	"
6	2	"	"
8	3	"	"
10*	9	"	"

Borehole SB-8 **Sampling Date-6/10/02** **Sample Depth-10.0 feet**

Sample Interval (ft.)	OVA Results	Lithology	Soil Conditions
2	2	Red/Brown Sandy Silt	Dry, No Odor
4	3	"	"
6	10	"	"
8	11	"	"
10*	20	Orange/Brown Sandy Silt	"

Borehole SB-9 **Sampling Date-6/10/02** **Sample Depth-6.0 feet**

Sample Interval (ft.)	OVA Results	Lithology	Soil Conditions
2	9	Red/Brown Sandy Silt	Dry, No Odor
4	18	"	"
6*	24	"	"
8	22	"	"
10	15	Orange/Brown Sandy Silt	"
15	17	Brown Silty Sand	"
20	19	"	"
25	28	Brown Sandy Silt	"
30	24	"	Moist, No Odor
35		"	Wet,

* Samples submitted for chemical analysis.

APPENDIX B

WELL CONSTRUCTION LOGS

DHEC

Water Well Record

2600 Bull Street, Columbia, SC 29201-1708; (803) 896-6240

1. WELL OWNER INFORMATION:

Stockman Oil Two, Inc.
Pierce Stockman
1138 Reynolds Avenue
Greenwood, SC 29649-2736
(800) 868-7569

2. LOCATION OF WELL:
Stockman Oil Two, Inc.
1138 Reynolds Avenue
Greenwood, SC 29649-2736
County: Greenwood
Latitude: **Longitude:**

3. SYSTEM NAME: **SYSTEM NUMBER:**
Stockman Oil Two, Inc. #04736

4. CUTTING SAMPLES: ☑ Yes ☐ No

Geophysical Logs: ☐ Yes (please enclose) ☑ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
Red/Brown Clayey Sand	5.0	5.0
Orange/Brown Clayey Sand	5.0	10.0
Brown Sandy Clay	10.0	20.0
Brown Clayey Sand	15.0	35.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: MW-2

6. PERMIT NUMBER:

7. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitoring Well ☐ Replacement

8. WELL DEPTH (completed) 30.0 ft. **Date Started:** 6/10/02 **Date Completed:** 6/10/02

9. ☐ Mud Rotary ☐ Cable tool ☐ Air Rotary ☑ Bored ☐ Dug ☐ Jetted ☐ Driven ☐ Other

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2.0"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 20.0 ft.
_____ in. to _____ ft.
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN **Type** PVC **Diam.:** 2.0"
Slot/Gauge: #10 **Length:** 10.0'
Set Between: 30.0 ft. and 20.0 ft. **NOTE: MULTIPLE SCREENS**
_____ ft. and _____ ft. **USE SECOND SHEET**
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL
21.32 ft.

13. PUMPING LEVEL Below Land Surface.
_____ ft. after ____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclosed) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☑ Yes ☐ No **Bacterial Analysis** ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 30.0 ft. to 18.0 ft.
Effective size "FX-50" Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Sand Cement ☐ Concrete ☑ Other Bentonite
Depth: From 18.0 ft. to ground surface

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft in ____ direction
_____ Type well disinfected ☐ Yes Type: _____
_____ upon completion ☐ No Amount: _____

18. PUMP: Date installed: _____ **Not installed** ☑
Mfr. Name: _____ Model No.: _____
H.P. ____ Volts ____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Owen Astwood **Cert. No.:** 1647
Force & Associates, Inc.
147 Vera Road, Suite A
803-359-3200

20. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ Date: 7-9-02
Authorized Representative

DHEC

Water Well Record

2600 Bull Street, Columbia, SC 29201-1708; (803) 896-6240

1. WELL OWNER INFORMATION:

Stockman Oil Two, Inc.
Pierce Stockman
1138 Reynolds Avenue
Greenwood, SC 29649-2736
(800) 868-7569

2. LOCATION OF WELL:

Stockman Oil Two, Inc.
1138 Reynolds Avenue
Greenwood, SC 29649-2736
County: Greenwood
Latitude: **Longitude:**

3. SYSTEM NAME: **SYSTEM NUMBER:**
Stockman Oil Two, Inc. #04736

4. CUTTING SAMPLES: ☑ Yes ☐ No

Geophysical Logs: ☐ Yes (please enclose) ☑ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
Orange/Brown Clayey Silt	5.0	5.0
Brown Clayey Silt	25.0	30.0
Light Brown Sandy Silt	10.0	40.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: MW-3

6. PERMIT NUMBER:

7. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitoring Well ☐ Replacement

8. WELL DEPTH (completed) 35.0 ft. **Date Started:** 6/10/02 **Date Completed:** 6/10/02

9. ☐ Mud Rotary ☐ Cable tool ☐ Air Rotary ☑ Bored ☐ Dug ☐ Jetted ☐ Driven ☐ Other

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2.0"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 25.0 ft.
_____ in. to _____ ft.

Height: Above/Below
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN **Type** PVC **Diam.:** 2.0"
Slot/Gauge: #10 **Length:** 10.0'
Set Between: 35.0 ft. and 25.0 ft. **NOTE: MULTIPLE SCREENS**
_____ ft. and _____ ft. **USE SECOND SHEET**
Sieve Analysis ☑ Yes (please enclose) ☐ No

12. STATIC WATER LEVEL
22.96 ft.

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclosed) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☑ Yes ☐ No **Bacterial Analysis** ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 35.0 ft. to 23.0 ft.
Effective size "FX-50" Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Sand Cement ☐ Concrete ☑ Other Bentonite
Depth: From 23.0 ft. to ground surface

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft in _____ direction
_____ Type well disinfected ☐ Yes Type: _____
_____ upon completion ☐ No Amount: _____

18. PUMP: Date installed: _____ **Not installed** ☑
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Owen Astwood **Cert. No.:** 1647
Force & Associates, Inc.
147 Vera Road, Suite A
803-359-3200

20. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Owen Astwood Date: 7-9-02
Authorized Representative

DHEC

Water Well Record

2600 Bull Street, Columbia, SC 29201-1708; (803) 896-6240

1. WELL OWNER INFORMATION:

Stockman Oil Two, Inc.
Pierce Stockman
1138 Reynolds Avenue
Greenwood, SC 29649-2736
(800) 868-7569

2. LOCATION OF WELL:
Stockman Oil Two, Inc.
1138 Reynolds Avenue
Greenwood, SC 29649-2736
County: Greenwood
Latitude: **Longitude:**

3. SYSTEM NAME: **SYSTEM NUMBER:**
Stockman Oil Two, Inc. #04736

4. CUTTING SAMPLES: ☑ Yes ☐ No

Geophysical Logs: ☐ Yes (please enclose) ☑ No

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
Red/Brown Sandy Silt	8.0	8.0
Orange/Brown Sandy Silt	2.0	10.0
Brown Silty Sand	10.0	20.0
Brown Sandy Silt	15.0	35.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS: MW-4

6. PERMIT NUMBER:

7. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitoring Well ☐ Replacement

8. WELL DEPTH (completed) 35.0 ft. **Date Started:** 6/10/02 **Date Completed:** 6/10/02

9. ☐ Mud Rotary ☐ Cable tool ☐ Air Rotary ☑ Bored ☐ Dug ☐ Jetted ☐ Driven ☐ Other

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2.0"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 25.0 ft.
_____ in. to _____ ft.
Height: Above/Below Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN **Type** PVC **Diam.:** 2.0"
Slot/Gauge: #10 **Length:** 10.0'
Set Between: 35.0 ft. and 25.0 ft. **NOTE: MULTIPLE SCREENS**
_____ ft. and _____ ft. **USE SECOND SHEET**
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL
24.17 ft.

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclosed) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☑ Yes ☐ No **Bacterial Analysis** ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 35.0 ft. to 23.0 ft.
Effective size "FX-50" Uniformity Coefficient _____

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Sand Cement ☐ Concrete ☑ Other Bentonite
Depth: From 23.0 ft. to ground surface

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft in _____ direction
_____ Type well disinfected upon completion ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ **Not installed** ☑
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe _____ ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Owen Astwood **Cert. No.:** 1647
Force & Associates, Inc.
147 Vera Road, Suite A
803-359-3200

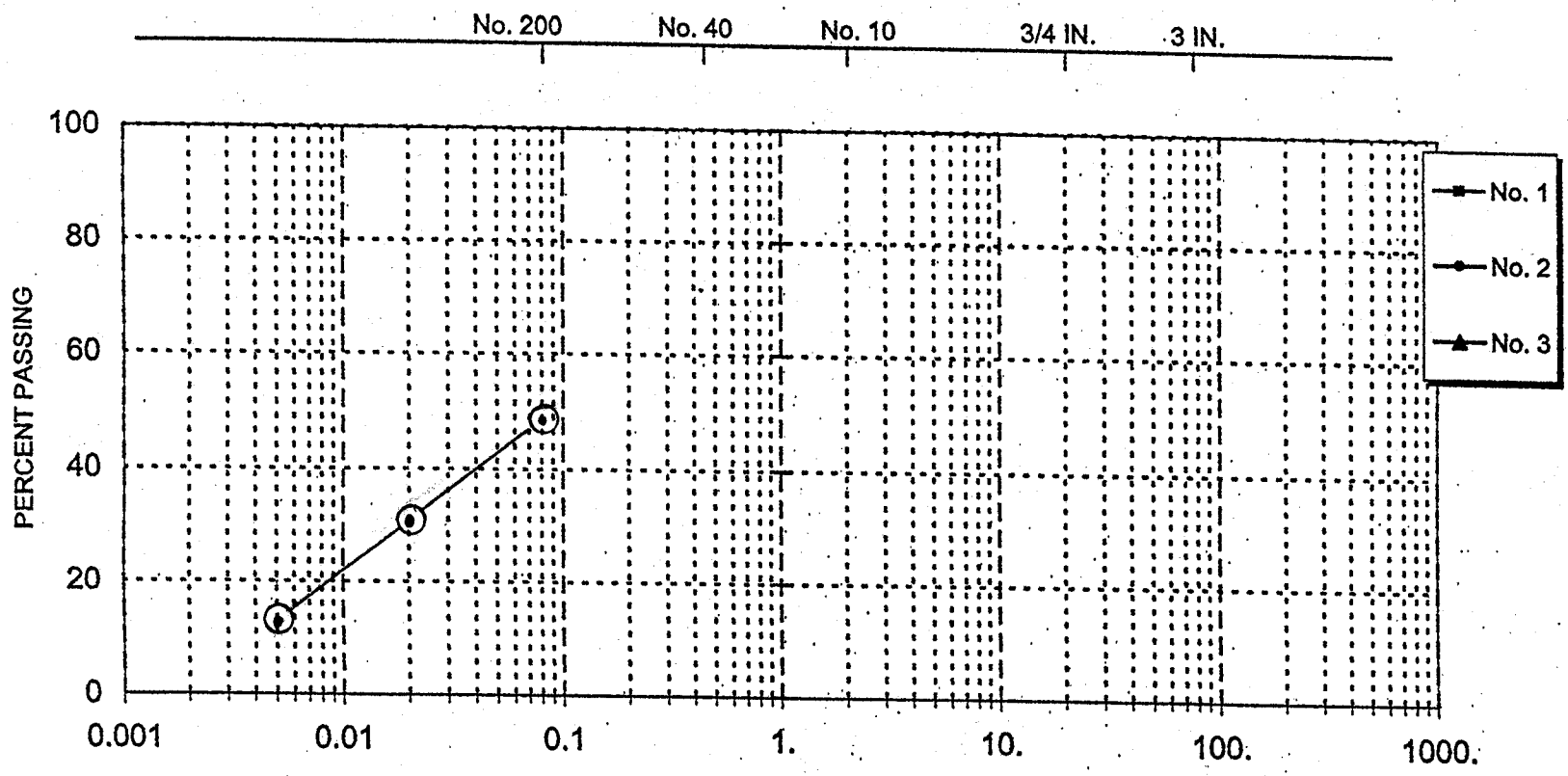
20. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ Date: 7-9-02
Authorized Representative

APPENDIX C

CHAIN OF CUSTODY AND LABORATORY FORMS

U.S. STANDARD SIEVE SIZE



CLAY	SILT	SAND			GRAVEL		COBBLES
		Fine	Medium	Coarse	Fine	Coarse	

KEY	NO.	DEPTH	DESCRIPTION OF SOIL SAMPLE TESTED	CLASS.
No. 1	B-2	25'	SAND = 52% SILT = 35% CLAY = 13%	
No. 2				
No. 3				

Schnabel Engineering Associates, Inc.

GRADATION CURVES

Stockman Oil Two

CONTRACT NO. 989062.228

DATE 6-25-02

Q:\Templates\xls\[SIEVE2001 Hydro.XLT.xls]A

FORCE & ASSOCIATES

138 Middlebrook Drive
Lexington,SC 29072

Alternate billing information:

#1683
28801

Chain of Custody Page 1 of 2

Prepared by:

ENVIRONMENTAL SCIENCE CORP.
12065 Lebanon Road
Mt. Juliet, TN 37122
Phone (615) 758-5858
Phone (800) 767-5859
FAX (615) 758-5859

TEST AMERICA

Report: Greg Force
Phone (803) 359-3200
FAX: (803) 359-6682

Project name: Stockman Oil Two
Client Project #:
ESC Key:

Collected by: (print): Jason Miller
Collected by (signature): Jason S. Miller

Site/Facility ID#: 04736
P.O.#:

Rush? (Lab MUST Be Notified)
____ Same Day. 200%
____ Next Day. 100%
____ Two Day 50%

Date Results Needed: 5 Day Turnaround
FAX? __No__Yes

CoCode: FORCEA (lab use only)
Template/Prelogin
Cooler #:
Shipped Via:

Analysis/Container/Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	BTEX NAPH	PAH	TOC	TPH 3550	Remarks/Contaminant	Sample # (lab only)
SB-1	G	SS	20	6-10-02	1700	5	✓	✓	✓			96128
SB-2			20		1705	5	✓	✓		✓		29
SB-3			25		1709	4	✓	✓				30
SB-4			25		1713	4	✓	✓				31
SB-5			2		1754	4	✓	✓				32
SB-6			2		1757	4	✓	✓				33
SB-7			10		1800	4	✓	✓				34
SB-8			10		1806	4	✓	✓				35
SB-9			6		1810	4	✓	✓				96136

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

Remarks:

pH _____ Temp 1.0°C
Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Jason S. Miller	6-10-02	2205	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐_____

Condition: (lab use only)

Temp: | Bottles Received:

Date: 6-12 | Time: 9:00

pH Checked: | NCF:

FORCE & ASSOCIATES

138 Middlebrook Drive
Lexington,SC 29072

Alternate billing information:

#6883
28614

Chain of Custody
Page 2 of 2

Prepared by:

~~ENVIRONMENTAL SCIENCE CORP.~~
~~12065 Lebanon Road~~
~~Mt. Juliet, TN 37122~~
~~Phone (615) 758-5858~~
~~Phone (800) 767-5859~~
~~FAX (615) 758-5859~~
TEST AMERICA

Report: Greg Force
Phone (803) 359-3200
FAX: (803) 359-6682

Project name: Stockman Oil Two
Client Project #:
ESC Key:

Collected by: (print): Jason Miller
Site/Facility ID#: 04736
P.O.#:

Collected by (signature): Jason S. Miller

Rush? (Lab MUST Be Notified)
_____ Same Day. 200%
_____ Next Day. 100%
_____ Two Day 50%

Date Results Needed: 5 Day Turnaround

FAX? __No__Yes

CoCode: FORCEA (lab use only)
Template/Prelogin
Cooler #:
Shipped Via:

Analysis/Container/Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	BTEX MAPH MTBE	EDB (8011)	LEAD	SULFATE	PAH	Remarks/Contaminant	Sample # (lab only)
MW-1	G	GW	N/A	6-10-02	1420	7	✓	✓	✓	✓	✓		96177
MW-2					1450	7	✓	✓	✓	✓	✓		78
MW-3					1625	7	✓	✓	✓	✓	✓		79
MW-4					1920	7	✓	✓	✓	✓	✓		96180

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____	Condition: (lab use only)
Jason S. Miller	6-10-02	2200			@ 1.0°C
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: / Bottles Received:	
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 6-12-02 / Time: 9:00	pH Checked: / NCF:

ALERT

DATE: 6-12

CLIENT NAME: Force + Assoc.

CLIENT CODE: 6883

ALERT INFORMATION:

Date to receive cooler 6-12 Wed

How many samples are there

What tests will be on the coc

Project Name Tier 1 / Soils + Water

Project Number

Will a copy of the coc be faxed?

Purpose of the ALERT

- ACCOUNT NUMBER CORRECTION
  NEW ACCOUNT REFERENCE:
- Changing turnaround?
- Changing tests or canceling?
- Changing Project Name?
- Changing Project Number?
- Heads up XXX- will be on Env Science COC. Account is Force + Assoc - 6883.

Jennifer Huckaba

Also, return the cooler(s) back to Env. Science, not to Force + Assoc

TESTAMERICA,INC.-NASHVILLE

COOLER RECEIPT FORM

Client: Force + Assoc. BC# 288601

Cooler Received On: 6-12 And Opened On: 6-12 By: Shawn Gracey

SL C
(Signature)

1. Temperature of Cooler when opened 1.0 Degrees Celsius
2. Were custody seals on outside of cooler?.....YES....NO
   a. If yes, how many, what kind and where:_____
   b. Were signature and date correct?.....YES....NO
3. Were custody seals on containers and intact?.....YES...NO
4. Were custody papers inside cooler?.....YES...NO
5. Were custody papers properly filled out (ink,signed,etc)?.....YES...NO
6. Did you sign the custody papers in the appropriate place?.....YES...NO
7. What kind of packing material used? Bubblewrap Peanuts Vermiculite Other None
8. Was sufficient ice used (if appropriate)?.....YES...NO
9. Did all bottles arrive in good condition(unbroken)?.....YES...NO
10. Were all bottle labels complete (#,date,signed,pres,etc)?.....YES...NO
11. Did all bottle labels and tags agree with custody papers?.....YES...NO
12. Were correct bottles used for the analysis requested?.....YES...NO
13. If present, was any observable VOA headspace present?.....YES...NO
14. If present, were VOA vials checked for air bubbles and noted if found?.....YES...NO
15. Was sufficient amount of sample sent in each bottle?.....YES...NO
16. Were correct preservatives used?.....YES...NO
17. Was residual chlorine present?.....YES...NO
18. Corrective action taken, if necessary:

See attached for resolution

TESTAMERICA,INC.-NASHVILLE

COOLER RECEIPT FORM

Client: Force & Assoc. BC# 28814

Cooler Received On: 6-12 And Opened On: 6-12 By: Shawn Gracey

Sh—Ce
(Signature)

1. Temperature of Cooler when opened 10 Degrees Celsius
2. Were custody seals on outside of cooler?.....YES...NO
   a. If yes, how many, what kind and where:_____
   b. Were signature and date correct?.....YES....NO
3. Were custody seals on containers and intact?.....YES...NO
4. Were custody papers inside cooler?.....YES...NO
5. Were custody papers properly filled out (ink,signed,etc)?.....YES...NO
6. Did you sign the custody papers in the appropriate place?.....YES...NO
7. What kind of packing material used? Bubblewrap Peanuts Vermiculite Other None
8. Was sufficient ice used (if appropriate)?.....YES...NO
9. Did all bottles arrive in good condition(unbroken)?.....YES...NO
10. Were all bottle labels complete (#,date,signed,pres,etc)?.....YES...NO
11. Did all bottle labels and tags agree with custody papers?.....YES...NO
12. Were correct bottles used for the analysis requested?.....YES...NO
13. If present, was any observable VOA headspace present?.....YES...NO
14. If present, were VOA vials checked for air bubbles and noted if found?.....YES...NO
15. Was sufficient amount of sample sent in each bottle?.....YES...NO
16. Were correct preservatives used?.....YES...NO
17. Was residual chlorine present?.....YES...NO
18. Corrective action taken, if necessary: Pb should be preserved in HNO_3

See attached for resolution

TestAmerica
INCORPORATED

6/19/02

FORCE & ASSOCIATES 6883
GREG FORCE
147 VERA ROAD, SUITE A
LEXINGTON, SC 29072

This report includes the analytical certificates of analysis for all samples listed below. These samples relate to your project STOCKMAN OIL TWO. The Laboratory Project number is 288601. An executed copy of the chain of custody and the sample receipt form are also included as an addendum to this report.

Sample Identification	Lab Number	Collection Date
SB-1	02-A96128	6/10/02
SB-2	02-A96129	6/10/02
SB-3	02-A96130	6/10/02
SB-4	02-A96131	6/10/02
SB-5	02-A96132	6/10/02
SB-6	02-A96133	6/10/02
SB-7	02-A96134	6/10/02
SB-8	02-A96135	6/10/02
SB-9	02-A96136	6/10/02

These results relate only to the items tested.
This report shall not be reproduced except in full and with permission of the laboratory.

Report Approved By: _____ Report Date: 6/19/02

Paul E. Lane, Jr., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Serv.
Eric S. Smith, Assistant Technical Director
Gail A. Lage, Technical Serv.
Glenn L. Norton, Technical Serv.
Kelly S. Comstock, Technical Serv.
Pamela A. Langford, Technical Serv.

Laboratory Certification Number: 84009

TestAmerica
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ANALYTICAL REPORT

FORCE & ASSOCIATES 6883
GREG FORCE
147 VERA ROAD, SUITE A
LEXINGTON, SC 29072

Project:
Project Name: STOCKMAN OIL TWO
Sampler: JASON MILLER

Lab Number: 02-A96128
Sample ID: SB-1
Sample Type: Soil
Site ID: 04736

Date Collected: 6/10/02
Time Collected: 17:00
Date Received: 6/12/02
Time Received: 9:00
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
GENERAL CHEMISTRY PARAMETERS									
% Dry Weight	83.7	%		1	6/14/02	15:50	K. Keller	CLP	7983
ORGANIC PARAMETERS									
Naphthalene	ND	mg/kg	0.066	1	6/17/02	21:46	B.Davis	8270C	1051
Acenaphthene	ND	mg/kg	0.066	1	6/17/02	21:46	B.Davis	8270C	1051
Anthracene	ND	mg/kg	0.066	1	6/17/02	21:46	B.Davis	8270C	1051
Fluoranthene	ND	mg/kg	0.066	1	6/17/02	21:46	B.Davis	8270C	1051
Fluorene	ND	mg/kg	0.066	1	6/17/02	21:46	B.Davis	8270C	1051
Pyrene	ND	mg/kg	0.066	1	6/17/02	21:46	B.Davis	8270C	1051
Benzo(a)anthracene	ND	mg/kg	0.066	1	6/17/02	21:46	B.Davis	8270C	1051
Benzo(a)pyrene	ND	mg/kg	0.066	1	6/17/02	21:46	B.Davis	8270C	1051
Benzo(b)fluoranthene	ND	mg/kg	0.066	1	6/17/02	21:46	B.Davis	8270C	1051
Benzo(k)fluoranthene	ND	mg/kg	0.066	1	6/17/02	21:46	B.Davis	8270C	1051
Chrysene	ND	mg/kg	0.066	1	6/17/02	21:46	B.Davis	8270C	1051
Dibenzo(a,h)anthracene	ND	mg/kg	0.066	1	6/17/02	21:46	B.Davis	8270C	1051
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.066	1	6/17/02	21:46	B.Davis	8270C	1051
Acenaphthylene	ND	mg/kg	0.066	1	6/17/02	21:46	B.Davis	8270C	1051
Benzo(g,h,i)perylene	ND	mg/kg	0.066	1	6/17/02	21:46	B.Davis	8270C	1051
Phenanthrene	ND	mg/kg	0.066	1	6/17/02	21:46	B.Davis	8270C	1051
VOLATILE ORGANICS									
Benzene	ND	mg/kg	0.0020	1	6/17/02	23:16	T.Johnson	8260B	2640
Ethylbenzene	ND	mg/kg	0.0020	1	6/17/02	23:16	T.Johnson	8260B	2640
Naphthalene	ND	mg/kg	0.0050	1	6/17/02	23:16	T.Johnson	8260B	2640
Toluene	ND	mg/kg	0.0020	1	6/17/02	23:16	T.Johnson	8260B	2640

Sample report continued . . .

TestAmerica
INCORPORATED

ANALYTICAL REPORT

Laboratory Number: 02-A96128
Sample ID: SB-1
Project:

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
Xylenes (Total)	ND	mg/kg	0.0020	1	6/17/02	23:16	T.Johnson	8260B	2640
GENERAL CHEMISTRY PARAMETERS									
TOC	ND	mg/kg	1000	1	6/16/02	16:51	Weatherly	9060M	248

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
BNA's	30.3 gm	1.0 ml	6/17/02		D. Harris	3550
Volatile Organics	7.8 g	5.0 ml	6/10/02	17:00	K. Turner	5035

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	118.	56. - 145.
VOA Surr Toluene-d8	112.	71. - 137.
VOA Surr, 4-BFB	100.	72. - 141.
VOA Surr, DBFM	113.	69. - 134.
BNA Surr-Nitrobenzene-d5	75.	15. - 126.
BNA Surr-2-Fluorobiphenyl	67.	22. - 119.
BNA Surr-Terphenyl-d14	66.	25. - 147.

LABORATORY COMMENTS:

ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
# = Recovery outside Laboratory historical or method prescribed limits.
All results reported on a wet weight basis.

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

FORCE & ASSOCIATES 6883
GREG FORCE
147 VERA ROAD, SUITE A
LEXINGTON, SC 29072

Project:
Project Name: STOCKMAN OIL TWO
Sampler: JASON MILLER

Lab Number: 02-A96129
Sample ID: SB-2
Sample Type: Soil
Site ID: 04736

Date Collected: 6/10/02
Time Collected: 17:05
Date Received: 6/12/02
Time Received: 9:00
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
GENERAL CHEMISTRY PARAMETERS									
% Dry Weight	77.2	%		1	6/14/02	15:50	K. Keller	CLP	7983
ORGANIC PARAMETERS									
TPH (Diesel Range)	10.8	mg/kg	9.84	1	6/14/02	23:02	M.Jarrett	8015B	9639
Naphthalene	ND	mg/kg	0.066	1	6/17/02	22:27	B.Davis	8270C	1051
Acenaphthene	ND	mg/kg	0.066	1	6/17/02	22:27	B.Davis	8270C	1051
Anthracene	ND	mg/kg	0.066	1	6/17/02	22:27	B.Davis	8270C	1051
Fluoranthene	ND	mg/kg	0.066	1	6/17/02	22:27	B.Davis	8270C	1051
Fluorene	ND	mg/kg	0.066	1	6/17/02	22:27	B.Davis	8270C	1051
Pyrene	ND	mg/kg	0.066	1	6/17/02	22:27	B.Davis	8270C	1051
Benzo(a)anthracene	ND	mg/kg	0.066	1	6/17/02	22:27	B.Davis	8270C	1051
Benzo(a)pyrene	ND	mg/kg	0.066	1	6/17/02	22:27	B.Davis	8270C	1051
Benzo(b)fluoranthene	ND	mg/kg	0.066	1	6/17/02	22:27	B.Davis	8270C	1051
Benzo(k)fluoranthene	ND	mg/kg	0.066	1	6/17/02	22:27	B.Davis	8270C	1051
Chrysene	ND	mg/kg	0.066	1	6/17/02	22:27	B.Davis	8270C	1051
Dibenzo(a,h)anthracene	ND	mg/kg	0.066	1	6/17/02	22:27	B.Davis	8270C	1051
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.066	1	6/17/02	22:27	B.Davis	8270C	1051
Acenaphthylene	ND	mg/kg	0.066	1	6/17/02	22:27	B.Davis	8270C	1051
Benzo(g,h,i)perylene	ND	mg/kg	0.066	1	6/17/02	22:27	B.Davis	8270C	1051
Phenanthrene	ND	mg/kg	0.066	1	6/17/02	22:27	B.Davis	8270C	1051
VOLATILE ORGANICS									
Benzene	0.0030	mg/kg	0.0020	1	6/17/02	23:49	T.Johnson	8260B	2640
Ethylbenzene	ND	mg/kg	0.0020	1	6/17/02	23:49	T.Johnson	8260B	2640
Naphthalene	ND	mg/kg	0.0050	1	6/17/02	23:49	T.Johnson	8260B	2640

Sample report continued . . .

TestAmerica
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ANALYTICAL REPORT

Laboratory Number: 02-A96129
Sample ID: SB-2
Project:

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
Toluene	0.0074	mg/kg	0.0020	1	6/17/02	23:49	T.Johnson	8260B	2640
Xylenes (Total)	0.0033	mg/kg	0.0020	1	6/17/02	23:49	T.Johnson	8260B	2640

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
BNA's	30.3 gm	1.0 ml	6/17/02		D. Harris	3550
EPH/DRO	25.4 gm	1.0 ml	6/14/02		D. Harris	3550
Volatile Organics	8.3 g	5.0 ml	6/10/02	17:05	K. Turner	5035

Surrogate	% Recovery	Target Range
EPH surr-o-Terphenyl	99.	50. - 150.
VOA Surr 1,2-DCA-d4	115.	56. - 145.
VOA Surr Toluene-d8	110.	71. - 137.
VOA Surr, 4-BFB	98.	72. - 141.
VOA Surr, DBFM	110.	69. - 134.
BNA Surr-Nitrobenzene-d5	62.	15. - 126.
BNA Surr-2-Fluorobiphenyl	55.	22. - 119.
BNA Surr-Terphenyl-d14	71.	25. - 147.

LABORATORY COMMENTS:

ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
# = Recovery outside Laboratory historical or method prescribed limits.
All results reported on a wet weight basis.

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

FORCE & ASSOCIATES 6883
GREG FORCE
147 VERA ROAD, SUITE A
LEXINGTON, SC 29072

Project:
Project Name: STOCKMAN OIL TWO
Sampler: JASON MILLER

Lab Number: 02-A96130
Sample ID: SB-3
Sample Type: Soil
Site ID: 04736

Date Collected: 6/10/02
Time Collected: 17:09
Date Received: 6/12/02
Time Received: 9:00
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
GENERAL CHEMISTRY PARAMETERS									
% Dry Weight	67.7	%		1	6/14/02	15:50	K. Keller	CLP	7983
ORGANIC PARAMETERS									
Naphthalene	ND	mg/kg	0.066	1	6/17/02	23:08	B.Davis	8270C	1051
Acenaphthene	ND	mg/kg	0.066	1	6/17/02	23:08	B.Davis	8270C	1051
Anthracene	ND	mg/kg	0.066	1	6/17/02	23:08	B.Davis	8270C	1051
Fluoranthene	ND	mg/kg	0.066	1	6/17/02	23:08	B.Davis	8270C	1051
Fluorene	ND	mg/kg	0.066	1	6/17/02	23:08	B.Davis	8270C	1051
Pyrene	ND	mg/kg	0.066	1	6/17/02	23:08	B.Davis	8270C	1051
Benzo(a)anthracene	ND	mg/kg	0.066	1	6/17/02	23:08	B.Davis	8270C	1051
Benzo(a)pyrene	ND	mg/kg	0.066	1	6/17/02	23:08	B.Davis	8270C	1051
Benzo(b)fluoranthene	ND	mg/kg	0.066	1	6/17/02	23:08	B.Davis	8270C	1051
Benzo(k)fluoranthene	ND	mg/kg	0.066	1	6/17/02	23:08	B.Davis	8270C	1051
Chrysene	ND	mg/kg	0.066	1	6/17/02	23:08	B.Davis	8270C	1051
Dibenzo(a,h)anthracene	ND	mg/kg	0.066	1	6/17/02	23:08	B.Davis	8270C	1051
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.066	1	6/17/02	23:08	B.Davis	8270C	1051
Acenaphthylene	ND	mg/kg	0.066	1	6/17/02	23:08	B.Davis	8270C	1051
Benzo(g,h,i)perylene	ND	mg/kg	0.066	1	6/17/02	23:08	B.Davis	8270C	1051
Phenanthrene	ND	mg/kg	0.066	1	6/17/02	23:08	B.Davis	8270C	1051
VOLATILE ORGANICS									
Benzene	ND	mg/kg	0.0020	1	6/18/02	0:22	T.Johnson	8260B	2640
Ethylbenzene	ND	mg/kg	0.0020	1	6/18/02	0:22	T.Johnson	8260B	2640
Naphthalene	ND	mg/kg	0.0050	1	6/18/02	0:22	T.Johnson	8260B	2640
Toluene	ND	mg/kg	0.0020	1	6/18/02	0:22	T.Johnson	8260B	2640

Sample report continued . . .

TestAmerica
INCORPORATED

ANALYTICAL REPORT

Laboratory Number: 02-A96130
Sample ID: SB-3
Project:

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
Xylenes (Total)	ND	mg/kg	0.0020	1	6/18/02	0:22	T.Johnson	8260B	2640

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
BNA's	30.1 gm	1.0 ml	6/17/02		D. Harris	3550
Volatile Organics	7.6 g	5.0 ml	6/10/02	17:09	K. Turner	5035

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	116.	56. - 145.
VOA Surr Toluene-d8	110.	71. - 137.
VOA Surr, 4-BFB	100.	72. - 141.
VOA Surr, DBFM	111.	69. - 134.
BNA Surr-Nitrobenzene-d5	59.	15. - 126.
BNA Surr-2-Fluorobiphenyl	53.	22. - 119.
BNA Surr-Terphenyl-d14	67.	25. - 147.

LABORATORY COMMENTS:

ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
# = Recovery outside Laboratory historical or method prescribed limits.
All results reported on a wet weight basis.

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

FORCE & ASSOCIATES 6883
GREG FORCE
147 VERA ROAD, SUITE A
LEXINGTON, SC 29072

Project:
Project Name: STOCKMAN OIL TWO
Sampler: JASON MILLER

Lab Number: 02-A96131
Sample ID: SB-4
Sample Type: Soil
Site ID: 04736

Date Collected: 6/10/02
Time Collected: 17:13
Date Received: 6/12/02
Time Received: 9:00
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
GENERAL CHEMISTRY PARAMETERS									
% Dry Weight	77.5	%		1	6/14/02	15:50	K. Keller	CLP	7983
ORGANIC PARAMETERS									
Naphthalene	ND	mg/kg	0.066	1	6/17/02	23:48	B.Davis	8270C	1051
Acenaphthene	ND	mg/kg	0.066	1	6/17/02	23:48	B.Davis	8270C	1051
Anthracene	ND	mg/kg	0.066	1	6/17/02	23:48	B.Davis	8270C	1051
Fluoranthene	ND	mg/kg	0.066	1	6/17/02	23:48	B.Davis	8270C	1051
Fluorene	ND	mg/kg	0.066	1	6/17/02	23:48	B.Davis	8270C	1051
Pyrene	ND	mg/kg	0.066	1	6/17/02	23:48	B.Davis	8270C	1051
Benzo(a)anthracene	ND	mg/kg	0.066	1	6/17/02	23:48	B.Davis	8270C	1051
Benzo(a)pyrene	ND	mg/kg	0.066	1	6/17/02	23:48	B.Davis	8270C	1051
Benzo(b)fluoranthene	ND	mg/kg	0.066	1	6/17/02	23:48	B.Davis	8270C	1051
Benzo(k)fluoranthene	ND	mg/kg	0.066	1	6/17/02	23:48	B.Davis	8270C	1051
Chrysene	ND	mg/kg	0.066	1	6/17/02	23:48	B.Davis	8270C	1051
Dibenzo(a,h)anthracene	ND	mg/kg	0.066	1	6/17/02	23:48	B.Davis	8270C	1051
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.066	1	6/17/02	23:48	B.Davis	8270C	1051
Acenaphthylene	ND	mg/kg	0.066	1	6/17/02	23:48	B.Davis	8270C	1051
Benzo(g,h,i)perylene	ND	mg/kg	0.066	1	6/17/02	23:48	B.Davis	8270C	1051
Phenanthrene	ND	mg/kg	0.066	1	6/17/02	23:48	B.Davis	8270C	1051
VOLATILE ORGANICS									
Benzene	ND	mg/kg	0.0020	1	6/18/02	0:55	T.Johnson	8260B	2640
Ethylbenzene	ND	mg/kg	0.0020	1	6/18/02	0:55	T.Johnson	8260B	2640
Naphthalene	ND	mg/kg	0.0050	1	6/18/02	0:55	T.Johnson	8260B	2640
Toluene	ND	mg/kg	0.0020	1	6/18/02	0:55	T.Johnson	8260B	2640

Sample report continued . . .

TestAmerica
INCORPORATED

ANALYTICAL REPORT

Laboratory Number: 02-A96131
Sample ID: SB-4
Project:

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
Xylenes (Total)	ND	mg/kg	0.0020	1	6/18/02	0:55	T.Johnson	8260B	2640

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
BNA's	30.5 gm	1.0 ml	6/17/02		D. Harris	3550
Volatile Organics	6.0 g	5.0 ml	6/10/02	17:13	K. Turner	5035

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	112.	56. - 145.
VOA Surr Toluene-d8	110.	71. - 137.
VOA Surr, 4-BFB	98.	72. - 141.
VOA Surr, DBFM	110.	69. - 134.
BNA Surr-Nitrobenzene-d5	59.	15. - 126.
BNA Surr-2-Fluorobiphenyl	55.	22. - 119.
BNA Surr-Terphenyl-d14	60.	25. - 147.

LABORATORY COMMENTS:

ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
# = Recovery outside Laboratory historical or method prescribed limits.
All results reported on a wet weight basis.

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

FORCE & ASSOCIATES 6883
GREG FORCE
147 VERA ROAD, SUITE A
LEXINGTON, SC 29072

Project:
Project Name: STOCKMAN OIL TWO
Sampler: JASON MILLER

Lab Number: 02-A96132
Sample ID: SB-5
Sample Type: Soil
Site ID: 04736

Date Collected: 6/10/02
Time Collected: 17:54
Date Received: 6/12/02
Time Received: 9:00
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
GENERAL CHEMISTRY PARAMETERS									
% Dry Weight	72.9	%		1	6/14/02	15:50	K. Keller	CLP	7983
ORGANIC PARAMETERS									
Naphthalene	ND	mg/kg	0.664	5	6/18/02	0:29	B.Davis	8270C	1051
Acenaphthene	ND	mg/kg	0.664	5	6/18/02	0:29	B.Davis	8270C	1051
Anthracene	ND	mg/kg	0.664	5	6/18/02	0:29	B.Davis	8270C	1051
Fluoranthene	ND	mg/kg	0.664	5	6/18/02	0:29	B.Davis	8270C	1051
Fluorene	ND	mg/kg	0.664	5	6/18/02	0:29	B.Davis	8270C	1051
Pyrene	ND	mg/kg	0.664	5	6/18/02	0:29	B.Davis	8270C	1051
Benzo(a)anthracene	ND	mg/kg	0.664	5	6/18/02	0:29	B.Davis	8270C	1051
Benzo(a)pyrene	ND	mg/kg	0.664	5	6/18/02	0:29	B.Davis	8270C	1051
Benzo(b)fluoranthene	ND	mg/kg	0.664	5	6/18/02	0:29	B.Davis	8270C	1051
Benzo(k)fluoranthene	ND	mg/kg	0.664	5	6/18/02	0:29	B.Davis	8270C	1051
Chrysene	ND	mg/kg	0.664	5	6/18/02	0:29	B.Davis	8270C	1051
Dibenzo(a,h)anthracene	ND	mg/kg	0.664	5	6/18/02	0:29	B.Davis	8270C	1051
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.664	5	6/18/02	0:29	B.Davis	8270C	1051
Acenaphthylene	ND	mg/kg	0.664	5	6/18/02	0:29	B.Davis	8270C	1051
Benzo(g,h,i)perylene	ND	mg/kg	0.664	5	6/18/02	0:29	B.Davis	8270C	1051
Phenanthrene	ND	mg/kg	0.664	5	6/18/02	0:29	B.Davis	8270C	1051
VOLATILE ORGANICS									
Benzene	ND	mg/kg	0.0020	1	6/18/02	1:29	T.Johnson	8260B	2640
Ethylbenzene	ND	mg/kg	0.0020	1	6/18/02	1:29	T.Johnson	8260B	2640
Naphthalene	ND	mg/kg	0.0050	1	6/18/02	1:29	T.Johnson	8260B	2640
Toluene	ND	mg/kg	0.0020	1	6/18/02	1:29	T.Johnson	8260B	2640

Sample report continued . . .

TestAmerica
INCORPORATED

ANALYTICAL REPORT

Laboratory Number: 02-A96132
Sample ID: SB-5
Project:

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
Xylenes (Total)	ND	mg/kg	0.0020	1	6/18/02	1:29	T.Johnson	8260B	2640

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
BNA's	30.1 gm	2.0 ml	6/17/02		D. Harris	3550
Volatile Organics	5.5 g	5.0 ml	6/10/02	17:54	K. Turner	5035

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	114.	56. - 145.
VOA Surr Toluene-d8	111.	71. - 137.
VOA Surr, 4-BFB	102.	72. - 141.
VOA Surr, DBFM	110.	69. - 134.

LABORATORY COMMENTS:

ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
# = Recovery outside Laboratory historical or method prescribed limits.
All results reported on a wet weight basis.

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

FORCE & ASSOCIATES 6883
GREG FORCE
147 VERA ROAD, SUITE A
LEXINGTON, SC 29072

Project:
Project Name: STOCKMAN OIL TWO
Sampler: JASON MILLER

Lab Number: 02-A96133
Sample ID: SB-6
Sample Type: Soil
Site ID: 04736

Date Collected: 6/10/02
Time Collected: 17:57
Date Received: 6/12/02
Time Received: 9:00
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
GENERAL CHEMISTRY PARAMETERS									
% Dry Weight	72.9	%		1	6/14/02	15:50	K. Keller	CLP	7983
ORGANIC PARAMETERS									
Naphthalene	ND	mg/kg	0.066	1	6/18/02	1:09	B.Davis	8270C	1051
Acenaphthene	ND	mg/kg	0.066	1	6/18/02	1:09	B.Davis	8270C	1051
Anthracene	ND	mg/kg	0.066	1	6/18/02	1:09	B.Davis	8270C	1051
Fluoranthene	ND	mg/kg	0.066	1	6/18/02	1:09	B.Davis	8270C	1051
Fluorene	ND	mg/kg	0.066	1	6/18/02	1:09	B.Davis	8270C	1051
Pyrene	ND	mg/kg	0.066	1	6/18/02	1:09	B.Davis	8270C	1051
Benzo(a)anthracene	ND	mg/kg	0.066	1	6/18/02	1:09	B.Davis	8270C	1051
Benzo(a)pyrene	ND	mg/kg	0.066	1	6/18/02	1:09	B.Davis	8270C	1051
Benzo(b)fluoranthene	ND	mg/kg	0.066	1	6/18/02	1:09	B.Davis	8270C	1051
Benzo(k)fluoranthene	ND	mg/kg	0.066	1	6/18/02	1:09	B.Davis	8270C	1051
Chrysene	ND	mg/kg	0.066	1	6/18/02	1:09	B.Davis	8270C	1051
Dibenzo(a,h)anthracene	ND	mg/kg	0.066	1	6/18/02	1:09	B.Davis	8270C	1051
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.066	1	6/18/02	1:09	B.Davis	8270C	1051
Acenaphthylene	ND	mg/kg	0.066	1	6/18/02	1:09	B.Davis	8270C	1051
Benzo(g,h,i)perylene	ND	mg/kg	0.066	1	6/18/02	1:09	B.Davis	8270C	1051
Phenanthrene	ND	mg/kg	0.066	1	6/18/02	1:09	B.Davis	8270C	1051
VOLATILE ORGANICS									
Benzene	ND	mg/kg	0.0020	1	6/18/02	2:02	T.Johnson	8260B	2640
Ethylbenzene	ND	mg/kg	0.0020	1	6/18/02	2:02	T.Johnson	8260B	2640
Naphthalene	ND	mg/kg	0.0050	1	6/18/02	2:02	T.Johnson	8260B	2640
Toluene	ND	mg/kg	0.0020	1	6/18/02	2:02	T.Johnson	8260B	2640

Sample report continued . . .

TestAmerica
INCORPORATED

ANALYTICAL REPORT

Laboratory Number: 02-A96133
Sample ID: SB-6
Project:

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
Xylenes (Total)	ND	mg/kg	0.0020	1	6/18/02	2:02	T.Johnson	8260B	2640

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
BNA's	30.0 gm	1.0 ml	6/17/02		D. Harris	3550
Volatile Organics	8.0 g	5.0 ml	6/10/02	17:57	K. Turner	5035

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	116.	56. - 145.
VOA Surr Toluene-d8	110.	71. - 137.
VOA Surr, 4-BFB	99.	72. - 141.
VOA Surr, DBFM	111.	69. - 134.
BNA Surr-Nitrobenzene-d5	71.	15. - 126.
BNA Surr-2-Fluorobiphenyl	65.	22. - 119.
BNA Surr-Terphenyl-d14	74.	25. - 147.

LABORATORY COMMENTS:

ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
# = Recovery outside Laboratory historical or method prescribed limits.
All results reported on a wet weight basis.

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

FORCE & ASSOCIATES 6883
GREG FORCE
147 VERA ROAD, SUITE A
LEXINGTON, SC 29072

Project:
Project Name: STOCKMAN OIL TWO
Sampler: JASON MILLER

Lab Number: 02-A96134
Sample ID: SB-7
Sample Type: Soil
Site ID: 04736

Date Collected: 6/10/02
Time Collected: 18:00
Date Received: 6/12/02
Time Received: 9:00
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
GENERAL CHEMISTRY PARAMETERS									
% Dry Weight	71.5	%		1	6/14/02	15:50	K. Keller	CLP	7983
ORGANIC PARAMETERS									
Naphthalene	ND	mg/kg	0.066	1	6/18/02	1:50	B.Davis	8270C	1051
Acenaphthene	ND	mg/kg	0.066	1	6/18/02	1:50	B.Davis	8270C	1051
Anthracene	ND	mg/kg	0.066	1	6/18/02	1:50	B.Davis	8270C	1051
Fluoranthene	ND	mg/kg	0.066	1	6/18/02	1:50	B.Davis	8270C	1051
Fluorene	ND	mg/kg	0.066	1	6/18/02	1:50	B.Davis	8270C	1051
Pyrene	ND	mg/kg	0.066	1	6/18/02	1:50	B.Davis	8270C	1051
Benzo(a)anthracene	ND	mg/kg	0.066	1	6/18/02	1:50	B.Davis	8270C	1051
Benzo(a)pyrene	ND	mg/kg	0.066	1	6/18/02	1:50	B.Davis	8270C	1051
Benzo(b)fluoranthene	ND	mg/kg	0.066	1	6/18/02	1:50	B.Davis	8270C	1051
Benzo(k)fluoranthene	ND	mg/kg	0.066	1	6/18/02	1:50	B.Davis	8270C	1051
Chrysene	ND	mg/kg	0.066	1	6/18/02	1:50	B.Davis	8270C	1051
Dibenzo(a,h)anthracene	ND	mg/kg	0.066	1	6/18/02	1:50	B.Davis	8270C	1051
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.066	1	6/18/02	1:50	B.Davis	8270C	1051
Acenaphthylene	ND	mg/kg	0.066	1	6/18/02	1:50	B.Davis	8270C	1051
Benzo(g,h,i)perylene	ND	mg/kg	0.066	1	6/18/02	1:50	B.Davis	8270C	1051
Phenanthrene	ND	mg/kg	0.066	1	6/18/02	1:50	B.Davis	8270C	1051
VOLATILE ORGANICS									
Benzene	ND	mg/kg	0.0020	1	6/18/02	2:35	T.Johnson	8260B	2640
Ethylbenzene	ND	mg/kg	0.0020	1	6/18/02	2:35	T.Johnson	8260B	2640
Naphthalene	ND	mg/kg	0.0050	1	6/18/02	2:35	T.Johnson	8260B	2640
Toluene	ND	mg/kg	0.0020	1	6/18/02	2:35	T.Johnson	8260B	2640

Sample report continued . . .

TestAmerica
INCORPORATED

ANALYTICAL REPORT

Laboratory Number: 02-A96134
Sample ID: SB-7
Project:

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
Xylenes (Total)	ND	mg/kg	0.0020	1	6/18/02	2:35	T.Johnson	8260B	2640

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
BNA's	30.0 gm	1.0 ml	6/17/02		D. Harris	3550
Volatile Organics	5.8 g	5.0 ml	6/10/02	17:57	K. Turner	5035

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	117.	56. - 145.
VOA Surr Toluene-d8	111.	71. - 137.
VOA Surr, 4-BFB	99.	72. - 141.
VOA Surr, DBFM	113.	69. - 134.
BNA Surr-Nitrobenzene-d5	65.	15. - 126.
BNA Surr-2-Fluorobiphenyl	57.	22. - 119.
BNA Surr-Terphenyl-d14	63.	25. - 147.

LABORATORY COMMENTS:

ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
# = Recovery outside Laboratory historical or method prescribed limits.
All results reported on a wet weight basis.

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

FORCE & ASSOCIATES 6883
GREG FORCE
147 VERA ROAD, SUITE A
LEXINGTON, SC 29072

Project:
Project Name: STOCKMAN OIL TWO
Sampler: JASON MILLER

Lab Number: 02-A96135
Sample ID: SB-8
Sample Type: Soil
Site ID: 04736

Date Collected: 6/10/02
Time Collected: 18:06
Date Received: 6/12/02
Time Received: 9:00
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
GENERAL CHEMISTRY PARAMETERS									
% Dry Weight	78.3	%		1	6/14/02	15:50	K. Keller	CLP	7983
ORGANIC PARAMETERS									
Naphthalene	ND	mg/kg	0.066	1	6/18/02	2:31	B.Davis	8270C	1051
Acenaphthene	ND	mg/kg	0.066	1	6/18/02	2:31	B.Davis	8270C	1051
Anthracene	ND	mg/kg	0.066	1	6/18/02	2:31	B.Davis	8270C	1051
Fluoranthene	ND	mg/kg	0.066	1	6/18/02	2:31	B.Davis	8270C	1051
Fluorene	ND	mg/kg	0.066	1	6/18/02	2:31	B.Davis	8270C	1051
Pyrene	ND	mg/kg	0.066	1	6/18/02	2:31	B.Davis	8270C	1051
Benzo(a)anthracene	ND	mg/kg	0.066	1	6/18/02	2:31	B.Davis	8270C	1051
Benzo(a)pyrene	ND	mg/kg	0.066	1	6/18/02	2:31	B.Davis	8270C	1051
Benzo(b)fluoranthene	ND	mg/kg	0.066	1	6/18/02	2:31	B.Davis	8270C	1051
Benzo(k)fluoranthene	ND	mg/kg	0.066	1	6/18/02	2:31	B.Davis	8270C	1051
Chrysene	ND	mg/kg	0.066	1	6/18/02	2:31	B.Davis	8270C	1051
Dibenzo(a,h)anthracene	ND	mg/kg	0.066	1	6/18/02	2:31	B.Davis	8270C	1051
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.066	1	6/18/02	2:31	B.Davis	8270C	1051
Acenaphthylene	ND	mg/kg	0.066	1	6/18/02	2:31	B.Davis	8270C	1051
Benzo(g,h,i)perylene	ND	mg/kg	0.066	1	6/18/02	2:31	B.Davis	8270C	1051
Phenanthrene	ND	mg/kg	0.066	1	6/18/02	2:31	B.Davis	8270C	1051
VOLATILE ORGANICS									
Benzene	ND	mg/kg	0.0020	1	6/18/02	3:08	T.Johnson	8260B	2640
Ethylbenzene	ND	mg/kg	0.0020	1	6/18/02	3:08	T.Johnson	8260B	2640
Naphthalene	ND	mg/kg	0.0050	1	6/18/02	3:08	T.Johnson	8260B	2640
Toluene	ND	mg/kg	0.0020	1	6/18/02	3:08	T.Johnson	8260B	2640

Sample report continued . . .

TestAmerica
INCORPORATED

ANALYTICAL REPORT

Laboratory Number: 02-A96135
Sample ID: SB-8
Project:

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
Xylenes (Total)	ND	mg/kg	0.0020	1	6/18/02	3:08	T.Johnson	8260B	2640

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
BNA's	30.0 gm	1.0 ml	6/17/02		D. Harris	3550
Volatile Organics	5.7 g	5.0 ml	6/10/02	18:06	K. Turner	5035

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	116.	56. - 145.
VOA Surr Toluene-d8	110.	71. - 137.
VOA Surr, 4-BFB	98.	72. - 141.
VOA Surr, DBFM	110.	69. - 134.
BNA Surr-Nitrobenzene-d5	55.	15. - 126.
BNA Surr-2-Fluorobiphenyl	50.	22. - 119.
BNA Surr-Terphenyl-d14	55.	25. - 147.

LABORATORY COMMENTS:

ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
# = Recovery outside Laboratory historical or method prescribed limits.
All results reported on a wet weight basis.

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

FORCE & ASSOCIATES 6883
GREG FORCE
147 VERA ROAD, SUITE A
LEXINGTON, SC 29072

Project:
Project Name: STOCKMAN OIL TWO
Sampler: JASON MILLER

Lab Number: 02-A96136
Sample ID: SB-9
Sample Type: Soil
Site ID: 04736

Date Collected: 6/10/02
Time Collected: 18:10
Date Received: 6/12/02
Time Received: 9:00
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
GENERAL CHEMISTRY PARAMETERS									
% Dry Weight	67.9	%		1	6/14/02	15:50	K. Keller	CLP	7983
ORGANIC PARAMETERS									
Naphthalene	ND	mg/kg	0.066	1	6/18/02	3:11	B.Davis	8270C	1051
Acenaphthene	ND	mg/kg	0.066	1	6/18/02	3:11	B.Davis	8270C	1051
Anthracene	ND	mg/kg	0.066	1	6/18/02	3:11	B.Davis	8270C	1051
Fluoranthene	ND	mg/kg	0.066	1	6/18/02	3:11	B.Davis	8270C	1051
Fluorene	ND	mg/kg	0.066	1	6/18/02	3:11	B.Davis	8270C	1051
Pyrene	ND	mg/kg	0.066	1	6/18/02	3:11	B.Davis	8270C	1051
Benzo(a)anthracene	ND	mg/kg	0.066	1	6/18/02	3:11	B.Davis	8270C	1051
Benzo(a)pyrene	ND	mg/kg	0.066	1	6/18/02	3:11	B.Davis	8270C	1051
Benzo(b)fluoranthene	ND	mg/kg	0.066	1	6/18/02	3:11	B.Davis	8270C	1051
Benzo(k)fluoranthene	ND	mg/kg	0.066	1	6/18/02	3:11	B.Davis	8270C	1051
Chrysene	ND	mg/kg	0.066	1	6/18/02	3:11	B.Davis	8270C	1051
Dibenzo(a,h)anthracene	ND	mg/kg	0.066	1	6/18/02	3:11	B.Davis	8270C	1051
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.066	1	6/18/02	3:11	B.Davis	8270C	1051
Acenaphthylene	ND	mg/kg	0.066	1	6/18/02	3:11	B.Davis	8270C	1051
Benzo(g,h,i)perylene	ND	mg/kg	0.066	1	6/18/02	3:11	B.Davis	8270C	1051
Phenanthrene	ND	mg/kg	0.066	1	6/18/02	3:11	B.Davis	8270C	1051
VOLATILE ORGANICS									
Benzene	ND	mg/kg	0.0020	1	6/18/02	3:41	T.Johnson	8260B	2640
Ethylbenzene	ND	mg/kg	0.0020	1	6/18/02	3:41	T.Johnson	8260B	2640
Naphthalene	ND	mg/kg	0.0050	1	6/18/02	3:41	T.Johnson	8260B	2640
Toluene	ND	mg/kg	0.0020	1	6/18/02	3:41	T.Johnson	8260B	2640

Sample report continued . . .

TestAmerica
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ANALYTICAL REPORT

Laboratory Number: 02-A96136
Sample ID: SB-9
Project:

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
Xylenes (Total)	ND	mg/kg	0.0020	1	6/18/02	3:41	T.Johnson	8260B	2640

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
BNA's	30.3 gm	1.0 ml	6/17/02		D. Harris	3550
Volatile Organics	5.5 g	5.0 ml	6/10/02	18:10	K. Turner	5035

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	119.	56. - 145.
VOA Surr Toluene-d8	110.	71. - 137.
VOA Surr, 4-BFB	99.	72. - 141.
VOA Surr, DBFM	110.	69. - 134.
BNA Surr-Nitrobenzene-d5	70.	15. - 126.
BNA Surr-2-Fluorobiphenyl	62.	22. - 119.
BNA Surr-Terphenyl-d14	65.	25. - 147.

LABORATORY COMMENTS:

ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
# = Recovery outside Laboratory historical or method prescribed limits.
All results reported on a wet weight basis.

End of Sample Report.

TestAmerica
INCORPORATED

PROJECT QUALITY CONTROL DATA
Project Number:
Page: 1

Matrix Spike Recovery

Analyte	units	Orig. Val.	MS Val	Spike Conc	Recovery	Target Range	Q.C. Batch	Spike Sample
UST ANALYSIS								
TPH (Diesel Range)	mg/kg	< 10.0	29.4	40.0	74	24. - 127.	9639	BLANK
Naphthalene	mg/kg	< 0.066	0.957	1.67	57	25. - 120.	1051	02-A96135
Acenaphthene	mg/kg	< 0.066	1.22	1.67	73	36. - 115.	1051	02-A96135
Anthracene	mg/kg	< 0.066	1.32	1.67	79	37. - 121.	1051	02-A96135
Fluoranthene	mg/kg	< 0.066	1.65	1.67	99	36. - 127.	1051	02-A96135
Fluorene	mg/kg	< 0.066	1.29	1.67	77	35. - 124.	1051	02-A96135
Pyrene	mg/kg	< 0.066	0.957	1.67	57	33. - 130.	1051	02-A96135
Benzo(a)anthracene	mg/kg	< 0.066	1.32	1.67	79	37. - 125.	1051	02-A96135
Benzo(a)pyrene	mg/kg	< 0.066	1.35	1.67	81	37. - 128.	1051	02-A96135
Benzo(b)fluoranthene	mg/kg	< 0.066	1.35	1.67	81	25. - 134.	1051	02-A96135
Benzo(k)fluoranthene	mg/kg	< 0.066	1.39	1.67	83	40. - 129.	1051	02-A96135
Chrysene	mg/kg	< 0.066	1.32	1.67	79	38. - 129.	1051	02-A96135
Dibenzo(a,h)anthracene	mg/kg	< 0.066	1.12	1.67	67	16. - 139.	1051	02-A96135
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.066	1.12	1.67	67	11. - 142.	1051	02-A96135
Acenaphthylene	mg/kg	< 0.066	1.19	1.67	71	33. - 120.	1051	02-A96135
Benzo(g,h,i)perylene	mg/kg	< 0.066	1.02	1.67	61	10. - 145.	1051	02-A96135
Phenanthrene	mg/kg	< 0.066	1.29	1.67	77	35. - 125.	1051	02-A96135

Matrix Spike Recovery

Analyte	units	Orig. Val.	MS Val	Spike Conc	Recovery	Target Range	Q.C. Batch	Spike Sample
VOA PARAMETERS								
Benzene	mg/kg	< 0.0020	0.0496	0.0500	99	58. - 136.	2640	blank
Toluene	mg/kg	< 0.0020	0.0529	0.0500	106	54. - 139.	2640	blank

Project QC continued . . .

TestAmerica
INCORPORATED

PROJECT QUALITY CONTROL DATA
Project Number:
Page: 2

Matrix Spike Duplicate

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch
UST PARAMETERS						
TPH (Diesel Range)	mg/kg	29.4	28.6	2.76	52.	9639
Naphthalene	mg/kg	0.957	0.858	10.91	41.	1051
Acenaphthene	mg/kg	1.22	1.09	11.26	38.	1051
Anthracene	mg/kg	1.32	1.09	19.09	37.	1051
Fluoranthene	mg/kg	1.65	1.25	27.59	43.	1051
Fluorene	mg/kg	1.29	1.16	10.61	37.	1051
Pyrene	mg/kg	0.957	0.924	3.51	43.	1051
Benzo(a)anthracene	mg/kg	1.32	1.12	16.39	40.	1051
Benzo(a)pyrene	mg/kg	1.35	1.09	21.31	42.	1051
Benzo(b)fluoranthene	mg/kg	1.35	1.06	24.07	45.	1051
Benzo(k)fluoranthene	mg/kg	1.39	1.06	26.94	39.	1051
Chrysene	mg/kg	1.32	1.09	19.09	39.	1051
Dibenzo(a,h)anthracene	mg/kg	1.12	1.06	5.50	44.	1051
Indeno(1,2,3-cd)pyrene	mg/kg	1.12	1.06	5.50	45.	1051
Acenaphthylene	mg/kg	1.19	1.09	8.77	39.	1051
Benzo(g,h,i)perylene	mg/kg	1.02	1.02	0.00	48.	1051
Phenanthrene	mg/kg	1.29	1.09	16.81	41.	1051

Matrix Spike Duplicate

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch
VOA PARAMETERS						
Benzene	mg/kg	0.0496	0.0490	1.22	30.	2640
Toluene	mg/kg	0.0529	0.0502	5.24	32.	2640

Project QC continued . . .

PROJECT QUALITY CONTROL DATA
Project Number:
Page: 3

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
UST PARAMETERS						
TPH (Diesel Range)	mg/kg	40.0	31.9	80	49 - 120	9639
Naphthalene	mg/kg	1.67	1.02	61	51 - 118	1051
Acenaphthene	mg/kg	1.67	1.35	81	50 - 115	1051
Anthracene	mg/kg	1.67	1.39	83	53 - 121	1051
Fluoranthene	mg/kg	1.67	1.62	97	53 - 127	1051
Fluorene	mg/kg	1.67	1.42	85	51 - 124	1051
Pyrene	mg/kg	1.67	1.02	61	51 - 129	1051
Benzo(a)anthracene	mg/kg	1.67	1.39	83	53 - 125	1051
Benzo(a)pyrene	mg/kg	1.67	1.42	85	53 - 128	1051
Benzo(b)fluoranthene	mg/kg	1.67	1.42	85	43 - 134	1051
Benzo(k)fluoranthene	mg/kg	1.67	1.39	83	52 - 129	1051
Chrysene	mg/kg	1.67	1.39	83	53 - 129	1051
Dibenzo(a,h)anthracene	mg/kg	1.67	1.19	71	35 - 139	1051
Indeno(1,2,3-cd)pyrene	mg/kg	1.67	1.19	71	31 - 142	1051
Acenaphthylene	mg/kg	1.67	1.35	81	50 - 120	1051
Benzo(g,h,i)perylene	mg/kg	1.67	1.12	67	27 - 145	1051
Phenanthrene	mg/kg	1.67	1.35	81	52 - 125	1051

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
VOA PARAMETERS						
Benzene	mg/kg	0.0500	0.0488	98	79 - 127	2640
Ethylbenzene	mg/kg	0.0500	0.0519	104	78 - 126	2640
Naphthalene	mg/kg	0.0500	0.0394	79	62 - 139	2640
Toluene	mg/kg	0.0500	0.0528	106	79 - 126	2640
Xylenes (Total)	mg/kg	0.150	0.156	104	77 - 123	2640

Project QC continued . . .

PROJECT QUALITY CONTROL DATA
Project Number:
Page: 4

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
MISC PARAMETERS						
TOC	mg/kg	12400	15300	123	65 - 135	248

Duplicates

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch	Sample Dup'd
TOC	mg/kg	< 1000	< 1000	N/A	25.	248	02-A97293

Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Date Analyzed	Time Analyzed
UST PARAMETERS					
TPH (Diesel Range)	< 10.0	mg/kg	9639	6/14/02	21:49
Naphthalene	< 0.165	mg/kg	1051	6/17/02	18:18
Acenaphthene	< 0.165	mg/kg	1051	6/17/02	18:18
Anthracene	< 0.165	mg/kg	1051	6/17/02	18:18
Fluoranthene	< 0.165	mg/kg	1051	6/17/02	18:18
Fluorene	< 0.165	mg/kg	1051	6/17/02	18:18
Pyrene	< 0.165	mg/kg	1051	6/17/02	18:18
Benzo(a)anthracene	< 0.165	mg/kg	1051	6/17/02	18:18
Benzo(a)pyrene	< 0.165	mg/kg	1051	6/17/02	18:18
Benzo(b)fluoranthene	< 0.165	mg/kg	1051	6/17/02	18:18
Benzo(k)fluoranthene	< 0.165	mg/kg	1051	6/17/02	18:18
Chrysene	< 0.165	mg/kg	1051	6/17/02	18:18
Dibenzo(a,h)anthracene	< 0.165	mg/kg	1051	6/17/02	18:18
Indeno(1,2,3-cd)pyrene	< 0.165	mg/kg	1051	6/17/02	18:18
Acenaphthylene	< 0.165	mg/kg	1051	6/17/02	18:18
Benzo(g,h,i)perylene	< 0.165	mg/kg	1051	6/17/02	18:18
Phenanthrene	< 0.165	mg/kg	1051	6/17/02	18:18

Project QC continued . . .

PROJECT QUALITY CONTROL DATA
Project Number:
Page: 5

Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Date Analyzed	Time Analyzed
VOA PARAMETERS					
Benzene	< 0.0020	mg/kg	2640	6/18/02	20:26
Ethylbenzene	< 0.0020	mg/kg	2640	6/18/02	20:26
Naphthalene	< 0.0050	mg/kg	2640	6/18/02	20:26
Toluene	< 0.0020	mg/kg	2640	6/18/02	20:26
Xylenes (Total)	< 0.0020	mg/kg	2640	6/18/02	20:26
VOA Surr 1,2-DCA-d4	105.	% Rec	2640	6/18/02	20:26
VOA Surr Toluene-d8	109.	% Rec	2640	6/18/02	20:26
VOA Surr, 4-BFB	103.	% Rec	2640	6/18/02	20:26
VOA Surr, DBFM	104.	% Rec	2640	6/18/02	20:26

Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Date Analyzed	Time Analyzed
MISC PARAMETERS					
TOC	< 1000	mg/kg	248	6/16/02	16:51

- Value outside Laboratory historical or method prescribed QC limits.

End of Report for Project 288601

TestAmerica
INCORPORATED

6/20/02

FORCE & ASSOCIATES 6883
GREG FORCE
147 VERA ROAD, SUITE A
LEXINGTON, SC 29072

This report includes the analytical certificates of analysis for all samples listed below. These samples relate to your project STOCKMAN OIL TWO. The Laboratory Project number is 288614. An executed copy of the chain of custody and the sample receipt form are also included as an addendum to this report.

Sample Identification	Lab Number	Collection Date
MW-1	02-A96177	6/10/02
MW-2	02-A96178	6/10/02
MW-3	02-A96179	6/10/02
MW-4	02-A96180	6/10/02

These results relate only to the items tested.
This report shall not be reproduced except in full and with permission of the laboratory.

Report Approved By: _____ Report Date: 6/20/02

Paul E. Lane, Jr., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Serv.
Eric S. Smith, Assistant Technical Director
Gail A. Lage, Technical Serv.
Glenn L. Norton, Technical Serv.
Kelly S. Comstock, Technical Serv.
Pamela A. Langford, Technical Serv.

Laboratory Certification Number: 84009

TestAmerica
INCORPORATED

ANALYTICAL REPORT

FORCE & ASSOCIATES 6883
GREG FORCE
147 VERA ROAD, SUITE A
LEXINGTON, SC 29072

Project:
Project Name: STOCKMAN OIL TWO
Sampler: JASON MILLER

Lab Number: 02-A96177
Sample ID: MW-1
Sample Type: Ground water
Site ID: 04736

Date Collected: 6/10/02
Time Collected: 14:20
Date Received: 6/12/02
Time Received: 9:00
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
ORGANIC PARAMETERS									
Naphthalene	37.0	ug/L	5.0	1	6/17/02	12:04	B.Davis	8270C	269
Acenaphthene	ND	ug/L	5.0	1	6/17/02	12:04	B.Davis	8270C	269
Anthracene	ND	ug/L	5.0	1	6/17/02	12:04	B.Davis	8270C	269
Fluoranthene	ND	ug/L	5.0	1	6/17/02	12:04	B.Davis	8270C	269
Fluorene	ND	ug/L	5.0	1	6/17/02	12:04	B.Davis	8270C	269
Pyrene	ND	ug/L	5.0	1	6/17/02	12:04	B.Davis	8270C	269
Benzo(a)anthracene	ND	ug/L	5.0	1	6/17/02	12:04	B.Davis	8270C	269
Benzo(a)pyrene	ND	ug/L	5.0	1	6/17/02	12:04	B.Davis	8270C	269
Benzo(b)fluoranthene	ND	ug/L	5.0	1	6/17/02	12:04	B.Davis	8270C	269
Benzo(k)fluoranthene	ND	ug/L	5.0	1	6/17/02	12:04	B.Davis	8270C	269
Chrysene	ND	ug/L	5.0	1	6/17/02	12:04	B.Davis	8270C	269
Dibenzo(a,h)anthracene	ND	ug/L	5.0	1	6/17/02	12:04	B.Davis	8270C	269
Indeno(1,2,3-cd)pyrene	ND	ug/L	5.0	1	6/17/02	12:04	B.Davis	8270C	269
Acenaphthylene	ND	ug/L	5.0	1	6/17/02	12:04	B.Davis	8270C	269
Benzo(g,h,i)perylene	ND	ug/L	5.0	1	6/17/02	12:04	B.Davis	8270C	269
Phenanthrene	ND	ug/L	5.0	1	6/17/02	12:04	B.Davis	8270C	269
VOLATILE ORGANICS									
Benzene	226.	ug/L	10.0	10	6/18/02	15:02	J.Haley	8260B	2519
Ethylbenzene	56.3	ug/L	1.0	1	6/18/02	0:37	J.Haley	8260B	2515
Naphthalene	39.4	ug/L	5.0	1	6/18/02	0:37	J.Haley	8260B	2515
Toluene	443.	ug/L	10.0	10	6/18/02	15:02	J.Haley	8260B	2519
Xylenes (Total)	306.	ug/L	1.0	1	6/18/02	0:37	J.Haley	8260B	2515
Methyl-t-butyl ether	751.	ug/L	10.0	10	6/18/02	15:02	J.Haley	8260B	2519
VOLATILE ORGANICS by GC									

Sample report continued . . .

TestAmerica
INCORPORATED

ANALYTICAL REPORT

Laboratory Number: 02-A96177
Sample ID: MW-1
Project:

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
Ethylene Dibromide	ND	ug/L	0.02	1	6/18/02	18:05	Henderson	8011	8714
METALS									
Lead	ND	ug/L	3.0	1	6/14/02	22:26	Rob Hunt	6010B	8488
MISCELLANEOUS CHEMISTRY									
Sulfate	3.60	mg/l	1.00	1	6/20/02	13:49	M.Shockley	9038	3383

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
BNA's	975. ml	1.0 ml	6/14/02		D. Harris	3510/625

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	97.	60. - 158.
VOA Surr Toluene-d8	98.	82. - 127.
VOA Surr, 4-BFB	97.	72. - 136.
VOA Surr, DBFM	94.	81. - 137.
BNA Surr-Nitrobenzene-d5	87.	24. - 128.
BNA Surr-2-Fluorobiphenyl	83.	33. - 118.
BNA Surr-Terphenyl-d14	92.	27. - 142.
BNA Surr-Phenol-d5	43.	1. - 72.
BNA Surr-2-Fluorophenol	59.	1. - 99.
BNA Surr-2,4,6-Tribromophenol	99.	45. - 157.

Sample report continued . . .

TestAmerica
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ANALYTICAL REPORT

Laboratory Number: 02-A96177
Sample ID: MW-1
Project:

LABORATORY COMMENTS:

ND - Not detected at the report limit.

B - Analyte was detected in the method blank.

J - Estimated Value below Report Limit.

- Recovery outside Laboratory historical or method prescribed limits.

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

FORCE & ASSOCIATES 6883
GREG FORCE
147 VERA ROAD, SUITE A
LEXINGTON, SC 29072

Project:
Project Name: STOCKMAN OIL TWO
Sampler: JASON MILLER

Lab Number: 02-A96178
Sample ID: MW-2
Sample Type: Ground water
Site ID: 04736

Date Collected: 6/10/02
Time Collected: 14:50
Date Received: 6/12/02
Time Received: 9:00
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
ORGANIC PARAMETERS									
Naphthalene	ND	ug/L	5.0	1	6/17/02	12:42	B.Davis	8270C	269
Acenaphthene	ND	ug/L	5.0	1	6/17/02	12:42	B.Davis	8270C	269
Anthracene	ND	ug/L	5.0	1	6/17/02	12:42	B.Davis	8270C	269
Fluoranthene	ND	ug/L	5.0	1	6/17/02	12:42	B.Davis	8270C	269
Fluorene	ND	ug/L	5.0	1	6/17/02	12:42	B.Davis	8270C	269
Pyrene	ND	ug/L	5.0	1	6/17/02	12:42	B.Davis	8270C	269
Benzo(a)anthracene	ND	ug/L	5.0	1	6/17/02	12:42	B.Davis	8270C	269
Benzo(a)pyrene	ND	ug/L	5.0	1	6/17/02	12:42	B.Davis	8270C	269
Benzo(b)fluoranthene	ND	ug/L	5.0	1	6/17/02	12:42	B.Davis	8270C	269
Benzo(k)fluoranthene	ND	ug/L	5.0	1	6/17/02	12:42	B.Davis	8270C	269
Chrysene	ND	ug/L	5.0	1	6/17/02	12:42	B.Davis	8270C	269
Dibenzo(a,h)anthracene	ND	ug/L	5.0	1	6/17/02	12:42	B.Davis	8270C	269
Indeno(1,2,3-cd)pyrene	ND	ug/L	5.0	1	6/17/02	12:42	B.Davis	8270C	269
Acenaphthylene	ND	ug/L	5.0	1	6/17/02	12:42	B.Davis	8270C	269
Benzo(g,h,i)perylene	ND	ug/L	5.0	1	6/17/02	12:42	B.Davis	8270C	269
Phenanthrene	ND	ug/L	5.0	1	6/17/02	12:42	B.Davis	8270C	269
VOLATILE ORGANICS									
Benzene	4.1	ug/L	1.0	1	6/18/02	1:08	J.Haley	8260B	2515
Ethylbenzene	ND	ug/L	1.0	1	6/18/02	1:08	J.Haley	8260B	2515
Naphthalene	ND	ug/L	5.0	1	6/18/02	1:08	J.Haley	8260B	2515
Toluene	ND	ug/L	1.0	1	6/18/02	1:08	J.Haley	8260B	2515
Xylenes (Total)	ND	ug/L	1.0	1	6/18/02	1:08	J.Haley	8260B	2515
Methyl-t-butyl ether	12.4	ug/L	1.0	1	6/18/02	1:08	J.Haley	8260B	2515
VOLATILE ORGANICS by GC									

Sample report continued . . .

TestAmerica
INCORPORATED

ANALYTICAL REPORT

Laboratory Number: 02-A96178
Sample ID: MW-2
Project:

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
Ethylene Dibromide	ND	ug/L	0.02	1	6/18/02	18:33	Henderson	8011	8714
METALS									
Lead	ND	ug/L	3.0	1	6/14/02	22:26	Rob Hunt	6010B	8488
MISCELLANEOUS CHEMISTRY									
Sulfate	5.10	mg/l	1.00	1	6/20/02	13:49	M.Shockley	9038	3383

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
BNA's	980. ml	1.0 ml	6/14/02		D. Harris	3510/625

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	95.	60. - 158.
VOA Surr Toluene-d8	93.	82. - 127.
VOA Surr, 4-BFB	93.	72. - 136.
VOA Surr, DBFM	90.	81. - 137.
BNA Surr-Nitrobenzene-d5	82.	24. - 128.
BNA Surr-2-Fluorobiphenyl	80.	33. - 118.
BNA Surr-Terphenyl-d14	89.	27. - 142.
BNA Surr-Phenol-d5	41.	1. - 72.
BNA Surr-2-Fluorophenol	57.	1. - 99.
BNA Surr-2,4,6-Tribromophenol	96.	45. - 157.

Sample report continued . . .

TestAmerica
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ANALYTICAL REPORT

Laboratory Number: 02-A96178
Sample ID: MW-2
Project:

LABORATORY COMMENTS:

ND - Not detected at the report limit.
B - Analyte was detected in the method blank.
J - Estimated Value below Report Limit.
- Recovery outside Laboratory historical or method prescribed limits.

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

FORCE & ASSOCIATES 6883
GREG FORCE
147 VERA ROAD, SUITE A
LEXINGTON, SC 29072

Project:
Project Name: STOCKMAN OIL TWO
Sampler: JASON MILLER

Lab Number: 02-A96179
Sample ID: MW-3
Sample Type: Ground water
Site ID: 04736

Date Collected: 6/10/02
Time Collected: 16:25
Date Received: 6/12/02
Time Received: 9:00
Page: 1

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
ORGANIC PARAMETERS									
Naphthalene	180.	ug/L	25.0	5	6/17/02	15:00	B.Davis	8270C	269
Acenaphthene	ND	ug/L	5.0	1	6/17/02	13:20	B.Davis	8270C	269
Anthracene	ND	ug/L	5.0	1	6/17/02	13:20	B.Davis	8270C	269
Fluoranthene	ND	ug/L	5.0	1	6/17/02	13:20	B.Davis	8270C	269
Fluorene	ND	ug/L	5.0	1	6/17/02	13:20	B.Davis	8270C	269
Pyrene	ND	ug/L	5.0	1	6/17/02	13:20	B.Davis	8270C	269
Benzo(a)anthracene	ND	ug/L	5.0	1	6/17/02	13:20	B.Davis	8270C	269
Benzo(a)pyrene	ND	ug/L	5.0	1	6/17/02	13:20	B.Davis	8270C	269
Benzo(b)fluoranthene	ND	ug/L	5.0	1	6/17/02	13:20	B.Davis	8270C	269
Benzo(k)fluoranthene	ND	ug/L	5.0	1	6/17/02	13:20	B.Davis	8270C	269
Chrysene	ND	ug/L	5.0	1	6/17/02	13:20	B.Davis	8270C	269
Dibenzo(a,h)anthracene	ND	ug/L	5.0	1	6/17/02	13:20	B.Davis	8270C	269
Indeno(1,2,3-cd)pyrene	ND	ug/L	5.0	1	6/17/02	13:20	B.Davis	8270C	269
Acenaphthylene	ND	ug/L	5.0	1	6/17/02	13:20	B.Davis	8270C	269
Benzo(g,h,i)perylene	ND	ug/L	5.0	1	6/17/02	13:20	B.Davis	8270C	269
Phenanthrene	ND	ug/L	5.0	1	6/17/02	13:20	B.Davis	8270C	269
VOLATILE ORGANICS									
Benzene	8680	ug/L	100.	100	6/18/02	16:04	J.Haley	8260B	2521
Ethylbenzene	779.	ug/L	10.0	10	6/18/02	15:33	J.Haley	8260B	2519
Naphthalene	194.	ug/L	50.0	10	6/18/02	15:33	J.Haley	8260B	2519
Toluene	6680	ug/L	100.	100	6/18/02	16:04	J.Haley	8260B	2521
Xylenes (Total)	5310	ug/L	10.0	10	6/18/02	15:33	J.Haley	8260B	2519
Methyl-t-butyl ether	3290	ug/L	100.	100	6/18/02	16:04	J.Haley	8260B	2521
VOLATILE ORGANICS by GC									

Sample report continued . . .

TestAmerica
INCORPORATED

ANALYTICAL REPORT

Laboratory Number: 02-A96179
Sample ID: MW-3
Project:

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
Ethylene Dibromide	ND	ug/L	0.02	1	6/18/02	19:01	Henderson	8011	8714
METALS									
Lead	9.0	ug/L	3.0	1	6/15/02	18:25	G.McCord	6010B	8494
MISCELLANEOUS CHEMISTRY									
Sulfate	10.8	mg/l	1.00	1	6/20/02	13:49	M.Shockley	9038	3383

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
BNA's	995. ml	1.0 ml	6/14/02		D. Harris	3510/625

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	89.	60. - 158.
VOA Surr Toluene-d8	91.	82. - 127.
VOA Surr, 4-BFB	90.	72. - 136.
VOA Surr, DBFM	87.	81. - 137.
BNA Surr-Nitrobenzene-d5	84.	24. - 128.
BNA Surr-2-Fluorobiphenyl	80.	33. - 118.
BNA Surr-Terphenyl-d14	88.	27. - 142.
BNA Surr-Phenol-d5	40.	1. - 72.
BNA Surr-2-Fluorophenol	54.	1. - 99.
BNA Surr-2,4,6-Tribromophenol	95.	45. - 157.

Sample report continued . . .

TestAmerica
INCORPORATED

ANALYTICAL REPORT

Laboratory Number: 02-A96179
Sample ID: MW-3
Project:

LABORATORY COMMENTS:

ND - Not detected at the report limit.
B - Analyte was detected in the method blank.
J - Estimated Value below Report Limit.
- Recovery outside Laboratory historical or method prescribed limits.

End of Sample Report.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

FORCE & ASSOCIATES 6883
GREG FORCE
147 VERA ROAD, SUITE A
LEXINGTON, SC 29072

Project:
Project Name: STOCKMAN OIL TWO
Sampler: JASON MILLER

Lab Number: 02-A96180
Sample ID: MW-4
Sample Type: Ground water
Site ID: 04736

Date Collected: 6/10/02
Time Collected: 19:20
Date Received: 6/12/02
Time Received: 9:00
Page: 1

Analyte	Result		Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
ORGANIC PARAMETERS										
Naphthalene	ND		ug/L	5.0	1	6/17/02	13:59	B.Davis	8270C	269
Acenaphthene	ND		ug/L	5.0	1	6/17/02	13:59	B.Davis	8270C	269
Anthracene	ND		ug/L	5.0	1	6/17/02	13:59	B.Davis	8270C	269
Fluoranthene	ND		ug/L	5.0	1	6/17/02	13:59	B.Davis	8270C	269
Fluorene	ND		ug/L	5.0	1	6/17/02	13:59	B.Davis	8270C	269
Pyrene	ND		ug/L	5.0	1	6/17/02	13:59	B.Davis	8270C	269
Benzo(a)anthracene	ND		ug/L	5.0	1	6/17/02	13:59	B.Davis	8270C	269
Benzo(a)pyrene	ND		ug/L	5.0	1	6/17/02	13:59	B.Davis	8270C	269
Benzo(b)fluoranthene	ND		ug/L	5.0	1	6/17/02	13:59	B.Davis	8270C	269
Benzo(k)fluoranthene	ND		ug/L	5.0	1	6/17/02	13:59	B.Davis	8270C	269
Chrysene	ND		ug/L	5.0	1	6/17/02	13:59	B.Davis	8270C	269
Dibenzo(a,h)anthracene	ND		ug/L	5.0	1	6/17/02	13:59	B.Davis	8270C	269
Indeno(1,2,3-cd)pyrene	ND		ug/L	5.0	1	6/17/02	13:59	B.Davis	8270C	269
Acenaphthylene	ND		ug/L	5.0	1	6/17/02	13:59	B.Davis	8270C	269
Benzo(g,h,i)perylene	ND		ug/L	5.0	1	6/17/02	13:59	B.Davis	8270C	269
Phenanthrene	ND		ug/L	5.0	1	6/17/02	13:59	B.Davis	8270C	269
VOLATILE ORGANICS										
Benzene	6.4		ug/L	1.0	1	6/18/02	12:58	J.Haley	8260B	2515
Ethylbenzene	ND		ug/L	1.0	1	6/18/02	12:58	J.Haley	8260B	2515
Naphthalene	ND		ug/L	5.0	1	6/18/02	12:58	J.Haley	8260B	2515
Toluene	2.7		ug/L	1.0	1	6/18/02	12:58	J.Haley	8260B	2515
Xylenes (Total)	2.8	U	ug/L	1.0	1	6/18/02	12:58	J.Haley	8260B	2515
Methyl-t-butyl ether	ND		ug/L	1.0	1	6/18/02	12:58	J.Haley	8260B	2515
VOLATILE ORGANICS by GC										

Sample report continued . . .

TestAmerica
INCORPORATED

ANALYTICAL REPORT

Laboratory Number: 02-A96180
Sample ID: MW-4
Project:

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
Ethylene Dibromide	ND	ug/L	0.02	1	6/18/02	19:28	Henderson	8011	8714
METALS									
Lead	ND	ug/L	3.0	1	6/15/02	18:25	G.McCord	6010B	8494
MISCELLANEOUS CHEMISTRY									
Sulfate	ND	mg/l	1.00	1	6/20/02	13:49	M.Shockley	9038	3383

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
BNA's	1000 ml	1.0 ml	6/14/02		D. Harris	3510/625

Surrogate	% Recovery	Target Range
VOA Surr 1,2-DCA-d4	94.	60. - 158.
VOA Surr Toluene-d8	94.	82. - 127.
VOA Surr, 4-BFB	95.	72. - 136.
VOA Surr, DBFM	90.	81. - 137.
BNA Surr-Nitrobenzene-d5	84.	24. - 128.
BNA Surr-2-Fluorobiphenyl	80.	33. - 118.
BNA Surr-Terphenyl-d14	89.	27. - 142.
BNA Surr-Phenol-d5	41.	1. - 72.
BNA Surr-2-Fluorophenol	59.	1. - 99.
BNA Surr-2,4,6-Tribromophenol	91.	45. - 157.

Sample report continued . . .

TestAmerica
INCORPORATED

ANALYTICAL REPORT

Laboratory Number: 02-A96180
Sample ID: MW-4
Project:

LABORATORY COMMENTS:

ND = Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
# = Recovery outside Laboratory historical or method prescribed limits.

End of Sample Report.

TestAmerica
INCORPORATED

PROJECT QUALITY CONTROL DATA
Project Number:
Page: 1

Matrix Spike Recovery

Analyte	units	Orig. Val.	MS Val	Spike Conc	Recovery	Target Range	Q.C. Batch	Spike Sample
UST ANALYSIS								
Naphthalene	mg/l	< 0.0010	0.0410	0.0500	82	51. - 122.	269	BLANK
Acenaphthene	mg/l	< 0.0010	0.0470	0.0500	94	52. - 126.	269	BLANK
Anthracene	mg/l	< 0.0010	0.0500	0.0500	100	55. - 129.	269	BLANK
Fluoranthene	mg/l	< 0.0010	0.0530	0.0500	106	55. - 133.	269	BLANK
Fluorene	mg/l	< 0.0010	0.0510	0.0500	102	53. - 131.	269	BLANK
Pyrene	mg/l	< 0.0010	0.0500	0.0500	100	52. - 134.	269	BLANK
Benzo(a)anthracene	mg/l	< 0.0010	0.0500	0.0500	100	53. - 135.	269	BLANK
Benzo(a)pyrene	mg/l	< 0.0010	0.0520	0.0500	104	54. - 137.	269	BLANK
Benzo(b)fluoranthene	mg/l	< 0.0010	0.0520	0.0500	104	44. - 138.	269	BLANK
Benzo(k)fluoranthene	mg/l	< 0.0010	0.0540	0.0500	108	52. - 142.	269	BLANK
Chrysene	mg/l	< 0.0010	0.0490	0.0500	98	52. - 142.	269	BLANK
Dibenzo(a,h)anthracene	mg/l	< 0.0020	0.0610	0.0500	122	31. - 155.	269	BLANK
Indeno(1,2,3-cd)pyrene	mg/l	< 0.0020	0.0610	0.0500	122	30. - 154.	269	BLANK
Acenaphthylene	mg/l	< 0.0010	0.0470	0.0500	94	52. - 129.	269	BLANK
Benzo(g,h,i)perylene	mg/l	< 0.0020	0.0620	0.0500	124	21. - 165.	269	BLANK
Phenanthrene	mg/l	< 0.0010	0.0500	0.0500	100	54. - 128.	269	BLANK

Matrix Spike Recovery

Analyte	units	Orig. Val.	MS Val	Spike Conc	Recovery	Target Range	Q.C. Batch	Spike Sample
VOA PARAMETERS								
Benzene	mg/l	< 0.0007	0.0501	0.0500	100	70. - 136.	2515	blank
Toluene	mg/l	< 0.0007	0.0499	0.0500	100	69. - 137.	2515	blank
VOA Surr 1,2-DCA-d4	% Rec				94	60. - 158.	2515	
VOA Surr Toluene-d8	% Rec				97	82. - 127.	2515	
VOA Surr, 4-BFB	% Rec				89	72. - 136.	2515	
VOA Surr, DBFM	% Rec				94	81. - 137.	2515	

Project QC continued . . .

PROJECT QUALITY CONTROL DATA
Project Number:
Page: 2

BNA Surr-Nitrobenzene-d5	% Rec	89	24. - 128.	269
BNA Surr-2-Fluorobiphenyl	% Rec	87	33. - 118.	269
BNA Surr-Terphenyl-d14	% Rec	95	27. - 142.	269
BNA Surr-Phenol-d5	% Rec	25	1. - 72.	269
BNA Surr-2-Fluorophenol	% Rec	36	1. - 99.	269
BNA Surr-2,4,6-Tribromopheno	% Rec	99	45. - 157.	269

Matrix Spike Recovery

Analyte	units	Orig. Val.	MS Val	Spike Conc	Recovery	Target Range	Q.C. Batch	Spike Sample
METALS								
Lead	mg/l	< 0.0030	0.0540	0.0500	108	80 - 120	8488	Duplicate
Lead	mg/l	< 0.0030	0.0540	0.0500	108	80 - 120	8494	Duplicate

Matrix Spike Recovery

Analyte	units	Orig. Val.	MS Val	Spike Conc	Recovery	Target Range	Q.C. Batch	Spike Sample
MISC PARAMETERS								
Sulfate	mg/l	3.60	33.0	40.0	74#	80 - 120	3383	02-A96177

Matrix Spike Recovery

Analyte	units	Orig. Val.	MS Val	Spike Conc	Recovery	Target Range	Q.C. Batch	Spike Sample
MISC PARAMETERS								
Ethylene Dibromide	mg/l	< 0.00002	0.00031	0.00029	107	40 - 140	8714	blank

Project QC continued . . .

PROJECT QUALITY CONTROL DATA
Project Number:
Page: 3

Matrix Spike Duplicate

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch

Matrix Spike Duplicate

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch
UST PARAMETERS						
Naphthalene	mg/l	0.0410	0.0360	12.99	41.	269
Acenaphthene	mg/l	0.0470	0.0430	8.89	40.	269
Anthracene	mg/l	0.0500	0.0470	6.19	40.	269
Fluoranthene	mg/l	0.0530	0.0490	7.84	40.	269
Fluorene	mg/l	0.0510	0.0460	10.31	40.	269
Pyrene	mg/l	0.0500	0.0460	8.33	41.	269
Benzo(a)anthracene	mg/l	0.0500	0.0470	6.19	41.	269
Benzo(a)pyrene	mg/l	0.0520	0.0480	8.00	43.	269
Benzo(b)fluoranthene	mg/l	0.0520	0.0480	8.00	42.	269
Benzo(k)fluoranthene	mg/l	0.0540	0.0490	9.71	41.	269
Chrysene	mg/l	0.0490	0.0450	8.51	40.	269
Dibenzo(a,h)anthracene	mg/l	0.0610	0.0550	10.34	45.	269
Indeno(1,2,3-cd)pyrene	mg/l	0.0610	0.0550	10.34	44.	269
Acenaphthylene	mg/l	0.0470	0.0420	11.24	41.	269
Benzo(g,h,i)perylene	mg/l	0.0620	0.0560	10.17	45.	269
Phenanthrene	mg/l	0.0500	0.0470	6.19	39.	269

Matrix Spike Duplicate

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch
VOA PARAMETERS						
Benzene	mg/l	0.0501	0.0428	15.72	21.	2515
Toluene	mg/l	0.0499	0.0388	25.03#	22.	2515

Project QC continued . . .

PROJECT QUALITY CONTROL DATA
Project Number:
Page: 4

VOA Surr 1,2-DCA-d4	% Rec	94.	2515
VOA Surr Toluene-d8	% Rec	96.	2515
VOA Surr, 4-BFB	% Rec	90.	2515
VOA Surr, DBFM	% Rec	93.	2515
BNA Surr-Nitrobenzene-d5	% Rec	78.	269
BNA Surr-2-Fluorobiphenyl	% Rec	78.	269
BNA Surr-Terphenyl-d14	% Rec	89.	269
BNA Surr-Phenol-d5	% Rec	26.	269
BNA Surr-2-Fluorophenol	% Rec	36.	269
BNA Surr-2,4,6-Tribromophenol	% Rec	95.	269

Matrix Spike Duplicate

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch
METALS						
Lead	mg/l	0.0540	0.0530	1.87	20	8488
Lead	mg/l	0.0540	0.0530	1.87	20	8494

Matrix Spike Duplicate

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch
MISC PARAMETERS						
Ethylene Dibromide	mg/l	0.00031	0.00031	0.00	50	8714

Matrix Spike Duplicate

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch
MISC PARAMETERS						
Sulfate	mg/l	33.0	33.0	0.00	20	3383

Project QC continued . . .

PROJECT QUALITY CONTROL DATA
Project Number:
Page: 5

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
UST PARAMETERS						
Naphthalene	mg/l	0.0500	0.0400	80	52 - 121	269
Acenaphthene	mg/l	0.0500	0.0470	94	53 - 125	269
Anthracene	mg/l	0.0500	0.0500	100	54 - 130	269
Fluoranthene	mg/l	0.0500	0.0520	104	56 - 133	269
Fluorene	mg/l	0.0500	0.0500	100	53 - 131	269
Pyrene	mg/l	0.0500	0.0500	100	54 - 133	269
Benzo(a)anthracene	mg/l	0.0500	0.0500	100	54 - 134	269
Benzo(a)pyrene	mg/l	0.0500	0.0520	104	55 - 136	269
Benzo(b)fluoranthene	mg/l	0.0500	0.0510	102	45 - 136	269
Benzo(k)fluoranthene	mg/l	0.0500	0.0530	106	55 - 139	269
Chrysene	mg/l	0.0500	0.0490	98	52 - 141	269
Dibenzo(a,h)anthracene	mg/l	0.0500	0.0650	130	37 - 148	269
Indeno(1,2,3-cd)pyrene	mg/l	0.0500	0.0650	130	34 - 150	269
Acenaphthylene	mg/l	0.0500	0.0460	92	52 - 129	269
Benzo(g,h,i)perylene	mg/l	0.0500	0.0680	136	28 - 156	269
Phenanthrene	mg/l	0.0500	0.0500	100	55 - 128	269

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
VOA PARAMETERS						
Benzene	mg/l	0.0500	0.0547	109	79 - 124	2515
Benzene	mg/l	0.0500	0.0516	103	79 - 124	2515
Benzene	mg/l	0.0500	0.0516	103	79 - 124	2519
Benzene	mg/l	0.0500	0.0516	103	79 - 124	2521
Ethylbenzene	mg/l	0.0500	0.0542	108	77 - 126	2515
Ethylbenzene	mg/l	0.0500	0.0511	102	77 - 126	2515
Ethylbenzene	mg/l	0.0500	0.0511	102	77 - 126	2519
Naphthalene	mg/l	0.0500	0.0402	80	57 - 143	2515

Project QC continued . . .

TestAmerica
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PROJECT QUALITY CONTROL DATA
Project Number:
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Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
Naphthalene	mg/l	0.0500	0.0400	80	57 - 143	2515
Naphthalene	mg/l	0.0500	0.0400	80	57 - 143	2519
Toluene	mg/l	0.0500	0.0565	113	78 - 124	2515
Toluene	mg/l	0.0500	0.0529	106	78 - 124	2515
Toluene	mg/l	0.0500	0.0529	106	78 - 124	2519
Toluene	mg/l	0.0500	0.0529	106	78 - 124	2521
Xylenes (Total)	mg/l	0.150	0.165	110	76 - 127	2515
Xylenes (Total)	mg/l	0.150	0.154	103	76 - 127	2515
Xylenes (Total)	mg/l	0.150	0.154	103	76 - 127	2519
Methyl-t-butyl ether	mg/l	0.0500	0.0556	111	68 - 131	2515
Methyl-t-butyl ether	mg/l	0.0500	0.0536	107	68 - 131	2515
Methyl-t-butyl ether	mg/l	0.0500	0.0536	107	68 - 131	2519
Methyl-t-butyl ether	mg/l	0.0500	0.0536	107	68 - 131	2521
Ethylene Dibromide	mg/l	0.00029	0.00031	107	69 - 127	8714
VOA Surr 1,2-DCA-d4	% Rec			95	60 - 158	2515
VOA Surr 1,2-DCA-d4	% Rec			92	60 - 158	2515
VOA Surr 1,2-DCA-d4	% Rec			92	60 - 158	2519
VOA Surr 1,2-DCA-d4	% Rec			92	60 - 158	2521
VOA Surr Toluene-d8	% Rec			97	82 - 127	2515
VOA Surr Toluene-d8	% Rec			96	82 - 127	2515
VOA Surr Toluene-d8	% Rec			96	82 - 127	2519
VOA Surr Toluene-d8	% Rec			96	82 - 127	2521
VOA Surr, 4-BFB	% Rec			89	72 - 136	2515
VOA Surr, 4-BFB	% Rec			90	72 - 136	2515
VOA Surr, 4-BFB	% Rec			90	72 - 136	2519
VOA Surr, 4-BFB	% Rec			90	72 - 136	2521
VOA Surr, DBFM	% Rec			92	81 - 137	2515
VOA Surr, DBFM	% Rec			93	81 - 137	2515
VOA Surr, DBFM	% Rec			93	81 - 137	2519
VOA Surr, DBFM	% Rec			93	81 - 137	2521

Project QC continued . . .

PROJECT QUALITY CONTROL DATA
Project Number:
Page: 7

BNA Surr-Nitrobenzene-d5	% Rec	87	24 - 128	269
BNA Surr-2-Fluorobiphenyl	% Rec	87	33 - 118	269
BNA Surr-Terphenyl-d14	% Rec	94	27 - 142	269
BNA Surr-Phenol-d5	% Rec	26	1 - 72	269
BNA Surr-2-Fluorophenol	% Rec	38	1 - 99	269
BNA Surr-2,4,6-Tribromophenol	% Rec	103	45 - 157	269

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
METALS						
Lead	mg/l	0.0500	0.0540	108	80 - 120	8488
Lead	mg/l	0.0500	0.0550	110	80 - 120	8494

Continuing Calibration Verification

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
METALS						

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
MISC PARAMETERS						
Ethylene Dibromide	mg/l	0.00029	0.00031	107	69 - 127	8714

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
MISC PARAMETERS						
Sulfate	mg/l	25.0	25.2	101	90 - 110	3383

Project QC continued . . .

PROJECT QUALITY CONTROL DATA
Project Number:
Page: 8

Duplicates

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch	Sample Dup'd
Sulfate	mg/l	4.60	4.70	2.15	15.	3383	02-A97319

Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Date Analyzed	Time Analyzed
UST PARAMETERS					
Naphthalene	< 0.0010	mg/l	269	6/16/02	17:46
Acenaphthene	< 0.0010	mg/l	269	6/16/02	17:46
Anthracene	< 0.0010	mg/l	269	6/16/02	17:46
Fluoranthene	< 0.0010	mg/l	269	6/16/02	17:46
Fluorene	< 0.0010	mg/l	269	6/16/02	17:46
Pyrene	< 0.0010	mg/l	269	6/16/02	17:46
Benzo(a)anthracene	< 0.0010	mg/l	269	6/16/02	17:46
Benzo(a)pyrene	< 0.0010	mg/l	269	6/16/02	17:46
Benzo(b)fluoranthene	< 0.0010	mg/l	269	6/16/02	17:46
Benzo(k)fluoranthene	< 0.0010	mg/l	269	6/16/02	17:46
Chrysene	< 0.0010	mg/l	269	6/16/02	17:46
Dibenzo(a,h)anthracene	< 0.0020	mg/l	269	6/16/02	17:46
Indeno(1,2,3-cd)pyrene	< 0.0020	mg/l	269	6/16/02	17:46
Acenaphthylene	< 0.0010	mg/l	269	6/16/02	17:46
Benzo(g,h,i)perylene	< 0.0020	mg/l	269	6/16/02	17:46
Phenanthrene	< 0.0010	mg/l	269	6/16/02	17:46

Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Date Analyzed	Time Analyzed
VOA PARAMETERS					
Benzene	< 0.0007	mg/l	2515	6/17/02	19:29
Benzene	< 0.0007	mg/l	2515	6/18/02	7:48
Benzene	< 0.0007	mg/l	2519	6/18/02	7:48

Project QC continued . . .

PROJECT QUALITY CONTROL DATA
Project Number:
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Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Analysis Date	Analysis Time
Benzene	< 0.0007	mg/l	2521	6/18/02	7:48
Ethylbenzene	< 0.0007	mg/l	2515	6/17/02	19:29
Ethylbenzene	< 0.0007	mg/l	2515	6/18/02	7:48
Ethylbenzene	< 0.0007	mg/l	2519	6/18/02	7:48
Naphthalene	< 0.0019	mg/l	2515	6/17/02	19:29
Naphthalene	< 0.0019	mg/l	2515	6/18/02	7:48
Naphthalene	< 0.0019	mg/l	2519	6/18/02	7:48
Toluene	< 0.0007	mg/l	2515	6/17/02	19:29
Toluene	< 0.0007	mg/l	2515	6/18/02	7:48
Toluene	< 0.0007	mg/l	2519	6/18/02	7:48
Toluene	< 0.0007	mg/l	2521	6/18/02	7:48
Xylenes (Total)	< 0.0009	mg/l	2515	6/17/02	19:29
Xylenes (Total)	< 0.0009	mg/l	2515	6/18/02	7:48
Xylenes (Total)	< 0.0009	mg/l	2519	6/18/02	7:48
Methyl-t-butyl ether	< 0.0009	mg/l	2515	6/17/02	19:29
Methyl-t-butyl ether	< 0.0009	mg/l	2515	6/18/02	7:48
Methyl-t-butyl ether	< 0.0009	mg/l	2519	6/18/02	7:48
Methyl-t-butyl ether	< 0.0009	mg/l	2521	6/18/02	7:48
VOA Surr 1,2-DCA-d4	95.	% Rec	2515	6/17/02	19:29
VOA Surr 1,2-DCA-d4	94.	% Rec	2515	6/18/02	7:48
VOA Surr 1,2-DCA-d4	94.	% Rec	2519	6/18/02	7:48
VOA Surr 1,2-DCA-d4	94.	% Rec	2521	6/18/02	7:48
VOA Surr Toluene-d8	95.	% Rec	2515	6/17/02	19:29
VOA Surr Toluene-d8	95.	% Rec	2515	6/18/02	7:48
VOA Surr Toluene-d8	95.	% Rec	2519	6/18/02	7:48
VOA Surr Toluene-d8	95.	% Rec	2521	6/18/02	7:48
VOA Surr, 4-BFB	93.	% Rec	2515	6/17/02	19:29
VOA Surr, 4-BFB	96.	% Rec	2515	6/18/02	7:48
VOA Surr, 4-BFB	96.	% Rec	2519	6/18/02	7:48
VOA Surr, 4-BFB	96.	% Rec	2521	6/18/02	7:48
VOA Surr, DBFM	90.	% Rec	2515	6/17/02	19:29
VOA Surr, DBFM	91.	% Rec	2515	6/18/02	7:48
VOA Surr, DBFM	91.	% Rec	2519	6/18/02	7:48

Project QC continued . . .

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PROJECT QUALITY CONTROL DATA
Project Number:
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Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Analysis Date	Analysis Time
VOA Surr, DBFM	91.	% Rec	2521	6/18/02	7:48
BNA Surr-Nitrobenzene-d5	84.	% Rec	269	6/16/02	17:46
BNA Surr-2-Fluorobiphenyl	79.	% Rec	269	6/16/02	17:46
BNA Surr-Terphenyl-d14	96.	% Rec	269	6/16/02	17:46
BNA Surr-Phenol-d5	28.	% Rec	269	6/16/02	17:46
BNA Surr-2-Fluorophenol	43.	% Rec	269	6/16/02	17:46
BNA Surr-2,4,6-Tribromophenol	93.	% Rec	269	6/16/02	17:46

Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Date Analyzed	Time Analyzed
METALS					
Lead	< 0.0015	mg/l	8488	6/14/02	22:26
Lead	< 0.0015	mg/l	8494	6/15/02	18:25

Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Date Analyzed	Time Analyzed
MISC PARAMETERS					
Sulfate	< 1.00	mg/l	3383	6/20/02	13:49

Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Date Analyzed	Time Analyzed
MISC PARAMETERS					
Ethylene Dibromide	< 0.00002	mg/l	8714	6/18/02	12:59

= Value outside Laboratory historical or method prescribed QC limits.

TestAmerica
INCORPORATED

PROJECT QUALITY CONTROL DATA
Project Number:
Page: 11

End of Report for Project 288614

Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 6-10-02
Field Personnel JM
General Weather Conditions Sunny
Ambient Air Temperature 31 °C
Facility Name Stockmain 0:1 Two Site ID# 04736

pH Meter:
serial no.
pH=4.0
pH=7.0
pH=10.0

Quality Assurance:
Conductivity Meter
serial no.
Standard
Standard
Standard

Chain of Custody

Relinquished by	Date/Time	Received by	Date/Time

Well # MW-1

Well Diameter(D) 2 inch or ___ feet
conversion factor(C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth(TWD) 29.5 ft.
Depth to GW (DGW) 25.87 ft

Length of Water Column(LWC=TWD-DGW) 3.63 ft.
1 Csg. Volume(LWC * C) = 3.63 x 0.163 = 0.60 gals.
3 Csg. Volumes = 3 X 0.60 = 1.80 gals. (Std. Purge Volume)
Total Volume of Water Purged Before Sampling ~1.25 gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post Sampling
Volume Purged (gallons)		0.60	0.60	6.60			
Time (military)	1355	1356	1357				
pH (s.u.)	5.3	5.2	5.2				
Specific Cond. (umhos/cm)	75	63	58				
Water Temp (°C)	21.5	20.9	20.7				
Turbidity (*)	Clear	not clear	not clear				
PID Readings	2.2						
DO							

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks Fe++: 0.8 Bailed dry during 2nd vol. Sampled @ 1420

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 6-10-02
Field Personnel JM
General Weather Conditions Sunny
Ambient Air Temperature 31 °C
Facility Name Stockmans Oil Two Site ID# 04736

pH Meter:
serial no.
pH=4.0
pH=7.0
pH=10.0

Quality Assurance
Conductivity Meter
serial no.
Standard
Standard
Standard

Chain of Custody

Relinquished by Date/Time Received by Date/Time

Well # MW-2

Well Diameter(D) 2 inch or ___ feet
conversion factor(C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth(TWD) 30 ft.
Depth to GW (DGW) 21.84 ft

Length of Water Column(LWC=TWD-DGW) 8.16 ft.

1 Csg. Volume(LWC * C) = 8.16 x 0.163 = 1.33 gals.
3 Csg. Volumes = 3 X 1.33 = 3.99 gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling 4.5 gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post Sampling
Volume Purged (gallons)		1.33	1.33	1.33			
Time (military)	1427	1429	1432	1435			
pH (s.u.)	5.8	5.7	5.6	5.5			
Specific Cond. (umhos/cm)	125	120	115	110			
Water Temp (°C)	24.1	20.8	20.3	20.1			
Turbidity (*)	clear	cloudy	cloudy	slightly cloudy			
PID Readings	7.4						

DO

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks Fe++ : <0.2

Sampled @ 1450

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 6-10-02
Field Personnel JM
General Weather Conditions Sunny
Ambient Air Temperature 33 °C

Facility Name Stockman Oil Two Site ID# 04736

Quality Assurance:

pH Meter:
serial no.
pH=4.0
pH=7.0
pH=10.0

Conductivity Meter
serial no.
Standard
Standard
Standard

Chain of Custody

Relinquished by	Date /Time	Received by	Date/Time

Well # MW-3

Well Diameter(D) 2 inch or ___ feet
conversion factor(C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth(TWD) 35 ft.
Depth to GW (DGW) 24.58 ft.

Length of Water Column(LWC=TWD-DGW) 10.42 ft.

1 Csg. Volume(LWC * C) = 10.42 X 0.163 = 1.70 gals.
3 Csg. Volumes = 3 X 1.70 = 5.10 gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling 8 gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		1.70	1.70	1.70				
Time (military)	1544	1548	1552	1556				
pH (s.u.)	6.4	6.3	6.2	6.1				
Specific Cond. (umhos/cm)	206	169	159	157				
Water Temp (°C)	25.0	22.5	21.4	20.8				
Turbidity (*)	cloudy	cloudy	cloudy	cloudy				
PID Readings	8.1							

DO

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks Fe++: 0.2 sampled @1625

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 6-10-02
Field Personnel JM
General Weather Conditions Sunny
Ambient Air Temperature 27 °C

Facility Name Stockman O.L. Two Site ID# _____

Quality Assurance

pH Meter:
serial no. _____
pH=4.0 _____
pH=7.0 _____
pH=10.0 _____

Conductivity Meter
serial no. _____
Standard _____
Standard _____
Standard _____

Chain of Custody

Relinquished by _____ Date/Time _____ Received by _____ Date/Time _____

Well # MW-4

Well Diameter(ID) 2 Inch or ____ feet
conversion factor(C): 3.143*(D/2)^2
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth(TWD) 35 ft.
Depth to GW (DGW) 24.17 ft.

Length of Water Column(LWC=TWD-DGW) 10.83 ft.

1 Csg. Volume(LWC * C) = 10.83 x 0.163 = 1.77 gals.
3 Csg. Volumes = 3 X 1.77 = 5.31 gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling 6 gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post Sampling	
Volume Purged (gallons)		1.77	1.77	1.77				
Time (military)	1859	1903	1907	1911				
pH (s.u.)	6.8	6.5	6.4	6.4				
Specific Cond. (umhos/cm)	177	153	138	128				
Water Temp (°C)	23.9	20.7	20.1	19.8				
Turbidity (*)	clear	slightly cloudy	slightly cloudy	slightly cloudy				
PID Readings	5.8							

DO

* subjective (1) None (2) Faint (3) Moderate (4) Strong

Remarks Ferrous <0.2

Sampled @ 1920

APPENDIX D

SLUG TEST DATA FORMS

D H E C
PROMOTE PROTECT PROSPER

Summary of Slug Test
Division of Underground Storage Tank Management

Site Data

UST Permit #: 04736 County: Greenwood

Facility Name: Stockman Oil Two

Slug Data

See Appendix _____ Table _____ Figure _____ for a list of all data measurements. [water level logs, etc. (complete as appropriate)].

Water Level Recovery Data was measured by Aquastar DL1-1A
[Hermit Data Logger, Manually with Water Level Indicator, etc. (list method)].

Complete the following table for each well tested.

COMPLETE A SECOND SHEET IF MORE THAN FOUR WELLS ARE TESTED

Slug Test Conducted in Well(s) Number	MW-2	MW-3		
Initial Rise/Drawdown in Well (feet)	2.87	1.66		
Radius of Well Casing (feet)	0.083	0.083		
Effective Radius of Well (feet)	0.167	0.167		
Static Saturated Aquifer Thickness (feet)	50	50		
Length of Well Screen (feet)	10	10		
Static Height of Water Column in Well (ft)	7.17	4.70		

Calculations

See Appendix _____ Table _____ Figure _____ for calculations (complete as appropriate).

The method for aquifer calculations was Bouwer-Rice (i.e. Bouwer-Rice, Cooper, etc.).

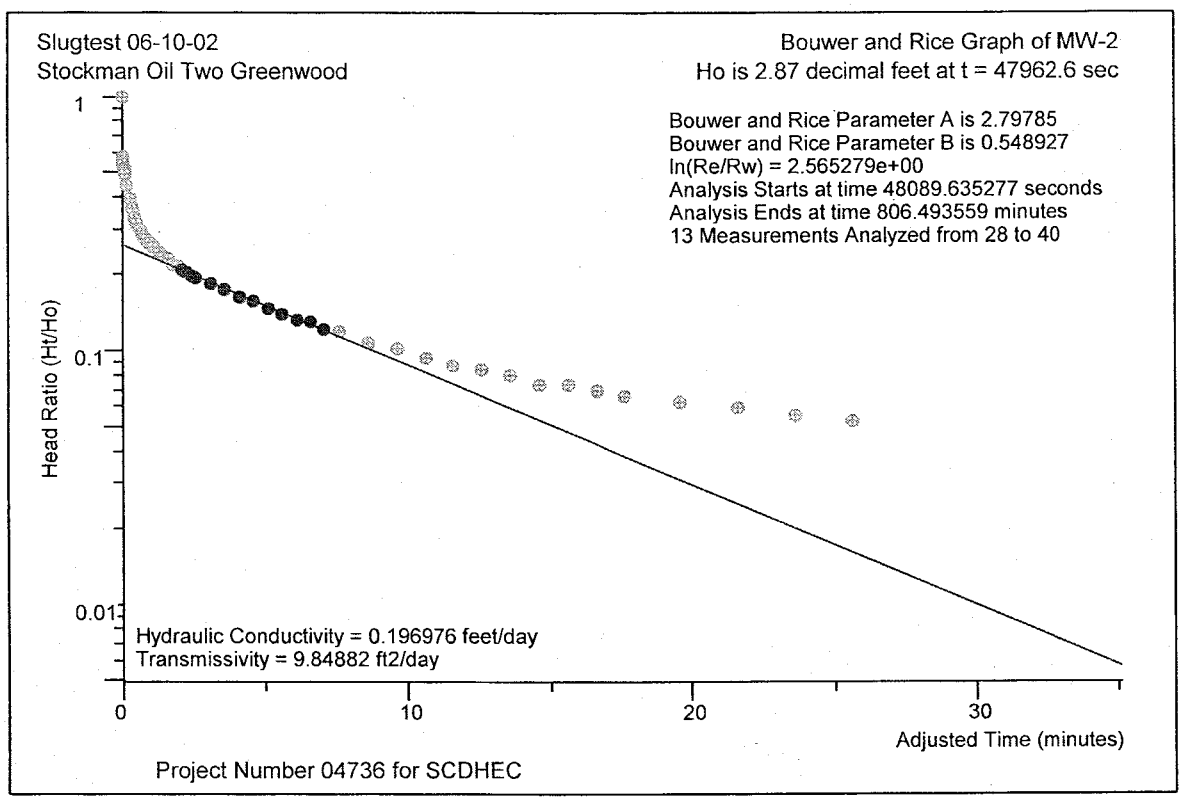
Calculated values by well were as follows:

Slug Test Conducted in Well(s) Number	MW-2	MW-3	
Hydraulic Conductivity	0.20 ft/day	0.41 ft/day	

Thickness of the aquifer used to calculate hydraulic conductivity was 50 feet.

The aquifer is _____ confined _____ semi-confined ✓ water table (check as appropriate).

The estimated seepage velocity is 20.37 feet per year based on a hydraulic conductivity of 0.31 ft/day, a hydraulic gradient of 0.018, and a porosity of 10 percent for silty sand soil (list type i.e., silty sand ,clay, etc).

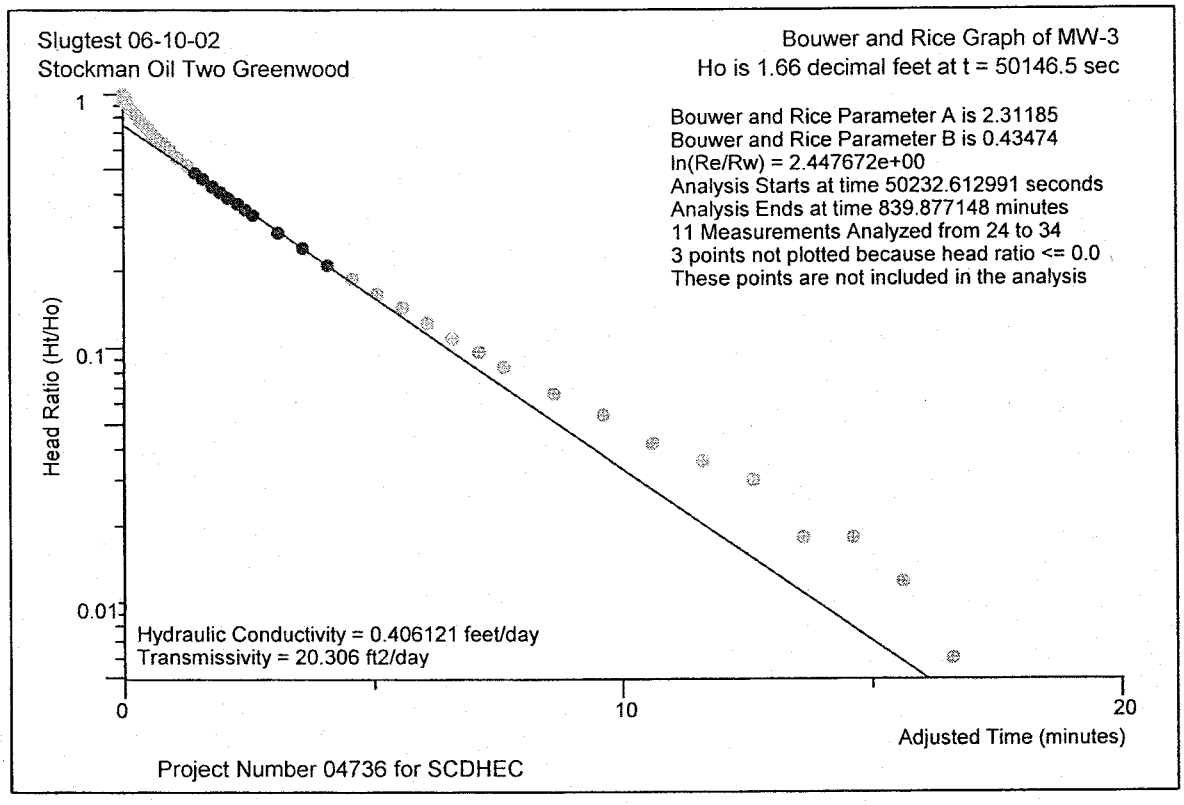

Slugtest 06-10-02
Stockman Oil Two Greenwood
Bouwer and Rice Graph of MW-2
Ho is 2.87 decimal feet at t = 47962.6 sec
Bouwer and Rice Parameter A is 2.79785
Bouwer and Rice Parameter B is 0.548927
ln(Re/Rw) = 2.565279e+00
Analysis Starts at time 48089.635277 seconds
Analysis Ends at time 806.493559 minutes
13 Measurements Analyzed from 28 to 40
Head Ratio (Ht/Ho)
1
0.1
0.01
Hydraulic Conductivity = 0.196976 feet/day
Transmissivity = 9.84882 ft2/day
0
10
20
30
Adjusted Time (minutes)
Project Number 04736 for SCDHEC

Data from file:	C:\DOCUME~1\JASONM~1\MYDOCU~1\SLUGTE~1\STCKMW2.SLG
Title:	Slugtest
Site Name:	Stockman Oil Two
Location:	Greenwood
Client:	SCDHEC
Project Number:	04736
Test Date:	06-10-02
Well Number:	MW-2
Casing Radius:	1 inches
Effective Well Radius:	2 inches
Aquifer Thickness:	50 feet
Water Table to Screen Bottom :	7.17 feet
Screen Length:	10 feet
Static Water Level:	7.17 decimal feet

K ratio is not entered
There are 55 time and drawdown measurements
Tests starts with trial 4
Time values will be adjusted by 0.555123 days (47962.624741 seconds)

Trial	Time (days)	Adjusted Time (days)	Drawdown (decimal feet)	Head (decimal feet)	Head Ratio
1	0.555088	-3.49879e-05	7.17	0	0
2	0.5551	-2.29478e-05	7.17	0	0
3	0.55511	-1.29938e-05	7.14	0.0299999	0.0104529
4	0.555123	0	4.3	2.87	1
5	0.555134	1.10269e-05	5.5	1.67	0.581882
6	0.555145	2.20537e-05	5.53	1.64	0.571429
7	0.555156	3.3021e-05	5.59	1.58	0.550523
8	0.555168	4.50015e-05	5.63	1.54	0.536585
9	0.555181	5.80549e-05	5.67	1.5	0.522648
10	0.555191	6.80089e-05	5.7	1.47	0.512195
11	0.555204	8.10027e-05	5.74	1.43	0.498258
12	0.555262	0.000139058	5.9	1.27	0.442509
13	0.555319	0.00019604	6.03	1.14	0.397212
14	0.555377	0.000254035	6.14	1.03	0.358885
15	0.555435	0.00031203	6.21	0.96	0.334495
16	0.555493	0.000370026	6.27	0.9	0.313589
17	0.555551	0.000428021	6.31	0.86	0.299652
18	0.555609	0.000486016	6.34	0.829999	0.289198
19	0.555667	0.000544012	6.37	0.8	0.278746
20	0.555725	0.000602007	6.39	0.78	0.271777
21	0.555784	0.000661016	6.41	0.76	0.264808
22	0.555898	0.000775039	6.44	0.73	0.254355
23	0.556014	0.00089103	6.47	0.7	0.243902
24	0.55613	0.00100702	6.5	0.67	0.233449
25	0.556245	0.00112206	6.51	0.66	0.229965
26	0.556361	0.00123805	6.54	0.63	0.219512
27	0.556477	0.00135404	6.55	0.62	0.216028
28	0.556593	0.00147003	6.57	0.6	0.209059
29	0.556708	0.00158501	6.58	0.59	0.205575
30	0.556824	0.00170106	6.6	0.57	0.198606
31	0.556941	0.001818	6.61	0.56	0.195122
32	0.557287	0.00216401	6.64	0.53	0.184669
33	0.557634	0.00251102	6.67	0.499999	0.174216
34	0.557981	0.00285804	6.7	0.47	0.163763
35	0.558329	0.00320601	6.72	0.45	0.156795
36	0.558676	0.00355303	6.75	0.42	0.146341
37	0.559023	0.00390005	6.77	0.4	0.139373
38	0.55937	0.00424701	6.79	0.38	0.132404
39	0.559718	0.00459504	6.8	0.37	0.12892
40	0.560065	0.004942	6.82	0.349999	0.121951
41	0.560413	0.00529003	6.83	0.34	0.118467
42	0.561106	0.00598305	6.86	0.31	0.108014
43	0.561801	0.00667804	6.88	0.29	0.101045

Trial	Time (days)	Adjusted Time (days)	Drawdown (decimal feet)	Head (decimal feet)	Head Ratio
44	0.562495	0.00737202	6.9	0.27	0.0940765
45	0.56319	0.00806701	6.92	0.25	0.0871081
46	0.563884	0.00876105	6.93	0.24	0.0836236
47	0.564579	0.00945604	6.94	0.23	0.0801394
48	0.565273	0.01015	6.96	0.21	0.0731707
49	0.565968	0.010845	6.96	0.21	0.0731707
50	0.566662	0.011539	6.97	0.2	0.0696865
51	0.567358	0.012235	6.98	0.19	0.066202
52	0.568745	0.013622	6.99	0.18	0.0627178
53	0.570134	0.015011	7	0.169999	0.0592333
54	0.571523	0.0164	7.01	0.16	0.0557491
55	0.572912	0.017789	7.02	0.15	0.0522648


Slugtest 06-10-02
Stockman Oil Two Greenwood
Bouwer and Rice Graph of MW-3
Ho is 1.66 decimal feet at t = 50146.5 sec
Bouwer and Rice Parameter A is 2.31185
Bouwer and Rice Parameter B is 0.43474
ln(Re/Rw) = 2.447672e+00
Analysis Starts at time 50232.612991 seconds
Analysis Ends at time 839.877148 minutes
11 Measurements Analyzed from 24 to 34
3 points not plotted because head ratio <= 0.0
These points are not included in the analysis
Head Ratio (Ht/Ho)
1
0.1
0.01
Hydraulic Conductivity = 0.406121 feet/day
Transmissivity = 20.306 ft2/day
0
10
20
Adjusted Time (minutes)
Project Number 04736 for SCDHEC

Data from file: C:\DOCUME~1\JASONM~1\MYDOCU~1\SLUGTE~1\STCKMW3.SLG
Title: Slugtest
Site Name: Stockman Oil Two
Location: Greenwood
Client: SCDHEC
Project Number: 04736
Test Date: 06-10-02
Well Number: MW-3
Casing Radius: 1 inches
Effective Well Radius: 2 inches
Aquifer Thickness: 50 feet
Water Table to Screen Bottom: 4.7 feet
Screen Length: 10 feet
Static Water Level: 4.7 decimal feet
K ratio is not entered
There are 53 time and drawdown measurements
Tests starts with trial 5
Time values will be adjusted by 0.580399 days (50146.471596 seconds)

Trial	Time (days)	Adjusted Time (days)	Drawdown (decimal feet)	Head (decimal feet)	Head Ratio
1	0.580352	-4.69685e-05	4.7	0	0
2	0.580365	-3.39746e-05	4.7	0	0
3	0.580377	-2.19941e-05	4.7	0	0
4	0.580388	-1.09673e-05	4.69	0.0100001	0.00602415
5	0.580399	0	3.04	1.66	1
6	0.580411	1.20401e-05	3.07	1.63	0.981928
7	0.580424	2.5034e-05	3.1	1.6	0.963855
8	0.580434	3.50475e-05	3.12	1.58	0.951807
9	0.580446	4.70281e-05	3.16	1.54	0.927711
10	0.580457	5.79953e-05	3.18	1.52	0.915663
11	0.58047	7.10487e-05	3.19	1.51	0.909638
12	0.580528	0.000129044	3.27	1.43	0.861446
13	0.580586	0.000187039	3.34	1.36	0.819277
14	0.580644	0.000245035	3.4	1.3	0.783132
15	0.580701	0.000302017	3.45	1.25	0.753012
16	0.580759	0.000360012	3.5	1.2	0.722891
17	0.580817	0.000418007	3.55	1.15	0.692771
18	0.580875	0.000476003	3.59	1.11	0.668675
19	0.580933	0.000533998	3.63	1.07	0.644578
20	0.580991	0.000592053	3.67	1.03	0.620482
21	0.58105	0.000651002	3.71	0.99	0.596386
22	0.581164	0.000765026	3.78	0.92	0.554217
23	0.58128	0.000881016	3.84	0.86	0.518072
24	0.581396	0.000997007	3.89	0.81	0.487952
25	0.581512	0.001113	3.94	0.76	0.457831
26	0.581627	0.00122803	3.98	0.72	0.433735
27	0.581743	0.00134403	4.02	0.68	0.409639
28	0.581859	0.00146002	4.06	0.64	0.385542
29	0.581975	0.00157601	4.09	0.61	0.36747
30	0.58209	0.00169104	4.12	0.58	0.349398
31	0.582207	0.00180805	4.15	0.55	0.331325
32	0.582553	0.00215405	4.23	0.47	0.283133
33	0.5829	0.00250101	4.29	0.41	0.246988
34	0.583248	0.00284904	4.35	0.35	0.210843
35	0.583595	0.003196	4.39	0.31	0.186747
36	0.583942	0.00354302	4.43	0.27	0.162651
37	0.584289	0.00389004	4.46	0.24	0.144578
38	0.584637	0.00423801	4.49	0.21	0.126506
39	0.584984	0.00458503	4.52	0.18	0.108434
40	0.585331	0.00493205	4.54	0.16	0.0963856
41	0.585679	0.00528002	4.56	0.14	0.0843373
42	0.586373	0.00597399	4.59	0.11	0.0662649
43	0.587067	0.00666803	4.61	0.09	0.0542168

Trial	Time (days)	Adjusted Time (days)	Drawdown (decimal feet)	Head (decimal feet)	Head Ratio
44	0.587762	0.00736302	4.63	0.0699998	0.0421686
45	0.588456	0.008057	4.64	0.0600001	0.0361446
46	0.58915	0.00875103	4.65	0.05	0.0301205
47	0.589845	0.00944602	4.67	0.0299999	0.0180722
48	0.590539	0.01014	4.67	0.0299999	0.0180722
49	0.591234	0.0108351	4.68	0.0200002	0.0120483
50	0.591928	0.011529	4.69	0.0100001	0.00602415
51	0.592624	0.012225	4.7	0	0
52	0.594012	0.013613	4.7	0	0
53	0.5954	0.015001	4.7	0	0

APPENDIX E

SOIL AND WATER DISPOSAL MANIFESTS

WASTE MANAGEMENT

1047 Highway Church Rd.
Elgin, SC 29045
(803) 788-3054 Phone
(803) 736-0995 Fax

SPECIAL WASTE MANIFEST

WASTE ID # RC 0112022

APPROVAL EXPIRATION DATE:

DECEMBER 20, 2002

GENERATOR OF WASTE: FORCE AND ASSOCIATES

CUSTOMER ACCOUNT: FORCE AND ASSOCIATES 820 - 436

LOCATION OF WASTE : Callison's Store, Skeeters, Stockman Oil Two, Covar's Auto Service, Jackson Corner Grocery, and Jim Hudson Autoworld (2)

PHONE # 803 359 - 7874 **CONTACT** GREG FORCE

FAX # 803 407 - 2589

GENERATOR'S SIGNATURE _____ **DATE:** _____

TRANSPORTER OF WASTE FORCE AND ASSOCIATES

DATE: 7-19-02 **TRUCK NO.** 1

DRIVER'S SIGNATURE _____

****** TO BE COMPLETED BY RICHLAND LANDFILL ******

DISPOSAL SITE: RICHLAND LANDFILL, INC. - ELGIN SC

DESCRIPTION OF WASTE: Soil Boring for SCDHEC Assessment Program (Soil)
Analytical to be submitted to Sara Adams for review prior to landfill delivery

TICKET NO.# 1 **TONNAGE :** _____

RECEIVED BY : _____

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of

3. Generator's Name and Mailing Address

4. Generator's Phone ( )

5. Transporter 1 Company Name	6. US EPA ID Number	A. Transporter's Phone

7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone
Environmental, Inc.		

9. Designated Facility Name and Site Address	10. US EPA ID Number	C. Facility's Phone

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a.	001	DM	25	
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above	E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

Emergency Response Contact: 800-424-9300

Pelzer Gasmart
Callison's Store
Skeeters
Stockman Oil Two
Covar's Auto Service
Covil Corp.
Speedy Food Store KMO 124
Bryan's Grocery
SCDOT Gaffney

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
		07	11	12

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Dennis Hilton		07	11	12

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

GENERATOR

TRANSPORTER

FACILITY

GENERATOR'S COPY

Force & Associates, Inc.
147 Vera Road, Suite A, Lexington, South Carolina 29072 (803) 359-3200 (803) 359-6682 fax

South Carolina Department of Health
and Environmental Control
Assessment and Corrective Action Division
Bureau of UST Management
2600 Bull Street
Columbia, South Carolina 29201

RE: Treatment of Purge Water

To SCDHEC Project Manager:

Source:

Groundwater derived from development and purging of monitoring wells.

Conditions:

All purge water was contained in 55-gallon drums. Only water with hydrocarbon concentrations less than 20,000 ppb total BTEX and Benzene less than 5,000 ppb were treated using an activated carbon filter. Purge water with concentration exceeding 20,000 ppb were disposed of at licensed waste water treatment facility. The manifest is attached if applicable. No free product was treated using the filter. All specifications from the manufacturer and SCDHEC were strictly followed. All appropriate purge water was treated on-site. Records involving date, quantity, concentration, and location are attached.

PURGE/DEVELOPMENT WATER TREATMENT

Date	Site Name/ID#	Worst Case BTEX Concentration (ppb)	Worst Case Benzene Concentration (ppb)	Quantity (# of drums)	Technician Initials
6/10/02	Stockman Oil Two SCDHEC Site ID #04736	1,031.3 (MW-1)	226 (MW-1)	1	JSM

APPENDIX F

LOCAL ZONING REGULATIONS

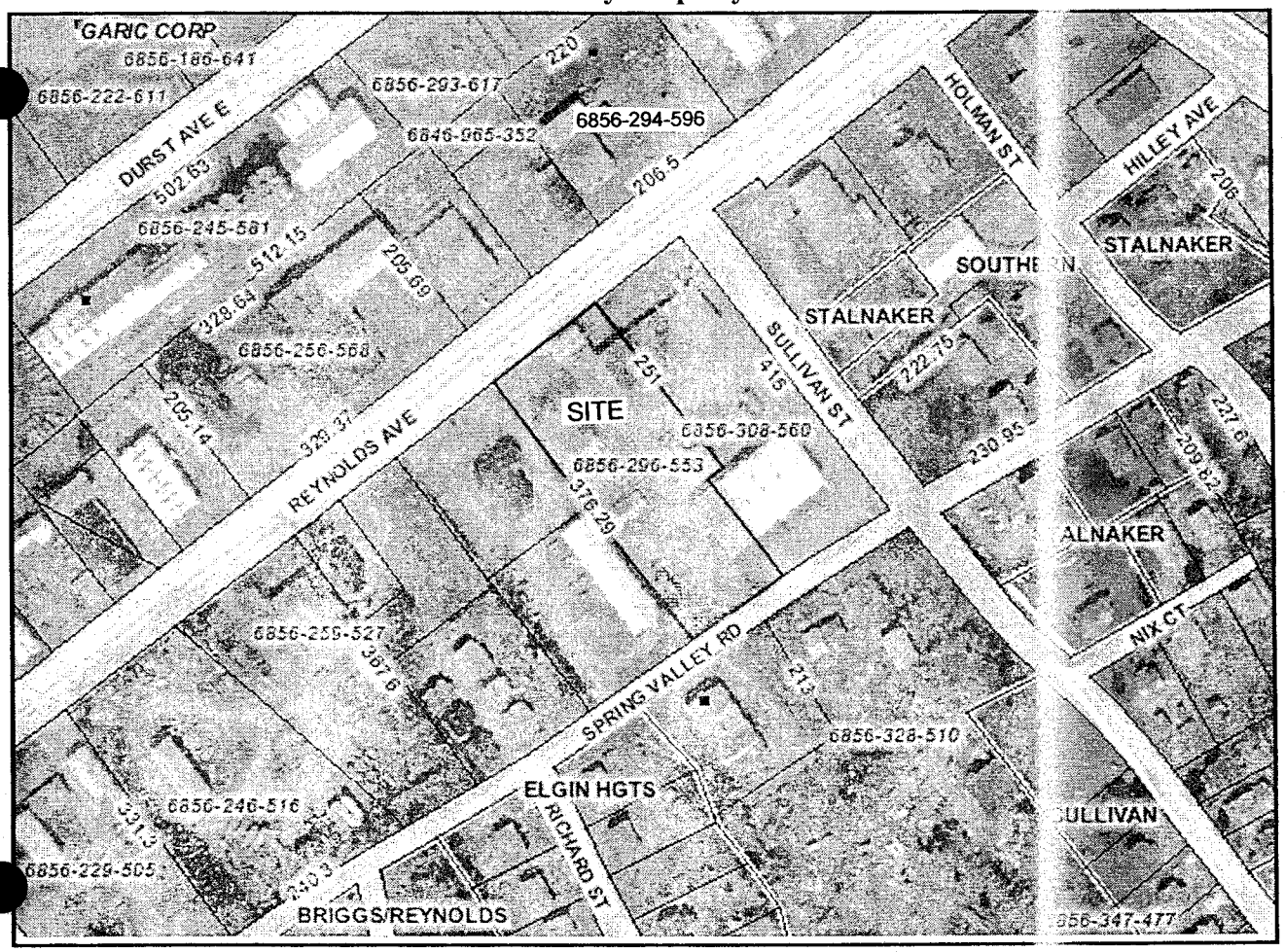
GREENWOOD COUNTY
ZONING ORDINANCES

Name:	**Mr. Larry Smith**
Phone number:	**864-942-8556**
Business Address:	**Greenwood Commission of Public Works** **PO Box 549** **Greenwood, SC 29648**
Relevant Info:	**If municipal water supply is available, connection is required. If municipal water supply is not available, regulations concerning installation of drinking water wells or irrigation wells are enforced by the SCDHEC.**

APPENDIX G

TAX MAP DATA

Greenwood County Property Information



PIN	120-08-08-002-000	Year Build	1966
Parcel ID Number	6856-296-553	Square Footage	1083
Owner Name	STOCKMAN OIL TWO INC	Estimated Acres	1.32
Mailing in-care-of		Market Value Tax Year	200
Mailing Address	1138 REYNOLDS AVE	Market Value	260
City, State, Zip	GREENWOOD, SC 29649-2736	Tax District	6-Greenwood Metro
Deed	277-0372	Property Use Code	BR-COMMERCIAL
Plat	34-139	Property Use Description	Split Usage
Purchase Date	Tue, 10 Jun 1980	School District	50
Description	PAR A	Voter Precinct	7 -Greenwood
Property Address	1138 REYNOLDS AV	City Ward	
Subdivision		County Council	3 Genza Bryant
Zoning Code	I1		

Print Close Window

Disclaimer: Map and parcel data is believed to be accurate, but accuracy is not guaranteed. This is not a legal document and should not be substituted for a title search, appraisal, survey, or for zoning verification.

Parcel ID Number	6856-294-596
Owner Name	ABERNATHY HARDY
Mailing in-care-of	
Mailing Address	P O BOX 1604
City, State, Zip	GREENWOOD, SC 29648-0000
Deed	471-0260
Plat	15-070
Purchase Date	Wed, 15 Jan 1997
Description	1 LT
Property Address	1147 REYNOLDS AV
Subdivision	
Zoning Code	I1
Year Build	1969
Square Footage	4500
Estimated Acres	0.95?
Market Value Tax Year	2002
Market Value	194000
Tax District	6-Greenwood Metro
Property Use Code	BB-COMMERCIAL
Property Use Description	Retail
School District	50
Voter Precinct	7 -Greenwood
City Ward	
County Council	3 Gonza Bryant

Parcel ID Number	6856-308-560
Owner Name	STOCKMAN LANDS INC
Mailing in-care-of	
Mailing Address	1142 REYNOLDS AVE
City, State, Zip	GREENWOOD, SC 29649-2736
Deed	270-0574
Plat	34-139
Purchase Date	Thu, 1 Mar 1979
Description	TR 1-20,65-74,B
Property Address	1144 REYNOLDS AV
Subdivision	
Zoning Code	I1
Year Build	1966
Square Footage	13044
Estimated Acres	1.28?
Market Value Tax Year	2002
Market Value	296600
Tax District	6-Greenwood Metro
Property Use Code	BR-COMMERCIAL
Property Use Description	Split Usage
School District	50
Voter Precinct	7 -Greenwood
City Ward	
County Council	3 Gonza Bryant

Parcel ID Number	6856-328-510
Owner Name	EDWARDS FREDDIE N
Mailing in-care-of	
Mailing Address	707 COKESBURY RD
City, State, Zip	GREENWOOD, SC 29649-2110
Deed	521-0246
Plat	106-120
Purchase Date	Tue, 19 May 1998
Description	4.137AC
Property Address	316 SPRING VALLEY RD
Subdivision	
Zoning Code	I1
Year Build	1972
Square Footage	3000
Estimated Acres	4.05?
Market Value Tax Year	2002
Market Value	77700
Tax District	6-Greenwood Metro
Property Use Code	BN-COMMERCIAL
Property Use Description	Utility Building(warehouse w/o office)
School District	50
Voter Precinct	7 -Greenwood
City Ward	
County Council	3 Gonza Bryant

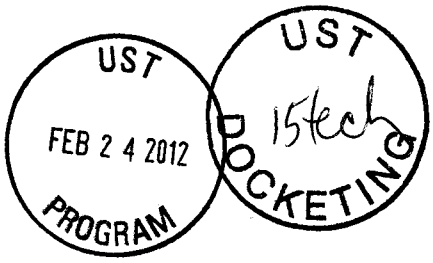
Parcel ID Number	6856-259-527
Owner Name	GEM INC
Mailing in-care-of	
Mailing Address	PO BOX 578
City, State, Zip	GREENWOOD, SC 29648-0578
Deed	389-0462
Plat	22-007
Purchase Date	Thu, 30 Dec 1993
Description	1 LT G E MOORE CO
Property Address	1120 REYNOLDS AV
Subdivision	
Zoning Code	I1
Year Build	1950
Square Footage	6225
Estimated Acres	1.14?
Market Value Tax Year	2002
Market Value	187100
Tax District	6-Greenwood Metro
Property Use Code	BO-COMMERCIAL
Property Use Description	Office Building
School District	50
Voter Precinct	7 -Greenwood
City Ward	
County Council	3 Gonza Bryant

Parcel ID Number	6856-256-568
Owner Name	FURMAN SAM H
Mailing in-care-of	
Mailing Address	1137 REYNOLDS AVE
City, State, Zip	GREENWOOD, SC 29649-2737
Deed	402-0119
Plat	85-026
Purchase Date	Thu, 1 Dec 1994
Description	1 LT(1.55 AC)
Property Address	1125 REYNOLDS AV
Subdivision	
Zoning Code	I1
Year Build	1945
Square Footage	17832
Estimated Acres	1.55?
Market Value Tax Year	2002
Market Value	313000
Tax District	6-Greenwood Metro
Property Use Code	BR-COMMERCIAL
Property Use Description	Split Usage
School District	50
Voter Precinct	7 -Greenwood
City Ward	
County Council	3 Gonza Bryant

Parcel ID Number	6846-965-352
Owner Name	COMMISSIONERS OF PUBLIC WORKS
Mailing in-care-of	
Mailing Address	PO BOX 549
City, State, Zip	GREENWOOD, SC 29648-0549
Deed	361-0974
Plat	
Purchase Date	Fri, 7 Jun 1991
Description	.67 AC (R/R R/W)
Property Address	GATLIN ST
Subdivision	
Zoning Code	I1
Year Build	0
Square Footage	0
Estimated Acres	2.40?
Market Value Tax Year	2002
Market Value	0
Tax District	9-City of Greenwood
Property Use Code	BZ-COMMERCIAL
Property Use Description	Other
School District	50
Voter Precinct	7 -Greenwood
City Ward	
County Council	3 Gonza Bryant

KLM Environmental, LLC

Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation
PO Box 2704
Goose Creek, SC 29445
843-870-4285 Phone
843-797-1893 Fax



February 22, 2012

Mr. David Ebinger
SCDHEC – BUSTM
2600 Bull Street
Columbia, S.C. 29201

Re: Stockman Oil Two, Inc.:Permit # 04736 CA # 42634

Mr. Ebinger,

This letter, along with its attachments, is presented to document the results of the Aggressive Fluid Vapor Recovery (AFVR) events performed on January 25th and February 9th, 2012. As you requested, the AFVR events on each well were conducted 15 days apart. Monitoring well MW-5 contained free phase product and was gauged prior to each event. The drop tube was installed to a depth of six inches below the bottom of the product during the AFVR events. Monitoring well MW-6 had a down hole obstruction when we arrived on site. MW-5 also had some sort of obstruction. We were able to push past the obstruction in MW-5 and conduct the AFVR event on the first event, but could not get past the obstruction in MW-6. The obstruction was found at the water table and from what could be retrieved from the hole, it resembled a very thick substance and was very hard from what was able to be chipped away from MW-5. We notified you of the problems while in the field and the second event was performed on MW-5 alone. We attempted to use the vacuum truck to remove the obstacle/substance but were unsuccessful. Monitoring well MW-1 was gauged during the event since MW-6 could not be gauged and product was noted in the monitoring well. As it has been 15 months since our last AFVR event on this site, the product has migrated in the direction of groundwater flow and is affecting other monitoring wells at the site. Results from each event are provided on the attached tables. A total of 16 gallons of petroleum product was recovered during the AFVR events. Emissions calculations were performed for each event and a total of 20.42 gallons of petroleum product were recovered as vapor. KLM recommends continued AFVR events as soon as possible at the site in order to remove the free phase petroleum product.

All of the remaining information requested in the AFVR letter is provided as an attachment. It has been a pleasure working with you on this project. Please call me directly if you have any questions at 843-870-4285.

Sincerely,

KLM Environmental, LLC

Mark L. Keller, PG
President

Enclosures(9): AFVR information tables; Waste Manifests; Emissions Calculations; Magnehelic Gauge Tables; Site Map

cc: Chip Stockman, Stockman Oil Two, Inc. (1138 Reynolds Ave., Greenwood, SC)

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 1/25/12
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Mark L Keller	General Weather Conditions: Sunny
Ambient Air Temperature: 64 Fahrenheit	Estimated Gallons of Product Removed: 9.5 gallons	Initial Product Thickness: MW-5 = 8.82 (bottom of well) MW-6 = Obstruction
Final Product Thickness: MW-5 = 0.00 (bottom of well)	AFVR Start Time: 12:00	AFVR End Time: 20:00

Time(Readings Every 30 Minutes)	Recovery Rate Vacuum Inches of Hg	Temp Degrees F	Stack Vel. mph	Humidity	Air Emission Conc. Measurements in ppm	Air Flow Rate shown in Cubic Feet per Minute
12:00	-21	82.4	11.4	70.2	6274	
12:30	-21	103.6	11.5	68.3	6339	
13:00	-22	138.4	11.5	27.3	6314	
13:30	-22	162.4	11.6	15.4	5999	
14:00	-22	182.6	11.6	13.5	6644	
14:30	-22	187.3	11.6	10.4	6513	
15:00	-22	191.4	11.8	7.2	6304	
15:30	-22	190.7	11.7	6.9	6741	
16:00	-22	189.4	11.7	6.5	6813	
16:30	-22	187.5	11.6	7.2	5481	
17:00	-22	185.6	11.5	6.9	5271	
17:30	-22	182.4	11.6	8.2	5584	
18:00	-22	179.5	11.8	9.5	5492	
18:30	-22	174.6	11.7	10.3	5771	
19:00	-22	168.1	11.7	10.7	6034	
19:30	-22	166.5	11.6	9.6	6221	
20:00	-22	162.3	11.7	10.3	5895	

	Start	End
MW-5	31.18-40.00 (bottom)	40.00 (termination depth of well)
MW-6	31.84 (obstruction)	

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 1-25-12
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Mark Keller	General Weather Conditions: Sunny

	Inches of Hg on Extraction Well	**Inches of Hg on surrounding wells**				Notes / Comments
Time	**MW-5**	**MW-1**	**MW-6**			
12:00	-18	0	0			
12:30	-20	0	0			
13:00	-22	0	0			
13:30	-19	0	0			
14:00	-19	0	0			
14:30	-19	0	0			
15:00	-19	0	0			
15:30	-19	0	0			
16:00	-19	0	0			
16:30	-19	0	0			
17:00	-19	0	0			
17:30	-19	0	0			
18:00	-19	0	0			
18:30	-19	0	0			
19:00	-18	0	0			
19:30	-18	0	0			
20:00	-19	0	0			

Equations to determine Pollutant Mass Removal rate as gasoline (PMRg):

1/25/2012

$PPM_w = PPM_{measured}$ = 5431.664706

$PPM_d = PPM_w / (1-Bws)$ = 5797.179529

$PPM_c = (PPM_d)(K)$ = 23188.71812

$C_{c:m} = PPM_c(M_c/K_3)$ = 11570.27439

$C_c = C_{c:m}(62.43x10^{-9})$ = 0.000722332

$PMR_c = C_c(Qstd)(60)$ = 12.21209598

$PMR_g = (PMR_c)(M_g/M_{cg})$ = **14.13309984 lbs of emissions per hour**

18.0903678 Gallons of emissions per 8 hours

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 2/9/12
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Micah Bennett	General Weather Conditions: Sunny
Ambient Air Temperature: 50 Fahrenheit	Estimated Gallons of Product Removed: 6.5 gallons	Initial Product Thickness: MW-5 = 6.24 MW-6 = Obstruction
Final Product Thickness: MW-5 = 0.00 (bottom of well)	AFVR Start Time: 7:30	AFVR End Time: 15:30

Time(Readings Every 30 Minutes)	Recovery Rate				Air Emission Conc. Measurements in ppm	Air Flow Rate shown in Cubic Feet per Minute
	Vacuum Inches of Hg	Temp Degrees F	Stack Vel. mph	Humidity		
7:30	-16	20.9	10.3	64.3	265.4	74.23
8:00	-17	89.6	11.5	52.7	291.5	82.88
8:30	-19	107.5	12.3	43.8	387.4	88.65
9:00	-19	126.4	12.6	31.6	501.6	90.81
9:30	-20	146.8	12.6	20.3	466.2	90.81
10:00	-20	153.6	12.4	18.7	409.6	89.37
10:30	-20	161.6	12.4	16.4	871.7	89.37
11:00	-20	169.3	12.2	12.3	868.4	87.93
11:30	-20	169.2	12.3	10.8	866.5	88.65
12:00	-20	168.1	12.3	10.1	831.6	88.65
12:30	-20	168.5	12.2	9.8	798.7	87.93
13:00	-20	169.1	12.3	10.3	784.6	88.65
13:30	-20	167.5	12.3	11.1	751.7	88.65
14:00	-20	187.3	12.3	10.4	723.3	88.65
14:30	-20	168.4	12.2	11.5	747.6	87.93
15:00	-20	167.4	12.3	10.6	709.1	88.65
15:30	-20	167.5	12.3	12.2	786.6	88.65

	Start	End
MW-5	31.34-37.58	40.00 (termination depth of well)
MW-6	31.67 (obstruction)	

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 2-9-12
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Micah Bennett	General Weather Conditions: Sunny

	Inches of Hg on Extraction Well	**Inches of Hg on surrounding wells**				Notes / Comments
Time	**MW-5**	**MW-1**	**MW-6**			
12:00	-15	0	0			
12:30	-17	0	0			
13:00	-19	0	0			
13:30	-19	0	0			
14:00	-19	0	0			
14:30	-19	0	0			
15:00	-19	0	0			
15:30	-19	0	0			
16:00	-19	0	0			
16:30	-19	0	0			
17:00	-19	0	0			
17:30	-17	0	0			
18:00	-18	0	0			
18:30	-19	0	0			
19:00	-18	0	0			
19:30	-1-	0	0			
20:00	-19	0	0			

Equations to determine Pollutant Mass Removal rate as gasoline (PMRg):

2/9/2012

$PPM_w = PPM_{measured} =$	650.6764706
$PPM_d = PPM_w / (1-Bws) =$	694.4626592
$PPM_c = (PPM_d)(K) =$	2777.850637
$C_{c:m} = PPM_c(M_c/K_3) =$	1386.040139
$C_c = C_{c:m}(62.43x10^{-9}) =$	8.65305E-05
$PMR_c = C_c(Qstd)(60) =$	1.579361382
$PMR_g = (PMR_c)(M_g/M_{cg}) =$	**1.827800251 lbs of emissions per hour**
	2.339584322 Gallons of emissions per 8 hours

US Water Recovery

Non-Hazardous Wastewater Manifest

Number:

1. Generator's EPA ID# (If applicable):
Waste ID Number:

2. Generator's Name and Mailing Address:
Phone ( )
P O #:

3. Agent of Generator and Mailing Address:
Phone ( )
P O #:

4. Transporter Company Name:
Phone ( )

Truck & Trailer License Number:

5. Transporter U.S. EPA ID#:

6. Facility Name and Site Address:
U S Water Recovery
435 Old Mt. Holly Rd.
Mt. Holly, SC 29445
Phone: (843) 797-8674
Fax: (843) 797-2126

Mailing Address:
U S Water Recovery
210 S. Cedar Street
Summerville, SC 29483
Phone: (843) 797-3111
Fax: (843) 797-1884

7. Facility U.S. EPA ID#:

Start Level: End Level: Total Gallons: Tank Number:

8. U.S. DOT Description	Container No.	Container Type	Unit	Quantity
Non-Hazardous, non-regulated waste water				222
[illegible] oil				76
Carolina Restaurant				94

9. Generator's Certification: I hereby declare that the contents of this consignment are not hazardous by definition or listing and are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, and the laws of the State of South Carolina. I further certify that the contents of this consignment are as represented by the description contained on the Waste Profile Form previously submitted to and approved by the Designated Facility.
Printed/Typed Name: Jack Keller Signature: Date: 1/25/12

10. Transporter Acknowledgement of Receipt of Materials
Printed/Typed Name: Jason Bates Signature: Date: 1/25/12

11. Discrepancy Indication space:

12. Facility Owner or Operator: Certification of Receipt of Materials
Printed/Typed Name: David Watson Signature: Date: 2 16

White - Facility Yellow - Office Pink - Transporter Blue - Generator

8807

US Water Recovery

Non-Hazardous Wastewater Manifest

Number:

1. Generator's EPA ID# (if applicable):
Waste ID Number:

2. Generator's Name and Mailing Address:
L.J. Creek #277
#3
Phone ( )
P.O.#:

3. Agent of Generator and Mailing Address:
Phone ( )
P.O.#:

4. Transporter Company Name:
Phone ( )

Truck & Trailer License Number:

5. Transporter U.S. EPA ID#:

6. Facility Name and Site Address:
U.S Water Recovery
435 Old Mt. Holly Rd.
Mt. Holly, SC 29445
Phone: (843) 797-8874
Fax: (843) 797-2126

Mailing Address:
U.S Water Recovery
210 S. Cedar Street
Summerville, SC 29483
Phone: (843) 797-3111
Fax: (843) 797-1884

7. Facility U.S. EPA ID#:

Start Level: End Level: Total Gallons: Tank Number:

8. U.S. DOT Description	Container No.	Container Type	Unit	Quantity
Non-Hazardous, non-regulated waste water				216
Jack mon #1				99
Southern Convenience				27
Young's #53				57

9. Generator's Certification: I hereby declare that the contents of this consignment are not hazardous by definition or listing and are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and the laws of the State of South Carolina. I further certify that the contents of this consignment are as represented by the description contained on the Waste Profile Form previously submitted to and approved by the Designated Facility.
Printed/Typed Name: Signature: Date:

10. Transporter Acknowledgement of Receipt of Materials
Printed/Typed Name: Signature: Date:

11. Discrepancy Indication space:

12. Facility Owner or Operator: Certification of Receipt of Materials
Printed/Typed Name: David Ward Signature: D Ward Date: 2-16-2

White - Facility Yellow - Office Pink - Transporter Blue - Generator

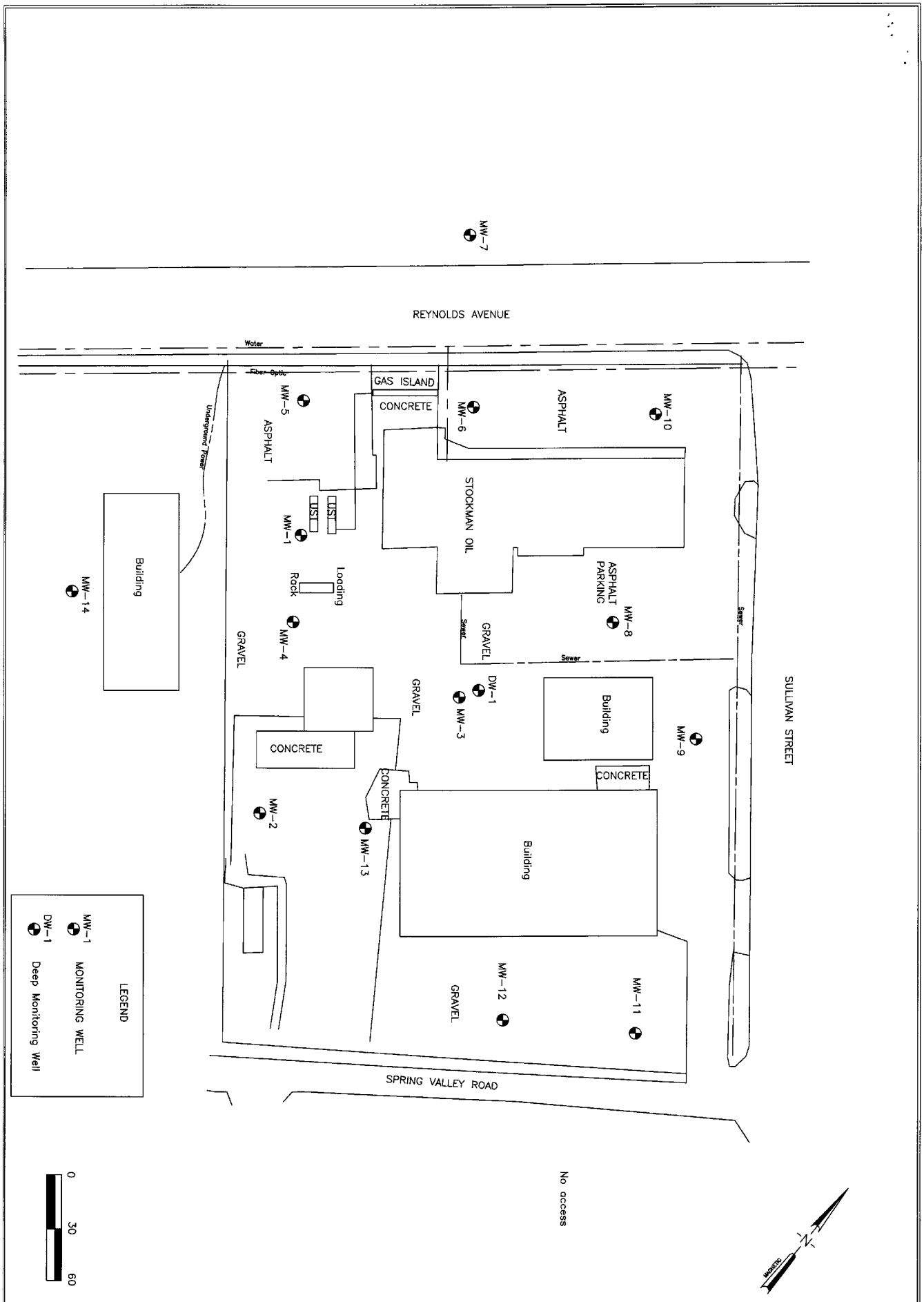


FIGURE 2
SITE MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

KLM Environmental, LLC
Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

MAR 0 6 2012

STOCKMAN OIL TWO INC
1138 REYNOLDS AVE
GREENWOOD SC 29646

Re: **Recovery Well Installation Directive**
Stockman Oil Two Inc: 1138 Reynolds Ave, Greenwood, SC 29646
UST Permit #**04736**; Cost Agreement #**43313**
Release reported December 27, 1989
Aggressive Fluid Vapor Recovery Report received February 24, 2012
Greenwood County

To Whom It May Concern::

The Underground Storage Tank Management Division (UST Division) of the South Carolina Department of Health and Environmental Control (SCDHEC) has approved the following scope of work to assist in the removal of free product:

Install four (4) 4" recovery wells (see attached map):

- RW-1 Near MW-6 screen 25'-40'
- RW-2 Near MW-5 screen 25'-40'
- RW-3 Near MW-1 screen 25'-40'
- RW-4 Near rear of building screen 25'-40'

(for all recovery wells: maintain a minimum horizontal separation of five (5) feet from site monitoring wells)

The well installation must be conducted and reported in accordance with the UST Quality Assurance Program Plan (QAPP) Revision 1.0 and in compliance with all applicable regulations. Cost Agreement #**43313** has been approved in the amount shown on the enclosed cost agreement form. The installation activities may proceed immediately upon receipt of this letter.

KLM Environmental LLC. may submit an invoice for direct billing from the State Underground Petroleum Environmental Response Bank (SUPERB) Account. Please Note that all site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor.

A well installation report and invoice are due within 90 days from the date of this letter. Interim reports and invoices may not be submitted for this scope of work. If the final invoice is not submitted within 120 days from the date of this letter, monies allocated to pay this invoice will be uncommitted. This means that the invoice will not be processed for payment until all other committed funds are paid or monies become available.

Please note that Sections 44-2-110(4) and 44-2-130 of the SUPERB Statute state that no costs will be allowed unless prior approval from the UST Division is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the UST Division for the cost to be paid. The SCDHEC reserves the authority to pay only for work properly performed and/or technically justified and will only pay rates in accordance with established criteria. Further, SCDHEC reserves the right to question and/or reject costs if deemed unreasonable and the right to audit project records at any time during the project or after completion of work.

On all correspondence or inquiries regarding this project, please reference **UST Permit #04736.** If you have any questions, please feel free to contact me by phone at (803) 896-6649, by fax at (803) 896-6245, or email at ebingedj@dhec.sc.gov.

Sincerely,

David J. Ebinger, Project Manager
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

enc: Cost Agreement
Site Map

cc: KLM Environmental LLC: PO Box 2704, Goose Creek, SC 29445 (w/ enc)
Technical File (w/ enc)

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

Monitoring Well Approval

Approval is hereby granted to: KLM Environmental LLC
(On behalf of): Stockman Oil Two, Inc.
Facility: Stockman Oil Two, Inc.: 1138 Reynolds Ave, Greenwood SC
UST Permit Number: 04736
County: Greenwood

This approval is for the installation of one (4) groundwater recovery wells. The recovery wells are to be installed in the approved locations. Wells are to be installed following the South Carolina Well Standards, R.61-71, and the applicable guidance documents.

Please note that R.61-71 requires the following:

1. All wells shall be drilled, constructed, and abandoned by a South Carolina certified well driller per R.61-71.D.1.
2. All monitoring wells shall be labeled as required by R.61-71.H.2.c.
3. A Water Well Record Form or other form provided or approved by the Department shall be completed and submitted to the Department within 30 days after well completion or abandonment unless another schedule has been approved by the Department. The form should contain the "as-built" construction details and all other information required by R.61-71.H.1.f
4. All analytical data and water levels obtained from each monitoring well shall be submitted to the Department within 30 days of receipt of laboratory results unless another schedule has been approved by the Department as required by R.61-71.H.1.d.
5. If any of the information provided to the Department changes, notification to David Ebinger (tel: (803) 896-6649 or e-mail: ebingedj@dhec.sc.gov) shall be provided a minimum of twenty-four (24) hours prior to well construction as required by R.61-71.H.1.a.
6. All temporary monitoring wells shall be abandoned within 5 days of borehole completion using appropriate methods as required by R.61-71.H.4.c. All other wells shall be properly developed per R.61-71.H.2.d.
7. Departmental approval is required prior to abandonment of all monitoring wells as required by R.61-71.H.1.a.

This approval is pursuant to the provisions of Section 44-55-40 of the 1976 South Carolina Code of Laws and R.61-71 of the South Carolina Well Standards and Regulations, dated April 26, 2002. A copy of this approval should be on the site during well installation.

Date of Issuance: **March 2, 2012** **Approval #:** **UMW-24480**

David Ebinger, Project Manager
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

Approved Cost Agreement 43313

Facility: 04736 STOCKMAN OIL TWO INC

EBINGEDJ

PO Number:

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
04 MOB/DEMOB						
		A	EQUIPMENT	1.0000	575.00	575.00
		B	PERSONNEL	2.0000	290.00	580.00
09 WELL INSTALLATION						
		H	RECOVERY WELL (4 INCH DIA)	160.0000	45.00	7,200.00
17 DISPOSAL						
		A	WASTEWATER	400.0000	0.80	320.00
		C	SOIL (TREATMENT/DISPOSAL)	5.0000	72.50	362.50
19 RPT/PROJECT MNGT & COORDINATIO						
		PCT	PERCENT	0.1500	9,037.50	1,355.63
				Total Amount		10,393.13

KLM Environmental, LLC

Phase I Phase II: Underground Storage Tanks Soil & Water Sampling Well Installation

FIGURE 2
SITE MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

KLM Environmental, LLC

Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation
PO Box 2704
Goose Creek, SC 29445
843-870-4285 Phone
843-797-1893 Fax

April 16, 2012

Mr. David Ebinger
SCDHEC-BUSTM.
2600 Bull Street
Columbia, SC 29201

Re: Stockman Oil Two, Inc.; UST # 04736, CA # 43313

Mr. Ebinger,

Enclosed are the well installation logs and disposal manifest for the well installation activities requested at the Stockman Oil site. The invoicing will follow at a later date once the form has been signed by the site owner.

It has been a pleasure working with you on this project. Please call me directly if you have any questions at 843-870-4285.

Sincerely,

KLM Environmental, LLC

Mark L. Keller, PG
President

DHEC
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Stockman Oil Two Inc. (last) (first)
Address: 1138 Reynolds Ave
City: Greenwood State: SC Zip: 29646
Telephone. Work: Home:

2. LOCATION OF WELL: COUNTY: Greenwood
Name: Stockman Oil Inc.
Street Address: 1138 Reynolds Ave
City: Greenwood State: SC Zip: 29646
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: PUBLIC SYSTEM NUMBER: RW-1

4. ABANDONIMENT: ☐ Yes ☒ No
Grouted Depth: from ft. to ft.

Formation Description	• Thickness of Stratum	Depth to Bottom of Stratum
Brownish orange sandy clay	40 ft	0 - 40 ft
• Indicate Water Bearing Zones (Use a 2nd sheet if needed)		
5. REMARKS:		

6. TYPE: ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UST # 04736 UMW # 24480

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☒ MonitorWell ☐ Replacement

9. WELL DEPTH (completed) 40 ft. Date Started: 4/3/2012 Date Completed: 4/3/2012

10. CASING: ☒ Threaded ☐ Welded
Diam.: 4"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
4 in. to 25 ft. depth
in. to ft, depth
Height Above ☐ Below ☐
Surface ft
Weight lb./ft,
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 4"
Slot/Gauge: 0.010" Length: 15'
Set Between: 25 ft. and 40 ft
ft. and ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
ft. after hrs. Pumping G.P.M
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield:

14. WATER QUALITY
Chemical Analysis ☒ Yes ☐ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☒ No
Installed from 23 ft. to 40 ft.
Effective size #2 Uniformity Coefficient

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other
Depth: From 0 ft. to 20 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft. direction
Type
Well Disinfected ☐ Yes Type: Amount:

18. PUMP: Date installed: Not installed ☒
Mfr. Name: Model No.:
H.P. volts Length of drop pipe - ft. Capacity gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Mark Keller CERT. NO.: 1554
Address: (Print)
PO Box 2704
Goose Creek, SC 29445
Level A ☐ B ☒ C ☐ D ☐
Telephone No.: 843-797-7884 Fax No.: 843-797-1893

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Well Driller Date: 4/3/2012

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) COPY I MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

South Carolina Department of Health and Environmental Control

1. WELL OWNER INFORMATION:
Name: Stockman Oil Two Inc. (last) _____ (first)
Address: 1138 Reynolds Ave
City: Greenwood State: SC Zip: 29646
Telephone. Work: _____ Home: _____

2. LOCATION OF WELL: COUNTY: Greenwood
Name: Stockman Oil Inc.
Street Address: 1138 Reynolds Ave
City: Greenwood State: SC Zip: 29646
Latitude: _____ Longitude: _____

3. PUBLIC SYSTEM NAME: _____ PUBLIC SYSTEM NUMBER: RW-2

4. ABANDONIMENT: ☐ Yes ☒ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	• Thickness of Stratum	Depth to Bottom of Stratum
Brownish orange sandy clay	40 ft	0 - 40 ft
• Indicate Water Bearing Zones (Use a 2nd sheet if needed)		
5. REMARKS:		

6. TYPE: ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UST # 04736 UMW # 24480

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☒ MonitorWell ☐ Replacement

9. WELL DEPTH (completed) 40 ft. Date Started: 4/3/2012 Date Completed: 4/3/2012

10. CASING: ☒ Threaded ☐ Welded
Diam.: 4"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
4 in. to 25 ft. depth
_____ in. to _____ ft, depth
Height Above ☐ Below ☐ Surface _____ ft
Weight _____ lb./ft,
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 4"
Slot/Gauge: 0.010" Length: 15'
Set Between: 25 ft. and 40 ft
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☒ Yes ☐ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☒ No
Installed from 23 ft. to 40 ft.
Effective size #2 Uniformity Coefficient _____

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 20 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☒
Mfr. Name: _____ Model No.: _____
H.P._____ volts_____ Length of drop pipe - ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Mark Keller CERT. NO.: 1554
Address: (Print)
PO Box 2704
Goose Creek, SC 29445
Level A ☐ B ☒ C ☐ D ☐
Telephone No.: 843-797-7884 Fax No.: 843-797-1893

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ Date: 4/3/2012
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) COPY I MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

DHEC
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Stockman Oil Two Inc. (last) (first)
Address: 1138 Reynolds Ave
City: Greenwood State: SC Zip: 29646
Telephone. Work: Home:

2. LOCATION OF WELL: COUNTY: Greenwood
Name: Stockman Oil Inc.
Street Address: 1138 Reynolds Ave
City: Greenwood State: SC Zip: 29646
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: PUBLIC SYSTEM NUMBER: RW-3

4. ABANDONIMENT: ☐ Yes ☒ No
Grouted Depth: from ft. to ft.

Formation Description	• Thickness of Stratum	Depth to Bottom of Stratum
Brownish orange sandy clay	40 ft	0 - 40 ft
• Indicate Water Bearing Zones (Use a 2nd sheet if needed)		
5. REMARKS:		

6. TYPE: ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UST # 04736 UMW # 24480

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☒ MonitorWell ☐ Replacement

9. WELL DEPTH (completed) 40 ft. Date Started: 4/3/2012 Date Completed: 4/3/2012

10. CASING: ☒ Threaded ☐ Welded
Diam.: 4"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
4 in. to 25 ft. depth
in. to ft, depth
Height Above ☐ Below ☐ Surface ft
Weight lb./ft,
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 4"
Slot/Gauge: 0.010" Length: 15'
Set Between: 25 ft. and 40 ft NOTE: MULTIPLE SCREENS
ft. and ft. USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
ft. after hrs. Pumping G.P.M
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield:

14. WATER QUALITY
Chemical Analysis ☒ Yes ☐ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☒ No
Installed from 23 ft. to 40 ft.
Effective size #2 Uniformity Coefficient

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other
Depth: From 0 ft. to 20 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft. direction
Type
Well Disinfected ☐ Yes Type: Amount:

18. PUMP: Date installed: Not installed ☒
Mfr. Name: Model No.:
H.P. volts Length of drop pipe - ft. Capacity gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Mark Keller CERT. NO.: 1554
Address: (Print)
PO Box 2704
Goose Creek, SC 29445
Level A ☐ B ☒ C ☐ D ☐
Telephone No.: 843-797-7884 Fax No.: 843-797-1893

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: Well Driller Date: 4/3/2012
If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003)

COPY I MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

DHEC
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Stockman Oil Two Inc. (last) (first)
Address: 1138 Reynolds Ave
City: Greenwood State: SC Zip: 29646
Telephone. Work: Home:

2. LOCATION OF WELL: COUNTY: Greenwood
Name: Stockman Oil Inc.
Street Address: 1138 Reynolds Ave
City: Greenwood State: SC Zip: 29646
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: PUBLIC SYSTEM NUMBER: RW-4

4. ABANDONIMENT: ☐ Yes ☒ No
Grouted Depth: from ft. to ft.

Formation Description	• Thickness of Stratum	Depth to Bottom of Stratum
Brownish orange sandy clay	40 ft	0 - 40 ft
• Indicate Water Bearing Zones (Use a 2nd sheet if needed)		
5. REMARKS:		

6. TYPE: ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UST # 04736 UMW # 24480

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☒ MonitorWell ☐ Replacement

9. WELL DEPTH (completed) 40 ft. Date Started: 4/3/2012 Date Completed: 4/3/2012

10. CASING: ☒ Threaded ☐ Welded
Diam.: 4"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
4 in. to 25 ft. depth
in. to ft, depth
Height Above ☐ Below ☐
Surface ft
Weight lb./ft,
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 4"
Slot/Gauge: 0.010" Length: 15'
Set Between: 25 ft. and 40 ft
ft. and ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
ft. after hrs. Pumping G.P.M
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield:

14. WATER QUALITY
Chemical Analysis ☒ Yes ☐ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☐ Yes ☒ No
Installed from 23 ft. to 40 lt.
Effective size #2 Uniformity Coefficient

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other
Depth: From 0 ft. to 20 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft. direction
Type
Well Disinfected ☐ Yes Type: Amount:

18. PUMP: Date installed: Not installed ☒
Mfr. Name: Model No.:
H.P. volts Length of drop pipe - ft. Capacity gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Mark Keller CERT. NO.: 1554
Address: (Print)
PO Box 2704
Goose Creek, SC 29445
Level A ☐ B ☒ C ☐ D ☐
Telephone No.: 843-797-7884 Fax No.: 843-797-1893

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: Well Driller Date: 4/3/2012
If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) COPY I MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number

5. Generator's Name and Mailing Address: KLM Environmental, PO Box 2704, Goose Creek SC 29445

Generator's Site Address (if different than mailing address)

Generator's Phone:

6. Transporter 1 Company Name: KLM Environmental — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address: RBM, 38 Clearwater, Walterboro, SC 29488 — U.S. EPA ID Number

Facility's Phone:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Youngs 19 Sumter SC Drill Cuttings	24	DM	9.6	Tons	
2.	Stackman Oil Greenwood SC Drill Cuttings	12	DM	4.8	Tons	
3.						
4.						

13. Special Handling Instructions and Additional Information

14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Generator's/Offeror's Printed/Typed Name — Signature — Month / Day / Year

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Jason Boots — Signature — Month: 4 / Day: 10 / Year: 12

Transporter 2 Printed/Typed Name — Signature — Month / Day / Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month / Day / Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month: 4 / Day: 10 / Year: 12

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

169-BLS-C 5 11979 (Rev. 8/06)

TRANSPORTER #1

US Water Recovery

Non-Hazardous Wastewater Manifest

Number:

1. Generator's EPA ID# (if applicable):

Waste ID Number:

2. Generator's Name and Mailing Address:

Phone ( )

P O #:

scotchman # 18

3. Agent of Generator and Mailing Address:

Phone ( )

P O #:

KM Env

4. Transporter Company Name:

Phone ( )

Vacuum recovery

Truck & Trailer License Number:

5. Transporter U.S. EPA ID#:

6. Facility Name and Site Address:
U S Water Recovery
435 Old Mt. Holly Rd.
Mt. Holly, SC 29445

Phone: (843) 797-8674

Fax: (843) 797-2126

Mailing Address:
U S Water Recovery
210 S. Cedar Street
Summerville, SC 29483

Phone: (843) 797-3111

Fax: (843) 797-1884

7. Facility U.S. EPA ID#:

Start Level: End Level: Total Gallons: Tank Number

8. U.S. DOT Desciption	Container No.	Container Type	Unit	Quantity
a. Non-Hazardous, non-regulated waste water				1478
stockman oil				80
wilco/hess				220

9. Generator's Certification: I hereby declare that the contents of this consignment are not hazardous by definition or listing and are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and the laws of the State of South Carolina. I further certify that the contents of this consignment are as represented by the description contained on the Waste Profile Form previously submitted to and approved by the Designated Facility.

Printed/Typed Name: mark Keller Signature: [signature] Date: 4-16-2012

10. Transporter Acknowledgement of Receipt of Materials

Printed/Typed Name: Jason Porter Signature: [signature] Date: 4/16/2012

11. Discrepancy indication space:

12. Facility Owner or Operator: Certification of Receipt of Materials

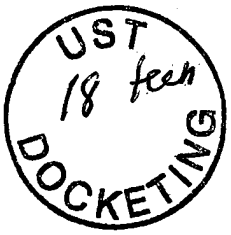
Printed/Typed Name: [signature] Signature: [signature] Date: 4-16-12

White - Facility Yellow - Office Pink - Transporter Blue - Generator

8875

D H E C
PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director
Promoting and protecting the health of the public and the environment



STOCKMAN OIL TWO INC
1138 REYNOLDS AVE
GREENWOOD SC 29646

MAY 1 5 2012

Re: **AFVR Directive**
Stockman Oil Two Inc: 1138 Reynolds Ave, Greenwood, SC 29646
UST Permit #**04736**; Cost Agreement #**43659**
Release reported December 27, 1989
Technical Report received April 19, 2012
Greenwood County

To Whom It May Concern:

The Underground Storage Tank Management Division (UST Division) of the South Carolina Department of Health and Environmental Control (Agency) has approved the following scope of work to remove free product:

Three 8-hr AFVR Events:
- Event #1: RW-1
- Event #2: RW-2
- Event #3: RW-3 and RW-4

(events may occur consecutively)

The AFVR events must be conducted and reported in accordance with the UST Quality Assurance Program Plan (QAPP) Revision 1.0 and in compliance with all applicable regulations. Cost Agreement #**43659** has been approved in the amount shown on the enclosed cost agreement form. The AFVR activities may proceed immediately upon receipt of this letter.

KLM Environmental LLC may submit an invoice for direct billing from the State Underground Petroleum Environmental Response Bank (SUPERB) Account. Please note that all site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor.

An AFVR report and invoice are due within 60 days from the date of this letter. Interim reports and invoices may be submitted for this scope of work. If the final invoice is not submitted within 120 days from the date of this letter, monies allocated to pay this invoice will be uncommitted. This means that the invoice will not be processed for payment until all other committed funds are paid or monies become available.

Please note that Sections 44-2-110(4) and 44-2-130 of the SUPERB Statute state that no costs will be allowed unless prior approval from the UST Division is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the UST Division for the cost to be paid. The Agency reserves the authority to pay only for work properly performed and/or technically justified and will only pay rates in accordance with established criteria. Further, the Agency reserves the right to question and/or reject costs if deemed unreasonable and the right to audit project records at any time during the project or after completion of work.

The Agency grants pre-approval for transportation of virgin petroleum impacted groundwater from the referenced site to a permitted treatment facility. There can be no spillage or leakage in transport. All investigation derived waste (IDW) must be properly contained and labeled prior to disposal. IDW should not be stored on-site longer than ninety (90) days. A copy of the disposal manifest and/or acceptance letter from the receiving facility that clearly designates the quantity received must be included as an appendix to the report. If the concentrations of chemicals of concern, based on laboratory analysis, are below Risk Based Screening Levels (RBSLs), please contact the project manager for approval to dispose of soil and/or groundwater on site. The SUPERB Account will not reimburse for transportation or treatment of soil and/or groundwater with concentrations below RBSLs.

On all correspondence or inquiries regarding this project, please reference **UST Permit #04736.** If you have any questions, please feel free to contact me by phone at (803) 896-6649, by fax at (803) 896-6245, or email at ebingedj@dhec.sc.gov.

Sincerely,

David J. Ebinger, Project Manager
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

enc: Cost Agreement

cc: KLM Environmental LLC: PO Box 2704, Goose Creek, SC 29445 (w/ enc)
Technical File (w/ enc)

Approved Cost Agreement 43659

Facility: 04736 STOCKMAN OIL TWO INC

EBINGEDJ

PO Number:

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
04 MOB/DEMOB						
		A	EQUIPMENT	3.0000	575.00	1,725.00
		B	PERSONNEL	3.0000	290.00	870.00
17 DISPOSAL						
		A	WASTEWATER	4,000.0000	0.80	3,200.00
19 RPT/PROJECT MNGT & COORDINATIO						
		PCT	PERCENT	0.1500	15,635.00	2,345.25
23 EFR						
		A	8 HOUR EVENT	3.0000	3,000.00	9,000.00
		C	OFF GAS TREATMENT	24.0000	35.00	840.00
				Total Amount		17,980.25

KLM Environmental, LLC

Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation
PO Box 2704
Goose Creek, SC 29445
843-870-4285 Phone
843-797-1893 Fax

UST
JUL 0 2 2012
PROGRAM

UST
DOCKETING
19tech

June 29, 2012

Mr. David Ebinger
SCDHEC – BUSTM
2600 Bull Street
Columbia, S.C. 29201

Re: Stockman Oil Two, Inc.: Permit # 04736 / CA # 43659

Mr. Ebinger,

This letter, along with its attachments, is presented to document the results of the Aggressive Fluid Vapor Recovery (AFVR) events performed on June 19th and June 20th, 2012. As the AFVR events could be done consecutively, KLM utilized two vacuum trucks on the June 19th event. Recovery well RW-1 was connected to one truck, and recovery well RW-2 was connected to the second truck. On June 20th, one truck was connected to RW-3 and RW-4 simultaneously. All recovery wells were gauged for free phase product prior to and following each event. The drop tube was installed to a depth of six inches below the bottom of the product during the AFVR events. Results from each event are provided on the attached tables. A total of 2.5 gallons of petroleum product was recovered during the AFVR events. Emissions calculations were performed for each event and a total of 7.01 gallons of petroleum product were recovered as vapor. KLM recommends continued AFVR events as soon as possible at the site in order to remove the free phase petroleum product.

All of the remaining information requested in the AFVR letter is provided as an attachment. It has been a pleasure working with you on this project. Please call me directly if you have any questions at 843-870-4285.

Sincerely,

KLM Environmental, LLC

Mark L. Keller, PG
President

Enclosures(11): AFVR information tables; Waste Manifests; Emissions Calculations; Magnehelic Gauge Tables; Site Map

cc: Chip Stockman, Stockman Oil Two, Inc. (1138 Reynolds Ave., Greenwood, SC)

KLM Environmental, LLC

Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation
PO Box 2704 843-870-4285 Phone
Goose Creek, SC 29445 843-797-1893 Fax

July 12, 2012

Mr. David Ebinger
SCDHEC – BUSTM
2600 Bull Street
Columbia, S.C. 29201

Re: Stockman Oil Two, Inc.: Permit # 04736 CA # 43659

Mr. Ebinger,

This letter, along with its attachments, is presented to document the results of the Aggressive Fluid Vapor Recovery (AFVR) events performed on June 19th and June 20th, 2012. As the AFVR events could be done consecutively, KLM utilized two vacuum trucks on the June 19th event. Recovery well RW-1 was connected to one truck, and recovery well RW-2 was connected to the second truck. On June 20th, one truck was connected to RW-3 and RW-4 simultaneously. All recovery wells were gauged for free phase product prior to and following each event. The drop tube was installed to a depth of six inches below the bottom of the product during the AFVR events. Results from each event are provided on the attached tables. A total of 2.5 gallons of petroleum product was recovered during the AFVR events. Emissions calculations were performed for each event and a total of 7.01 gallons of petroleum product were recovered as vapor. Activated carbon was utilized as the method of off gas treatment for both trucks throughout the events. KLM recommends continued AFVR events as soon as possible at the site in order to remove the free phase petroleum product.

All of the remaining information requested in the AFVR letter is provided as an attachment. It has been a pleasure working with you on this project. Please call me directly if you have any questions at 843-870-4285.

Sincerely,

KLM Environmental, LLC

Mark L. Keller, PG
President

Enclosures(11): AFVR information tables; Waste Manifests; Emissions Calculations; Magnehelic Gauge Tables; Site Map

cc: Chip Stockman, Stockman Oil Two, Inc. (1138 Reynolds Ave., Greenwood, SC)

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 6-19-12
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Jason Boots	General Weather Conditions: Sunny
Ambient Air Temperature: 90 Fahrenheit	Estimated Gallons of Product Removed: 1.75 gallons	Initial Product Thickness: RW-2 = 7.87
Final Product Thickness: RW-2 = 0.00	AFVR Start Time: 12:00	AFVR End Time: 20:00

Time(Readings Every 30 Minutes)	Recovery Rate				Air Emission Conc. Measurements in ppm	Air Flow Rate shown in Cubic Feet per Minute
	Vacuum Inches of Hg	Temp Degrees F	Stack Vel. mph	Humidity		
12:00	-23	92.7	8.5	41.7	793.7	61.26
12:30	-23	131.6	9.3	27.4	939.3	67.02
13:00	-23	161.2	9.4	20.6	981.6	67.75
13:30	-23	169.3	9.8	20.1	1149	70.63
14:00	-23	173.6	9.9	17.6	1387	71.35
14:30	-23	178.4	9.9	17.3	1351	71.35
15:00	-23	180.2	10.4	15.7	1847	74.95
15:30	-22	175.4	10.4	15.5	1181	74.95
16:00	-22	170.2	10.2	15.2	837.3	73.51
16:30	-22	168.3	10.3	14.7	456.2	74.23
17:00	-22	163.7	10.5	17.4	271.4	75.67
17:30	-22	160.1	10.7	20.3	383.6	77.11
18:00	-22	161.3	10.4	23.7	409.5	74.95
18:30	-22	158.4	10.3	24.5	371.7	74.23
19:00	-22	158.7	10.4	23.6	421.6	74.95
19:30	-22	156.3	10.5	24.1	404.7	75.67
20:00	-22	156.7	10.5	25.5	391.2	75.67

	Start	End
RW-2	30.87 – 38.74	39.41

KLM Environmental, LLC

Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation

AFVR Table
Stockman Oil Two, Inc.
1138 Reynolds Ave
Greenwood, SC
Site ID 04736 6/19/12

Equations to determine Pollutant Mass Removal rate as gasoline (PMRg):

6/19/2012

$PPM_w = PPM_{measured} =$	798.6352941
$PPM_d = PPM_w / (1-Bws) =$	852.3781252
$PPM_c = (PPM_d)(K) =$	3409.512501
$C_{c:m} = PPM_c(M_c/K_3) =$	1701.215003
$C_c = C_{c:m}(62.43x10^{-9}) =$	0.000106207
$PMR_c = C_c(Qstd)(60) =$	1.575037775
$PMR_g = (PMR_c)(M_g/M_{cg}) =$	**1.822796526 lbs of emissions per hour**
	2.333179553 Gallons of emissions per 8 hours

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 6-19-12
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Matt Roseberry	General Weather Conditions: Sunny
Ambient Air Temperature: 85 Fahrenheit	Estimated Gallons of Product Removed: 0.25 gallons	Initial Product Thickness: RW-1 = 2.12
Final Product Thickness: RW-1 = 0.00	AFVR Start Time: 12:00	AFVR End Time: 20:00

Time(Readings Every 30 Minutes)	Recovery Rate Vacuum Inches of Hg	Temp Degrees F	Stack Vel. mph	Humidity	Air Emission Conc. Measurements in ppm	Air Flow Rate shown in Cubic Feet per Minute
12:00	-18	102.8	5.8	44.1	290.6	41.80
12:30	-18	103.9	6.9	42.5	386.4	49.73
13:00	-18	103.8	7.2	39.9	1320	51.89
13:30	-17	115.9	7.1	38.2	908.5	51.17
14:00	-17	118.3	7.2	34.7	927.7	51.89
14:30	-17	121.3	7.3	32.6	960.9	52.61
15:00	-17	153.7	7.5	22.7	696.3	54.05
15:30	-17	158.1	8.1	18.3	841.8	58.38
16:00	-17	160.9	7.9	17.7	295.7	56.94
16:30	-17	163.4	8.2	16.8	316.9	59.10
17:00	-17	163.1	8.2	13.4	336.8	59.10
17:30	-16	160.3	7.1	15.5	461.8	51.17
18:00	-16	163.5	7.4	14.7	542.3	53.33
18:30	-16	160.4	8.0	13.1	601.4	57.66
19:00	-16	155.7	7.6	18.3	308.1	54.77
19:30	-16	163.1	7.7	11.1	299.9	55.49
20:00	-16	159.8	8.0	10.6	397.4	57.66

	Start	End
RW-1	31.75 – 33.87	36.00

Equations to determine Pollutant Mass Removal rate as gasoline (PMRg):

6/19/2012

$PPM_w = PPM_{measured}$ = 581.9117647

$PPM_d = PPM_w / (1-Bws)$ = 621.0705471

$PPM_c = (PPM_d)(K)$ = 2484.282188

$C_{c:m} = PPM_c(M_c/K_3)$ = 1239.560826

$C_c = C_{c:m}(62.43x10^{-9})$ = 7.73858E-05

$PMR_c = C_c(Qstd)(60)$ = 0.875622018

$PMR_g = (PMR_c)(M_g/M_{cg})$ = **1.013360313 lbs of emissions per hour**

1.2971012 Gallons of emissions per 8 hours

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 6-20-12
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Matt Roseberry	General Weather Conditions: Sunny
Ambient Air Temperature: 85 Fahrenheit	Estimated Gallons of Product Removed: 0.50 gallons	Initial Product Thickness: RW-3 = 2.37 RW-4 = 2.20
Final Product Thickness: RW-3 = 0.00 RW-4 = 0.00	AFVR Start Time: 08:00	AFVR End Time: 16:00

Time(Readings Every 30 Minutes)	Recovery Rate				Air Emission Conc. Measurements in ppm	Air Flow Rate shown in Cubic Feet per Minute
	Vacuum Inches of Hg	Temp Degrees F	Stack Vel. mph	Humidity		
08:00	-15	120.4	17.0	30.9	485.2	122.52
08:30	-15	121.6	24.4	23.3	640.8	175.85
09:00	-16	122.3	24.1	22.1	624.3	173.69
09:30	-16	119.8	23.1	20.2	631.5	166.48
10:00	-16	159.8	23.3	17.3	536.4	167.92
10:30	-16	164.7	23.8	16.1	539.1	171.53
11:00	-16	161.2	21.3	22.1	511.7	153.51
11:30	-16	169.7	22.4	20.3	487.1	161.44
12:00	-16	170.1	20.7	17.6	546.3	149.18
12:30	-16	171.6	20.1	13.4	515.7	144.86
13:00	-16	170.4	18.6	11.1	521.9	134.05
13:30	-15	188.8	22.8	15.7	552.7	164.32
14:00	-15	190.2	24.7	13.5	591.6	178.01
14:30	-15	188.6	22.6	14.6	486.1	162.88
15:00	-15	191.4	24.1	12.1	440.2	173.69
15:30	-16	189.1	21.8	11.3	389.4	157.11
16:00	-17	190.6	22.0	19.5	503.1	158.55

	Start	End
RW-3	28.29 – 30.66	31.72
RW-4	28.75 – 30.95	31.66

Equations to determine Pollutant Mass Removal rate as gasoline (PMRg):

6/20/2012

$PPM_w = PPM_{measured} =$	529.5941176
$PPM_d = PPM_w / (1-Bws) =$	565.2322711
$PPM_c = (PPM_d)(K) =$	2260.929085
$C_{c:m} = PPM_c(M_c/K_3) =$	1128.116257
$C_c = C_{c:m}(62.43x10^{-9}) =$	7.04283E-05
$PMR_c = C_c(Qstd)(60) =$	2.280016157
$PMR_g = (PMR_c)(M_g/M_{cg}) =$	**2.638670384 lbs of emissions per hour**
	3.377498092 Gallons of emissions per 8 hours

US Water Recovery

Non-Hazardous Wastewater Manifest

Number:

1. Generator's EPA ID# (if applicable): Waste ID Number:

2. Generator's Name and Mailing Address: Phone ( )

Scotch man #25 P O #:

3. Agent of Generator and Mailing Address: Phone ( )

KIM Env P O #:

4. Transporter Company Name: Phone ( )

Vacuum recovery tech

Truck & Trailer License Number:

5. Transporter U.S. EPA ID#:

6. Facility Name and Site Address: Phone: (843) 797-8674
U S Water Recovery
435 Old Mt. Holly Rd.
Mt. Holly, SC 29445
Fax: (843) 797-2126

Mailing Address: Phone: (843) 797-3111
U S Water Recovery
210 S. Cedar Street
Summerville, SC 29483
Fax: (843) 797-1884

7. Facility U.S. EPA ID#:

Start Level: End Level: Total Gallons: Tank Number:

8. U.S. DOT Desciption	Container No.	Container Type	Unit	Quantity
Non-Hazardous, non-regulated waste water				858
stock man oil 1st				283
stock man oil 2nd				357
stock man oil 3rd				4168

9. Generator's Certification: I hereby declare that the contents of this consignment are not hazardous by definition or listing and are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and the laws of the State of South Carolina. I further certify that the contents of this consignment are as represented by the description contained on the Waste Profile Form previously submitted to and approved by the Designated Facility.

Printed/Typed Name: Mark Killer Signature: Mark Killer Date: 6-28-2012

10. Transporter Acknowledgement of Receipt of Materials

Printed/Typed Name: Jason Bratt Signature: [signature] Date: 6-28-2012

11. Discrepancy indication space:

12. Facility Owner or Operator: Certification of Receipt of Materials

Printed/Typed Name: David Wand Signature: [signature] Date: 6-27-12

White - Facility Yellow - Office Pink - Transporter Blue - Generator

8682

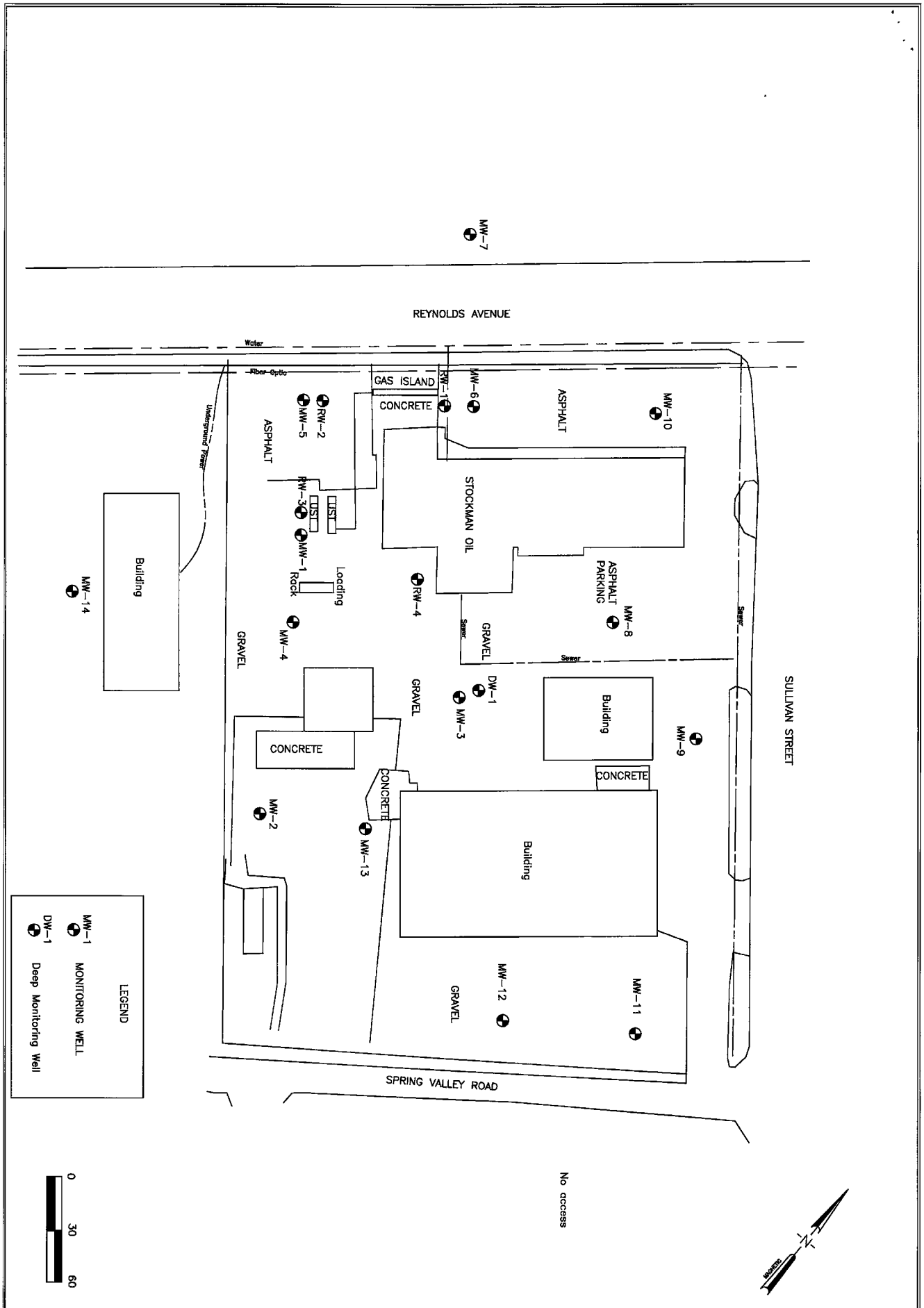


FIGURE 2
SITE MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

KLM Environmental, LLC
Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation

RECEIVED
2008
UNDERGROUND STORAGE

NOVEMBER 2008 MONITORING REPORT
STOCKMAN OIL TWO, INC.
Greenwood, South Carolina
Site ID# 04736

KLM Environmental, LLC
Phase I Phase II Underground Storage Tanks Soil & Water Sampling Well Installation
PO Box 2704
Goose Creek, SC 29445
843-870-4285 Phone
843-797-1893 Fax

December 1st, 2008

Prepared for:

Ms. Victoria Bosnick
SCDHEC BUSTM
2600 Bull Street
Columbia, SC 29201

Prepared by:

KLM Environmental, LLC
Post Office Box 2704
Goose Creek, SC 29445
(843) 870-4285 / *fax: 797-1893*

Project# 05086.1

UST DOCKET
2tech

SIGNATURE PAGE

This report entitled **"NOVEMBER 2008 MONITORING REPORT" for Stockman Oil Two, Inc.** has been prepared at the request of and for the exclusive use of the South Carolina Department of Health and Environmental Control. It has been prepared and reviewed by the undersigned.

Prepared By:

April duffmges For:

J. Micah Bennett
Hydrogeologist
KLM Environmental, LLC

Reviewed By:

Mark L. Keller, PG
President
KLM Environmental, LLC

12/2/08
Date

MARK L. KELLER
REGISTERED
No. 2311
12/2/08
SOUTH CAROLINA
PROFESSIONAL GEOLOGIST

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DESCRIPTION	APPENDIX
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HISTORICAL GROUNDWATER ELEVATIONS	C

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DESCRIPTION	TABLE
GROUNDWATER ELEVATION DATA	1
SUMMARY OF ANALYTICAL DATA	2
OXYGENATE DATA	3
SUMMARY OF AUXILIARY DATA	4

1.0 INTRODUCTION

The Stockman Oil site is located at 1138 Reynolds Avenue in Greenwood, South Carolina. A general site location map is provided as Figure 1 in Appendix A. The initial release was reported on December 27th, 1989 and the site has been undergoing assessment and monitoring activities since that date. This report serves to present results of the sampling conducted at Stockman Oil at the request of the SCDHEC Project Manager.

2.0 SITE DESCRIPTION

The Stockman Oil site has four shallow wells located at the site. On November 17th, 2008, KLM personnel mobilized to the site to sample all monitoring wells associated with the site. Figure 2 serves as a site map showing well locations. The piezometric data is provided in the following table.

TABLE 1
Groundwater Data (feet)
Stockman Oil
Greenwood, SC

Monitoring Well	Date	TOC Elevation	Screened Interval	TOC to FP	TOC to GW	GW Elevation
MW-1	11/17/08	100.00	14.6-29.6	--	29.32	70.68
MW-2	11/17/08	92.79	20-30	--	24.74	68.05
MW-3	11/17/08	94.82	25-35	--	25.96	68.86
MW-4	11/17/08	97.52	25-35	--	27.37	70.15

Depths to fluid measurements were collected relative to the top of casing for each well using a hydrocarbon interface probe capable of detecting and measuring a hydrocarbon product thickness of 0.01 foot or 1/8 inch. Groundwater elevations were then determined by subtracting depth to fluid measurements from the top of casing elevations. A piezometric map is provided in Appendix A as Figure 3. Historical groundwater elevations are provided in Appendix C.

3.0 GROUNDWATER QUALITY

KLM personnel performed the groundwater-sampling event on November 17th, 2008. Results for all wells sampled are presented in the following table.

TABLE 2
Summary of Analytical Data
Stockman Oil
Greenwood, SC

Well #	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Naph-thalene	Lead	EDB
RBSL	--	**5**	**1000**	**700**	**10000**	**40**	**25**	**15**	**0.05**
MW-1	11/17/08	**132**	32.0	28.0	466	**1200**	**61.6**	**40.8**	<0.019
MW-2	11/17/08	<5.0	<5.0	<5.0	<10.0	13.7	3.5	<5.0	<0.019
MW-3	11/17/08	**24500**	**39400**	**2620**	**11400**	**6720**	**755**	8.9	**0.34**
MW-4	11/17/08	**5.7**	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020

Note: All results in µg/l. Numbers in bold exceed RBSL.

TABLE 3
Oxygenate Data
Stockman Oil
Greenwood, SC

Well #	Date Sampled	Ethanol	(ETBE)	(DIPE)	(ETBA)	(TBA)	(TAME)	(TAA)	(TBF)
RBSL	--	**10000**	**47**	**150**	--	**1400**	**128**	**240**	--
MW-1	11/17/08	<200	<10.0	63.5	<100	<100	43.0	<100	<50.0
MW-2	11/17/08	<200	<10.0	4.5	<100	<100	<10.0	<100	<50.0
MW-3	11/17/08	<4000	**<200**	**1650**	<2000	**<2000**	**1530**	**58300**	<1000
MW-4	11/17/08	<200	<10.0	<5.0	<100	<100	<10.0	<100	<50.0

TABLE 4
Summary of Auxiliary Data
Stockman Oil
Greenwood, SC

Well #	Date Sampled	Methane	Ferrous Iron (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	1,2 DCA	Filtered Lead
**	--	--	--	--	--	**5**	--
MW-1	11/17/08	NS	NS	NS	NS	<5.0	NS
MW-2	11/17/08	NS	NS	NS	NS	<5.0	NS
MW-3	11/17/08	NS	NS	NS	NS	**<100**	NS
MW-4	11/17/08	NS	NS	NS	NS	<5.0	NS

A minimum of three well volumes were purged from all monitoring wells not bracketing the water table, using an electric purge pump. Immediately after well purging was completed, groundwater samples were collected using disposable bottom entry sampling bailers, decanted into sterile glass sample containers provided by the analytical laboratory, and preserved in accordance with United States Environmental Protection Agency (USEPA) sampling protocol. Standard field parameters (pH, specific conductivity, temperature, dissolved oxygen, salinity, and turbidity) were measured and recorded for each sample during well purging or at the time of collection. Following collection in the field, the groundwater samples were submitted to the analytical laboratory and analyzed for Benzene, Toluene, Ethylbenzene, total Xylenes (BTEX), Methyl-tert Butyl Ether (MTBE), Naphthalene, EDB, Lead, 8 Oxygenates, and 1,2 DCA. A copy of the laboratory data and the chain-of-custody for the well sampling event is provided in Appendix B.

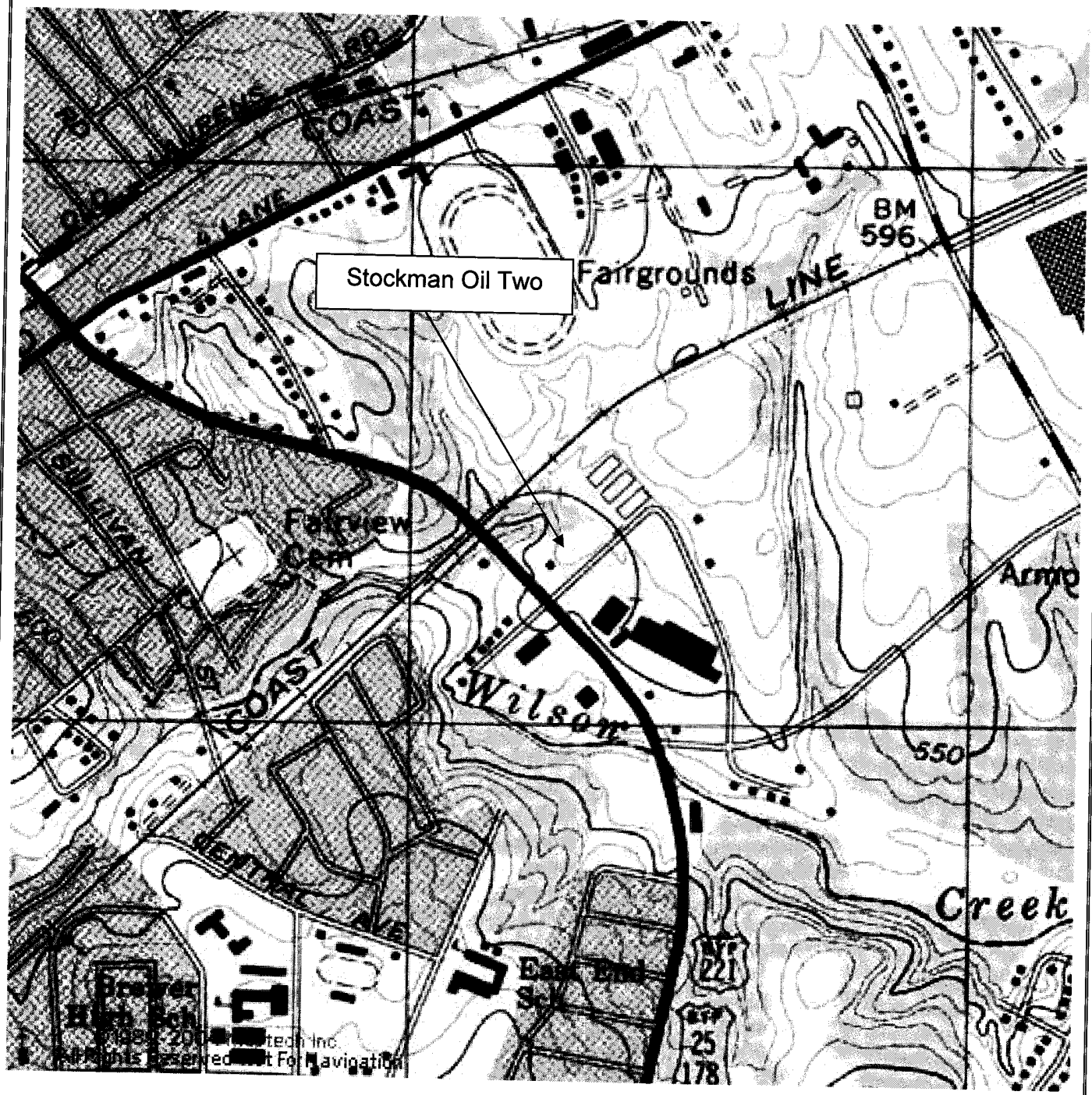
4.0 CONCLUSIONS

All of the monitoring wells were located during this sampling event and were sampled. Monitoring wells MW-1, MW-3, and MW-4 contain contaminants above the Risk Based Screening Levels (RBSLs) as established by the SCDHEC with MW-3 containing significant levels of contaminants. In order to determine the extent of the contaminant plume a Tier II assessment should be conducted at the site.

5.0 REFERENCES

Force & Associates, Inc., *Tier I Report*, July, 2002.

South Carolina Department of Health and Environmental Control Bureau of Land and Waste Management Underground Storage Tank Program, *South Carolina Risk-Based Corrective Action for Petroleum Releases*, May 15, 2001.



KLM Environmental, LLC

Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation

Figure 1
USGS Map
Stockman Oil Two
Greenwood, SC
Project # 05086.1

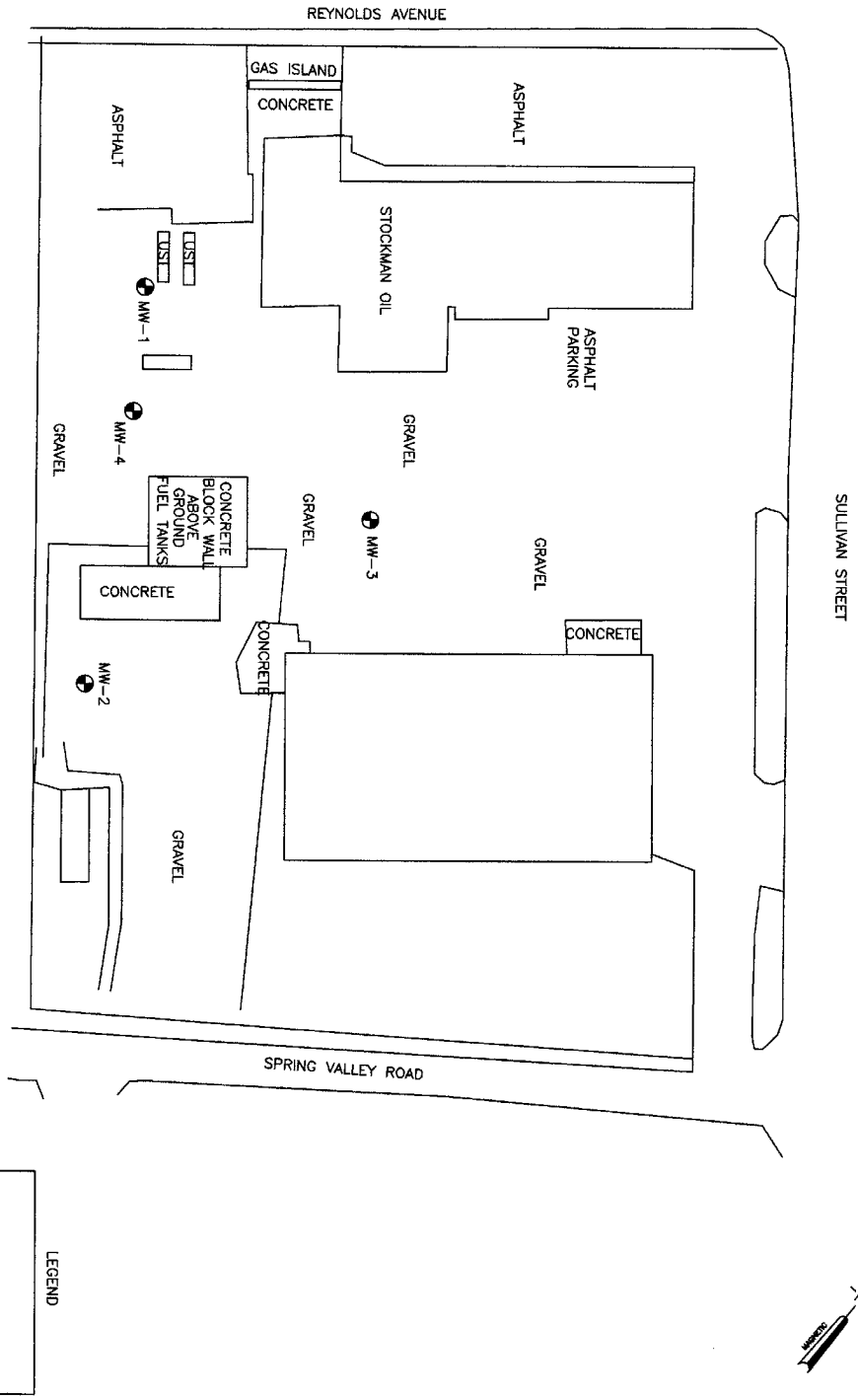
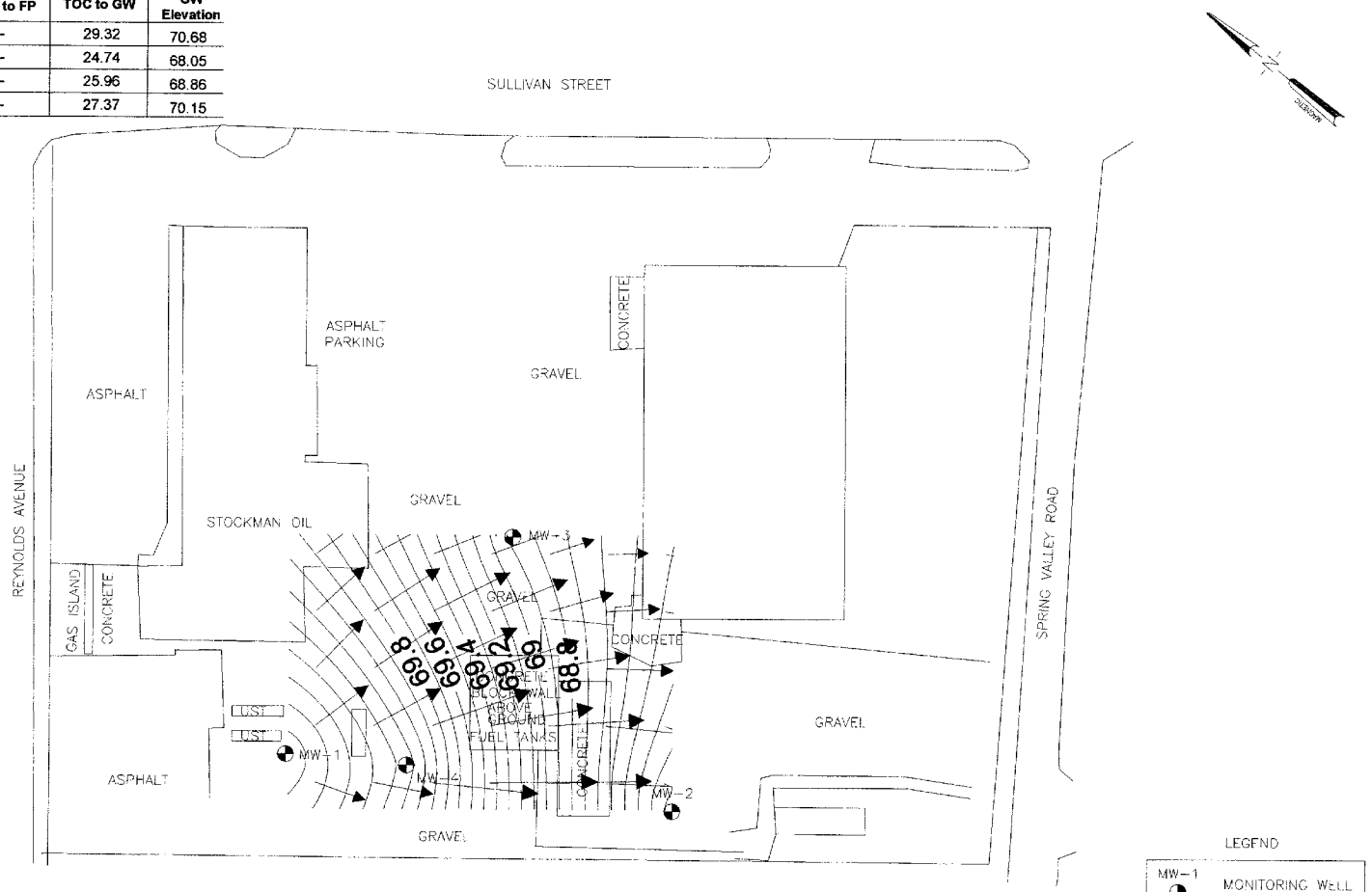


FIGURE 2
SITE MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

KLM Environmental, LLC
Phase I· Phase II· Underground Storage Tanks· Soil & Water Sampling· Well Installation

TABLE 1
Groundwater Data (feet)
Stockman Oil
Greenwood, SC

Monitoring Well	Date	TOC Elevation	Screened Interval	TOC to FP	TOC to GW	GW Elevation
MW-1	11/17/08	100.00	14.6-29.6	--	29.32	70.68
MW-2	11/17/08	92.79	20-30	--	24.74	68.05
MW-3	11/17/08	94.82	25-35	--	25.96	68.86
MW-4	11/17/08	97.52	25-35	--	27.37	70.15



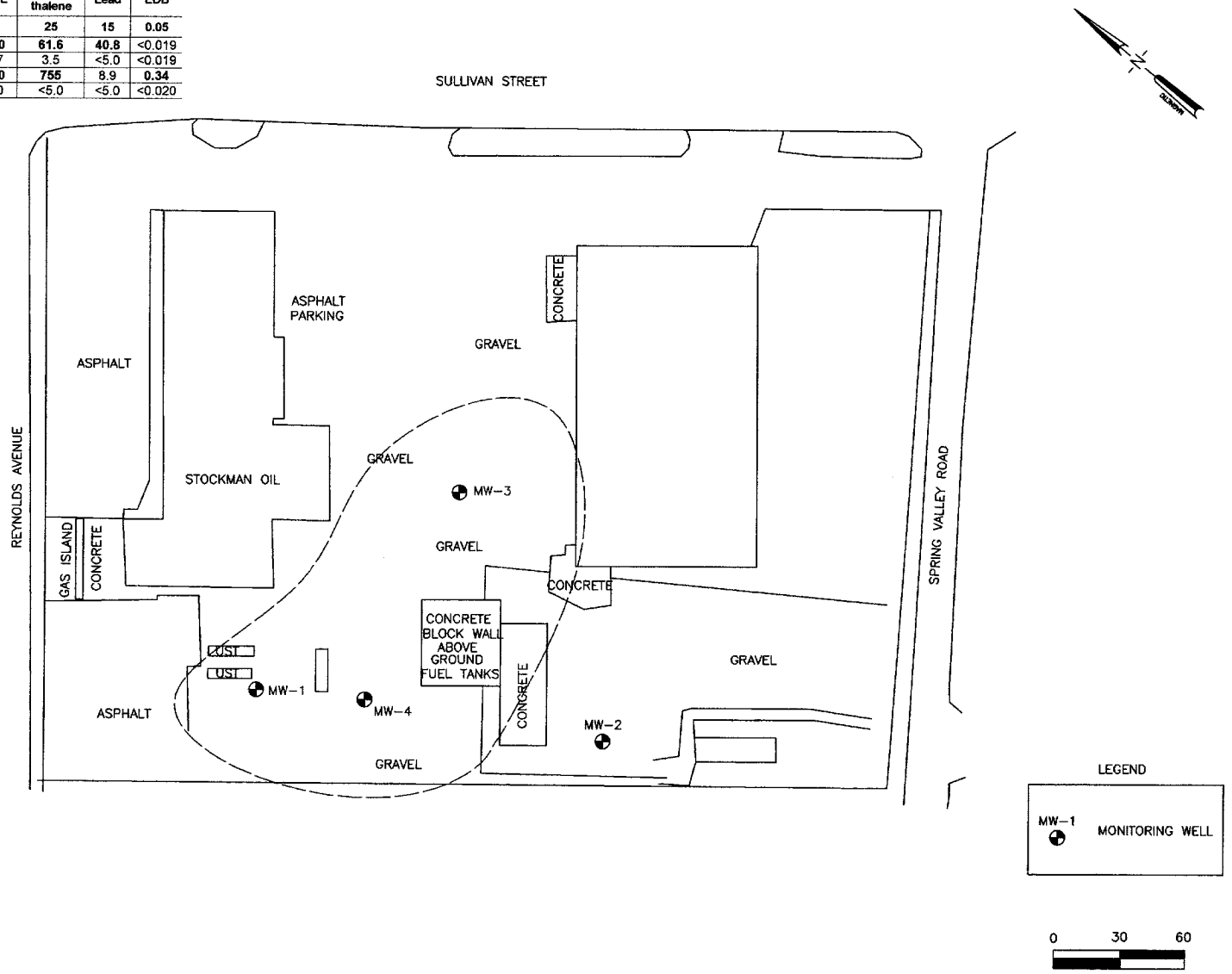
KLM Environmental, LLC

Phase I Phase II Underground Storage Tanks Soil & Water Sampling Well Installation

FIGURE 3
PIEZOMETRIC MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

TABLE 2
Summary of Analytical Data
Stockman Oil
Greenwood, SC

Well #	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Naph-thalene	Lead	EDB
RBSL	--	5	1000	700	10000	40	25	15	0.05
MW-1	11/17/08	132	32.0	28.0	466	1200	61.6	40.8	<0.019
MW-2	11/17/08	<5.0	<5.0	<5.0	<10.0	13.7	3.5	<5.0	<0.019
MW-3	11/17/08	24500	39400	2620	11400	6720	755	8.9	0.34
MW-4	11/17/08	5.7	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020



KLM Environmental, LLC

Phase I: Phase II: Underground Storage Tanks: Soil & Water Sampling: Well Installation

FIGURE 4
COC MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

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9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

November 26, 2008

Mr. Mark Keller
KLM Environmental
PO Box 2704
Goose Creek, SC 29445

RE: Project: STOCKMAN OIL
Pace Project No.: 9232573

Dear Mr. Keller:
Enclosed are the analytical results for sample(s) received by the laboratory on November 19, 2008. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Inorganic Wet Chemistry and Metals analyses were performed at our Pace Asheville laboratory and Organic testing was performed at our Pace Huntersville laboratory unless otherwise footnoted. All Microbiological analyses were performed at the laboratory where the samples were received.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Herring

kevin.herring@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: STOCKMAN OIL
Pace Project No.: 9232573

Charlotte Certification IDs
Connecticut Certification Number: PH-0104
Pennsylvania Certification Number: 68-00784
West Virginia Certification Number: 357
Virginia Certification Number: 00213
Tennessee Certification Number: 04010
South Carolina Drinking Water Cert. Number: 990060003
South Carolina Certification Number: 990060001
North Carolina Field Services Certification Number: 5342
North Carolina Wastewater Certification Number: 12
North Carolina Drinking Water Certification Number: 37706
Louisiana/LELAP Certification Number: 04034
Kentucky UST Certification Number: 84
New Jersey Certification Number: NC012
Florida/NELAP Certification Number: E87627

Asheville Certification IDs
Connecticut Certification Number: PH-0106
Massachusetts Certification Number: M-NC030
West Virginia Certification Number: 356
Virginia Certification Number: 00072
Tennessee Certification Number: 2980
South Carolina Bioassay Certification Number: 99030002
South Carolina Certification Number: 99030001
Pennsylvania Certification Number: 68-03578
North Carolina Bioassay Certification Number: 9
North Carolina Wastewater Certification Number: 40
North Carolina Drinking Water Certification Number: 37712
New Jersey Certification Number: NC011
Louisiana/LELAP Certification Number: 03095
Florida/NELAP Certification Number: E87648

Eden Certification IDs
Virginia Drinking Water Certification Number: 00424
North Carolina Wastewater Certification Number: 633
North Carolina Drinking Water Certification Number: 37738

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SAMPLE SUMMARY

Project: STOCKMAN OIL
Pace Project No.: 9232573

Lab ID	Sample ID	Matrix	Date Collected	Date Received
9232573001	MW-1	Water	11/17/08 12:00	11/19/08 09:30
9232573002	MW-2	Water	11/17/08 11:40	11/19/08 09:30
9232573003	MW-3	Water	11/17/08 11:30	11/19/08 09:30
9232573004	MW-4	Water	11/17/08 11:50	11/19/08 09:30

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SAMPLE ANALYTE COUNT

Project: STOCKMAN OIL
Pace Project No.: 9232573

Lab ID	Sample ID	Method	Analysts	Analytes Reported
9232573001	MW-1	EPA 6010	JMW	1
		EPA 8011	CAH	2
		EPA 8260	MCK	21
9232573002	MW-2	EPA 6010	JMW	1
		EPA 8011	CAH	2
		EPA 8260	MCK	21
9232573003	MW-3	EPA 6010	JMW	1
		EPA 8011	CAH	2
		EPA 8260	MCK	21
9232573004	MW-4	EPA 6010	JMW	1
		EPA 8011	CAH	2
		EPA 8260	MCK	21

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ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 9232573

Sample: MW-1 **Lab ID: 9232573001** Collected: 11/17/08 12:00 Received: 11/19/08 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	11/20/08 14:48	11/21/08 08:02	106-93-4	
1-Chloro-2-bromopropane (S)	85	%	60-140		1	11/20/08 14:48	11/21/08 08:02	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**40.8**	ug/L	5.0	4.0	1	11/20/08 14:35	11/21/08 21:57	7439-92-1	
8260 MSV Oxygenates	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	62.0	1		11/23/08 22:15	75-85-4	
tert-Amylmethyl ether	**43.0**	ug/L	10.0	4.5	1		11/23/08 22:15	994-05-8	
Benzene	**132**	ug/L	5.0	1.2	1		11/23/08 22:15	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	48.0	1		11/23/08 22:15	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	27.0	1		11/23/08 22:15	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	9.0	1		11/23/08 22:15	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.3	1		11/23/08 22:15	107-06-2	
Diisopropyl ether	**63.5**	ug/L	5.0	2.7	1		11/23/08 22:15	108-20-3	
Ethanol	ND	ug/L	200	170	1		11/23/08 22:15	64-17-5	
Ethylbenzene	**28.0**	ug/L	5.0	1.1	1		11/23/08 22:15	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	4.6	1		11/23/08 22:15	637-92-3	
Methyl-tert-butyl ether	**1200**	ug/L	100	40.0	20		11/24/08 19:21	1634-04-4	
Naphthalene	**61.6**	ug/L	5.0	2.9	1		11/23/08 22:15	91-20-3	
Toluene	**32.0**	ug/L	5.0	1.8	1		11/23/08 22:15	108-88-3	
Xylene (Total)	**466**	ug/L	200	54.0	20		11/24/08 19:21	1330-20-7	
m&p-Xylene	**271**	ug/L	10.0	2.7	1		11/23/08 22:15	1330-20-7	
o-Xylene	**196**	ug/L	100	34.0	20		11/24/08 19:21	95-47-6	
Dibromofluoromethane (S)	96	%	85-115		1		11/23/08 22:15	1868-53-7	
Toluene-d8 (S)	100	%	70-120		1		11/23/08 22:15	2037-26-5	
4-Bromofluorobenzene (S)	104	%	87-109		1		11/23/08 22:15	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%	79-120		1		11/23/08 22:15	17060-07-0	

Sample: MW-2 **Lab ID: 9232573002** Collected: 11/17/08 11:40 Received: 11/19/08 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	11/20/08 14:48	11/21/08 08:14	106-93-4	
1-Chloro-2-bromopropane (S)	78	%	60-140		1	11/20/08 14:48	11/21/08 08:14	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	ND	ug/L	5.0	4.0	1	11/20/08 14:35	11/21/08 22:11	7439-92-1	
8260 MSV Oxygenates	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	62.0	1		11/24/08 12:53	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	4.5	1		11/24/08 12:53	994-05-8	
Benzene	ND	ug/L	5.0	1.2	1		11/24/08 12:53	71-43-2	

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ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 9232573

Sample: MW-2 **Lab ID: 9232573002** Collected: 11/17/08 11:40 Received: 11/19/08 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Oxygenates	Analytical Method: EPA 8260								
3,3-Dimethyl-1-Butanol	ND	ug/L	100	48.0	1		11/24/08 12:53	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	27.0	1		11/24/08 12:53	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	9.0	1		11/24/08 12:53	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.3	1		11/24/08 12:53	107-06-2	
Diisopropyl ether	**4.5J**	ug/L	5.0	2.7	1		11/24/08 12:53	108-20-3	
Ethanol	ND	ug/L	200	170	1		11/24/08 12:53	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.1	1		11/24/08 12:53	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	4.6	1		11/24/08 12:53	637-92-3	
Methyl-tert-butyl ether	**13.7**	ug/L	5.0	2.0	1		11/24/08 12:53	1634-04-4	
Naphthalene	**3.5J**	ug/L	5.0	2.9	1		11/24/08 12:53	91-20-3	
Toluene	ND	ug/L	5.0	1.8	1		11/24/08 12:53	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		11/24/08 12:53	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	2.7	1		11/24/08 12:53	1330-20-7	
o-Xylene	ND	ug/L	5.0	1.7	1		11/24/08 12:53	95-47-6	
Dibromofluoromethane (S)	94	%	85-115		1		11/24/08 12:53	1868-53-7	
Toluene-d8 (S)	99	%	70-120		1		11/24/08 12:53	2037-26-5	
4-Bromofluorobenzene (S)	105	%	87-109		1		11/24/08 12:53	460-00-4	
1,2-Dichloroethane-d4 (S)	93	%	79-120		1		11/24/08 12:53	17060-07-0	

Sample: MW-3 **Lab ID: 9232573003** Collected: 11/17/08 11:30 Received: 11/19/08 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	**0.34**	ug/L	0.020	0.020	1	11/20/08 14:48	11/21/08 08:26	106-93-4	
1-Chloro-2-bromopropane (S)	66	%	60-140		1	11/20/08 14:48	11/21/08 08:26	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**8.9**	ug/L	5.0	4.0	1	11/20/08 14:35	11/21/08 22:14	7439-92-1	
8260 MSV Oxygenates	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**58300**	ug/L	2000	1240	20		11/25/08 08:04	75-85-4	
tert-Amylmethyl ether	**1530**	ug/L	200	90.0	20		11/25/08 08:04	994-05-8	
Benzene	**24500**	ug/L	5000	1200	1000		11/25/08 11:44	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	2000	960	20		11/25/08 08:04	624-95-3	
tert-Butyl Alcohol	ND	ug/L	2000	540	20		11/25/08 08:04	75-65-0	
tert-Butyl Formate	ND	ug/L	1000	180	20		11/25/08 08:04	762-75-4	
1,2-Dichloroethane	ND	ug/L	100	26.0	20		11/25/08 08:04	107-06-2	
Diisopropyl ether	**1650**	ug/L	100	54.0	20		11/25/08 08:04	108-20-3	
Ethanol	ND	ug/L	4000	3400	20		11/25/08 08:04	64-17-5	
Ethylbenzene	**2620**	ug/L	100	22.0	20		11/25/08 08:04	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	200	92.0	20		11/25/08 08:04	637-92-3	
Methyl-tert-butyl ether	**6720**	ug/L	5000	2000	1000		11/25/08 11:44	1634-04-4	
Naphthalene	**755**	ug/L	100	58.0	20		11/25/08 08:04	91-20-3	

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ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 9232573

Sample: MW-3 **Lab ID: 9232573003** Collected: 11/17/08 11:30 Received: 11/19/08 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Oxygenates	Analytical Method: EPA 8260								
Toluene	**39400**	ug/L	5000	1800	1000		11/25/08 11:44	108-88-3	
Xylene (Total)	**11400**	ug/L	10000	2700	1000		11/25/08 11:44	1330-20-7	
m&p-Xylene	**7530J**	ug/L	10000	2700	1000		11/25/08 11:44	1330-20-7	
o-Xylene	**3860J**	ug/L	5000	1700	1000		11/25/08 11:44	95-47-6	
Dibromofluoromethane (S)	94	%	85-115		20		11/25/08 08:04	1868-53-7	
Toluene-d8 (S)	99	%	70-120		20		11/25/08 08:04	2037-26-5	
4-Bromofluorobenzene (S)	107	%	87-109		20		11/25/08 08:04	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	79-120		20		11/25/08 08:04	17060-07-0	

Sample: MW-4 **Lab ID: 9232573004** Collected: 11/17/08 11:50 Received: 11/19/08 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	11/20/08 14:48	11/21/08 08:38	106-93-4	
1-Chloro-2-bromopropane (S)	82	%	60-140		1	11/20/08 14:48	11/21/08 08:38	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	ND	ug/L	5.0	4.0	1	11/20/08 14:35	11/21/08 22:17	7439-92-1	
8260 MSV Oxygenates	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	62.0	1		11/23/08 22:49	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	4.5	1		11/23/08 22:49	994-05-8	
Benzene	**5.7**	ug/L	5.0	1.2	1		11/23/08 22:49	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	48.0	1		11/23/08 22:49	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	27.0	1		11/23/08 22:49	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	9.0	1		11/23/08 22:49	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.3	1		11/23/08 22:49	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	2.7	1		11/23/08 22:49	108-20-3	
Ethanol	ND	ug/L	200	170	1		11/23/08 22:49	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.1	1		11/23/08 22:49	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	4.6	1		11/23/08 22:49	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	2.0	1		11/23/08 22:49	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.9	1		11/23/08 22:49	91-20-3	
Toluene	ND	ug/L	5.0	1.8	1		11/23/08 22:49	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		11/23/08 22:49	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	2.7	1		11/23/08 22:49	1330-20-7	
o-Xylene	ND	ug/L	5.0	1.7	1		11/23/08 22:49	95-47-6	
Dibromofluoromethane (S)	97	%	85-115		1		11/23/08 22:49	1868-53-7	
Toluene-d8 (S)	99	%	70-120		1		11/23/08 22:49	2037-26-5	
4-Bromofluorobenzene (S)	105	%	87-109		1		11/23/08 22:49	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%	79-120		1		11/23/08 22:49	17060-07-0	

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 9232573

QC Batch: OEXT/5096 Analysis Method: EPA 8011
QC Batch Method: EPA 8011 Analysis Description: GCS 8011 EDB DBCP
Associated Lab Samples: 9232573001, 9232573002, 9232573003, 9232573004

METHOD BLANK: 200945 Matrix: Water
Associated Lab Samples: 9232573001, 9232573002, 9232573003, 9232573004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.019	11/21/08 04:16	
1-Chloro-2-bromopropane (S)	%	92	60-140	11/21/08 04:16	

LABORATORY CONTROL SAMPLE & LCSD: 200946 200947

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.28	0.22	0.25	78	90	60-140	14	20	
1-Chloro-2-bromopropane (S)	%				87	81	60-140			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 200948 200949

Parameter	Units	9232665009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dibromoethane (EDB)	ug/L	ND	.28	.28	0.24	0.23	86	84	60-140	2	20	
1-Chloro-2-bromopropane (S)	%						84	83	60-140			

SAMPLE DUPLICATE: 200950

Parameter	Units	9232665010 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	ND		20	
1-Chloro-2-bromopropane (S)	%		82	3		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 9232573

QC Batch: MPRP/3414 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 9232573001, 9232573002, 9232573003, 9232573004

METHOD BLANK: 200982 Matrix: Water
Associated Lab Samples: 9232573001, 9232573002, 9232573003, 9232573004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead	ug/L	ND	5.0	11/21/08 21:47	

LABORATORY CONTROL SAMPLE: 200983

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	500	488	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 200985 200986

Parameter	Units	9232529005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead	ug/L	ND	500	500	480	499	96	100	75-125	4	20	

SAMPLE DUPLICATE: 200984

Parameter	Units	9232573001 Result	Dup Result	RPD	Max RPD	Qualifiers
Lead	ug/L	40.8	39.2	4	20	

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Pace Analytical Services, Inc.
2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 9232573

QC Batch: MSV/5347 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Oxygenates
Associated Lab Samples: 9232573001, 9232573002, 9232573004

METHOD BLANK: 202759 Matrix: Water
Associated Lab Samples: 9232573001, 9232573002, 9232573004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	11/23/08 19:23	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	11/23/08 19:23	
Benzene	ug/L	ND	5.0	11/23/08 19:23	
Diisopropyl ether	ug/L	ND	5.0	11/23/08 19:23	
Ethanol	ug/L	ND	200	11/23/08 19:23	
Ethyl-tert-butyl ether	ug/L	ND	10.0	11/23/08 19:23	
Ethylbenzene	ug/L	ND	5.0	11/23/08 19:23	
m&p-Xylene	ug/L	ND	10.0	11/23/08 19:23	
Methyl-tert-butyl ether	ug/L	ND	5.0	11/23/08 19:23	
Naphthalene	ug/L	ND	5.0	11/23/08 19:23	
o-Xylene	ug/L	ND	5.0	11/23/08 19:23	
tert-Amyl Alcohol	ug/L	ND	100	11/23/08 19:23	
tert-Amylmethyl ether	ug/L	ND	10.0	11/23/08 19:23	
tert-Butyl Alcohol	ug/L	ND	100	11/23/08 19:23	
tert-Butyl Formate	ug/L	ND	50.0	11/23/08 19:23	
Toluene	ug/L	ND	5.0	11/23/08 19:23	
Xylene (Total)	ug/L	ND	10.0	11/23/08 19:23	
1,2-Dichloroethane-d4 (S)	%	97	79-120	11/23/08 19:23	
4-Bromofluorobenzene (S)	%	103	87-109	11/23/08 19:23	
Dibromofluoromethane (S)	%	97	85-115	11/23/08 19:23	
Toluene-d8 (S)	%	98	70-120	11/23/08 19:23	

LABORATORY CONTROL SAMPLE: 202760

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	41.6	83	72-126	
3,3-Dimethyl-1-Butanol	ug/L	1000	714	71	55-148	
Benzene	ug/L	50	51.8	104	78-128	
Diisopropyl ether	ug/L	50	46.6	93	74-131	
Ethanol	ug/L	2000	1940	97	53-150	
Ethyl-tert-butyl ether	ug/L	100	89.7	90	77-136	
Ethylbenzene	ug/L	50	45.5	91	80-127	
m&p-Xylene	ug/L	100	91.1	91	82-127	
Methyl-tert-butyl ether	ug/L	50	48.5	97	71-130	
Naphthalene	ug/L	50	56.4	113	52-136	
o-Xylene	ug/L	50	44.3	89	83-124	
tert-Amyl Alcohol	ug/L	1000	729	73	50-150	
tert-Amylmethyl ether	ug/L	100	101	101	50-150	
tert-Butyl Alcohol	ug/L	500	388	78	50-150	
tert-Butyl Formate	ug/L	200	182	91	50-150	
Toluene	ug/L	50	50.9	102	76-126	

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 9232573

LABORATORY CONTROL SAMPLE: 202760

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Xylene (Total)	ug/L	150	135	90	83-125	
1,2-Dichloroethane-d4 (S)	%			99	79-120	
4-Bromofluorobenzene (S)	%			102	87-109	
Dibromofluoromethane (S)	%			94	85-115	
Toluene-d8 (S)	%			99	70-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 202762 202763

Parameter	Units	9232708021 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	ND	50	50	53.0	57.6	106	115	74-136	8	30	
Toluene	ug/L	ND	50	50	50.4	55.1	100	110	73-131	9	30	
1,2-Dichloroethane-d4 (S)	%						101	96	79-120			
4-Bromofluorobenzene (S)	%						104	102	87-109			
Dibromofluoromethane (S)	%						99	97	85-115			
Toluene-d8 (S)	%						98	99	70-120			

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 9232573

QC Batch: MSV/5356
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV Oxygenates
Associated Lab Samples: 9232573003

METHOD BLANK: 202982
Matrix: Water
Associated Lab Samples: 9232573003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	11/24/08 22:44	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	11/24/08 22:44	
Benzene	ug/L	ND	5.0	11/24/08 22:44	
Diisopropyl ether	ug/L	ND	5.0	11/24/08 22:44	
Ethanol	ug/L	ND	200	11/24/08 22:44	
Ethyl-tert-butyl ether	ug/L	ND	10.0	11/24/08 22:44	
Ethylbenzene	ug/L	ND	5.0	11/24/08 22:44	
m&p-Xylene	ug/L	ND	10.0	11/24/08 22:44	
Methyl-tert-butyl ether	ug/L	ND	5.0	11/24/08 22:44	
Naphthalene	ug/L	ND	5.0	11/24/08 22:44	
o-Xylene	ug/L	ND	5.0	11/24/08 22:44	
tert-Amyl Alcohol	ug/L	ND	100	11/24/08 22:44	
tert-Amylmethyl ether	ug/L	ND	10.0	11/24/08 22:44	
tert-Butyl Alcohol	ug/L	ND	100	11/24/08 22:44	
tert-Butyl Formate	ug/L	ND	50.0	11/24/08 22:44	
Toluene	ug/L	ND	5.0	11/24/08 22:44	
Xylene (Total)	ug/L	ND	10.0	11/24/08 22:44	
1,2-Dichloroethane-d4 (S)	%	96	79-120	11/24/08 22:44	
4-Bromofluorobenzene (S)	%	101	87-109	11/24/08 22:44	
Dibromofluoromethane (S)	%	96	85-115	11/24/08 22:44	
Toluene-d8 (S)	%	99	70-120	11/24/08 22:44	

LABORATORY CONTROL SAMPLE: 202983

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	42.4	85	72-126	
3,3-Dimethyl-1-Butanol	ug/L	1000	912	91	55-148	
Benzene	ug/L	50	51.7	103	78-128	
Diisopropyl ether	ug/L	50	47.8	96	74-131	
Ethanol	ug/L	2000	2370	119	53-150	
Ethyl-tert-butyl ether	ug/L	100	92.5	93	77-136	
Ethylbenzene	ug/L	50	45.0	90	80-127	
m&p-Xylene	ug/L	100	89.0	89	82-127	
Methyl-tert-butyl ether	ug/L	50	50.9	102	71-130	
Naphthalene	ug/L	50	57.1	114	52-136	
o-Xylene	ug/L	50	44.8	90	83-124	
tert-Amyl Alcohol	ug/L	1000	927	93	50-150	
tert-Amylmethyl ether	ug/L	100	104	104	50-150	
tert-Butyl Alcohol	ug/L	500	522	104	50-150	
tert-Butyl Formate	ug/L	200	131	66	50-150	
Toluene	ug/L	50	51.5	103	76-126	

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 9232573

LABORATORY CONTROL SAMPLE: 202983

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Xylene (Total)	ug/L	150	134	89	83-125	
1,2-Dichloroethane-d4 (S)	%			99	79-120	
4-Bromofluorobenzene (S)	%			105	87-109	
Dibromofluoromethane (S)	%			97	85-115	
Toluene-d8 (S)	%			98	70-120	

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QUALIFIERS

Project: STOCKMAN OIL
Pace Project No.: 9232573

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

1179557

Section A — Required Client Information:

Company: KLM Env.
Address: PoBox 2704
Goose Creek SC 29445
Email To: mkeller31@comcast.net
Phone: Fax:
Requested Due Date/TAT:

Section B — Required Project Information:

Report To: Mark Keller
Copy To:
Purchase Order No.:
Project Name: Stockman 0.1
Project Number:

Section C — Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #: 824-3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☒ UST ☐ RCRA ☐ OTHER

Site Location STATE: SC

Section D — Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE)

Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Tissue	TS
Other	OT

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	BTEX MN	12 DCA	Lead	EDB	8 Oxygenates	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-1	WT	G	11/17/08			1200												X	X	X	X	X		001
2	MW-2						1140												X	X	X	X	X		
3	MW-3						1130												X	X	X	X	X		003
4	MW-4	X	X	X			1150												X	X	X	X	X		004
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	[signature]	11/18/08	1700	[signature]	11/19/08	9:30	3.7	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% [illegible]

Pace Analytical

Sample Condition Upon Receipt

Client Name: KLM Project # 92325 73

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other_____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☒ yes ☐ no

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other_____

Thermometer Used T060 Type of Ice: (Wet) Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 3.7 Biological Tissue is Frozen: Yes No N/A

Temp should be above freezing to 6°C

Optional	
Proj. Due Date:	N/A
Proj. Name:	N/A

Date and Initials of person examining contents: GW 11/19

		Comments:
Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☒Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☒Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☒No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☒No ☐N/A	7.
Sufficient Volume:	☒Yes ☐No ☐N/A	8.
Correct Containers Used:	☐Yes ☐No ☐N/A	9.
-Pace Containers Used:	☐Yes ☐No ☐N/A	
Containers Intact:	☒Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC:	☒Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: WT		
All containers needing preservation have been checked.	☐Yes ☐No ☐N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☐N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes ☐No	Initial when completed
Samples checked for dechlorination:	☐Yes ☐No ☒N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☒No ☐N/A	15.
Trip Blank Present:	☐Yes ☐No ☒N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased): N/A		

Client Notification/ Resolution: Field Data Required? Y / N / N/A

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [signature] Date: 11/19/08

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 11/17/08
Field Personnel M. Bennett
General Weather Condition Sunny
Ambient Air Temperature 60 °F
Facility Name Stockman Oil Two, Inc. Site ID# 04736

Quality Assurance:

pH Meter Horiba — Conductivity Meter: Horiba
serial no. — serial no.
pH=4.0 Internal — Standard Internal
pH=7.0 Internal — Standard Internal
pH=10.0 Internal — Standard Internal

Chain of Custody

Relinquished by — Date/Time — Received by — Date/Time

Well # MW- 1

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 30 ft.
Depth to GW (DWG) 29.32 ft.

Length of Water Column (LWC=TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	—							
Time (military)	1157							
pH (s.u.)								
Specific Cond. (mS/cm)								
Turbidity (*)								
Dissolved Oxygen								
Water Temp (°C)								
Salinity								
OVA Readings								

Sample Time: 1200 Insuff. vol for Readings

server/admin/DHEC field data sht/doc

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 11/17/08
Field Personnel M. Bennett
General Weather Condition Sunny
Ambient Air Temperature 60 °F
Facility Name Stockman Oil Two, Inc. Site ID# 04736

Quality Assurance:

pH Meter Horiba — Conductivity Meter: Horiba
serial no. ____ — serial no. ____
pH=4.0 Internal — Standard Internal
pH=7.0 Internal — Standard Internal
pH=10.0 Internal — Standard Internal

Chain of Custody

Relinquished by Date/Time Received by Date/Time

Well # MW-2

Well Diameter(D) 2 Inches or ____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 20-30 ft.
Depth to GW (DWG) 24.71 ft.

Length of Water Column (LWC=TWD-DGW) ____ ft.

1 Csg. Volume (LWC*C)= ____ x .163 = ____ gals.
3 Csg. Volumes = 3 x ____ = ____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling ____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	—							
Time (military)	1137							
pH (s.u.)	4.68							
Specific Cond. (mS/cm)	.118							
Turbidity (*)	94							
Dissolved Oxygen	1.93							
Water Temp (°C)	19.4							
Salinity	0							
OVA Readings								

Sample Time: 1145

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 11/17/08
Field Personnel M. Bennett
General Weather Condition Sunny
Ambient Air Temperature 60 °F
Facility Name Stockman Oil Two, Inc. Site ID# 04736

Quality Assurance:

pH Meter Horiba — Conductivity Meter: Horiba
serial no. ____ — serial no. ____
pH=4.0 Internal — Standard Internal
pH=7.0 Internal — Standard Internal
pH=10.0 Internal — Standard Internal

Chain of Custody

Relinquished by Date/Time Received by Date/Time

Well # MW-3

Well Diameter(D) 2 Inches or ____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 25-35 ft.
Depth to GW (DWG) 25.96 ft.

Length of Water Column (LWC=TWD-DGW) ____ ft.

1 Csg. Volume (LWC*C)= ____ x .163 = ____ gals.
3 Csg. Volumes = 3 x ____ = ____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling ____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	—							
Time (military)	1128							
pH (s.u.)	6.06							
Specific Cond. (mS/cm)	.189							
Turbidity (*)	119							
Dissolved Oxygen	1.33							
Water Temp (°C)	18.4							
Salinity	0							
OVA Readings	—							

Sample Time: 1130

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 11/17/08
Field Personnel M. Bennett
General Weather Condition Sunny
Ambient Air Temperature 60 °F
Facility Name Stockman Oil Two, Inc. Site ID# 04736

Quality Assurance:

pH Meter Horiba — Conductivity Meter: Horiba
serial no. ____ — serial no. ____
pH=4.0 Internal — Standard Internal
pH=7.0 Internal — Standard Internal
pH=10.0 Internal — Standard Internal

Chain of Custody

Relinquished by Date/Time Received by Date/Time

Well # MW-4

Well Diameter(D) 2 Inches or ____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 25-35 ft.
Depth to GW (DWG) 27.37 ft.

Length of Water Column (LWC=TWD-DGW) ____ ft.

1 Csg. Volume (LWC*C)= ____ x .163 = ____ gals.
3 Csg. Volumes = 3 x ____ = ____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling ____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	9							
Time (military)	1148							
pH (s.u.)	4.30							
Specific Cond. (mS/cm)	.106							
Turbidity (*)	127							
Dissolved Oxygen	1.65							
Water Temp (°C)	19.4							
Salinity	0							
OVA Readings	—							

Sample Time: 1150

TABLE 1
Groundwater Data (feet)
Stockman Oil
Greenwood, SC

Monitoring Well	Date	TOC Elevation	Screened Interval	TOC to FP	TOC to GW	GW Elevation
MW-1	6/10/02	100.00	14.6-29.6	--	25.85	74.15
	11/17/08			--	29.32	70.68
MW-2	6/10/02	92.79	20-30	--	21.32	71.47
	11/17/08			--	24.74	68.05
MW-3	6/10/02	94.82	25-35	--	22.96	71.86
	11/17/08			--	25.96	68.86
MW-4	6/10/02	97.52	25-35	--	24.17	73.35
	11/17/08			--	27.37	70.15

D H E C

PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

JUL 2 6 2012

UST 26kcl DOCKETING

STOCKMAN OIL TWO INC
1138 REYNOLDS AVE
GREENWOOD SC 29646

Re: **AFVR Directive**
Stockman Oil Two Inc: 1138 Reynolds Ave, Greenwood, SC 29646
UST Permit #**04736**; Cost Agreement #**44166**
Release reported December 27, 1989
Aggressive Fluid Vapor Recovery Report received July 2, 2012
Greenwood County

To Whom It May Concern:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) has approved the following scope of work to remove free product:

Three 8-hour AFVR events:
- Event #1: RW-1
- Event #2: RW-2
- Event #3: RW-3 and RW-4
  (events may be conducted concurrently)

The AFVR events must be conducted and reported in accordance with the UST Quality Assurance Program Plan (QAPP) Revision 1.0 and in compliance with all applicable regulations. Cost Agreement #**44166** has been approved in the amount shown on the enclosed cost agreement form. The AFVR activities may proceed immediately upon receipt of this letter.

KLM Environmental LLC. may submit an invoice for direct billing from the State Underground Petroleum Environmental Response Bank (SUPERB) Account. Please note that all site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor.

An AFVR report and invoice are due within 90 days from the date of this letter. Interim reports and invoices may be submitted for this scope of work. If the final invoice is not submitted within 120 days from the date of this letter, monies allocated to pay this invoice will be uncommitted. This means that the invoice will not be processed for payment until all other committed funds are paid or monies become available.

Please note that Sections 44-2-110(4) and 44-2-130 of the SUPERB Statute state that no costs will be allowed unless prior approval from the Agency is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the Agency for the cost to be paid. The Agency reserves the authority to pay only for work properly performed and/or technically justified and will only pay rates in accordance with established criteria. Further, the Agency reserves the right to question and/or reject costs if deemed unreasonable and the right to audit project records at any time during the project or after completion of work.

The Agency grants pre-approval for transportation of virgin petroleum impacted groundwater from the referenced site to a permitted treatment facility. There can be no spillage or leakage in transport. All investigation derived waste (IDW) must be properly contained and labeled prior to disposal. IDW should not be stored on-site longer than ninety (90) days. A copy of the disposal manifest and/or acceptance letter from the receiving facility that clearly designates the quantity received must be included as an appendix to the report. If the concentrations of chemicals of concern, based on laboratory analysis, are below Risk Based Screening Levels (RBSLs), please contact the project manager for approval to dispose of soil and/or groundwater on site. The SUPERB Account will not reimburse for transportation or treatment of soil and/or groundwater with concentrations below RBSLs.

On all correspondence or inquiries regarding this project, please reference **UST Permit #04736.** If you have any questions, please feel free to contact me by phone at (803) 896-6649, by fax at (803) 896-6245, or email at ebingedj@dhec.sc.gov.

Sincerely,

David J. Ebinger, Project Manager
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

enc: Cost Agreement

cc: KLM Environmental LLC: PO Box 2704, Goose Creek, SC 29445 (w/ enc)
Technical File (w/ enc)

Approved Cost Agreement 44166

Facility: 04736 STOCKMAN OIL TWO INC
EBINGEDJ
PO Number:

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
04 MOB/DEMOB						
		A	EQUIPMENT	3.0000	575.00	1,725.00
		B	PERSONNEL	3.0000	290.00	870.00
17 DISPOSAL						
		A	WASTEWATER	4,000.0000	0.80	3,200.00
19 RPT/PROJECT MNGT & COORDINATIO						
		PCT	PERCENT	0.1500	15,635.00	2,345.25
23 EFR						
		A	8 HOUR EVENT	3.0000	3,000.00	9,000.00
		C	OFF GAS TREATMENT	24.0000	35.00	840.00
				Total Amount		17,980.25

KLM Environmental, LLC

Phase I· Phase II· Underground Storage Tanks·Soil & Water Sampling· Well Installation
PO Box 2704
Goose Creek, SC 29445
843-870-4285 Phone
843-797-1893 Fax

September 13, 2012

Mr. David Ebinger
SCDHEC – BUSTM
2600 Bull Street
Columbia, S.C. 29201

Re: Stockman Oil Two, Inc.: Permit # 04736 CA # 44166

Mr. Ebinger,

This letter, along with its attachments, is presented to document the results of the Aggressive Fluid Vapor Recovery (AFVR) events performed on September 5th and 6th, 2012. As the AFVR events could be done consecutively, KLM performed all three events in a two day period. All recovery wells were gauged for free phase product prior to and following each event. The drop tube was installed to a depth of six inches below the bottom of the product during the AFVR events. Results from each event are provided on the attached tables. A total of 2.0 gallons of petroleum product was recovered during the AFVR events. Emissions calculations were performed for each event and a total of 8.09 gallons of petroleum product were recovered as vapor. Activated carbon was utilized as the method of off gas treatment throughout the events. KLM recommends continued AFVR events as soon as possible at the site in order to remove the free phase petroleum product.

All of the remaining information requested in the AFVR letter is provided as an attachment. It has been a pleasure working with you on this project. Please call me directly if you have any questions at 843-870-4285.

Sincerely,

KLM Environmental, LLC

Mark L. Keller, PG
President

Enclosures(11): AFVR information tables; Emissions Calculations; Magnehelic Gauge Tables; Waste Manifest; Site Map

cc: Chip Stockman, Stockman Oil Two, Inc. (1138 Reynolds Ave., Greenwood, SC)

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 9-5-12
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Matt Roseberry	General Weather Conditions: Cloudy
Ambient Air Temperature: 82 Fahrenheit	Estimated Gallons of Product Removed:	Initial Product Thickness: RW-1 = 2.94
Final Product Thickness: RW-1 = 0.00	AFVR Start Time: 12:00	AFVR End Time: 20:00

Time(Readings Every 30 Minutes)	Recovery Rate				Air Emission Conc. Measurements in ppm	Air Flow Rate shown in Cubic Feet per Minute
	Vacuum Inches of Hg	Temp Degrees F	Stack Vel. mph	Humidity		
12:00	-20	91.5	7.1	50.7	525.6	51.17
12:30	-20	99.1	7.3	47.3	1297	52.61
13:00	-21	108.6	7.3	45.9	1351	52.61
13:30	-21	115.4	7.4	45.7	1489	53.33
14:00	-21	121.6	7.2	41.2	1656	51.89
14:30	-21	128.7	7.5	40.3	1708	54.05
15:00	-21	135.6	7.1	40.1	1841	51.17
15:30	-21	140.1	7.3	38.6	2000	52.61
16:00	-21	143.0	6.4	36.2	1139	46.12
16:30	-21	144.4	5.8	31.5	1217	41.80
17:00	-21	149.6	6.1	28.7	1233	43.96
17:30	-21	152.3	6.3	26.1	1262	45.40
18:00	-21	156.7	6.0	24.3	1161	43.24
18:30	-21	160.7	6.4	23.7	1049	46.12
19:00	-21	164.8	6.2	20.1	1021	44.68
19:30	-21	170.3	6.8	17.6	1010	49.01
20:00	-21	175.9	7.1	16.4	998.8	51.17

	Start	End
RW-1	31.89 – 34.83	35.89

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 9/5/12
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Matt Roseberry	General Weather Conditions: Cloudy

	Inches of Hg on Extraction Well**			**Inches of Hg on surrounding wells**			
Time	**RW-1**	**MW-**	**MW-**	**MW-6**	**RW-2**	**MW-**	**MW-**
12:00	-10			0	0		
12:30	-10			0	0		
13:00	-9			0	0		
13:30	-10			0	0		
14:00	-10			0	0		
14:30	-10			0	0		
15:00	-10			0	0		
15:30	-10			0	0		
16:00	-10			0	0		
16:30	-10			0	0		
17:00	-10			0	0		
17:30	-10			0	0		
18:00	-10			0	0		
18:30	-10			0	0		
19:00	-10			0	0		
19:30	-10			0	0		
20:00	-10			0	0		

Equations to determine Pollutant Mass Removal rate as gasoline (PMRg):

9/5/2012

$PPM_w = PPM_{measured}$ = 1291.670588

$PPM_d = PPM_w / (1-Bws)$ = 1378.591408

$PPM_c = (PPM_d)(K)$ = 5514.365631

$C_{c:m} = PPM_c(M_c/K_3)$ = 2751.455389

$C_c = C_{c:m}(62.43x10^{-9})$ = 0.000171773

$PMR_c = C_c(Qstd)(60)$ = 1.773851959

$PMR_g = (PMR_c)(M_g/M_{cg})$ = **2.052884852 lbs of emissions per hour**

2.62769261 Gallons of emissions per 8 hours

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 9-6-12
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Matt Roseberry	General Weather Conditions: Cloudy
Ambient Air Temperature: 80 Fahrenheit	Estimated Gallons of Product Removed:	Initial Product Thickness: RW-3 = 1.96 RW-4 = 2.55
Final Product Thickness: RW-3 = 0.00 RW-4 = 0.00	AFVR Start Time: 08:00	AFVR End Time: 16:00

Time(Readings Every 30 Minutes)	Recovery Rate				Air Emission Conc. Measurements in ppm	Air Flow Rate shown in Cubic Feet per Minute
	Vacuum Inches of Hg	Temp Degrees F	Stack Vel. mph	Humidity		
08:00	-21	100.6	4.6	49.6	541.6	33.15
08:30	-21	115.3	4.8	47.1	568.7	34.59
09:00	-21	120.1	5.1	43.6	601.2	36.76
09:30	-21	124.6	5.3	40.1	744.2	38.20
10:00	-21	131.3	4.9	36.8	810.1	35.31
10:30	-21	138.7	5.0	33.2	968.7	36.03
11:00	-21	142.1	4.8	30.1	1035	34.59
11:30	-21	144.6	4.8	28.6	1179	34.59
12:00	-21	150.0	4.9	26.2	1288	35.31
12:30	-21	153.6	5.1	22.3	1460	36.76
13:00	-21	157.2	5.0	20.1	1971	36.03
13:30	-21	160.4	5.1	18.9	2011	36.76
14:00	-21	164.1	4.9	14.3	2541	35.31
14:30	-21	166.5	4.8	13.2	3115	34.59
15:00	-21	169.7	4.7	12.1	3018	33.87
15:30	-21	171.3	4.9	11.8	2917	35.31
16:00	-21	177.4	5.2	10.2	1951	37.48

	Start	End
RW-3	28.83 – 30.79	31.42
RW-4	29.01 – 31.56	31.85

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 9/6/12
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Matt Roseberry	General Weather Conditions: Cloudy

	Inches of Hg on Extraction Well**			**Inches of Hg on surrounding wells**			
Time	**RW-3**	**RW-4**	**MW-**	**MW-1**	**MW-4**	**MW-**	**MW-**
08:00	-10	-11		0	0		
08:30	-10	-11		0	0		
09:00	-11	-11		0	0		
09:30	-11	-11		0	0		
10:00	-11	-11		0	0		
10:30	-11	-11		0	0		
11:00	-10	-11		0	0		
11:30	-10	-11		0	0		
12:00	-10	-11		0	0		
12:30	-10	-11		0	0		
13:00	-11	-11		0	0		
13:30	-11	-11		0	0		
14:00	-11	-11		0	0		
14:30	-11	-11		0	0		
15:00	-11	-11		0	0		
15:30	-11	-11		0	0		
16:00	-11	-11		0	0		

Equations to determine Pollutant Mass Removal rate as gasoline (PMRg):

9/6/2012

$PPM_w = PPM_{measured} =$	1571.794118
$PPM_d = PPM_w / (1-Bws) =$	1677.565383
$PPM_c = (PPM_d)(K) =$	6710.261533
$C_{c:m} = PPM_c(M_c/K_3) =$	3348.161238
$C_c = C_{c:m}(62.43x10^{-9}) =$	0.000209026
$PMR_c = C_c(Qstd)(60) =$	1.551014357
$PMR_g = (PMR_c)(M_g/M_{cg}) =$	**1.794994143 lbs of emissions per hour**
	2.297592503 Gallons of emissions per 8 hours

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 9-6-12
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Matt Roseberry	General Weather Conditions: Clear
Ambient Air Temperature: 80 Fahrenheit	Estimated Gallons of Product Removed:	Initial Product Thickness: RW-2 = 7.29
Final Product Thickness: RW-2 = 0.00	AFVR Start Time: 00:00	AFVR End Time: 08:00

Time(Readings Every 30 Minutes)	Recovery Rate				Air Emission Conc. Measurements in ppm	Air Flow Rate shown in Cubic Feet per Minute
	Vacuum Inches of Hg	Temp Degrees F	Stack Vel. mph	Humidity		
00:00	-20	90.6	5.1	58.1	468.7	36.76
00:30	-20	99.9	5.6	56.7	669.4	40.36
01:00	-20	106.3	5.4	53.7	811.1	38.92
01:30	-20	112.9	6.2	50.2	954.6	44.68
02:00	-20	120.4	6.1	47.6	1079	43.96
02:30	-20	129.3	6.1	43.1	1254	43.96
03:00	-20	134.1	5.9	38.6	1288	42.52
03:30	-20	136.3	5.7	33.2	1370	41.08
04:00	-20	140.8	6.1	29.6	1386	43.96
04:30	-20	146.8	6.3	25.4	1490	45.40
05:00	-20	152.7	6.5	22.1	1860	46.85
05:30	-20	160.0	6.0	20.9	2011	43.24
06:00	-20	168.1	6.2	17.6	2069	44.68
06:30	-20	170.2	6.1	15.3	2644	43.96
07:00	-20	174.3	6.4	11.4	3160	46.12
07:30	-20	175.9	5.8	10.3	3580	41.80
08:00	-20	179.5	5.9	10.0	4115	42.52

	Start	End
RW-2	31.21 – 38.50	38.62

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 9/6/12
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Matt Roseberry	General Weather Conditions: Clear

	Inches of Hg on Extraction Well**			Inches of Hg on surrounding wells			
Time	**RW-2**	**MW-**	**MW-**	**RW-1**	**MW-5**	**MW-**	**MW-**
00:00	-9			0	0		
00:30	-10			0	0		
01:00	-10			0	0		
01:30	-9			0	0		
02:00	-9			0	0		
02:30	-9			0	0		
03:00	-9			0	0		
03:30	-9			0	0		
04:00	-10			0	0		
04:30	-9			0	0		
05:00	-9			0	0		
05:30	-9			0	0		
06:00	-9			0	0		
06:30	-9			0	0		
07:00	-9			0	0		
07:30	-9			0	0		
08:00	-9			0	0		

Equations to determine Pollutant Mass Removal rate as gasoline (PMRg):

9/6/2012

$PPM_w = PPM_{measured} =$	1777.047059
$PPM_d = PPM_w / (1-Bws) =$	1896.630479
$PPM_c = (PPM_d)(K) =$	7586.521916
$C_{c:m} = PPM_c(M_c/K_3) =$	3785.381313
$C_c = C_{c:m}(62.43x10^{-9}) =$	0.000236321
$PMR_c = C_c(Qstd)(60) =$	2.137855151
$PMR_g = (PMR_c)(M_g/M_{cg}) =$	**2.474146972 lbs of emissions per hour**
	3.166908124 Gallons of emissions per 8 hours

US Water Recovery

8003

Non-Hazardous Wastewater Manifest Number:

1. Generator's EPA ID# (if applicable): Waste ID Number:

2. Generator's Name and Mailing Address: Phone ( )
Stockman Oil
P O#:

3. Agent of Generator and Mailing Address: Phone ( )
KLM Env.
P O#:

4. Transporter Company Name: Phone ( )
Vacuum Recovery Tech.

Truck & Trailer License Number:

5. Transporter U.S. EPA ID#:

6. Facility Name and Site Address: Phone: (843) 797-8674
U S Water Recovery
435 Old Mt. Holly Rd. Fax: (843) 797-2126
Mt. Holly, SC 29445

Mailing Address: Phone: (843) 797-3111
U S Water Recovery
210 S. Cedar Street Fax: (843) 797-1884
Summerville, SC 29483

7. Facility U.S. EPA ID#:

Start Level: End Level: Total Gallons: Tank Number:

8. U.S. DOT Description	Container No.	Container Type	Unit	Quantity
a. Non-Hazardous, non-regulated waste water				706

9. Generator's Certification: I hereby declare that the contents of this consignment are not hazardous by definition or listing and are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and the laws of the State of South Carolina. I further certify that the contents of this consignment are as represented by the description contained on the Waste Profile Form previously submitted to and approved by the Designated Facility.

Printed/Typed Name: Jason Boots Signature: Jason Boots Date: 9-11-12

10. Transporter Acknowledgement of Receipt of Materials

Printed/Typed Name: Matthew Foscheny Signature: Matthew Foscheny Date: 9-11-12

11. Discrepancy Indication space:

12. Facility Owner or Operator: Certification of Receipt of Materials

Printed/Typed Name: David Ward Signature: David Ward Date: 9-11-12

White - Facility Yellow - Office Pink - Transporter Blue - Generator

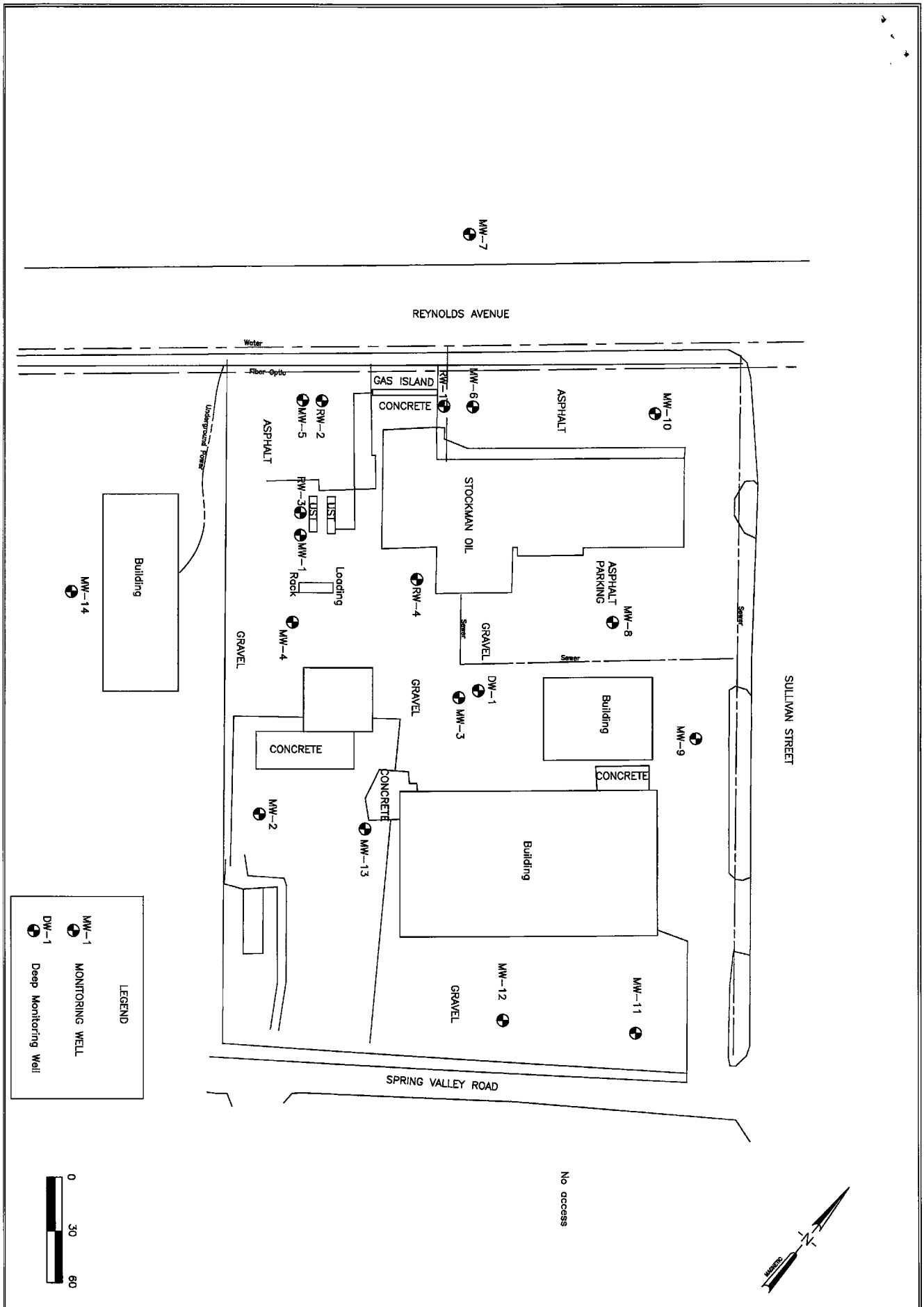

FIGURE 2
SITE MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

KLM Environmental, LLC
Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation

D H E C

PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

STOCKMAN OIL TWO INC
1138 REYNOLDS AVE
GREENWOOD SC 29646

OCT 1 1 2012

Re: **AFVR Directive**
Stockman Oil Two Inc: 1138 Reynolds Ave, Greenwood, SC 29646
UST Permit #**04736**; Cost Agreement #**44607**
Release reported December 27, 1989
Aggressive Fluid Vapor Recovery Report received September 17, 2012
Greenwood County

To Whom It May Concern,

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) has approved the following scope of work to remove free product:

Three 8-hour AFVR events:
- Event #1: RW-1
- Event #2: RW-2
- Event #3: RW-3 and RW-4

(events may occur concurrently)

The AFVR events must be conducted and reported in accordance with the UST Quality Assurance Program Plan (QAPP) Revision 1.0 and in compliance with all applicable regulations. Cost Agreement #**44607** has been approved in the amount shown on the enclosed cost agreement form. The AFVR activities may proceed immediately upon receipt of this letter.

KLM Environmental LLC. may submit an invoice for direct billing from the State Underground Petroleum Environmental Response Bank (SUPERB) Account. Please note that all site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor.

An AFVR report and invoice are due within 90 days from the date of this letter. Interim reports and invoices may be submitted for this scope of work. If the final invoice is not submitted within 120 days from the date of this letter, monies allocated to pay this invoice will be uncommitted. This means that the invoice will not be processed for payment until all other committed funds are paid or monies become available.

Please note that Sections 44-2-110(4) and 44-2-130 of the SUPERB Statute state that no costs will be allowed unless prior approval from the Agency is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the Agency for the cost to be paid. The Agency reserves the authority to pay only for work properly performed and/or technically justified and will only pay rates in accordance with established criteria. Further, the Agency reserves the right to question and/or reject costs if deemed unreasonable and the right to audit project records at any time during the project or after completion of work.

The Agency grants pre-approval for transportation of virgin petroleum impacted groundwater from the referenced site to a permitted treatment facility. There can be no spillage or leakage in transport. All investigation derived waste (IDW) must be properly contained and labeled prior to disposal. IDW should not be stored on-site longer than ninety (90) days. A copy of the disposal manifest and/or acceptance letter from the receiving facility that clearly designates the quantity received must be included as an appendix to the report. If the concentrations of chemicals of concern, based on laboratory analysis, are below Risk Based Screening Levels (RBSLs), please contact the project manager for approval to dispose of soil and/or groundwater on site. The SUPERB Account will not reimburse for transportation or treatment of soil and/or groundwater with concentrations below RBSLs.

On all correspondence or inquiries regarding this project, please reference **UST Permit #04736.** If you have any questions, please feel free to contact me by phone at (803) 896-6649, by fax at (803) 896-6245, or email at ebingedj@dhec.sc.gov.

Sincerely,

David J. Ebinger, Project Manager
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

enc: Cost Agreement

cc: KLM Environmental LLC: PO Box 2704, Goose Creek, SC 29445 (w/ enc)
Technical File (w/ enc)

Approved Cost Agreement 44607

Facility: 04736 STOCKMAN OIL TWO INC

EBINGEDJ

PO Number:

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
04 MOB/DEMOB						
		A	EQUIPMENT	3.0000	575.00	1,725.00
		B	PERSONNEL	3.0000	290.00	870.00
17 DISPOSAL						
		A	WASTEWATER	2,400.0000	0.80	1,920.00
19 RPT/PROJECT MNGT & COORDINATIO						
		PCT	PERCENT	0.1500	14,355.00	2,153.25
23 EFR						
		A	8 HOUR EVENT	3.0000	3,000.00	9,000.00
		C	OFF GAS TREATMENT	24.0000	35.00	840.00
				Total Amount		16,508.25

KLM Environmental, LLC

Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation
PO Box 2704
Goose Creek, SC 29445
843-870-4285 Phone
843-797-1893 Fax

UST
OCT 29 2012
PROGRAM

October 26, 2012

UST
23 tech
DOCKETING

Mr. David Ebinger
SCDHEC – BUSTM
2600 Bull Street
Columbia, S.C. 29201

Re: Stockman Oil Two, Inc.: Permit # 04736 CA # 44607

Mr. Ebinger,

This letter, along with its attachments, is presented to document the results of the Aggressive Fluid Vapor Recovery (AFVR) events performed on October 22nd and 23rd, 2012. As the AFVR events could be done consecutively, KLM performed all three events in a two day period. All recovery wells were gauged for free phase product prior to and following each event. The drop tube was installed to a depth of six inches below the bottom of the product during the AFVR events. Results from each event are provided on the attached tables. An estimated total of 13.0 gallons of petroleum product was recovered during the AFVR events. Emissions calculations were performed for each event and a total of 53.4 gallons of petroleum product were recovered as vapor. Activated carbon was utilized as the method of off gas treatment throughout the events. KLM recommends continued AFVR events as these events have recovered the most product compared to any other previous events with outstanding recovery rates.

All of the remaining information requested in the AFVR letter is provided as an attachment. It has been a pleasure working with you on this project. Please call me directly if you have any questions at 843-870-4285.

Sincerely,

KLM Environmental, LLC

Mark L. Keller, PG
President

Enclosures(11): AFVR information tables; Emissions Calculations; Magnehelic Gauge Tables; Waste Manifest; Site Map

cc: Chip Stockman, Stockman Oil Two, Inc. (1138 Reynolds Ave., Greenwood, SC)

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 10-22-12
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Matt Roseberry	General Weather Conditions: Sunny
Ambient Air Temperature: 80 Fahrenheit	Estimated Gallons of Product Removed: 3 gallons	Initial Product Thickness: RW-1= 2.73
Final Product Thickness: RW-1= 0.00	AFVR Start Time: 14:00	AFVR End Time: 22:00

Time(Readings Every 30 Minutes)	Recovery Rate				Air Emission Conc. Measurements in ppm	Air Flow Rate shown in Cubic Feet per Minute
	Vacuum Inches of Hg	Temp Degrees F	Stack Vel. mph	Humidity		
14:00	-20	88.8	12.6	43.4	253.7	90.81
14:30	-20	92.7	13.4	40.1	410.9	96.57
15:00	-20	97.9	13.3	39.7	369.7	95.85
15:30	-20	108.6	14.1	36.8	489.8	101.62
16:00	-20	117.4	13.8	34.2	644.4	99.46
16:30	-20	123.6	13.6	31.7	715.4	98.01
17:00	-20	134.7	14.2	30.3	848.8	102.34
17:30	-21	139.0	12.6	29.7	11930	90.81
18:00	-21	141.3	13.0	29.1	13608	93.69
18:30	-21	144.7	13.1	27.3	6722	94.41
19:00	-21	147.3	12.6	27.2	10894	90.81
19:30	-21	150.2	13.7	25.4	14171	98.74
20:00	-21	153.6	13.4	23.8	12098	96.57
20:30	-21	160.7	14.3	23.0	7245	103.06
21:00	-21	161.3	13.7	17.8	13623	98.74
21:30	-21	161.7	13.3	16.5	12726	95.85
22:00	-21	162.3	13.9	13.3	8958	100.18

	Start	End
RW-1	32.12 – 34.85	35.65

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 10/22/12
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Matt Roseberry	General Weather Conditions: Sunny

	Inches of Hg on Extraction Well**			Inches of Hg on surrounding wells			
Time	**RW-1**	**MW-**	**MW-**	**MW-6**	**MW-10**	**MW-**	**MW-**
14:00	-20			0	0		
14:30	-20			0	0		
15:00	-20			0	0		
15:30	-20			0	0		
16:00	-20			0	0		
16:30	-20			0	0		
17:00	-20			0	0		
17:30	-21			0	0		
18:00	-21			0	0		
18:30	-23			0	0		
19:00	-23			0	0		
19:30	-21			0	0		
20:00	-21			0	0		
20:30	-21			0	0		
21:00	-23			0	0		
21:30	-23			0	0		
22:00	-23			0	0		

Equations to determine Pollutant Mass Removal rate as gasoline (PMRg):

10/22/2012

$PPM_w = PPM_{measured} =$	6806.335294
$PPM_d = PPM_w / (1-Bws) =$	7264.356284
$PPM_c = (PPM_d)(K) =$	29057.42514
$C_{c:m} = PPM_c(M_c/K_3) =$	14498.53244
$C_c = C_{c:m}(62.43x10^{-9}) =$	0.000905143
$PMR_c = C_c(Qstd)(60) =$	18.66510373
$PMR_g = (PMR_c)(M_g/M_{cg}) =$	**21.60118747 lbs of emissions per hour**
	27.64951996 Gallons of emissions per 8 hours

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 10-23-12
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Matt Roseberry	General Weather Conditions: Clear
Ambient Air Temperature: 65 Fahrenheit	Estimated Gallons of Product Removed: 6 gallons	Initial Product Thickness: RW-2 = 7.23
Final Product Thickness: RW-2= 1.66	AFVR Start Time: 00:00	AFVR End Time: 08:00

Time(Readings Every 30 Minutes)	Recovery Rate Vacuum Inches of Hg	Temp Degrees F	Stack Vel. mph	Humidity	Air Emission Conc. Measurements in ppm	Air Flow Rate shown in Cubic Feet per Minute
00:00	-20	74.6	11.1	48.6	761.3	80.00
00:30	-20	90.8	11.9	46.1	884.7	85.76
01:00	-20	98.9	12.2	44.3	986.1	87.93
01:30	-21	101.3	12.4	41.2	1181	89.37
02:00	-21	110.6	12.1	40.1	1379	87.20
02:30	-21	118.9	11.7	37.6	1987	84.32
03:00	-21	122.6	11.9	35.4	2476	85.76
03:30	-21	126.8	11.7	30.1	6481	84.32
04:00	-21	130.4	12.3	28.6	7894	88.65
04:30	-21	133.6	12.6	26.1	8466	90.81
05:00	-21	134.1	13.3	24.1	9174	95.85
05:30	-21	134.8	13.1	20.7	9861	94.41
06:00	-21	136.9	12.8	18.6	11041	92.25
06:30	-21	138.7	12.6	16.4	11888	90.81
07:00	-21	140.1	12.9	15.7	9768	92.97
07:30	-21	140.3	13.1	14.3	5476	94.41
08:00	-21	141.0	12.8	13.1	6381	92.25

	Start	End
RW-2	31.62 – 38.85	35.45 - 37.11

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 10/23/12
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Matt Roseberry	General Weather Conditions: Clear

	Inches of Hg on Extraction Well**			Inches of Hg on surrounding wells			
Time	**RW-2**	**MW-**	**MW-**	**MW-5**	**MW-6**	**MW-**	**MW-**
00:00	-20			0	0		
00:30	-22			0	0		
01:00	-22			0	0		
01:30	-22			0	0		
02:00	-22			0	0		
02:30	-23			0	0		
03:00	-23			0	0		
03:30	-22			0	0		
04:00	-22			0	0		
04:30	-22			0	0		
05:00	-22			0	0		
05:30	-22			0	0		
06:00	-22			0	0		
06:30	-22			0	0		
07:00	-22			0	0		
07:30	-22			0	0		
08:00	-22			0	0		

Equations to determine Pollutant Mass Removal rate as gasoline (PMRg):

10/23/2012

$PPM_w = PPM_{measured}$ = 5652.064706

$PPM_d = PPM_w / (1-Bws)$ = 6032.41098

$PPM_c = (PPM_d)(K)$ = 24129.64392

$C_{c:m} = PPM_c(M_c/K_3)$ = 12039.76001

$C_c = C_{c:m}(62.43x10^{-9})$ = 0.000751642

$PMR_c = C_c(Qstd)(60)$ = 14.57744136

$PMR_g = (PMR_c)(M_g/M_{cg})$ = **16.87052202 lbs of emissions per hour**

21.59426819 Gallons of emissions per 8 hours

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 10-23-12
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Matt Roseberry	General Weather Conditions: Sunny
Ambient Air Temperature: 80 Fahrenheit	Estimated Gallons of Product Removed: 4 gallons	Initial Product Thickness: RW-3 = 2.13 RW-4 = 0.59
Final Product Thickness: RW-3 = 0.00 RW-4 = 0.00	AFVR Start Time: 08:00	AFVR End Time: 16:00

Time(Readings Every 30 Minutes)	Recovery Rate				Air Emission Conc. Measurements in ppm	Air Flow Rate shown in Cubic Feet per Minute
	Vacuum Inches of Hg	Temp Degrees F	Stack Vel. mph	Humidity		
08:00	-20	81.8	10.1	47.1	335.1	72.79
08:30	-20	92.7	10.7	44.4	500.4	77.11
09:00	-21	99.2	10.4	41.4	718.6	74.95
09:30	-21	108.5	11.1	38.4	1041	80.00
10:00	-21	116.7	10.8	36.9	1076	77.84
10:30	-21	121.3	10.9	35.4	1107	78.56
11:00	-21	124.7	11.2	33.1	1181	80.72
11:30	-21	130.6	11.1	31.4	1242	80.00
12:00	-21	136.7	11.1	29.9	1264	80.00
12:30	-21	140.3	11.2	29.1	1288	80.72
13:00	-21	144.6	10.8	27.6	1466	77.84
13:30	-21	148.1	11.3	25.1	1871	81.44
14:00	-21	151.3	11.1	24.8	1886	80.00
14:30	-21	162.4	10.9	21.2	2142	78.56
15:00	-21	164.3	11.1	18.7	1976	80.00
15:30	-21	164.5	11.1	15.3	1224	80.00
16:00	-21	166.1	11.3	12.2	1014	81.44

	Start	End
RW-3	29.02 – 31.15	32.20
RW-4	29.53 – 30.12	31.01

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 10/23/12
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Matt Roseberry	General Weather Conditions: Sunny

	Inches of Hg on Extraction Well**			**Inches of Hg on surrounding wells**			
Time	**RW-3**	**RW-4**	**MW-**	**MW-1**	**MW-4**	**MW-5**	**MW-**
08:00	-22	-23		0	0	0	
08:30	-22	-23		0	0	0	
09:00	-22	-23		0	0	0	
09:30	-22	-23		0	0	0	
10:00	-22	-23		0	0	0	
10:30	-22	-23		0	0	0	
11:00	-22	-23		0	0	0	
11:30	-22	-23		0	0	0	
12:00	-22	-23		0	0	0	
12:30	-22	-23		0	0	0	
13:00	-22	-23		0	0	0	
13:30	-22	-23		0	0	0	
14:00	-22	-23		0	0	0	
14:30	-22	-23		0	0	0	
15:00	-22	-23		0	0	0	
15:30	-22	-23		0	0	0	
16:00	-22	-23		0	0	0	

Equations to determine Pollutant Mass Removal rate as gasoline (PMRg):

10/23/2012

$PPM_w = PPM_{measured} =$	1254.829412
$PPM_d = PPM_w / (1-Bws) =$	1339.271066
$PPM_c = (PPM_d)(K) =$	5357.084263
$C_{c:m} = PPM_c(M_c/K_3) =$	2672.978064
$C_c = C_{c:m}(62.43x10^{-9}) =$	0.000166874
$PMR_c = C_c(Qstd)(60) =$	2.811788065
$PMR_g = (PMR_c)(M_g/M_{cg}) =$	**3.254091805 lbs of emissions per hour**
	4.165237511 Gallons of emissions per 8 hours

US Water Recovery

Non-Hazardous Wastewater Manifest

Number:

1. Generator's EPA ID# (if applicable): Waste ID Number:

2. Generator's Name and Mailing Address: Phone ( )

Stockman Oil

PO#:

3. Agent of Generator and Mailing Address: Phone ( )

KLM ENV.

PO#:

4. Transporter Company Name: Phone ( )

Vaccum Recovery Tech.

Truck & Trailer License Number:

5. Transporter U.S. EPA ID#:

6. Facility Name and Site Address:
U S Water Recovery
435 Old Mt. Holly Rd.
Mt. Holly, SC 29445
Phone: (843) 797-8874
Fax: (843) 797-2126

Mailing Address:
U S Water Recovery
210 S. Cedar Street
Summerville, SC 29483
Phone: (843) 797-3111
Fax: (843) 797-1884

7. Facility U.S. EPA ID#:

Start Level: End Level: Total Gallons: Tank Number

8. U.S. DOT Desciption	Container No.	Container Type	Unit	Quantity
a. Non-Hazardous, non-regulated waste water				606
Younas #39				57.5
Bakers 76				20.5

9. Generator's Certification: I hereby declare that the contents of this consignment are not hazardous by definition or listing and are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and the laws of the State of South Carolina. I further certify that the contents of this consignment are as represented by the description contained on the Waste Profile Form previously submitted to and approved by the Designated Facility.

Printed/Typed Name: Jason Boots Signature: [signature] Date: 10/24/12

10. Transporter Acknowledgement of Receipt of Materials

Printed/Typed Name: Matthew Roseberry Signature: [signature] Date: 10/24/12

11. Discrepancy indication space:

12. Facility Owner or Operator: Certification of Receipt of Materials

Printed/Typed Name: [signature] Signature: [signature] Date: 10-24-12

White - Facility Yellow - Office Pink - Transporter Blue - Generator

8088

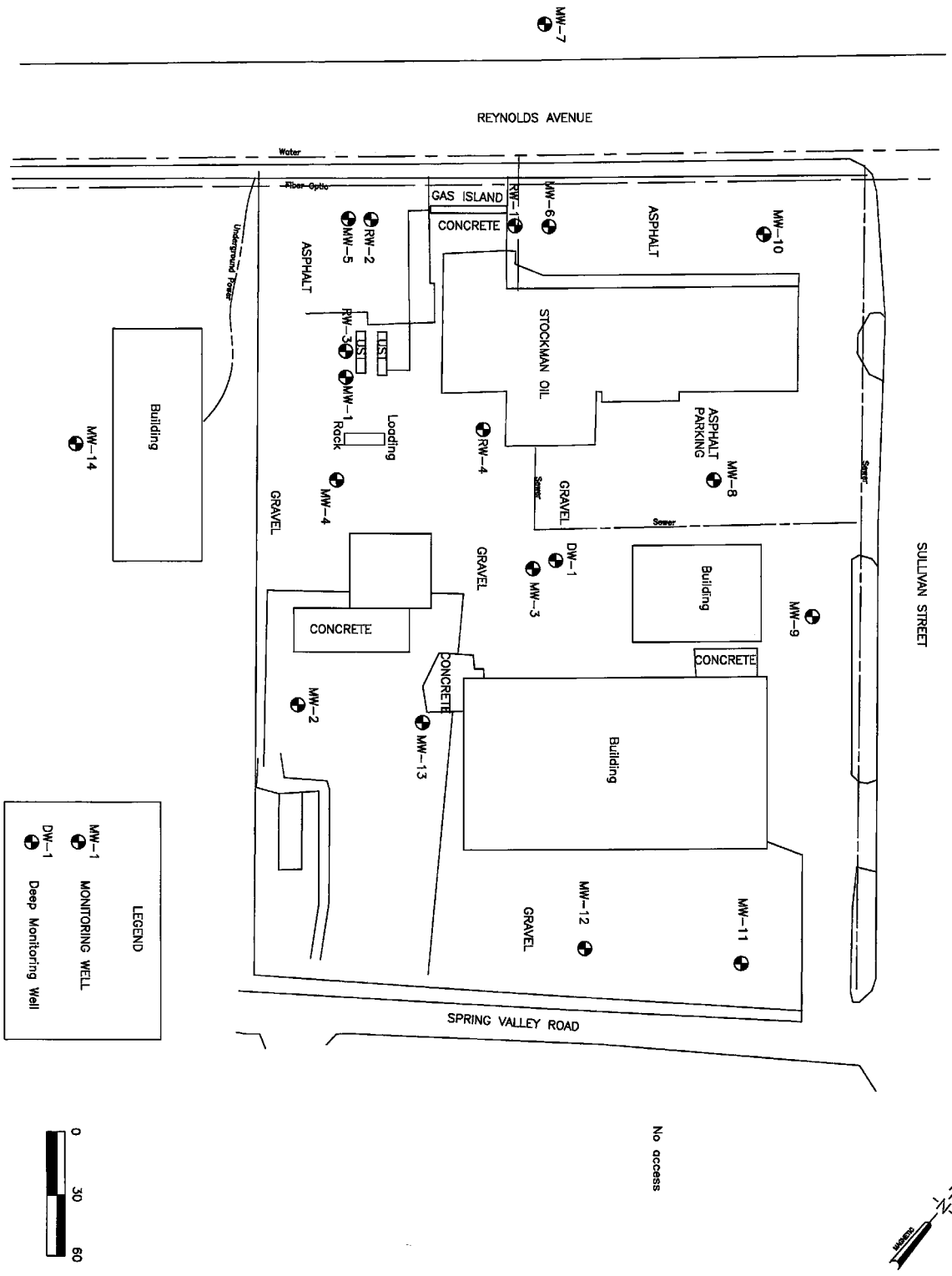

FIGURE 2
SITE MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

KLM Environmental, LLC
Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation

D H E C

PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

STOCKMAN OIL TWO INC
1138 REYNOLDS AVE
GREENWOOD SC 29646

JUN 19 2013

UST 24hr DOCKETING

Re: **Aggressive Fluid Vapor Recovery Directive**
Stockman Oil Two Inc, 1138 Reynolds Ave., Greenwood, SC
UST Permit # 04736, Cost Agreement # 46148
Release reported December 27, 1989
AFVR Report received October 29, 2012
Greenwood County

To Whom It May Concern,

The Underground Storage Tank Management Division (UST Division) of the South Carolina of Health and Environmental Control (Agency) recognizes your commitment to continue work at this site using KLM Environmental, LLC as your contractor. Based on the results of the referenced report, the UST Division has determined the next necessary scope of work is to conduct additional Aggressive Fluid Vapor Recovery events.

In accordance with Section 280.64 of the South Carolina Underground Storage Tank Control Regulations, the implementation of three (3) Aggressive Fluid Vapor Recovery (AFVR) events as outlined in the UST Quality Assurance Program Plan (QAPP), Revision 1.0 is necessary. A copy of the Agency QAPP for the UST Division is available online at http://www.scdhec.gov/environment/lwm/usthome/Qapp.htm. The AFVR events may be conducted simultaneously.

Cost Agreement # 46148 has been approved in the amount shown on the enclosed cost agreement form for the aforementioned scope of work. The work may proceed immediately upon your receipt of this letter.

The AFVR Report should be submitted within sixty (60) days from the date of this letter. Please note that all applicable South Carolina certification requirements apply to the services and report preparation. All site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor.

KLM Environmental, LLC may submit an invoice for direct billing from the State Underground Petroleum Environmental Response Bank (SUPERB) Account. Interim invoices may (may not) be submitted for this scope of work. By law, the SUPERB Account cannot compensate any costs that are not pre-approved. If the invoice is not submitted within one hundred twenty (120) days from the date of this letter, monies allocated to pay this invoice will be uncommitted. This

means that the invoice will not be processed for payment until all other committed funds are paid or monies become available.

Please note that Sections 44-2-110(4) and 44-2-130 of the SUPERB Statute state that no costs will be allowed unless prior approval from the UST Division is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the UST Division for the cost to be paid. The Agency reserves the authority to pay only for work properly performed and/or technically justified and will only pay rates in accordance with established criteria. Further, the Agency reserves the right to question and/or reject costs if deemed unreasonable and the right to audit project records at any time during the project or after completion of work.

The UST Division grants pre-approval for transportation of up to 5,000 gallons of free-phase product and petroleum-contaminated groundwater from the referenced facility to a permitted treatment facility for disposal. The transport and disposal must be conducted in accordance with the QAPP.

On all correspondence concerning this directive, please reference **UST Permit #04736 and Cost Agreement #46148.** If you have any questions concerning this project, please contact me by telephone at (803) 898-0606 or by e-mail to bursonsj@dhec.sc.gov.

Sincerely,

Scott J. Burson, Hydrogeologist
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: Approved Cost Agreement

cc: KLM Environmenal, LLC, PO Box 2704, Goose Creek, SC 29445 (w/ enc.)
Technical File (w/ enc.)

Approved Cost Agreement 46148

Facility: 04736 STOCKMAN OIL TWO INC

BURSONSJ

PO Number:

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
04 MOB/DEMOB						
		A	EQUIPMENT	3.0000	575.00	1,725.00
		B	PERSONNEL	3.0000	290.00	870.00
17 DISPOSAL						
		A	WASTEWATER	2,500.0000	0.80	2,000.00
19 RPT/PROJECT MNGT & COORDINATIO						
		PCT	PERCENT	0.1500	18,491.00	2,773.65
23 EFR						
		A	8 HOUR EVENT	3.0000	3,000.00	9,000.00
		B	ADDITIONAL HOUR	24.0000	204.00	4,896.00
				Total Amount		21,264.65

KLM Environmental, LLC

Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation
PO Box 2704
Goose Creek, SC 29445
843-870-4285 Phone
843-797-1893 Fax

UST DOCKETING 25tech

UST JUL 31 2013 PROGRAM

July 25, 2013

Mr. Scott J. Burson
SCDHEC – BUSTM
2600 Bull Street
Columbia, S.C. 29201

Re: Stockman Oil Two, Inc.: Permit # 04736 CA # 44607

Mr. Burson,

This letter, along with its attachments, is presented to document the results of the Aggressive Fluid Vapor Recovery (AFVR) events performed on July 22nd and 23rd, 2013. As the AFVR events could be done consecutively, KLM performed all three events in a two day period. All recovery wells were gauged for free phase product prior to and following each event. The drop tube was installed to a depth of six inches below the bottom of the product during the AFVR events. Results from each event are provided on the attached tables. An estimated total of 69.0 gallons of petroleum product was recovered during the AFVR events as liquid. Emissions calculations were performed for each event and a total of 146.01 gallons of petroleum product were recovered as vapor. Activated carbon was utilized as the method of off gas treatment throughout the events. KLM recommends continued AFVR events as these events have recovered the most product compared to any other previous events with outstanding recovery rates. Free product continues to accumulate at over 5 feet in the recovery wells so the frequency of the AFVR events should be increased to capitalize on the current recovery rates.

All of the remaining information requested in the AFVR letter is provided as an attachment. It has been a pleasure working with you on this project. Please call me directly if you have any questions at 843-870-4285.

Sincerely,

KLM Environmental, LLC

Mark L. Keller, PG
President

Enclosures(11): AFVR information tables; Emissions Calculations; Magnehelic Gauge Tables; Waste Manifest; Site Map

cc: Chip Stockman, Stockman Oil Two, Inc. (1138 Reynolds Ave., Greenwood, SC)

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave., Greenwood, SC	Date: 7/22/13
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Jason Boots	General Weather Conditions: Sunny
Ambient Air Temperature: 90Fahrenheit	Estimated Gallons of Product Removed: 4.0 gallons	Initial Product Thickness: RW-3= 1.07 RW-4= 2.95
Final Product Thickness: RW-3= 0.00 RW-4= 0.00	AFVR Start Time: 13:00	AFVR End Time: 21:00

Time(Readings Every 30 Minutes)	Recovery Rate Vacuum Inches of Hg	Temp Degrees F	Stack Vel. mph	Humidity	Air Emission Conc. Measurements in ppm	Air Flow Rate shown in Cubic Feet per Minute
13:00	-17	90.7	11.6	50.7	15000	83.60
13:30	-18	123.6	12.6	41.1	15000	90.81
14:00	-18	142.8	12.8	26.3	15000	92.25
14:30	-18	147.9	12.9	23.7	15000	92.97
15:00	-18	152.3	13.1	20.3	15000	94.41
15:30	-18	153.1	13.2	20.5	15000	95.13
16:00	-18	153.3	13.2	19.7	15000	95.13
16:30	-18	152.9	13.3	18.1	15000	95.85
17:00	-18	152.3	13.3	19.6	15000	95.85
17:30	-18	153.5	13.1	21.5	14312	94.41
18:00	-18	154.8	12.9	22.8	14541	92.97
18:30	-18	154.2	13.0	23.6	13987	93.69
19:00	-18	153.7	13.2	24.2	12213	95.13
19:30	-18	153.5	13.3	24.7	12187	95.85
20:00	-18	152.7	13.2	25.1	11514	95.13
20:30	-18	150.3	13.3	26.8	10972	95.85
21:00	-18	149.7	13.2	26.5	10534	95.13

	Start	End
RW-3	26.35 - 27.42	28.53
RW-4	25.42 - 28.37	29.71

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave., Greenwood, SC	Date: 7/22/13
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Jason Boots	General Weather Conditions: Sunny

	Inches of Hg on Extraction Well			Inches of Hg on surrounding wells			
Time	**RW-3**	**RW-4**		**MW-1**	**MW-4**	**MW-3**	
13:00	-15	-14		0	0	0	
13:30	-16	-15		0	0	0	
14:00	-16	-16		0	0	0	
14:30	-17	-16		0	0	0	
15:00	-18	-17		0	0	0	
15:30	-18	-18		0	0	0	
16:00	-18	-18		0	0	0	
16:30	-17	-18		0	0	0	
17:00	-17	-17		0	0	0	
17:30	-18	-17		0	0	0	
18:00	-18	-18		0	0	0	
18:30	-18	-18		0	0	0	
19:00	-17	-18		0	0	0	
19:30	-18	-18		0	0	0	
20:00	-18	-17		0	0	0	
20:30	-18	-18		0	0	0	
21:00	-18	-18		0	0	0	

Equations to determine Pollutant Mass Removal rate as gasoline (PMRg):

7/22/2013

$PPM_w = PPM_{measured}$ = 13838.82353

$PPM_d = PPM_w / (1-Bws)$ = 14770.08409

$PPM_c = (PPM_d)(K)$ = 59080.33638

$C_{c:m} = PPM_c(M_c/K_3)$ = 29478.80515

$C_c = C_{c:m}(62.43x10^{-9})$ = 0.001840362

$PMR_c = C_c(Qstd)(60)$ = 35.99004691

$PMR_g = (PMR_c)(M_g/M_{cg})$ = **41.65140261 lbs of emissions per hour**

53.31379534 Gallons of emissions per 8 hours

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave., Greenwood, SC	Date: 7/22/13
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Jason Boots	General Weather Conditions: Cloudy/Rain
Ambient Air Temperature: 77 Fahrenheit	Estimated Gallons of Product Removed: 28.0 gallons	Initial Product Thickness: RW-1= 8.39
Final Product Thickness: RW-1= 0.00	AFVR Start Time: 21:15	AFVR End Time: 5:15

Time(Readings Every 30 Minutes)	Recovery Rate Vacuum Inches of Hg	Temp Degrees F	Stack Vel. mph	Humidity	Air Emission Conc. Measurements in ppm	Air Flow Rate shown in Cubic Feet per Minute
21:15	-17	136.4	13.6	26.8	15000	98.01
21:45	-18	147.3	13.0	20.5	15000	93.69
22:15	-18	154.1	12.9	16.7	15000	92.97
22:45	-18	153.5	12.8	17.5	15000	92.25
23:15	-18	152.9	12.8	18.0	15000	92.25
23:45	-18	151.4	13.0	19.4	15000	93.69
00:15	-18	148.1	13.1	21.6	15000	94.41
00:45	-18	145.7	13.0	23.5	15000	93.69
1:15	-18	144.5	12.9	24.8	15000	92.97
1:45	-18	143.1	13.0	25.8	15000	93.69
2:15	-18	142.3	12.9	26.8	15000	92.97
2:45	-18	142.5	13.1	26.5	15000	94.41
3:15	-18	142.3	13.2	27.3	15000	95.13
3:45	-18	141.8	13.1	26.5	15000	94.41
4:15	-18	141.6	13.3	26.8	15000	95.85
4:45	-18	141.9	13.1	26.7	15000	94.41
5:15	-18	141.8	13.3	26.7	15000	95.85

	Start	End
RW-1	27.65 – 36.04	37.91

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave., Greenwood, SC	Date: 7/22/13
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Jason Boots	General Weather Conditions: Rainy/Cloudy

	Inches of Hg on Extraction Well			**Inches of Hg on surrounding wells**			
Time	**RW-1**			**MW-6**	**MW-5**	**MW-10**	
21:15	-17			0	0	0	
21:45	-18			0	0	0	
22:15	-18			0	0	0	
22:45	-18			0	0	0	
23:15	-18			0	0	0	
23:45	-18			0	0	0	
00:15	-18			0	0	0	
00:45	-18			0	0	0	
1:15	-18			0	0	0	
1:45	-18			0	0	0	
2:15	-18			0	0	0	
2:45	-18			0	0	0	
3:15	-18			0	0	0	
3:45	-18			0	0	0	
4:15	-18			0	0	0	
4:45	-18			0	0	0	
5:15	-18			0	0	0	

Equations to determine Pollutant Mass Removal rate as gasoline (PMRg):

7/22/2013

$PPM_w = PPM_{measured}$ = 15000

$PPM_d = PPM_w / (1-Bws)$ = 16009.4

$PPM_c = (PPM_d)(K)$ = 64037.6

$C_{c:m} = PPM_c(M_c/K_3)$ = 31952.28816

$C_c = C_{c:m}(62.43x10^{-9})$ = 0.001994781

$PMR_c = C_c(Qstd)(60)$ = 39.24509101

$PMR_g = (PMR_c)(M_g/M_{cg})$ = **45.41847611 lbs of emissions per hour**

58.13564942 Gallons of emissions per 8 hours

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave., Greenwood, SC	Date: 7/23/13
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Jason Boots	General Weather Conditions: Cloudy
Ambient Air Temperature: 72 Fahrenheit	Estimated Gallons of Product Removed: 37.0 gallons	Initial Product Thickness: RW-2= 7.15
Final Product Thickness: RW-2= 0.00	AFVR Start Time: 5:30	AFVR End Time: 13:30

Time(Readings Every 30 Minutes)	Recovery Rate Vacuum Inches of Hg	Temp Degrees F	Stack Vel. mph	Humidity	Air Emission Conc. Measurements in ppm	Air Flow Rate shown in Cubic Feet per Minute
5:30	-17	134.7	13.1	30.7	15000	94.41
6:00	-18	142.6	13.0	28.6	15000	93.69
6:30	-18	143.3	13.1	25.3	15000	94.41
7:00	-18	143.5	13.2	22.5	15000	95.13
7:30	-18	142.9	13.1	21.1	15000	94.41
8:00	-18	142.6	13.3	20.3	11271	95.85
8:30	-18	142.1	13.0	18.4	10452	93.69
9:00	-18	142.7	13.2	19.1	9634	95.13
9:30	-18	142.6	13.3	19.7	7271	95.85
10:00	-18	142.9	13.3	19.6	6493	95.85
10:30	-18	145.3	13.2	19.3	5827	95.13
11:00	-18	146.8	13.3	20.7	5114	95.85
11:30	-18	146.7	13.2	20.1	4071	95.13
12:00	-18	147.5	13.0	21.5	3957	93.69
12:30	-18	147.1	13.1	23.7	3761	94.41
13:00	-18	147.8	13.0	25.4	3859	93.69
13:30	-18	147.3	13.0	26.3	3822	93.69

	Start	End
RW-2	27.12 – 34.27	35.71

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave., Greenwood, SC	Date: 7/23/13
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Jason Boots	General Weather Conditions: Cloudy

	Inches of Hg on Extraction Well			Inches of Hg on surrounding wells			
Time	**RW-2**			**MW-5**	**MW-6**	**MW-10**	
5:30	-18			0	0	0	
6:00	-18			0	0	0	
6:30	-18			0	0	0	
7:00	-18			0	0	0	
7:30	-18			0	0	0	
8:00	-18			0	0	0	
8:30	-18			0	0	0	
9:00	-18			0	0	0	
9:30	-18			0	0	0	
10:00	-18			0	0	0	
10:30	-18			0	0	0	
11:00	-18			0	0	0	
11:30	-18			0	0	0	
12:00	-18			0	0	0	
12:30	-18			0	0	0	
13:00	-18			0	0	0	
13:30	-18			0	0	0	

Equations to determine Pollutant Mass Removal rate as gasoline (PMRg):

7/23/2013

$PPM_w = PPM_{measured}$ = 8854.823529

$PPM_d = PPM_w / (1-Bws)$ = 9450.694121

$PPM_c = (PPM_d)(K)$ = 37802.77648

$C_{c:m} = PPM_c(M_c/K_3)$ = 18862.12487

$C_c = C_{c:m}(62.43x10^{-9})$ = 0.001177562

$PMR_c = C_c(Qstd)(60)$ = 23.35456822

$PMR_g = (PMR_c)(M_g/M_{cg})$ = **27.02832053 lbs of emissions per hour**

34.59625028 Gallons of emissions per 8 hours

US Water Recovery

Non-Hazardous Manifest: Waste Water or Drums Number:

1. Generator's EPA ID# (if applicable): Waste ID Number:

2. Generator's Name and Mailing Address: Stack man oil Phone ( ) P O #:

3. Agent of Generator and Mailing Address: Kim Enu Phone ( ) P O #:

4. Transporter Company Name: Vacuum recovery tech Phone ( )

Truck & Trailer License Number:

5. Transporter U.S. EPA ID#:

6. Facility Name and Site Address: US Water Recovery, 511 Old Mt. Holly Rd, Goose Creek, SC 29445 Phone: (843) 797-8674 Fax: (843) 797-2126

Mailing Address: US Water Recovery, 511 Old Mt. Holly Rd, Goose Creek, SC 29445 Phone: (843) 797-3111 Fax: (843) 797-1884

7. Facility U.S. EPA ID#:

Start Level: End Level: Total Gallons: Tank Number

8. U.S. DOT Description	Container No.	Container Type	Unit	Quantity
a. Non-Hazardous, non-regulated waste water				606
Rounds 19				237
Rounds 53				78

9. Generator's Certification: I hereby declare that the contents of this consignment are not hazardous by definition or listing and are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable International and national government regulations and the laws of the State of South Carolina. I further certify that the contents of this consignment are as represented by the description contained on the Waste Profile Form previously submitted to and approved by the Designated Facility.

Printed/Typed Name: Mark Killer Signature: Mark Killer Date: 7-25-2013

10. Transporter Acknowledgement of Receipt of Materials:

Printed/Typed Name: Jason Rooks Signature: Date: 7-25-2013

11. Discrepancy Indication space:

12. Facility Owner or Operator: Certification of Receipt of Materials.

Printed/Typed Name: David Ward Signature: Date: 7-25-13

White - Facility Yellow - Office Pink - Transporter Blue - Generator

8533

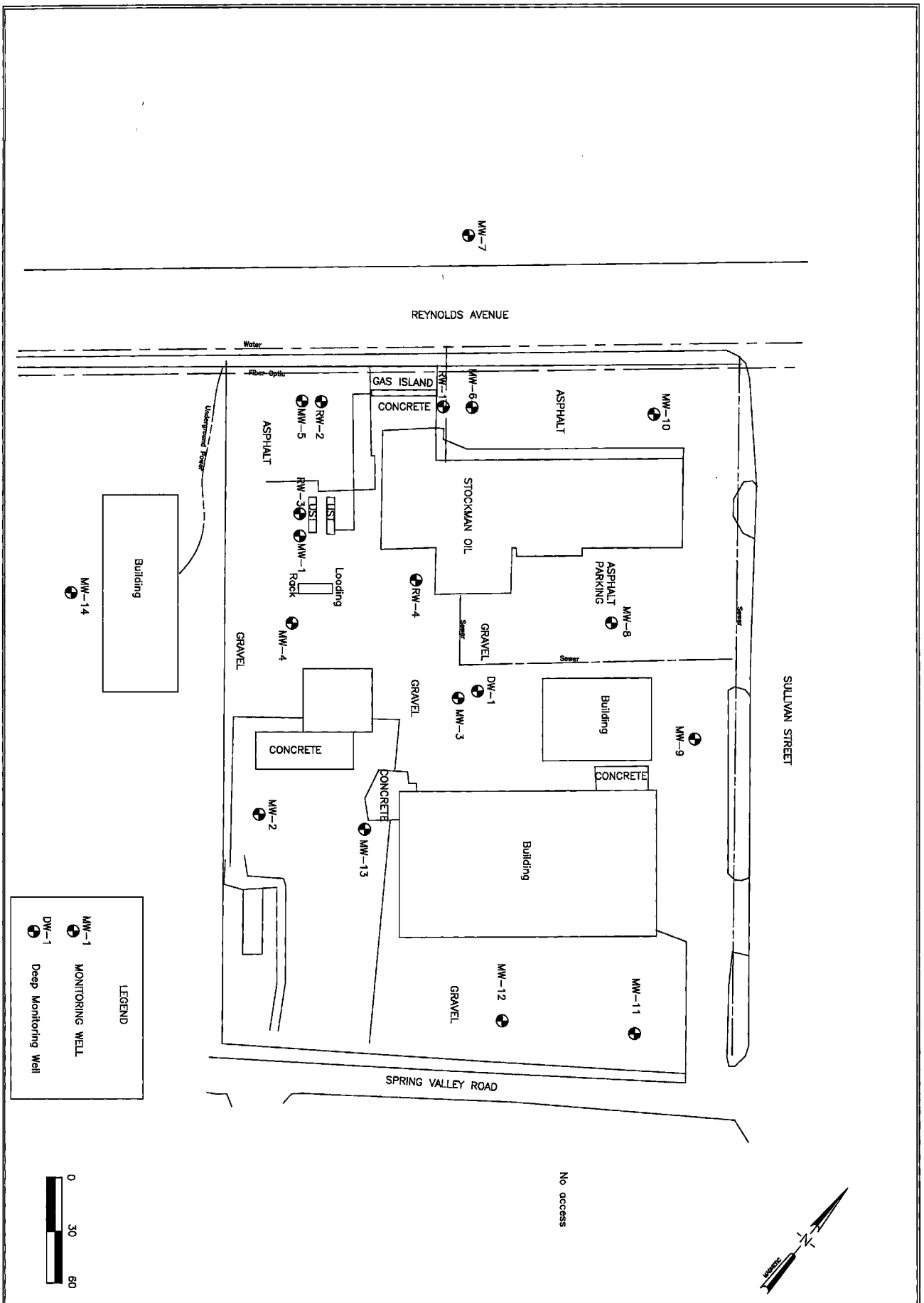

FIGURE 2
SITE MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

KLM Environmental, LLC
Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation

D H E C

PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

STOCKMAN OIL TWO INC
1138 REYNOLDS AVE
GREENWOOD SC 29646

AUG 1 3 2

UST DOCKETING 26 tech

Re: **Site Specific Work Plan Request**
Stockman Oil Two Inc, 1138 Reynolds Ave., Greenwood, SC
UST Permit # 04736
Release Reported December 27, 1989
AFVR Report Received August 1, 2013
Greenwood County

To Whom It May Concern:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) has reviewed the referenced report. The report indicates the presence of chemicals of concern in the groundwater.

To determine what risk the referenced release may pose to the environment and public health, and in accordance with Section 280.65 of the South Carolina Underground Storage Tank Control Regulations, implementation of a groundwater sampling event as outlined in the UST Quality Assurance Program Plan (QAPP) Revision 2.0 is necessary. All monitoring wells and water supply wells associated with the release should be sampled for BTEX, naphthalene, MtBE, 1,2-DCA, 8-Oxygenates and EDB. The groundwater sampling event should be conducted in accordance with the UST QAPP and must be conducted in compliance with all applicable regulations. A copy of the Agency's QAPP for the Underground Storage Tank Division is available at http://www.dhec.sc.gov/Environment/LW/UST/ReleaseAssessmentClean-up/QualityAssurance/.

Please have your contractor complete and submit the Site Specific Work Plan and Cost Agreement within thirty (30) days of the date of this letter. The Site Specific Work Plan form can be found at http://www.dhec.sc.gov/Environment/LW/UST/ReleaseAssessmentClean-up/QualityAssurance/. Every component may not be necessary to complete the above scope of work. The State Underground Petroleum Environmental Response Bank (SUPERB) Account allowable cost for each component is included on the Assessment Component Cost Agreement Form. **Please note that technical and financial preapproval from the Agency must be issued before work begins**.

On all correspondence regarding this site, please reference UST Permit #04736. If you have questions or need additional information, feel free to call me at (803) 898-0606.

Sincerely,

John C. Bryant, Hydrogeologist
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: KLM Environmenal, LLC, PO Box 2704, Goose Creek, SC 29445

Technical File

D H E C
PROMOTE PROTECT PROSPER

Site-Specific Work Plan for Approved ACQAP
Underground Storage Tank Management Division

UST AUG 28 2014 PROGRAM

To: John C Bryant (SCDHEC Project Manager)
From: Mark Keller, PG (Contractor Project Manager)
Contractor: KLM Environmental UST Contractor Certification Number: 345

Facility Name: Stockman Oil Two UST Permit #: 04736
Facility Address: 1138 Reynolds Ave., Greenwood, SC 29646
Responsible Party: Stockman Oil Phone: 910-343-1991
RP Address: 1138 Reynolds Ave., Greenwood, SC 29646
Property Owner (if different): Same as RP
Property Owner Address: Same as RP
Current Use of Property: Gas station / Warehouse / Office

UST 27 Tech DOCKETING

Scope of Work (Please check all that apply)

☐ IGWA ☐ Tier II ☑ Groundwater Sampling ☐ GAC
☐ Tier I ☐ Monitoring Well Installation ☐ Other

Analyses (Please check all that apply)

Groundwater/Surface Water:

☑ BTEXNMDCA (8260B) ☐ Lead ☐ BOD ☐ Methane
☑ Oxygenates (8260B) ☐ 8 RCRA Metals ☐ Nitrate ☐ Ethanol
☑ EDB (8011) ☐ TPH ☐ Sulfate ☐ Dissolved Iron
☐ PAH (8270D) ☐ pH ☐ Other

Soil:

☐ BTEXN ☐ 8 RCRA Metals ☐ TPH-DRO (3550B/8015B) ☐ Grain Size
☐ PAH ☐ Oil & Grease (9071) ☐ TPH-GRO (5030B/8015B) ☐ TOC

Air:

☐ BTEXN

Sample Collection (Estimate the number of samples of each matrix that are expected to be collected.)

0 Soil 0 Water Supply Wells 0 Air 1 Field Blank
19 Monitoring Wells 0 Surface Water 1 Duplicate 1 Trip Blank

Field Screening Methodology

Estimate number and total completed depth for each point, and include their proposed locations on the attached map.

# of shallow points proposed: NA Estimated Footage: NA feet per point
# of deep points proposed: NA Estimated Footage: NA feet per point
Field Screening Methodology: NA

Permanent Monitoring Wells

Estimate number and total completed depth for each well, and include their proposed locations on the attached map.

# of shallow wells: NA Estimated Footage: NA feet per point
# of deep wells: NA Estimated Footage: NA feet per point
# of recovery wells: NA Estimated Footage: NA feet per point
Monitoring Well development method (consistent with SOP): NA
Comments, if warranted:
NA

UST Permit #: 04736 Facility Name: Stockman Oil Two

Implementation Schedule (Number of calendar days from approval)
Field Work Start-Up: 30 Field Work Completion: 35
Report Submittal: 60 # of Copies Provided to Property Owners: _____

Aquifer Characterization
Pump Test: ☐ Slug Test: ☐ (Check one and provide explanation below for choice)
NA

Investigation Derived Waste Disposal
Soil: NA Tons Purge Water: 150 Gallons
Drilling Fluids: NA Gallons Free-Phase Product: 0 Gallons

Additional Details For This Scope of Work
For example, list wells to be sampled, wells to be abandoned/repaired, well pads/bolts/caps to replace, details of AFVR event, etc.
Sample all monitoring wells. Purging will be required on all wells prior to sample collection.

Compliance With Annual Contractor Quality Assurance Plan (ACQAP)
Yes Laboratory as indicated in ACQAP? (Yes/No) If no, indicate laboratory information below.
Name of Laboratory: _____
SCDHEC Certification Number: _____
Name of Laboratory Director: _____

NA Well Driller as indicated in ACQAO? (Yes/No) If no, indicate driller information below.
Name of Well Driller: _____
SCLLR Certification Number: _____

NA Other variations from ACQAP. Please describe below.

Attachments
1. Attach a copy of the relevant portion of the USGS topographic map showing the site location.
2. Prepare a site base map. This map must be accurately scaled, but does not need to be surveyed. The map must include the following:
   - North Arrow
   - Location of property lines
   - Location of buildings
   - Previous soil sampling locations
   - Previous monitoring well locations
   - Proposed soil boring locations
   - Proposed monitoring well locations
   - Legend with facility name and address, UST permit number, and bar scale
   - Streets or highways (indicate names and numbers)
   - Location of all present and former ASTs and USTs
   - Location of all potential receptors
3. Assessment Component Cost Agreement, SCDHEC Form D-3664

D H E C

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3600 Bull Street
Columbia, SC 29201-1708

ASSESSMENT COMPONENT COST AGREEMENT 2014

SOUTH CAROLINA

Department of Health and Environmental Control (DHEC)

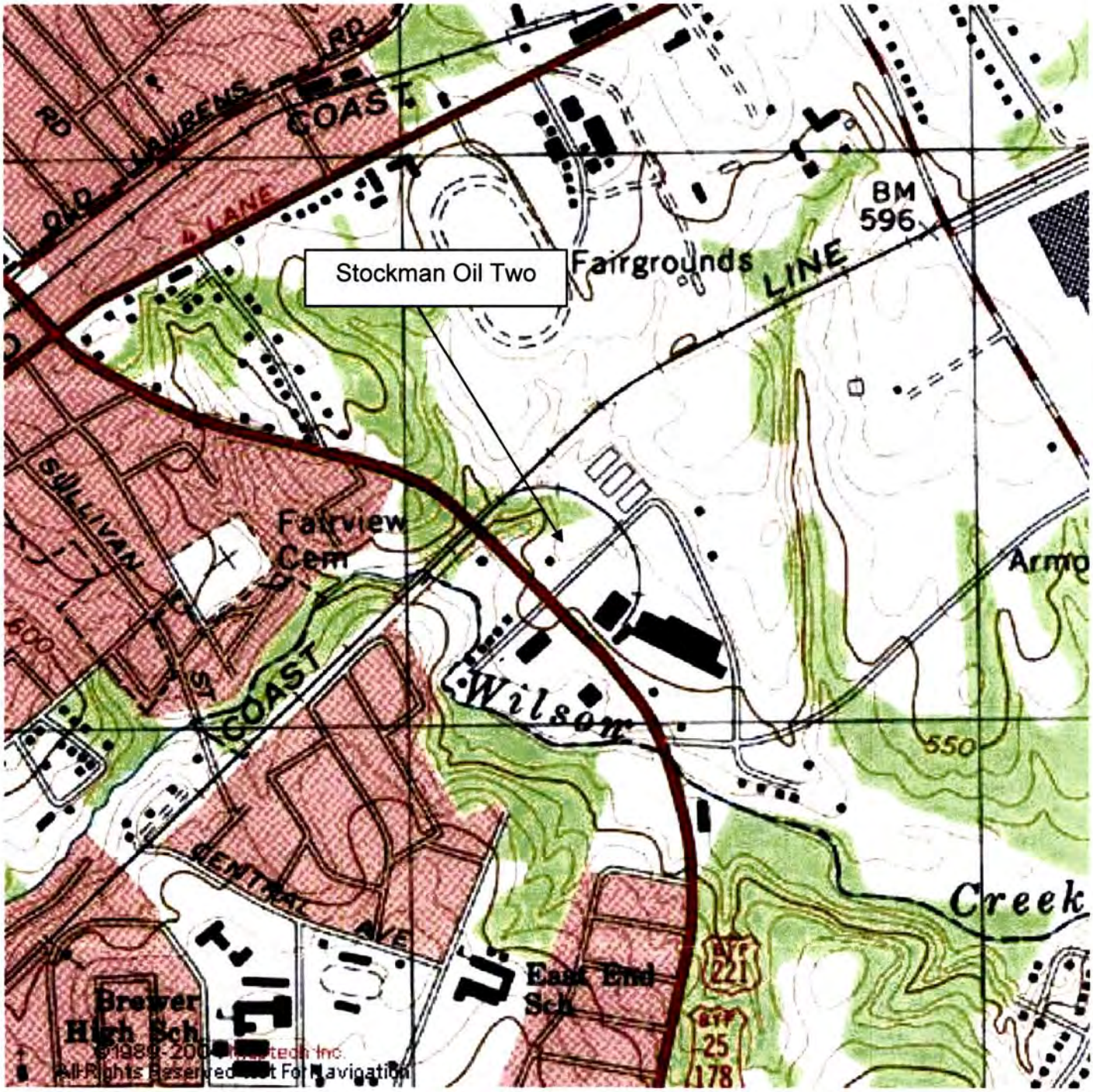
Bureau of Underground Storage Tank Management

Facility Name	Stockman Oil Two, Inc.		
UST Permit#	04736	Cost Agreement #	

		QTY	UNIT	UNIT PRICE	TOTAL
1	Plan*				
	A1. Site Specific Work Plan	1	x	150.00	150 00
	B1. Tax Map		x	$70 00	-
	C1. Tier II or Comp. Plan/QAPP App B		x	$250 00	-
2	A1 Receptor Survey*		x	$551 00	-
3	Survey (500ft x 500 ft)				
	A1 Comprehensive Survey		x	$1,040 00	-
	B Subsurface Geophysical Survey				
	1. <10 meters below grade		x	$1,300 00	-
	2. >10 meters below grade		x	$2,310.00	-
	C1 Geophysical UST or Drum Survey		x	$910 00	-
4	Mob/Demob (List component #)				
	A1 Equipment ()		x	$1,020 00	-
	B1 Personnel (10,17)	2	x	$423 00	846 00
	C1 Adverse Terrain Vehicle		x	$500 00	-
5	Soil Borings (hand auger)*		feet x	$5.00	-
6	Soil Borings or Field Screening*				
	A1. Standard		feet x	$15.00	-
	B1. Fractured Rock		feet x	$20.20	-
7	Soil Leachability Model		each x	$60 00	-
8	Abandonment				
	A1 2" or less*		feet x	$3 10	-
	B1 2+" to 6"*		feet x	$4 50	-
	C1. Dug/bored well (up to 6 ft dia.)*		feet x	$15 00	-
9	Well Installation *				
	A1. Water Table (hand auger)*		feet x	$10.60	-
	B1. Water Table (drill rig)*		feet x	$38.00	-
	C1. Telescoping*		feet x	$50.00	-
	D1. Rock Drilling*		feet x	$58.00	-
	E1. 2" Rock Coring*		feet x	$30 90	-
	G1 Multi-sampling ports/screens*		feet x	$33 40	-
	H1. Recovery Well (4" dia.)*		feet x	$45 00	-
	I1. Pre-packed screen (1 25" dia)*		feet x	$15.00	-
	J1 Rotosonic (2" dia.)*		feet x	$44 00	-
	K Re-develop existing well*		feet x	$11 00	-
10	Sample Collection*				
	A1 Ground-water (purge)*	19	per well or receptor x	$60 00	1,140.00
	B1 Air or Vapors*		Per receptor x	$12 00	-
	C1 Water Supply*		per well or receptor x	$22.00	-
	D1 Groundwater (No Purge or duplicate)*	1	per well or receptor x	$28.00	28.00
	E1. Gauge Well Only*		per well x	$7 00	-
	F1 Sample Below Product*		per well x	$12 00	-
	G1 Passive Diffusion Bag*		each x	$26 00	-
	H1. Field Blank	1	each x	$24 60	24 60
11	Analyses-Groundwater (See Analytical Methodology for analyses)				
	A2 BTEXNM+Oxyg's+1,2-DCA+Eth(8260B	22	samples x	$122 00	2,684.00
	AA1 Lead, Filtered		samples x	$13 80	-
	B2 8260 RUSH		samples x	$153 60	-
	C2. Trimethyl, Butyl, & Isopropyl Benzene		samples x	$36.40	-
	D1. PAH's		samples x	$60 60	-
	E1 Lead, Unfiltered		samples x	$16 00	-
	F1 EDB by 8011	21	samples x	$45.20	949 20
	FF1 EDB by 8011 RUSH		samples x	$68 20	-
	G1. 8 RCRA Metals		samples x	$63 40	-
	H1 TPH (9070)		samples x	$41 00	-
	I1. pH		samples x	$5 20	-
	J1 BOD		samples x	$20 00	-
	P1 Ethanol		samples x	$14 80	-
				sub-total	5,821.80

UST Facility Name	Stockman Oil Two, Inc.				
UST Permit#	04736		Cost Agreement #	00000	
		QTY	UNIT	UNIT PRICE	TOTAL
11	Analyses-Soil				
	Q1 BTEX + Napth		samples x	$64 00	-
	R1. PAH's		samples x	$64 04	-
	S1 8 RCRA Metals		samples x	$56.40	-
	U1 TPH-DRO (3550C/8015C)		samples x	$40.00	-
	V1. TPH-GRO (5035B/8015C)		samples x	$35.96	-
	W1. Grain size/hydrometer		samples x	$104.00	-
	X1 Total Organic Carbon		samples x	$30 60	-
	Analyses-Air				
	Y1. BTEX + Napth		samples x	$216.00	-
	Analyses-Free-Phase Product				
	Z1 Hydrocarbon Fuel Identification		samples x	$357.00	-
12	Aquifer Characterization*				
	A1 Pumping Test*		hours x	$23 00	-
	B1 Slug Test*		tests x	$191 00	-
	C1 Fractured Rock*		tests x	$100 00	-
13	Free Product Recovery Rate Test*		tests x	$38 00	-
14	Fate/Transport Modeling				
	A1 Mathematical Model		models x	$100.00	-
	B1 Computer Model		models x	$100.00	-
15	Risk Evaluation				
	A1 Tier I Risk Evaluation		x	$300 00	-
	B1 Tier II Risk Evaluation		x	$100 00	-
16	Subsequent Survey*		x	$260 00	-
17	Disposal				
	AA Wastewater*	150	gallons x	$0 56	84 00
	BB Free Product*		gallons x	$0 50	-
	C1. Soil Treatment/Disposal*		ton x	$60 00	-
	D1. Drilling Fluids*		gallons x	$0 42	-
18	Miscellaneous(attach receipts)		each x	pre aprroved	
20	IGWA ($3,460 SE $3,760 Others)		standard		-
21	Tier I Assessment ($10,230/$11,230)		standard		-
22	Active Corrective Action		PFP bid		-
23	EFR				
	A1. 8-hour event		each x	$1,375 00	-
	A2. 24-hour event		each x	$3,825 00	-
	A3. 48 hour event		each x	$6,265.00	-
	A4 96-hour event		each x	$12,567.50	-
	C1. Off-gas treatment 8-hour		per event x	$122.50	-
	C2. Off-gas treatment 24 hour		per event x	$241.50	-
	C3. Off-gas treatment 48 hour		per event x	$327 00	-
	C4 Off-gas treatment 96 hour		per event x	$780.00	-
	D1. AFVR Site Reconnaissance		each x	$203 25	-
	E1 Additional hook-ups		each x	$25.75	-
	F Effluent Disposal		gallon x	$0.44	-
	G. AFVR Mobilization/Demobilizatior		each x	$391 50	-
24	Granulated Activated Carbor (GAC) filter system installation & service:				
	A1. New GAC System Installation*		each x	$1,900 00	-
	BB Refurbished GAC Sys Install*		each x	$900 00	-
	C1. Filter replacement/removal*		each x	$350.00	-
	DD. GAC System removal,cleaning*		each x	$275.00	-
	E1. GAC System housing*		each x	$250 00	-
	F In-line particulate filter		each x	$150 00	-
	G1. Additional piping & fittings		foot x	$1.50	-
25	Well Repair*				
	A1 Additonal Copies of Report		each x	$50 00	-
	B1 Repair 2x2 MW Pad*		each x	$50.00	-
	C1 Repair 4x4 MW Pad*		each x	$88.00	-
	D1 Repair Well Vault*		each x	$118.00	-
	F1. Replace well cover bolts		each x	$2 60	-
	G1 Replace locking well cap & lock		each x	$15.00	-
	H1 Replace/repair stick-up		each x	$134.00	-
	I1. Convert flush-mount to stick-up		each x	$150 00	-
	J1 Convert stick-up to flush-mount		each x	$130.00	-
	K1. Replace missing/illegible well tag		each x	$12 00	-
				Subtotal	**5,905.80**
	Project Management Fee (%)		x	12 0%	$708 70
	Total			**Total**	**$6,614.50**

* The appropriate mobilization cost can be added to complete these tasks, as necessary



KLM Environmental, LLC

Phase I Phase II Underground Storage Tanks Soil & Water Sampling Well Installation

Figure 1
USGS Map
Stockman Oil Two
Greenwood, SC
Project # 05086.11

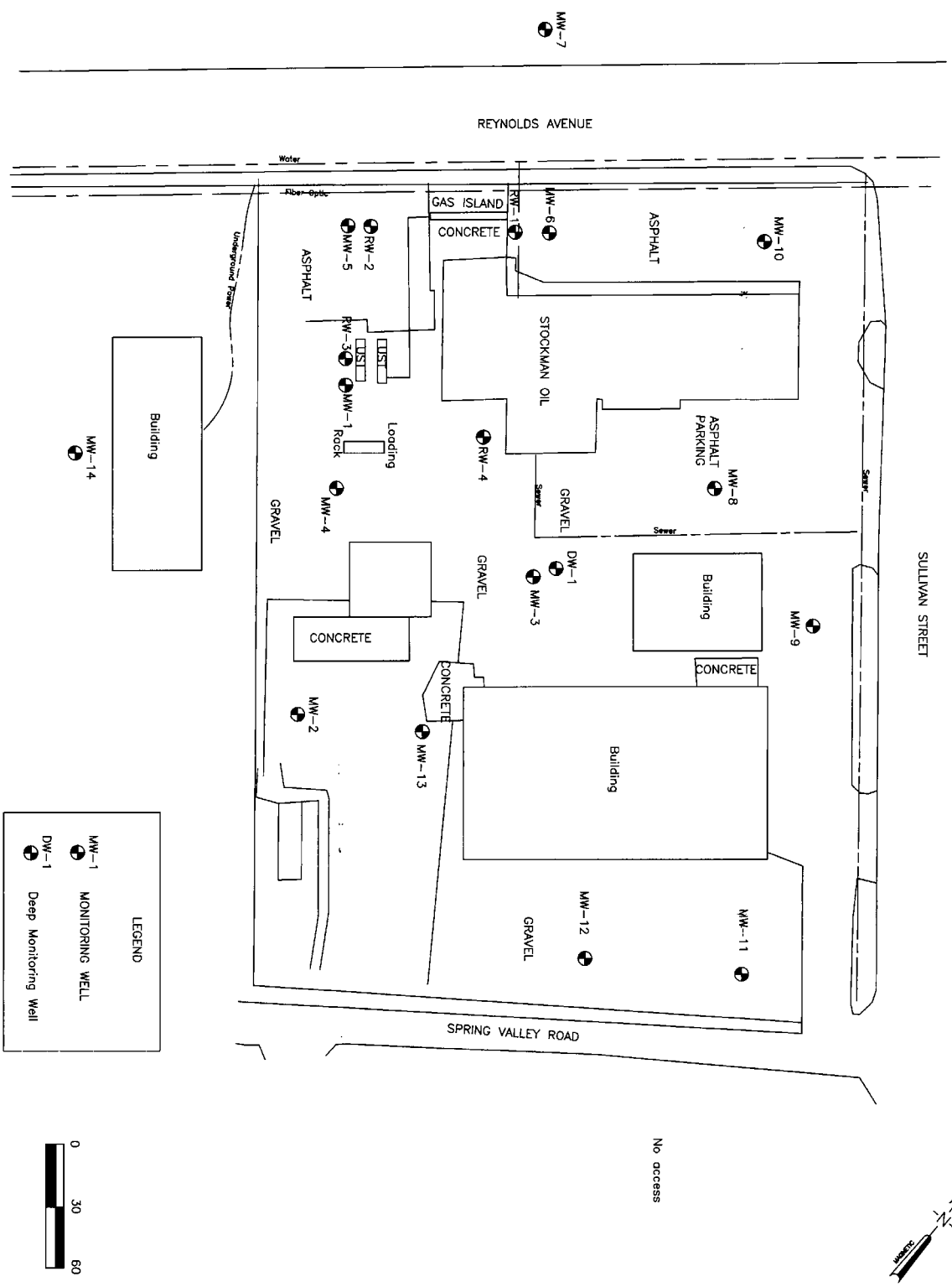


FIGURE 2
SITE MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

KLM Environmental, LLC
Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation

D H E C
PROMOTE PROTECT PROSPER
Catherine B. Templeton, Director
Promoting and protecting the health of the public and the environment

STOCKMAN OIL TWO INC
1138 REYNOLDS AVE
GREENWOOD SC 29646

SEP 0 9 2014

Re: **Groundwater Sampling Directive**
Stockman Oil Two Inc, 1138 Reynolds Ave., Greenwood, SC
UST Permit# 04736; CA# 48593
Release Reported December 27, 1989
Site Specific Work Plan received August 28, 2014
Greenwood County

To Whom It May Concern:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) has reviewed the referenced Site Specific Work Plan submitted on your behalf by KLM. The next appropriate scope of work at the site is a comprehensive groundwater sampling event. All work should be conducted in accordance with the UST Quality Assurance Program Plan (QAPP) Revision 2.0, and must be conducted in compliance with all applicable regulations. A copy of the Agency QAPP Revision 2.0, for the UST Management Division is available at http://www.dhec.sc.gov/Environment/LW/UST/ReleaseAssessmentClean-up/QualityAssurance.

Groundwater sampling activities at the site should begin immediately upon receipt of this letter. Cost agreement # 48593 has been approved for the amount shown on the enclosed cost agreement form for sampling all monitoring wells associated with the referenced release. Groundwater samples should be collected and analyzed for BTEX, naphthalene, MtBE, 8 oxygenates, 1,2 DCA and EDB. Analyses should be in accordance with Appendix E of the QAPP to include duplicate samples, field and trip blanks.

In accordance with the QAPP, a weekly status report of the project should be provided via e-mail. If any quality assurance problems arise, you must contact me within 24 hours via phone or e-mail. In addition, a discussion of the problem(s) encountered, including quality assurance problems, the actions taken, and the results must be included in the final report submitted to the UST Management Division.

The Monitoring Report, contractor checklist (QAPP Appendix K), and invoice are due within 60 days from the date of this letter. The report submitted at the completion of these activities should include the required information outlined in the QAPP. Please note that all applicable South Carolina certification requirements apply to the services and report preparation. All site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor.

KLM can submit an invoice for direct payment from State Underground Petroleum Environmental Response Bank (SUPERB) Account for pre-approved costs. By law, the SUPERB Account cannot compensate any costs that are not pre-approved. Please note that applicable South Carolina certification requirements regarding laboratory services and report preparation must be satisfied. If the invoice is not submitted within 120 days from the date of this letter, monies allocated to pay this invoice will be uncommitted. This means that the invoice will not be processed for payment until all other committed funds are paid or monies become available.

Please note that Sections 44-2-110(4) and 44-2-130 of the SUPERB Statute state that no costs will be allowed unless prior approval from the Agency is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the Agency for the cost to be paid. The Agency reserves the authority to pay only for work properly performed and/or technically justified and will only pay rates in accordance with established criteria. Further, the Agency reserves the right to question and/or reject costs if deemed unreasonable and the right to audit project records at any time during the project or after completion of work.

Please note, if unnecessary dilutions are completed resulting in reporting limits of individual chemical of concern (CoC) in excess of Risk-Based Screening Levels (RBSLs), the data cannot be used. In those cases, the Division may deny payment for any non-detect analysis where the reporting limit exceeds the RBSL. The UST Management Division encourages the use of 'J' values as necessary so the appropriate action can be determined for a release.

The Agency grants pre-approval for transportation of virgin petroleum impacted soil and groundwater from the referenced site to a permitted treatment facility. The transport and disposal must be conducted in accordance with the QAPP. If the CoC concentrations based on laboratory analysis are below RBSLs, please contact the project manager for approval to dispose of soil and/or groundwater on site. The SUPERB Account will not reimburse for transportation or treatment of soil and/or groundwater with concentrations below RBSLs.

On all correspondence regarding this site, please reference UST Permit # 04736. If you have any questions regarding this correspondence, please contact me by telephone at (803) 898-0606, by fax at (803) 898-0673, or by e-mail at bryantjc@dhec.sc.gov.

Sincerely,

John C. Bryant, Hydrogeologist
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: Approved Cost Agreement

cc: KLM Environmental, PO Box 2704, Goose Creek, SC 29445 (with enc.)
Technical File (with enc.)

Approved Cost Agreement 48593

Facility 04736 STOCKMAN OIL TWO INC

BRYANTJC

PO Number

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
01 PLAN						
		A1	SITE SPECIFIC WORK PLAN	1 0000	150 00	150 00
04 MOB/DEMOB						
		B1	PERSONNEL	2 0000	423 00	846 00
10 SAMPLE COLLECTION						
		A1	GROUNDWATER (PURGE)	19 0000	60 00	1,140 00
		D1	GROUNDWATER NO PURGE/DUPLICATE	2 0000	28 00	56 00
		H1	FIELD BLANK	1 0000	24 60	24 60
11 ANALYSES						
	GW GROUNDWATER	A2	BTEXNM+OXYGS+1,2-DCA+ETH-8260B	23 0000	122 00	2,806 00
		F1	EDB BY 8011	21 0000	45 20	949 20
17 DISPOSAL						
		AA	WASTEWATER	200 0000	0 56	112 00
19 RPT/PROJECT MNGT & COORDINATIO						
		PRT	REPORT PREPARATION	0 1200	6,083 80	730 06
				Total Amount		6,813 86

Document Receipt Information

☐ Hard Copy ☒ CD ☐ Email

Date Received 11/14/14

Permit Number 04736

Project Manager John Bryant

Name of Contractor KLM Environmental

UST Certification Number

Docket Number 29 tech

Scanned

Monitoring Report

MONITORING REPORT

Stockman Oil Two, Inc.

Greenwood, South Carolina

Site ID# 04736

KLM Environmental, LLC
Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation
PO Box 2704
Goose Creek, SC 29445
843-870-4285 Phone
843-797-1893 Fax

November 7th, 2014

Prepared for:

Mr. John C. Bryant
SCDHEC BUSTM
2600 Bull Street
Columbia, SC 29201

Prepared by:

KLM Environmental, LLC
Post Office Box 2704
Goose Creek, SC 29445
(843) 870-4285 / *fax: 797-1893*
UST Contractor # 345

Project# 05086.11

SIGNATURE PAGE

This report entitled **"MONITORING REPORT" for Stockman Oil Two, Inc.** has been prepared at the request of and for the exclusive use of the South Carolina Department of Health and Environmental Control. It has been prepared and reviewed by the undersigned.

Prepared By:

J. Micah Bennett, PG
Vice President
KLM Environmental, LLC

Reviewed By:

Mark L. Keller, PG
President
KLM Environmental, LLC

11/6/14
Date

MARK L. KELLER
REGISTERED
No. 2311
11/6/14
SOUTH CAROLINA
PROFESSIONAL GEOLOGIST

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1.0 INTRODUCTION

The Stockman Oil site is located at 1138 Reynolds Avenue in Greenwood, South Carolina. A general site location map is provided as Figure 1 in Appendix A. The owner / operator is Stockman Oil Two, Inc. located at 1138 Reynolds Ave., Greenwood, SC 29646; phone 864-223-8486. KLM Environmental is the Certified UST Site Rehabilitation Contractor performing the work (Certification # 345). KLM's address is PO Box 2704, Goose Creek, SC 29445, phone 843-870-4285. Pace Analytical Services, Inc. is the certified laboratory used to analyze the samples for this work. Pace Analytical Services main address is 9800 Kincey Ave., Suite 100, Huntersville, NC 28078, phone # 704-875-9092.

The initial release was reported on December 27th, 1989 and the site has been undergoing assessment and monitoring activities since that date. The Stockman Oil site has been an in service gas station since the 1930's. The dispensers and the location of the underground storage tanks have not changed since that time. The UST's were upgraded by Stockman Oil in 1980. The site is surrounded by commercial property and is situated in the inner piedmont belt where the soil mainly consists of saprolite, sandy clays and clays that are underlined by medium to high grade metamorphic rock, such as granitic, biotitic and hornblendic rocks.

KLM performed a Tier II assessment in December of 2009 and has subsequently conducted AFVR events at the site. Six 8-hour AFVR events were performed at the site between July of 2010 and February of 2012. KLM installed four, four inch recovery wells at the site in April of 2012 to help facilitate free product removal. Additional AFVR events have been conducted at the site following the recovery well installation in 2012. This report serves to present results of the recent sampling conducted at the Stockman Oil site at the request of the SCDHEC Project Manager.

2.0 SITE DESCRIPTION

Figure 2 in Appendix A serves as the comprehensive site map showing the locations of the fourteen shallow monitoring wells, one telescopic well and four recovery wells located at the Stockman Oil Two site. On October 14th, 2014 KLM mobilized to the site and attempted to sample the requested monitoring wells. Monitoring wells MW-11 and MW-12 could not be located. The gravel parking / driveway area these wells were located in looked as though it had been reworked since it was last sampled in 2009. RW-3 was covered by a truck and could not be accessed during the sampling event. A piezometric map was created utilizing data collected during sampling activities on October 14th, 2014. The piezometric map can be found in Appendix A as Figure 3.

TABLE 1
Groundwater Data (feet)
Stockman Oil Two, Inc.
Greenwood, SC

Monitoring Well	Date	TOC Elevation	Screened Interval	TOC to FP	TOC to GW	GW Elevation
MW-1*	10/14/14	100.00	14.6-29.6	24.72	>29.6	**FP** to bottom of well
MW-2	10/14/14	92.79	20-30	--	21.39	71.40
MW-3	10/14/14	94.82	25-35	--	22.98	71.84
MW-4	10/14/14	97.52	25-35	--	23.82	73.70
MW-5*	10/14/14	104.40	20-40	28.43	33.72	70.68
MW-6*	10/14/14	104.92	20-40	28.39	>32	Obstruction at 32' **FP**
MW-7	10/14/14	104.13	20-40	--	27.03	77.10
MW-8	10/14/14	98.19	15-35	--	26.59	71.60
MW-9	10/14/14	95.10	15-35	--	24.69	70.41
MW-10	10/14/14	104.25	20-40	--	29.33	74.92
MW-11*	10/14/14	90.86	15-30	--	CNL	--
MW-12*	10/14/14	89.44	15-30	--	CNL	--
MW-13	10/14/14	92.36	15-35	--	20.88	71.48
MW-14	10/14/14	99.74	15-35	--	23.73	76.01
DW-1*	10/14/14	95.18	56-61	--	23.29	71.89
RW-1*	10/14/14	--	25-40	28.12	36.64	**FP**
RW-2*	10/14/14	--	25-40	28.64	34.35	**FP**
RW-3*	10/14/14	--	25-40	--	Covered	--
RW-4*	10/14/14	--	25-40	26.35	28.14	**FP**

* = wells not used in the construction of the piezometric map

Depths to fluid measurements were collected relative to the top of casing for each well using a hydrocarbon interface probe capable of detecting and measuring a hydrocarbon product thickness

of 0.01 foot or 1/8 inch. Groundwater elevations were then determined by subtracting depth to fluid measurements from the top of casing elevations. A copy of the historical groundwater elevations is provided in Appendix F.

3.0 GROUNDWATER QUALITY

Since the monitoring well network has not been sampled in the past 12 months, a minimum of three well volumes were purged from each monitoring well or purged dry prior to sample collection using an electric purge pump. The purge pump and hose were decontaminated between wells with a triple station rinse as outlined in the QAPP. Immediately after well purging was completed, or purged dry, groundwater samples were collected using disposable bottom entry sampling bailers, decanted into sterile glass sample containers provided by the analytical laboratory, and preserved in accordance with United States Environmental Protection Agency (USEPA) sampling protocol. Standard field parameters (pH, specific conductivity, temperature, dissolved oxygen, salinity, and turbidity) were measured with the Horiba U-52 (serial # W22MV13L) and recorded for each sample during well purging or at the time of collection. The Horiba U-52 (serial # W22MV13L) was calibrated with Horiba 100-4 standard solution prior to use and the calibration records are recorded on the calibration sheet which are included in Appendix B. Following collection in the field, the groundwater samples were packed on wet ice and submitted to Pace Analytical Services (SCDHEC Certification # 99006) and analyzed for Benzene, Toluene, Ethylbenzene, total Xylenes (BTEX), Methyl-tert Butyl Ether (MTBE), Naphthalene, 1,2 DCA, EDB and 8 Oxygenates. Analytical results are provided in Table 2 and 3 and in Appendix B. Field sampling sheets are provided in Appendix B. A map is provided as Figure 4 in Appendix A showing the sample results along with the well locations. A disposal manifest for 51.75 gallons of contaminated purge water is provided in Appendix G.

Results for all wells sampled are as follows:

TABLE 2
Summary of Analytical Data
Stockman Oil Two, Inc.
Greenwood, SC

Well #	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Naph-thalene	1,2 DCA	EDB
RBSL	--	**5**	**1000**	**700**	**10000**	**40**	**25**	**5**	**0.05**
MW-1	11/17/08	**132**	32.0	28.0	466	**1200**	**61.6**	NS	<0.019
	11/18/09	**230**	116	113	929	**6320**	**202**	<13.0	**0.072**
	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
MW-2	11/17/08	<5.0	<5.0	<5.0	<10.0	13.7	3.5	NS	<0.019
	11/18/09	<5.0	<5.0	<5.0	<10.0	2.7	<5.0	<5.0	<0.020
	10/14/14	<5.0	<5.0	<5.0	<10.0	2.1	<5.0	<5.0	<0.020
MW-3	11/17/08	**24500**	**39400**	**2620**	**11400**	**6720**	**755**	NS	**0.34**
	11/18/09	**21400**	**34700**	**2150**	**11700**	**5780**	**<580**	**<260**	<0.019
	10/14/14	**14800**	**20400**	**1020**	8360	**1080**	<1000	<1000	<0.020
MW-4	11/17/08	**5.7**	<5.0	<5.0	<10.0	<5.0	<5.0	NS	<0.020
	11/18/09	**13.9**	<5.0	<5.0	3.4	<5.0	<5.0	<5.0	<0.019
	10/14/14	**35.6**	3.3	6.6	36.4	<5.0	**32.4**	<5.0	<0.020
MW-5	11/18/09	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
MW-6	11/18/09	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
MW-7	11/18/09	<5.0	5.4	2.2	12.0	<5.0	<5.0	<5.0	<0.019
	10/14/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
MW-8	11/18/09	<5.0	2.3	1.2	7.5	<5.0	<5.0	<5.0	<0.020
	10/14/14	<5.0	1.7	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019
MW-9	11/18/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
	10/14/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
MW-10	11/18/09	<5.0	<5.0	<5.0	3.6	<5.0	<5.0	<5.0	<0.019
	10/14/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
MW-11	11/18/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
	10/14/14	CNL	CNL	CNL	CNL	CNL	CNL	CNL	CNL
MW-12	11/18/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	2.8	<0.019
	10/14/14	CNL	CNL	CNL	CNL	CNL	CNL	CNL	CNL
MW-13	11/18/09	**19.6**	24.0	2.6	8.2	38.7	<5.0	<5.0	<0.019
	10/14/14	**63.4**	50.8	9.6	<50.0	18.2	<25.0	<25.0	<0.020
MW-14	11/18/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
	10/14/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
DW-1	11/18/09	**70.2**	128	15.6	97.7	25.3	7.1	<5.0	<0.020
	10/14/14	<5.0	<5.0	<5.0	<10.0	1.8	5.3	<5.0	<0.020
RW-1	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
RW-2	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
RW-3	10/14/14	Covered	Covered	Covered	Covered	Covered	Covered	Covered	Covered
RW-4	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
QA / QC Data									
Dup. 1 (MW-4)	10/14/14	**32.8**	13.7	30.3	156	<5.0	**125**	<5.0	0.034
Field Blank	10/14/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
Trip Blank	10/14/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	NA

TABLE 3
Oxygenate Data
Stockman Oil Two, Inc.
Greenwood, SC

Well #	Date Sampled	(ETBE)	(TAME)	(DIPE)	(TBA)	(TAA)	(TBF)	Ethanol	(ETBA)
RBSL	**--**	**47**	**128**	**150**	**1400**	**240**	**--**	**10000**	**--**
MW-1	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
MW-2	10/14/14	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100
MW-3	10/14/14	<2000	<2000	**522**	<20000	**45600**	<10000	<40000	<20000
MW-4	10/14/14	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100
MW-5	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
MW-6	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
MW-7	10/14/14	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100
MW-8	10/14/14	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100
MW-9	10/14/14	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100
MW-10	10/14/14	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100
MW-11	10/14/14	CNL	CNL	CNL	CNL	CNL	CNL	CNL	CNL
MW-12	10/14/14	CNL	CNL	CNL	CNL	CNL	CNL	CNL	CNL
MW-13	10/14/14	<50.0	<50.0	<25.0	<500	**1720**	<250	<1000	<500
MW-14	10/14/14	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100
DW-1	10/14/14	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100
RW-1	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
RW-2	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
RW-3	10/14/14	Covered	Covered	Covered	Covered	Covered	Covered	Covered	Covered
RW-4	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
QA /QC Data									
Dup. 1 (MW-4)	10/14/14	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100
Field Blank	10/14/14	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100
Trip Blank	10/14/14	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100

4.0 CONCLUSIONS

All data was reviewed thoroughly by KLM's quality assurance officer and the data was determined valid. Results from the sampling event indicate free product is present in monitoring wells MW-1, MW-5 and MW-6 in addition to recovery wells RW-1, RW-2 and RW-4. RW-3 could not be accessed during the sampling event as a truck was parked over the well and the driver was not available to move the truck. Laboratory analysis show contaminants above RSBL's persist in monitoring wells MW-3, MW-4 and MW-13. With monitoring wells MW-11 and MW-12 missing, the plume is undefined to the east of MW-13 and MW-3 (towards Spring Valley Rd).

KLM recommends performing multiple extended AFVR events on all recovery wells and the affected monitoring wells showing free phase product. The thickness of free phase product at this site has been measured at nearly 6 feet in some areas. Multiple events at shorter intervals between events should provide information to show if extended AFVR technology is successful at addressing the free product present at this site.

5.0 REFERENCES

KLM Environmental, LLC, *Tier II Assessment Report*, December, 2009.

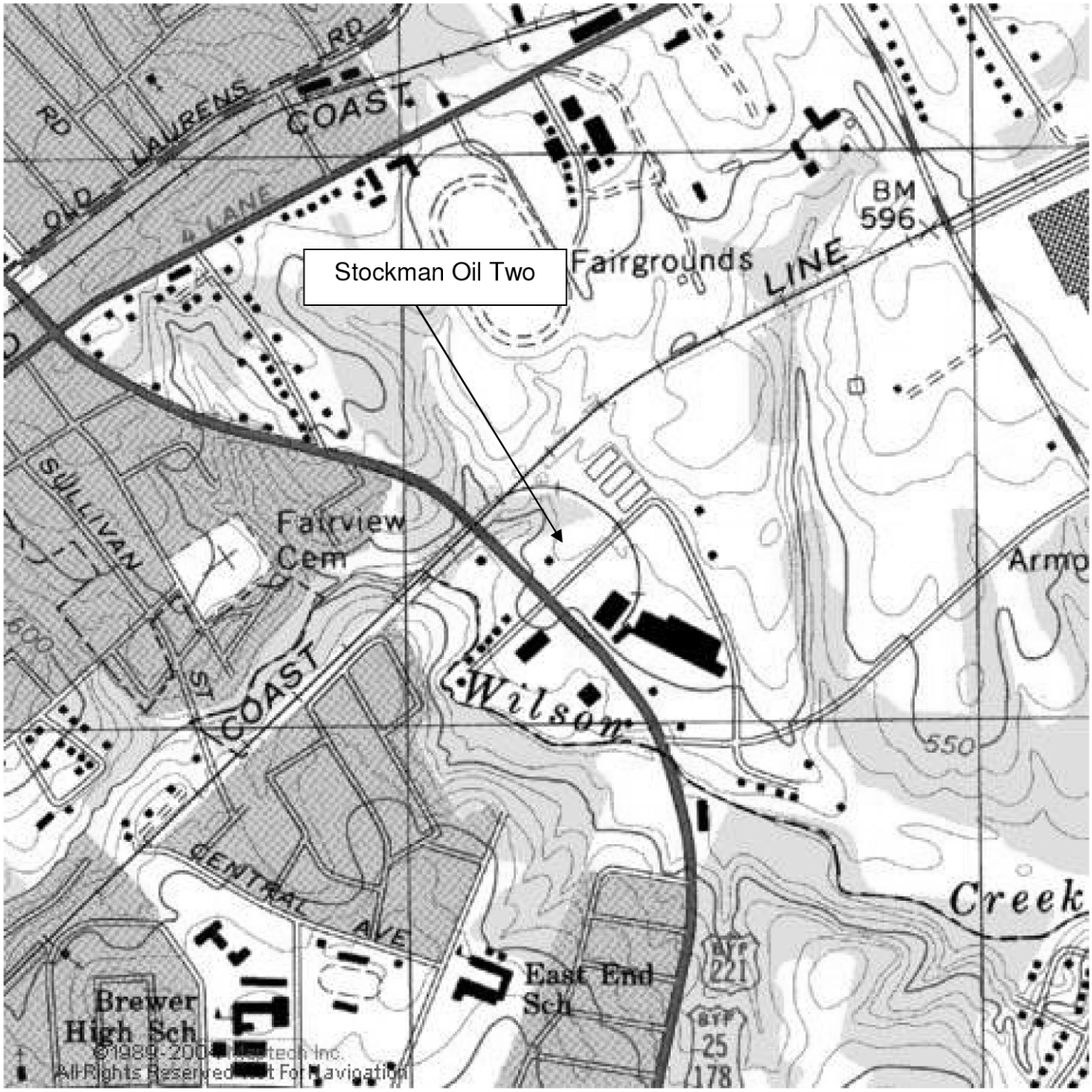
KLM Environmental, LLC, *Monitoring Report*, December, 2008.

Force & Associates, Inc., *Tier I Report*, July, 2002.

South Carolina Department of Health and Environmental Control Bureau of Land and Waste Management Underground Storage Tank Program, *South Carolina Quality Assurance Program Plan Revision 2.0,* July, 2013.

APPENDIX A

Figures



KLM Environmental, LLC

Phase I· Phase II· Underground Storage Tanks·Soil & Water Sampling· Well Installation

Figure 1
USGS Map
Stockman Oil Two
Greenwood, SC
Project # 05086.11

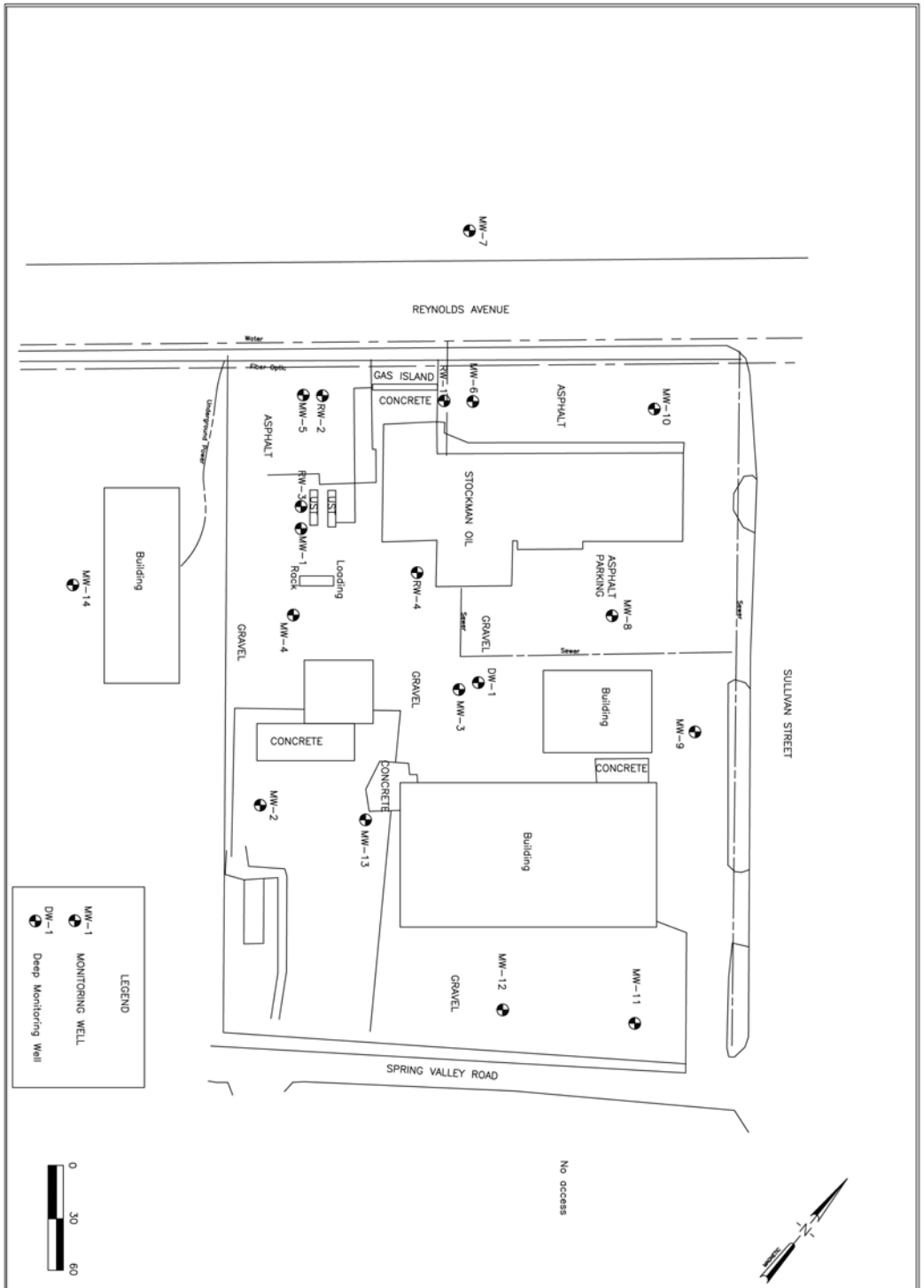


FIGURE 2
SITE MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

KLM Environmental, LLC

Phase I· Phase II· Underground Storage Tanks· Soil & Water Sampling· Well Installation

TABLE 1
Groundwater Data (feet)
Stockman Oil Two, Inc.
Greenwood, SC

Monitoring Well	Date	TOC Elevation	Screened Interval	TOC to FP	TOC to GW	GW Elevation
MW-1*	10/14/14	100.00	14.6-29.6	24.72	>29.6	FP to bottom of well
MW-2	10/14/14	92.79	20-30	--	21.39	71.40
MW-3	10/14/14	94.82	25-35	--	22.98	71.84
MW-4	10/14/14	97.52	25-35	--	23.82	73.70
MW-5*	10/14/14	104.40	20-40	28.43	33.72	70.68
MW-6*	10/14/14	104.92	20-40	28.39	>32	Obstruction at 32' **FP**
MW-7	10/14/14	104.13	20-40	--	27.03	77.10
MW-8	10/14/14	98.19	15-35	--	26.59	71.60
MW-9	10/14/14	95.10	15-35	--	24.69	70.41
MW-10	10/14/14	104.25	20-40	--	29.33	74.92
MW-11*	10/14/14	90.86	15-30	--	CNL	--
MW-12*	10/14/14	89.44	15-30	--	CNL	--
MW-13	10/14/14	92.36	15-35	--	20.88	71.48
MW-14	10/14/14	99.74	15-35	--	23.73	76.01
DW-1*	10/14/14	95.18	56-61	--	23.29	71.89
RW-1*	10/14/14	--	25-40	28.12	36.64	**FP**
RW-2*	10/14/14	--	25-40	28.64	34.35	**FP**
RW-3*	10/14/14	--	25-40	--	Covered	--
RW-4*	10/14/14	--	25-40	26.35	28.14	**FP**

KLM Environmental, LLC

Phase I Phase II Underground Storage Tanks Soil & Water Sampling Well Installation

FIGURE 3
PIEZOMETRIC MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

TABLE 2
Summary of Analytical Data
Stockman Oil Two, Inc.
Greenwood, SC

Well #	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Naph-thalene	1,2 DCA	EDB
RBSL	--	**5**	**1000**	**700**	**10000**	**40**	**25**	**5**	**0.05**
MW-1	11/17/08	**132**	32.0	28.0	466	**1200**	**61.6**	NS	<0.019
	11/18/09	**230**	116	113	929	**6320**	**202**	<13.0	**0.072**
	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
MW-2	11/17/08	<5.0	<5.0	<5.0	<10.0	13.7	3.5	NS	<0.019
	11/18/09	<5.0	<5.0	<5.0	<10.0	2.7	<5.0	<5.0	<0.020
	10/14/14	<5.0	<5.0	<5.0	<10.0	2.1	<5.0	<5.0	<0.020
MW-3	11/17/08	**24500**	**39400**	**2620**	**11400**	**6720**	**755**	NS	**0.34**
	11/18/09	**21400**	**34700**	**2150**	**11700**	**5780**	**<580**	**<260**	<0.019
	10/14/14	**14800**	**20400**	**1020**	8360	**1080**	<1000	<1000	<0.020
	11/17/08	**5.7**	<5.0	<5.0	<10.0	<5.0	<5.0	NS	<0.020
MW-4	11/18/09	**13.9**	<5.0	<5.0	3.4	<5.0	<5.0	<5.0	<0.019
	10/14/14	**35.6**	3.3	9.6	39.4	<5.0	**32.4**	<5.0	<0.020
MW-5	11/18/09	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
MW-6	11/18/09	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
MW-7	11/18/09	<5.0	5.4	2.2	12.0	<5.0	<5.0	<5.0	<0.019
	10/14/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
MW-8	11/18/09	<5.0	2.3	1.2	7.5	<5.0	<5.0	<5.0	<0.020
	10/14/14	<5.0	1.7	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019
MW-9	11/18/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
	10/14/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
MW-10	11/18/09	<5.0	<5.0	<5.0	3.6	<5.0	<5.0	<5.0	<0.019
	10/14/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
MW-11	11/18/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
	10/14/14	CNL	CNL	CNL	CNL	CNL	CNL	CNL	CNL
MW-12	11/18/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	2.8	<0.019
	10/14/14	CNL	CNL	CNL	CNL	CNL	CNL	CNL	CNL
MW-13	11/18/09	**19.6**	24.0	2.6	8.2	38.7	<5.0	<5.0	<0.019
	10/14/14	**63.4**	50.8	9.6	<50.0	18.2	<25.0	<25.0	<0.020
MW-14	11/18/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
	10/14/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
DW-1	11/18/09	**70.2**	128	15.6	97.7	25.3	7.1	<5.0	<0.020
	10/14/14	<5.0	<5.0	<5.0	<10.0	1.8	5.3	<5.0	<0.020
RW-1	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
RW-2	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
RW-3	10/14/14	Covered	Covered	Covered	Covered	Covered	Covered	Covered	Covered
RW-4	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**

MW-7

KLM Environmental, LLC

Phase I- Phase II- Underground Storage Tanks-Soil & Water Sampling- Well Installation

FIGURE 4
COC MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

APPENDIX B

Laboratory Data / Sampling Sheets

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

October 31, 2014

Mr. Mark Keller
KLM Environmental
PO Box 2704
Goose Creek, SC 29445

RE: Project: STOCKMAN OIL
Pace Project No.: 92222203

Dear Mr. Keller:
Enclosed are the analytical results for sample(s) received by the laboratory on October 21, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Nicole Benjamin
nicole.benjamin@pacelabs.com
Project Manager

Enclosures

cc: Micah Bennett, KLM

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CERTIFICATIONS

Project: STOCKMAN OIL
Pace Project No.: 92222203

Charlotte Certification IDs
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
West Virginia Certification #: 357
Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: STOCKMAN OIL
Pace Project No.: 92222203

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92222203001	04736 MW-2	Water	10/17/14 13:00	10/21/14 09:45
92222203002	04736 MW-3	Water	10/17/14 11:45	10/21/14 09:45
92222203003	04736 MW-4	Water	10/17/14 11:00	10/21/14 09:45
92222203004	04736 MW-7	Water	10/17/14 10:15	10/21/14 09:45
92222203005	04736 MW-8	Water	10/17/14 12:00	10/21/14 09:45
92222203006	04736 MW-9	Water	10/17/14 13:45	10/21/14 09:45
92222203007	04736 MW-10	Water	10/17/14 14:00	10/21/14 09:45
92222203008	04736 MW-13	Water	10/17/14 13:30	10/21/14 09:45
92222203009	04736 MW-14	Water	10/17/14 10:00	10/21/14 09:45
92222203010	04736 DW-1	Water	10/17/14 11:30	10/21/14 09:45
92222203011	04736 DUPLICATE 1	Water	10/17/14 11:05	10/21/14 09:45
92222203012	04736 FIELD BLANK	Water	10/17/14 14:05	10/21/14 09:45
92222203013	04736 TRIP BLANK	Water	10/17/14 00:00	10/21/14 09:45

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SAMPLE ANALYTE COUNT

Project: STOCKMAN OIL
Pace Project No.: 92222203

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92222203001	04736 MW-2	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	20	PASI-C
92222203002	04736 MW-3	EPA 8011	JMC	2	PASI-C
		EPA 8260	CAH	20	PASI-C
92222203003	04736 MW-4	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	20	PASI-C
92222203004	04736 MW-7	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	20	PASI-C
92222203005	04736 MW-8	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	20	PASI-C
92222203006	04736 MW-9	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	20	PASI-C
92222203007	04736 MW-10	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	20	PASI-C
92222203008	04736 MW-13	EPA 8011	JMC	2	PASI-C
		EPA 8260	CAH	20	PASI-C
92222203009	04736 MW-14	EPA 8011	JMC	2	PASI-C
		EPA 8260	CAH	20	PASI-C
92222203010	04736 DW-1	EPA 8011	JMC	2	PASI-C
		EPA 8260	CAH	20	PASI-C
92222203011	04736 DUPLICATE 1	EPA 8011	JMC	2	PASI-C
		EPA 8260	CAH	20	PASI-C
92222203012	04736 FIELD BLANK	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	20	PASI-C
92222203013	04736 TRIP BLANK	EPA 8260	CCL	20	PASI-C

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SUMMARY OF DETECTION

Project: STOCKMAN OIL
Pace Project No.: 92222203

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92222203001	**04736 MW-2**					
EPA 8260	Methyl-tert-butyl ether	2.1J	ug/L	5.0	10/29/14 03:27	
92222203002	**04736 MW-3**					
EPA 8260	tert-Amyl Alcohol	45600	ug/L	20000	10/29/14 17:28	
EPA 8260	Benzene	14800	ug/L	1000	10/29/14 17:28	
EPA 8260	Diisopropyl ether	522J	ug/L	1000	10/29/14 17:28	
EPA 8260	Ethylbenzene	1020	ug/L	1000	10/29/14 17:28	
EPA 8260	Methyl-tert-butyl ether	1080	ug/L	1000	10/29/14 17:28	
EPA 8260	Toluene	20400	ug/L	1000	10/29/14 17:28	
EPA 8260	Xylene (Total)	8360	ug/L	2000	10/29/14 17:28	
EPA 8260	m&p-Xylene	5240	ug/L	2000	10/29/14 17:28	
EPA 8260	o-Xylene	3120	ug/L	1000	10/29/14 17:28	
92222203003	**04736 MW-4**					
EPA 8260	Benzene	35.6	ug/L	5.0	10/29/14 06:30	
EPA 8260	Ethylbenzene	6.6	ug/L	5.0	10/29/14 06:30	
EPA 8260	Naphthalene	32.4	ug/L	5.0	10/29/14 06:30	
EPA 8260	Toluene	3.3J	ug/L	5.0	10/29/14 06:30	
EPA 8260	Xylene (Total)	36.4	ug/L	10.0	10/29/14 06:30	
EPA 8260	m&p-Xylene	17.5	ug/L	10.0	10/29/14 06:30	
EPA 8260	o-Xylene	19.0	ug/L	5.0	10/29/14 06:30	
92222203005	**04736 MW-8**					
EPA 8260	Toluene	1.7J	ug/L	5.0	10/29/14 03:43	
92222203008	**04736 MW-13**					
EPA 8260	tert-Amyl Alcohol	1720	ug/L	500	10/29/14 16:55	
EPA 8260	Benzene	63.4	ug/L	25.0	10/29/14 16:55	
EPA 8260	Ethylbenzene	9.6J	ug/L	25.0	10/29/14 16:55	
EPA 8260	Methyl-tert-butyl ether	18.2J	ug/L	25.0	10/29/14 16:55	
EPA 8260	Toluene	50.8	ug/L	25.0	10/29/14 16:55	
92222203010	**04736 DW-1**					
EPA 8260	Methyl-tert-butyl ether	1.8J	ug/L	5.0	10/29/14 20:16	
EPA 8260	Naphthalene	5.3	ug/L	5.0	10/29/14 20:16	
EPA 8260	o-Xylene	2.7J	ug/L	5.0	10/29/14 20:16	
92222203011	**04736 DUPLICATE 1**					
EPA 8011	1,2-Dibromoethane (EDB)	0.034	ug/L	0.020	10/23/14 12:22	
EPA 8260	Benzene	32.8	ug/L	5.0	10/30/14 18:31	
EPA 8260	Ethylbenzene	30.3	ug/L	5.0	10/30/14 18:31	
EPA 8260	Naphthalene	125	ug/L	5.0	10/30/14 18:31	
EPA 8260	Toluene	13.7	ug/L	5.0	10/30/14 18:31	
EPA 8260	Xylene (Total)	156	ug/L	10.0	10/30/14 18:31	
EPA 8260	m&p-Xylene	76.0	ug/L	10.0	10/30/14 18:31	
EPA 8260	o-Xylene	80.2	ug/L	5.0	10/30/14 18:31	

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: STOCKMAN OIL
Pace Project No.: 92222203

Method: **EPA 8011**
Description: 8011 GCS EDB and DBCP
Client: KLM
Date: October 31, 2014

General Information:
12 samples were analyzed for EPA 8011. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 8011 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

QC Batch: OEXT/30634

S2: Surrogate recovery outside laboratory control limits due to matrix interferences (confirmed by similar results from sample re-analysis).

- MS (Lab ID: 1313208)
  - 1-Chloro-2-bromopropane (S)
- MSD (Lab ID: 1313209)
  - 1-Chloro-2-bromopropane (S)

S4: Surrogate recovery not evaluated against control limits due to sample dilution.

- DUP (Lab ID: 1313210)
  - 1-Chloro-2-bromopropane (S)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: OEXT/30634

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92222513001

M3: Matrix spike recovery was outside laboratory control limits due to matrix interferences.

- MS (Lab ID: 1313208)
  - 1,2-Dibromoethane (EDB)
- MSD (Lab ID: 1313209)

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PROJECT NARRATIVE

Project: STOCKMAN OIL
Pace Project No.: 92222203

Method: **EPA 8011**
Description: 8011 GCS EDB and DBCP
Client: KLM
Date: October 31, 2014

QC Batch: OEXT/30634

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92222513001

M3: Matrix spike recovery was outside laboratory control limits due to matrix interferences.

- 1,2-Dibromoethane (EDB)

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: STOCKMAN OIL
Pace Project No.: 92222203

Method: **EPA 8260**
Description: 8260 MSV
Client: KLM
Date: October 31, 2014

General Information:
13 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MSV/28919

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92222203001

M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

- MS (Lab ID: 1316888)
  - Ethanol
  - tert-Butyl Alcohol

P5: The EPA or method required sample preservation degrades this compound, therefore acceptable recoveries may not be achieved in sample matrix spikes.

- MS (Lab ID: 1316888)
  - tert-Butyl Formate

QC Batch: MSV/28920

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92222492002

P5: The EPA or method required sample preservation degrades this compound, therefore acceptable recoveries may not be achieved in sample matrix spikes.

- MS (Lab ID: 1317400)
  - tert-Butyl Formate

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PROJECT NARRATIVE

Project: STOCKMAN OIL
Pace Project No.: 92222203

Method: **EPA 8260**
Description: 8260 MSV
Client: KLM
Date: October 31, 2014

QC Batch: MSV/28990

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92222643003

M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

- MS (Lab ID: 1318488)
  - Ethanol

P5: The EPA or method required sample preservation degrades this compound, therefore acceptable recoveries may not be achieved in sample matrix spikes.

- MS (Lab ID: 1318488)
  - tert-Butyl Formate

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 92222203

Sample: 04736 MW-2 **Lab ID: 92222203001** Collected: 10/17/14 13:00 Received: 10/21/14 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	10/22/14 11:47	10/23/14 05:14	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	103	%	60-140		1	10/22/14 11:47	10/23/14 05:14	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		10/29/14 03:27	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		10/29/14 03:27	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		10/29/14 03:27	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		10/29/14 03:27	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		10/29/14 03:27	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		10/29/14 03:27	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		10/29/14 03:27	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		10/29/14 03:27	108-20-3	
Ethanol	ND	ug/L	200	138	1		10/29/14 03:27	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		10/29/14 03:27	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		10/29/14 03:27	637-92-3	
Methyl-tert-butyl ether	**2.1J**	ug/L	5.0	1.7	1		10/29/14 03:27	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		10/29/14 03:27	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		10/29/14 03:27	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		10/29/14 03:27	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	3.1	1		10/29/14 03:27	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		10/29/14 03:27	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	97	%	70-130		1		10/29/14 03:27	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%	70-130		1		10/29/14 03:27	17060-07-0	
Toluene-d8 (S)	99	%	70-130		1		10/29/14 03:27	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 92222203

Sample: 04736 MW-3 **Lab ID: 92222203002** Collected: 10/17/14 11:45 Received: 10/21/14 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	10/22/14 11:47	10/23/14 05:33	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	121	%	60-140		1	10/22/14 11:47	10/23/14 05:33	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**45600**	ug/L	20000	15400	200		10/29/14 17:28	75-85-4	
tert-Amylmethyl ether	ND	ug/L	2000	680	200		10/29/14 17:28	994-05-8	
Benzene	**14800**	ug/L	1000	340	200		10/29/14 17:28	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	20000	6420	200		10/29/14 17:28	624-95-3	
tert-Butyl Alcohol	ND	ug/L	20000	11500	200		10/29/14 17:28	75-65-0	
tert-Butyl Formate	ND	ug/L	10000	1460	200		10/29/14 17:28	762-75-4	
1,2-Dichloroethane	ND	ug/L	1000	360	200		10/29/14 17:28	107-06-2	
Diisopropyl ether	**522J**	ug/L	1000	340	200		10/29/14 17:28	108-20-3	
Ethanol	ND	ug/L	40000	27600	200		10/29/14 17:28	64-17-5	
Ethylbenzene	**1020**	ug/L	1000	320	200		10/29/14 17:28	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	2000	720	200		10/29/14 17:28	637-92-3	
Methyl-tert-butyl ether	**1080**	ug/L	1000	340	200		10/29/14 17:28	1634-04-4	
Naphthalene	ND	ug/L	1000	400	200		10/29/14 17:28	91-20-3	
Toluene	**20400**	ug/L	1000	320	200		10/29/14 17:28	108-88-3	
Xylene (Total)	**8360**	ug/L	2000	540	200		10/29/14 17:28	1330-20-7	
m&p-Xylene	**5240**	ug/L	2000	620	200		10/29/14 17:28	179601-23-1	
o-Xylene	**3120**	ug/L	1000	320	200		10/29/14 17:28	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	102	%	70-130		200		10/29/14 17:28	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	70-130		200		10/29/14 17:28	17060-07-0	
Toluene-d8 (S)	99	%	70-130		200		10/29/14 17:28	2037-26-5	

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ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 92222203

Sample: 04736 MW-4 **Lab ID: 92222203003** Collected: 10/17/14 11:00 Received: 10/21/14 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	10/22/14 11:47	10/23/14 05:53	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	102	%	60-140		1	10/22/14 11:47	10/23/14 05:53	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		10/29/14 06:30	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		10/29/14 06:30	994-05-8	
Benzene	**35.6**	ug/L	5.0	1.7	1		10/29/14 06:30	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		10/29/14 06:30	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		10/29/14 06:30	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		10/29/14 06:30	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		10/29/14 06:30	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		10/29/14 06:30	108-20-3	
Ethanol	ND	ug/L	200	138	1		10/29/14 06:30	64-17-5	
Ethylbenzene	**6.6**	ug/L	5.0	1.6	1		10/29/14 06:30	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		10/29/14 06:30	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		10/29/14 06:30	1634-04-4	
Naphthalene	**32.4**	ug/L	5.0	2.0	1		10/29/14 06:30	91-20-3	
Toluene	**3.3J**	ug/L	5.0	1.6	1		10/29/14 06:30	108-88-3	
Xylene (Total)	**36.4**	ug/L	10.0	2.7	1		10/29/14 06:30	1330-20-7	
m&p-Xylene	**17.5**	ug/L	10.0	3.1	1		10/29/14 06:30	179601-23-1	
o-Xylene	**19.0**	ug/L	5.0	1.6	1		10/29/14 06:30	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	98	%	70-130		1		10/29/14 06:30	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%	70-130		1		10/29/14 06:30	17060-07-0	
Toluene-d8 (S)	100	%	70-130		1		10/29/14 06:30	2037-26-5	

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ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 92222203

Sample: 04736 MW-7 **Lab ID: 92222203004** Collected: 10/17/14 10:15 Received: 10/21/14 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	10/22/14 11:47	10/23/14 06:51	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	100	%	60-140		1	10/22/14 11:47	10/23/14 06:51	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		10/29/14 06:47	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		10/29/14 06:47	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		10/29/14 06:47	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		10/29/14 06:47	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		10/29/14 06:47	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		10/29/14 06:47	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		10/29/14 06:47	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		10/29/14 06:47	108-20-3	
Ethanol	ND	ug/L	200	138	1		10/29/14 06:47	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		10/29/14 06:47	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		10/29/14 06:47	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		10/29/14 06:47	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		10/29/14 06:47	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		10/29/14 06:47	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		10/29/14 06:47	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	3.1	1		10/29/14 06:47	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		10/29/14 06:47	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	101	%	70-130		1		10/29/14 06:47	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%	70-130		1		10/29/14 06:47	17060-07-0	
Toluene-d8 (S)	100	%	70-130		1		10/29/14 06:47	2037-26-5	

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ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 92222203

Sample: 04736 MW-8 **Lab ID: 92222203005** Collected: 10/17/14 12:00 Received: 10/21/14 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	10/22/14 11:47	10/23/14 07:29	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	102	%	60-140		1	10/22/14 11:47	10/23/14 07:29	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		10/29/14 03:43	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		10/29/14 03:43	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		10/29/14 03:43	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		10/29/14 03:43	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		10/29/14 03:43	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		10/29/14 03:43	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		10/29/14 03:43	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		10/29/14 03:43	108-20-3	
Ethanol	ND	ug/L	200	138	1		10/29/14 03:43	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		10/29/14 03:43	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		10/29/14 03:43	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		10/29/14 03:43	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		10/29/14 03:43	91-20-3	
Toluene	**1.7J**	ug/L	5.0	1.6	1		10/29/14 03:43	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		10/29/14 03:43	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	3.1	1		10/29/14 03:43	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		10/29/14 03:43	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	102	%	70-130		1		10/29/14 03:43	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%	70-130		1		10/29/14 03:43	17060-07-0	
Toluene-d8 (S)	99	%	70-130		1		10/29/14 03:43	2037-26-5	

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ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 92222203

Sample: 04736 MW-9 **Lab ID: 92222203006** Collected: 10/17/14 13:45 Received: 10/21/14 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	10/22/14 11:47	10/23/14 07:49	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	99	%	60-140		1	10/22/14 11:47	10/23/14 07:49	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		10/29/14 04:00	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		10/29/14 04:00	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		10/29/14 04:00	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		10/29/14 04:00	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		10/29/14 04:00	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		10/29/14 04:00	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		10/29/14 04:00	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		10/29/14 04:00	108-20-3	
Ethanol	ND	ug/L	200	138	1		10/29/14 04:00	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		10/29/14 04:00	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		10/29/14 04:00	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		10/29/14 04:00	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		10/29/14 04:00	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		10/29/14 04:00	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		10/29/14 04:00	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	3.1	1		10/29/14 04:00	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		10/29/14 04:00	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	98	%	70-130		1		10/29/14 04:00	460-00-4	
1,2-Dichloroethane-d4 (S)	93	%	70-130		1		10/29/14 04:00	17060-07-0	
Toluene-d8 (S)	100	%	70-130		1		10/29/14 04:00	2037-26-5	

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ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 92222203

Sample: 04736 MW-10 **Lab ID: 92222203007** Collected: 10/17/14 14:00 Received: 10/21/14 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	10/22/14 11:47	10/23/14 08:08	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	102	%	60-140		1	10/22/14 11:47	10/23/14 08:08	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		10/29/14 04:17	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		10/29/14 04:17	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		10/29/14 04:17	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		10/29/14 04:17	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		10/29/14 04:17	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		10/29/14 04:17	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		10/29/14 04:17	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		10/29/14 04:17	108-20-3	
Ethanol	ND	ug/L	200	138	1		10/29/14 04:17	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		10/29/14 04:17	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		10/29/14 04:17	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		10/29/14 04:17	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		10/29/14 04:17	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		10/29/14 04:17	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		10/29/14 04:17	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	3.1	1		10/29/14 04:17	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		10/29/14 04:17	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	101	%	70-130		1		10/29/14 04:17	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%	70-130		1		10/29/14 04:17	17060-07-0	
Toluene-d8 (S)	101	%	70-130		1		10/29/14 04:17	2037-26-5	

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ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 92222203

Sample: 04736 MW-13 **Lab ID: 92222203008** Collected: 10/17/14 13:30 Received: 10/21/14 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	10/23/14 09:22	10/23/14 11:23	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	101	%	60-140		1	10/23/14 09:22	10/23/14 11:23	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**1720**	ug/L	500	384	5		10/29/14 16:55	75-85-4	
tert-Amylmethyl ether	ND	ug/L	50.0	17.0	5		10/29/14 16:55	994-05-8	
Benzene	**63.4**	ug/L	25.0	8.5	5		10/29/14 16:55	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	500	160	5		10/29/14 16:55	624-95-3	
tert-Butyl Alcohol	ND	ug/L	500	288	5		10/29/14 16:55	75-65-0	
tert-Butyl Formate	ND	ug/L	250	36.5	5		10/29/14 16:55	762-75-4	
1,2-Dichloroethane	ND	ug/L	25.0	9.0	5		10/29/14 16:55	107-06-2	
Diisopropyl ether	ND	ug/L	25.0	8.5	5		10/29/14 16:55	108-20-3	
Ethanol	ND	ug/L	1000	689	5		10/29/14 16:55	64-17-5	
Ethylbenzene	**9.6J**	ug/L	25.0	8.0	5		10/29/14 16:55	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	50.0	18.0	5		10/29/14 16:55	637-92-3	
Methyl-tert-butyl ether	**18.2J**	ug/L	25.0	8.5	5		10/29/14 16:55	1634-04-4	
Naphthalene	ND	ug/L	25.0	10.0	5		10/29/14 16:55	91-20-3	
Toluene	**50.8**	ug/L	25.0	8.0	5		10/29/14 16:55	108-88-3	
Xylene (Total)	ND	ug/L	50.0	13.5	5		10/29/14 16:55	1330-20-7	
m&p-Xylene	ND	ug/L	50.0	15.5	5		10/29/14 16:55	179601-23-1	
o-Xylene	ND	ug/L	25.0	8.0	5		10/29/14 16:55	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	102	%	70-130		5		10/29/14 16:55	460-00-4	HS
1,2-Dichloroethane-d4 (S)	98	%	70-130		5		10/29/14 16:55	17060-07-0	
Toluene-d8 (S)	98	%	70-130		5		10/29/14 16:55	2037-26-5	

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ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 92222203

Sample: 04736 MW-14 **Lab ID: 92222203009** Collected: 10/17/14 10:00 Received: 10/21/14 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	10/23/14 09:22	10/23/14 11:43	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	99	%	60-140		1	10/23/14 09:22	10/23/14 11:43	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		10/29/14 17:12	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		10/29/14 17:12	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		10/29/14 17:12	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		10/29/14 17:12	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		10/29/14 17:12	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		10/29/14 17:12	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		10/29/14 17:12	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		10/29/14 17:12	108-20-3	
Ethanol	ND	ug/L	200	138	1		10/29/14 17:12	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		10/29/14 17:12	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		10/29/14 17:12	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		10/29/14 17:12	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		10/29/14 17:12	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		10/29/14 17:12	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		10/29/14 17:12	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	3.1	1		10/29/14 17:12	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		10/29/14 17:12	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	98	%	70-130		1		10/29/14 17:12	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%	70-130		1		10/29/14 17:12	17060-07-0	
Toluene-d8 (S)	100	%	70-130		1		10/29/14 17:12	2037-26-5	

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ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 92222203

Sample: 04736 DW-1 **Lab ID: 92222203010** Collected: 10/17/14 11:30 Received: 10/21/14 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	10/23/14 09:22	10/23/14 12:03	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	98	%	60-140		1	10/23/14 09:22	10/23/14 12:03	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		10/29/14 20:16	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		10/29/14 20:16	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		10/29/14 20:16	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		10/29/14 20:16	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		10/29/14 20:16	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		10/29/14 20:16	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		10/29/14 20:16	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		10/29/14 20:16	108-20-3	
Ethanol	ND	ug/L	200	138	1		10/29/14 20:16	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		10/29/14 20:16	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		10/29/14 20:16	637-92-3	
Methyl-tert-butyl ether	**1.8J**	ug/L	5.0	1.7	1		10/29/14 20:16	1634-04-4	
Naphthalene	**5.3**	ug/L	5.0	2.0	1		10/29/14 20:16	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		10/29/14 20:16	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		10/29/14 20:16	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	3.1	1		10/29/14 20:16	179601-23-1	
o-Xylene	**2.7J**	ug/L	5.0	1.6	1		10/29/14 20:16	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	100	%	70-130		1		10/29/14 20:16	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%	70-130		1		10/29/14 20:16	17060-07-0	
Toluene-d8 (S)	100	%	70-130		1		10/29/14 20:16	2037-26-5	

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ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 92222203

Sample: 04736 DUPLICATE 1 **Lab ID: 92222203011** Collected: 10/17/14 11:05 Received: 10/21/14 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	**0.034**	ug/L	0.020	0.020	1	10/23/14 09:22	10/23/14 12:22	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	101	%	60-140		1	10/23/14 09:22	10/23/14 12:22	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		10/30/14 18:31	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		10/30/14 18:31	994-05-8	
Benzene	**32.8**	ug/L	5.0	1.7	1		10/30/14 18:31	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		10/30/14 18:31	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		10/30/14 18:31	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		10/30/14 18:31	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		10/30/14 18:31	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		10/30/14 18:31	108-20-3	
Ethanol	ND	ug/L	200	138	1		10/30/14 18:31	64-17-5	
Ethylbenzene	**30.3**	ug/L	5.0	1.6	1		10/30/14 18:31	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		10/30/14 18:31	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		10/30/14 18:31	1634-04-4	
Naphthalene	**125**	ug/L	5.0	2.0	1		10/30/14 18:31	91-20-3	
Toluene	**13.7**	ug/L	5.0	1.6	1		10/30/14 18:31	108-88-3	
Xylene (Total)	**156**	ug/L	10.0	2.7	1		10/30/14 18:31	1330-20-7	
m&p-Xylene	**76.0**	ug/L	10.0	3.1	1		10/30/14 18:31	179601-23-1	
o-Xylene	**80.2**	ug/L	5.0	1.6	1		10/30/14 18:31	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	100	%	70-130		1		10/30/14 18:31	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	70-130		1		10/30/14 18:31	17060-07-0	
Toluene-d8 (S)	100	%	70-130		1		10/30/14 18:31	2037-26-5	

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ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 92222203

Sample: 04736 FIELD BLANK **Lab ID: 92222203012** Collected: 10/17/14 14:05 Received: 10/21/14 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	10/23/14 09:22	10/23/14 12:42	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	100	%	60-140		1	10/23/14 09:22	10/23/14 12:42	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		10/29/14 04:50	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		10/29/14 04:50	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		10/29/14 04:50	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		10/29/14 04:50	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		10/29/14 04:50	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		10/29/14 04:50	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		10/29/14 04:50	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		10/29/14 04:50	108-20-3	
Ethanol	ND	ug/L	200	138	1		10/29/14 04:50	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		10/29/14 04:50	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		10/29/14 04:50	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		10/29/14 04:50	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		10/29/14 04:50	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		10/29/14 04:50	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		10/29/14 04:50	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	3.1	1		10/29/14 04:50	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		10/29/14 04:50	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	99	%	70-130		1		10/29/14 04:50	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%	70-130		1		10/29/14 04:50	17060-07-0	
Toluene-d8 (S)	100	%	70-130		1		10/29/14 04:50	2037-26-5	

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ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 92222203

Sample: 04736 TRIP BLANK **Lab ID: 92222203013** Collected: 10/17/14 00:00 Received: 10/21/14 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		10/29/14 05:07	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		10/29/14 05:07	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		10/29/14 05:07	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		10/29/14 05:07	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		10/29/14 05:07	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		10/29/14 05:07	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		10/29/14 05:07	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		10/29/14 05:07	108-20-3	
Ethanol	ND	ug/L	200	138	1		10/29/14 05:07	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		10/29/14 05:07	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		10/29/14 05:07	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		10/29/14 05:07	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		10/29/14 05:07	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		10/29/14 05:07	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		10/29/14 05:07	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	3.1	1		10/29/14 05:07	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		10/29/14 05:07	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	99	%	70-130		1		10/29/14 05:07	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%	70-130		1		10/29/14 05:07	17060-07-0	
Toluene-d8 (S)	100	%	70-130		1		10/29/14 05:07	2037-26-5	

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 92222203

QC Batch: MSV/28919 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV SC
Associated Lab Samples: 92222203001, 92222203003, 92222203004, 92222203005, 92222203006, 92222203007, 92222203012, 92222203013

METHOD BLANK: 1315585 Matrix: Water
Associated Lab Samples: 92222203001, 92222203003, 92222203004, 92222203005, 92222203006, 92222203007, 92222203012, 92222203013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	10/29/14 01:47	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	10/29/14 01:47	
Benzene	ug/L	ND	5.0	10/29/14 01:47	
Diisopropyl ether	ug/L	ND	5.0	10/29/14 01:47	
Ethanol	ug/L	ND	200	10/29/14 01:47	
Ethyl-tert-butyl ether	ug/L	ND	10.0	10/29/14 01:47	
Ethylbenzene	ug/L	ND	5.0	10/29/14 01:47	
m&p-Xylene	ug/L	ND	10.0	10/29/14 01:47	
Methyl-tert-butyl ether	ug/L	ND	5.0	10/29/14 01:47	
Naphthalene	ug/L	ND	5.0	10/29/14 01:47	
o-Xylene	ug/L	ND	5.0	10/29/14 01:47	
tert-Amyl Alcohol	ug/L	ND	100	10/29/14 01:47	
tert-Amylmethyl ether	ug/L	ND	10.0	10/29/14 01:47	
tert-Butyl Alcohol	ug/L	ND	100	10/29/14 01:47	
tert-Butyl Formate	ug/L	ND	50.0	10/29/14 01:47	
Toluene	ug/L	ND	5.0	10/29/14 01:47	
Xylene (Total)	ug/L	ND	10.0	10/29/14 01:47	
1,2-Dichloroethane-d4 (S)	%	93	70-130	10/29/14 01:47	
4-Bromofluorobenzene (S)	%	100	70-130	10/29/14 01:47	
Toluene-d8 (S)	%	101	70-130	10/29/14 01:47	

LABORATORY CONTROL SAMPLE: 1315586

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	48.2	96	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	965	96	70-130	
Benzene	ug/L	50	55.9	112	70-130	
Diisopropyl ether	ug/L	50	54.2	108	70-130	
Ethanol	ug/L	2000	2220	111	70-130	
Ethyl-tert-butyl ether	ug/L	100	113	113	70-130	
Ethylbenzene	ug/L	50	53.2	106	70-130	
m&p-Xylene	ug/L	100	106	106	70-130	
Methyl-tert-butyl ether	ug/L	50	52.8	106	70-130	
Naphthalene	ug/L	50	56.1	112	70-130	
o-Xylene	ug/L	50	52.5	105	70-130	
tert-Amyl Alcohol	ug/L	1000	958	96	70-130	
tert-Amylmethyl ether	ug/L	100	114	114	70-130	
tert-Butyl Alcohol	ug/L	500	530	106	70-130	

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 92222203

LABORATORY CONTROL SAMPLE: 1315586

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
tert-Butyl Formate	ug/L	400	361	90	70-130	
Toluene	ug/L	50	55.0	110	70-130	
Xylene (Total)	ug/L	150	159	106	70-130	
1,2-Dichloroethane-d4 (S)	%			93	70-130	
4-Bromofluorobenzene (S)	%			99	70-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE SAMPLE: 1316888

Parameter	Units	92222203001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	ND	20	20.4	102	70-130	
3,3-Dimethyl-1-Butanol	ug/L	ND	400	439	110	70-130	
Benzene	ug/L	ND	20	24.6	121	70-130	
Diisopropyl ether	ug/L	ND	20	23.5	113	70-130	
Ethanol	ug/L	ND	800	1740	217	70-130	M0
Ethyl-tert-butyl ether	ug/L	ND	40	46.3	116	70-130	
Ethylbenzene	ug/L	ND	20	23.0	115	70-130	
m&p-Xylene	ug/L	ND	40	46.9	117	70-130	
Methyl-tert-butyl ether	ug/L	2.1J	20	24.5	112	70-130	
Naphthalene	ug/L	ND	20	23.1	111	70-130	
o-Xylene	ug/L	ND	20	22.7	112	70-130	
tert-Amyl Alcohol	ug/L	ND	400	483	121	70-130	
tert-Amylmethyl ether	ug/L	ND	40	44.5	111	70-130	
tert-Butyl Alcohol	ug/L	ND	200	275	138	70-130	M0
tert-Butyl Formate	ug/L	ND	160	ND	0	70-130	P5
Toluene	ug/L	ND	20	23.2	115	70-130	
1,2-Dichloroethane-d4 (S)	%				95	70-130	
4-Bromofluorobenzene (S)	%				100	70-130	
Toluene-d8 (S)	%				100	70-130	

SAMPLE DUPLICATE: 1316889

Parameter	Units	92222203007 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dichloroethane	ug/L	ND	ND		30	
3,3-Dimethyl-1-Butanol	ug/L	ND	ND		30	
Benzene	ug/L	ND	ND		30	
Diisopropyl ether	ug/L	ND	ND		30	
Ethanol	ug/L	ND	ND		30	
Ethyl-tert-butyl ether	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	
m&p-Xylene	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
o-Xylene	ug/L	ND	ND		30	

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 92222203

SAMPLE DUPLICATE: 1316889

Parameter	Units	92222203007 Result	Dup Result	RPD	Max RPD	Qualifiers
tert-Amyl Alcohol	ug/L	ND	ND		30	
tert-Amylmethyl ether	ug/L	ND	ND		30	
tert-Butyl Alcohol	ug/L	ND	ND		30	
tert-Butyl Formate	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	95	97	2		
4-Bromofluorobenzene (S)	%	101	100	1		
Toluene-d8 (S)	%	101	100	1		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 92222203

QC Batch: MSV/28920 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV SC
Associated Lab Samples: 92222203002, 92222203008, 92222203009, 92222203010

METHOD BLANK: 1315590 Matrix: Water
Associated Lab Samples: 92222203002, 92222203008, 92222203009, 92222203010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	10/29/14 14:41	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	10/29/14 14:41	
Benzene	ug/L	ND	5.0	10/29/14 14:41	
Diisopropyl ether	ug/L	ND	5.0	10/29/14 14:41	
Ethanol	ug/L	ND	200	10/29/14 14:41	
Ethyl-tert-butyl ether	ug/L	ND	10.0	10/29/14 14:41	
Ethylbenzene	ug/L	ND	5.0	10/29/14 14:41	
m&p-Xylene	ug/L	ND	10.0	10/29/14 14:41	
Methyl-tert-butyl ether	ug/L	ND	5.0	10/29/14 14:41	
Naphthalene	ug/L	ND	5.0	10/29/14 14:41	
o-Xylene	ug/L	ND	5.0	10/29/14 14:41	
tert-Amyl Alcohol	ug/L	ND	100	10/29/14 14:41	
tert-Amylmethyl ether	ug/L	ND	10.0	10/29/14 14:41	
tert-Butyl Alcohol	ug/L	ND	100	10/29/14 14:41	
tert-Butyl Formate	ug/L	ND	50.0	10/29/14 14:41	
Toluene	ug/L	ND	5.0	10/29/14 14:41	
Xylene (Total)	ug/L	ND	10.0	10/29/14 14:41	
1,2-Dichloroethane-d4 (S)	%	93	70-130	10/29/14 14:41	
4-Bromofluorobenzene (S)	%	100	70-130	10/29/14 14:41	
Toluene-d8 (S)	%	100	70-130	10/29/14 14:41	

LABORATORY CONTROL SAMPLE: 1315591

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	47.2	94	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	959	96	70-130	
Benzene	ug/L	50	53.2	106	70-130	
Diisopropyl ether	ug/L	50	50.0	100	70-130	
Ethanol	ug/L	2000	2360	118	70-130	
Ethyl-tert-butyl ether	ug/L	100	103	103	70-130	
Ethylbenzene	ug/L	50	52.2	104	70-130	
m&p-Xylene	ug/L	100	105	105	70-130	
Methyl-tert-butyl ether	ug/L	50	47.7	95	70-130	
Naphthalene	ug/L	50	52.8	106	70-130	
o-Xylene	ug/L	50	51.0	102	70-130	
tert-Amyl Alcohol	ug/L	1000	973	97	70-130	
tert-Amylmethyl ether	ug/L	100	109	109	70-130	
tert-Butyl Alcohol	ug/L	500	519	104	70-130	
tert-Butyl Formate	ug/L	400	329	82	70-130	
Toluene	ug/L	50	53.0	106	70-130	

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 92222203

LABORATORY CONTROL SAMPLE: 1315591

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Xylene (Total)	ug/L	150	156	104	70-130	
1,2-Dichloroethane-d4 (S)	%			93	70-130	
4-Bromofluorobenzene (S)	%			101	70-130	
Toluene-d8 (S)	%			102	70-130	

MATRIX SPIKE SAMPLE: 1317400

Parameter	Units	92222492002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	ND	20	19.0	95	70-130	
3,3-Dimethyl-1-Butanol	ug/L	ND	400	387	97	70-130	
Benzene	ug/L	ND	20	22.2	111	70-130	
Diisopropyl ether	ug/L	ND	20	20.5	103	70-130	
Ethanol	ug/L	ND	800	681	85	70-130	
Ethyl-tert-butyl ether	ug/L	ND	40	41.5	104	70-130	
Ethylbenzene	ug/L	ND	20	21.3	107	70-130	
m&p-Xylene	ug/L	ND	40	42.7	106	70-130	
Methyl-tert-butyl ether	ug/L	ND	20	19.1	95	70-130	
Naphthalene	ug/L	ND	20	20.9	103	70-130	
o-Xylene	ug/L	ND	20	20.9	104	70-130	
tert-Amyl Alcohol	ug/L	ND	400	421	105	70-130	
tert-Amylmethyl ether	ug/L	ND	40	40.2	100	70-130	
tert-Butyl Alcohol	ug/L	ND	200	241	120	70-130	
tert-Butyl Formate	ug/L	ND	160	ND	0	70-130	P5
Toluene	ug/L	ND	20	22.1	110	70-130	
1,2-Dichloroethane-d4 (S)	%				93	70-130	
4-Bromofluorobenzene (S)	%				99	70-130	
Toluene-d8 (S)	%				101	70-130	

SAMPLE DUPLICATE: 1317401

Parameter	Units	92222492004 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dichloroethane	ug/L	ND	ND		30	
3,3-Dimethyl-1-Butanol	ug/L	ND	ND		30	
Benzene	ug/L	ND	ND		30	
Diisopropyl ether	ug/L	ND	ND		30	
Ethanol	ug/L	ND	ND		30	
Ethyl-tert-butyl ether	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	
m&p-Xylene	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Naphthalene	ug/L	2.1J	2.0J		30	
o-Xylene	ug/L	17.1	18.1	6	30	
tert-Amyl Alcohol	ug/L	ND	ND		30	
tert-Amylmethyl ether	ug/L	ND	ND		30	

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 92222203

SAMPLE DUPLICATE: 1317401

Parameter	Units	92222492004 Result	Dup Result	RPD	Max RPD	Qualifiers
tert-Butyl Alcohol	ug/L	ND	ND		30	
tert-Butyl Formate	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
Xylene (Total)	ug/L	17.1	18.1	6	30	
1,2-Dichloroethane-d4 (S)	%	96	90	7		
4-Bromofluorobenzene (S)	%	101	100	1		
Toluene-d8 (S)	%	101	101	0		

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 92222203

QC Batch: MSV/28990
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV SC
Associated Lab Samples: 92222203011

METHOD BLANK: 1318486
Matrix: Water
Associated Lab Samples: 92222203011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	10/30/14 16:00	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	10/30/14 16:00	
Benzene	ug/L	ND	5.0	10/30/14 16:00	
Diisopropyl ether	ug/L	ND	5.0	10/30/14 16:00	
Ethanol	ug/L	ND	200	10/30/14 16:00	
Ethyl-tert-butyl ether	ug/L	ND	10.0	10/30/14 16:00	
Ethylbenzene	ug/L	ND	5.0	10/30/14 16:00	
m&p-Xylene	ug/L	ND	10.0	10/30/14 16:00	
Methyl-tert-butyl ether	ug/L	ND	5.0	10/30/14 16:00	
Naphthalene	ug/L	ND	5.0	10/30/14 16:00	
o-Xylene	ug/L	ND	5.0	10/30/14 16:00	
tert-Amyl Alcohol	ug/L	ND	100	10/30/14 16:00	
tert-Amylmethyl ether	ug/L	ND	10.0	10/30/14 16:00	
tert-Butyl Alcohol	ug/L	ND	100	10/30/14 16:00	
tert-Butyl Formate	ug/L	ND	50.0	10/30/14 16:00	
Toluene	ug/L	ND	5.0	10/30/14 16:00	
Xylene (Total)	ug/L	ND	10.0	10/30/14 16:00	
1,2-Dichloroethane-d4 (S)	%	95	70-130	10/30/14 16:00	
4-Bromofluorobenzene (S)	%	100	70-130	10/30/14 16:00	
Toluene-d8 (S)	%	101	70-130	10/30/14 16:00	

LABORATORY CONTROL SAMPLE: 1318487

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	48.7	97	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	853	85	70-130	
Benzene	ug/L	50	54.1	108	70-130	
Diisopropyl ether	ug/L	50	51.3	103	70-130	
Ethanol	ug/L	2000	1480	74	70-130	
Ethyl-tert-butyl ether	ug/L	100	106	106	70-130	
Ethylbenzene	ug/L	50	51.3	103	70-130	
m&p-Xylene	ug/L	100	103	103	70-130	
Methyl-tert-butyl ether	ug/L	50	48.8	98	70-130	
Naphthalene	ug/L	50	51.9	104	70-130	
o-Xylene	ug/L	50	50.1	100	70-130	
tert-Amyl Alcohol	ug/L	1000	850	85	70-130	
tert-Amylmethyl ether	ug/L	100	109	109	70-130	
tert-Butyl Alcohol	ug/L	500	464	93	70-130	
tert-Butyl Formate	ug/L	400	337	84	70-130	
Toluene	ug/L	50	53.9	108	70-130	

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 92222203

LABORATORY CONTROL SAMPLE: 1318487

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Xylene (Total)	ug/L	150	154	102	70-130	
1,2-Dichloroethane-d4 (S)	%			93	70-130	
4-Bromofluorobenzene (S)	%			99	70-130	
Toluene-d8 (S)	%			102	70-130	

MATRIX SPIKE SAMPLE: 1318488

Parameter	Units	92222643003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	ND	20	21.6	104	70-130	
3,3-Dimethyl-1-Butanol	ug/L	ND	400	398	99	70-130	
Benzene	ug/L	ND	20	23.9	120	70-130	
Diisopropyl ether	ug/L	4.6J	20	26.8	111	70-130	
Ethanol	ug/L	ND	800	477	60	70-130	M0
Ethyl-tert-butyl ether	ug/L	ND	40	44.2	111	70-130	
Ethylbenzene	ug/L	ND	20	22.4	112	70-130	
m&p-Xylene	ug/L	ND	40	44.6	112	70-130	
Methyl-tert-butyl ether	ug/L	13.6	20	36.1	113	70-130	
Naphthalene	ug/L	ND	20	21.6	108	70-130	
o-Xylene	ug/L	ND	20	21.6	108	70-130	
tert-Amyl Alcohol	ug/L	ND	400	427	107	70-130	
tert-Amylmethyl ether	ug/L	ND	40	43.0	107	70-130	
tert-Butyl Alcohol	ug/L	ND	200	228	114	70-130	
tert-Butyl Formate	ug/L	ND	160	ND	0	70-130	P5
Toluene	ug/L	ND	20	23.2	116	70-130	
1,2-Dichloroethane-d4 (S)	%				97	70-130	
4-Bromofluorobenzene (S)	%				101	70-130	
Toluene-d8 (S)	%				102	70-130	

SAMPLE DUPLICATE: 1318489

Parameter	Units	92222643005 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dichloroethane	ug/L	ND	ND		30	
3,3-Dimethyl-1-Butanol	ug/L	ND	ND		30	
Benzene	ug/L	ND	ND		30	
Diisopropyl ether	ug/L	6.9	6.8	1	30	
Ethanol	ug/L	ND	ND		30	
Ethyl-tert-butyl ether	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	
m&p-Xylene	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	32.3	31.7	2	30	
Naphthalene	ug/L	ND	ND		30	
o-Xylene	ug/L	ND	ND		30	
tert-Amyl Alcohol	ug/L	ND	ND		30	
tert-Amylmethyl ether	ug/L	ND	ND		30	

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 92222203

SAMPLE DUPLICATE: 1318489

Parameter	Units	92222643005 Result	Dup Result	RPD	Max RPD	Qualifiers
tert-Butyl Alcohol	ug/L	ND	ND		30	
tert-Butyl Formate	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	97	99	2		
4-Bromofluorobenzene (S)	%	101	101	0		
Toluene-d8 (S)	%	100	100	1		

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 92222203

QC Batch: OEXT/30609 Analysis Method: EPA 8011
QC Batch Method: EPA 8011 Analysis Description: GCS 8011 EDB DBCP
Associated Lab Samples: 92222203001, 92222203002, 92222203003, 92222203004, 92222203005, 92222203006, 92222203007

METHOD BLANK: 1312238 Matrix: Water
Associated Lab Samples: 92222203001, 92222203002, 92222203003, 92222203004, 92222203005, 92222203006, 92222203007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.020	10/23/14 00:04	
1-Chloro-2-bromopropane (S)	%	104	60-140	10/23/14 00:04	

LABORATORY CONTROL SAMPLE & LCSD: 1312239 1312240

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.29	0.29	0.29	100	102	60-140	2	20	
1-Chloro-2-bromopropane (S)	%				102	102	60-140			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1312241 1312242

Parameter	Units	92222203003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dibromoethane (EDB)	ug/L	ND	.28	.28	0.26	0.26	94	94	60-140	0	20	
1-Chloro-2-bromopropane (S)	%						98	99	60-140			

SAMPLE DUPLICATE: 1312243

Parameter	Units	92222203004 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	ND		20	
1-Chloro-2-bromopropane (S)	%	100	102	3		

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 92222203

QC Batch: OEXT/30634 Analysis Method: EPA 8011
QC Batch Method: EPA 8011 Analysis Description: GCS 8011 EDB DBCP
Associated Lab Samples: 92222203008, 92222203009, 92222203010, 92222203011, 92222203012

METHOD BLANK: 1313205 Matrix: Water
Associated Lab Samples: 92222203008, 92222203009, 92222203010, 92222203011, 92222203012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.020	10/23/14 10:24	
1-Chloro-2-bromopropane (S)	%	102	60-140	10/23/14 10:24	

LABORATORY CONTROL SAMPLE & LCSD: 1313206 1313207

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.28	0.27	0.28	96	98	60-140	2	20	
1-Chloro-2-bromopropane (S)	%				100	101	60-140			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1313208 1313209

Parameter	Units	92222513001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dibromoethane (EDB)	ug/L	1100	.28	.28	858	859	-84184	-84020	60-140	0	20	M3
1-Chloro-2-bromopropane (S)	%						185	184	60-140			S2

SAMPLE DUPLICATE: 1313210

Parameter	Units	92222513002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	588	585	1	20	
1-Chloro-2-bromopropane (S)	%	0	0			S4

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QUALIFIERS

Project: STOCKMAN OIL
Pace Project No.: 92222203

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Acid preservation may not be appropriate for 2-Chloroethylvinyl ether, Styrene, and Vinyl chloride.

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TNI - The NELAC Institute.

LABORATORIES

PASI-C	Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

HS	Results are from sample aliquot taken from VOA vial with headspace (air bubble greater than 6 mm diameter).
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
M3	Matrix spike recovery was outside laboratory control limits due to matrix interferences.
P5	The EPA or method required sample preservation degrades this compound, therefore acceptable recoveries may not be achieved in sample matrix spikes.
S2	Surrogate recovery outside laboratory control limits due to matrix interferences (confirmed by similar results from sample re-analysis).
S4	Surrogate recovery not evaluated against control limits due to sample dilution.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: STOCKMAN OIL
Pace Project No.: 92222203

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92222203001	**04736 MW-2**	EPA 8011	OEXT/30609	EPA 8011	GCSV/19262
92222203002	**04736 MW-3**	EPA 8011	OEXT/30609	EPA 8011	GCSV/19262
92222203003	**04736 MW-4**	EPA 8011	OEXT/30609	EPA 8011	GCSV/19262
92222203004	**04736 MW-7**	EPA 8011	OEXT/30609	EPA 8011	GCSV/19262
92222203005	**04736 MW-8**	EPA 8011	OEXT/30609	EPA 8011	GCSV/19262
92222203006	**04736 MW-9**	EPA 8011	OEXT/30609	EPA 8011	GCSV/19262
92222203007	**04736 MW-10**	EPA 8011	OEXT/30609	EPA 8011	GCSV/19262
92222203008	**04736 MW-13**	EPA 8011	OEXT/30634	EPA 8011	GCSV/19267
92222203009	**04736 MW-14**	EPA 8011	OEXT/30634	EPA 8011	GCSV/19267
92222203010	**04736 DW-1**	EPA 8011	OEXT/30634	EPA 8011	GCSV/19267
92222203011	**04736 DUPLICATE 1**	EPA 8011	OEXT/30634	EPA 8011	GCSV/19267
92222203012	**04736 FIELD BLANK**	EPA 8011	OEXT/30634	EPA 8011	GCSV/19267
92222203001	**04736 MW-2**	EPA 8260	MSV/28919		
92222203002	**04736 MW-3**	EPA 8260	MSV/28920		
92222203003	**04736 MW-4**	EPA 8260	MSV/28919		
92222203004	**04736 MW-7**	EPA 8260	MSV/28919		
92222203005	**04736 MW-8**	EPA 8260	MSV/28919		
92222203006	**04736 MW-9**	EPA 8260	MSV/28919		
92222203007	**04736 MW-10**	EPA 8260	MSV/28919		
92222203008	**04736 MW-13**	EPA 8260	MSV/28920		
92222203009	**04736 MW-14**	EPA 8260	MSV/28920		
92222203010	**04736 DW-1**	EPA 8260	MSV/28920		
92222203011	**04736 DUPLICATE 1**	EPA 8260	MSV/28990		
92222203012	**04736 FIELD BLANK**	EPA 8260	MSV/28919		
92222203013	**04736 TRIP BLANK**	EPA 8260	MSV/28919		

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 2

1782561

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: KLM Env.	Report To: Mark Keller	Attention:
Address: PoBox 2704	Copy To:	Company Name:
Goose Creek SC 29445		Address:
Email To: mkeller131@comcast.net	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Stockman O.'l	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #: 824-2

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☒ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: SC

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	BTEX NM	12 DCA	3 Oxygenates	EDB	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	04736 MW-2	wt	G	10/14/14			1300						X						X	X	X	X		001
2	MW-3						1145																	002
3	MW-4						1100																	003
4	MW-7						1015																	004
5	MW-8						1200																	005
6	MW-9						1345																	006
7	MW-10						1400																	007
8	MW-13						1330																	008
9	MW-14						1000																	009
10	DW-1						1130																	010
11	Duplicate 1						1105																	011
12	Field Blank						1405																	012

9222223

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Mark Keller	10/20/14	1100	Patrick [illegible]/PACE	102014	945	3.8	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 2 of 2

1782559

Section A Required Client Information:

Company:	KLM Env
Address:	
Email To:	
Phone:	Fax:
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	
Copy To:	
Purchase Order No.:	
Project Name:	Stockman Oil
Project Number:	

Section C Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☒ UST ☐ RCRA ☐ OTHER

Site Location STATE: SC

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	BTEXNM	12DLA	Oxygenates	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	04736 Trip Blank	WT	G	10/14	/14								X						X	X	X		92222203
2																							013
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	[signature]	10/20/14	1700	Patrick Sims / PACE	10/21/14	945	3.8	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

Water Quality Meter Calibration Sheet

Project: Stockman oil

Personnel : G. Long

Calibration Date : 10/14/14

Time : 630

Meter Horiba U-52

Serial # W22MV13L

pH= 3.86 (100-4 Standard Solution)

Spec. Cond. = 4.52 mS/cm (100-4 Standard Solution)

Turb. = 0 NTU(100-4 Standard Solution)

D.O. = 4.63 mg/L (Air)

Signature

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 10/14/14
Field Personnel Gary Long and Mark Keller
General Weather Condition ~~Sunny~~ Rainy
Ambient Air Temperature 80
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW-1

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ ft.
Depth to GW (DWG) 24.72 – ft. 30 Bottom

Length of Water Column (LWC=TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
Water Temp (°F)								
pH (s.u.)								
Specific Cond. (mS/cm)								
Turbidity (NTU)								
Dissolved Oxygen (mg/L)								
Salinity								
OVA								

Sample Time:

FP NS

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 10/14/14
Field Personnel Gary Long and Mark Keller
General Weather Condition ~~Sunny~~ Rainy
Ambient Air Temperature 80
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW-2

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 30 ft.
Depth to GW (DWG) 21.39 ft.

Length of Water Column (LWC=TWD-DGW) _____ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	1.5							
Time (military)	1250							
Water Temp (°F)	67.4							
pH (s.u.)	5.20							
Specific Cond. (mS/cm)	230							
Turbidity (NTU)	109							
Dissolved Oxygen (mg/L)	1.10							
Salinity	0.1							
OVA	–							

Sample Time: 1300

Dye 1.5 gal.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 10/14/14
Field Personnel Gary Long and Mark Keller
General Weather Condition ~~Sunny~~ Rain
Ambient Air Temperature 80
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # **MW-** mw-3

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 35 ft.
Depth to GW (DWG) 22.98 ft.

Length of Water Column (LWC=TWD-DGW) _____ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	1135	1140	1145					
Time (military)	2.5	4.5	6.5					
Water Temp (°F)	68.4	68.0	67.0					
pH (s.u.)	5.27	5.24	5.13					
Specific Cond. (mS/cm)	.208	.210	.218					
Turbidity (NTU)	143	121	100					
Dissolved Oxygen (mg/L)	1.14	1.00	.46					
Salinity	0.1	0.1	0.1					
OVA	—	—	—					

Sample Time: 1145

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 10/14/14
Field Personnel Gary Long and Mark Keller
General Weather Condition ~~Sunny~~ Rain
Ambient Air Temperature 80
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW-4 = Dup.1

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 35 ft.
Depth to GW (DWG) 23.82 ft.

Length of Water Column (LWC=TWD-DGW) _____ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	2	4	6					
Time (military)	1050	1055	1100					
Water Temp (°F)	69.6	69.7	68.8					
pH (s.u.)	4.60	4.71	4.65					
Specific Cond. (mS/cm)	.197	.191	.192					
Turbidity (NTU)	28.6	27.1	23.8					
Dissolved Oxygen (mg/L)	2.11	2.10	2.17					
Salinity	0.1	0.1	.1					
OVA			—					

Sample Time: 1100

Dup.1 1105

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 10/14/14
Field Personnel Gary Long and Mark Keller
General Weather Condition ~~Sunny~~ Rain
Ambient Air Temperature 80
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW- 5

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ ft.
Depth to GW (DWG) 28.43 ft. 33.72

Length of Water Column (LWC=TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
Water Temp (°F)								
pH (s.u.)								
Specific Cond. (mS/cm)								
Turbidity (NTU)								
Dissolved Oxygen (mg/L)								
Salinity								
OVA								

Sample Time:

FP NS

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 10/14/14
Field Personnel Gary Long and Mark Keller
General Weather Condition ~~Sunny~~ Rain
Ambient Air Temperature 80
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW- 6

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ ft.
Depth to GW (DWG) 28.39 ft. - 32 Bot.

Length of Water Column (LWC=TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
Water Temp (°F)								
pH (s.u.)								
Specific Cond. (mS/cm)								
Turbidity (NTU)								
Dissolved Oxygen (mg/L)								
Salinity								
OVA								

Sample Time:

TF NS

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 10/14/14
Field Personnel Gary Long and Mark Keller
General Weather Condition ~~Sunny~~ Rain
Ambient Air Temperature 80
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW-7

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 40 ft.
Depth to GW (DWG) 27.03 ft.

Length of Water Column (LWC=TWD-DGW) _____ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	2							
Time (military)	1005							
Water Temp (°F)	70.7							
pH (s.u.)	5.49							
Specific Cond. (mS/cm)	.295							
Turbidity (NTU)	635							
Dissolved Oxygen (mg/L)	2.11							
Salinity	0.1							
OVA	-							

Sample Time: 1015

Dye 2.25 gal

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 10/14/14
Field Personnel Gary Long and Mark Keller
General Weather Condition ~~Sunny~~ Rain
Ambient Air Temperature 80
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:

Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW- 8

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 3.5 ft.
Depth to GW (DWG) 2.59 ft.

Length of Water Column (LWC=TWD-DGW) _____ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	1.5	3	4.5					
Time (military)	1150	1155	1200					
Water Temp (°F)	68.6	68.6	68.7					
pH (s.u.)	5.00	5.04	5.09					
Specific Cond. (mS/cm)	148	140.	134					
Turbidity (NTU)	74.7	72.0	73.1					
Dissolved Oxygen (mg/L)	1.62	1.40	1.14					
Salinity	0.1	0.1	0.1					
OVA	—	—	—					

Sample Time: 1200

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 10/14/14
Field Personnel Gary Long and Mark Keller
General Weather Condition ~~Sunny~~ Rain
Ambient Air Temperature 80
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW- 9

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 35 ft.
Depth to GW (DWG) 29.69 ft.

Length of Water Column (LWC=TWD-DGW) _____ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	1.75	1						
Time (military)	1335							
Water Temp (°F)	69.1							
pH (s.u.)	5.79							
Specific Cond. (mS/cm)	.271							
Turbidity (NTU)	138							
Dissolved Oxygen (mg/L)	1.86							
Salinity	0.1							
OVA	-							

Sample Time: 1345

Dup 2 gal.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 10/14/14
Field Personnel Gary Long and Mark Keller
General Weather Condition ~~Sunny~~ Rain
Ambient Air Temperature 80
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW-10

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 40 ft.
Depth to GW (DWG) 29.33 ft.

Length of Water Column (LWC=TWD-DGW) _____ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	1.5	3.5	5.5					
Time (military)	1350	1355	1400					
Water Temp (°F)	69.4	69.5	69.8					
pH (s.u.)	4.86	4.90	4.97					
Specific Cond. (mS/cm)	.074	.069	.061					
Turbidity (NTU)	694	710	729					
Dissolved Oxygen (mg/L)	1.94	1.90	1.83					
Salinity	0.1	0.0	0.0					
OVA	-	-	-					

Sample Time: 1400

FB 1405

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 10/14/14
Field Personnel Gary Long and Mark Keller
General Weather Condition ~~Sunny~~ Rain
Ambient Air Temperature 80
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW-1

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ft.
Depth to GW (DWG) _____ft.

Length of Water Column (LWC=TWD-DGW) _____ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
Water Temp (°F)								
pH (s.u.)								
Specific Cond. (mS/cm)								
Turbidity (NTU)								
Dissolved Oxygen (mg/L)								
Salinity								
OVA								

Sample Time:

CNC Now gauge

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 10/14/14
Field Personnel Gary Long and Mark Keller
General Weather Condition ~~Sunny~~ Rain
Ambient Air Temperature 80
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW-12

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ft.
Depth to GW (DWG) _____ft.

Length of Water Column (LWC=TWD-DGW) _____ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
Water Temp (°F)								
pH (s.u.)								
Specific Cond. (mS/cm)								
Turbidity (NTU)								
Dissolved Oxygen (mg/L)								
Salinity								
OVA								

Sample Time:

CNC
New Grand

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 10/14/14
Field Personnel Gary Long and Mark Keller
General Weather Condition ~~Sunny~~ Rain
Ambient Air Temperature 80
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW- 13

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 35 ft.
Depth to GW (DWG) 20.88 ft.

Length of Water Column (LWC=TWD-DGW) _____ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	2.5							
Time (military)	1320							
Water Temp (°F)	69.4							
pH (s.u.)	5.19							
Specific Cond. (mS/cm)	.231							
Turbidity (NTU)	674							
Dissolved Oxygen (mg/L)	2.14							
Salinity	0.0							
OVA	-							

Sample Time: 1330

Dry @ 2.5 gal.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 10/14/14
Field Personnel Gary Long and Mark Keller
General Weather Condition ~~Sunny~~ Rain
Ambient Air Temperature 80
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW- 14

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 35 ft.
Depth to GW (DWG) 23.13 ft.

Length of Water Column (LWC=TWD-DGW) _____ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	2	4						
Time (military)	950							
Water Temp (°F)	70.9							
pH (s.u.)	6.26							
Specific Cond. (mS/cm)	.053							
Turbidity (NTU)	266							
Dissolved Oxygen (mg/L)	4.97							
Salinity	0.0							
OVA	-							

Sample Time: 1000

Dye 2 gal

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 10/14/14
Field Personnel Gary Long and Mark Keller
General Weather Condition ~~Sunny~~ Rain
Ambient Air Temperature 80
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW- Dw.1

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 61 ft.
Depth to GW (DWG) 23.29 ft.

Length of Water Column (LWC=TWD-DGW) _____ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	6	12	19					
Time (military)	1110	1120	1130					
Water Temp (°F)	68.4	68.1	67.8					
pH (s.u.)	6.19	6.10	6.08					
Specific Cond. (mS/cm)	.389	.380	.379					
Turbidity (NTU)	33.4	17.1	5.6					
Dissolved Oxygen (mg/L)	1.96	1.81	1.30					
Salinity	0.1	0.1	0.2					
OVA	—	—	—					

Sample Time:

1130

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 10/14/14
Field Personnel Gary Long and Mark Keller
General Weather Condition ~~Sunny~~ Rain
Ambient Air Temperature 80
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW- RW1

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ ft.
Depth to GW (DWG) 29.12 ft. 36.64

Length of Water Column (LWC=TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
Water Temp (°F)								
pH (s.u.)								
Specific Cond. (mS/cm)								
Turbidity (NTU)								
Dissolved Oxygen (mg/L)								
Salinity								
OVA								

Sample Time:

TPNS

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 10/14/14
Field Personnel Gary Long and Mark Keller
General Weather Condition ~~Sunny~~ Rain
Ambient Air Temperature 80
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW-Rw2

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ ft.
Depth to GW (DWG) 28.64 ft. 34.35

Length of Water Column (LWC=TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
Water Temp (°F)								
pH (s.u.)								
Specific Cond. (mS/cm)								
Turbidity (NTU)								
Dissolved Oxygen (mg/L)								
Salinity								
OVA								

Sample Time:

FP NS

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 10/14/14
Field Personnel Gary Long and Mark Keller
General Weather Condition ~~Sunny~~ Rain
Ambient Air Temperature 80
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW- Raw 3

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ft.
Depth to GW (DWG) _____ft.

Length of Water Column (LWC=TWD-DGW) _____ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
Water Temp (°F)								
pH (s.u.)								
Specific Cond. (mS/cm)								
Turbidity (NTU)								
Dissolved Oxygen (mg/L)								
Salinity								
OVA								

Sample Time:

Covered by trunk
Driver was not available to move
Out on deliveries

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 10/14/14
Field Personnel Gary Long and Mark Keller
General Weather Condition ~~Sunny~~ Rain
Ambient Air Temperature 80
Facility Name Stockman Oil
Site ID# 04736

Well # MW- RW-4

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ ft.
Depth to GW (DWG) 26.35 ft. 28.14

Length of Water Column (LWC=TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
Water Temp (°F)								
pH (s.u.)								
Specific Cond. (mS/cm)								
Turbidity (NTU)								
Dissolved Oxygen (mg/L)								
Salinity								
OVA								

Sample Time:

FP MS

APPENDIX C

Tax Map

APPENDIX D

Field Screening Logs

APPENDIX E

Well Logs

APPENDIX F

Aquifer Calculations/Historical Groundwater Data

TABLE 1
Groundwater Data (feet)
Stockman Oil Two, Inc.
Greenwood, SC

Monitoring Well	Date	TOC Elevation	Screened Interval	TOC to FP	TOC to GW	GW Elevation
MW-1	6/10/02	100.00	14.6-29.6	--	25.85	74.15
	11/17/08			--	29.32	70.68
	11/18/09			--	25.87	74.13
	10/14/14			24.72	>29.6	**FP** to bottom of well
MW-2	6/10/02	92.79	20-30	--	21.32	71.47
	11/17/08			--	24.74	68.05
	11/18/09			--	21.79	71.00
	10/14/14			--	21.39	71.40
MW-3	6/10/02	94.82	25-35	--	22.96	71.86
	11/17/08			--	25.96	68.86
	11/18/09			--	23.44	71.38
	10/14/14			--	22.98	71.84
MW-4	6/10/02	97.52	25-35	--	24.17	73.35
	11/17/08			--	27.37	70.15
	11/18/09			--	24.38	73.14
	10/14/14			--	23.82	73.70
MW-5	11/18/09	104.40	20-40	28.24	37.97	FP
	10/14/14			28.43	33.72	FP
MW-6	11/18/09	104.92	20-40	25.61	37.20	FP
	10/14/14			28.39	>32	Obstruction at 32' **FP**
MW-7	11/18/09	104.13	20-40	--	27.05	77.08
	10/14/14			--	27.03	77.10
MW-8	11/18/09	98.19	15-35	--	26.99	71.20
	10/14/14			--	26.59	71.60
MW-9	11/18/09	95.10	15-35	--	25.64	69.46
	10/14/14			--	24.69	70.41
MW-10	11/18/09	104.25	20-40	--	29.38	74.87
	10/14/14			--	29.33	74.92
MW-11	11/18/09	90.86	15-30	--	23.96	66.90
	10/14/14			--	CNL	--
MW-12	11/18/09	89.44	15-30	--	23.33	66.11
	10/14/14			--	CNL	--
MW-13	11/18/09	92.36	15-35	--	21.23	71.13
	10/14/14			--	20.88	71.48
MW-14	11/18/09	99.74	15-35	--	24.84	74.90
	10/14/14			--	23.73	76.01

DW-1	11/18/09	95.18	56-61	--	23.66	71.52
	10/14/14			--	23.29	71.89
RW-1*	10/14/14	--	25-40	28.12	36.64	**FP**
RW-2*	10/14/14	--	25-40	28.64	34.35	**FP**
RW-3*	10/14/14	--	25-40	--	Covered	--
RW-4*	10/14/14	--	25-40	26.35	28.14	**FP**

APPENDIX G

Disposal Manifest

US Water Recovery

Non-Hazardous Manifest: Waste Water or Drums

Number:

1. Generator's EPA ID# (if applicable): Waste ID Number:

2. Generator's Name and Mailing Address: Phone ( )
Bob White El Chaco P O #:
Stockman Oil

3. Agent of Generator and Mailing Address: Phone ( )
KLM ENV P O #:

4. Transporter Company Name: Phone ( )
Truck & Trailer License Number: Vacuum Recovery Tech

5. Transporter U.S. EPA ID#:

6. Facility Name and Site Address: Phone: (843) 797-8674
US Water Recovery
511 Old Mt. Holly Rd.
Goose Creek, SC 29445
Fax: (843) 797-2126

Mailing Address: Phone: (843) 797-3111
US Water Recovery
511 Old Mt. Holly Rd.
Goose Creek, SC 29445
Fax: (843) 797-1884

7. Facility U.S. EPA ID#:

Start Level: End Level: Total Gallons: Tank Number

8. U.S. DOT Description	Container No.	Container Type	Unit	Quantity
a. Non-Hazardous, non-regulated waste water				El Chaco Bob White 98.5
				Stockman Oil 51.75 ~~98.5~~

9. Generator's Certification: I hereby declare that the contents of this consignment are not hazardous by definition or listing and are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and the laws of the State of South Carolina. I further certify that the contents of this consignment are as represented by the description contained on the Waste Profile Form previously submitted to and approved by the Designated Facility.

Printed/Typed Name: Mark Miller Signature: Mark Miller Date: 11-7-14

10. Transporter Acknowledgement of Receipt of Materials
Printed/Typed Name: Samuel Holmes Signature: Samuel Holmes Date: 11-7-14

11. Discrepancy Indication space:

12. Facility Owner or Operator: Certification of Receipt of Materials
Printed/Typed Name: Dan Ward Signature: Dan Ward Date 11-7-14

White - Facility Yellow - Office Pink - Transporter Blue - Generator

11213

APPENDIX H

Zoning Information

APPENDIX I

Fate and Transport Modeling

APPENDIX J

Access Agreements

APPENDIX K

Checklist

Contractor Checklist

For each report submitted to the UST Management Division, the contractor will be required to verify that all data elements for the required scope of work have been provided. For items not required for the scope of work, the N/A box should be checked. For items required and not completed or provided, the No box should be checked and a thorough description of the reason must be provided.

Item #	Item	Yes	No	N/A
1	Is Facility Name, Permit #, and address provided?	✓		
2	Is UST Owner/Operator name, address, & phone number provided?	✓		
3	Is name, address, & phone number of current property owner provided?	✓		
4	Is the DHEC Certified UST Site Rehabilitation Contractor's Name, Address, telephone number, and certification number provided?	✓		
5	Is the name, address, telephone number, and certification number of the well driller that installed borings/monitoring wells provided?			✓
6	Is the name, address, telephone number, and certification number of the certified laboratory(ies) performing analytical analyses provided?	✓		
7	Has the facility history been summarized?	✓		
8	Has the regional geology and hydrogeology been described?	✓		
9	Are the receptor survey results provided as required?			✓
10	Has current use of the site and adjacent land been described?	✓		
11	Has the site-specific geology and hydrogeology been described?			✓
12	Has the primary soil type been described?			✓
13	Have field screening results been described?			✓
14	Has a description of the soil sample collection and preservation been detailed?			✓
15	Has the field screening methodology and procedure been detailed?			✓
16	Has the monitoring well installation and development dates been provided?			✓
17	Has the method of well development been detailed?			✓
18	Has justification been provided for the locations of the monitoring wells?			✓
19	Have the monitoring wells been labeled in accordance with the UST QAPP guidelines?	✓		
20	Has the groundwater sampling methodology been detailed?	✓		
21	Have the groundwater sampling dates and groundwater measurements been provided?	✓		
22	Has the purging methodology been detailed?	✓		
23	Has the volume of water purged from each well been provided along with measurements to verify that purging is complete?	✓		
24	If free-product is present, has the thickness been provided?	✓		
25	Does the report include a brief discussion of the assessment done and the results?			✓
26	Does the report include a brief discussion of the aquifer evaluation and results?			✓
27	Does the report include a brief discussion of the fate & transport models used?			✓

Item #	Item	Yes	No	N/A
28	Are the site-conceptual model tables included? (Tier 1 Risk Evaluation)			✓
29	Have the exposure pathways been analyzed? (Tier 2 Risk Evaluation)			✓
30	Have the SSTLs for each compound and pathway been calculated? (Tier 2 Risk Evaluation)	✓		✓
31	Have recommendations for further action been provided and explained?	✓		
32	Has the soil analytical data for the site been provided in tabular format? (Table 1)			✓
33	Has the potentiometric data for the site been provided in tabular format? (Table 2)	✓		
34	Has the current and historical laboratory data been provided in tabular format?	✓		
35	Have the aquifer characteristics been provided and summarized on the appropriate form?			✓
36	Have the Site conceptual model tables been included? (Tier 1 Risk Evaluation)			✓
37	Has the topographic map been provided with all required elements? (Figure 1)	✓		
38	Has the site base map been provided with all required elements? (Figure 2)	✓		
39	Have the CoC site maps been provided? (Figure 3 & Figure 4)	✓		
40	Has the site potentiometric map been provided? (Figure 5)	✓		
41	Have the geologic cross-sections been provided? (Figure 6)			✓
42	Have maps showing the predicted migration of the CoCs through time been provided? (Tier 2 Risk Evaluation)			✓
43	Has the site survey been provided and include all necessary elements? (Appendix A)	✓		
44	Have the sampling logs, chain of custody forms, and the analytical data package been included with all required elements? (Appendix B)	✓		
45	Is the laboratory performing the analyses properly certified?	✓		
46	Has the tax map been included with all necessary elements? (Appendix C)			✓
47	Have the soil boring/field screening logs been provided? (Appendix D)			✓
48	Have the well completion logs and SCDHEC Form 1903 been provided? (Appendix E)			✓
49	Have the aquifer evaluation forms, data, graphs, equations, etc. been provided? (Appendix F)			✓
50	Have the disposal manifests been provided? (Appendix G)	✓		
51	Has a copy of the local zoning regulations been provided? (Appendix H)			✓
52	Has all fate and transport modeling been provided? (Appendix I)			✓
53	Have copies of all access agreements obtained by the contractor been provided? (Appendix J)			✓
54	Has a copy of this form been attached to the final report and are explanations for any missing or incomplete data been provided?	✓		

Explanation for missing and incomplete information?

D H E C
PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

MR PIERCE STOCKMAN
STOCKMAN OIL TWO INC
1138 REYNOLDS AVE
GREENWOOD SC 29649-2736

DEC 09 2008

Re: Tier II Plan Directive
Stockman Oil Two, Inc., 1138 Reynolds Ave, Greenwood, SC
UST Permit #04736
Release reported December 27, 1989
Monitoring Report received December 4, 2008
Greenwood County

Dear Mr. Stockman:

The Underground Storage Tank (UST) Program of the South Carolina Department of Health and Environmental Control (SCDHEC) reviewed the referenced report submitted by KLM Environmental, LLC, on your behalf. The report indicates presence of chemicals of concern in the groundwater.

To determine what risk the referenced release may pose to the environment and public health, and in accordance with Section 280.65 of the South Carolina Underground Storage Tank Control Regulations, implementation of the scope of work as outlined in the Tier II Assessment Guidance Document is necessary. The Tier II assessment document and appendices may be obtained from our website at http://www.scdhec.gov/environment/lwm/html/ust_guidance docs.htm. Forms may be obtained from the UST website at http://www.scdhec.gov/eqc/lwm/ forms/assess%7E1.pdf.

Please have KLM Environmental, LLC, complete and submit the Assessment Component Cost Agreement and Assessment Plan Forms within thirty days of the date of this letter. Every component may not be necessary to complete the above scope of work. The State Underground Petroleum Environmental Response Bank (SUPERB) Account allowable cost for each component is included on the Assessment Component Cost Agreement Form. **Please note that approval from the Department must be issued before work begins.**

All releases from regulated underground storage tanks that have been reported to this Program have been prioritized using a ranking system that evaluates the risk to human health and the environment. The priority classification system identifies those releases that represent an immediate or short term risk to human health where the Program should be allocating available State Underground Petroleum Environmental Response Bank (SUPERB) monies. Based on the available data, the priority classification of this release is 4A and does not pose an immediate or short-term risk to human health. Therefore, SUPERB funds are not currently available for additional site rehabilitation activities at this time. You will be informed when SUPERB funds become available.

Should you wish to proceed with site rehabilitation activities, you can fund the necessary activities and seek payment from the SUPERB Account when, and if, funds become available. The Program will forward a contract, which outlines the conditions upon which reimbursement can occur, to you, should you decide to use this option. A signed contract must be submitted in order to seek potential future reimbursement. Please notify the Program of your intent within **30 days** from the date of this letter. A completed contract will be forwarded if you choose to proceed under this option. If you opt to wait for SUPERB funding, having a cost agreement on file will expedite technical and financial approval once funding does become available.

UST DOCKET

3 tech

On all correspondence regarding this site, please reference UST Permit #04736. If you have questions or need additional information, feel free to call me at (803) 896-6396.

Sincerely,

Victoria F Bosnick

Victoria Bosnick, Hydrogeologist
Assessment Section
Assessment and Corrective Action Division
Underground Storage Tank Program
Bureau of Land and Waste Management

cc: KLM Environmental, LLC, PO Box 2704, Goose Creek, SC 29445
Technical File

D H E C
PROMOTE PROTECT PROSPER
Catherine B. Templeton, Director
Promoting and protecting the health of the public and the environment

STOCKMAN OIL TWO INC
1138 REYNOLDS AVE
GREENWOOD SC 29646

DEC 17 2014

Re: **Corrective Action Options**
Stockman Oil Two Inc, 1138 Reynolds Ave., Greenwood, SC
UST Permit # 04736
Release Reported December 27, 1989
Monitoring Report received November 14, 2014
Greenwood County

To Whom It May Concern,

The Underground Storage Tank (UST) Management Division (Division) of the South Carolina Department of Health and Environmental Control (Agency) has reviewed the referenced report submitted by KLM Environmental, LLC., on your behalf. The report indicates that active corrective action is necessary at the site to mitigate petroleum impact and ensure that there is no detrimental exposure to human health or the environment.

Funds from the State Underground Petroleum Environmental Response Bank (SUPERB) Account will soon be available for active corrective action. The selected technology must reduce the petroleum chemicals of concern (CoC) concentrations to site-specific target levels (SSTLs) determined by the Division.

The SUPERB Site Rehabilitation and Fund Access Regulations R.61-98 require the UST owner/operator to develop and implement a reasonable, cost-effective corrective action to be performed by an Agency-certified site rehabilitation contractor. As the owner/operator for the release reported on December 27, 1989, you may choose one of two options as to how to proceed with this requirement: state lead or owner/operator lead.

State Lead Option:

- If you choose the state lead option, the Division will procure a certified site rehabilitation contractor to perform corrective action on your behalf. The Agency will enter into an enforceable contract with the awarded contractor. As long as you do not interfere with or prohibit the work at your site, you will not be responsible in the event the state selected contractor does not perform appropriately or does not make satisfactory progress towards achieving the established corrective action goals. **To utilize the state lead option, please sign and return the applicable Permission and Right-of-Entry forms within 15 days of the date of this letter.**

Owner/Operator Lead Option:

- If you select the owner/operator lead option, you will be required to select a contractor to perform the corrective action. In order to assist you in determining the clean-up technology, time frame, clean-up levels, and associated costs, the Division will prepare a technical specification package and provide you copies to send to contractors of your choice. In addition, the Division will announce the request for solicitations in the South Carolina Business Opportunities, a bi-weekly state government publication, to ensure that an adequate solicitation response is obtained so that a fair and competitive price can be established. This announcement will clearly indicate that you will select the contractor to implement the corrective action.
- Compensation to the contractor will be from the SUPERB Account, but you may have the obligation to pay your selected contractor for any costs not approved by the Agency.
- The Division strongly suggests that a written contract between you and the selected contractor be developed following the completion of the solicitation process. The parties to this contract would be you and the contractor you choose; the Agency would not be a party to this contract. The Division's function would be to monitor and ensure progress of corrective action activities.
- If the contractor you select does not or cannot complete the required activities, you will be required to find another certified contractor to complete the required activities for the remainder of the existing financial approval amount. No additional funding from the SUPERB Account may be allowed. Under R.61-92, Part 280 of the Underground Storage Tank Control Regulations, you as the owner/operator are ultimately responsible to the Agency for the actions of your contractor. The Agency will pursue enforcement actions against you if the contractor you select does not make satisfactory progress towards achieving established corrective actions goals. **To utilize the owner/operator lead option, please sign and return the enclosed Active Corrective Action Options Form within 15 days of the date of this letter.**

On all correspondence or inquiries regarding this project, please reference UST Permit **#04736**. If you have any questions, please contact me at (803) 898-0606 or bryantjc@dhec.sc.gov.

Sincerely,

John C. Bryant, Hydrogeologist
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

enc: Permission/Right-of-Entry forms
Active Corrective Action Options form

cc: KLM Environmental LLC: PO Box 2704, Goose Creek, SC 29445 (w/ enc)
Technical File (w/ enc)

State Lead Option

PERMISSION FORM

UNDERGROUND STORAGE TANK AND PROPERTY OWNER

UST Permit #04736

If you are both the owner of the former or existing underground storage tanks for the release reported on December 27, 1989 and the current property owner, please complete this form.

I, _____, certify that I am the identified legal owner of the underground storage tanks for the release reported on December 27, 1989 and property located at the facility identified below or serve as the authorized representative for the owner. I grant permission to the South Carolina Department of Health and Environmental Control (Agency) to secure on my behalf contractor services to conduct assessment and corrective action activities as required, and authorize the Agency, or a contractor selected by the Agency, to enter this property at reasonable times only to accomplish these site rehabilitation tasks. The contractor(s) will be designated as my contractor for only the required site rehabilitation activities. Compensation to the contractor(s) will be from the SUPERB Account and I will have no obligation to pay the contractor(s). I understand that the Agency or its contractor will be responsible for notifying me of all activities that are necessary prior to their initiation and will promptly provide to me a copy of each environmental report. I understand that I may choose to select my own contractor at the completion of any phase of work by notifying the Division of Underground Storage Tank Management in writing.

Name of Facility Stockman Oil Two Inc Phone # _____

Street Address of Facility 1138 Reynolds Ave

Town, City, District, Suburb Greenville

Name of nearest intersecting street, road, highway, alley _____

_____ Is this facility within the city limits? (yes or no) _____

Does a public water or sewer utility service this facility? (yes or no) _____, if no, please provide the name and phone number of a person that we can contact that can assist in the location of private water and septic tank lines _____

_____, phone number _____

Is the property currently leased or rented to someone? (yes or no) _____. If yes, please provide their name _____ and phone number _____

_____ and let them know about the pending site rehabilitation activities. If vehicles or other mobile structures are parked over the monitoring wells, they should be moved before the Agency's contractor arrives at the site.

NAME of UST/property owner (Please Print):_____

Phone Number (home)_____(work)_____

Signature of UST/property Owner:_____

Witness:_____

Date:_____Month _____Day_____Year

State Lead Option

PERMISSION FORM

UNDERGROUND STORAGE TANK OWNER

UST Permit #04736

If you are the owner of the former or existing underground storage tanks for the release reported on December 27, 1989 or are designated as their authorized representative, but do not own the property, please complete this form.

I, _____ certify that I am the legal owner of the former and/or existing underground storage tank(s) located at the facility identified below and for the release reported on December 27, 1989 or serve as the authorized representative for the UST owner. I grant permission to the South Carolina Department of Health and Environmental Control (Agency) to secure on my behalf services of a contractor to conduct assessment and corrective action activities, as required. The contractor will be designated as my contractor for only the required environmental site rehabilitation activities. Compensation to the contractor will be from the SUPERB Account and I will have no obligation to pay the contractor. I understand that the Agency or its contractor will be responsible for obtaining right-of-entry from the property owner and notifying me of all activities that are necessary prior to their initiation and will promptly provide to me a copy of each environmental report. I understand that I may choose to select my own contractor at the completion of any phase of work by notifying the Division of Underground Storage Tank Management in writing.

Name of Facility Stockman Oil Two Inc Phone # _____

Street Address of Facility 1138 Reynolds Avenue

Town, City, District, Suburb Greenwood

Name of nearest intersecting street, road, highway, alley _____

_____ Is this facility within the city limits? (yes or no) _____

Does a public water or sewer utility service this facility? (yes or no) _____, if no, please provide the name and phone number of a person that we can contact that can assist in the location of private water and septic tank lines _____

_____, phone number _____

NAME of UST owner (Please Print):_____

Phone Number (home)_____ (work)_____

Signature of UST Owner:_____

Witness:_____

Date:_____ Month _____ Day_____ Year

State Lead Option

RIGHT-OF-ENTRY FORM

PROPERTY OWNER

UST Permit #04736

If you are the Property Owner or are the authorized representative for that person, but did not own the former or existing underground storage tanks at the time the release was reported, please complete this form.

I, _____, certify that I am the legal owner of the property identified below or serve as the authorized representative for the property owner. I authorize the South Carolina Department of Health and Environmental Control (Agency), or a contractor selected by the Agency, to enter this property at reasonable times only to conduct assessment and corrective action activities, as required. The contractor will be designated as the contractor for the UST owner or operator for only the required environmental site rehabilitation activities. Compensation to the contractor will be from the SUPERB Account and I will have no obligation to pay the contractor. I understand that the Agency or its contractor will notify me of all activities that are necessary prior to their initiation and will promptly provide to me a summary of the data upon request.

Name of Facility Stockman Oil Two Inc Phone # _____

Street Address of Facility 1138 Reynolds Avenue

Town, City, District, Suburb Greenwood

Name of nearest intersecting street, road, highway, alley _____

_____ Is this facility within the city limits? (yes or no) _____

Does a public water or sewer utility service this facility? (yes or no) _____, if no, please provide the name and phone number of a person that we can contact that can assist in the location of private water and septic tank lines _____

_____, phone number _____

Is the property currently leased or rented to someone? (yes or no) _____. If yes, please provide their name _____ and phone number _____ and let them know about the pending site rehabilitation activities. If vehicles or other mobile structures are parked over the monitoring wells, they should be moved before the Agency's contractor arrives at the site.

NAME of Property owner (Please Print):_____

Phone Number (home)_____ (work)_____

Current Mailing Address:_____

Signature of Property Owner:_____

Witness:_____

Date:_____ Month _____ Day_____ Year

Owner/ Operator Lead Option

ACTIVE CORRECTIVE ACTION OPTIONS FORM

UST PERMIT #04736

I, _____, certify that I am the legal owner on record for the underground storage tanks at the facility identified below for the release reported on December 27, 1989 or serve as the authorized representative for the owner. I wish to secure price quotations for corrective action activities as required by the Agency, and to select my own corrective action contractor after price quotation results are received. I understand that the Agency will also advertise for price quotations in the South Carolina Business Opportunities and provide the results to me. **I understand compensation to the contractor will be from the SUPERB Account, but I may have the obligation to pay the contractor for any costs not approved by the Agency. I understand that if the contractor I select does not or cannot complete the required activities, I will be required to find another certified contractor to complete the required activities for the remainder of the existing financial approval amount and that no additional funding from the SUPERB Account may be allowed. I also understand that the Agency will pursue enforcement actions against me if the contractor I select does not make satisfactory progress towards achieving established corrective actions goals.**

NAME of UST owner or authorized representative (Please Print):_____

Phone Number (home)_____ (work)_____

Signature of UST Owner:_____

Date:_____

Witness:_____

Date:_____

D H E C

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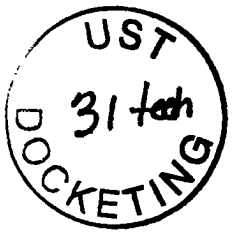
Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

STOCKMAN OIL TWO INC
1138 REYNOLDS AVE
GREENWOOD SC 29646

DEC 1 5 2014



Re: **Site Specific Work Plan Request**
Stockman Oil Two Inc, 1138 Reynolds Ave., Greenwood, SC
UST Permit # 04736
Release Reported December 27, 1989
Monitoring Report Received November 14, 2014
Greenwood County

To Whom It May Concern:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) has reviewed the referenced report. The report indicates the presence of chemicals of concern in the groundwater.

To determine what risk the referenced release may pose to the environment and public health, and in accordance with Section 280.65 of the South Carolina Underground Storage Tank Control Regulations, implementation of monitoring well installation and groundwater sampling on the newly installed wells as outlined in the UST Quality Assurance Program Plan (QAPP) Revision 2.0 is necessary. The three new monitoring wells should be sampled for BTEX, naphthalene, MtBE, 1,2-DCA, 8-Oxygenates and EDB. The groundwater sampling event should be conducted in accordance with the UST QAPP and must be conducted in compliance with all applicable regulations. A copy of the Agency's QAPP for the Underground Storage Tank Division is available at http://www.dhec.sc.gov/Environment/LW/UST/ReleaseAssessmentClean-up/QualityAssurance/.

Please have your contractor complete and submit the Site Specific Work Plan and Cost Agreement within thirty (30) days of the date of this letter. The Site Specific Work Plan form can be found at http://www.dhec.sc.gov/Environment/LW/UST/ReleaseAssessmentClean-up/QualityAssurance/. Every component may not be necessary to complete the above scope of work. The State Underground Petroleum Environmental Response Bank (SUPERB) Account allowable cost for each component is included on the Assessment Component Cost Agreement Form. **Please note that technical and financial preapproval from the Agency must be issued before work begins.**

On all correspondence regarding this site, please reference UST Permit #04736. If you have questions or need additional information, feel free to call me at (803) 898-0606.

Sincerely,

John C. Bryant, Hydrogeologist
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: Map

cc: KLM Environmenal, LLC, PO Box 2704, Goose Creek, SC 29445
Technical File

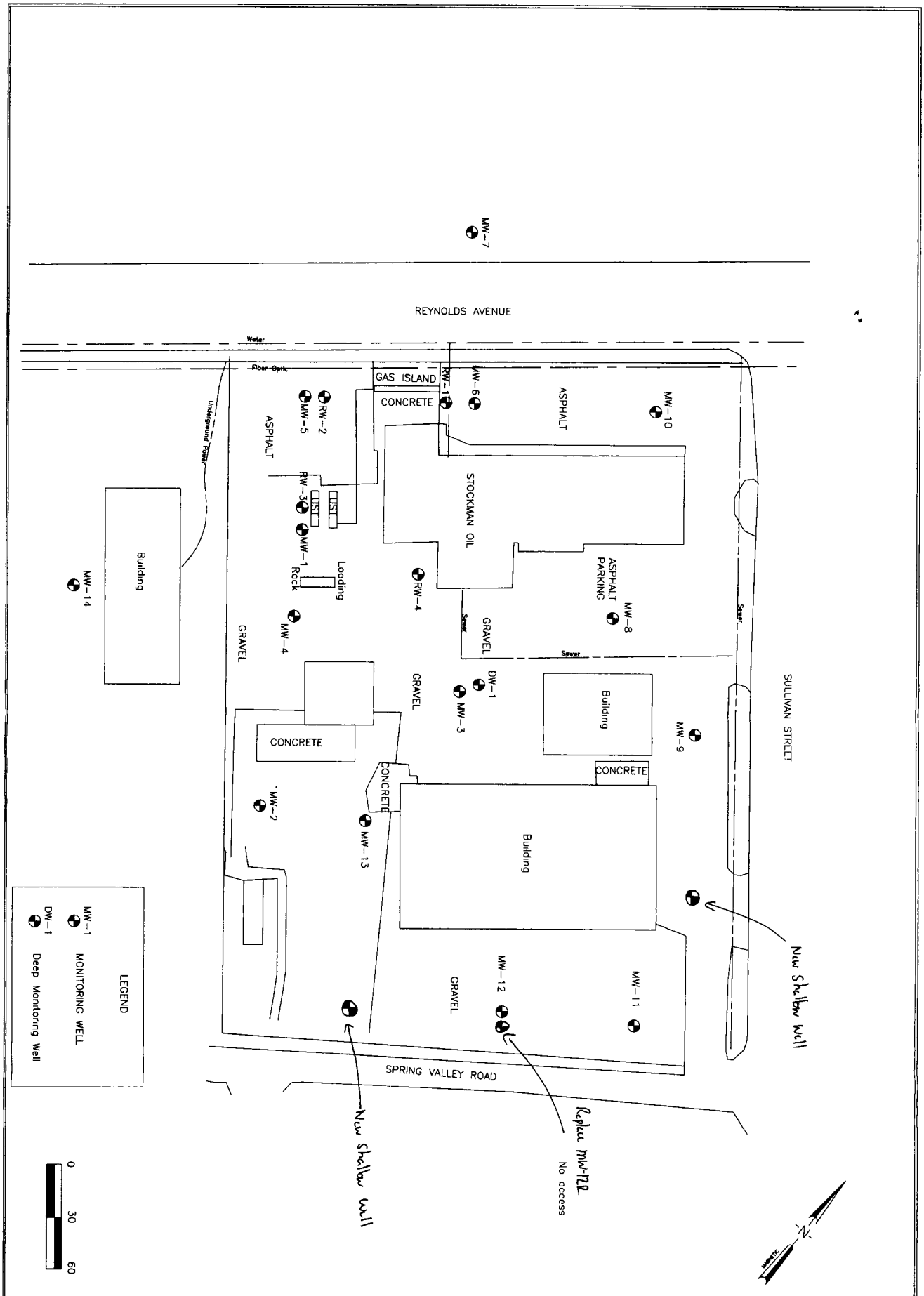


FIGURE 2
SITE MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

KLM Environmental, LLC
Phase I·Phase II Underground Storage Tanks·Soil & Water Sampling·Well Installation

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Site-Specific Work Plan for Approved ACQAP
Underground Storage Tank Management Division

UST DEC 3 1 2014 PROGRAM

To: John C Bryant (SCDHEC Project Manager)
From: Mark Keller, PG (Contractor Project Manager)
Contractor: KLM Environmental UST Contractor Certification Number: 345

Facility Name: Stockman Oil Two UST Permit #: 04736
Facility Address: 1138 Reynolds Ave., Greenwood, SC 29646
Responsible Party: Stockman Oil Phone: 910-343-1991
RP Address: 1138 Reynolds Ave., Greenwood, SC 29646
Property Owner (if different): Same as RP
Property Owner Address: Same as RP
Current Use of Property: Gas station / Warehouse / Office

UST 32 tech DOCKETING

Scope of Work (Please check all that apply)

- ☐ IGWA
- ☐ Tier I
- ☐ Tier II
- ☑ Monitoring Well Installation
- ☑ Groundwater Sampling
- ☐ Other
- ☐ GAC

Analyses (Please check all that apply)

Groundwater/Surface Water:

- ☑ BTEXNMDCA (8260B)
- ☑ Oxygenates (8260B)
- ☑ EDB (8011)
- ☐ PAH (8270D)
- ☐ Lead
- ☐ 8 RCRA Metals
- ☐ TPH
- ☐ pH
- ☐ BOD
- ☐ Nitrate
- ☐ Sulfate
- ☐ Other
- ☐ Methane
- ☐ Ethanol
- ☐ Dissolved Iron

Soil:

- ☐ BTEXN
- ☐ PAH
- ☐ 8 RCRA Metals
- ☐ Oil & Grease (9071)
- ☐ TPH-DRO (3550B/8015B)
- ☐ TPH-GRO (5030B/8015B)
- ☐ Grain Size
- ☐ TOC

Air:

- ☐ BTEXN

Sample Collection (Estimate the number of samples of each matrix that are expected to be collected.)

0	Soil	0	Water Supply Wells	0	Air	1	Field Blank
21	Monitoring Wells	0	Surface Water	2	Duplicate	1	Trip Blank

Field Screening Methodology

Estimate number and total completed depth for each point, and include their proposed locations on the attached map.

# of shallow points proposed: NA Estimated Footage: NA feet per point
# of deep points proposed: NA Estimated Footage: NA feet per point
Field Screening Methodology: NA

Permanent Monitoring Wells

Estimate number and total completed depth for each well, and include their proposed locations on the attached map.

# of shallow wells: 3 Estimated Footage: 35 feet per point
# of deep wells: NA Estimated Footage: NA feet per point
# of recovery wells: NA Estimated Footage: NA feet per point
Monitoring Well development method (consistent with SOP): NA
Comments, if warranted:
Replace missing well MW-12 and install two more shallow wells as depicted on the map.

UST Permit #: 04736 Facility Name: Stockman Oil Two

Implementation Schedule (Number of calendar days from approval)
Field Work Start-Up: 30 Field Work Completion: 35
Report Submittal: 60 # of Copies Provided to Property Owners: _____

Aquifer Characterization
Pump Test: ☐ Slug Test: ☐ (Check one and provide explanation below for choice)
NA

Investigation Derived Waste Disposal
Soil: 2 Tons Purge Water: 150 Gallons
Drilling Fluids: NA Gallons Free-Phase Product: 0 Gallons

Additional Details For This Scope of Work
For example, list wells to be sampled, wells to be abandoned/repaired, well pads/bolts/caps to replace, details of AFVR event, etc.
Install three shallow wells. Sample all wells in the monitoring well network. Conduct a subsequent survey.

Purging will be required on the three new wells and deep wells prior to sample collection.

Two mobilizations for sampling are being proposed per the standards set forth in SCDHEC Solicitation # 5400007403 where a separate personnel mobilization is allowed for every 20 monitoring wells sampled or gauged.

Compliance With Annual Contractor Quality Assurance Plan (ACQAP)
Yes Laboratory as indicated in ACQAP? (Yes/No) If no, indicate laboratory information below.
Name of Laboratory: _____
SCDHEC Certification Number: _____
Name of Laboratory Director: _____

Yes Well Driller as indicated in ACQAO? (Yes/No) If no, indicate driller information below.
Name of Well Driller: _____
SCLLR Certification Number: _____

NA Other variations from ACQAP. Please describe below.

Attachments
1. Attach a copy of the relevant portion of the USGS topographic map showing the site location.
2. Prepare a site base map. This map must be accurately scaled, but does not need to be surveyed. The map must include the following:
   - North Arrow
   - Location of property lines
   - Location of buildings
   - Previous soil sampling locations
   - Previous monitoring well locations
   - Proposed soil boring locations
   - Proposed monitoring well locations
   - Legend with facility name and address, UST permit number, and bar scale
   - Streets or highways (indicate names and numbers)
   - Location of all present and former ASTs and USTs
   - Location of all potential receptors
3. Assessment Component Cost Agreement, SCDHEC Form D-3664

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2600 Bull Street
Columbia, SC 29201-1708

ASSESSMENT COMPONENT COST AGREEMENT 2014

SOUTH CAROLINA

Department of Health and Environmental Control (DHEC)

Bureau of Underground Storage Tank Management

Facility Name: **Stockman Oil Two**

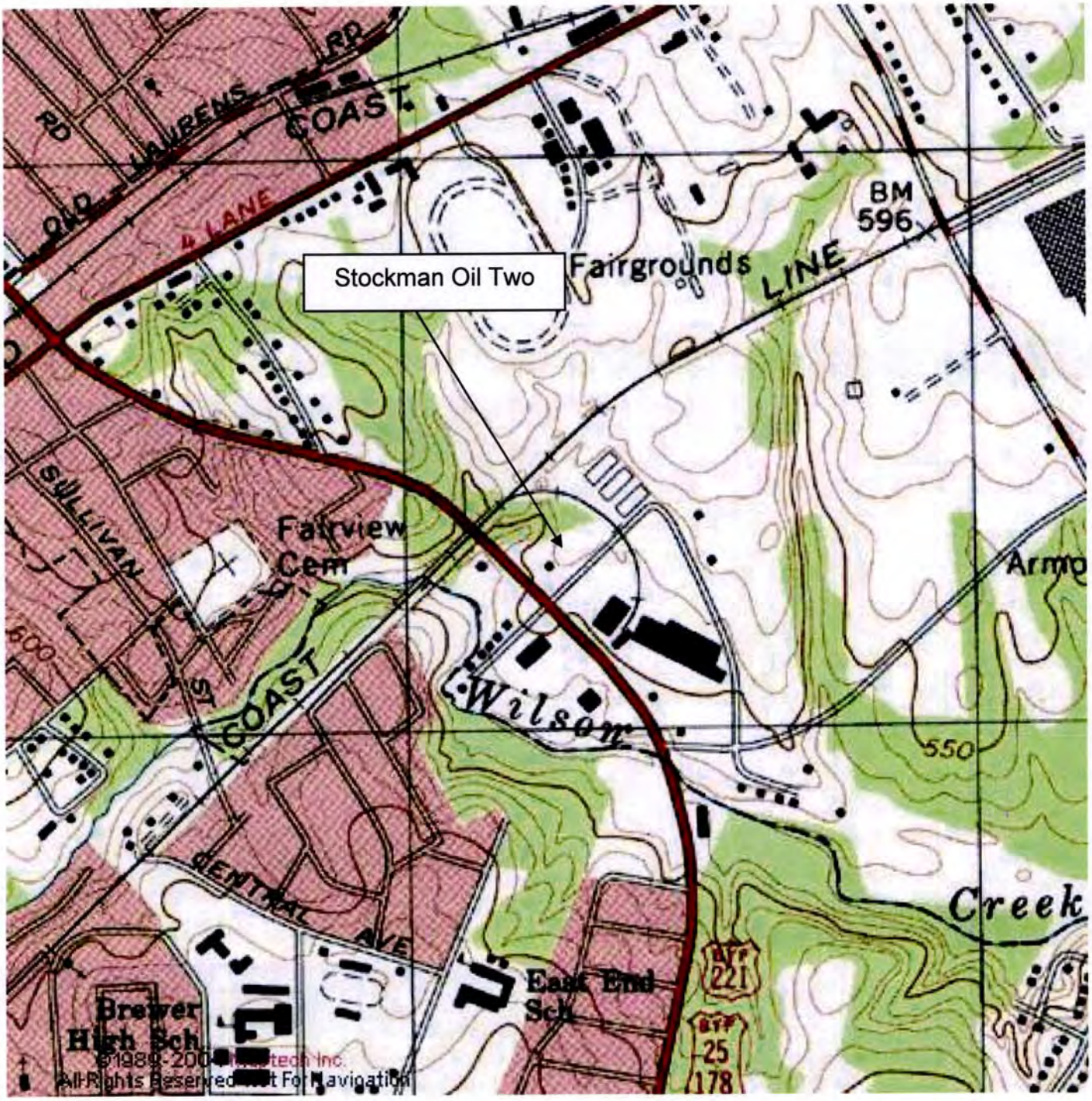
UST Permit#: **04736** Cost Agreement #:

		QTY	UNIT	UNIT PRICE	TOTAL
1	Plan*				
	A1. Site Specific Work Plan	1	x	150.00	150.0
	B1. Tax Map		x	$70.00	
	C1. Tier II or Comp. Plan/QAPP App. E		x	$250.00	
2	A1. Receptor Survey*		x	$551.00	
3	Survey (500ft x 500 ft)				
	A1. Comprehensive Survey		x	$1,040.00	
	B. Subsurface Geophysical Survey				
	1. <10 meters below grade		x	$1,300.00	
	2. >10 meters below grade		x	$2,310.00	
	C1. Geophysical UST or Drum Survey		x	$910.00	
4	Mob/Demob (List component #)				
	A1. Equipment (9)	1	x	$1,020.00	1,020.0
	B1. Personnel (9,10,10,17)	4	x	$423.00	1,692.0
	C1. Adverse Terrain Vehicle		x	$500.00	
5	Soil Borings (hand auger)*		feet x	$5.00	
6	Soil Borings or Field Screening*				
	A1. Standard		feet x	$15.00	
	B1. Fractured Rock		feet x	$20.20	
7	Soil Leachability Model		each x	$60.00	
8	Abandonment				
	A1. 2" or less*		feet x	$3.10	
	B1. 2+" to 6"*		feet x	$4.50	
	C1. Dug/bored well (up to 6 ft dia.)*		feet x	$15.00	
9	Well Installation *				
	A1. Water Table (hand auger)*		feet x	$10.60	
	B1. Water Table (drill rig)*	105	feet x	$38.00	3,990.0
	C1. Telescoping*		feet x	$50.00	
	D1. Rock Drilling*		feet x	$58.00	
	E1. 2" Rock Coring*		feet x	$30.90	
	G1. Multi-sampling ports/screens*		feet x	$33.40	
	H1. Recovery Well (4" dia.)*		feet x	$45.00	
	I1. Pre-packed screen (1.25" dia.)*		feet x	$15.00	
	J1. Rotosonic (2" dia.)*		feet x	$44.00	
	K. Re-develop existing well*		feet x	$11.00	
10	Sample Collection*				
	A1. Ground-water (purge)*	4	per well or receptor x	$60.00	240.0
	B1. Air or Vapors*		Per receptor x	$12.00	
	C1. Water Supply*		per well or receptor x	$22.00	
	D1. Groundwater (No Purge or duplicate)*	13	per well or receptor x	$28.00	364.0
	E1. Gauge Well Only*	6	per well x	$7.00	42.0
	F1. Sample Below Product*		per well x	$12.00	
	G1. Passive Diffusion Bag*		each x	$26.00	
	H1. Field Blank	1	each x	$24.60	24.6
11	Analyses-Groundwater (See Analytical Methodology for analyses)				
	A2. BTEXNM+Oxyg's+1,2-DCA+Eth(8260	19	samples x	$122.00	2,318.0
	AA1. Lead, Filtered		samples x	$13.80	
	B2. 8260 RUSH		samples x	$153.60	
	C2. Trimethyl, Butyl, & Isopropyl Benzene		samples x	$36.40	
	D1. PAH's		samples x	$60.60	
	E1. Lead, Unfiltered		samples x	$16.00	
	F1. EDB by 8011	18	samples x	$45.20	813.6
	FF1. EDB by 8011 RUSH		samples x	$68.20	
	G1. 8 RCRA Metals		samples x	$63.40	
	H1. TPH (9070)		samples x	$41.00	
	I1. pH		samples x	$5.20	
	J1. BOD		samples x	$20.00	
	P1. Ethanol		samples x	$14.80	
				sub-total	10,654.20

UST Facility Name	Stockman Oil Two			
UST Permit#	04736		Cost Agreement #	00000

		QTY	UNIT	UNIT PRICE	TOTAL
11	Analyses-Soil				
	Q1. BTEX + Napth.		samples x	$64.00	
	R1. PAH's		samples x	$64.04	
	S1. 8 RCRA Metals		samples x	$56.40	
	U1. TPH-DRO (3550C/8015C)		samples x	$40.00	
	V1. TPH-GRO (5035B/8015C)		samples x	$35.96	
	W1. Grain size/hydrometer		samples x	$104.00	
	X1. Total Organic Carbon		samples x	$30.60	
	Analyses-Air				
	Y1. BTEX + Napth.		samples x	$216.00	
	Analyses-Free-Phase Product				
	Z1. Hydrocarbon Fuel Identification		samples x	$357.00	
12	Aquifer Characterization*				
	A1. Pumping Test*		hours x	$23.00	
	B1. Slug Test*		tests x	$191.00	
	C1. Fractured Rock*		tests x	$100.00	
13	Free Product Recovery Rate Test*		tests x	$38.00	
14	Fate/Transport Modeling				
	A1. Mathematical Mode		models x	$100.00	
	B1. Computer Model		models x	$100.00	
15	Risk Evaluation				
	A1. Tier I Risk Evaluation		x	$300.00	
	B1. Tier II Risk Evaluation		x	$100.00	
16	Subsequent Survey*	1	x	$260.00	260.0
17	Disposal				
	AA. Wastewater*	150	gallons x	$0.56	84.0
	BB. Free Product*		gallons x	$0.50	
	C1. Soil Treatment/Disposal*	5	ton x	$60.00	300.0
	D1. Drilling Fluids*		gallons x	$0.42	
18	Miscellaneous(attach receipts)		each x	pre aprroved	
20	IGWA ($3,460 SE $3,760 Others)		standard		
21	Tier I Assessment ($10,230/$11,230)		standard		
22	Active Corrective Action		PFP bid		
23	EFR				
	A1. 8-hour event		each x	$1,375.00	
	A2. 24-hour event		each x	$3,825.00	
	A3. 48 hour event		each x	$6,265.00	
	A4. 96-hour event		each x	$12,567.50	
	C1. Off-gas treatment 8-hour		per event x	$122.50	
	C2. Off-gas treatment 24 hour		per event x	$241.50	
	C3. Off-gas treatment 48 hour		per event x	$327.00	
	C4. Off-gas treatment 96 hour		per event x	$780.00	
	D1. AFVR Site Reconnaissance		each x	$203.25	
	E1. Additional hook-ups		each x	$25.75	
	F. Effluent Disposal		gallon x	$0.44	
	G. AFVR Mobilization/Demobilization		each x	$391.50	
24	Granulated Activated Carbon (GAC) filter system installation & service				
	A1. New GAC System Installation*		each x	$1,900.00	
	BB. Refurbished GAC Sys. Install*		each x	$900.00	
	C1. Filter replacement/removal*		each x	$350.00	
	DD. GAC System removal,cleaning*		each x	$275.00	
	E1. GAC System housing*		each x	$250.00	
	F. In-line particulate filter		each x	$150.00	
	G1. Additional piping & fittings		foot x	$1.50	
25	Well Repair*				
	A1. Additonal Copies of Repor		each x	$50.00	
	B1. Repair 2x2 MW Pad*		each x	$50.00	
	C1. Repair 4x4 MW Pad*		each x	$88.00	
	D1. Repair Well Vault*		each x	$118.00	
	F1. Replace well cover bolts		each x	$2.60	
	G1. Replace locking well cap & lock		each x	$15.00	
	H1. Replace/repair stick-up		each x	$134.00	
	I1. Convert flush-mount to stick-up		each x	$150.00	
	J1. Convert stick-up to flush-mount		each x	$130.00	
	K1. Replace missing/illegible well tag		each x	$12.00	
				Subtotal	**11,298.20**
	Project Management Fee (%)		x	12.0%	$1,355.78
	Total			**Total**	**$12,653.98**

* The appropriate mobilization cost can be added to complete these tasks, as necessary.



KLM Environmental, LLC

Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation

Figure 1
USGS Map
Stockman Oil Two
Greenwood, SC
Project # 05086.12

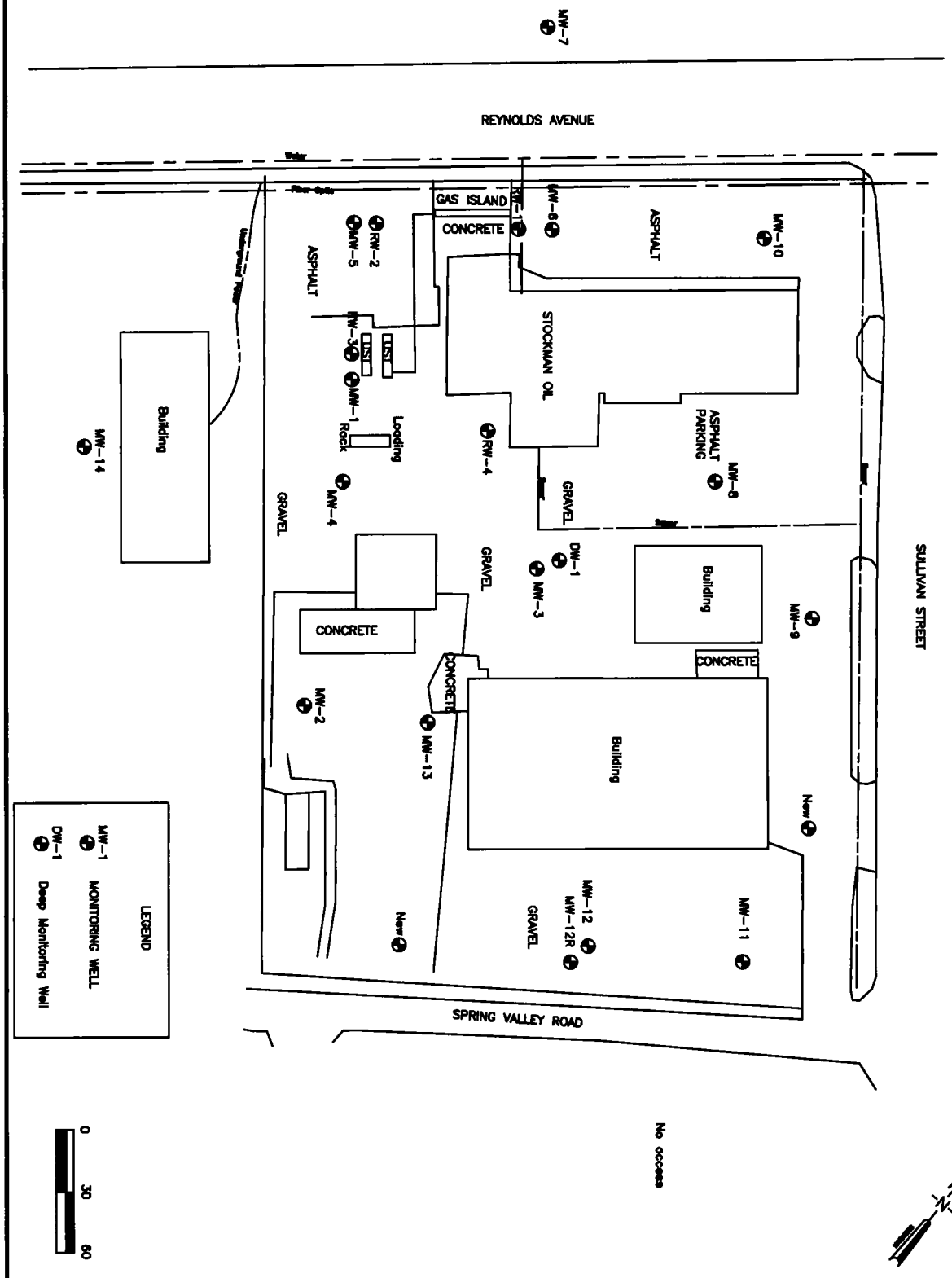


FIGURE 2
SITE MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

KLM Environmental, LLC
Phase I Phase II Underground Storage Tanks Soil & Water Sampling Well Installation

D H E C

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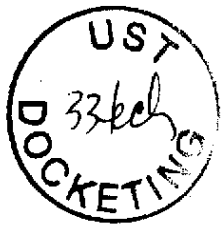
Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment



STOCKMAN OIL TWO INC
1138 REYNOLDS AVE
GREENWOOD SC 29646

JAN 0 7 2015

Re: **Assessment Directive**
Stockman Oil Two Inc, 1138 Reynolds Ave., Greenwood, SC
UST Permit # 04736; CA # 49453; UMW # 25806
Release Reported December 27, 1989
SSWP Received December 31, 2014
Greenwood County

To Whom It May Concern:

The Underground Storage Tank (UST) Management Division (Division) of the South Carolina Department of Health and Environmental Control (Agency) has reviewed the referenced Site Specific Work Plan (SSWP) submitted on your behalf by KLM Environmental. The previous assessment work for this release indicates that petroleum Chemicals of Concern (CoC) are present in the soil and groundwater at concentrations that exceed risk-based screening levels. In order to determine the extent of the CoC, additional assessment and sampling is necessary. All work should be conducted in accordance with the UST QAPP Revision 2.0, and must be conducted in compliance with all applicable regulations. A copy of the Agency Quality Assurance Program Plan (QAPP) Rev. 2.0 for the UST Management Division is available at http://www.dhec.sc.gov/Environment/LW/UST/ReleaseAssessmentClean-up/QualityAssurance/.

Assessment activities at the site should begin immediately upon receipt of this letter. Cost agreement # 49453 has been approved for the amount shown on the enclosed cost agreement form for monitoring well installation and a comprehensive groundwater sampling event. The necessary monitoring well approval form is enclosed. Well installation should be conducted in the locations described within the referenced SSWP. Groundwater analyses should be conducted for BTEX, Naphthalene, MTBE, Oxygenates, 1,2-DCA, Ethanol, and EDB. Analyses should be in accordance with Appendix E of the QAPP to include duplicate samples, field and trip blanks.

In accordance with the QAPP Rev. 2.0, if any quality assurance problems arise, you must contact the Agency project manager within 24 hours via phone or e-mail. In addition, a discussion of the problem(s) encountered, including quality assurance problems, the actions taken, and the results must be included in the final report submitted to the UST Management Division.

The Assessment Report, contractor checklist (QAPP Appendix K), and invoice are due within 90 days from the date of this letter. The report submitted at the completion of these activities should include the required information outlined in the QAPP. Please note that all applicable South Carolina certification requirements apply to the services and report preparation. All site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor.

Your contractor can submit an invoice for direct payment from State Underground Petroleum Environmental Response Bank (SUPERB) Account for pre-approved costs. By law, the SUPERB Account cannot compensate any costs that are not pre-approved. Please note that applicable South Carolina certification requirements regarding laboratory services, well installation, and report preparation must be satisfied. If the invoice is not submitted within 120 days from the date of this letter, monies allocated to pay this invoice will be uncommitted. This means that the invoice will not be processed for payment until all other committed funds are paid or monies become available.

Please note that Sections 44-2-110(4) and 44-2-130 of the SUPERB Statute state that no costs will be allowed unless prior approval from the Agency is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the Division for the cost to be paid. The Agency reserves the authority to pay only for work properly performed and/or technically justified and will only pay rates in accordance with established criteria. Further, the Agency reserves the right to question and/or reject costs if deemed unreasonable and the right to audit project records at any time during the project or after completion of work.

Please note, if unnecessary dilutions are completed resulting in reporting limits of individual CoC in excess of Risk-Based Screening Levels (RBSLs), the data cannot be used. In those cases, the UST Division may deny payment for any non-detect analysis where the reporting limit exceeds the RBSL. The UST Management Division encourages the use of 'J' values as necessary so the appropriate action can be determined for a release.

The Agency grants pre-approval for transportation of virgin petroleum impacted soil and groundwater from the referenced site to a permitted treatment facility. The transport and disposal must be conducted in accordance with the QAPP. If the CoC concentrations based on laboratory analysis are below RBSLs, please contact the project manager for approval to dispose of soil and/or groundwater on site. The SUPERB Account will not reimburse for transportation or treatment of soil and/or groundwater with concentrations below RBSLs.

On all correspondence regarding this site, please reference UST Permit # 04736 and CA # 49453. If you have any questions regarding this correspondence, please contact me by telephone at (803) 898-0606, by fax at (803) 898-0673, or by e-mail at bryantjc@dhec.sc.gov.

Sincerely,

John C. Bryant, Hydrogeologist
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: Approved Cost Agreement
Monitoring Well Approval UMW-25806

cc: KLM Environmental, PO Box 2704, Goose Creek, SC 29445 (w/ enc)
Technical File (w/ enc)

D H E C

PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

Monitoring Well Approval Form

Approval is hereby granted to:	KLM Environmental
(on behalf of):	Stockman Oil Two Inc
Facility:	Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC
UST Permit Number:	04736
County:	**Greenwood**

This approval is for the installation of three Monitoring Wells. The wells are to be installed in the approved locations. The monitoring wells are to be installed following the South Carolina Well Standards, R.61-71, and the applicable guidance documents.

Please note that R.61-71 requires the following:

1. All wells shall be drilled, constructed, and abandoned by a South Carolina certified well driller per R.61-71.D.1.
2. All monitoring wells shall be labeled as required by R.61-71.H.2.c.
3. A Water Well Record Form or other form provided or approved by the Agency shall be completed and submitted to the Agency within 30 days after well completion or abandonment unless another schedule has been approved by the Agency. The form should contain the "as-built" construction details and all other information required by R.61-71.H.1.f
4. All analytical data and water levels obtained from each monitoring well shall be submitted to the Agency within 30 days of receipt of laboratory results unless another schedule has been approved by the Agency as required by R.61-71.H.1.d.
5. If any of the information provided to the Agency changes, notification to John Bryant (tel: (803) 898-0606 or e-mail: bryantjc@dhec.sc.gov) shall be provided a minimum of twenty-four (24) hours prior to well construction as required by R.61-71.H.1.a.
6. All temporary monitoring wells shall be abandoned within 5 days of borehole completion using appropriate methods as required by R.61-71.H.4.c. All other wells shall be properly developed per R.61-71.H.2.d.
7. Agency approval is required prior to abandonment of all monitoring wells as required by R.61-71.H.1.a.

This approval is pursuant to the provisions of Section 44-55-40 of the 1976 South Carolina Code of Laws and R.61-71 of the South Carolina Well Standards and Regulations, dated April 26, 2002. A copy of this approval should be on the site during well installation.

Date of Issuance: **January 2, 2015** **Approval #: UMW-25806**

John C. Bryant, Hydrogeologist
Corrective Action Section
Division of Assessment and Corrective Action
Bureau of Land and Waste Management

Approved Cost Agreement 49453

Facility: 04736 STOCKMAN OIL TWO INC

BRYANTJC

PO Number:

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
01 PLAN						
		A1	SITE SPECIFIC WORK PLAN	1.0000	150.00	150.00
04 MOB/DEMOB						
		A1	EQUIPMENT	1.0000	1,020.00	1,020.00
		B1	PERSONNEL	4.0000	423.00	1,692.00
09 WELL INSTALLATION						
		B1	WATER TABLE (DRILL RIG)	105.0000	38.00	3,990.00
10 SAMPLE COLLECTION						
		A1	GROUNDWATER (PURGE)	4.0000	60.00	240.00
		D1	GROUNDWATER NO PURGE/DUPLICATE	13.0000	28.00	364.00
		E1	GAUGE WELL ONLY	6.0000	7.00	42.00
		H1	FIELD BLANK	1.0000	24.60	24.60
11 ANALYSES	GW GROUNDWATER					
		A2	BTEXNM+OXYGS+1,2-DCA+ETH-8260B	19.0000	122.00	2,318.00
		F1	EDB BY 8011	18.0000	45.20	813.60
16 SUBSEQUENT SURVEY						
		A1	SUBSEQUENT SURVEY	1.0000	260.00	260.00
17 DISPOSAL						
		AA	WASTEWATER	150.0000	0.56	84.00
		C1	SOIL TREATMENT DISPOSAL	5.0000	60.00	300.00
19 RPT/PROJECT MNGT & COORDINATIO						
		PRT	REPORT PREPARATION	0.1200	11,298.20	1,355.78
				Total Amount		12,653.98

Document Receipt Information

☐ Hard Copy ☒ CD ☐ Email

Date Received 3-26-15

Permit Number 04736

Project Manager John Bryant

Name of Contractor KLM Env

UST Certification Number

Docket Number 34tech

Scanned

Well Installation/Monitoring Report

WELL INSTALLATION & MONITORING REPORT

Stockman Oil Two, Inc.

Greenwood, South Carolina

Site ID# 04736

KLM Environmental, LLC
Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation
PO Box 2704
Goose Creek, SC 29445
843-870-4285 Phone
843-797-1893 Fax

March 17th, 2015

Prepared for:

Mr. John C. Bryant
SCDHEC BUSTM
2600 Bull Street
Columbia, SC 29201

Prepared by:

KLM Environmental, LLC
Post Office Box 2704
Goose Creek, SC 29445
(843) 870-4285 / *fax: 797-1893*
UST Contractor # 345

Project# 05086.12

SIGNATURE PAGE

This report entitled **"WELL INSTALLATION & MONITORING REPORT" for Stockman Oil Two, Inc.** has been prepared at the request of and for the exclusive use of the South Carolina Department of Health and Environmental Control. It has been prepared and reviewed by the undersigned.

Prepared By:

J. Micah Bennett, PG
Vice President
KLM Environmental, LLC

Reviewed By:

Mark L. Keller, PG
President
KLM Environmental, LLC

3/18/15
Date

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1.0 INTRODUCTION

The Stockman Oil site is located at 1138 Reynolds Avenue in Greenwood, South Carolina. A general site location map is provided as Figure 1 in Appendix A. The site is an in service gas station as well as a bulk fuels plant with multiple above ground tanks along with underground tanks servicing the dispenser island in front of the property. The owner / operator is Stockman Oil Two, Inc. located at 1138 Reynolds Ave., Greenwood, SC 29646; phone 864-223-8486. KLM Environmental is the Certified UST Site Rehabilitation Contractor performing the work (Certification # 345). KLM's address is PO Box 2704, Goose Creek, SC 29445, phone 843-870-4285. Pace Analytical Services, Inc. is the certified laboratory used to analyze the samples for this work. Pace Analytical Services main address is 9800 Kincey Ave., Suite 100, Huntersville, NC 28078, phone # 704-875-9092.

The initial release was reported on December 27th, 1989 and the site has been undergoing assessment and monitoring activities since that date. The Stockman Oil site has been an in service gas station since the 1930's. The dispensers and the location of the underground storage tanks have not changed since that time. The UST's were upgraded by Stockman Oil in 1980. The site is surrounded by commercial property and is situated in the inner piedmont belt where the soil mainly consists of saprolite, sandy clays and clays that are underlined by medium to high grade metamorphic rock, such as granitic, biotitic and hornblendic rocks.

KLM performed a Tier II assessment in December of 2009 and has subsequently conducted AFVR events at the site. Six 8-hour AFVR events were performed at the site between July of 2010 and February of 2012. KLM installed four, four inch recovery wells at the site in April of 2012 to help facilitate free product removal. Additional AFVR events have been conducted at the site following the recovery well installation in 2012. A comprehensive sampling event was performed in October of 2014. The results of the sampling event prompted the SCDHEC Project Manager to request the installation / replacement of three shallow monitoring wells down gradient to define the horizontal extent of the plume. This report serves to present results of the well installation and recent comprehensive sampling conducted at the Stockman Oil site at the request of the SCDHEC Project Manager.

2.0 ASSESSMENT INFORMATION

2.1 Well Installation

The SCDHEC Project Manager chose three locations for KLM to install shallow monitoring wells to better define the horizontal extent of the contaminant plume. Installation of shallow monitoring wells MW-12R, MW-15 and MW-16 was completed by Mark Keller (CWD # 1554) with Environmental Drilling Technologies on February 26th, 2015. All newly installed wells were developed upon completion by KLM Environmental by the pumping method. The development water was containerized along with drill cuttings and disposed of at Waste Management Oakridge Landfill on March 9th, 2015. Disposal manifests are included in Appendix G (3.33 tons). All augers were steam cleaned thoroughly after each well was installed. The well logs for the well installation event are provided in Appendix E. The lithology of the newly installed monitoring wells is described on the well logs in Appendix E.

2.2 Piezometric Data

Figure 2 in Appendix A serves as the comprehensive site map showing the locations of the fifteen shallow monitoring wells, one telescopic well and four recovery wells located at the Stockman Oil Two site. On March 3rd, 2015 KLM mobilized to the site to sample all monitoring wells and survey the new shallow wells (MW-12R, MW-15 & MW-16). RW-3 was covered by a truck and could not be accessed during the sampling event. A piezometric map was created utilizing data collected during sampling and surveying activities on March 3rd, 2015. The piezometric map can be found in Appendix A as Figure 3.

TABLE 1
Groundwater Data (feet)
Stockman Oil Two, Inc.
Greenwood, SC

Monitoring Well	Date	TOC Elevation	Screened Interval	TOC to FP	TOC to GW	GW Elevation
MW-1*	3/3/15	100.00	14.6-29.6	24.34	>29.6	**FP** to bottom of well
MW-2	3/3/15	92.79	20-30	--	19.48	73.31
MW-3	3/3/15	94.82	25-35	--	22.33	72.49
MW-4	3/3/15	97.52	25-35	--	23.42	74.10
MW-5*	3/3/15	104.40	20-40	28.05	31.09	**FP**
MW-6*	3/3/15	104.92	20-40	28.22	>32	Obstruction at 32' **FP**
MW-7	3/3/15	104.13	20-40	--	26.63	77.50
MW-8	3/3/15	98.19	15-35	--	26.09	72.10
MW-9	3/3/15	95.10	15-35	--	23.77	71.33
MW-10	3/3/15	104.25	20-40	--	28.13	76.12
MW-12R	3/3/15	90.00	20-30	--	21.81	68.19
MW-13	3/3/15	92.36	15-35	--	19.97	72.39
MW-14	3/3/15	99.74	15-35	--	23.58	76.16
MW-15	3/3/15	89.64	20-30	--	20.87	68.77
MW-16	3/3/15	93.70	25-35	--	23.67	70.03
DW-1*	3/3/15	95.18	56-61	--	22.16	73.02
RW-1*	3/3/15	--	25-40	27.99	38.11	**FP**
RW-2*	3/3/15	--	25-40	28.35	33.53	**FP**
RW-3*	3/3/15	--	25-40	--	Covered	--
RW-4*	3/3/15	--	25-40	26.01	27.86	**FP**

* = wells not used in the construction of the piezometric map

Depths to fluid measurements were collected relative to the top of casing for each well using a hydrocarbon interface probe capable of detecting and measuring a hydrocarbon product thickness of 0.01 foot or 1/8 inch. Groundwater elevations were then determined by subtracting depth to fluid measurements from the top of casing elevations. A copy of the historical groundwater elevations is provided in Appendix F.

3.0 GROUNDWATER QUALITY

Since the monitoring well network has been sampled in the past 12 months, wells where the screen properly brackets the water table did not require purging. However, several shallow wells along with the newly installed wells and telescoping well required purging. A minimum of three well volumes were purged from these wells or purged dry prior to sample collection using an electric purge pump. The purge pump and hose were decontaminated between wells with a triple station rinse as outlined in the QAPP. Immediately after well purging was completed, or purged dry, groundwater samples were collected using disposable bottom entry sampling bailers, decanted into sterile glass sample containers provided by the analytical laboratory, and preserved in accordance with United States Environmental Protection Agency (USEPA) sampling protocol. Standard field parameters (pH, specific conductivity, temperature, dissolved oxygen, salinity, and turbidity) were measured with the Horiba U-52 (serial # W22MV13L) and recorded for each sample during well purging or at the time of collection. The Horiba U-52 (serial # W22MV13L) was calibrated with Horiba 100-4 standard solution prior to use and the calibration records are recorded on the calibration sheet which are included in Appendix B. Following collection in the field, the groundwater samples were packed on wet ice and submitted to Pace Analytical Services (SCDHEC Certification # 99006) and analyzed for Benzene, Toluene, Ethylbenzene, total Xylenes (BTEX), Methyl-tert Butyl Ether (MTBE), Naphthalene, 1,2 DCA, EDB and 8 Oxygenates. Analytical results are provided in Table 2 and 3 and in Appendix B. Field sampling sheets are provided in Appendix B. A map is provided as Figure 4 in Appendix A showing the sample results along with the well locations. A disposal manifest for 43.75 gallons of contaminated purge water is provided in Appendix G.

Results for all wells sampled are as follows:

TABLE 2
Summary of Analytical Data
Stockman Oil Two, Inc.
Greenwood, SC

Well #	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Naph-thalene	1,2 DCA	EDB
RBSL	**--**	**5**	**1000**	**700**	**10000**	**40**	**25**	**5**	**0.05**
MW-1	11/17/08	**132**	32.0	28.0	466	**1200**	**61.6**	NS	<0.019
	11/18/09	**230**	116	113	929	**6320**	**202**	<13.0	**0.072**
	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
	3/3/15	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
MW-2	11/17/08	<5.0	<5.0	<5.0	<10.0	13.7	3.5	NS	<0.019
	11/18/09	<5.0	<5.0	<5.0	<10.0	2.7	<5.0	<5.0	<0.020
	10/14/14	<5.0	<5.0	<5.0	<10.0	2.1	<5.0	<5.0	<0.020
	3/3/15	<5.0	<5.0	<5.0	<10.0	2.4 j	<5.0	<5.0	<0.019
MW-3	11/17/08	**24500**	**39400**	**2620**	**11400**	**6720**	**755**	NS	**0.34**
	11/18/09	**21400**	**34700**	**2150**	**11700**	**5780**	**<580**	**<260**	<0.019
	10/14/14	**14800**	**20400**	**1020**	8360	**1080**	<1000	<1000	<0.020
	3/3/15	**19300**	**34300**	**2070**	**12400**	**1840**	**1000**	<1000	<0.020
MW-4	11/17/08	**5.7**	<5.0	<5.0	<10.0	<5.0	<5.0	NS	<0.020
	11/18/09	**13.9**	<5.0	<5.0	3.4	<5.0	<5.0	<5.0	<0.019
	10/14/14	**35.6**	3.3	6.6	36.4	<5.0	**32.4**	<5.0	<0.020
	3/3/15	**28.1**	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019
MW-5	11/18/09	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
	3/3/15	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
MW-6	11/18/09	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
	3/3/15	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
MW-7	11/18/09	<5.0	5.4	2.2	12.0	<5.0	<5.0	<5.0	<0.019
	10/14/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
	3/3/15	<5.0	1.7	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019
MW-8	11/18/09	<5.0	2.3	1.2	7.5	<5.0	<5.0	<5.0	<0.020
	10/14/14	<5.0	1.7	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019
	3/3/15	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
MW-9	11/18/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
	10/14/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
	3/3/15	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019
MW-10	11/18/09	<5.0	<5.0	<5.0	3.6	<5.0	<5.0	<5.0	<0.019
	10/14/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
	3/3/15	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
MW-11	11/18/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
	10/14/14	CNL	CNL	CNL	CNL	CNL	CNL	CNL	CNL
MW-12	11/18/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	2.8	<0.019
	10/14/14	CNL	CNL	CNL	CNL	CNL	CNL	CNL	CNL
MW-12R	3/3/15	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.027
MW-13	11/18/09	**19.6**	24.0	2.6	8.2	38.7	<5.0	<5.0	<0.019
	10/14/14	**63.4**	50.8	9.6	<50.0	18.2	<25.0	<25.0	<0.020
	3/3/15	**63.7**	51.9	10.7	10.2	16.4	<5.0	<5.0	<0.020

TABLE 2
Summary of Analytical Data
Stockman Oil Two, Inc.
Greenwood, SC

Well #	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Naph-thalene	1,2 DCA	EDB
RBSL	**--**	**5**	**1000**	**700**	**10000**	**40**	**25**	**5**	**0.05**
MW-14	11/18/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
	10/14/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
	3/3/15	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
MW-15	3/3/15	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.021
MW-16	3/3/15	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.021
DW-1	11/18/09	**70.2**	128	15.6	97.7	25.3	7.1	<5.0	<0.020
	10/14/14	<5.0	<5.0	<5.0	<10.0	1.8 j	5.3	<5.0	<0.020
	3/3/15	<5.0	<5.0	<5.0	<10.0	1.9 j	<5.0	<5.0	<0.020
RW-1	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
	3/3/15	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
RW-2	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
	3/3/15	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
RW-3	10/14/14	Covered	Covered	Covered	Covered	Covered	Covered	Covered	Covered
	3/3/15	Covered	Covered	Covered	Covered	Covered	Covered	Covered	Covered
RW-4	10/14/14	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
	3/3/15	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
QA / QC Data									
Dup. 1 (MW-4)	3/3/15	**28.9**	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
Field Blank	3/3/15	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
Trip Blank	3/3/15	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	NS

TABLE 3
Oxygenate Data
Stockman Oil Two, Inc.
Greenwood, SC

Well #	Date Sampled	(ETBE)	(TAME)	(DIPE)	(TBA)	(TAA)	(TBF)	Ethanol	(ETBA)
RBSL	**--**	**47**	**128**	**150**	**1400**	**240**	**--**	**10000**	**--**
MW-1	3/3/15	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
MW-2	3/3/15	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	87.8
MW-3	3/3/15	<2000	<2000	**693**	<20000	**50900**	<10000	<40000	<20000
MW-4	3/3/15	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100
MW-5	3/3/15	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
MW-6	3/3/15	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
MW-7	3/3/15	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100
MW-8	3/3/15	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100
MW-9	3/3/15	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100
MW-10	3/3/15	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100
MW-12R	3/3/15	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100
MW-13	3/3/15	<10.0	<10.0	<5.0	61.6	**1300**	<50.0	<200	<100
MW-14	3/3/15	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100
MW-15	3/3/15	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100
MW-16	3/3/15	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100
DW-1	3/3/15	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100
RW-1	3/3/15	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
RW-2	3/3/15	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
RW-3	3/3/15	Covered	Covered	Covered	Covered	Covered	Covered	Covered	Covered
RW-4	3/3/15	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
QA /QC Data									
Dup. 1 (MW-4)	3/3/15	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100
Field Blank	3/3/15	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100
Trip Blank	3/3/15	<10.0	<10.0	<5.0	<100	<100	<50.0	<200	<100

4.0 CONCLUSIONS

All data was reviewed thoroughly by KLM's quality assurance officer and the data was determined valid. Results from the sampling event indicate free product is present in monitoring wells MW-1, MW-5 and MW-6 in addition to recovery wells RW-1, RW-2 and RW-4. RW-3 could not be accessed during the sampling event as a truck was parked over the well and the driver was not available to move the truck. Laboratory analysis show contaminants above RSBL's persist in monitoring wells MW-3, MW-4 and MW-13. Newly installed shallow monitoring wells MW-12R, MW-15 and MW-16 were reported by the laboratory at below detection for all parameters sampled, thus defining the horizontal extent on the contaminant plume down gradient.

KLM recommends performing multiple extended AFVR events on all recovery wells and the affected monitoring wells showing free phase product. The thickness of free phase product at this site has been measured at nearly 6 feet in some areas. Multiple events at shorter intervals between events should provide information to show if extended AFVR technology is successful at addressing the free product present at this site. To date a long duration AFVR event has not been conducted at the site.

5.0 REFERENCES

KLM Environmental, LLC, *Monitoring Report*, October, 2014.

KLM Environmental, LLC, *Tier II Assessment Report*, December, 2009.

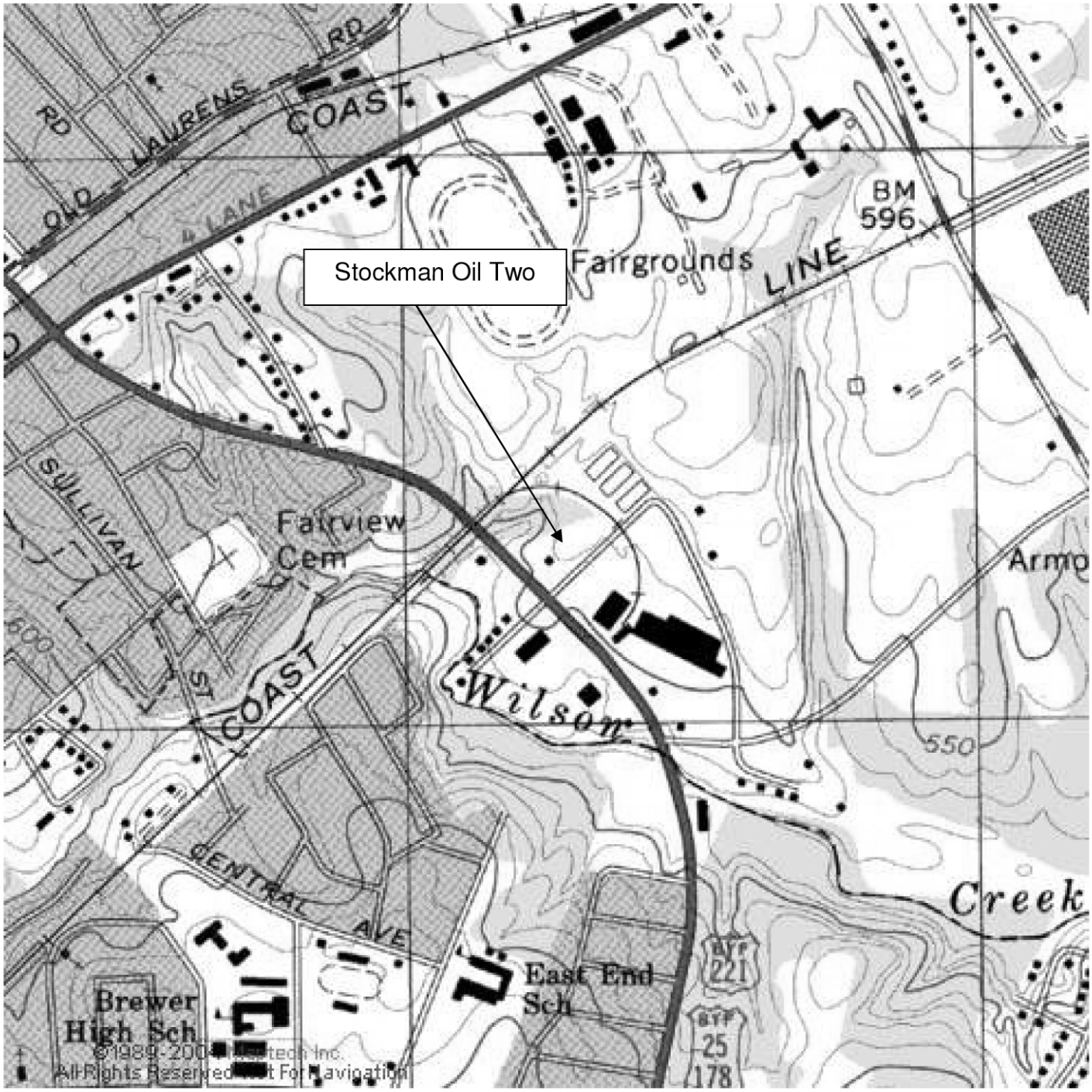
KLM Environmental, LLC, *Monitoring Report*, December, 2008.

Force & Associates, Inc., *Tier I Report*, July, 2002.

South Carolina Department of Health and Environmental Control Bureau of Land and Waste Management Underground Storage Tank Program, *South Carolina Quality Assurance Program Plan Revision 2.0,* July, 2013.

APPENDIX A

Figures



KLM Environmental, LLC

Phase I· Phase II· Underground Storage Tanks·Soil & Water Sampling· Well Installation

Figure 1
USGS Map
Stockman Oil Two
Greenwood, SC
Project # 05086.12

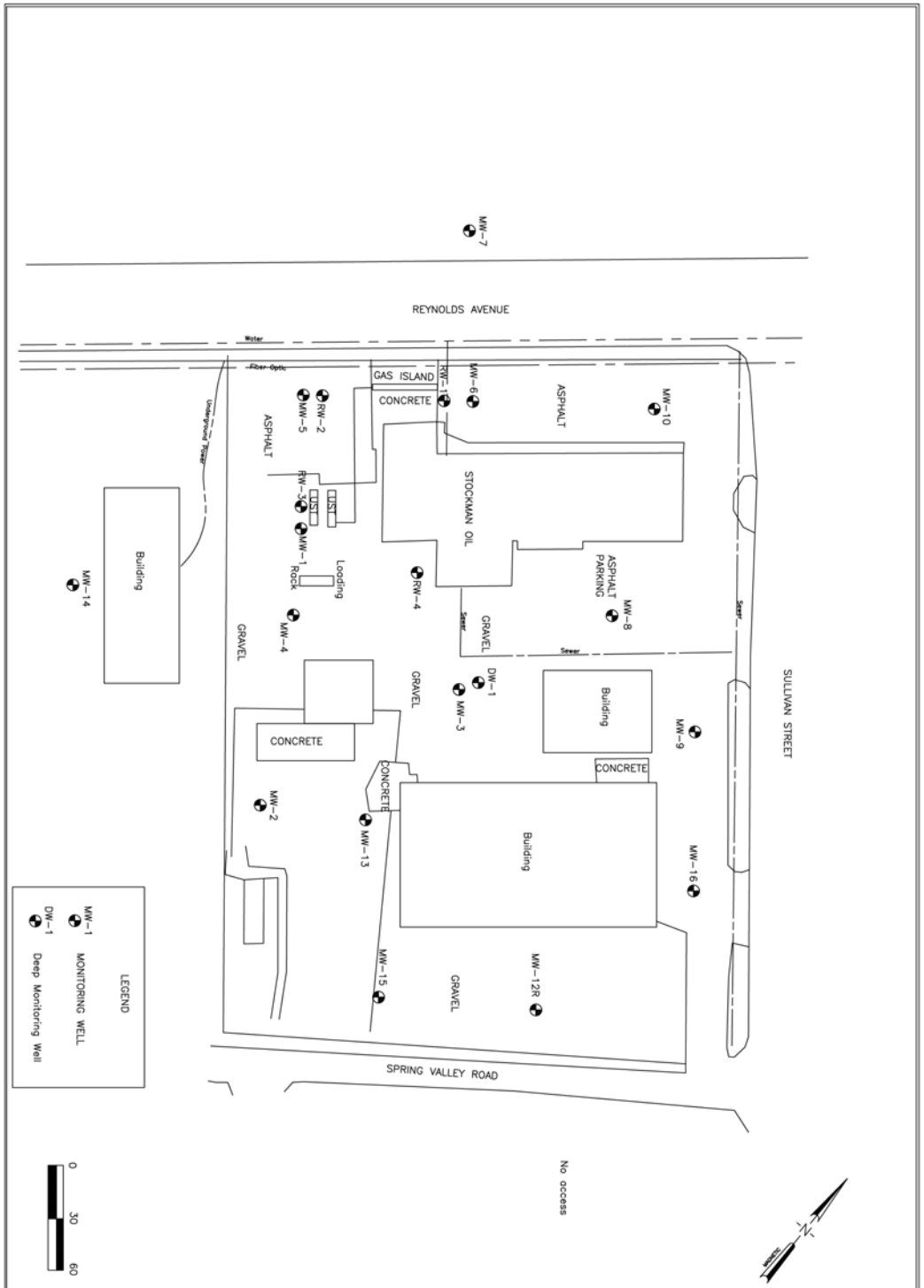


FIGURE 2
SITE MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

KLM Environmental, LLC
Phase I· Phase II· Underground Storage Tanks· Soil & Water Sampling· Well Installation

TABLE 1
Groundwater Data (feet)
Stockman Oil Two, Inc.
Greenwood, SC

Monitoring Well	Date	TOC Elevation	Screened Interval	TOC to FP	TOC to GW	GW Elevation
MW-1*	3/3/15	100.00	14.6-29.6	24.34	>29.6	FP to bottom of well
MW-2	3/3/15	92.79	20-30	--	19.48	73.31
MW-3	3/3/15	94.82	25-35	--	22.33	72.49
MW-4	3/3/15	97.52	25-35	--	23.42	74.10
MW-5*	3/3/15	104.40	20-40	28.05	31.09	FP
MW-6*	3/3/15	104.92	20-40	28.22	>32	Obstruction at 32' FP
MW-7	3/3/15	104.13	20-40	--	26.63	77.50
MW-8	3/3/15	98.19	15-35	--	26.09	72.10
MW-9	3/3/15	95.10	15-35	--	23.77	71.33
MW-10	3/3/15	104.25	20-40	--	28.13	76.12
MW-12R	3/3/15	90.00	20-30	--	21.81	68.19
MW-13	3/3/15	92.36	15-35	--	19.97	72.39
MW-14	3/3/15	99.74	15-35	--	23.58	76.16
MW-15	3/3/15	89.64	20-30	--	20.87	68.77
MW-16	3/3/15	93.70	25-35	--	23.67	70.03
DW-1*	3/3/15	95.18	56-61	--	22.16	73.02
RW-1*	3/3/15	--	25-40	27.99	38.11	FP
RW-2*	3/3/15	--	25-40	28.35	33.53	FP
RW-3*	3/3/15	--	25-40	--	Covered	--
RW-4*	3/3/15	--	25-40	26.01	27.86	FP

KLM Environmental, LLC
Phase I Phase II Underground Storage Tanks Soil & Water Sampling Well Installation

FIGURE 3
PIEZOMETRIC MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

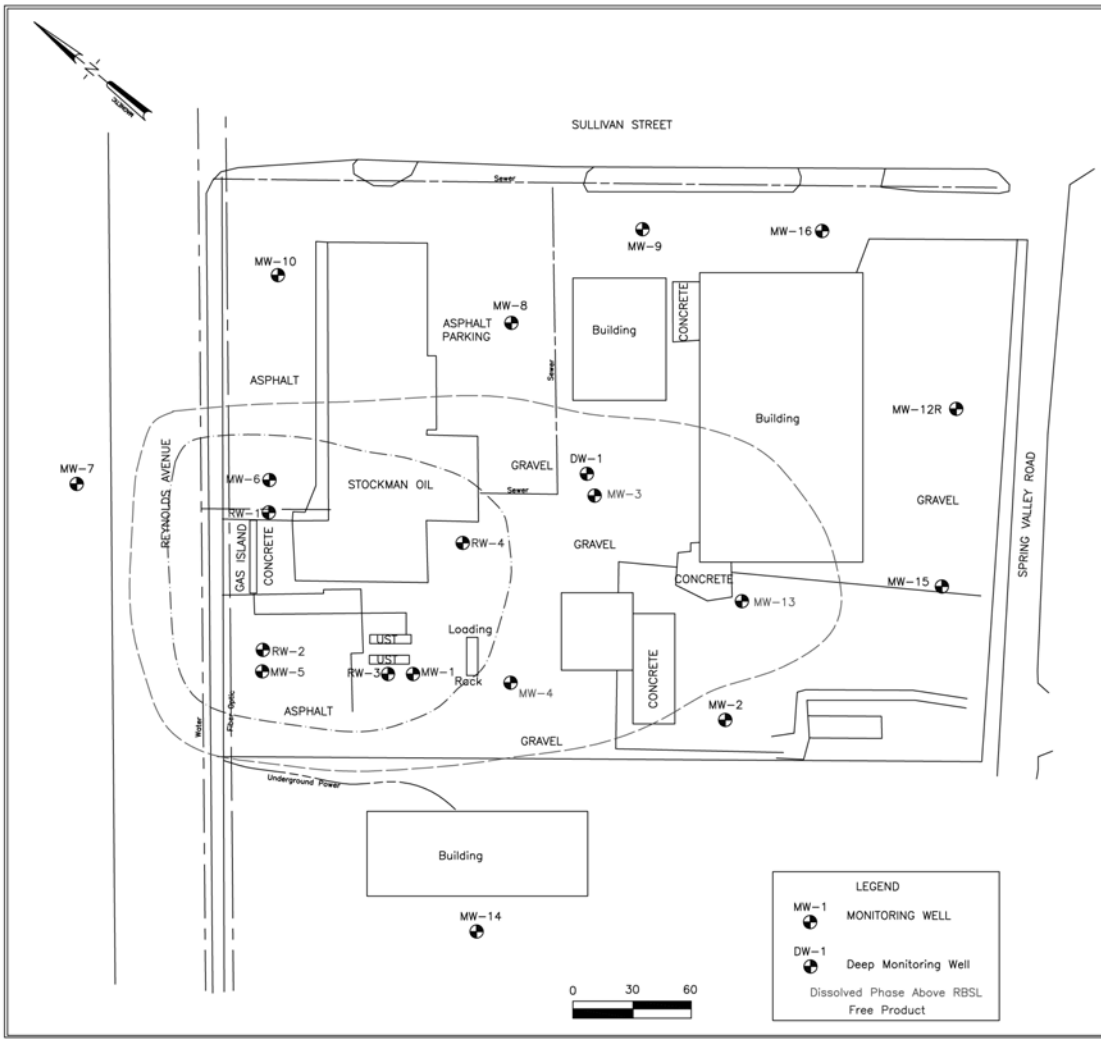


TABLE 2
Summary of Analytical Data
Stockman Oil Two, Inc.
Greenwood, SC

Well #	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Naph-thalene	1,2 DCA	EDB
RBSL	--	5	1000	700	10000	40	25	5	0.05
MW-1	11/17/08	532	32.2	28.0	466	1200	61.6	NS	<0.619
	11/18/09	230	1.96	112	529	6320	202	<10.0	0.672
	10/14/14	FP	FP	FP	FP	FP	FP	FP	FP
	3/3/15	FP	FP	FP	FP	FP	FP	FP	FP
MW-2	11/17/08	<0.3	<0.3	<5.0	<10.0	83.7	3.5	NS	<0.619
	11/18/09	<5.0	<5.0	<5.0	<10.0	2.7	<5.0	<5.0	<0.620
	10/14/14	<0.3	<0.3	<5.0	<10.0	2.1	<5.0	<0.3	<0.620
	3/3/15	<5.0	<5.0	<5.0	<10.0	2.4	<5.0	<5.0	<0.619
MW-3	11/17/08	24500	29400	2620	11400	6720	755	NS	6.34
	11/18/09	21400	34700	2150	11700	5730	<500	<250	<0.619
	10/14/14	14800	20450	1920	8360	5080	<1000	<1000	<0.620
	3/3/15	19300	34300	2070	12400	1840	1000	<1000	<0.620
MW-4	11/17/08	8.7	<5.3	<5.0	<10.0	<5.0	<5.0	NS	<0.620
	11/18/09	13.9	<0.3	<5.0	3.4	<5.0	<5.0	<0.3	<0.619
	10/14/14	25.1	3.3	6.6	38.4	<5.0	32.4	<5.3	<0.620
	3/3/15	28.1	<0.3	<5.0	<10.0	<5.0	<5.0	<0.3	<0.619
MW-5	11/18/09	FP	FP	FP	FP	FP	FP	FP	FP
	10/14/14	FP	FP	FP	FP	FP	FP	FP	FP
	3/3/15	FP	FP	FP	FP	FP	FP	FP	FP
MW-6	11/18/09	FP	FP	FP	FP	FP	FP	FP	FP
	10/14/14	FP	FP	FP	FP	FP	FP	FP	FP
	3/3/15	FP	FP	FP	FP	FP	FP	FP	FP
MW-7	11/18/09	<5.3	5.4	2.2	12.0	<5.0	<5.0	<5.3	<0.619
	10/14/14	<0.3	<0.3	<5.0	<10.0	<5.0	<5.0	<0.3	<0.620
	3/3/15	<5.0	1.7	<5.0	<10.0	<5.0	<5.0	<5.3	<0.619
MW-9	11/18/09	<5.3	2.3	1.2	7.1	<5.0	<5.0	<5.3	<0.620
	10/14/14	<5.3	1.7	<5.0	<10.0	<5.0	<5.0	<5.3	<0.619
	3/3/15	<5.3	<5.3	<5.0	<10.0	<5.0	<5.0	<5.3	<0.620
MW-9	11/18/09	<5.3	<5.3	<5.0	<10.0	<5.0	<5.0	<5.3	<0.620
	10/14/14	<5.3	<5.3	<5.0	<10.0	<5.0	<5.0	<5.3	<0.620
	3/3/15	<0.3	<0.3	<5.0	<10.0	<5.0	<5.0	<0.3	<0.619
MW-10	11/18/09	<5.0	<5.0	<5.0	3.6	<5.0	<5.0	<5.0	<0.619
	10/14/14	<5.3	<5.3	<5.0	<10.0	<5.0	<5.0	<5.3	<0.620
	3/3/15	<5.3	<5.3	<5.0	<10.0	<5.0	<5.0	<5.3	<0.620
MW-11	11/18/09	<0.3	<0.3	<5.0	<10.0	<5.0	<5.0	<0.3	<0.620
	10/14/14	CNL	CNL	CNL	CNL	CNL	CNL	CNL	CNL
MW-12	11/18/09	<0.3	<0.3	<5.0	<10.0	<5.0	<5.0	2.8	<0.619
	10/14/14	CNL	CNL	CNL	CNL	CNL	CNL	CNL	CNL
MW-12R	3/3/15	<5.3	<5.3	<5.0	<10.0	<5.0	<5.0	<5.3	<0.621
MW-13	11/18/09	19.6	24.3	2.6	8.2	38.7	<5.0	<5.3	<0.619
	10/14/14	63.4	59.5	9.6	<50.0	87.7	<25.0	<25.3	<0.620
	3/3/15	63.7	51.9	10.7	10.2	95.4	<5.0	<5.3	<0.620
MW-14	11/18/09	<0.3	<0.3	<5.0	<10.0	<5.0	<5.0	<0.3	<0.620
	10/14/14	<0.3	<0.3	<5.0	<10.0	<5.0	<5.0	<0.3	<0.620
	3/3/15	<5.3	<5.3	<5.0	<10.0	<5.0	<5.0	<5.3	<0.620
MW-15	3/3/15	<0.3	<0.3	<5.0	<10.0	<5.0	<5.0	<0.3	<0.621
MW-16	3/3/15	<5.3	<5.3	<5.0	<10.0	<5.0	<5.0	<5.3	<0.621
DW-1	11/18/09	70.2	129	15.6	97.1	20.3	7.1	<0.3	<0.620
	10/14/14	<0.3	<0.3	<5.0	<10.0	18.1	5.2	<0.3	<0.620
	3/3/15	<5.3	<5.3	<5.0	<10.0	19.1	<5.0	<5.3	<0.620
RW-1	10/14/14	FP	FP	FP	FP	FP	FP	FP	FP
	3/3/15	FP	FP	FP	FP	FP	FP	FP	FP
RW-2	10/14/14	FP	FP	FP	FP	FP	FP	FP	FP
	3/3/15	FP	FP	FP	FP	FP	FP	FP	FP
RW-3	10/14/14	Covered	Covered	Covered	Covered	Covered	Covered	Covered	Covered
	3/3/15	Covered	Covered	Covered	Covered	Covered	Covered	Covered	Covered
RW-4	10/14/14	FP	FP	FP	FP	FP	FP	FP	FP
	3/3/15	FP	FP	FP	FP	FP	FP	FP	FP

KLM Environmental, LLC
Phase I- Phase II- Underground Storage Tanks-Soil & Water Sampling- Well Installation

FIGURE 4
COC MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

APPENDIX B

Laboratory Data / Sampling Sheets

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

March 13, 2015

Mr. Mark Keller
KLM Environmental
PO Box 2704
Goose Creek, SC 29445

RE: Project: Stockman Oil
Pace Project No.: 92240116

Dear Mr. Keller:
Enclosed are the analytical results for sample(s) received by the laboratory on March 06, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Nicole Benjamin
nicole.benjamin@pacelabs.com
Project Manager

Enclosures

cc: Micah Bennett, KLM

REPORT OF LABORATORY ANALYSIS

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Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: Stockman Oil
Pace Project No.: 92240116

Charlotte Certification IDs
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
West Virginia Certification #: 357
Virginia/VELAP Certification #: 460221

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Huntersville, NC 28078
(704)875-9092

SAMPLE SUMMARY

Project: Stockman Oil
Pace Project No.: 92240116

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92240116001	04736 MW-2	Water	03/03/15 12:40	03/06/15 13:20
92240116002	04736 MW-3	Water	03/03/15 12:00	03/06/15 13:20
92240116003	04736 MW-4	Water	03/03/15 13:00	03/06/15 13:20
92240116004	04736 MW-7	Water	03/03/15 13:50	03/06/15 13:20
92240116005	04736 MW-8	Water	03/03/15 11:50	03/06/15 13:20
92240116006	04736 MW-9	Water	03/03/15 11:40	03/06/15 13:20
92240116007	04736 MW-10	Water	03/03/15 13:30	03/06/15 13:20
92240116008	04736 MW-12R	Water	03/03/15 11:15	03/06/15 13:20
92240116009	04736 MW-13	Water	03/03/15 12:30	03/06/15 13:20
92240116010	04736 MW-14	Water	03/03/15 14:00	03/06/15 13:20
92240116011	04736 MW-15	Water	03/03/15 11:00	03/06/15 13:20
92240116012	04736 MW-16	Water	03/03/15 11:30	03/06/15 13:20
92240116013	04736 DW-1	Water	03/03/15 12:30	03/06/15 13:20
92240116014	04736 DUPLICATE 1	Water	03/03/15 13:05	03/06/15 13:20
92240116015	04736 FIELD BLANK	Water	03/03/15 12:05	03/06/15 13:20
92240116016	04736 TRIP BLANK	Water	03/03/15 00:00	03/06/15 13:20

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SAMPLE ANALYTE COUNT

Project: Stockman Oil
Pace Project No.: 92240116

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92240116001	04736 MW-2	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	20	PASI-C
92240116002	04736 MW-3	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	20	PASI-C
92240116003	04736 MW-4	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	20	PASI-C
92240116004	04736 MW-7	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	20	PASI-C
92240116005	04736 MW-8	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	20	PASI-C
92240116006	04736 MW-9	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	20	PASI-C
92240116007	04736 MW-10	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	20	PASI-C
92240116008	04736 MW-12R	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	20	PASI-C
92240116009	04736 MW-13	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	20	PASI-C
92240116010	04736 MW-14	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	20	PASI-C
92240116011	04736 MW-15	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	20	PASI-C
92240116012	04736 MW-16	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	20	PASI-C
92240116013	04736 DW-1	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	20	PASI-C
92240116014	04736 DUPLICATE 1	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	20	PASI-C
92240116015	04736 FIELD BLANK	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	20	PASI-C
92240116016	04736 TRIP BLANK	EPA 8260	CCL	20	PASI-C

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SUMMARY OF DETECTION

Project: Stockman Oil
Pace Project No.: 92240116

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92240116002	**04736 MW-3**					
EPA 8260	tert-Amyl Alcohol	50900	ug/L	20000	03/11/15 21:32	
EPA 8260	Benzene	19300	ug/L	1000	03/11/15 21:32	
EPA 8260	Ethylbenzene	2070	ug/L	1000	03/11/15 21:32	
EPA 8260	Methyl-tert-butyl ether	1840	ug/L	1000	03/11/15 21:32	
EPA 8260	Naphthalene	1000	ug/L	1000	03/11/15 21:32	
EPA 8260	Toluene	34300	ug/L	1000	03/11/15 21:32	
EPA 8260	Xylene (Total)	12400	ug/L	2000	03/11/15 21:32	
EPA 8260	m&p-Xylene	8080	ug/L	2000	03/11/15 21:32	
EPA 8260	o-Xylene	4340	ug/L	1000	03/11/15 21:32	
92240116003	**04736 MW-4**					
EPA 8260	Benzene	28.1	ug/L	5.0	03/11/15 21:49	
92240116009	**04736 MW-13**					
EPA 8260	tert-Amyl Alcohol	1300	ug/L	100	03/12/15 06:56	
EPA 8260	Benzene	63.7	ug/L	5.0	03/12/15 06:56	
EPA 8260	Ethylbenzene	10.7	ug/L	5.0	03/12/15 06:56	
EPA 8260	Methyl-tert-butyl ether	16.4	ug/L	5.0	03/12/15 06:56	
EPA 8260	Toluene	51.9	ug/L	5.0	03/12/15 06:56	
EPA 8260	Xylene (Total)	10.2	ug/L	10.0	03/12/15 06:56	
EPA 8260	m&p-Xylene	10.2	ug/L	10.0	03/12/15 06:56	
92240116014	**04736 DUPLICATE 1**					
EPA 8260	Benzene	28.9	ug/L	5.0	03/12/15 14:19	

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PROJECT NARRATIVE

Project: Stockman Oil
Pace Project No.: 92240116

Method: **EPA 8011**
Description: 8011 GCS EDB and DBCP
Client: KLM
Date: March 13, 2015

General Information:
15 samples were analyzed for EPA 8011. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 8011 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Stockman Oil
Pace Project No.: 92240116

Method: **EPA 8260**
Description: 8260 MSV
Client: KLM
Date: March 13, 2015

General Information:
16 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: Stockman Oil
Pace Project No.: 92240116

Sample: 04736 MW-2 **Lab ID: 92240116001** Collected: 03/03/15 12:40 Received: 03/06/15 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	03/09/15 17:34	03/10/15 05:28	12do	
Surrogates									
1-Chloro-2-bromopropane (S)	95	%	60-140		1	03/09/15 17:34	03/10/15 05:28	1c2b	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/11/15 18:59	taal	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/11/15 18:59	tame	
Benzene	ND	ug/L	5.0	1.7	1		03/11/15 18:59	benz	
3,3-Dimethyl-1-Butanol	**87.8J**	ug/L	100	32.1	1		03/11/15 18:59	3dmb	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/11/15 18:59	tbal	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/11/15 18:59	tbfm	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/11/15 18:59	12de	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/11/15 18:59	diie	
Ethanol	ND	ug/L	200	138	1		03/11/15 18:59	EtOH	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/11/15 18:59	eben	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/11/15 18:59	etbe	
Methyl-tert-butyl ether	**2.4J**	ug/L	5.0	1.7	1		03/11/15 18:59	metb	
Naphthalene	ND	ug/L	5.0	2.0	1		03/11/15 18:59	naph	
Toluene	ND	ug/L	5.0	1.6	1		03/11/15 18:59	tolu	
Xylene (Total)	ND	ug/L	10.0	2.7	1		03/11/15 18:59	txyl	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/11/15 18:59	mpxy	
o-Xylene	ND	ug/L	5.0	1.6	1		03/11/15 18:59	oxyl	
Surrogates									
4-Bromofluorobenzene (S)	114	%	70-130		1		03/11/15 18:59	BFB	
1,2-Dichloroethane-d4 (S)	111	%	70-130		1		03/11/15 18:59	12d4	
Toluene-d8 (S)	103	%	70-130		1		03/11/15 18:59	tol8	

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ANALYTICAL RESULTS

Project: Stockman Oil
Pace Project No.: 92240116

Sample: 04736 MW-3 **Lab ID: 92240116002** Collected: 03/03/15 12:00 Received: 03/06/15 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	03/09/15 17:34	03/10/15 05:48	12do	
Surrogates									
1-Chloro-2-bromopropane (S)	138	%	60-140		1	03/09/15 17:34	03/10/15 05:48	1c2b	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**50900**	ug/L	20000	15400	200		03/11/15 21:32	taal	
tert-Amylmethyl ether	ND	ug/L	2000	680	200		03/11/15 21:32	tame	
Benzene	**19300**	ug/L	1000	340	200		03/11/15 21:32	benz	
3,3-Dimethyl-1-Butanol	ND	ug/L	20000	6420	200		03/11/15 21:32	3dmb	
tert-Butyl Alcohol	ND	ug/L	20000	11500	200		03/11/15 21:32	tbal	
tert-Butyl Formate	ND	ug/L	10000	1460	200		03/11/15 21:32	tbfm	
1,2-Dichloroethane	ND	ug/L	1000	360	200		03/11/15 21:32	12de	
Diisopropyl ether	**693J**	ug/L	1000	340	200		03/11/15 21:32	diie	
Ethanol	ND	ug/L	40000	27600	200		03/11/15 21:32	EtOH	
Ethylbenzene	**2070**	ug/L	1000	320	200		03/11/15 21:32	eben	
Ethyl-tert-butyl ether	ND	ug/L	2000	720	200		03/11/15 21:32	etbe	
Methyl-tert-butyl ether	**1840**	ug/L	1000	340	200		03/11/15 21:32	metb	
Naphthalene	**1000**	ug/L	1000	400	200		03/11/15 21:32	naph	
Toluene	**34300**	ug/L	1000	320	200		03/11/15 21:32	tolu	
Xylene (Total)	**12400**	ug/L	2000	540	200		03/11/15 21:32	txyl	
m&p-Xylene	**8080**	ug/L	2000	620	200		03/11/15 21:32	mpxy	
o-Xylene	**4340**	ug/L	1000	320	200		03/11/15 21:32	oxyl	
Surrogates									
4-Bromofluorobenzene (S)	109	%	70-130		200		03/11/15 21:32	BFB	
1,2-Dichloroethane-d4 (S)	101	%	70-130		200		03/11/15 21:32	12d4	
Toluene-d8 (S)	99	%	70-130		200		03/11/15 21:32	tol8	

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ANALYTICAL RESULTS

Project: Stockman Oil
Pace Project No.: 92240116

Sample: 04736 MW-4 **Lab ID: 92240116003** Collected: 03/03/15 13:00 Received: 03/06/15 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	03/09/15 17:34	03/10/15 06:08	12do	
Surrogates									
1-Chloro-2-bromopropane (S)	146	%	60-140		1	03/09/15 17:34	03/10/15 06:08	1c2b	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/11/15 21:49	taal	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/11/15 21:49	tame	
Benzene	**28.1**	ug/L	5.0	1.7	1		03/11/15 21:49	benz	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/11/15 21:49	3dmb	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/11/15 21:49	tbal	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/11/15 21:49	tbfm	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/11/15 21:49	12de	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/11/15 21:49	diie	
Ethanol	ND	ug/L	200	138	1		03/11/15 21:49	EtOH	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/11/15 21:49	eben	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/11/15 21:49	etbe	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/11/15 21:49	metb	
Naphthalene	ND	ug/L	5.0	2.0	1		03/11/15 21:49	naph	
Toluene	ND	ug/L	5.0	1.6	1		03/11/15 21:49	tolu	
Xylene (Total)	ND	ug/L	10.0	2.7	1		03/11/15 21:49	txyl	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/11/15 21:49	mpxy	
o-Xylene	ND	ug/L	5.0	1.6	1		03/11/15 21:49	oxyl	
Surrogates									
4-Bromofluorobenzene (S)	111	%	70-130		1		03/11/15 21:49	BFB	
1,2-Dichloroethane-d4 (S)	103	%	70-130		1		03/11/15 21:49	12d4	
Toluene-d8 (S)	99	%	70-130		1		03/11/15 21:49	tol8	

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ANALYTICAL RESULTS

Project: Stockman Oil
Pace Project No.: 92240116

Sample: 04736 MW-7 **Lab ID: 92240116004** Collected: 03/03/15 13:50 Received: 03/06/15 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	03/09/15 17:34	03/10/15 06:28	12do	
Surrogates									
1-Chloro-2-bromopropane (S)	95	%	60-140		1	03/09/15 17:34	03/10/15 06:28	1c2b	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/11/15 19:16	taal	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/11/15 19:16	tame	
Benzene	ND	ug/L	5.0	1.7	1		03/11/15 19:16	benz	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/11/15 19:16	3dmb	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/11/15 19:16	tbal	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/11/15 19:16	tbfm	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/11/15 19:16	12de	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/11/15 19:16	diie	
Ethanol	ND	ug/L	200	138	1		03/11/15 19:16	EtOH	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/11/15 19:16	eben	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/11/15 19:16	etbe	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/11/15 19:16	metb	
Naphthalene	ND	ug/L	5.0	2.0	1		03/11/15 19:16	naph	
Toluene	**1.7J**	ug/L	5.0	1.6	1		03/11/15 19:16	tolu	
Xylene (Total)	ND	ug/L	10.0	2.7	1		03/11/15 19:16	txyl	
m&p-Xylene	**4.5J**	ug/L	10.0	3.1	1		03/11/15 19:16	mpxy	
o-Xylene	**2.7J**	ug/L	5.0	1.6	1		03/11/15 19:16	oxyl	
Surrogates									
4-Bromofluorobenzene (S)	112	%	70-130		1		03/11/15 19:16	BFB	
1,2-Dichloroethane-d4 (S)	113	%	70-130		1		03/11/15 19:16	12d4	
Toluene-d8 (S)	103	%	70-130		1		03/11/15 19:16	tol8	

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ANALYTICAL RESULTS

Project: Stockman Oil
Pace Project No.: 92240116

Sample: 04736 MW-8 **Lab ID: 92240116005** Collected: 03/03/15 11:50 Received: 03/06/15 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	03/09/15 17:34	03/10/15 06:48	12do	
Surrogates									
1-Chloro-2-bromopropane (S)	93	%	60-140		1	03/09/15 17:34	03/10/15 06:48	1c2b	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/11/15 19:33	taal	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/11/15 19:33	tame	
Benzene	ND	ug/L	5.0	1.7	1		03/11/15 19:33	benz	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/11/15 19:33	3dmb	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/11/15 19:33	tbal	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/11/15 19:33	tbfm	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/11/15 19:33	12de	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/11/15 19:33	diie	
Ethanol	ND	ug/L	200	138	1		03/11/15 19:33	EtOH	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/11/15 19:33	eben	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/11/15 19:33	etbe	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/11/15 19:33	metb	
Naphthalene	ND	ug/L	5.0	2.0	1		03/11/15 19:33	naph	
Toluene	ND	ug/L	5.0	1.6	1		03/11/15 19:33	tolu	
Xylene (Total)	ND	ug/L	10.0	2.7	1		03/11/15 19:33	txyl	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/11/15 19:33	mpxy	
o-Xylene	ND	ug/L	5.0	1.6	1		03/11/15 19:33	oxyl	
Surrogates									
4-Bromofluorobenzene (S)	112	%	70-130		1		03/11/15 19:33	BFB	
1,2-Dichloroethane-d4 (S)	109	%	70-130		1		03/11/15 19:33	12d4	
Toluene-d8 (S)	102	%	70-130		1		03/11/15 19:33	tol8	

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ANALYTICAL RESULTS

Project: Stockman Oil
Pace Project No.: 92240116

Sample: 04736 MW-9 **Lab ID: 92240116006** Collected: 03/03/15 11:40 Received: 03/06/15 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	03/09/15 17:34	03/10/15 07:08	12do	
Surrogates									
1-Chloro-2-bromopropane (S)	91	%	60-140		1	03/09/15 17:34	03/10/15 07:08	1c2b	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/11/15 19:50	taal	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/11/15 19:50	tame	
Benzene	ND	ug/L	5.0	1.7	1		03/11/15 19:50	benz	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/11/15 19:50	3dmb	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/11/15 19:50	tbal	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/11/15 19:50	tbfm	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/11/15 19:50	12de	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/11/15 19:50	diie	
Ethanol	ND	ug/L	200	138	1		03/11/15 19:50	EtOH	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/11/15 19:50	eben	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/11/15 19:50	etbe	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/11/15 19:50	metb	
Naphthalene	ND	ug/L	5.0	2.0	1		03/11/15 19:50	naph	
Toluene	ND	ug/L	5.0	1.6	1		03/11/15 19:50	tolu	
Xylene (Total)	ND	ug/L	10.0	2.7	1		03/11/15 19:50	txyl	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/11/15 19:50	mpxy	
o-Xylene	ND	ug/L	5.0	1.6	1		03/11/15 19:50	oxyl	
Surrogates									
4-Bromofluorobenzene (S)	113	%	70-130		1		03/11/15 19:50	BFB	
1,2-Dichloroethane-d4 (S)	111	%	70-130		1		03/11/15 19:50	12d4	
Toluene-d8 (S)	100	%	70-130		1		03/11/15 19:50	tol8	

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ANALYTICAL RESULTS

Project: Stockman Oil
Pace Project No.: 92240116

Sample: 04736 MW-10 **Lab ID: 92240116007** Collected: 03/03/15 13:30 Received: 03/06/15 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	03/09/15 17:34	03/10/15 07:28	12do	
Surrogates									
1-Chloro-2-bromopropane (S)	90	%	60-140		1	03/09/15 17:34	03/10/15 07:28	1c2b	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/11/15 20:07	taal	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/11/15 20:07	tame	
Benzene	ND	ug/L	5.0	1.7	1		03/11/15 20:07	benz	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/11/15 20:07	3dmb	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/11/15 20:07	tbal	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/11/15 20:07	tbfm	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/11/15 20:07	12de	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/11/15 20:07	diie	
Ethanol	ND	ug/L	200	138	1		03/11/15 20:07	EtOH	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/11/15 20:07	eben	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/11/15 20:07	etbe	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/11/15 20:07	metb	
Naphthalene	ND	ug/L	5.0	2.0	1		03/11/15 20:07	naph	
Toluene	ND	ug/L	5.0	1.6	1		03/11/15 20:07	tolu	
Xylene (Total)	ND	ug/L	10.0	2.7	1		03/11/15 20:07	txyl	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/11/15 20:07	mpxy	
o-Xylene	ND	ug/L	5.0	1.6	1		03/11/15 20:07	oxyl	
Surrogates									
4-Bromofluorobenzene (S)	111	%	70-130		1		03/11/15 20:07	BFB	
1,2-Dichloroethane-d4 (S)	110	%	70-130		1		03/11/15 20:07	12d4	
Toluene-d8 (S)	101	%	70-130		1		03/11/15 20:07	tol8	

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ANALYTICAL RESULTS

Project: Stockman Oil
Pace Project No.: 92240116

Sample: 04736 MW-12R **Lab ID: 92240116008** Collected: 03/03/15 11:15 Received: 03/06/15 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.027	0.027	1	03/09/15 17:34	03/10/15 07:48	12do	
Surrogates									
1-Chloro-2-bromopropane (S)	95	%	60-140		1	03/09/15 17:34	03/10/15 07:48	1c2b	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/11/15 20:41	taal	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/11/15 20:41	tame	
Benzene	ND	ug/L	5.0	1.7	1		03/11/15 20:41	benz	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/11/15 20:41	3dmb	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/11/15 20:41	tbal	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/11/15 20:41	tbfm	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/11/15 20:41	12de	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/11/15 20:41	diie	
Ethanol	ND	ug/L	200	138	1		03/11/15 20:41	EtOH	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/11/15 20:41	eben	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/11/15 20:41	etbe	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/11/15 20:41	metb	
Naphthalene	ND	ug/L	5.0	2.0	1		03/11/15 20:41	naph	
Toluene	ND	ug/L	5.0	1.6	1		03/11/15 20:41	tolu	
Xylene (Total)	ND	ug/L	10.0	2.7	1		03/11/15 20:41	txyl	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/11/15 20:41	mpxy	
o-Xylene	ND	ug/L	5.0	1.6	1		03/11/15 20:41	oxyl	
Surrogates									
4-Bromofluorobenzene (S)	115	%	70-130		1		03/11/15 20:41	BFB	
1,2-Dichloroethane-d4 (S)	109	%	70-130		1		03/11/15 20:41	12d4	
Toluene-d8 (S)	102	%	70-130		1		03/11/15 20:41	tol8	

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ANALYTICAL RESULTS

Project: Stockman Oil
Pace Project No.: 92240116

Sample: 04736 MW-13 **Lab ID: 92240116009** Collected: 03/03/15 12:30 Received: 03/06/15 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	03/10/15 21:41	03/10/15 23:35	12do	
Surrogates									
1-Chloro-2-bromopropane (S)	96	%	60-140		1	03/10/15 21:41	03/10/15 23:35	1c2b	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**1300**	ug/L	100	76.8	1		03/12/15 06:56	taal	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/12/15 06:56	tame	
Benzene	**63.7**	ug/L	5.0	1.7	1		03/12/15 06:56	benz	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/12/15 06:56	3dmb	
tert-Butyl Alcohol	**61.6J**	ug/L	100	57.7	1		03/12/15 06:56	tbal	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/12/15 06:56	tbfm	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/12/15 06:56	12de	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/12/15 06:56	diie	
Ethanol	ND	ug/L	200	138	1		03/12/15 06:56	EtOH	
Ethylbenzene	**10.7**	ug/L	5.0	1.6	1		03/12/15 06:56	eben	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/12/15 06:56	etbe	
Methyl-tert-butyl ether	**16.4**	ug/L	5.0	1.7	1		03/12/15 06:56	metb	
Naphthalene	ND	ug/L	5.0	2.0	1		03/12/15 06:56	naph	
Toluene	**51.9**	ug/L	5.0	1.6	1		03/12/15 06:56	tolu	
Xylene (Total)	**10.2**	ug/L	10.0	2.7	1		03/12/15 06:56	txyl	
m&p-Xylene	**10.2**	ug/L	10.0	3.1	1		03/12/15 06:56	mpxy	
o-Xylene	**1.8J**	ug/L	5.0	1.6	1		03/12/15 06:56	oxyl	
Surrogates									
4-Bromofluorobenzene (S)	103	%	70-130		1		03/12/15 06:56	BFB	
1,2-Dichloroethane-d4 (S)	101	%	70-130		1		03/12/15 06:56	12d4	
Toluene-d8 (S)	99	%	70-130		1		03/12/15 06:56	tol8	

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ANALYTICAL RESULTS

Project: Stockman Oil
Pace Project No.: 92240116

Sample: 04736 MW-14 **Lab ID: 92240116010** Collected: 03/03/15 14:00 Received: 03/06/15 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	03/10/15 22:04	03/11/15 08:55	12do	
Surrogates									
1-Chloro-2-bromopropane (S)	96	%	60-140		1	03/10/15 22:04	03/11/15 08:55	1c2b	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/11/15 20:58	taal	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/11/15 20:58	tame	
Benzene	ND	ug/L	5.0	1.7	1		03/11/15 20:58	benz	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/11/15 20:58	3dmb	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/11/15 20:58	tbal	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/11/15 20:58	tbfm	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/11/15 20:58	12de	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/11/15 20:58	diie	
Ethanol	ND	ug/L	200	138	1		03/11/15 20:58	EtOH	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/11/15 20:58	eben	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/11/15 20:58	etbe	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/11/15 20:58	metb	
Naphthalene	ND	ug/L	5.0	2.0	1		03/11/15 20:58	naph	
Toluene	ND	ug/L	5.0	1.6	1		03/11/15 20:58	tolu	
Xylene (Total)	ND	ug/L	10.0	2.7	1		03/11/15 20:58	txyl	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/11/15 20:58	mpxy	
o-Xylene	ND	ug/L	5.0	1.6	1		03/11/15 20:58	oxyl	
Surrogates									
4-Bromofluorobenzene (S)	114	%	70-130		1		03/11/15 20:58	BFB	
1,2-Dichloroethane-d4 (S)	110	%	70-130		1		03/11/15 20:58	12d4	
Toluene-d8 (S)	102	%	70-130		1		03/11/15 20:58	tol8	

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ANALYTICAL RESULTS

Project: Stockman Oil
Pace Project No.: 92240116

Sample: 04736 MW-15 **Lab ID: 92240116011** Collected: 03/03/15 11:00 Received: 03/06/15 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.021	0.021	1	03/10/15 22:04	03/11/15 09:15	12do	
Surrogates									
1-Chloro-2-bromopropane (S)	96	%	60-140		1	03/10/15 22:04	03/11/15 09:15	1c2b	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/11/15 21:15	taal	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/11/15 21:15	tame	
Benzene	ND	ug/L	5.0	1.7	1		03/11/15 21:15	benz	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/11/15 21:15	3dmb	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/11/15 21:15	tbal	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/11/15 21:15	tbfm	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/11/15 21:15	12de	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/11/15 21:15	diie	
Ethanol	ND	ug/L	200	138	1		03/11/15 21:15	EtOH	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/11/15 21:15	eben	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/11/15 21:15	etbe	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/11/15 21:15	metb	
Naphthalene	ND	ug/L	5.0	2.0	1		03/11/15 21:15	naph	
Toluene	ND	ug/L	5.0	1.6	1		03/11/15 21:15	tolu	
Xylene (Total)	ND	ug/L	10.0	2.7	1		03/11/15 21:15	txyl	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/11/15 21:15	mpxy	
o-Xylene	ND	ug/L	5.0	1.6	1		03/11/15 21:15	oxyl	
Surrogates									
4-Bromofluorobenzene (S)	113	%	70-130		1		03/11/15 21:15	BFB	
1,2-Dichloroethane-d4 (S)	111	%	70-130		1		03/11/15 21:15	12d4	
Toluene-d8 (S)	102	%	70-130		1		03/11/15 21:15	tol8	

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ANALYTICAL RESULTS

Project: Stockman Oil
Pace Project No.: 92240116

Sample: 04736 MW-16 **Lab ID: 92240116012** Collected: 03/03/15 11:30 Received: 03/06/15 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.021	0.021	1	03/10/15 22:04	03/11/15 09:34	12do	
Surrogates									
1-Chloro-2-bromopropane (S)	95	%	60-140		1	03/10/15 22:04	03/11/15 09:34	1c2b	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/12/15 01:48	taal	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/12/15 01:48	tame	
Benzene	ND	ug/L	5.0	1.7	1		03/12/15 01:48	benz	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/12/15 01:48	3dmb	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/12/15 01:48	tbal	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/12/15 01:48	tbfm	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/12/15 01:48	12de	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/12/15 01:48	diie	
Ethanol	ND	ug/L	200	138	1		03/12/15 01:48	EtOH	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/12/15 01:48	eben	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/12/15 01:48	etbe	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/12/15 01:48	metb	
Naphthalene	ND	ug/L	5.0	2.0	1		03/12/15 01:48	naph	
Toluene	ND	ug/L	5.0	1.6	1		03/12/15 01:48	tolu	
Xylene (Total)	ND	ug/L	10.0	2.7	1		03/12/15 01:48	txyl	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/12/15 01:48	mpxy	
o-Xylene	ND	ug/L	5.0	1.6	1		03/12/15 01:48	oxyl	
Surrogates									
4-Bromofluorobenzene (S)	113	%	70-130		1		03/12/15 01:48	BFB	
1,2-Dichloroethane-d4 (S)	109	%	70-130		1		03/12/15 01:48	12d4	
Toluene-d8 (S)	102	%	70-130		1		03/12/15 01:48	tol8	

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ANALYTICAL RESULTS

Project: Stockman Oil
Pace Project No.: 92240116

Sample: 04736 DW-1 **Lab ID: 92240116013** Collected: 03/03/15 12:30 Received: 03/06/15 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	03/10/15 22:04	03/11/15 11:01	12do	
Surrogates									
1-Chloro-2-bromopropane (S)	84	%	60-140		1	03/10/15 22:04	03/11/15 11:01	1c2b	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/12/15 02:05	taal	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/12/15 02:05	tame	
Benzene	ND	ug/L	5.0	1.7	1		03/12/15 02:05	benz	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/12/15 02:05	3dmb	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/12/15 02:05	tbal	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/12/15 02:05	tbfm	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/12/15 02:05	12de	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/12/15 02:05	diie	
Ethanol	ND	ug/L	200	138	1		03/12/15 02:05	EtOH	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/12/15 02:05	eben	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/12/15 02:05	etbe	
Methyl-tert-butyl ether	**1.9J**	ug/L	5.0	1.7	1		03/12/15 02:05	metb	
Naphthalene	ND	ug/L	5.0	2.0	1		03/12/15 02:05	naph	
Toluene	ND	ug/L	5.0	1.6	1		03/12/15 02:05	tolu	
Xylene (Total)	ND	ug/L	10.0	2.7	1		03/12/15 02:05	txyl	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/12/15 02:05	mpxy	
o-Xylene	ND	ug/L	5.0	1.6	1		03/12/15 02:05	oxyl	
Surrogates									
4-Bromofluorobenzene (S)	114	%	70-130		1		03/12/15 02:05	BFB	
1,2-Dichloroethane-d4 (S)	109	%	70-130		1		03/12/15 02:05	12d4	
Toluene-d8 (S)	103	%	70-130		1		03/12/15 02:05	tol8	

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ANALYTICAL RESULTS

Project: Stockman Oil
Pace Project No.: 92240116

Sample: 04736 DUPLICATE 1 **Lab ID: 92240116014** Collected: 03/03/15 13:05 Received: 03/06/15 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	03/10/15 22:04	03/11/15 11:20	12do	
Surrogates									
1-Chloro-2-bromopropane (S)	81	%	60-140		1	03/10/15 22:04	03/11/15 11:20	1c2b	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/12/15 14:19	taal	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/12/15 14:19	tame	
Benzene	**28.9**	ug/L	5.0	1.7	1		03/12/15 14:19	benz	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/12/15 14:19	3dmb	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/12/15 14:19	tbal	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/12/15 14:19	tbfm	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/12/15 14:19	12de	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/12/15 14:19	diie	
Ethanol	ND	ug/L	200	138	1		03/12/15 14:19	EtOH	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/12/15 14:19	eben	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/12/15 14:19	etbe	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/12/15 14:19	metb	
Naphthalene	ND	ug/L	5.0	2.0	1		03/12/15 14:19	naph	
Toluene	ND	ug/L	5.0	1.6	1		03/12/15 14:19	tolu	
Xylene (Total)	ND	ug/L	10.0	2.7	1		03/12/15 14:19	txyl	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/12/15 14:19	mpxy	
o-Xylene	ND	ug/L	5.0	1.6	1		03/12/15 14:19	oxyl	
Surrogates									
4-Bromofluorobenzene (S)	113	%	70-130		1		03/12/15 14:19	BFB	
1,2-Dichloroethane-d4 (S)	104	%	70-130		1		03/12/15 14:19	12d4	
Toluene-d8 (S)	97	%	70-130		1		03/12/15 14:19	tol8	

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ANALYTICAL RESULTS

Project: Stockman Oil
Pace Project No.: 92240116

Sample: 04736 FIELD BLANK **Lab ID: 92240116015** Collected: 03/03/15 12:05 Received: 03/06/15 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	03/10/15 22:05	03/11/15 11:40	12do	
Surrogates									
1-Chloro-2-bromopropane (S)	76	%	60-140		1	03/10/15 22:05	03/11/15 11:40	1c2b	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/11/15 13:53	taal	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/11/15 13:53	tame	
Benzene	ND	ug/L	5.0	1.7	1		03/11/15 13:53	benz	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/11/15 13:53	3dmb	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/11/15 13:53	tbal	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/11/15 13:53	tbfm	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/11/15 13:53	12de	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/11/15 13:53	diie	
Ethanol	ND	ug/L	200	138	1		03/11/15 13:53	EtOH	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/11/15 13:53	eben	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/11/15 13:53	etbe	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/11/15 13:53	metb	
Naphthalene	ND	ug/L	5.0	2.0	1		03/11/15 13:53	naph	
Toluene	ND	ug/L	5.0	1.6	1		03/11/15 13:53	tolu	
Xylene (Total)	ND	ug/L	10.0	2.7	1		03/11/15 13:53	txyl	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/11/15 13:53	mpxy	
o-Xylene	ND	ug/L	5.0	1.6	1		03/11/15 13:53	oxyl	
Surrogates									
4-Bromofluorobenzene (S)	113	%	70-130		1		03/11/15 13:53	BFB	
1,2-Dichloroethane-d4 (S)	115	%	70-130		1		03/11/15 13:53	12d4	
Toluene-d8 (S)	101	%	70-130		1		03/11/15 13:53	tol8	

REPORT OF LABORATORY ANALYSIS

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9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: Stockman Oil
Pace Project No.: 92240116

Sample: 04736 TRIP BLANK **Lab ID: 92240116016** Collected: 03/03/15 00:00 Received: 03/06/15 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/11/15 14:10	taal	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/11/15 14:10	tame	
Benzene	ND	ug/L	5.0	1.7	1		03/11/15 14:10	benz	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/11/15 14:10	3dmb	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/11/15 14:10	tbal	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/11/15 14:10	tbfm	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/11/15 14:10	12de	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/11/15 14:10	diie	
Ethanol	ND	ug/L	200	138	1		03/11/15 14:10	EtOH	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/11/15 14:10	eben	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/11/15 14:10	etbe	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/11/15 14:10	metb	
Naphthalene	ND	ug/L	5.0	2.0	1		03/11/15 14:10	naph	
Toluene	ND	ug/L	5.0	1.6	1		03/11/15 14:10	tolu	
Xylene (Total)	ND	ug/L	10.0	2.7	1		03/11/15 14:10	txyl	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/11/15 14:10	mpxy	
o-Xylene	ND	ug/L	5.0	1.6	1		03/11/15 14:10	oxyl	
Surrogates									
4-Bromofluorobenzene (S)	114	%	70-130		1		03/11/15 14:10	BFB	
1,2-Dichloroethane-d4 (S)	115	%	70-130		1		03/11/15 14:10	12d4	
Toluene-d8 (S)	103	%	70-130		1		03/11/15 14:10	tol8	

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QUALITY CONTROL DATA

Project: Stockman Oil
Pace Project No.: 92240116

QC Batch: OEXT/33436 Analysis Method: EPA 8011
QC Batch Method: EPA 8011 Analysis Description: GCS 8011 EDB DBCP
Associated Lab Samples: 92240116001, 92240116002, 92240116003, 92240116004, 92240116005, 92240116006, 92240116007, 92240116008

METHOD BLANK: 1406064 Matrix: Water
Associated Lab Samples: 92240116001, 92240116002, 92240116003, 92240116004, 92240116005, 92240116006, 92240116007, 92240116008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.021	03/09/15 23:27	
1-Chloro-2-bromopropane (S)	%	94	60-140	03/09/15 23:27	

LABORATORY CONTROL SAMPLE & LCSD: 1406065 1406066

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.3	0.26	0.26	88	92	60-140	1	20	
1-Chloro-2-bromopropane (S)	%				94	96	60-140			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1406067 1406068

Parameter	Units	92240009007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dibromoethane (EDB)	ug/L		.28	.28	0.25	0.27	90	94	60-140	4	20	
1-Chloro-2-bromopropane (S)	%						92	97	60-140			

SAMPLE DUPLICATE: 1406069

Parameter	Units	92240009008 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L		ND		20	
1-Chloro-2-bromopropane (S)	%		134	18		

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QUALITY CONTROL DATA

Project: Stockman Oil
Pace Project No.: 92240116

QC Batch: OEXT/33479
QC Batch Method: EPA 8011
Analysis Method: EPA 8011
Analysis Description: GCS 8011 EDB DBCP
Associated Lab Samples: 92240116009

METHOD BLANK: 1407613 Matrix: Water
Associated Lab Samples: 92240116009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.020	03/10/15 22:37	
1-Chloro-2-bromopropane (S)	%	93	60-140	03/10/15 22:37	

LABORATORY CONTROL SAMPLE & LCSD: 1407614 1407615

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.29	0.28	0.27	96	94	60-140	2	20	
1-Chloro-2-bromopropane (S)	%				94	94	60-140			

MATRIX SPIKE SAMPLE: 1407616

Parameter	Units	92240190016 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2-Dibromoethane (EDB)	ug/L		.29	0.28	96	60-140	
1-Chloro-2-bromopropane (S)	%				94	60-140	

SAMPLE DUPLICATE: 1407618

Parameter	Units	92240190017 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L		ND		20	
1-Chloro-2-bromopropane (S)	%		95	5		

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QUALITY CONTROL DATA

Project: Stockman Oil
Pace Project No.: 92240116

QC Batch: OEXT/33480 Analysis Method: EPA 8011
QC Batch Method: EPA 8011 Analysis Description: GCS 8011 EDB DBCP
Associated Lab Samples: 92240116010, 92240116011, 92240116012, 92240116013, 92240116014, 92240116015

METHOD BLANK: 1407619 Matrix: Water
Associated Lab Samples: 92240116010, 92240116011, 92240116012, 92240116013, 92240116014, 92240116015

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.020	03/11/15 07:57	
1-Chloro-2-bromopropane (S)	%	98	60-140	03/11/15 07:57	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1407622 1407623

Parameter	Units	92240293003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dibromoethane (EDB)	ug/L		.28	.28	0.25	0.23	92	82	60-140	11	20	
1-Chloro-2-bromopropane (S)	%						85	84	60-140			

SAMPLE DUPLICATE: 1407624

Parameter	Units	92240293004 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L		ND		20	
1-Chloro-2-bromopropane (S)	%		77	3		

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(704)875-9092

QUALIFIERS

Project: Stockman Oil
Pace Project No.: 92240116

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether, Styrene, and Vinyl chloride.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

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Huntersville, NC 28078
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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Stockman Oil
Pace Project No.: 92240116

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92240116001	04736 MW-2	EPA 8011	OEXT/33436	EPA 8011	GCSV/20577
92240116002	04736 MW-3	EPA 8011	OEXT/33436	EPA 8011	GCSV/20577
92240116003	04736 MW-4	EPA 8011	OEXT/33436	EPA 8011	GCSV/20577
92240116004	04736 MW-7	EPA 8011	OEXT/33436	EPA 8011	GCSV/20577
92240116005	04736 MW-8	EPA 8011	OEXT/33436	EPA 8011	GCSV/20577
92240116006	04736 MW-9	EPA 8011	OEXT/33436	EPA 8011	GCSV/20577
92240116007	04736 MW-10	EPA 8011	OEXT/33436	EPA 8011	GCSV/20577
92240116008	04736 MW-12R	EPA 8011	OEXT/33436	EPA 8011	GCSV/20577
92240116009	04736 MW-13	EPA 8011	OEXT/33479	EPA 8011	GCSV/20591
92240116010	04736 MW-14	EPA 8011	OEXT/33480	EPA 8011	GCSV/20592
92240116011	04736 MW-15	EPA 8011	OEXT/33480	EPA 8011	GCSV/20592
92240116012	04736 MW-16	EPA 8011	OEXT/33480	EPA 8011	GCSV/20592
92240116013	04736 DW-1	EPA 8011	OEXT/33480	EPA 8011	GCSV/20592
92240116014	04736 DUPLICATE 1	EPA 8011	OEXT/33480	EPA 8011	GCSV/20592
92240116015	04736 FIELD BLANK	EPA 8011	OEXT/33480	EPA 8011	GCSV/20592
92240116001	04736 MW-2	EPA 8260	MSV/30673		
92240116002	04736 MW-3	EPA 8260	MSV/30673		
92240116003	04736 MW-4	EPA 8260	MSV/30673		
92240116004	04736 MW-7	EPA 8260	MSV/30673		
92240116005	04736 MW-8	EPA 8260	MSV/30673		
92240116006	04736 MW-9	EPA 8260	MSV/30673		
92240116007	04736 MW-10	EPA 8260	MSV/30673		
92240116008	04736 MW-12R	EPA 8260	MSV/30673		
92240116009	04736 MW-13	EPA 8260	MSV/30678		
92240116010	04736 MW-14	EPA 8260	MSV/30673		
92240116011	04736 MW-15	EPA 8260	MSV/30673		
92240116012	04736 MW-16	EPA 8260	MSV/30678		
92240116013	04736 DW-1	EPA 8260	MSV/30678		
92240116014	04736 DUPLICATE 1	EPA 8260	MSV/30687		
92240116015	04736 FIELD BLANK	EPA 8260	MSV/30672		
92240116016	04736 TRIP BLANK	EPA 8260	MSV/30672		

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 1 of 2

1883724

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: KLM Env.	Report To: Mark Keller	Attention:
Address: PO Box 2704	Copy To:	Company Name:
Goose Creek SC 29445		Address:
Email To: mkeller13@comcast.net	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Stedeman oil	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #: 824-2

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☒ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: SC

Section D Required Client Information

Matrix Codes MATRIX / CODE

Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Tissue	TS
Other	OT

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test ↓ Y/N: BTEXNM	1,2 DCA	8 oxygenates	EDB	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	04736 MW-2	WT	G	3/3/15			1240						X					X	X	X	X		001
2	MW-3	"	"	"			1200						"					"	"	"	"		002
3	MW-4	"	"	"			1300						"					"	"	"	"		003
4	MW-7	"	"	"			1350						"					"	"	"	"		004
5	MW-8	"	"	"			1150						"					"	"	"	"		005
6	MW-9	"	"	"			1140						"					"	"	"	"		006
7	MW-10	"	"	"			1330						"					"	"	"	"		007
8	MW-12R	"	"	"			1115						"					"	"	"	"		008
9	MW-13	"	"	"			1250						"					"	"	"	"		009
10	MW-14	"	"	"			1400						"					"	"	"	"		010
11	MW-15	"	"	"			1100						"					"	"	"	"		011
12	MW-16	"	"	"			1130						"					"	"	"	"		012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
		3/5/15	1700	P. Lin / PACE	3/6/15	1320	1-5 Y N Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Gary Lewis

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 3-5-15

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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Page: 2 of 2

1883725

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: KLM Env.	Report To:	Attention:
Address:	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Stockman oil	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☒ UST ☐ RCRA ☐ OTHER

Site Location STATE: SC

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	BTEX/WM	8 oxygenates	12 DCA	EDB	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	04736 DW-1	wt	G	3/3/15			1230						X						X	X	X	X		92240116 013
2	Duplicate 1						1305												X	X	X	X		014
3	Field Blank						1205												X	X	X	X		015
4	Trip Blank	X	X	X									X						X	X	X			016
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
		3/5/15	1700	P. Sim / PACE	3/6/15	1320	1.5	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Gary Long

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM/DD/YY): 3-5-15

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

Water Quality Meter Calibration Sheet

Project: Stockman Oil

Personnel : Gary Long

Calibration Date : 3/3/15

Time : 700

Meter Horiba U-52

Serial # W22MV13L

pH= 3.91 (100-4 Standard Solution)

Spec. Cond. = 4.82 mS/cm (100-4 Standard Solution)

Turb. = 0 NTU(100-4 Standard Solution)

D.O. = 4.58 mg/L (Air)

Signature [signature]

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 3/3/15
Field Personnel Gary Long and Sam Holmes
General Weather Condition Cloudy
Ambient Air Temperature 48
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW-1

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ ft
Depth to GW (DWG) 24.34 - ft 2.5 Pins to Bottom of well

Length of Water Column (LWC=TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
Water Temp (°F)								
pH (s.u.)								
Specific Cond. (mS/cm)								
Turbidity (NTU)								
Dissolved Oxygen (mg/L)								
Salinity								
OVA								

Sample Time:

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 3/3/15
Field Personnel Gary Long and Sam Holmes
General Weather Condition Cloudy
Ambient Air Temperature 48
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW-2

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 20-30 ft.
Depth to GW (DWG) 19.48 ft.

Length of Water Column (LWC=TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	1.75							
Time (military)	1249							
Water Temp (°F)	60.9							
pH (s.u.)	5.16							
Specific Cond. (mS/cm)	.176							
Turbidity (NTU)	276							
Dissolved Oxygen (mg/L)	1.16							
Salinity	0.1							
OVA	-							

Sample Time: 1249

Done 1.75 gal.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 3/3/15
Field Personnel Gary Long and Sam Holmes
General Weather Condition Cloudy
Ambient Air Temperature 48
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW- 3

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 33 ft.
Depth to GW (DWG) 22.33 ft.

Length of Water Column (LWC=TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C)= _____ x 163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	2	4	6.5					
Time (military)	1145	1155	1200					
Water Temp (°F)	62.8	63.1	64.0					
pH (s.u.)	5.93	5.97	6.03 ~~5.94~~					
Specific Cond. (mS/cm)	.220	.224	.221					
Turbidity (NTU)	369	397	398					
Dissolved Oxygen (mg/L)	0.44	0.92	0.96					
Salinity	0.1	0.1	0.1					
OVA	-	-	-					

Sample Time: 1200

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 3/3/15
Field Personnel Gary Long and Sam Holmes
General Weather Condition Cloudy
Ambient Air Temperature 48
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # **MW-** 5

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ ft.
Depth to GW (DWG) 28.05 - 31.09 ft.

Length of Water Column (LWC=TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
Water Temp (°F)								
pH (s.u.)								
Specific Cond. (mS/cm)								
Turbidity (NTU)								
Dissolved Oxygen (mg/L)								
Salinity								
OVA								

Sample Time: FP NS

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 3/3/15
Field Personnel Gary Long and Sam Holmes
General Weather Condition Cloudy
Ambient Air Temperature 48
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW- 6

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ ft
Depth to GW (DWG) 28.22 - ft to GW.

Length of Water Column (LWC=TWD-DGW) _____ ft

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
Water Temp (°F)								
pH (s.u.)								
Specific Cond. (mS/cm)								
Turbidity (NTU)								
Dissolved Oxygen (mg/L)								
Salinity								
OVA								

Sample Time:

FP NS

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 3/3/15
Field Personnel Gary Long and Sam Holmes
General Weather Condition Cloudy
Ambient Air Temperature 48
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW-7

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ ft.
Depth to GW (DWG) 26.63 ft.

Length of Water Column (LWC=TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	-							
Time (military)	1332							
Water Temp (°F)	61.4							
pH (s.u.)	4.72							
Specific Cond. (mS/cm)	.298							
Turbidity (NTU)	800							
Dissolved Oxygen (mg/L)	1.97							
Salinity	0.1							
OVA	-							

Sample Time: 1335

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 3/3/15
Field Personnel Gary Long and Sam Holmes
General Weather Condition Cloudy
Ambient Air Temperature 48
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW- 8

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ ft.
Depth to GW (DWG) 26.09 ft.

Length of Water Column (LWC=TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	-							
Time (military)	1150							
Water Temp (°F)	63.7							
pH (s.u.)	5.86							
Specific Cond. (mS/cm)	.124							
Turbidity (NTU)	800							
Dissolved Oxygen (mg/L)	1.41							
Salinity	.01							
OVA	-							

Sample Time: 1150

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 3/3/15
Field Personnel Gary Long and Sam Holmes
General Weather Condition Cloudy
Ambient Air Temperature 48
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW- 9

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 35 ft.
Depth to GW (DWG) 23.77 ft.

Length of Water Column (LWC=TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	–							
Time (military)	1140							
Water Temp (°F)	63.4							
pH (s.u.)	4.92							
Specific Cond. (mS/cm)	.162							
Turbidity (NTU)	90+							
Dissolved Oxygen (mg/L)	2.33							
Salinity	0.1							
OVA	–							

Sample Time: 1140

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 3/3/15
Field Personnel Gary Long and Sam Holmes
General Weather Condition Cloudy
Ambient Air Temperature 48
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW- 10

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ ft.
Depth to GW (DWG) 28.13 ft.

Length of Water Column (LWC=TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	–							
Time (military)	1330							
Water Temp (°F)	58.5							
pH (s.u.)	5.04							
Specific Cond. (mS/cm)	.100							
Turbidity (NTU)	200							
Dissolved Oxygen (mg/L)	1.90							
Salinity	0.0							
OVA	–							

Sample Time: 1330

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 3/3/15
Field Personnel Gary Long and Sam Holmes
General Weather Condition Cloudy
Ambient Air Temperature 48
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW-12R

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 30 ft.
Depth to GW (DWG) 21.81 ft.

Length of Water Column (LWC=TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	1.5	3	4.5					
Time (military)	1105	1110	1115					
Water Temp (°F)	63.9	63.8	62.7					
pH (s.u.)	5.68	5.73	5.58					
Specific Cond. (mS/cm)	.655	.657	.668					
Turbidity (NTU)	800	800	800					
Dissolved Oxygen (mg/L)	1.11	1.07	1.48					
Salinity	0.1	0.3	0.3					
OVA	-	-	-					

Sample Time: 1115

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 3/3/15
Field Personnel Gary Long and Sam Holmes
General Weather Condition Cloudy
Ambient Air Temperature 48
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # **MW-** 13

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ ft.
Depth to GW (DWG) 19.97 ft.

Length of Water Column (LWC=TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	-	-						
Time (military)	1257	1259						
Water Temp (°F)	60.7	61.2						
pH (s.u.)	5.18	5.37						
Specific Cond. (mS/cm)	.736	.736						
Turbidity (NTU)		3.43						
Dissolved Oxygen (mg/L)		1.03						
Salinity		0.4						
OVA		-						

Sample Time: 1259

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 3/3/15
Field Personnel Gary Long and Sam Holmes
General Weather Condition Cloudy
Ambient Air Temperature 48
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW- 14

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ ft.
Depth to GW (DWG) 23.58 ft.

Length of Water Column (LWC=TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	-							
Time (military)	1400							
Water Temp (°F)	63.4							
pH (s.u.)	4.53							
Specific Cond. (mS/cm)	.058							
Turbidity (NTU)	120							
Dissolved Oxygen (mg/L)	1.08							
Salinity	0.0							
OVA	-							

Sample Time: 1430

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 3/3/15
Field Personnel Gary Long and Sam Holmes
General Weather Condition Cloudy
Ambient Air Temperature 48
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # MW- 15

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 30 ft.
Depth to GW (DWG) 20.87 ft.

Length of Water Column (LWC=TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		1.5	3.0					
Time (military)		1050	1100					
Water Temp (°F)		63.1	62.9					
pH (s.u.)		5.57	5.[illegible]					
Specific Cond. (mS/cm)		[illegible]	[illegible]					
Turbidity (NTU)		106	107					
Dissolved Oxygen (mg/L)		2.11	2.03					
Salinity		0.2	0.3					
OVA		–	–					

Sample Time: 1100

[illegible] 3 gal

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 3/3/15
Field Personnel Gary Long and Sam Holmes
General Weather Condition Cloudy
Ambient Air Temperature 48
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # **MW-** 16

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 35 ft.
Depth to GW (DWG) 23.67 ft.

Length of Water Column (LWC=TWD-DGW) _____ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	2.0							
Time (military)	1129							
Water Temp (°F)	63.2							
pH (s.u.)	6.29							
Specific Cond. (mS/cm)	.202							
Turbidity (NTU)	999							
Dissolved Oxygen (mg/L)	1.68							
Salinity	0.1							
OVA	-							

Sample Time: 1130 DM @ 2 gal

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 3/3/15
Field Personnel Gary Long and Sam Holmes
General Weather Condition Cloudy
Ambient Air Temperature 48
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # **MW-** Dw-1

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 61 ft.
Depth to GW (DWG) 22.16 ft.

Length of Water Column (LWC=TWD-DGW) _____ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	6.5	13	20					
Time (military)	1140	1220	1230					
Water Temp (°F)	62.3	63.7	62.9					
pH (s.u.)	5.69	5.71	5.86					
Specific Cond. (mS/cm)	309	399	397					
Turbidity (NTU)	439	496	351					
Dissolved Oxygen (mg/L)	094	096	097					
Salinity	0.2	0.1	0.1					
OVA	-	-	-					

Sample Time: 1230

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 3/3/15
Field Personnel Gary Long and Sam Holmes
General Weather Condition Cloudy
Ambient Air Temperature 48
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # **MW-** Rw-1

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ ft.
Depth to GW (DWG) 27.99 ~ ft. 38.11

Length of Water Column (LWC=TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
Water Temp (°F)								
pH (s.u.)								
Specific Cond. (mS/cm)								
Turbidity (NTU)								
Dissolved Oxygen (mg/L)								
Salinity								
OVA								

Sample Time:

FP, NS

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 3/3/15
Field Personnel Gary Long and Sam Holmes
General Weather Condition Cloudy
Ambient Air Temperature 48
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # **MW-** Rw-2

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ ft.
Depth to GW (DWG) 28.35 - ft. 33.53

Length of Water Column (LWC=TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
Water Temp (°F)								
pH (s.u.)								
Specific Cond. (mS/cm)								
Turbidity (NTU)								
Dissolved Oxygen (mg/L)								
Salinity								
OVA								

Sample Time: FP. NS

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 3/3/15
Field Personnel Gary Long and Sam Holmes
General Weather Condition Cloudy
Ambient Air Temperature 48
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # **MW-** Rw.3

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ft.
Depth to GW (DWG) _____ft.

Length of Water Column (LWC=TWD-DGW) _____ft.

1 Csg. Volume (LWC*C)= _____ x 163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
Water Temp (°F)								
pH (s.u.)								
Specific Cond. (mS/cm)								
Turbidity (NTU)								
Dissolved Oxygen (mg/L)								
Salinity								
OVA								

Sample Time:

Covered by truck
Could not move

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 3/3/15
Field Personnel Gary Long and Sam Holmes
General Weather Condition Cloudy
Ambient Air Temperature 48
Facility Name Stockman Oil
Site ID# 04736

Quality Assurance:
Please see Water Quality Meter Calibration Sheet attached in front of the sampling sheets.

Well # **MW-** Rw-4

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ ft.
Depth to GW (DWG) 27.601 ft. - 27.86

Length of Water Column (LWC=TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C)= _____ x 163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
Water Temp (°F)								
pH (s.u.)								
Specific Cond. (mS/cm)								
Turbidity (NTU)								
Dissolved Oxygen (mg/L)								
Salinity								
OVA								

Sample Time: 1800

APPENDIX C

Tax Map

APPENDIX D

Field Screening Logs

APPENDIX E

Well Logs

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

1. WELL OWNER INFORMATION:
Name: Stockman Oil (last) _____ (first)
Address: 1138 Reynolds Ave
City: Greenwood State: SC Zip: 29646
Telephone. Work: _____ Home: _____

2. LOCATION OF WELL: COUNTY: Greenwood
Name: Stockman Oil
Street Address: 1138 Reynolds Ave
City: Greenwood State: SC Zip: 29646
Latitude: _____ Longitude: _____

3. PUBLIC SYSTEM NAME: _____ PUBLIC SYSTEM NUMBER: 04736 MW-12R

4. ABANDONIMENT: ☐ Yes ☒ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	• Thickness of Stratum	Depth to Bottom of Stratum
Brownish Orange Sandy Clay	30	0-30'
• Indicate Water Bearing Zones (Use a 2nd sheet if needed)		
5. REMARKS:		

6. TYPE: ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-25806 UST# 04736

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☒ MonitorWell ☐ Replacement

9. WELL DEPTH (completed) 30 ft. Date Started: 2/26/2015 Date Completed: 2/26/2015

10. CASING: ☒ Threaded ☐ Welded
Diam.: 2"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
2 in. to 20 ft. depth
_____ in. to _____ ft, depth
Height Above ☐ Below ☐ Surface _____ ft
Weight _____ lb./ft,
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2"
Slot/Gauge: 0.010" Length: 10'
Set Between: 20 ft. and 30 ft
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☒ Yes ☐ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☒ Yes ☐ No
Installed from 18 ft. to 30 lt.
Effective size # 2 Uniformity Coefficient _____

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 15 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ volts_____ Length of drop pipe - ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Mark Keller, PG CERT. NO.: 1554
Address: (Print)
Environmental Drilling Technologies Inc.
113 Gum Street
Summerville, SC 29483
Level A ☐ B ☒ C ☐ D ☐
Telephone No.: 843-797-7884 Fax No.: 843-797-1893

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Mark E. Keller Well Driller Date: 2/26/2015

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) COPY I MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

1. WELL OWNER INFORMATION:
Name: Stockman Oil (last) _____ (first)
Address: 1138 Reynolds Ave
City: Greenwood State: SC Zip: 29646
Telephone. Work: _____ Home: _____

2. LOCATION OF WELL: COUNTY: Greenwood
Name: Stockman Oil
Street Address: 1138 Reynolds Ave
City: Greenwood State: SC Zip: 29646
Latitude: _____ Longitude: _____

3. PUBLIC SYSTEM NAME: _____ PUBLIC SYSTEM NUMBER: 04736 MW-15

4. ABANDONIMENT: ☐ Yes ☒ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	• Thickness of Stratum	Depth to Bottom of Stratum
Brownish Orange Sandy Clay	30	0-30'
• Indicate Water Bearing Zones (Use a 2nd sheet if needed)		
5. REMARKS:		

6. TYPE: ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-25806 UST# 04736

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☒ MonitorWell ☐ Replacement

9. WELL DEPTH (completed) 30 ft. Date Started: 2/26/2015 Date Completed: 2/26/2015

10. CASING: ☒ Threaded ☐ Welded
Diam.: 2"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
2 in. to 20 ft. depth
_____ in. to _____ ft, depth
Height Above ☐ Below ☐ Surface _____ ft
Weight _____ lb./ft,
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2"
Slot/Gauge: 0.010" Length: 10'
Set Between: 20 ft. and 30 ft
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☒ Yes ☐ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☒ Yes ☐ No
Installed from 18 ft. to 30 lt.
Effective size # 2 Uniformity Coefficient _____

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 15 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ volts_____ Length of drop pipe - ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Mark Keller, PG CERT. NO.: 1554
Address: (Print)
Environmental Drilling Technologies Inc.
113 Gum Street
Summerville, SC 29483
Level A ☐ B ☒ C ☐ D ☐
Telephone No.: 843-797-7884 Fax No.: 843-797-1893

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Mark E. Keller Well Driller Date: 2/26/2015

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) COPY I MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

1. WELL OWNER INFORMATION:
Name: Stockman Oil (last) _____ (first)
Address: 1138 Reynolds Ave
City: Greenwood State: SC Zip: 29646
Telephone. Work: _____ Home: _____

2. LOCATION OF WELL: COUNTY: Greenwood
Name: Stockman Oil
Street Address: 1138 Reynolds Ave
City: Greenwood State: SC Zip: 29646
Latitude: _____ Longitude: _____

3. PUBLIC SYSTEM NAME: _____ PUBLIC SYSTEM NUMBER: 04736 MW-16

4. ABANDONIMENT: ☐ Yes ☒ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	• Thickness of Stratum	Depth to Bottom of Stratum
Brownish Orange Sandy Clay	35	0-35'
• Indicate Water Bearing Zones (Use a 2nd sheet if needed)		
5. REMARKS:		

6. TYPE: ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-25806 UST# 04736

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☒ MonitorWell ☐ Replacement

9. WELL DEPTH (completed) 35 ft. Date Started: 2/26/2015 Date Completed: 2/26/2015

10. CASING: ☒ Threaded ☐ Welded
Diam.: 2"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
2 in. to 25 ft. depth
_____ in. to _____ ft, depth
Height Above ☐ Below ☐ Surface _____ ft
Weight _____ lb./ft,
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2"
Slot/Gauge: 0.010" Length: 10'
Set Between: 25 ft. and 35 ft NOTE: MULTIPLE SCREENS
_____ ft. and _____ ft. USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☒ Yes ☐ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☒ Yes ☐ No
Installed from 23 ft. to 35 lt.
Effective size # 2 Uniformity Coefficient _____

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 20 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ volts_____ Length of drop pipe - ft. Capacity _____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Mark Keller, PG CERT. NO.: 1554
Address: (Print)
Environmental Drilling Technologies Inc.
113 Gum Street
Summerville, SC 29483
Level A ☐ B ☒ C ☐ D ☐
Telephone No.: 843-797-7884 Fax No.: 843-797-1893

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 2/26/2015

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) COPY I MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

APPENDIX F

Aquifer Calculations/Historical Groundwater Data

TABLE 1 Groundwater Data (feet) Stockman Oil Two, Inc. Greenwood, SC						
Monitoring Well	**Date**	**TOC Elevation**	**Screened Interval**	**TOC to FP**	**TOC to GW**	**GW Elevation**
MW-1	6/10/02	100.00	14.6-29.6	--	25.85	74.15
	11/17/08			--	29.32	70.68
	11/18/09			--	25.87	74.13
	10/14/14			24.72	>29.6	**FP** to bottom of well
	3/3/15			24.34	>29.6	**FP** to bottom of well
MW-2	6/10/02	92.79	20-30	--	21.32	71.47
	11/17/08			--	24.74	68.05
	11/18/09			--	21.79	71.00
	10/14/14			--	21.39	71.40
	3/3/15			--	19.48	73.31
MW-3	6/10/02	94.82	25-35	--	22.96	71.86
	11/17/08			--	25.96	68.86
	11/18/09			--	23.44	71.38
	10/14/14			--	22.98	71.84
	3/3/15			--	22.33	72.49
MW-4	6/10/02	97.52	25-35	--	24.17	73.35
	11/17/08			--	27.37	70.15
	11/18/09			--	24.38	73.14
	10/14/14			--	23.82	73.70
	3/3/15			--	23.42	74.10
MW-5	11/18/09	104.40	20-40	28.24	37.97	FP
	10/14/14			28.43	33.72	FP
	3/3/15			28.05	31.09	**FP**
MW-6	11/18/09	104.92	20-40	25.61	37.20	FP
	10/14/14			28.39	>32	Obstruction at 32' **FP**
	3/3/15			28.22	>32	Obstruction at 32' **FP**
MW-7	11/18/09	104.13	20-40	--	27.05	77.08
	10/14/14			--	27.03	77.10
	3/3/15			--	26.63	77.50
MW-8	11/18/09	98.19	15-35	--	26.99	71.20
	10/14/14			--	26.59	71.60
	3/3/15			--	26.09	72.10

MW-9	11/18/09	95.10	15-35	--	25.64	69.46
	10/14/14			--	24.69	70.41
	3/3/15			--	23.77	71.33
MW-10	11/18/09	104.25	20-40	--	29.38	74.87
	10/14/14			--	29.33	74.92
	3/3/15			--	28.13	76.12
MW-11	11/18/09	90.86	15-30	--	23.96	66.90
	10/14/14			--	CNL	--
MW-12	11/18/09	89.44	15-30	--	23.33	66.11
	10/14/14			--	CNL	--
MW-12R	3/3/15	90.00	20-30	--	21.81	68.19
MW-13	11/18/09	92.36	15-35	--	21.23	71.13
	10/14/14			--	20.88	71.48
	3/3/15			--	19.97	72.39
MW-14	11/18/09	99.74	15-35	--	24.84	74.90
	10/14/14			--	23.73	76.01
	3/3/15			--	23.58	76.16
MW-15	3/3/15	89.64	20-30	--	20.87	68.77
MW-16	3/3/15	93.70	25-35	--	23.67	70.03
DW-1	11/18/09	95.18	56-61	--	23.66	71.52
	10/14/14			--	23.29	71.89
	3/3/15			--	22.16	73.02
RW-1*	10/14/14	--	25-40	28.12	36.64	**FP**
	3/3/15			27.99	38.11	**FP**
RW-2*	10/14/14	--	25-40	28.64	34.35	**FP**
	3/3/15			28.35	33.53	**FP**
RW-3*	10/14/14	--	25-40	--	Covered	--
	3/3/15			--	Covered	--
RW-4*	10/14/14	--	25-40	26.35	28.14	**FP**
	3/3/15			26.01	27.86	**FP**

APPENDIX G

Disposal Manifest

US Water Recovery

Non-Hazardous Manifest: Waste Water or Drums

Number:

1. Generator's EPA ID# (if applicable): | Waste ID Number:

2. Generator's Name and Mailing Address: Stockman Oil | Phone ( ) | P O #:

3. Agent of Generator and Mailing Address: KLM Env | Phone ( ) | P O #:

4. Transporter Company Name: | Phone ( )

Truck & Trailer License Number: Vacuum Recovery Tech

5. Transporter U.S. EPA ID#:

6. Facility Name and Site Address:		Mailing Address:	
US Water Recovery 511 Old Mt. Holly Rd. Goose Creek, SC 29445	Phone: (843) 797-8674 Fax: (843) 797-2126	US Water Recovery 511 Old Mt. Holly Rd. Goose Creek, SC 29445	Phone: (843) 797-3111 Fax: (843) 797-1884

7 Facility U.S. EPA ID#:

Start Level:	End Level:	Total Gallons:	Tank Number

8. U.S. DOT Description	Container No.	Container Type	Unit	Quantity
a. Non-Hazardous, non-regulated waste water				43.75 Gal

9. Generator's Certification: I hereby declare that the contents of this consignment are not hazardous by definition or listing and are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and the laws of the State of South Carolina. I further certify that the contents of this consignment are as represented by the description contained on the Waste Profile Form previously submitted to and approved by the Designated Facility.

Printed/Typed Name: Mark Keller | Signature: Mark Keller | Date: 3-17-15

10. Transporter Acknowledgement of Receipt of Materials

Printed/Typed Name: Stanley Holmes | Signature: Stanley Holmes | Date: 3-17-15

11. Discrepancy Indication space:

12. Facility Owner or Operator: Certification of Receipt of Materials

Printed/Typed Name: David Ward | Signature: David Ward | Date 3-17-15

White - Facility Yellow - Office Pink - Transporter Blue - Generator

9814

OAKRIDGE LANDFILL
a WASTE MANAGEMENT COMPANY

SPECIAL WASTE MANIFEST
PROFILE # 60637SC
Expiration: 5/8/2016

Generator: KLM ENVIRONMENTAL

Account Number: 490-901

Location/Address:
Bob Whites El Cheapo, 2463 N. Okatie Hwy., Ridgeland, SC. (UST # 14438) .05 tons
Stockman Oil, 1138 Reynolds Ave., Greenwood, SC (UST # 04736) 3.33 tons

Tele Number: 843-412-1437 **Contact:** MICAH BENNETT

Generator Signature: [signature]

********* TO BE COMPLETED BY TRANSPORTER **********

Transporter of Waste: **Truck:** ___

Date: 3-9-15 **Driver's Signature:** [signature]

********** TO BE COMPLETED BY OAKRIDGE LANDFILL **********
Disposal Site: Oakridge Landfill DWP 130

Description of Waste: DRILL CUTTINGS FROM UST SITES

Ticket Number: 178884 **Tonnage:** 3.83 total

Received By: [signature] **Date:** 3/9/15

2183 HWY 78, (POB 145), DORCHESTER, SC. 29437
TEL: 843-563-4587, FAX: 843-563-4588

APPENDIX H

Zoning Information

APPENDIX I

Fate and Transport Modeling

APPENDIX J

Access Agreements

APPENDIX K

Checklist

Contractor Checklist

For each report submitted to the UST Management Division, the contractor will be required to verify that all data elements for the required scope of work have been provided. For items not required for the scope of work, the N/A box should be checked. For items required and not completed or provided, the No box should be checked and a thorough description of the reason must be provided.

Item #	Item	Yes	No	N/A
1	Is Facility Name, Permit #, and address provided?	✓		
2	Is UST Owner/Operator name, address, & phone number provided?	✓		
3	Is name, address, & phone number of current property owner provided?	✓		
4	Is the DHEC Certified UST Site Rehabilitation Contractor's Name, Address, telephone number, and certification number provided?	✓		
5	Is the name, address, telephone number, and certification number of the well driller that installed borings/monitoring wells provided?	✓		
6	Is the name, address, telephone number, and certification number of the certified laboratory(ies) performing analytical analyses provided?	✓		
7	Has the facility history been summarized?	✓		
8	Has the regional geology and hydrogeology been described?	✓		
9	Are the receptor survey results provided as required?			✓
10	Has current use of the site and adjacent land been described?	✓		
11	Has the site-specific geology and hydrogeology been described?			✓
12	Has the primary soil type been described?	✓		
13	Have field screening results been described?			✓
14	Has a description of the soil sample collection and preservation been detailed?			✓
15	Has the field screening methodology and procedure been detailed?			✓
16	Has the monitoring well installation and development dates been provided?	✓		
17	Has the method of well development been detailed?	✓		
18	Has justification been provided for the locations of the monitoring wells?	✓		
19	Have the monitoring wells been labeled in accordance with the UST QAPP guidelines?	✓		
20	Has the groundwater sampling methodology been detailed?	✓		
21	Have the groundwater sampling dates and groundwater measurements been provided?	✓		
22	Has the purging methodology been detailed?	✓		
23	Has the volume of water purged from each well been provided along with measurements to verify that purging is complete?	✓		
24	If free-product is present, has the thickness been provided?	✓		
25	Does the report include a brief discussion of the assessment done and the results?	✓		
26	Does the report include a brief discussion of the aquifer evaluation and results?			✓
27	Does the report include a brief discussion of the fate & transport models used?			✓

Item #	Item	Yes	No	N/A
28	Are the site-conceptual model tables included? (Tier 1 Risk Evaluation)			✓
29	Have the exposure pathways been analyzed? (Tier 2 Risk Evaluation)			✓
30	Have the SSTLs for each compound and pathway been calculated? (Tier 2 Risk Evaluation)			✓
31	Have recommendations for further action been provided and explained?	✓		
32	Has the soil analytical data for the site been provided in tabular format? (Table 1)			✓
33	Has the potentiometric data for the site been provided in tabular format? (Table 2)	✓		
34	Has the current and historical laboratory data been provided in tabular format?	✓		
35	Have the aquifer characteristics been provided and summarized on the appropriate form?			✓
36	Have the Site conceptual model tables been included? (Tier 1 Risk Evaluation)			✓
37	Has the topographic map been provided with all required elements? (Figure 1)	✓		
38	Has the site base map been provided with all required elements? (Figure 2)	✓		
39	Have the CoC site maps been provided? (Figure 3 & Figure 4)	✓		
40	Has the site potentiometric map been provided? (Figure 5)	✓		
41	Have the geologic cross-sections been provided? (Figure 6)			✓
42	Have maps showing the predicted migration of the CoCs through time been provided? (Tier 2 Risk Evaluation)			✓
43	Has the site survey been provided and include all necessary elements? (Appendix A)	✓		
44	Have the sampling logs, chain of custody forms, and the analytical data package been included with all required elements? (Appendix B)	✓		
45	Is the laboratory performing the analyses properly certified?	✓		
46	Has the tax map been included with all necessary elements? (Appendix C)			✓
47	Have the soil boring/field screening logs been provided? (Appendix D)			✓
48	Have the well completion logs and SCDHEC Form 1903 been provided? (Appendix E)	✓		
49	Have the aquifer evaluation forms, data, graphs, equations, etc. been provided? (Appendix F)			✓
50	Have the disposal manifests been provided? (Appendix G)	✓		
51	Has a copy of the local zoning regulations been provided? (Appendix H)			✓
52	Has all fate and transport modeling been provided? (Appendix I)			✓
53	Have copies of all access agreements obtained by the contractor been provided? (Appendix J)			✓
54	Has a copy of this form been attached to the final report and are explanations for any missing or incomplete data been provided?	✓		

Explanation for missing and incomplete information?

UST DOCKETING 35-tech

Domenico Model

UST # 04736
Site Name: Stockman Oil
Modeler: J. Bryant
Date: 4/17/2015

Transport Parameters

x_{max}	175	ft
y_{max}	0	ft
z	0	ft
Source Width	30	ft
Source Thickness	15	ft
Plume Length	175	ft
α_x	10.18299	ft
α_y	1.018299	ft
α_z	1.00E-99	ft

Simulation Time

t_{sim}	26	yrs

Groundwater Flow Parameters

K	-	ft/yr
dh/dx	-	
θ	0.2	dec. %
v_x	6	ft/yr

Aquifer Characteristics

ρ_d	1.6	kg/L
f_{oc}	0.0002	

Source Area CoC Data

CoC	C_{source} (mg/L)	K_{oc} (L/kg)
Benzene	19.3	81
Toluene	34.3	133
Ethylbenzene	2.07	176
Xylenes	12.4	639
Naphthalene	1	1543
MtBE	1.84	11
EDB		28
1,2-DCA		17.5

Retarded Velocity (ft/yr)

CoC	R	v_R
Benzene	1.130	5.31
Toluene	1.213	4.95
Ethylbenzene	1.282	4.68
Xylenes	2.022	2.97
Naphthalene	3.469	1.73
MtBE	1.018	5.90
EDB	1.045	5.74
1,2-DCA	1.028	5.84

Simulation Points for Breakthrough Curves

x	0	ft
y	0	ft
z	0	ft

x		ft
y		ft
z		ft

$$C(x,y,z,t)=\left(\frac{C_0}{8}\right)\exp\left[\left(\frac{x}{2\alpha_x}\right)\left(1-\sqrt{1+\frac{4\lambda\alpha_x}{v}}\right)\right]erfc\left[\frac{x-vt\sqrt{1+\frac{4\lambda\alpha_x}{v}}}{2\sqrt{\alpha_x vt}}\right]\left\{erf\left[\frac{y+\frac{Y}{2}}{2\sqrt{\alpha_y x}}\right]-erf\left[\frac{y-\frac{Y}{2}}{2\sqrt{\alpha_y x}}\right]\right\}\left\{erf\left[\frac{z+Z}{2\sqrt{\alpha_z x}}\right]-erf\left[\frac{z-Z}{2\sqrt{\alpha_z x}}\right]\right\}$$

Benzene Calibration

Spatial Calibration Data (centerline)

x	C_{obs} (mg/L)	C_{sim} (mg/L)
0	19.3	19.3
17.5		8.960
35		3.939
52.5		1.708
70		0.744
87.5		0.326
105		0.144
122.5		0.064
140		0.028
157.5		0.013
175	0.005	0.005

Temporal Calibration Data

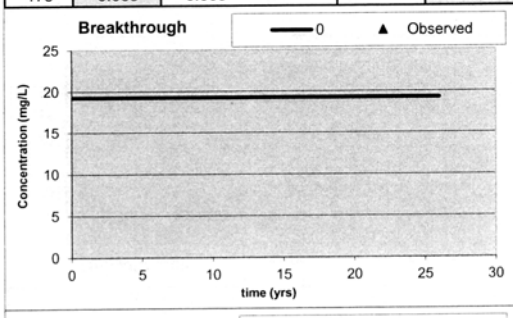
	0		0	
t (yrs)	C_{obs} (mg/L)	C_{sim} (mg/L)	C_{obs} (mg/L)	C_{sim} (mg/L)
0		19.3		19.3
2.6		19.300		19.300
5.2		19.300		19.300
7.8		19.300		19.300
10.4		19.300		19.300
13		19.300		19.300
15.6		19.300		19.300
18.2		19.300		19.300
20.8		19.300		19.300
23.4		19.300		19.300
26		19.300		19.300

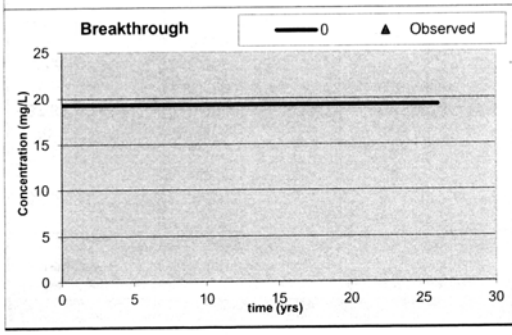
Site ID 04736

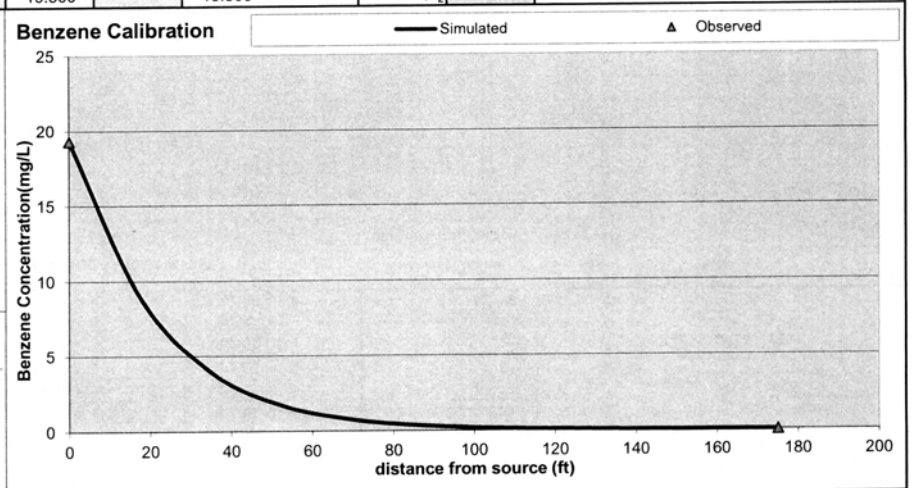
Site Name Stockman Oil

Model Calibration Parameters

$t_{1/2}$	2.1	yrs	λ	0.33	yr^{-1}
v_x	6	ft/yr			
R	1.130				
v_R	5.312	ft/yr	C_{source}	19.3	mg/L
L_p	175	ft			
α_x	10.18299	ft	t_{sim}	26	yrs
α_y	1.018299	ft			
α_z	1E-99	ft			







Source	17.5	35	52.5	70	87.5	105	122.5	140	157.5	175
0	8.95983388	3.93877871	1.7079979	0.74399879	0.32640267	0.1440927	0.063875	0.028342	0.012528	0.00548
0	8.95983388	3.93877871	1.7079979	0.74399879	0.32640267	0.1440927	0.063875	0.028342	0.012528	0.00548
0	8.95983388	3.93877871	1.7079979	0.74399879	0.32640267	0.1440927	0.063875	0.028342	0.012528	0.00548
0	8.95983388	3.93877871	1.7079979	0.74399879	0.32640267	0.1440927	0.063875	0.028342	0.012528	0.00548
0	8.95983388	3.93877871	1.7079979	0.74399879	0.32640267	0.1440927	0.063875	0.028342	0.012528	0.00548

Toluene Calibration

Spatial Calibration Data (centerline)

x	C_{obs} (mg/L)	C_{sim} (mg/L)
0	34.3	34.3
17.5		14.816
35		6.060
52.5		2.445
70		0.991
87.5		0.405
105		0.166
122.5		0.068
140		0.028
157.5		0.012
175	0.005	0.005

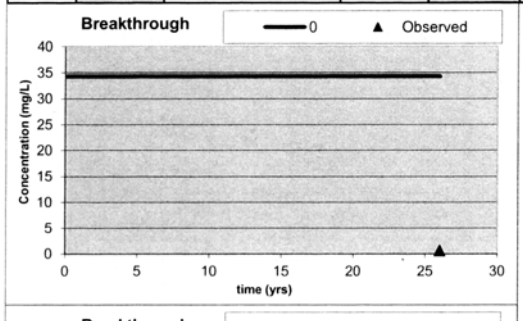
Temporal Calibration Data

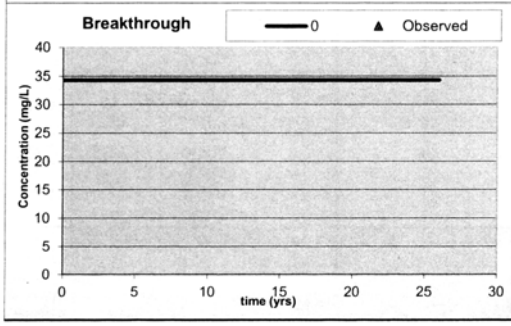
		0		0
t (yrs)	C_{obs} (mg/L)	C_{sim} (mg/L)	C_{obs} (mg/L)	C_{sim} (mg/L)
0		34.3		34.3
2.6		34.300		34.300
5.2		34.300		34.300
7.8		34.300		34.300
10.4		34.300		34.300
13		34.300		34.300
15.6		34.300		34.300
18.2		34.300		34.300
20.8		34.300		34.300
23.4		34.300		34.300
26	0.669	34.300		34.300

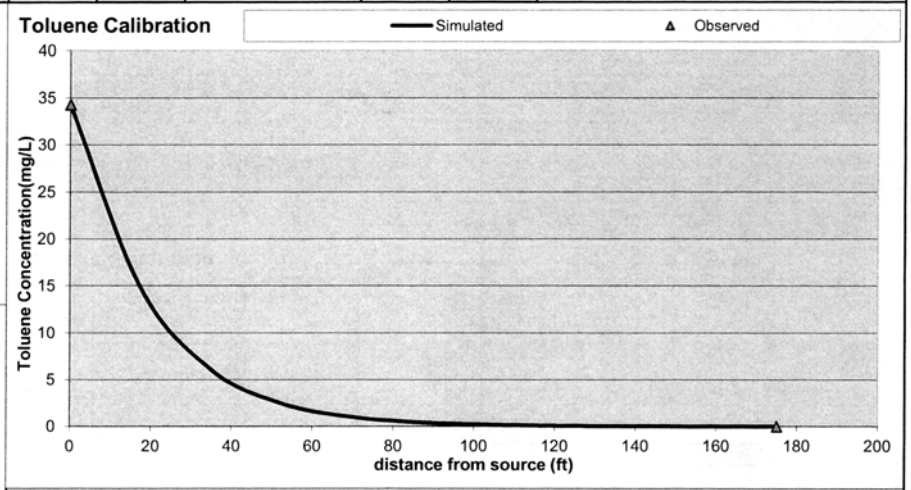
Site ID 04736
Site Name Stockman Oil

Model Calibration Parameters

$t_{1/2}$	2	yrs	λ	0.3465	yr^{-1}
v_x	6	ft/yr			
R	1.213				
v_R	4.947	ft/yr	C_{source}	34.3	mg/L
L_p	175	ft			
α_x	10.18299	ft	t_{sim}	26	yrs
α_y	1.018299	ft			
α_z	1E-99	ft			







Source	17.5	35	52.5	70	87.5	105	122.5	140	157.5	175
0	14.8161784	6.06034469	2.44524498	0.99106904	0.40454667	0.1661467	0.068497	0.028245	0.011585	0.00469
0	14.8161784	6.06034469	2.44524498	0.99106904	0.40454667	0.1661467	0.068497	0.028245	0.011585	0.00469
0	14.8161784	6.06034469	2.44524498	0.99106904	0.40454667	0.1661467	0.068497	0.028245	0.011585	0.00469
0	14.8161784	6.06034469	2.44524498	0.99106904	0.40454667	0.1661467	0.068497	0.028245	0.011585	0.00469
0	14.8161784	6.06034469	2.44524498	0.99106904	0.40454667	0.1661467	0.068497	0.028245	0.011585	0.00469

Ethylbenzene Calibration

Spatial Calibration Data (centerline)

x	C_{obs} (mg/L)	C_{sim} (mg/L)
0	2.07	2.07
17.5		1.226
35		0.687
52.5		0.379
70		0.210
87.5		0.116
105		0.064
122.5		0.035
140		0.019
157.5		0.010
175	0.005	0.005

Temporal Calibration Data

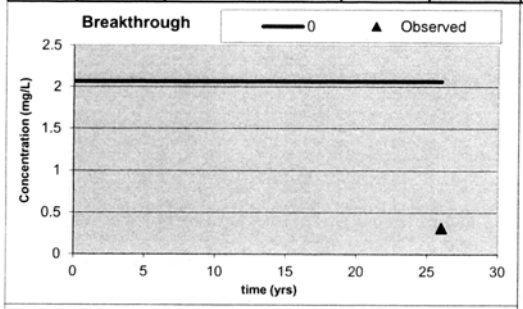
		0		0
t (yrs)	C_{obs} (mg/L)	C_{sim} (mg/L)	C_{obs} (mg/L)	C_{sim} (mg/L)
0		2.07		2.07
2.6		2.070		2.070
5.2		2.070		2.070
7.8		2.070		2.070
10.4		2.070		2.070
13		2.070		2.070
15.6		2.070		2.070
18.2		2.070		2.070
20.8		2.070		2.070
23.4		2.070		2.070
26	0.318	2.070		2.070

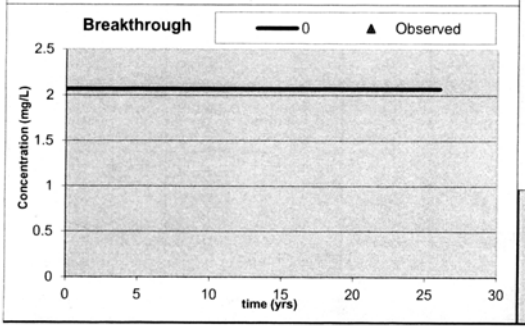
Site ID 04736

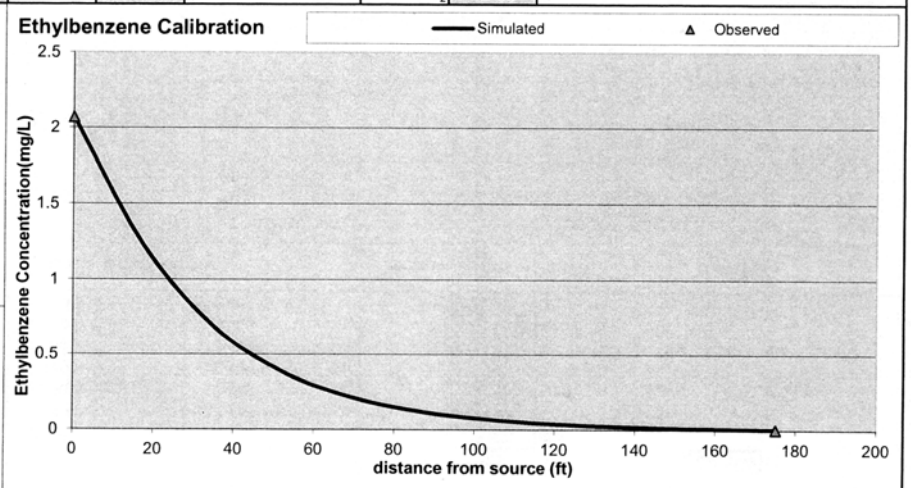
Site Name Stockman Oil

Model Calibration Parameters

$t_{1/2}$	3.9	yrs	λ	0.17769	yr^{-1}
v_x	6	ft/yr			
R	1.282				
v_R	4.682	ft/yr	C_{source}	2.07	mg/L
L_p	175	ft			
α_x	10.18299	ft	t_{sim}	26	yrs
α_y	1.018299	ft			
α_z	1E-99	ft			







Source	17.5	35	52.5	70	87.5	105	122.5	140	157.5	175
0	1.22568616	0.68703209	0.37949584	0.21004577	0.11645211	0.0642908	0.035021	0.018604	0.009512	0.00462
0	1.22568616	0.68703209	0.37949584	0.21004577	0.11645211	0.0642908	0.035021	0.018604	0.009512	0.00462
0	1.22568616	0.68703209	0.37949584	0.21004577	0.11645211	0.0642908	0.035021	0.018604	0.009512	0.00462
0	1.22568616	0.68703209	0.37949584	0.21004577	0.11645211	0.0642908	0.035021	0.018604	0.009512	0.00462
0	1.22568616	0.68703209	0.37949584	0.21004577	0.11645211	0.0642908	0.035021	0.018604	0.009512	0.00462

Xylenes Calibration

Spatial Calibration Data (centerline)

x	C_{obs} (mg/L)	C_{sim} (mg/L)
0	12.4	12.4
17.5		7.476
35		4.242
52.5		2.334
70		1.248
87.5		0.635
105		0.300
122.5		0.129
140		0.049
157.5		0.016
175	0.005	0.005

Temporal Calibration Data

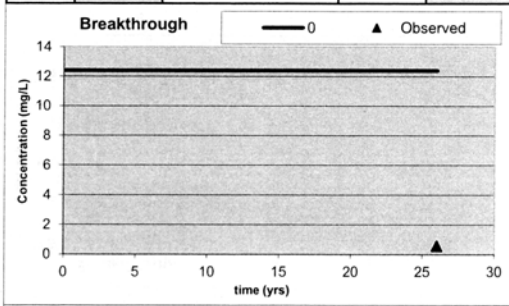
	0		0	
t (yrs)	C_{obs} (mg/L)	C_{sim} (mg/L)	C_{obs} (mg/L)	C_{sim} (mg/L)
0		12.4		12.4
2.6		12.400		12.400
5.2		12.400		12.400
7.8		12.400		12.400
10.4		12.400		12.400
13		12.400		12.400
15.6		12.400		12.400
18.2		12.400		12.400
20.8		12.400		12.400
23.4		12.400		12.400
26	0.591	12.400		12.400

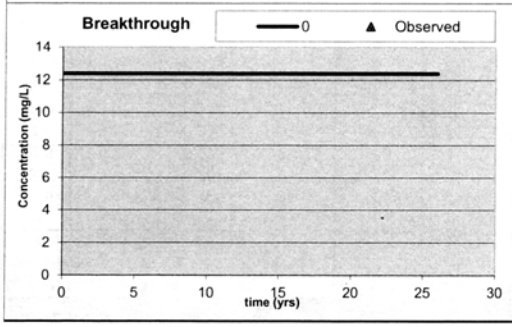
Site ID 04736

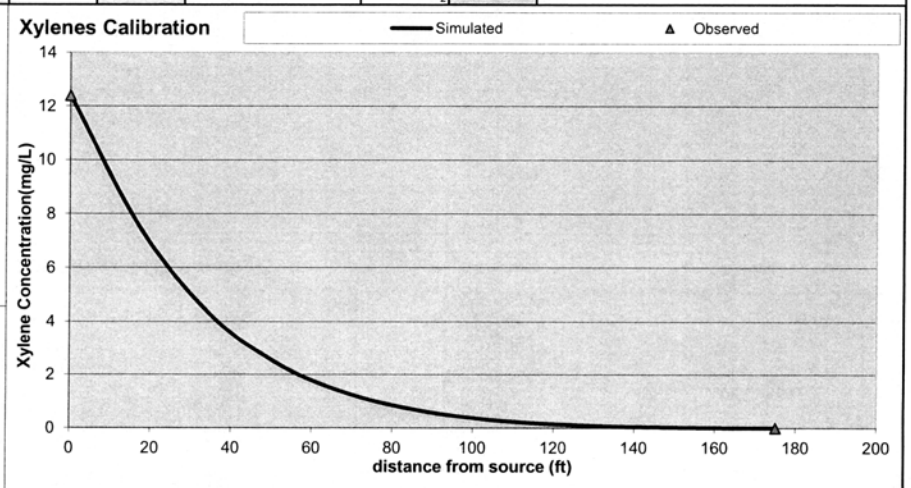
Site Name Stockman Oil

Model Calibration Parameters

$t_{1/2}$	6.5	yrs	λ	0.10662	yr^{-1}
v_x	6	ft/yr			
R	2.022				
v_R	2.967	ft/yr	C_{source}	12.4	mg/L
L_p	175	ft			
α_x	10.18299	ft	t_{sim}	26	yrs
α_y	1.018299	ft			
α_z	1E-99	ft			







Source	17.5	35	52.5	70	87.5	105	122.5	140	157.5	175
0	7.4757742	4.24208661	2.33430115	1.24774078	0.63534776	0.3004847	0.128754	0.048924	0.016207	0.004619
0	7.4757742	4.24208661	2.33430115	1.24774078	0.63534776	0.3004847	0.128754	0.048924	0.016207	0.004619
0	7.4757742	4.24208661	2.33430115	1.24774078	0.63534776	0.3004847	0.128754	0.048924	0.016207	0.004619
0	7.4757742	4.24208661	2.33430115	1.24774078	0.63534776	0.3004847	0.128754	0.048924	0.016207	0.004619
0	7.4757742	4.24208661	2.33430115	1.24774078	0.63534776	0.3004847	0.128754	0.048924	0.016207	0.004619

MtBE Calibration

Spatial Calibration Data (centerline)

x	C_{obs} (mg/L)	C_{sim} (mg/L)
0	1.84	1.84
17.5		1.068
35		0.587
52.5		0.318
70		0.173
87.5		0.095
105		0.052
122.5		0.029
140		0.016
157.5		0.009
175	0.005	0.005

Temporal Calibration Data

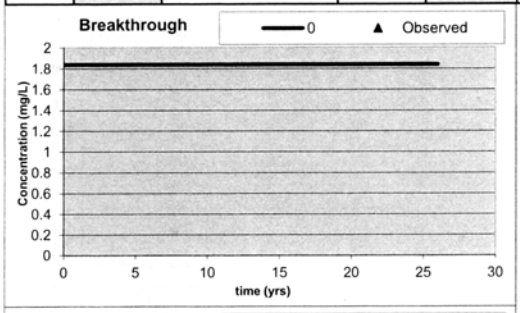
t (yrs)	C_{obs} (mg/L)	C_{sim} (mg/L)	C_{obs} (mg/L)	C_{sim} (mg/L)
	0		0	
0		1.84		1.84
2.6		1.840		1.840
5.2		1.840		1.840
7.8		1.840		1.840
10.4		1.840		1.840
13		1.840		1.840
15.6		1.840		1.840
18.2		1.840		1.840
20.8		1.840		1.840
23.4		1.840		1.840
26		1.840		1.840

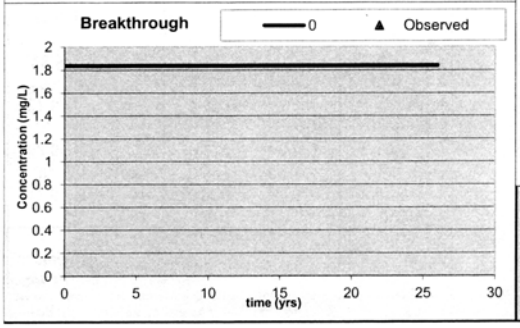
Site ID 04736

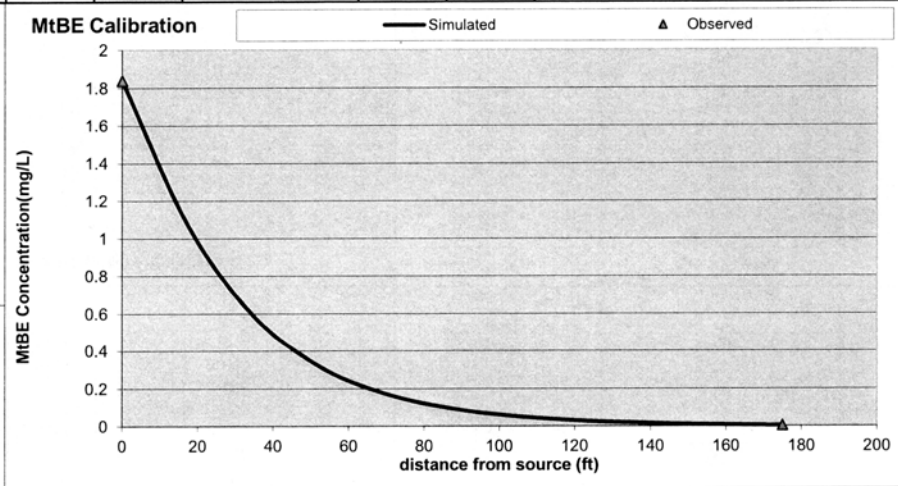
Site Name Stockman Oil

Model Calibration Parameters

$t_{1/2}$	2.9	yrs	λ	0.23897	yr^{-1}
v_x	6	ft/yr			
R	1.000				
v_R	6.000	ft/yr	C_{source}	1.84	mg/L
L_p	175	ft			
α_x	10.18299	ft	t_{sim}	26	yrs
α_y	1.018299	ft			
α_z	1E-99	ft			







Source	17.5	35	52.5	70	87.5	105	122.5	140	157.5	175
0	1.06770384	0.58667042	0.31795991	0.17307441	0.09484447	0.0522559	0.028868	0.015926	0.008727	0.004716
0	1.06770384	0.58667042	0.31795991	0.17307441	0.09484447	0.0522559	0.028868	0.015926	0.008727	0.004716
0	1.06770384	0.58667042	0.31795991	0.17307441	0.09484447	0.0522559	0.028868	0.015926	0.008727	0.004716
0	1.06770384	0.58667042	0.31795991	0.17307441	0.09484447	0.0522559	0.028868	0.015926	0.008727	0.004716
0	1.06770384	0.58667042	0.31795991	0.17307441	0.09484447	0.0522559	0.028868	0.015926	0.008727	0.004716

Naphthalene Calibration

Spatial Calibration Data (centerline)

x	C_{obs} (mg/L)	C_{sim} (mg/L)
0	1	1
17.5		0.626
35		0.371
52.5		0.217
70		0.127
87.5		0.075
105		0.045
122.5		0.026
140		0.016
157.5		0.009
175	0.005	0.005

Temporal Calibration Data

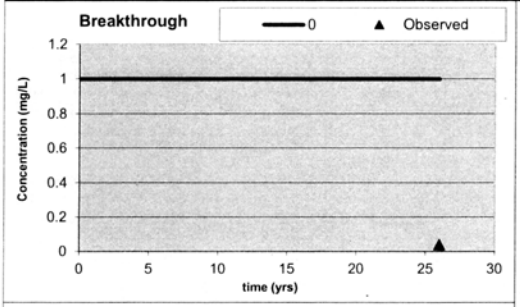
			0	0
t (yrs)	C_{obs} (mg/L)	C_{sim} (mg/L)	C_{obs} (mg/L)	C_{sim} (mg/L)
0		1		1
2.6		1.000		1.000
5.2		1.000		1.000
7.8		1.000		1.000
10.4		1.000		1.000
13		1.000		1.000
15.6		1.000		1.000
18.2		1.000		1.000
20.8		1.000		1.000
23.4		1.000		1.000
26	0.0401	1.000		1.000

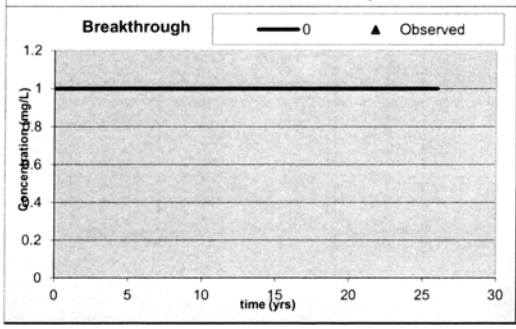
Site ID 04736

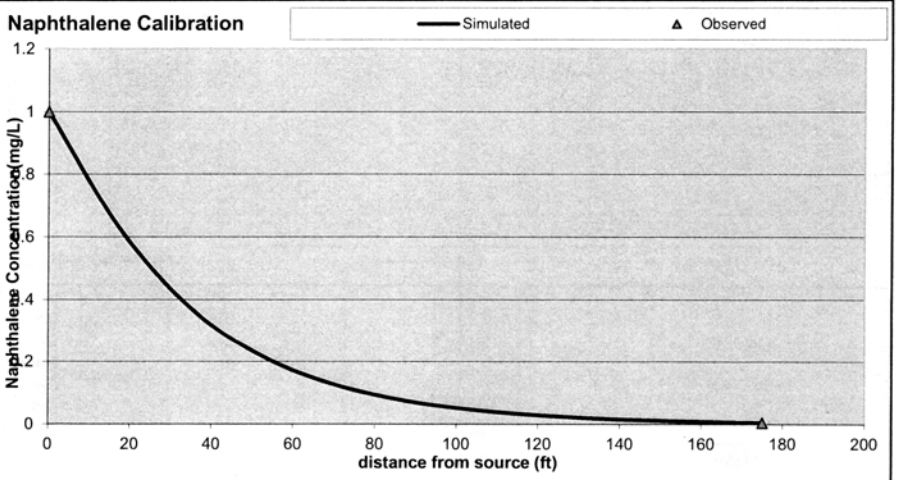
Site Name Stockman Oil

Model Calibration Parameters

$t_{1/2}$	3.5	yrs	λ	0.198	yr^{-1}
v_x	6	ft/yr			
R	1.000				
v_R	6.000	ft/yr	C_{source}	1	mg/L
L_p	175	ft			
α_x	10.18299	ft	t_{sim}	26	yrs
α_y	1.018299	ft			
α_z	1E-99	ft			







Source	17.5	35	52.5	70	87.5	105	122.5	140	157.5	175
0	0.62598389	0.37103991	0.21689992	0.12730593	0.07517375	0.0445717	0.026437	0.015605	0.009104	0.005207
0	0.62598389	0.37103991	0.21689992	0.12730593	0.07517375	0.0445717	0.026437	0.015605	0.009104	0.005207
0	0.62598389	0.37103991	0.21689992	0.12730593	0.07517375	0.0445717	0.026437	0.015605	0.009104	0.005207
0	0.62598389	0.37103991	0.21689992	0.12730593	0.07517375	0.0445717	0.026437	0.015605	0.009104	0.005207
0	0.62598389	0.37103991	0.21689992	0.12730593	0.07517375	0.0445717	0.026437	0.015605	0.009104	0.005207

SSTLs t 1000 yrs

UST Permit # 04736
Site Name: Stockman Oil

SSTLs in mg/L			RBSLs (mg/L):	0.005	1.000	0.700	10.000	0.040	0.025		
MW #	x (ft)	y (ft)	z (ft)	Benzene SSTL	Toluene SSTL	Ethylbenzene SSTL	Xylenes SSTL	MtBE SSTL	Naphthalene SSTL		
MW-1	370	0	0	>99999	>99999	84380.698	>99999	7419.723	932.768		
MW-3	220	0	0	127.477	63089.172	835.876	9019.441	61.717	14.864		
MW-4	350	0	0	42676.694	>99999	45849.846	>99999	3938.805	540.006		
MW-5	410	0	0	>99999	>99999	>99999	>99999	26238.080	2773.457		
MW-6	330	0	0	17533.140	>99999	24880.715	>99999	2088.197	312.215		
MW-13	180	0	0	20.873	8761.311	238.788	2711.487	16.828	4.820		
RW-1	330	0	0	17533.140	>99999	24880.715	>99999	2088.197	312.215		
RW-2	410	0	0	>99999	>99999	>99999	>99999	26238.080	2773.457		
RW-3	370	0	0	>99999	>99999	84380.698	>99999	7419.723	932.768		
RW-4	270	0	0	1204.394	>99999	3938.581	39873.220	308.244	59.775		
			λ (yr^{-1}):	0.330	0.347	0.178	0.107	0.239	0.198		
			R:	1.130	1.213	1.282	2.022	1.000	1.000		
			Pure Substance Solubility:	1750	526	169	175	5110	31		
			Effective Solubility:	44.39	26.54	3.7	21.68	173	6.7		

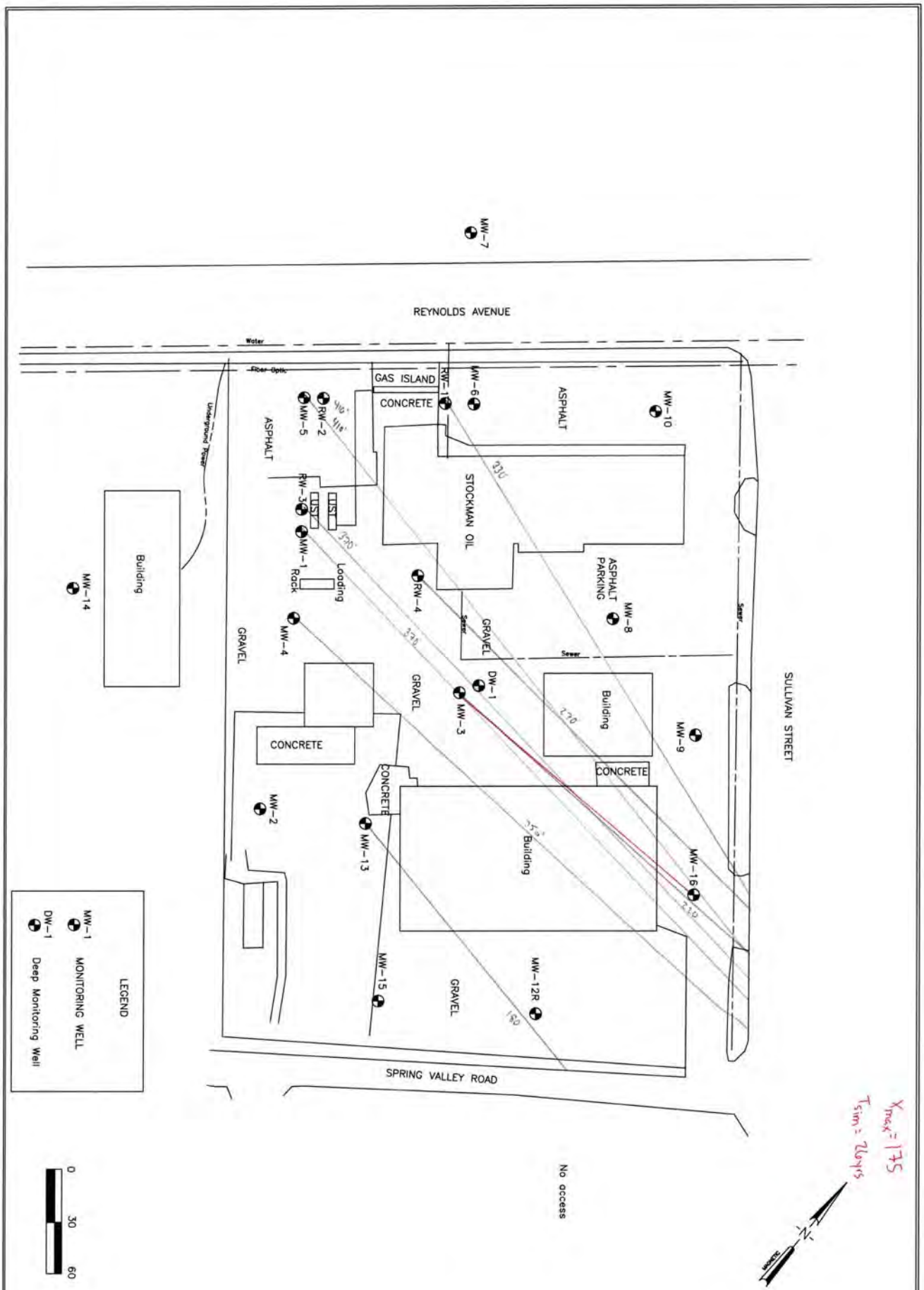


FIGURE 2
SITE MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

KLM Environmental, LLC
Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation

36 tech

Domenico Model (Oxygenates)

UST # 04736
Site Name: Stockman Oil
Modeler: John Bryant
Date: 4/17/2015

Groundwater Flow Parameters

K	-	ft/yr
dh/dx	-	
θ	0.25	dec. %
v_x	6	ft/yr

Transport Parameters

x_{max}	175	ft
y_{max}	0	ft
z	0	ft
Source Width	30	ft
Source Thickness	15	ft
Plume Length	175	ft
α_x	10.18299	ft
α_y	1.018299	ft
α_z	1.00E-99	ft

Simulation Time

t_{sim} = 26 yrs

Aquifer Characteristics

ρ_d	1.6	kg/L
f_{oc}	0.0002	

Source Area CoC Data

CoC	C_{source} (mg/L)	K_{oc} (L/kg)
tBA		1
tAA	50.9	1
DIPE	0.693	1.5
tAME		1.5
EtBE		1.5
Ethanol		0.5

Retarded Velocity (ft/yr)

CoC	R	v_R
tBA	1.001	5.99
tAA	1.001	5.99
DIPE	1.002	5.99
tAME	1.002	5.99
EtBE	1.002	5.99
Ethanol	1.001	6.00

Simulation Points for Breakthrough Curves

x	0	ft
y	0	ft
z	0	ft

x	0	ft
y	0	ft
z	0	ft

$$C(x,y,z,t) = \left(\frac{C_0}{8}\right)\exp\left[\left(\frac{x}{2\alpha_x}\right)\left(1-\sqrt{1+\frac{4\lambda\alpha_x}{v}}\right)\right] erfc\left[\frac{x-vt\sqrt{1+\frac{4\lambda\alpha_x}{v}}}{2\sqrt{\alpha_x vt}}\right]\left\{erf\left[\frac{y+\frac{Y}{2}}{2\sqrt{\alpha_y x}}\right]-erf\left[\frac{y-\frac{Y}{2}}{2\sqrt{\alpha_y x}}\right]\right\}\left\{erf\left[\frac{z+Z}{2\sqrt{\alpha_z x}}\right]-erf\left[\frac{z-Z}{2\sqrt{\alpha_z x}}\right]\right\}$$

tAA Calibration

Spatial Calibration Data (centerline)

x	C_{obs} (mg/L)	C_{sim} (mg/L)
0	50.9	50.9
17.5		28.713
35		15.337
52.5		8.081
70		4.276
87.5		2.279
105		1.221
122.5		0.657
140		0.353
157.5		0.189
175	0.1	0.100

Temporal Calibration Data

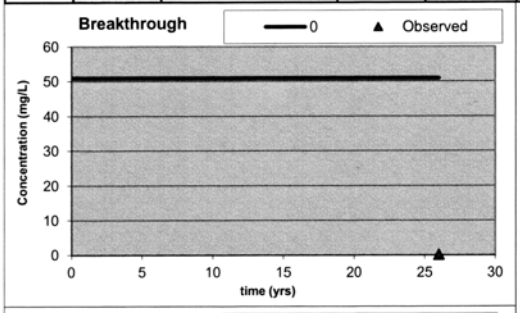
	0		0	
t (yrs)	C_{obs} (mg/L)	C_{sim} (mg/L)	C_{obs} (mg/L)	C_{sim} (mg/L)
0		50.9		50.9
2.6		50.900		50.900
5.2		50.900		50.900
7.8		50.900		50.900
10.4		50.900		50.900
13		50.900		50.900
15.6		50.900		50.900
18.2		50.900		50.900
20.8		50.900		50.900
23.4		50.900		50.900
26	0.16	50.900		50.900

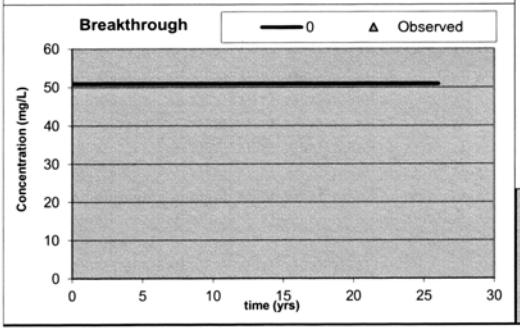
Site ID 04736

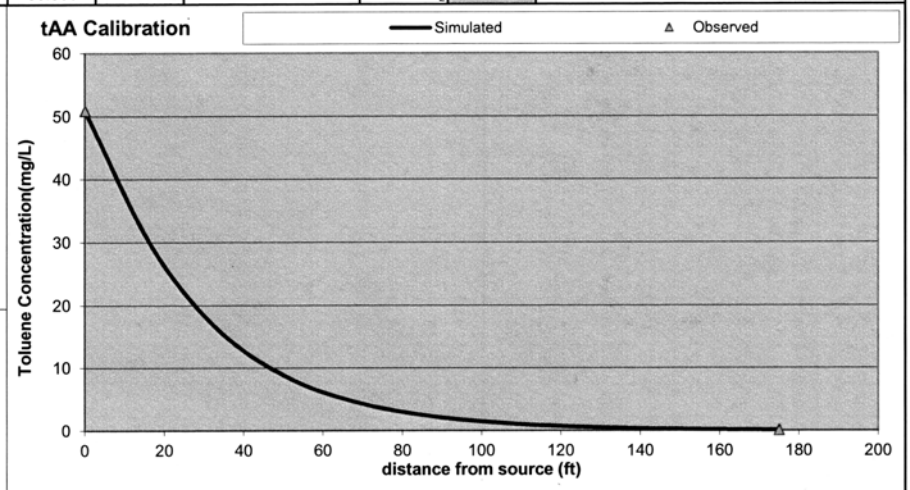
Site Name Stockman Oil

Model Calibration Parameters

$t_{1/2}$	2.723	yrs	λ	0.2545	yr^{-1}
v_x	6	ft/yr			
R	1.001				
v_R	5.992	ft/yr	C_{source}	50.9	mg/L
L_p	175	ft			
α_x	10.18299	ft	t_{sim}	26	yrs
α_y	1.018299	ft			
α_z	1E-99	ft			







Source	17.5	35	52.5	70	87.5	105	122.5	140	157.5	175
0	28.7125882	15.337004	8.0808036	4.2764155	2.27872458	1.2212087	0.656605	0.352915	0.188677	0.09968
0	28.7125882	15.337004	8.0808036	4.2764155	2.27872458	1.2212087	0.656605	0.352915	0.188677	0.09968
0	28.7125882	15.337004	8.0808036	4.2764155	2.27872458	1.2212087	0.656605	0.352915	0.188677	0.09968
0	28.7125882	15.337004	8.0808036	4.2764155	2.27872458	1.2212087	0.656605	0.352915	0.188677	0.09968
0	28.7125882	15.337004	8.0808036	4.2764155	2.27872458	1.2212087	0.656605	0.352915	0.188677	0.09968

DIPE Calibration

Spatial Calibration Data (centerline)

x	C_{obs} (mg/L)	C_{sim} (mg/L)
0	0.693	0.693
17.5		0.447
35		0.273
52.5		0.164
70		0.099
87.5		0.060
105		0.037
122.5		0.022
140		0.014
157.5		0.008
175	0.005	0.005

Temporal Calibration Data

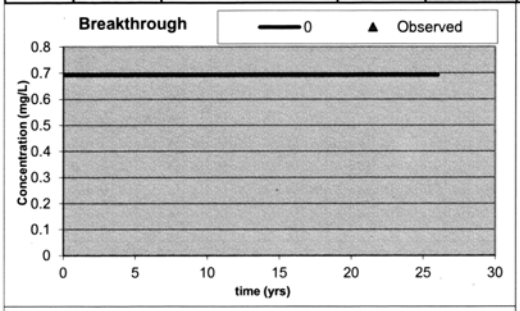
t (yrs)	C_{obs} (mg/L)	C_{sim} (mg/L)	C_{obs} (mg/L)	C_{sim} (mg/L)
	0		0	
0		0.693		0.693
2.6		0.693		0.693
5.2		0.693		0.693
7.8		0.693		0.693
10.4		0.693		0.693
13		0.693		0.693
15.6		0.693		0.693
18.2		0.693		0.693
20.8		0.693		0.693
23.4		0.693		0.693
26		0.693		0.693

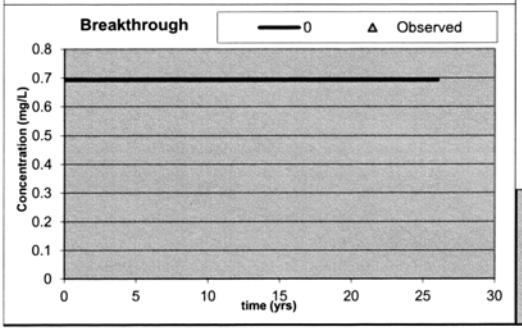
Site ID 04736

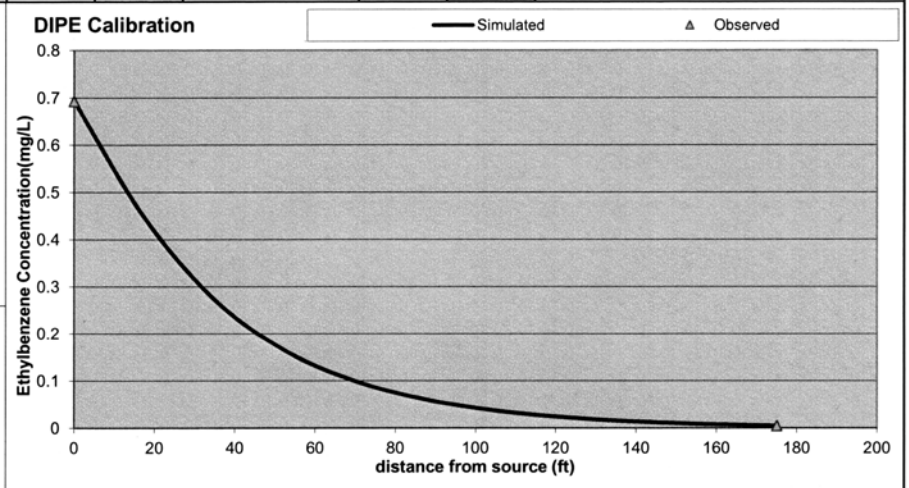
Site Name Stockman Oil

Model Calibration Parameters

$t_{1/2}$	3.8	yrs	λ	0.18237	yr^{-1}
v_x	6	ft/yr			
R	1.002				
v_R	5.989	ft/yr	C_{source}	0.693	mg/L
L_p	175	ft			
α_x	10.18299	ft	t_{sim}	26	yrs
α_y	1.018299	ft			
α_z	1E-99	ft			







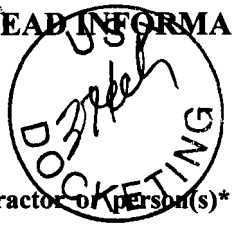
Source	17.5	35	52.5	70	87.5	105	122.5	140	157.5	175
0	0.44675851	0.27270657	0.16415859	0.09919683	0.06028164	0.0367556	0.022392	0.013551	0.008087	0.004718
0	0.44675851	0.27270657	0.16415859	0.09919683	0.06028164	0.0367556	0.022392	0.013551	0.008087	0.004718
0	0.44675851	0.27270657	0.16415859	0.09919683	0.06028164	0.0367556	0.022392	0.013551	0.008087	0.004718
0	0.44675851	0.27270657	0.16415859	0.09919683	0.06028164	0.0367556	0.022392	0.013551	0.008087	0.004718
0	0.44675851	0.27270657	0.16415859	0.09919683	0.06028164	0.0367556	0.022392	0.013551	0.008087	0.004718

UST Permit # 04736
Site Name: Stockman Oil

SSTLs t 1000 yrs

SSTLs in mg/L		RBSLs (mg/L):			0.240	0.150			
MW #	x (ft)	y (ft)	z (ft)		tAA SSTL	DIPE SSTL			
MW-1	370	0	0		80944.010	3003.282			
MW-3	220	0	0		528.368	61.598			
MW-4	350	0	0		41603.187	1798.182			
MW-5	410	0	0		>99999	8348.706			
MW-6	330	0	0		21354.956	1075.230			
MW-13	180	0	0		135.052	21.366			
RW-1	330	0	0		21354.956	1075.230			
RW-2	410	0	0		>99999	8348.706			
RW-3	370	0	0		80944.010	3003.282			
RW-4	270	0	0		2860.994	227.723			
			λ (yr^{-1}):		0.254	0.182			
			R:		1.001	1.002			

UNDERGROUND STORAGE TANK (UST) OWNER/OPERATOR LEAD INFORMATION SHEET



1. CONTRACTOR OF CHOICE

As the UST Owner/Operator of Facility ID # 04736, I would like to use the contractor or person(s)* listed below and request that they represent me for:

RECEIVED
JUL 20 2005
UNDERGROUND STORAGE TANK PROGRAM

- ☐ **Initial Ground-Water Assessment.**
- ☑ **All Future assessment scopes. ****

Name of Contractor/Person(s)	KLM Environmental, LLC Mark L. Keller, PG
Address	PO Box 2704., Goose Creek, SC 29445
Telephone	843-870-4285

Note: After September 20, 1997, rehabilitation activities must be performed by a SC Certified Site Rehabilitation Contractor.

*** indicate if the person listed is your own employee.**

**** if you would like the contractor to perform all future assessment activities at this and/or other UST sites that have confirmed releases, please provide a list of all sites on your letterhead and provide the information requested in items 2 and 3 below within the context of the letter.**

2. FINANCIAL OR FAMILIAL RELATIONSHIP

Does a financial or familial relationship, as defined below, exist between you and the contractor/person that you listed above? _____ Yes ___X___ No (please initial)

Financial Relationship: A connection or association through a material interest of sources of income which exceed five percent of annual gross income from a business entity.

Familial Relationship: A connection or association by family or relatives, in which a family member or relative has a material interest. Family or relatives include: father, mother, son, daughter, brother, sister, uncle, aunt fist cousin, nephew, niece, husband, wife, father-in-law, mother-in-law, son-in-low, daughter-in-law, stepfather, stepmother, stepson, stepdaughter, stepbrother, stepsister, half brother, half sister, grandparent, grandchild, great grandchild, step grandparent, step great grandparent, step grandchild, step great grandchild, or fiancée.

3. PAYMENT

The fist $25,000.00 in eligible site rehabilitation costs will be applied against the applicable SUPERB deductible, upon submittal of the cancelled check (front and back) or a notarized statement from the contractor verifying payment.

For eligible costs exceeding the $25,000.00 deductible, you can pay the contractor and, upon the submittal of the cancelled check (front and back) or a notarized statement from the contractor verifying payment, be compensated from the SUPERB Account, or have payment issued directly from the SUPERB Account to the contractor. (check one)

_____ For eligible costs exceeding the deductible, I request that payment be made to me after I have paid the contractor.

___✓___ For eligible costs exceeding the deductible, I request that payment be made directly to the contractor.

(Note: all costs must receive prior financial approval from the Department regardless of payment option.)

Underground Storage Tank Owner/Operator **Signature** _____

Date 7-13-05

D H E C
PROMOTE PROTECT PROSPER
2600 Bull Street
Columbia, SC 29201-1708

UNDERGROUND STORAGE TANK PROGRAM
BUREAU OF LAND AND WASTE MANAGEMENT

Phone (800) 826-5435 Fax (803) 896-6245

JUL 29 2002

PIERCE STOCKMAN
STOCKMAN OIL TWO INC
1138 REYNOLDS AVE
GREENWOOD SC 29649-2736

Re: Stockman Oil Two, Inc., 1138 Reynolds Ave., Greenwood, SC
UST Permit #04736
Tier I Assessment Report received July 23, 2002
Greenwood County

Dear Mr. Stockman:

Per the referenced report (see enclosure), chemicals of concern (i.e., benzene, toluene, ethylbenzene, and naphthalene) were found at levels above the established Risk-Based Screening Level. Therefore, the next scope deemed necessary by this office is a Tier II Assessment to determine the horizontal and vertical extent of the contamination and evaluate the risk it may pose to human health or the environment.

Based upon a review of the available data in the referenced facility's technical file, your site's priority classification is a 5A and does not pose an immediate or short-term risk to human health. Therefore, SUPERB funds cannot be made available for additional site investigative activities at this time. You will be informed when SUPERB funds become available for this site.

Should you wish to proceed with site rehabilitation activities at this time, you can fund those activities and seek reimbursement from the SUPERB Account when, and if, funds become available. If you elect this option, please submit a cost agreement for the proposed scope of work along with the Owner/Operator Information Sheet **within 30 days** from the date of this letter.

If this Office does not hear from you within 30 days, SCDHEC will procure the services of an environmental contractor on your behalf to perform assessment activities when SUPERB Funds become available. This is based on your permission form dated June 26, 2001.

Please note pre-approval from the Department must be issued before work can begin. On all correspondence concerning this site, please reference UST Permit Number. If there are any questions concerning this project, please contact me at (803) 896-6396 or (800) 826-5435 (within SC only).

Sincerely

John D. Abernathy, Hydrogeologist
State Lead & Field Services Section
Assessment and Corrective Action Division

Enc.: Tier I Assessment report
Owner/Operator Lead Information Sheet
Certified Contractors List

cc: Technical File (w/o enc.)

SCDHEC/SLFSS/UST/4736-tr2_opt/JDA/7.24.02

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2600 Bull Street
Columbia, SC 29201-1708

UNDERGROUND STORAGE TANK PROGRAM
BUREAU OF LAND AND WASTE MANAGEMENT

Phone (800) 826-5435 Fax (803) 896-6245

MR GREG FORCE
FORCE & ASSOCIATES
147 VERA RD STE A
LEXINGTON SC 29072

MAY 24 2002

Re: Tier I Assessment Directive
Bid #SB-13410-10/10/00-HW; PO#:292862
Notice to Proceed Northwest & Central Region

Dear Mr. Force:

Based on the award of the referenced bid package, enclosed is the information packet to conduct nine (9) Tier I Assessments. The packets contain all necessary approvals for work to begin. The facilities have been assigned individual Cost Agreement (CA) numbers as listed below. Please reference the CA number and Purchase Order #292849 on the appropriate invoice submitted for payment against the facility. Invoice forms are enclosed for your convenience. As specified in the referenced bid, **the completed invoice form and associated Tier I Assessment report (include contract certification number) is expected on or before the designated due date associated with the site (see below).**

UST Permit #	Facility	County	Release #	Report Due Date (days from the date of this letter)	CA#	CA Approval Amt.
14452	Former Zippy Mart	Anderson	1	60 days	15762:P	$5,484.00
00480	Pelzer Gasmart	Anderson	1	60 days	15760:P	$5,484.00
03117	Covar's Auto Service	Edgefield	1	60 days	16235:P	$5,333.00
04550	Jim Mason Exxon	Greenville	1	60 days	15725:P	$5,635.00
04736	Stockman Oil Two	Greenwood	1	60 days	15761:P	$5,484.00
04639	Callison's Store	Greenwood	1	60 days	15114:P	$5,484.00
05700	KMO 124	Laurens	1	60 days	15625:P	$5,515.00
10223	KMO 130	Laurens	1	60 days	15623:P	$5,333.00
13796	Jackson Corner Groc	Orangeburg	1	60 days	16131:P	$5,229.00

Force & Associates will perform services at the facilities on behalf of the facility's owner/operator (O/O); however, payment will be made from the SUPERB Account. The facility's O/O has no obligation for payment for this scope of work. **Please note, if there is any change in the established cost agreement amount (e.g., additional water supply wells sampled, additional well footage, etc.) contact the site's project manager for technical and/or financial approval.**

Failure to do so prior to submittal of invoice may result in delay of payment.

The Division grants pre-approval for transportation of drums of virgin petroleum contaminated soil and drums of groundwater from the referenced sites to a permitted treatment facility. The contaminated soil and/or groundwater must be properly stored in labeled 55-gallon drums or equivalent containers. The contaminated soil and/or groundwater must be accepted by the approved treatment facility. There can be no spillage or leakage in transport. A copy of the disposal manifest from the receiving facility that clearly designates the quantity received **must** be included as an appendix to the final report.

If you have any questions or need further assistance, please contact me at (800) 826-5435 (within SC only) or (803) 896-6397.

Sincerely,

Debra L. Thoma, Hydrogeologist
State Lead & Field Services Section
Assessment & Corrective Action Division

Enc.: Information Packets
Monitoring Well Approval Form
Approved Cost Agreement 15762, 15760, 16235, 15725, 15761, 15114, 15625, 15623, & 16131

cc: Robert Foster, 411 E Roosevelt Dr, Anderson, SC, 29624 **(UST Permit #14452)**
T.R. Fuller, PO Box 3255, Spartanburg, SC, 29304 **(UST Permit #00480)**
Blake Garrett, PO Box 36, Belton, SC, 29644 **(UST Permit #00480)**
Michael Covar, PO Box 8, Edgefield, SC, 29824 **(UST Permit #03117)**
Judith Laughter, PO Box 2527, Spartanburg, SC, 29304 **(UST Permit #04550)**
A.P. Stockman, 1138 Reynolds Ave, Greenwood, SC, 29649 **(UST Permit #04736)**
Talmadge Callison, 2719 County Farm Rd., Greenwood, SC, 29649 **(UST Permit #04639)**
Home Petroleum, 109 S. Sloan St., Clinton, SC, 29325 **(UST Permit #05700)**
Pete Overton, PO Box 2359, Gastonia, NC, 28053 **(UST Permit #10223)**
Ken Moorehead, 820 S Main St., Anderson, SC, 29624 **(UST Permit #05700 & #10223)**
H.S. Ghoman, PO Box 126, Rowesville, SC, 29133 **(UST Permit #13796)**
Technical File (9)
Read File

DHEC/UST/DLT/5.22.02/TIER I-FORCE

D · H E C

PROMOTE PROTECT PROSPER

2600 Bull Street
Columbia, SC 29201-1708

Monitoring Well Installa___ Approval Form

Date of Issue: May 22, 2002

Approval No.: UMW-16250

Approval is hereby granted to: Force & Associates
On behalf of:
Robert Foster, UST Permit #14452, Anderson County
Service Fuel Co, UST Permit #00480, Anderson County
Michael Covar, UST Permit #03117, Edgefield County
R.L. Jordan Oil Co., UST Permit #04550, Greenville County
Stockman Oil Co., UST Permit #04736, Greenwood County
Talmadge Callison, UST Permit #04639, Greenwood County
Home Petroleum Inc., UST Permit #05700, Laurens County
Acme Petroleum, UST Permit #10223, Laurens County
H.S. Ghoman, UST Permit #13796, Orangeburg County

This approval is for the construction of twenty-seven (27) permanent monitoring wells constructed in accordance with the South Carolina Well Standards and Regulations (R.61-71). The wells are to be completed within the uppermost aquifer for the intended purpose of monitoring ground-water quality and/or water level(s) at the referenced facility. Approval is provided with the following conditions:

1. The latitude and longitude, surveyed elevations, boring and/or geologist logs and actual (as built) construction details for each wells be submitted to Debra L. Thoma of the UST Program, Bureau Land & Waste Management within thirty (30) days of completion (of last well(s) installed).
2. Each well shall be labeled with an identification plate constructed of a durable material affixed to the casing or surface pad where it is readily visible. The plate shall provide monitoring well I.D.#, date of construction, static water level, and driller name and state certification #.
3. Well construction and sampling derived waste including, but not necessarily limited to, drill cuttings, drilling fluids, development, and purge water should be managed properly and in compliance with applicable requirements. If containerized, each vessel should be clearly labeled with regard to contents, source, and date of activity.
4. **A minimum of forty-eight (48) hours prior to initiation of drilling activities, please provide notice to Debra L. Thoma at (803) 896-6397 or thomadl@state.sc.us.**
5. Please provide ground-water quality analytical data (chemical analysis and/or water level(s)) and associated measurements (i.e., in-situ field measurements) to Debra L. Thoma of the UST Program, Bureau Land & Waste Management within thirty (30) days of receipt from the laboratory.
6. Monitoring wells shall be installed by a permanently licensed well driller certified by the State of South Carolina.

This approval is pursuant to the provisions of Section 44-55-40 of the 1976 South Carolina Code of Laws and the Department of Health and Environmental Control Regulations R.61-71. **Please remember to have a copy of this approval on the site during well installation.**

Approved by: Debra L. Thoma

Debra L. Thoma, Hydrogeologist
State Lead & Field Services Section
Assessment & Corrective Action Division
Underground Storage Tank Program
Bureau of Land & Waste Management

cc: Appalachia I District EQC
Appalachia II District EQC
Upper Savannah District EQC
Lower Savannah District EQC
Technical File (9)

DHEC
PROMOTE PROTECT PROSPER
2600 Bull Street
Columbia, SC 29201-1708

UNDERGROUND ST AGE TANK PROGRAM
BUREAU OF LAND AND WASTE MANAGEMENT

2600 Bull St., Columbia, SC 29201
Phone (800) 826-5435 Fax (803) 898-4330

Stockman Oil Two Company, Inc.
1138 Reynolds Ave.
Greenwood, SC 29649-2736

MAY 16 2001

Re: Stockman Oil Two Company, Inc.
UST Permit #04736
Release reported December 27, 1989
Greenwood County

To whom it may concern:

The Underground Storage Tank Program of the South Carolina Department of Health and Environmental Control (SCDHEC) has reviewed the file for the referenced facility and has determined that additional environmental assessment work will be necessary to determine what risk the release may pose to human health and the environment. The release is qualified to receive funds from the State Underground Petroleum Environmental Response Bank (SUPERB) Account under the conditions of the SUPERB Act.

Our records do not indicate that you have selected a contractor to perform assessment activities at this site. If you wish to select your own contractor, please check the appropriate box at the bottom of the enclosed copy of this letter and return it to my attention or call me within 10 days. All site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor. Should this be the manner you would like to proceed with, a form will be forwarded to you along with a list of SCDHEC certified environmental companies.

If you wish, the SCDHEC can directly procure the services of a site rehabilitation contractor on your behalf. If you would like more information on this method of implementing the necessary environmental assessment work, or if you prefer this option, please check the appropriate box at the bottom of the enclosed copy of this letter and return it to my attention or call me within 10 days. Additional forms will be forwarded to you if you select this option.

On all correspondence or inquiries regarding this project, please reference UST Permit #04736. If you have any questions, please contact me at (803) 898-4360 or (800) 826-5435 (within South Carolina only).

Sincerely,

John D. Abernathy, Hydrogeologist
State Lead and Field Services Section
Assessment and Corrective Action Division
Underground Storage Tank Program

enc: Copy of letter

cc: [redacted]

I choose to select my own environmental contractor. _____

I prefer for the UST Program to procure an environmental contractor on my behalf. _____

SCDHEC/SLFSS/UST/qnw/JDA/5.15.01

D H E C
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2600 Bull Street
Columbia, SC 29201-1708

BUREAU OF
UNDERGROUND STORAGE TANK MANAGEMENT

Phone (800) 826-5435 Fax (803) 734-3604

Stockman Oil
Attn: Scott Dublin
1138 Reynolds Avenue
Greenwood, SC 29649

NOV 17 1997

Re: Stockman Oil Two, Inc.
Site ID #04736, Release #1
Assessment Report received June 2, 1997
Availability of SUPERB Funding
Greenwood County

Dear Mr. Dublin:

The Bureau of Underground Storage Tank (UST) Management of the South Carolina Department of Health and Environmental Control (SCDHEC) has reviewed the referenced assessment report by Enviro-Test Services (see enclosure).

A receptor survey and installation of one monitoring well were conducted as part of the initial ground-water assessment. The results of the ground-water quality analysis indicate the concentration of Benzene, Naphthalene, and MTBE were above their Risk-Based Screening Levels (RBSL) and additional activities (i.e., Standard Limited Assessment) will be necessary.

Based on the available data, your site's priority classification is a 5B and does not pose an immediate or short term risk to human health. Therefore, SUPERB funds cannot be made available for additional site investigative activities at this time. You will be informed when SUPERB funds become available for this site.

Should you wish to proceed with site rehabilitation activities, you can fund the necessary activities and seek payment from the SUPERB Account when, and if, funds become available. The enclosed contract outlines the conditions upon which reimbursement can occur. A signed contract must be submitted in order to seek potential reimbursement. Please notify the Department of your intent (e.g., proceed with Contract or wait for available SUPERB funds) within **14 days** from the date of this letter. Approval from the Department must be issued before work can begin.

On all correspondence concerning this site, please reference Site ID #04736. If there are any questions concerning this project, please call H. Reed Corley at (803) 734-5430 or (800) 826-5435 (within SC only).

Sincerely,

State Lead and Field Services Section
Assessment and Corrective Action Division
Bureau of Underground Storage Tank Management

H. Reed Corley, Hydrogeologist

Christopher S. Doll, P.G., Manager

HRC/CSD/04736-01.con

enc: SUPERB Contract Form
Assessment Report

cc: Technical File

DHEC/UST/110797

D H E C
PROMOTE PROTECT PROSPER
2600 Bull Street
Columbia, SC 29201-1708

UNDERGROUND STORAGE TANK PROGRAM
BUREAU OF LAND AND WASTE MANAGEMENT

2600 Bull St., Columbia, SC 29201
Phone (800) 826-5435 Fax (803) 898-4330

JUN 1 2 2001

Stockman Oil Two Company, Inc.
1138 Reynolds Ave.
Greenwood, SC 29649-2736

RE: Stockman Oil Two Company, Inc.
UST Permit #04736
Correspondence received May 21, 2001
Greenwood County

To whom it may concern:

Based upon the referenced correspondence, you have elected to allow the South Carolina Department of Health and Environmental Control (SCDHEC) to procure the services of a site rehabilitation contractor on your behalf. The attached forms are necessary in order for the site rehabilitation contractor to gain access to the referenced property once rehabilitation activities are initiated. Enclosed you will find three Right-of-Entry forms. Please complete the appropriate form and return to my attention within 15 days of receipt of this correspondence.

If you have any questions, or need additional information, please contact me at (803) 898-4360, or 1-800-826-5435 (within SC only).

Sincerely,

John D. Abernathy, Hydrogeologist
State Lead and Field Services Section
Assessment and Corrective Action Division
Underground Storage Tank Program

Enc: Right of Entry Forms

Cc: Technical File (w/o enc.)

SCDHEC/SLFSS/UST/qnw_reply/JDA/6.11.01

PERMISSION FORM

UNDERGROUND STORAGE TANK AND PROPERTY OWNER

UST Permit # 04736

If you are the owner of the former or existing underground storage tanks and the property owner, please complete this form.

I, A.P. Stockman, certify that I am the legal owner of the underground storage tanks and property located at the facility identified below or serve as the authorized representative for the owner. I grant permission to the South Carolina Department of Health and Environmental Control (SCDHEC) to secure on my behalf contractor services to conduct assessment and corrective action activities as required, and authorize SCDHEC, or a contractor selected by SCDHEC, to enter this property at reasonable times only to accomplish these site rehabilitation tasks. The contractor(s) will be designated as my contractor for only the required site rehabilitation activities. Compensation to the contractor(s) will be from the SUPERB Account and I will have no obligation to pay the contractor(s). I understand that SCDHEC will be responsible for notifying me of all activities that are necessary prior to their initiation and will promptly provide to me a copy of each environmental report. I understand that I may choose to select my own contractor at the completion of any phase of work by notifying the Bureau of Underground Storage Tank Management in writing.

Name of Facility Stockman Oil Two, Inc. Phone # 864 223-8486

Street Address of Facility 1138 Reynolds Ave.

Town, City, District, Suburb Greenwood, SC 29649

Name of nearest intersecting street, road, highway, or alley

Reynolds Ave & Richard Street

Is this facility within the city limits? (yes or no) NO

Does a public water or sewer utility service this facility? (yes or no) Yes, if no, please provide the name and phone number of a person that we can contact that can assist in the location of private water and septic tank lines

Phone number

Were underground storage tanks previously removed from the ground at this facility? (yes or no) yes If yes, please provide the name of a person we can contact that can assist in the location of the former underground storage tank excavation Reece Stockman

Phone number 229-4311

Is the property currently leased or rented to someone? (yes or no) NO. If yes, please provide their name and phone number and let them know about the pending assessment activities. If vehicles or other mobile structures are parked over the former or existing underground storage tanks, they should be moved before SCDHEC's contractor gets to the site.

NAME of UST/property owner (Please Print): Stockman Oil Two, Inc.

Phone Number (home) (work) 864 223-8486

Signature of UST/property Owner: A.P. Stockman

Witness:

Date: 06 Month 26 Day 01 Year

PERMISSION FORM

UNDERGROUND STORAGE TANK AND PROPERTY OWNER

UST Permit # 04736

If you are the owner of the former or existing underground storage tanks and the property owner, please complete this form.

I, A.P. Stockman, certify that I am the legal owner of the underground storage tanks and property located at the facility identified below or serve as the authorized representative for the owner. I grant permission to the South Carolina Department of Health and Environmental Control (SCDHEC) to secure on my behalf contractor services to conduct assessment and corrective action activities as required, and authorize SCDHEC, or a contractor selected by SCDHEC, to enter this property at reasonable times only to accomplish these site rehabilitation tasks. The contractor(s) will be designated as my contractor for only the required site rehabilitation activities. Compensation to the contractor(s) will be from the SUPERB Account and I will have no obligation to pay the contractor(s). I understand that SCDHEC will be responsible for notifying me of all activities that are necessary prior to their initiation and will promptly provide to me a copy of each environmental report. I understand that I may choose to select my own contractor at the completion of any phase of work by notifying the Bureau of Underground Storage Tank Management in writing.

Name of Facility Stockman Oil Two, Inc. Phone # 864 223-8486

Street Address of Facility 1138 Reynolds Ave.

Town, City, District, Suburb Greenwood, SC 29649

Name of nearest intersecting street, road, highway, or alley

Reynolds Ave & Richard Street

Is this facility within the city limits? (yes or no) NO

Does a public water or sewer utility service this facility? (yes or no) Yes, if no, please provide the name and phone number of a person that we can contact that can assist in the location of private water and septic tank lines ___

Phone number ___

Were underground storage tanks previously removed from the ground at this facility? (yes or no) yes If yes, please provide the name of a person we can contact that can assist in the location of the former underground storage tank excavation Pierce Stockman

Phone number 229-4311

Is the property currently leased or rented to someone? (yes or no) NO. If yes, please provide their name ___ and phone number ___ and let them know about the pending assessment activities. If vehicles or other mobile structures are parked over the former or existing underground storage tanks, they should be moved before SCDHEC's contractor gets to the site.

NAME of UST/property owner (Please Print): Stockman Oil Two, Inc.

Phone Number (home) ___ (work) 864 223-8486

Signature of UST/property Owner: A.P. Stockman

Witness: [illegible]

Date: 06 Month 26 Day 01 Year

D H E C
PROMOTE PROTECT PROSPER
2600 Bull Street
Columbia, SC 29201-1708

UNDERGROUND ST .GE TANK PROGRAM
BUREAU OF LAND AND WASTE MANAGEMENT

2600 Bull St., Columbia, SC 29201
Phone (800) 826-5435 Fax (803) 898-4330

Stockman Oil Two Company, Inc.
1138 Reynolds Ave.
Greenwood, SC 29649-2736

MAY 16 2001

Re: Stockman Oil Two Company, Inc.
UST Permit #04736
Release reported December 27, 1989
Greenwood County

To whom it may concern:

The Underground Storage Tank Program of the South Carolina Department of Health and Environmental Control (SCDHEC) has reviewed the file for the referenced facility and has determined that additional environmental assessment work will be necessary to determine what risk the release may pose to human health and the environment. The release is qualified to receive funds from the State Underground Petroleum Environmental Response Bank (SUPERB) Account under the conditions of the SUPERB Act.

Our records do not indicate that you have selected a contractor to perform assessment activities at this site. If you wish to select your own contractor, please check the appropriate box at the bottom of the enclosed copy of this letter and return it to my attention or call me within 10 days. All site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor. Should this be the manner you would like to proceed with, a form will be forwarded to you along with a list of SCDHEC certified environmental companies.

If you wish, the SCDHEC can directly procure the services of a site rehabilitation contractor on your behalf. If you would like more information on this method of implementing the necessary environmental assessment work, or if you prefer this option, please check the appropriate box at the bottom of the enclosed copy of this letter and return it to my attention or call me within 10 days. Additional forms will be forwarded to you if you select this option.

On all correspondence or inquiries regarding this project, please reference UST Permit #04736. If you have any questions, please contact me at (803) 898-4360 or (800) 826-5435 (within South Carolina only).

Sincerely,

John D. Abernathy, Hydrogeologist
State Lead and Field Services Section
Assessment and Corrective Action Division
Underground Storage Tank Program

RECEIVED
MAY 21 2001
Underground Storage
Tank Program

enc: Copy of letter

cc: Technical File

I choose to select my own environmental contractor. _____

I prefer for the UST Program to procure an environmental contractor on my behalf. ✓

SCDHEC/SLFSS/UST/qnw/JDA/5.15.01

Stockman Oil

Dependable Service Since 1932

1138 REYNOLDS AVENUE
GREENWOOD, SC 29649

864-223-8486
800-868-7569
FAX NO:
864-223-2331

FAX COVER PAGE

RECEIVED
JUN 26 2001
Underground Storage Tank Program

To: JOHN ABERNATHY		From : SCOTT
Company : DHEC		Company : Stockman Oil
Fax Number : 803 898-4330	Number of pages : 04	For information Call: (864) 223 - 8486
Subject :		Fax Number : (864) 223 - 2331

SEE ATTACHED PERMISSION FORMS —

PLEASE call IF YOU HAVE QUESTIONS.

THANKS,

Scott
06/26/01
10:57 AM

Shell Castrol Mobil CITGO

ENVIRO-TEST SERVICES

DHEC

RECEIVED
JUN 0 2 1997
Bureau of Underground
Storage Tank Management

[SUPERB SITE RANKING]

IGWA

INITIAL GROUNDWATER ASSESSMENT

SITE # 04736

STOCKMAN
OIL TWO, INC.

GREENWOOD COUNTY, SC

PROJECT MANAGER: TERRY L. TEATE
SITE GEOLOGIST: ED LEACH

Environmental Laboratory & Drilling

7435 Broad River Road, Suite 105 • IRMO, South Carolina 29063 • (803) 732-5770 • FAX (803) 732-5714

ENVIRO-TEST SERVICES

DHEC FACILITY SITE # [04736] PUPS Ticket # [95631]

Facility Name: Stockman's Oil Two, Inc.

Facility Address: 1138 Reynolds Avenue

Town of: Greenwood, South Carolina County: Greenwood

[/Monitor Well Location]:
Latitude: 34 deg 12 . 412 Min-North
Longitude: 082 deg 08 . 949 Min-West

MW ID #: 1 [2" PVC (.010) Slot-Screen]
Construction Date: 4 / 24 / 97
Driller's Name: Terry L. Teate
State Certification ID #: 1242
Groundwater Level: 21 ft.- 2 tenths
Total Depth of Well: 29 ft.- 6 tenths
Interval Screened: 14.6 ft. (to) 29.6 ft.

<.....>Ground Level Surface Conditions: Asphalt, Concrete, Dirt, Other:

.....> 5 ft. Lithology SDCL-soft, mod. brown w/mod. yellow OVM 76 ppm
mottling, moist, abundant biotite, moderate gas odor
.....> 10 ft. Lithology SDCL-soft, mod. brown w/mod. yellow OVM 100 ppm
mottling, moist, abundant biotite, strong gas odor
.....> 15 ft. Lithology CL-soft, light yellowish-brown w/mod. OVM 112 ppm
red mottling, strong gas odor
.....> 20 ft. Lithology CL-soft, grayish-yellow, moist, mod. OVM 74 ppm
gas odor
.....> 25 ft. Lithology CL-soft, grayish-yellow, moist, strong OVM 101 ppm
gas odor
.....> 30 ft. Lithology SDCL-soft, grayish-yellow, wet, 20% OVM 8 ppm
fine sand, mild gas odor

***SOIL SAMPLES* Are Screened For Evidence Of Contamination Via Headspace Analysis, Utilizing An Organic Vapor Meter (OVM) With A Photoionization Detector (PID) Calibrated On Zero Air Then On 250 ppm Of Isobutylene.**

ENVIRO-TEST SERVICES

Underground Storage Tank Program, SUPERB-Funded Site Assessment

[INITIAL GROUNDWATER ASSESSMENT]

Facility ID # (SCDHEC SITE #): [04736] State of South Carolina

Facility Name: Stockman Oil Two, Inc.

Facility Address: 1138 Reynolds Avenue

Town of: Greenwood, South Carolina County: Greenwood

Owner/Authorized Representative: A. P. Stockman, III

Owner/Rep Address: 1138 Raynolds Avenue, Greenwood, South Carolina

Owner's Phone No.: Home (864) 223 - 4806 Work (864) 223 - 8486

Date Sampled: 5 / 06 / 97 Sampling Method: Teflon Bailer

Groundwater Level: 20 ft. 35 tenths Total-Depth of Well: 29 ft. 6 tenths

Free Product: [No X] [Yes] [Sheen] + Thickness [ft. tenths]

Field Parameters:

pH: 7 . 1 Temperature: 24 . 5 *c Conductivity: 095 u/S

Total Dissolved Solids: 30 ppm; Water Quality: Tan Odor: None

[GROUNDWATER ANALYTICAL DATA]

Benzene:	Toluene:	Ethylbenzene:	(Total) Xylenes:	(Total) BTEX:	(Total) Naphthalenes:
163 ug/L	164 ug/L	399 ug/L	2800 ug/L	3526 ug/L	302 ug/L

Receptor & Site Data: Survey Questions:

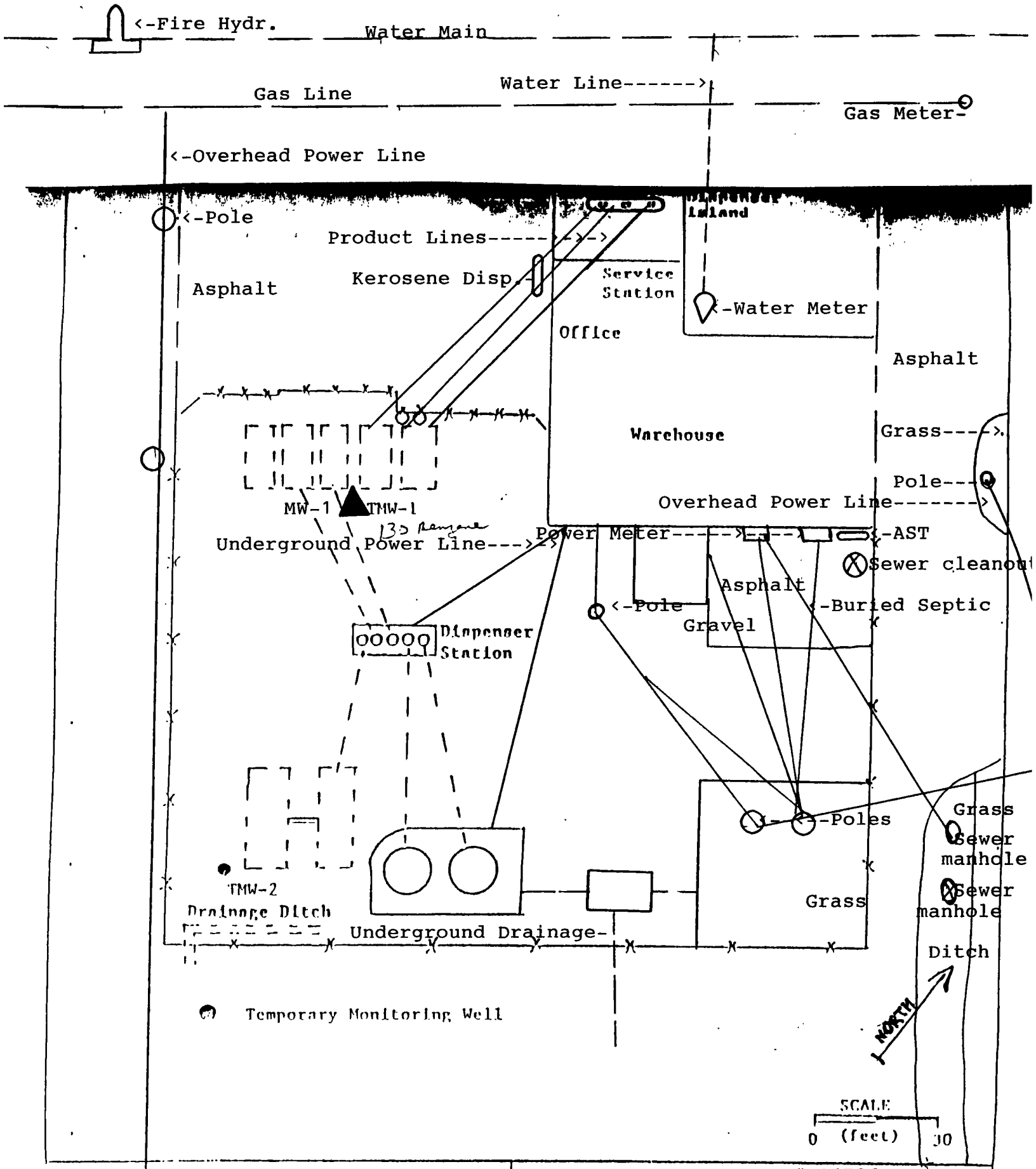
Is there a drinking water supply well [*pubic, private*], or surface water supply intake within 1,000 feet of the UST? [Yes] [No X]

Are Irrigation or other non-drinking water wells within 1,000 feet of the UST? [Yes] [No X]

Are there potential receptors [*Utilities, Surface Waters, Wetlands, Ditches*] less than 500 feet from the UST? [Yes X] [No]

If Yes, Provide Additional Information: Underground Power Line, Water Line, Sewer Line, Gas Line, Ditch, Underground drainage

Is the current use site and surrounding properties *Commercial, Residential, Agricultural, Industrial, or Other* ? (explain):


<-Fire Hydr.
Water Main
Gas Line
Water Line------>
Gas Meter-
<-Overhead Power Line
<-Pole
Product Lines------>
Asphalt
Kerosene Disp.
Service Station
<-Water Meter
Office
Asphalt
Warehouse
Grass--->
Pole--->
MW-1
TMW-1
Overhead Power Line------>
Underground Power Line--->
Power Meter--->
<-AST
Sewer cleanout
Asphalt
<-Pole
<-Buried Septic
Gravel
Dispenser Station
<-Poles
Grass
Sewer manhole
TMW-2
Drainage Ditch
Underground Drainage
Grass
Sewer manhole
Ditch
NORTH
Temporary Monitoring Well
SCALE
0 (feet) 30
= Monitor Well
·SCDHEC Site ID # 04736.
Stockman Oil Company Bulk Plant
1130 Reynolds Street
Greenwood, South Carolina

HYDROLOGIC, INC.

COMPANY NAME:	ENVIRO-TEST SERVICES
COMPANY PROJECT NUMBER:	DHEC #04736
HYDROLOGIC PROJECT NUMBER:	K9710418S
HYDROLOGIC SAMPLE NUMBER:	9710418
HYDROLOGIC LAB ID #:	70002
SAMPLE IDENTIFICATION:	MW-1
DATE SAMPLED:	05/06/97
DATE EXTRACTED:	N/A
DATE/TIME ANALYZED:	05/15/97

METHOD 602+MTBE+NAPHTHALENE

ANALYSIS	CAS NO.	SDL (ug/l)	RESULT (ug/l)
Benzene	**71-43-2**	**20**	**163**
Toluene	**108-88-3**	**20**	**164**
Ethylbenzene	**100-41-4**	**20**	**399**
Xylenes (Total)	**1330-20-7**	**20**	**2800**
MTBE		**100**	**297**
Naphthalene	**91-20-3**	**20**	**302**
Surrogate Recovery:			
BFB			99%

BDL = Below Sample Detection Limit
SDL = Sample Detection Limit

COMMENTS: COMPOUNDS WITH ELEVATED SDL ARE DUE TO A SAMPLE DILUTION.

1491 TWILIGHT TRAIL FRANKFORT, KY 40601
502-223-0251 FAX: 502-875-8016 / TOLL FREE 800-728-2251

HYDROLOGIC, INC.

COMPANY NAME:	ENVIRO-TEST SERVICES
COMPANY PROJECT NUMBER:	DHEC #04736
HYDROLOGIC PROJECT NUMBER:	K9710418S
HYDROLOGIC SAMPLE NUMBER:	9710418
HYDROLOGIC LAB ID #:	70002
SAMPLE IDENTIFICATION:	MW-1
DATE SAMPLED:	05/06/97
DATE EXTRACTED:	05/13/97
DATE/TIME ANALYZED:	05/25/97

METHOD PAH-610

ANALYSIS	CAS NO.	SDL (ug/l)	RESULT (ug/l)
Benzo(a)anthracene	56-55-3	10.0	BDL
Benzo(b)fluoranthene	205-99-2	10.0	BDL
Benzo(k)fluoranthene	207-08-9	10.0	BDL
Chrysene	218-01-9	10.0	BDL
Dibenzo(a,h)anthracene	53-70-3	10.0	BDL
Surrogate Recovery:			
p-Terphenyl			62%

BDL = Below Sample Detection Limit
SDL = Sample Detection Limit

COMMENTS: _____

1491 TWILIGHT TRAIL FRANKFORT, KY 40601
502-223-0251 FAX: 502-875-8016 / TOLL FREE 800-728-2251

MAY-28-1997 06:49 HYDROLOGIC-KY. P.004/004

Chain of Custody Record

HYDROLOGIC, INC.

(4)

Page 1 of 1

☐ 122 Lyman Street, Asheville, NC 28801, (704)254-5169, FAX (704) 252-9711
☐ 1412 Oakbrook Drive #105, Norcross, Georgia 30093, (770) 368-0636, FAX (770) 368-0806
☐ 1491 Twilight Trail, Frankfort, KY 40601, (502) 223-0251, FAX (502) 875-8016
☐ 2003 North Pine Street, Lumberton, NC 28358, (910) 738-6190, FAX (910) 671-8837
☐ I-85 S Bldg. 2848, Charlotte, NC 28208, (704) 392-1164, FAX (704) 392-9073
☐ 2500 Gateway Centre, Morrisville, NC 27560, (919) 380-9699, FAX (919) 380-9717
☐ 4875 Riverside Drive, Macon, GA 31210, (912) 757-0811, FAX (912) 757-0149
☐ 695 N Seventh Ave, Brighton, CO. 80601, (303) 659-0497, FAX (303) 659-5064

Client: Enviro-Test Services
Project No.: DHEC #04732
Report Address: 7435 Broad River Rd, Suite 105
Invoice Address: SAME
Attn: Irmo, SC 29063
Attn: W. Bussie
Phone No.: (803) 732-5770
Sampled By: T. Martin
Fax No.: (803) 732-5714
P.O. No:
State Samples Collected: SC

TURNAROUND TIME
☐ 24 Hours ☐ 48 Hours
☐ 5 Days ☐ 10 Days Date Needed:

REQUESTED PARAMETERS

602-BTEX MTBE Naph
610-5 PAH's

LAB CODE I.D.
A = Asheville, NC
C = Charlotte, NC
D = Denver, CO
G = Macon, GA
K = Frankfort, KY
L = Lumberton, NC
M = Morrisville, NC
N = Norcross
S = Subcontracted

K9710412(S)

Sample ID	Date	Time	Comp/Grab	Matrix	Containers	602-BTEX MTBE Naph	610-5 PAH's								← Preserv.	REMARKS
MW-1	5/6/97	1620	Grab	GW	2-40 1-1000	X	X									Handy Pantry #91
																Hwy 25, By Pass + Emerald R
																Greenwood, SC
																Greenwood County
																DHEC - 04732

Lab Use Only: Custody Seal: ☐ Yes ☐ No ☐ N/A

K K

Rec. Initial Temp: Rec. Initial Temp:

COMMENTS: Rec 1-1L(g) unpres./2-40ml(g) HCL

403 0962 703

Relinquished By:	Date	Time	Received By:	Date	Time	Lab Use Only:
T. Martin	5/8/97	345	[signature]	5/8	345	
[signature]	5/8		S.W. Baker	5/8/97	17:00	
S.W. Baker	5/9/97	16:30	Sonia L Estes	5/10/97	10:00	

Stockman Oil

1138 REYNOLDS AVENUE
GREENWOOD, SC 29649

PHONE 803-223-8486
1-800-868-7569
FAX 803-223-2331

IGWA

Mobil
AUTOMOTIVE — INDUSTRIAL LUBRICANTS

12/19/96

TO: Reed Corley
FR: Scott Dublin
RE: Site ID # 04736

As per our phone conversation, we are requesting funding option # 2.

Please procure the services for the Ground-Water Assessment and let us know how we may be of service.

Sincerely,

Scott R. Dublin
Operations Manager

RECEIVED
DEC 23 1996
Bureau of Underground
Storage Tank Management

PERMISSION FORM - SITE ID #04736

If you are the owner of the former or existing underground storage tanks and the property owner, please complete this form.

I, A.P. Stockman III, certify that I am the legal owner of the underground storage tanks and property located at the facility identified below or serve as the authorized representative for the owner. I grant permission to the South Carolina Department of Health and Environmental Control (SCDHEC) to secure on my behalf services of a contractor for only the activities outlined in the _____ letter and authorize SCDHEC, or a contractor selected by SCDHEC, to enter this property at reasonable times only to accomplish these tasks. The contractor will be designated as my contractor for only the site rehabilitation activities outlined therein. Compensation to the contractor will be from the SUPERB Account and I will have no obligation to pay the contractor. I understand that SCDHEC shall be responsible for notifying me of all activities that are necessary prior to their initiation and shall promptly provide to me a summary of the data upon request.

Name of Facility Stockman Oil Two, Inc. Phone # 864 223-8486

Street Address of Facility 1138 Reynolds Ave.

Town, City, District, Suburb Greenwood, S.C. 29646

Name of nearest intersecting street, road, highway, alley
Sullivan Street

Is this facility within the city limits? (yes or no) NO

Is this facility serviced by a public water or sewer utility? (yes or no) YES, if no, please provide the name and phone number of a person that we can contact that can assist in the location of private water and septic tank lines _____, phone number _____

Were underground storage tanks previously removed from the ground at this facility? (yes or no) YES, if yes, please provide the name of a person we can contact that can assist in the location of the former underground storage tank excavation AP Stockman, Phone number 864 223-8486

Is the property currently leased or rented to someone? (yes or no) NO, if yes, please provide their name _____ and phone number _____ and let them know about the pending assessment activities. If vehicles or other mobile structures are parked over the former or existing underground storage tanks, they should be moved before SCDHEC's contractor gets to the site.

NAME of UST/property owner (Please Print): A.P. Stockman III

PhoneNumber(home) 864 223-4806 (work) 864 223-8486

Signature of UST/property Owner: A.P. Stockman

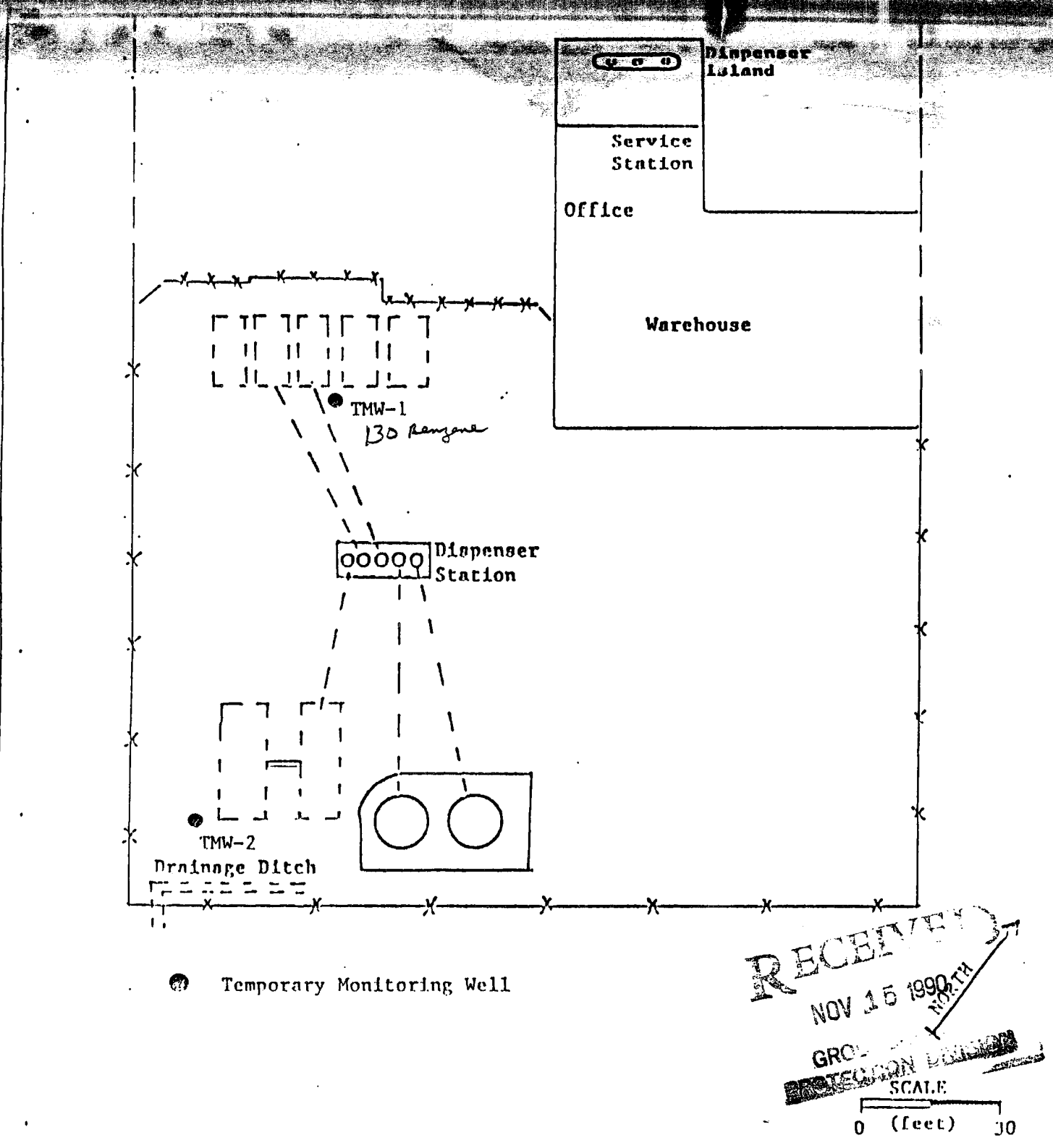
Witness: [illegible]

Date: 12 Month 19 Day 96 Year

EEC
ENVIRONMENTAL ENGINEERING COMPANY, INC.
P. O. Box 11047 Columbia, SC 29211
(803) 256-7046

FIGURE 1: Site Vicinity Map

Stockman Oil Company Bulk Plant
1138 Reynolds Street
Greenwood, South Carolina
REF: SCDHPT County Map System
(1 inch = 2 miles)



RECEIVED
NOV 15 1990
GROUNDWATER PROTECTION DIVISION

EEC
ENVIRONMENTAL ENGINEERING COMPANY, INC.
P. O. Box 11047 Columbia, SC 29211
(803) 256-7046

Figure 1: Site Facility Map

Stockman Oil Company Bulk Plant
1138 Reynolds Street
Greenwood, South Carolina

November 13, 1990; JDK

EEC, INC.
500 RIVERMONT DR.
COLUMBIA, SC 29211
ATTN: DON DUNCAN

EEC, INC.
NOV - 6 1990
DISTR.

DATE RECEIVED: 9/24/90
DATE REPORTED: 10/23/90
REFERENCE NO. 9012153

PROJECT NAME: STOCKMAN OIL

SAMPLE DESCRIPTION: STOCKMAN TMW-1
BENZENE - 130 UG/~~KG~~ L
TOLUENE - 54 UG/~~KG~~ L
ETHYLBENZENE - 62 UG/~~KG~~ L
XYLENE - 360 UG/~~KG~~ L

4/8/91
Called lab about UG/KG. According to their records, sample was water + should be UG/L. Will send corrected lab report
JCooper

SAMPLE DESCRIPTION: STOCKMAN TMW-2

EPA 610	UNITS, UG/L	QUALIFIER
ACENAPHTHENE	10	U
ACENAPHTHYLENE	10	U
ANTHRACENE	10	U
BENZO(A)ANTHRACENE	10	U
BENZO(A)PYRENE	10	U
BENZO(B)FLUORANTHENE	10	U
BENZO(G,H,I)PERYLENE	10	U
BENZO(K)FLUORANTHENE	10	U
CHRYSENE	10	U
DIBENZO(A,H)ANTHRACENE	10	U
FLUORANTHENE	10	U
FLUORENE	10	U
INDENO(1,2,3-CD)PYRENE	10	U
NAPHTHALENE	10	U
PHENANTHRENE	10	U
PYRENE	10	U

APPROVED BY: _____ 10/29/90
LEWIS FREDERICK
LABORATORY DIRECTOR

South Carolina
DHEC
Department of Health and Environmental Control
2600 Bull Street, Columbia, SC 29201-1708

Commissioner: Douglas E. Bryant

Board: John H. Burriss, Chairman
William M. Hull, Jr., MD, Vice Chairman
Roger Leaks, Jr., Secretary
Richard E. Jabbour, DDS
Cyndi C. Mosteller
Brian K. Smith
Rodney L. Grandy

Promoting Health, Protecting the Environment

Stockman Oil Two, Inc.
Attn: A. P. Stockman III
1138 Reynolds Avenue
Greenwood, SC 29646

Re: Stockman Oil Two, Inc.
Site ID #04736
Availability of SUPERB Funding
Greenwood County

Dear Mr. Stockman:

Currently, the release reported December 27, 1989, at the referenced site has a priority classification of 5B. Therefore, SUPERB funds are available, or will soon be available, to implement the next necessary scope of work. The scope of work to be implemented is completion of the Initial Ground-Water Assessment (see enclosure).

As the Owner or Operator of the Underground Storage Tanks (USTs) for this site, you have two funding options for proceeding with implementation of the scope of work indicated above:

Funding Option 1

You or your contractor can receive direct billing from the fund at the SUPERB allowable costs. The SUPERB allowable cost for the necessary scope of work is **$1,100.00**. If you need assistance in finding a contractor, please let us know and we will provide you with a list of companies for you to contact. If you wish to proceed under this option and you do not require assistance, please complete and return the enclosed information sheet within 10 days in order for the necessary technical and financial approvals to be issued.

Funding Option 2

The SCDHEC will directly procure the services of an environmental contractor on your behalf. All activities will be directed and coordinated by SCDHEC and you will be informed of the results. If you wish to use this option, please complete the enclosed Right-Of-Entry form(s). Completed Right-Of-Entry forms are needed from both the underground storage tank and property owners. If you own the underground storage tank but do not own the property, please provide a copy of the appropriate form to the property owner and return the completed forms **within 10 days of receipt of this letter**.

DHEC/UST/120696

recycled paper

On all correspondence regarding this site, please reference Site ID #04736. Please be sure to include the requested information (i.e., the information sheet or right-of-entry(ies) within 10 days of receipt) so that the appropriate approvals can be issued. **Note: approval from the Department must be issued before work begins.** Please feel free to call H. Reed Corley at (803) 734-5430 if you have questions or need additional information.

Sincerely,

State Lead and Field Services Section
Assessment and Corrective Action Division
Bureau of Underground Storage Tank Management

H. Reed Corley, Hydrogeologist

Christopher S. Doll, P.G., Manager

HRC/CSD/04736-01.IGW

enc: UST Owner/Operator Information Sheet
Right-Of-Entry/Permission Forms (3)
Initial Ground-Water Assessment Document

cc: Technical File

DHEC/UST/120696

Reed Corley

South Carolina
DHEC
Department of Health and Environmental Control
2600 Bull Street, Columbia, SC 29201
803-734-5000

MEMO

Date: 12/14/93

GWPD # 04736
Greenwood County
CBM Environmental
Jim Davidson

Talked to above individual about site. Told him that soil and groundwater samples were sufficiently old and low as not to warrant any action at this time. Maybe in six months if cost proposals go back on line, we will sample again to NFA the site

Olivier Jones

1A-442 (2/93)

PHASE I SOIL & GROUND-WATER ASSESSMENT PLAN

Stockman Oil Company Bulk Plant
1138 Reynolds Street
Greenwood, South Carolina

Prepared for

Stockman Oil Company, Inc.
1138 Reynolds Street
Greenwood, South Carolina
29646

Prepared by

Environmental Engineering Company, Inc.
500 Rivermont Road
Post Office Box 11847
Columbia, South Carolina

July 30, 1990

RECEIVED
AUG 03 1990
GROUND-WATER
PROTECTION DIVISION
Copy To District
10/29/92

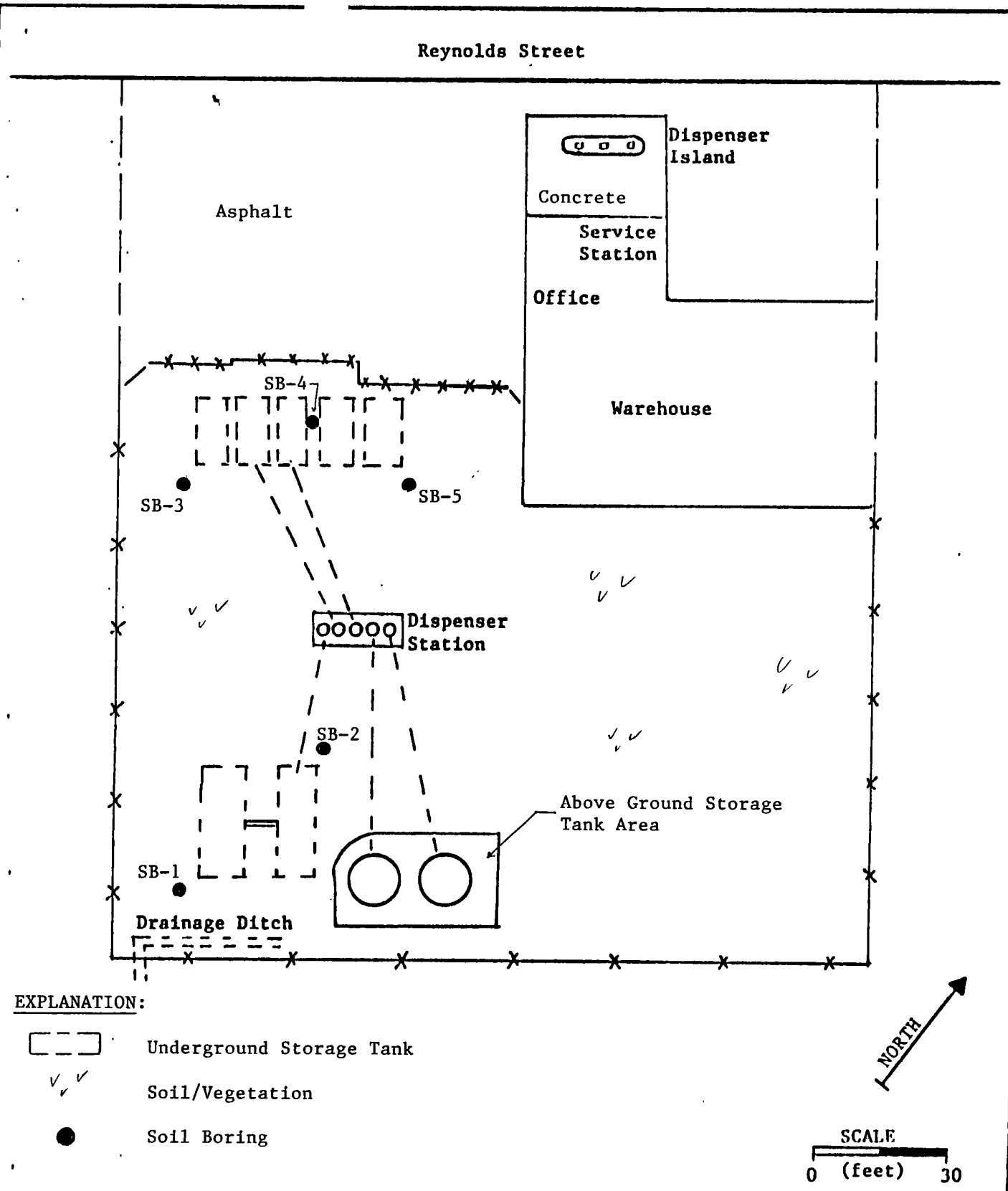
2.0 PREVIOUS INVESTIGATION

2.1 PRELIMINARY INVESTIGATION

A preliminary investigation was performed at the Stockman Oil Company, Inc. bulk storage facility on December 9, 1989 by Environmental Engineering Company, Inc. of Columbia, South Carolina. The investigation consisted of the drilling five soil borings at the facility and the collection of a soil sample from the bottom of each bore hole. The following sections describe the preliminary investigative activities.

2.2 SOIL BORINGS

Five soil borings (SB-1 through SB-2) were drilled adjacent to the underground storage tanks located at the facility. The locations of the soil borings are illustrated in Figure 3. Soil boring SB-1 was drilled adjacent to the 15,000-gallon tank formerly utilized for storage of hydraulic oil, and SB-2 was drilled adjacent to the 15,000-gallon tank currently utilized for diesel storage. These to soil borings extended in depth to 14 feet. Soil boring SB-3 was drilled adjacent to the 6,000-gallon tank formerly utilized for storage of gear oil and extended in depth to 11 ft. below ground surface. Soil boring SB-4 was drilled between the 6,000-gallon tank currently containing unleaded plus gasoline and the 6,000-gallon tank formerly containing motor oil. This soil boring (SB-4) also extended in depth to 11 feet. Soil boring SB-5 was drilled adjacent to the



EEC
ENVIRONMENTAL ENGINEERING COMPANY, INC.
P. O. Box 11047 Columbia, SC 29211
(803) 256-7046

FIGURE 3: Soil Boring Locations; Preliminary Site Assessment
Stockman Oil Company Bulk Plant
1138 Reynolds Street
Greenwood, South Carolina

July 31, 1990; JDK

other 6,000-gallon tank formerly containing motor oil and extended in depth to 14 feet below ground surface.

2.3 SOIL SAMPLING AND ANALYSIS

A soil sample was collected from the bottom of each soil boring following completion of drilling. The soil samples were placed in laboratory prepared sampling bottles. Chain-of-custody records were maintained during transportation to the laboratory. The chain-of custody records were retained on file subsequent to laboratory analysis. Laboratory analysis was performed by Environmental Analytics, Inc. of Lexington, South Carolina. The soil samples from soil borings SB-1 and SB-2 were analyzed for total petroleum hydrocarbons (TPH). The soil samples from soil borings SB-3, SB-4, and SB-5 were analyzed for parameters of benzene, toluene, ethylbenzene, and xylenes (BTEX). The laboratory data sheet listing the analytical results for each sample is included in Appendix 2. The analytical results are summarized in Table 1. The analytical results from the soil sampling and analysis indicated that soils in the vicinity of the underground gasoline storage tanks at the site have been impacted with petroleum contamination.

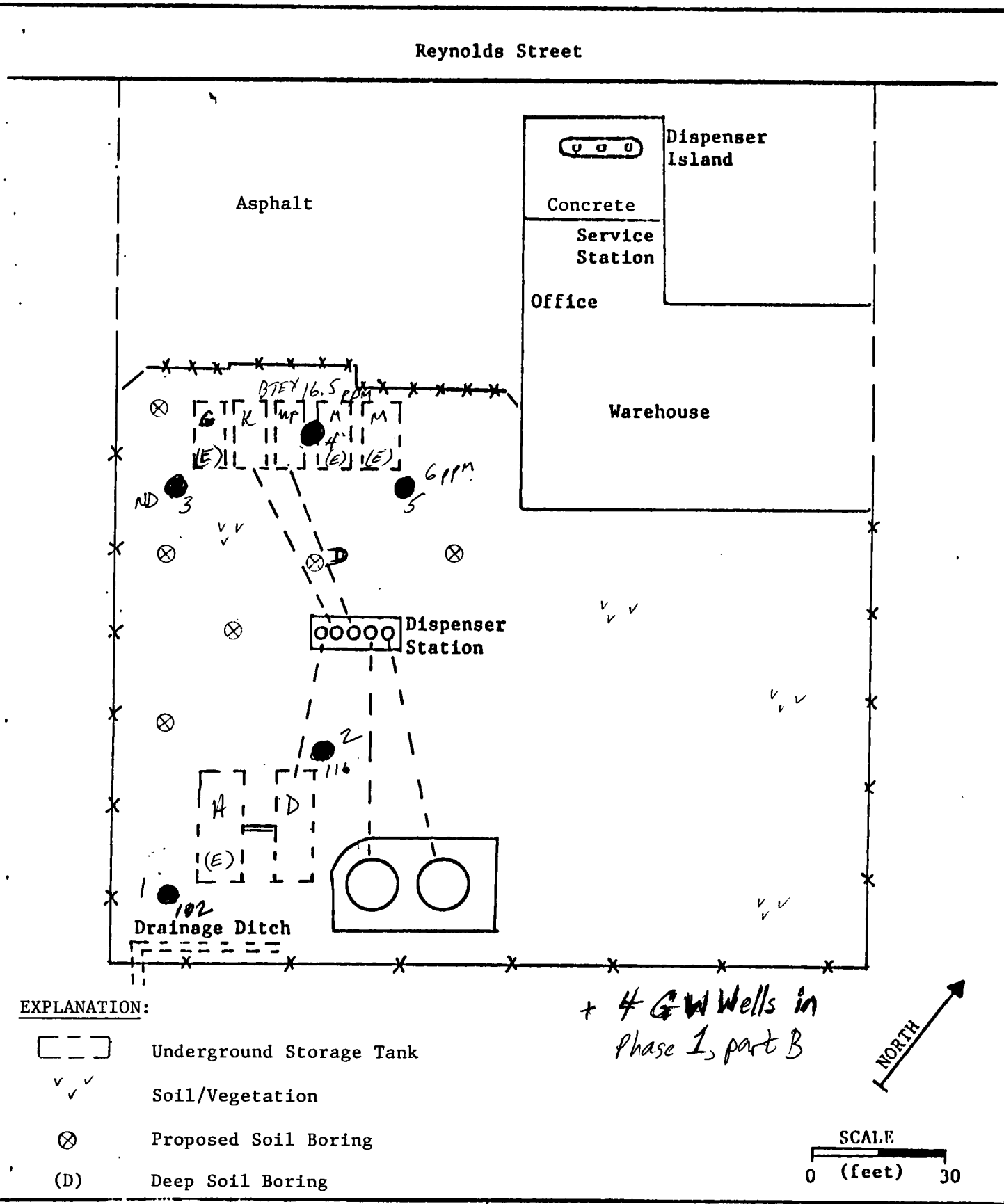
TABLE 1

LABORATORY ANALYTICAL DATA
Stockman Oil Company Bulk Plant
1138 Reynolds Street
Greenwood, South Carolina
July 31, 1990

Sampling Event: **December 9, 1989**

WELL NUMBER	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES	TPH
SB-1	-	-	-	-	102
SB-2	-	-	-	-	116
SB-3	ND	ND	ND	ND	-
SB-4	58	26	2,300	14,000	-
SB-5	ND	4	570	5,500	-

NOTE:
1. "ND" denotes non-detection.
2. Parameters of BTEX are in ug/l.
3. Parameter of TPH is in mg/l.
4. "-" denotes parameter not tested for.



EEC
ENVIRONMENTAL ENGINEERING COMPANY, INC.
P. O. Box 11047 Columbia, SC 29211
(803) 256-7046

FIGURE 4: Proposed Soil Boring Locations

Stockman Oil Company Bulk Plant
1138 Reynolds Street
Greenwood, South Carolina

July 31, 1990; JDK

EA Services

EEC, INC.

500 RIVERMONT DR.
COLUMBIA SC 29210
ATTN:

Description: 5 Samples Received on 12/11/89

Sampled By: CLIENT Client Job/PO Number:

Reference Number: 8829283 Reported Date : 12/18/89
Invoice Number:

Sample	Description	Client Id
0001	SO-SB-1	EEC, INC.
0002	SO-SB-2	EEC, INC.
0003	SO-SB-3	EEC, INC.
0004	SO-SB-4	EEC, INC.
0005	SO-SB-5 .	EEC, INC.

PARAMETER		SAMPLE NUMBER 0001	0002	0003	0004	0005
BENZENE	UG/KG			5*	58	25*
ETHYL BENZENE	UG/KG			5*	2300	570
TOLUENE	UG/KG			5*	26	4
TOTAL REC. PETROLEUM HYDROCARBON	PPB	** 01 **	** 02 **			
XYLENES	UG/KG			5*	14000	5500

FOOTNOTES

** 01 ** 102.0 MG/KG ** 02 ** 116.0 MG/KG

*ANALYZED FOR BUT NOT DETECTED

APPROVED BY:
Lewis Frederick
Laboratory Director

Lab Certification #32112

200 Rich Lex Court • Lexington, S.C. 29072 • (803) 796-9231 • FAX: 796-1602

HT 1349-3016

SUPERB APPROVAL CHECKLIST

SITE NAME Stedman Oil Company ID # 04736

FREE PRODUCT REPORTED? YES NO NOT REPORTED

SOIL (Determined on a case by case basis)

TPH	B	T	E	X	Total	LEAD (Total)
116 ppm						

WATER (Based upon Drinking Water MCL's)

TPH >10 ppm	B >5ppb	T 1000	E 700	X 10000	Total BTEX	LEAD (Total) 50

CONTAMINATION REPORTED (ANALYTICAL) (DATE) 12/27/89

- [X] Prior to SUPERB Bill Amnesty (Before Jan 1, 1988)
- [ ] GRACE PERIOD WITH NO DEDUCTIBLE (JAN 1, 1988 TO DEC 31, 1989)
- [ ] AFTER GRACE PERIOD, $100K DEDUCTIBLE (JAN 1, 1990 TO MAY 8, 1990)
- [ ] AFTER GRACE PERIOD, $ 25K DEDUCTIBLE (MAY 9, 1990 TO JUN 31, 1991)
- [ ] GRACE PERIOD WITH NO DEDUCTIBLE (JUL 1, 1991 TO JUN 30, 1993)
- [ ] AFTER GRACE PERIOD, $ 25K DEDUCTIBLE (JUL 1, 1993)

Rehabilitation costs incurred prior to December 31, 1987 are not eligible for reimbursement.

Rehabilitation costs incurred during the deductable periods are not reimburseable unless the costs are in excess of the deductable.

EXCLUSIONS FROM PARTICIPATION 44-2-110

___ 1) If SCDHEC initiated administrative or civil enforcement action prior to December 31, 1987.

___ 2) If SCDHEC has been denied site access.

SUPERB APPROVAL SUMMARY

	Y	N	
A)	X		CONTAMINATION REQUIRING REMEDIATION CONFIRMED?
B)	X		WRITTEN REQUEST FOR SUPERB (DATE) 12/27/89
C)	X		ALL TANKS REGISTERED? (Full ID #) ~~EN-24-NO-04236~~
			Tanks/Site must be registered before funds are disbursed.
D)	✓		FEES PAID TO DATE? ✓88-89 ___89-90 ___90-91 ✓91-92 ___92-93 ___93-94
			Appropriate fees must be paid before funds are disbursed.
E)		✓	SPILL INSURANCE? COMPANY
F)		✓	POLICY REC'D? DEDUCTIBLE $ ___ LIMIT $ ___
G)	✓		WRITTEN STATEMENT OF NO INSURANCE (Letter Dated 8/21/90)

SUPERB APPROVED (DATE) 3/4/93 BY

SUP-APP6 930108

9/15/91 - tanks removed

11/96

South Carolina
DHEC
Department of Health and Environmental Control
2600 Bull Street, Columbia, SC 29201

Interim Commissioner: Thomas E. Brown, Jr.

Board: John H. Burriss, Chairman
Richard E. Jabbour, DDS, Vice Chairman
Robert J. Stripling, Jr. Secretary

William E. Applegate, III,
Toney Graham, Jr., MD
Sandra J. Molander
John B. Pate, MD

Promoting Health, Protecting the Environment

March 4, 1993

RECEIVED
JUN 01 1993
Groundwater Protection
Division

Mr. A. Pierce Stockman
Stockman Oil Company
1138 Reynolds Street
Greenwood, S.C. 29648

RECEIVED MAR - 9 1993

Re: Stockman Oil Company (Bulk Plant)
GWPD Site ID #04736
SUPERB Qualification
Greenwood County

Dear Mr. Stockman:

The Ground-Water Protection Division of the South Carolina Department of Health and Environmental Control (SCDHEC) has reviewed your request for participation in the State Underground Petroleum Environmental Response Bank Act of 1988 (SUPERB). None of the exclusions listed in Section 44-2-110 and -130 apply to the site, however, Section 44-2-60 states that "the owner or operator shall pay to the department...an annual renewal fee of one hundred dollars a tank a year". Our records indicate that back fees are owed for fiscal years 1992 and 1993. These fees were requested in invoices QI44767-2 (1992-$500.00) and QI53344-8 (1993-$500.00). Before the use of SUPERB funds for site rehabilitation is approved, back tank registration fees must be paid.

If the tanks in question have been abandoned, or are no longer in operation, this office has yet to receive a closure report enabling us to update our tracking system. A closure report is required by Section 280.72 of the South Carolina Underground Storage Tank Control Regulations (SCUSTCR) which states that "owners and operators must measure for the presence of a release...." This closure report should be submitted to my attention on or before March 26, 1993.

On all correspondence concerning this site, please reference **GWPD Site ID #04736.** If you have any questions please feel free to call me at (803) 734-5602.

Sincerely,

James E. White

Jim White, Hydrogeologist
UST Corrective Action Section
Ground-Water Protection Division
Bureau of Drinking Water Protection

STOCKOIL.393

CC: CR, KC, SM, TY, ___, FILE

recycled paper

Stockman Oil

1138 REYNOLDS AVENUE
GREENWOOD, SC 29646

PHONE 803-223-8486

RECEIVED MAR 10 1993

Mobil
AUTOMOTIVE — INDUSTRIAL LUBRICANTS

March 9, 1993

Mr. Jim White
SC DHEC
2600 Bull Street
Columbia, SC 29201

Re: Stockman Oil
GWPD Site ID 04736
Superb Qualification
Greenwood County

Dear Mr. White,

Thank you for your letter of March 4, 1993, explaining qualifications for Superb Fund. The reason I deducted $500 the last two years from our renewal fees was we had removed five (5) of our tanks. We have not been able to retrieve our copy of "Notification for Underground Storage Tanks no longer in Operation," however, I am sure I completed one in late 1991 and mailed it. I have attempted to reconstruct this notification, and it is enclosed, along with some documents that you may need.

The process of determining extent of contamination was started by Environmental Engineering Company in December 1989. Since that time, Duncan Environmental has corresponded with you on our behalf; but now we have selected CBM Environmental Services to act in our behalf regarding reimbursement for expenses from the Superb Fund.

Yours truly,

Pierce Stockman

APS/pjm

South Carolina Department of Health and Environmental Control
Columbia, South Carolina 29201

SCDHEC

Notification for Underground Storage Tanks No Longer in Operation

Tanks taken out of operation after January 1, 1974, but still in the ground.

1. Name and address of the facility
Stockman Oil Two, Inc
1138 Reynolds
Greenwood, S.C. 29649

2. Business mailing address of facility, if different from location address

3. Owner of tank (*name, business address, and phone number*)
Stockman Oil Two, Inc
1138 Reynolds
Greenwood, S.C. 29649
803-223-8486

4. Contact person for the facility (*Name and phone number*)
A. Pierce Stockman
803-223-8486

pe of owner (*Mark "X" in appropriate box*)
☒ Non-Federal ☐ Federal (*Give GSA #*)

6. For State Use Only

Complete the following section(s) to the best of your knowledge using the examples provided as guidance. Check appropriate boxes and fill in blanks where applicable. If you need more space, photocopy this page or use a continuation sheet.

7. Tanks taken out of use after January 1, 1974, but still in the ground.

a. Tank No.	b. Date of last use		c. Age when last used (yrs)					d. Total capacity (gal.)	e. Material of construction			f. Internal protection		g. External protection				g. Substance left stored, if any					Estimate quantity (gal.)
																		Hazardous substance name and/or Chemical Abstract Service (CAS) # if known.	Petroleum products				
	Month	Year	0-5	6-10	11-15	16-20	20+		Steel	Fiberglass reinforced plastic	Other (*specify*)	Lined	Unlined	Coated	Wrapped	Cathodic protection	Other (*specify*)		Gasoline	Diesel	Kerosene	Other (*specify*)	
Example	6	75			X			8,000	TP				X	X					X				120
1	9	90					X	6000	TP													gear oil	-0-
2	9	90					X	6000	TP												X	Kerosene	-0-
3	9	90					X	6000	TP										X			gasoline	-0-
4	8	91					X	15000	TP											X			50
5	8	91					X	15000	TP													hydraulic	50
6																							
7																							
8																							
9																							

8. Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

a. Name and Official Title of Owner or Owner's Authorized Representative (*Type or print*)

b. Signature A Pierce Stockman

c. Date signed 3-9-93 *

*originally signed 10-91

DHEC Exp. # 16 (6/85)

Pierce Stockman

Stockman Oil

Mobil
AUTOMOTIVE — INDUSTRIAL LUBRICANTS

1138 REYNOLDS AVENUE
GREENWOOD, SC 29646

PHONE 803-223-8486
1-800-868-7569
FAX 803-223-2331

November 7, 1989

Mr. Guy Tumblin
South Carolina Department Health & Environment
P-129 One Park Avenue
Greenwood, S.C. 29649

Dear Guy,

After much study, we have decided to remove our underground tanks. We have (5) 6000 gallon and (2) 15,000 gallon tanks underground. Our plans are to install (8) 6000 above ground tanks, beginning as soon as we can obtain delivery, transfer the product, then remove the underground tanks.

The purpose of this letter is to obtain your permission to remove the tanks, weather permitting.

Thank you for your cooperation.

Sincerely,

STOCKMAN OIL COMPANY

Pierce Stockman

PS/bs

Tumblin, Guy
Brooks, Lee
DuPre, Billy
Jackson, Robert
Latham, Debra
Massey, Reggie
Simpson, Mike

RECEIVED
NOV 0 9 1989
Upper Savannah District
Environmental Quality Control

942 7852

Environmental Engineering Company, Inc. Post Office Box 11847 Columbia, SC 29211 (803) 256-7846

Don Duncan Associates 731-6083

December 19, 1989

A. Pierce Stockman
Stockman Oil Company
1138 Reynolds Street
Greenwood, South Carolina 29646

Re: Laboratory Results-Soil Samples
Stockman Oil Company Bulk Plant

Dear Mr. Stockman:

Please find enclosed the laboratory results for the five soil samples collected from the soil borings made by Environmental Engineering Company, Inc. on December 9, 1989.

The analytical results for the samples indicate contamination of soil from all samples with the exception of boring no. 3. A copy of the laboratory analytical results are enclosed. The more significant contamination was from soil borings 4 and 5 near the gasoline tanks.

Environmental Engineering Company, Inc. recommends that you submit this information along with a copy of the laboratory results to the Ground Water Protection Division of the South Carolina Department of Health and Environmental Control. In your letter of transmittal to DHEC, you should ask for their technical review and comments for these laboratory results, and for their recommendations and/or future actions that Stockman Oil Company should take with respect to this matter.

Additionally, you should also notify DHEC in your letter that should any cleanup or corrective action be required at this location, that you are by this notice applying for coverage under the Superb Act.

Also as per your request I am enclosing an invoice for the professional services provided by Environmental Engineering Company, Inc.

If you have any questions regarding this matter or if I can be of further service to you and Stockman Oil Company, please do not hesitate to call.

Yours very truly,

ENVIRONMENTAL ENGINEERING COMPANY, INC.

Donald A. Duncan, P.G.
Manager of Geological Services

DAD/gfn

Enclosure

If you have any questions, please feel free to call at (803)734-4672.

Sincerely,

Robert Devlin

Robert Devlin, Hydrogeologist
Underground Storage Tank Section
Ground-Water Protection Division
Bureau of Drinking Water Protection

cc: Billy DuPre, Upper Savannah District EQC
Stan Clark, Trust Section

South Carolina
DHEC
Department of Health and Environmental Control
2600 Bull Street, Columbia, SC 29201

Commissioner: Michael D. Jarrett

Board: John B. Pate, MD, Chairman
William E. Applegate, III, Vice Chairman
John H. Burriss, Secretary

Toney Graham, Jr., MD
Richard E. Jabbour, DDS
Henry S. Jordan, MD
Currie B. Spivey, Jr.

Promoting Health, Protecting the Environment

August 10, 1990

A. Pierce Stockman
Stockman Oil Co.
1138 Reynolds St.
Greenwood, SC 29648

Re: Stockman Oil Bulk Plant
July 30, 1990 Assessment Plan
Number N-24-NO-04236
PCAS # 7315

Dear Mr. Stockman:

The Ground-Water Protection Division (GWPD) of the S. C. Department of Health and Environmental Control (SCDHEC) has reviewed the July 30, 1990 submittal prepared by Environmental Engineering Company for the referenced facility. The submittal is the soil and/or ground-water assessment plan requested by the Department in response to the December 27, 1989 assessment that indicated a release of a regulated substance had occurred at the referenced facility.

In accordance with the South Carolina Underground Storage Tank Control Regulations, Part 280, Subpart F, you are required to take necessary abatement actions to stop any leak (280.61). This may entail emptying the tanks or you may provide the results of tank and line tests, performed since the leak, indicating that none of the tanks or lines are currently leaking. The results of the tank and line tests or information on the emptying of the tanks should be submitted to this office by September 26, 1990.

The July 30, 1990 plan prepared by Environmental Engineering Company has been reviewed. The six soil borings proposed in the referenced plan do not address the vertical extent of the areas previously identified as contaminated. The analysis proposed in the plan for soil samples include benzene, toluene, ethylbenzene and xylene (BTEX) and total petroleum hydrocarbons (TPH) as appropriate. Since the contents of some of the tanks (gear oil, motor oil, and hydraulic fluid) are not as volatile as gasoline the Department recommends sampling the worst case well from each area using EPA Method 625.

recycled paper

Stockman Oil

Mobil
AUTOMOTIVE — INDUSTRIAL LUBRICANTS

1138 REYNOLDS AVENUE
GREENWOOD, SC 29646

PHONE 803-223-8486

November 27, 1990

Mr. Robert Devlin
SC DHEC
2600 Bull Street
Columbia, SC 29201

Dear Mr. Devlin,

We would like to update our tank registration information with DHEC. Currently you have (5) 6000 gallon tanks and (2) 15000 gallon tanks registered at our address in Greenwood, S.C.

1. We have removed (3) 6000 gallon tanks from the ground along with any contaminated soil and all associated piping.

2. As for the (2) remaining 6000 gallon tanks:
    1. They were lined with fiberglass by Subcon, Inc.
    2. All piping replaced with steel, coated pipes
    3. They were retro-fitted with sacrificial anodes
    4. The submergible pumps were fitted with leak detectors
    5. Monitoring wells were installed

3. The (2) 15000 gallon tanks are in the process of being de-activated for removal

This site had some ground water contamination and we have requested Superb funds for remediation.

Pierce Stockman

APS/pjm

DUNCAN ENVIRONMENTAL ASSOCIATES, INC.

1750 Holly Hill Drive West Columbia, S C 29169 (803) 731-6083

October 14, 1991

Mr. A. Pierce Stockman
Stockman Oil Company, Inc.
1138 Reynolds Street
Greenwood, S.C. 29646

Subject: Soil Sample Analytical Results
Stockman Oil Company
Greenwood, S.C.

Dear Mr. Stockman:

Please find enclosed a copy of the analytical results for Total Petroleum Hydrocarbons (TPH), EPA Method 3550 as diesel, for the three soil samples collected by Stockman Oil Company personnel and delivered to my office for analysis.

Please note that the laboratory analytical results for TPH for the three soil samples were all less than the parts per million (mg/kg) detection limit of 5.0 as indicated on the enclosed analytical report.

Also please find enclosed, an invoice for the professional services provided by Duncan Environmental Associates, Inc. If you have any question, comment, require any additional information, or if Duncan Environmental Associates, Inc. can be of further service, please do not hesitate to contact me at 731-6083.

Yours very truly,

DUNCAN ENVIRONMENTAL ASSOCIATES, INC.

Donald A. Duncan, P. G. President

Enclosures
DAD/lj/101.006
stockman.doc

SHEAL NVIRONMENTAL SERVIC INC.
OGISTS, TOXICOLOGISTS & CHEMISTS

400 GRAYMONT AVENUE
COLUMBIA, SOUTH CAROLINA 29205
(803) 254-9915

SC DHEC CERTIFICATION NO. 26103
NC DEM NO. 001
Fax (803) 254-9107

CERTIFICATE OF ANALYSIS

Client: DUNCAN ENVIRONMENTAL ASSOCIATES, INC.
1750 Holly Hill Drive
West Columbia, SC 29169

Project Name: Stockman Oil Co.

Attention: Mr. Donald Duncan

Laboratory I.D.	Sample Description
91-8832	Sample #1; Collected 09/10/91 at 1400
91-8833	Sample #2; Collected 09/10/91 at 1405
91-8834	Sample #3; Collected 09/10/91 at 1415

Date Received: 09/17/91
Date Reported: 10/08/91
Date Revised: 10/11/91

QA/QC Officer MAW

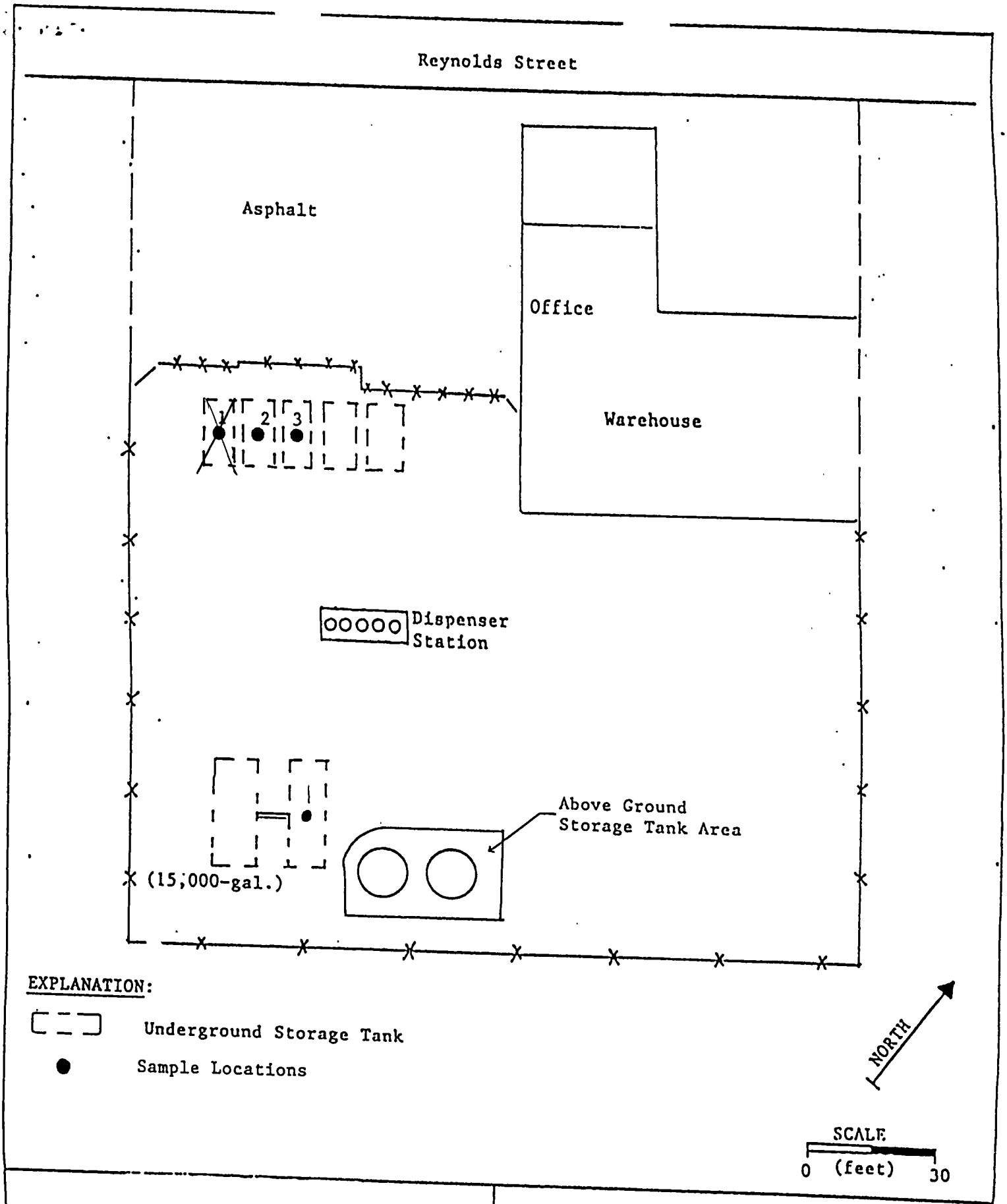
Results

Parameter	Units	91-8832	91-8833	91-8834	Analyst	Date Analyzed
TPH-Method 3550 as diesel	mg/kg	*<5.0	<5.0	*<5.0	MAW/MDE	10/01/91

*Low level late eluting hydrocarbons present.

Reported By: Michael A. Woodrum, Laboratory Director

MAW/rbh



Stockman Oil Company Bulk Plant
1138 Reynolds Street
Greenwood, South Carolina

ENVIRONMENTAL SERVICES

May 26, 1993

RECEIVED
JUN 01 1993
Groundwater Protection
Division

Jim White
SCDHEC
2600 Bull Street
Columbia, South Carolina 29201

Re: Stockman Oil Company
GWPD #04736

Dear Jim:

Enclosed is the information that you requested concerning the Closure Report for the referenced site.

Thank you for taking the time to review this information and for responding quickly.

If you have any questions please call.

Sincerely,

Amy Pugh
Environmental Services Coordinator

AP/alp
Enclosure
cc: File

RECEIVED
MAY 28 1993
BUREAU OF
QUALITY CONTROL

Stockman Oil

Mobil
AUTOMOTIVE — INDUSTRIAL LUBRICANTS

1138 REYNOLDS AVENUE
GREENWOOD, SC 29646

PHONE 803-223-8486

March 9, 1993

Mr. Jim White
SC DHEC
2600 Bull Street
Columbia, SC 29201

Re: Stockman Oil
GWPD Site ID 04736
Superb Qualification
Greenwood County

Dear Mr. White,

Thank you for your letter of March 4,1993, explaining qualifications for Superb Fund. The reason I deducted $500 the last two years from our renewal fees was we had removed five (5) of our tanks. We have not been able to retrieve our copy of "Notification for Underground Storage Tanks no longer in Operation," however, I am sure I completed one in late 1991 and mailed it. I have attempted to reconstruct this notification, and it is enclosed, along with some documents that you may need.

The process of determining extent of contamination was started by Environmental Engineering Company in December 1989. Since that time, Duncan Environmental has corresponded with you on our behalf; but now we have selected CBM Environmental Services to act in our behalf regarding reimbursement for expenses from the Superb Fund.

Yours truly,

Pierce Stockman

APS/pjm

RECEIVED
MAR 10 1993
BUREAU OF AIR
QUALITY CONTROL

SCDHEC

South Carolina Department of Health and Environmental Control
Columbia, South Carolina 29201

Notification for Underground Storage Tanks No Longer in Operation

Tanks taken out of operation after January 1, 1974, but still in the ground.

1. Name and address of the facility	2. Business mailing address of facility, if different from location address	3. Owner of tank (*name, business address, and phone number*)	4. Contact person for the facility (*Name and phone number*)
Stockman Oil Two, Inc 1138 Reynolds Greenwood, S.C. 29649		Stockman Oil Two, Inc 1138 Reynolds Greenwood, S.C. 29649 803-223-8486	A. Peice Stockman 803-223-8486

5. Type of owner (*Mark "X" in appropriate box*)

☒ Non-Federal ☐ Federal (*Give GSA #*)

6. For State Use Only

Complete the following section(s) to the best of your knowledge using the examples provided as guidance. Check appropriate boxes and fill in blanks where applicable. If you need more space, photocopy this page or use a continuation sheet.

7. Tanks taken out of use after January 1, 1974, but still in the ground.

a. Tank No.	b. Date of last use		c. Age when last used (yrs)					d. Total capacity (gal.)	e. Material of construction			f. Internal protection		g. External protection				g. Substance left stored, if any					Estimate quantity (gal.)
	Month	Year	0-5	6-10	11-15	16-20	20+		Steel	Fiberglass reinforced plastic	Other (*specify*)	Lined	Unlined	Coated	Wrapped	Cathodic protection	Other (*specify*)	Hazardous substance name and/or Chemical Abstract Service (CAS) # if known.	Petroleum products: Gasoline	Diesel	Kerosene	Other (*specify*)	
Example	6	75			X			8,000	TP				X	X					X				120
1	9	90					X	6000	TP													gear oil	-0
2	9	90					X	6000	TP												X	Kerosene	-0-
3	9	90					X	6000	TP										X			gasoline	-0-
4	8	91					X	15000	TP											X			50
5	8	91					X	15000	TP													Hydraulic	50
6																							
7																							
8																							
9																							

8. Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

a. Name and Official Title of Owner or Owner's Authorized Representative (*Type or print*)

b. Signature A Peice Stockman

c. Date signed 3-9-93 *

*Originally signed 10-91

DHEC Exp. # 16 (6/85)

Pierce Stockman

Stockman Oil

Mobil
AUTOMOTIVE — INDUSTRIAL LUBRICANTS

1138 REYNOLDS AVENUE
GREENWOOD, SC 29646

PHONE 803-223-8486
1-800-868-7569
FAX 803-223-2331

November 7, 1989

Mr. Guy Tumblin
South Carolina Department Health & Environment
P-129 One Park Avenue
Greenwood, S.C. 29649

Dear Guy,

After much study, we have decided to remove our underground tanks. We have (5) 6000 gallon and (2) 15,000 gallon tanks underground. Our plans are to install (8) 6000 above ground tanks, beginning as soon as we can obtain delivery, transfer the product, then remove the underground tanks.

The purpose of this letter is to obtain your permission to remove the tanks, weather permitting.

Thank you for your cooperation.

Sincerely,

STOCKMAN OIL COMPANY

Pierce Stockman

Pierce Stockman

PS/bs

Tumblin, Guy
Brooks, Lee
DuPre, Billy
Jackson, Robert
Latham, Debra
Massey, Reggie
Simpson, Mike

RECEIVED
NOV 0 9 1989
Upper Savannah District
Environmental Quality Control

942 7852

Environmental Engineering Company, Inc. Post Office Box 11847 Columbia, SC 29211 (803) 256-7846

Don Duncan Associates 731-6083

December 19, 1989

A. Pierce Stockman
Stockman Oil Company
1138 Reynolds Street
Greenwood, South Carolina 29646

Re: Laboratory Results-Soil Samples
Stockman Oil Company Bulk Plant

Dear Mr. Stockman:

Please find enclosed the laboratory results for the five soil samples collected from the soil borings made by Environmental Engineering Company, Inc. on December 9, 1989.

The analytical results for the samples indicate contamination of soil from all samples with the exception of boring no. 3. A copy of the laboratory analytical results are enclosed. The more significant contamination was from soil borings 4 and 5 near the gasoline tanks.

Environmental Engineering Company, Inc. recommends that you submit this information along with a copy of the laboratory results to the Ground Water Protection Division of the South Carolina Department of Health and Environmental Control. In your letter of transmittal to DHEC, you should ask for their technical review and comments for these laboratory results, and for their recommendations and/or future actions that Stockman Oil Company should take with respect to this matter.

Additionally, you should also notify DHEC in your letter that should any cleanup or corrective action be required at this location, that you are by this notice applying for coverage under the Superb Act.

Also as per your request I am enclosing an invoice for the professional services provided by Environmental Engineering Company, Inc.

If you have any questions regarding this matter or if I can be of further service to you and Stockman Oil Company, please do not hesitate to call.

Yours very truly,

ENVIRONMENTAL ENGINEERING COMPANY, INC.

Donald A. Duncan, P.G.
Manager of Geological Services

DAD/gfn

Enclosure

South Carolina
DHEC
Department of Health and Environmental Control
2600 Bull Street, Columbia, SC 29201

Commissioner: Michael D. Jarrett

Board: John B. Pate, MD, Chairman
William E. Applegate, III, Vice Chairman
John H. Burriss, Secretary
Toney Graham, Jr., MD
Richard E. Jabbour, DDS
Henry S. Jordan, MD
Currie B. Spivey, Jr.

Promoting Health, Protecting the Environment

August 10, 1990

A. Pierce Stockman
Stockman Oil Co.
1138 Reynolds St.
Greenwood, SC 29648

Re: Stockman Oil Bulk Plant
July 30, 1990 Assessment Plan
Number N-24-NO-04236
PCAS # 7315

Dear Mr. Stockman:

The Ground-Water Protection Division (GWPD) of the S. C. Department of Health and Environmental Control (SCDHEC) has reviewed the July 30, 1990 submittal prepared by Environmental Engineering Company for the referenced facility. The submittal is the soil and/or ground-water assessment plan requested by the Department in response to the December 27, 1989 assessment that indicated a release of a regulated substance had occurred at the referenced facility.

In accordance with the South Carolina Underground Storage Tank Control Regulations, Part 280, Subpart F, you are required to take necessary abatement actions to stop any leak (280.61). This may entail emptying the tanks or you may provide the results of tank and line tests, performed since the leak, indicating that none of the tanks or lines are currently leaking. The results of the tank and line tests or information on the emptying of the tanks should be submitted to this office by September 26, 1990.

The July 30, 1990 plan prepared by Environmental Engineering Company has been reviewed. The six soil borings proposed in the referenced plan do not address the vertical extent of the areas previously identified as contaminated. The analysis proposed in the plan for soil samples include benzene, toluene, ethylbenzene and xylene (BTEX) and total petroleum hydrocarbons (TPH) as appropriate. Since the contents of some of the tanks (gear oil, motor oil, and hydraulic fluid) are not as volatile as gasoline the Department recommends sampling the worst case well from each area using EPA Method 625.

recycled paper

If you have any questions, please feel free to call at (803)734-4672.

Sincerely,

Robert Devlin

Robert Devlin, Hydrogeologist
Underground Storage Tank Section
Ground-Water Protection Division
Bureau of Drinking Water Protection

cc: Billy DuPre, Upper Savannah District EQC
Stan Clark, Trust Section

Stockman Oil

Mobil
AUTOMOTIVE — INDUSTRIAL LUBRICANTS

1138 REYNOLDS AVENUE
GREENWOOD, SC 29646

PHONE 803-223-8486

November 27, 1990

Mr. Robert Devlin
SC DHEC
2600 Bull Street
Columbia, SC 29201

Dear Mr. Devlin,

We would like to update our tank registration information with DHEC. Currently you have (5) 6000 gallon tanks and (2) 15000 gallon tanks registered at our address in Greenwood, S.C.

1. We have removed (3) 6000 gallon tanks from the ground along with any contaminated soil and all associated piping.

2. As for the (2) remaining 6000 gallon tanks:
    1. They were lined with fiberglass by Subcon, Inc.
    2. All piping replaced with steel, coated pipes
    3. They were retro-fitted with sacrificial anodes
    4. The submergible pumps were fitted with leak detectors
    5. Monitoring wells were installed

3. The (2) 15000 gallon tanks are in the process of being de-activated for removal

This site had some ground water contamination and we have requested Superb funds for remediation.

Pierce Stockman

APS/pjm

DUNCAN ENVIRONMENTAL ASSOCIATES, INC.

1750 Holly Hill Drive West Columbia, SC 29169 (803) 731-6083

October 14, 1991

Mr. A. Pierce Stockman
Stockman Oil Company, Inc.
1138 Reynolds Street
Greenwood, S.C. 29646

Subject: Soil Sample Analytical Results
Stockman Oil Company
Greenwood, S.C.

Dear Mr. Stockman:

Please find enclosed a copy of the analytical results for Total Petroleum Hydrocarbons (TPH), EPA Method 3550 as diesel, for the three soil samples collected by Stockman Oil Company personnel and delivered to my office for analysis.

Please note that the laboratory analytical results for TPH for the three soil samples were all less than the parts per million (mg/kg) detection limit of 5.0 as indicated on the enclosed analytical report.

Also please find enclosed, an invoice for the professional services provided by Duncan Environmental Associates, Inc. If you have any question, comment, require any additional information, or if Duncan Environmental Associates, Inc. can be of further service, please do not hesitate to contact me at 731-6083.

Yours very truly,

DUNCAN ENVIRONMENTAL ASSOCIATES, INC.

Donald A. Duncan, P. G. President

Enclosures
DAD/lj/101.006
stockman.doc

SHEA ENVIRONMENTAL SERVI__S, INC.

BIOLOGISTS, TOXICOLOGISTS & CHEMISTS

400 GRAYMONT AVENUE
COLUMBIA, SOUTH CAROLINA 29205
(803) 254-9915

SC DHEC CERTIFICATION NO. 26103
NC DEM NO. 001
Fax (803) 254-9107

CERTIFICATE OF ANALYSIS

Client: DUNCAN ENVIRONMENTAL ASSOCIATES, INC.
1750 Holly Hill Drive
West Columbia, SC 29169

Project Name: Stockman Oil Co.

Attention: Mr. Donald Duncan

Laboratory I.D.	Sample Description
91-8832	Sample #1; Collected 09/10/91 at 1400
91-8833	Sample #2; Collected 09/10/91 at 1405
91-8834	Sample #3; Collected 09/10/91 at 1415

Date Received: 09/17/91
Date Reported: 10/08/91
Date Revised: 10/11/91

QA/QC Officer

Results

Parameter	Units	91-8832	91-8833	91-8834	Analyst	Date Analyzed
TPH-Method 3550 as diesel	mg/kg	*<5.0	<5.0	*<5.0	MAW/MDE	10/01/91

*Low level late eluting hydrocarbons present.

Reported By:
Michael A. Woodrum, Laboratory Director

MAW/rbh

CBM
ENVIRONMENTAL SERVICES

September 25, 1992

Jim White
SCDHEC
2600 Bull Street
Columbia, South Carolina 29201

RECEIVED
SEP 30 1992
Groundwater Protection
Division
04736

Re: Stockman Oil Company
1138 Reynolds Street
Greenwood, South Carolina
PCAS - 7315

Dear Mr. White,

CBM Environmental Services Incorporated has been retained by Stockman Oil Company to complete assessment activities at referenced facility. Mr. Stockman has forwarded to CBM Environmental all documents in his file concerning this site, copies of which are enclosed for your use. The chronology at this site, as best as I can determine from these various documents, is as follows:

12/19/89 - EEC letter to A. Pierce Stockman: Results of 5 analysis of soil borings. Borings were done 12/09/89. All but 1 sample contaminated. Recommends submission to SCDHEC.

12/22/89 - Stockman Oil Company letter to SCDHEC: Submission of soil analytical results. Requested **SUPERB** funding.

05/17/90 - Stockman oil letter to SCDHEC requesting a status update.

06/20/90 - SCDHEC letter from Robert Devlin to A. Pierce Stockman: **SUPERB** funding being evaluated, meantime Stockman Oil is required to begin investigations.

07/24/90 - Stockman Oil letter to Robert Devlin of SCDHEC stating EEC to do plan for assessment.

08/03/90 - EEC letter to Robert Devlin of SCDHEC: Phase I Site Assessment Plan submitted to SCDHEC. Phase I plan recommended six soil borings and minimum of 3 wells, analysis, sampling, aquifer testing and completion of AR.

08/10/90 - SCDHEC (Robert Devlin) letter to A. Pierce: Stockman Request for tank test results. Recommends testing for EPA 625 due to heavy oils also vertical extent of contamination not defined in all areas under plan.

10/23/90 - EEC fax to Pierce Stockman: Lab results indicate groundwater contamination in TMW-1, none in TMW-2

09/18/90 - EEC letter to R. Devlin of SCDHEC requesting permission to install 2 temporary monitor wells in 2 UST areas.

12/27/90 - EEC letter (Donald Duncan) to A. Pierce Stockman providing results of analyses of six soil samples.

09/05/91 - Lab results from 1 soil sample.

Based on the above, I recommend the following:

1. Determine the **SUPERB** status at this site.
2. If site is in **SUPERB**, submit EAP with Cost Proposal for future work.
3. Determine current expenditures to date and seek **reimbursement.**

The implementation of the EAP should allow complete assessment of the contamination at this site.

Please Contact me with your comments at 800-743-1226.

Sincerely,

Kenneth E. Czoer
Environmental Services Director

ENCLOSURES
CC: A. Pierce Stockman
file

Davis & Floyd, c. oratory Analysis Report

Page 1 Work Order # 91-09-025
Received: 09/05/91 09/10/91 16:34:21

REPORT STOCKMAN OIL
TO 1138 REYNOLDS AVE.
GREENWOOD, SC 29649

PREPARED Davis & Floyd, Inc.
BY P.O. Drawer 428
Greenwood, S.C. 29648

ATTEN PIERCE STOCKMAN

PHONE (803)-229_5211

CERTIFIED BY
JOHN_MCCORD

WORK ID JOB. # 7719.00
P.O. #
TAKEN STOCKMAN OIL
TYPE SOLID
NUMBER OF SAMPLES 1

Comments:
WE ARE PLEASED TO PROVIDE THIS CERTIFIED REPORT OF ANALYSES.
FEEL FREE TO TELEPHONE IF FURTHER EXPLANATION IS REQUIRED.
UNLESS OTHER ARRANGEMENTS HAVE BEEN MADE, SAMPLES WILL BE
DISPOSED OF OR RETURNED 28 DAYS FROM THE DATE OF THIS REPORT.

SAMPLE IDENTIFICATION	DATE COLLECTED
01 001 SOIL SP	09/05/91 11:00:00

RECEIVED
SEP 30 1992
Groundwater Protection
Division

Results by Sample

SAMPLE ID 001 SOIL SP FRACTION 01A TEST CODE TPH_D NAME TPH (DIESEL) & NAPHTHALENE
Date & Time Collected 09/05/91 11:00:00 Category

PARAMETER	RESULT	LIMIT
TPH DIESEL	ND	10000
NAPHTHALENE	ND	200

Notes and Definitions for this Report:

EXTRACTED 09/06/91
DATE RUN 09/10/91
ANALYST MPT
FILE ID 0910CA05
UNITS ug/kg

Stockman Oil

1138 REYNOLDS AVENUE
GREENWOOD, SC 29649

Mobil
AUTOMOTIVE — INDUSTRIAL LUBRICANTS

PHONE 803-223-8486
1-800-868-7569
FAX 803-223-2331

February 25, 1991

Mr. Robert Devlin, Hydrogeologist
Ground-Water Protection Division
South Carolina Department of Health
and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

RECEIVED
FEB 27 1991
GROUND WATER
PROTECTION DIVISION

Reference: Stockman Oil Company PCAS 7315

Dear Mr. Devlin,

On November 13, 1990, Mr. James Kotti of EEC, Inc. wrote you in regard to our site having contamination. We are awaiting your reply to determine if we will be required to remediate and if we will be approved for superb funds.

Please give this matter consideration as soon as possible.

Yours Truly,
STOCKMAN OIL TWO, INC.

Pierce Stockman

PS/jd

CC: James D. Kotti

EEC

Environmental Engineering Company, Inc. Post Office Box 11847 Columbia, SC 29211 (803) 256-7846

December 27, 1990

Mr. A. Pierce Stockman
Stockman Oil Company, Inc.
1138 Reynolds Street
Greenwood, South Carolina 29646

Subject: Soil Sample Results
Stockman Oil Company, Inc.

Dear Mr. Stockman:

Please find enclosed a copy of the analytical results for the six soil samples you submitted for analysis for BTEX for the underground storage tank area at the Stockman Oil Company bulk plant facility. Please note that all soil sample results for BTEX were less than 1.0 ug/kg with the exception of soil sample STK-SS-5 which indicated concentrations of ethylbenzene (192.5 ug/kg) and xylene (402.7 ug/kg). These analytical results indicate there is no contamination from these soil samples for the parameters analyzed except as noted.

Also enclosed is an invoice for the services provided. If you have any questions, comments, or require any additional information regarding this matter, please do not hesitate to call me at (803) 256-7846.

Yours very truly,

ENVIRONMENTAL ENGINEERING COMPANY, INC.

Donald A. Duncan, P.G.
Manager of Geological Services

DAD/jk

Enclosures

cc: UT1329 w/a

Environmental Engineering Company, Inc. Post Office Box 11847 Columbia, SC 29211 (803) 256-7846

27-December-90

****
INVOICE NO:
1032
****

STOCKMAN OIL COMPANY
1138 REYNOLDS
GREENWOOD, SOUTH CAROLINA 29646

ATTENTION: MR. A. PIERCE STOCKMAN

RE. PROJECT: UT1329
SITE ASSESSMENT AT BULK PLANT

INVOICE DUE 01/26/91. PAST DUE AFTER 30 DAYS WILL BE CHARGED 1 1/2% PER MONTH.

ANALYSIS	QUANTITY	RATE	AMOUNT	
SOIL SAMPLES (BTEX)	6.00	100.00	600.00	
ANALYSIS TOTAL :	6.00			600.00
PROFESSIONAL SERVICES	HOURS	RATE	AMOUNT	
PROJECT HYDROGEOLOGIST 12/27/90	1.00	60.00	60.00	
LABOR TOTAL :	1.00			60.00
TOTAL AMOUNT DUE			$	660.00

DONALD A. DUNCAN, P.G.
MANAGER OF GEOLOGICAL SERVICES

CC: RB

ENVIROLABS, INC.

EEC, INC.
DEC 1 7 1990

EEC, INC.
P.O. BOX 11847
COLUMBIA, SC 29211
ATTN: DON DUNCAN

DATE RECEIVED: 12/6/90
DATE REPORTED: 12/13/90
REFERENCE NO. 9012704
PROJECT NAME: STOCKMAN OIL

SAMPLE DESCRIPTION: STK-SS-1
BENZENE - < 1.0 UG/KG
TOLUENE - < 1.0 UG/KG
ETHYLBENZENE - < 1.0 UG/KG
XYLENE - < 1.0 UG/KG

SAMPLE DESCRIPTION: STK-SS-2
BENZENE - < 1.0 UG/KG
TOLUENE - < 1.0 UG/KG
ETHYLBENZENE - < 1.0 UG/KG
XYLENE - < 1.0 UG/KG

SAMPLE DESCRIPTION: STK-SS-3
BENZENE - < 1.0 UG/KG
TOLUENE - < 1.0 UG/KG
ETHYLBENZENE - < 1.0 UG/KG
XYLENE - < 1.0 UG/KG

SAMPLE DESCRIPTION: STK-SS-4
BENZENE - < 1.0 UG/KG
TOLUENE - < 1.0 UG/KG
ETHYLBENZENE - < 1.0 UG/KG
XYLENE - < 1.0 UG/KG

SAMPLE DESCRIPTION: STK-SS-5
BENZENE - < 1.0 UG/KG
TOLUENE - < 1.0 UG/KG
ETHYLBENZENE - 192.5 UG/KG
XYLENE - 402.7 UG/KG

SAMPLE DESCRIPTION: STK-SS-6
BENZENE - < 1.0 UG/KG
TOLUENE - < 1.0 UG/KG
ETHYLBENZENE - < 1.0 UG/KG
XYLENE - < 1.0 UG/KG

APPROVED BY: _____
LEWIS FREDERICK
LABORATORY DIRECTOR

EEC
Environmental Engineering Company, Inc. Post Office Box 11847 Columbia, SC 29211 (803) 256-7846

November 13, 1990

N-24-NW-24736

Mr. Robert Devlin, Hydrogeologist
Ground-Water Protection Division
South Carolina Department of Health
and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

RECEIVED
NOV 15 1990
GROUND-WATER
PROTECTION DIVISION

Subject: Temporary Monitoring Well Installation
Stockman Oil Company (PCAS-7315)
Greenwood, South Carolina

Dear Mr. Devlin:

On September 21, 1990, Environmental Engineering Company, Inc. personnel installed two temporary monitoring wells (TMW-1 and TMW-2) at the locations illustrated on the attached site facility drawing. The monitoring wells were installed in accordance with procedures outlined in the EEC, Inc. letter of correspondence dated September 18, 1990 and sent to your office for review and approval. Please find enclosed drilling logs and well construction records for the two temporary monitoring wells.

Following well development procedures, ground-water samples were collected from each temporary monitoring well in accordance with the procedures outlined in the September 18, 1990, EEC, Inc. letter of correspondence. The ground-water sample from TMW-1 was analyzed for parameters of benzene, toluene, ethylbenzene, and xylenes (BTEX). The analytical results of the ground-water sample from TMW-1 indicated concentrations of BTEX parameters as follows: benzene (130 ug/kg), toluene (54 u/kg), ethylbenzene (62 ug/kg), and xylene (360 ug/kg). As advised by your office, the ground-water sample from TMW-2 was analyzed for parameters of EPA-method 610. The analytical results of the ground-water sample from TMW-2 indicated the absence of contamination. Please find attached the laboratory data sheets from Envirolabs, Inc. of Lexington, South Carolina for analysis of the two ground-water samples from TMW-1 and TMW-2.

The analytical results indicate that ground-water of the surficial aquifer at the Stockman Oil Company site has been impacted with petroleum contamination. Having confirmed ground-water contamination at the site, EEC, Inc. on behalf of our client Stockman Oil Company, Inc., anticipates that your office will consider the site eligible

for funding through the State Underground Petroleum Environmental Response Bank Act (SUPERB) in the near future with the provisional amnesty requirements having been previously satisfied.

Concerning the previously submitted Phase I Soil and Ground-water Assessment Plan (dated July 30, 1990) for the Stockman Oil Company site, we would appreciate written correspondence from your office indicating approval and/or any recommended revisions. After the project has been approved for SUPERB funding and the Phase I Soil and Ground-Water Assessment Plan has been finalized and approved, a cost estimate for implementation of the Phase I plan will be submitted to your office for review for the preparation of a purchase order with respect to this project. Implementation of the approved Phase I Soil and Ground-water Assessment Plan will commence within thirty (30) days after receipt of the SCDHEC purchase order.

Rob's file

If you have any questions or comments or require any additional information, please do not hesitate to contact our office at (803) 256-7846.

Yours very truly,

ENVIRONMENTAL ENGINEERING COMPANY, INC.

James D. Kotti

James D. Kotti, P.G.
Project Hydrogeologist

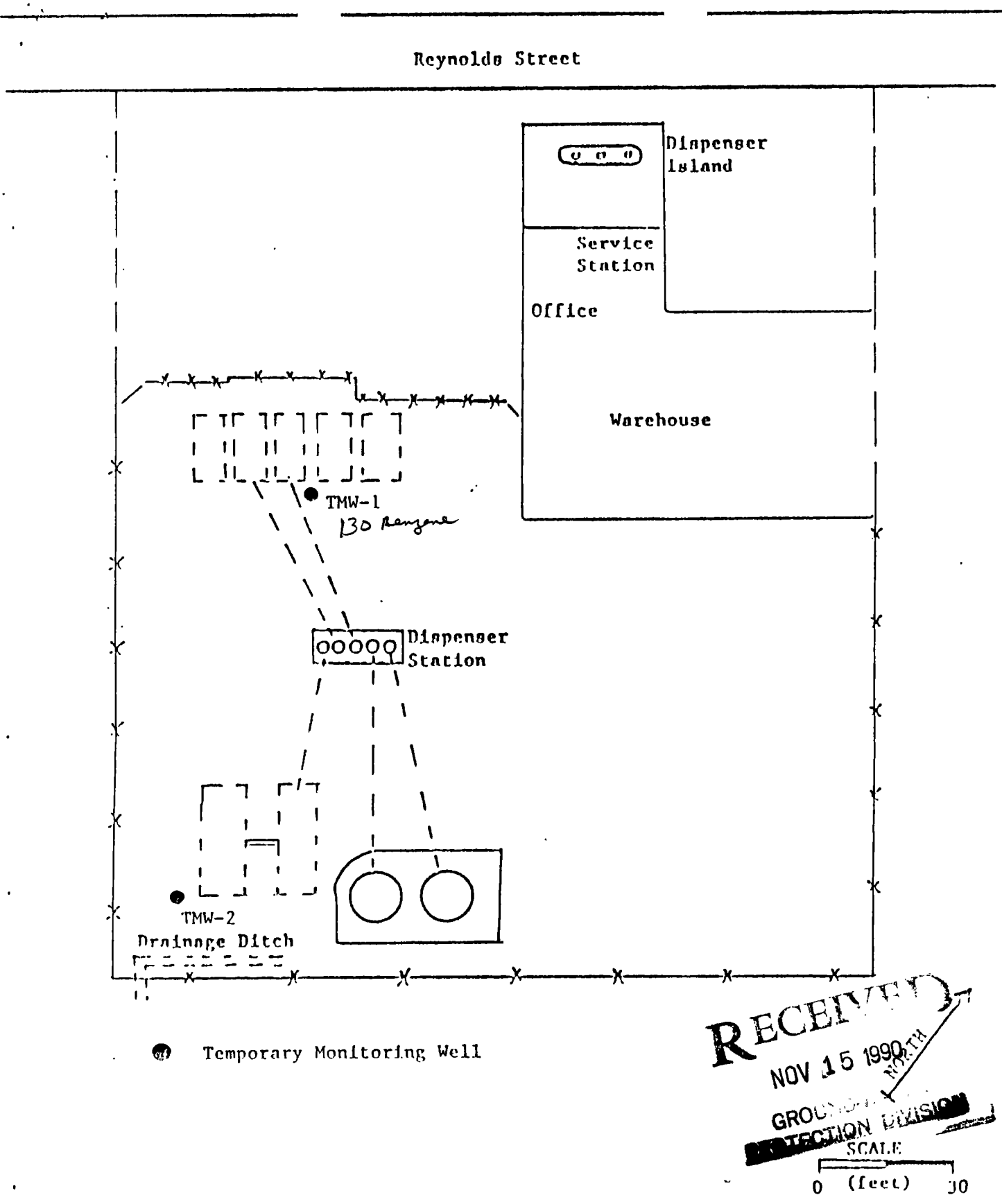
JDK/bg

Enclosures

cc: A. Pierce Stockman
Stockman Oil Company, Inc.
1138 Reynolds Street
Greenwood, SC 29648

File UT1329

RECEIVED
NOV 15 1990
GROUND-WATER
PROTECTION DIVISION



EEC
ENVIRONMENTAL ENGINEERING COMPANY, INC.
P. O. Box 11047 Columbia, SC 29211
(803) 256-7046

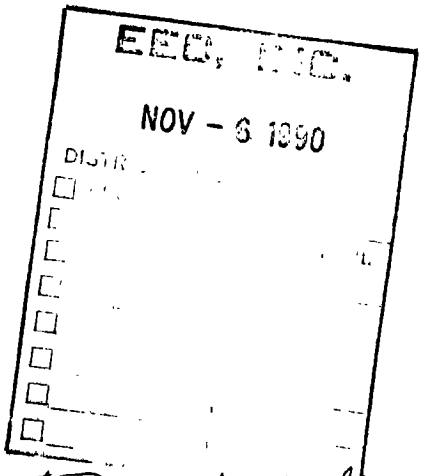
Figure 1: Site Facility Map

Stockman Oil Company Bulk Plant
1130 Reynolds Street
Greenwood, South Carolina

November 13, 1990; JDK

ENVIROLABS, INC.

EEC, INC.
500 RIVERMONT DR.
COLUMBIA, SC 29211
ATTN: DON DUNCAN



DATE RECEIVED: 9/24/90
DATE REPORTED: 10/23/90
REFERENCE NO. 9012153

PROJECT NAME: STOCKMAN OIL

SAMPLE DESCRIPTION: STOCKMAN TMW-1
BENZENE - 130 UG/~~KG~~ L
TOLUENE - 54 UG/~~KG~~ L
ETHYLBENZENE - 62 UG/~~KG~~ L
XYLENE - 360 UG/~~KG~~ L

4/8/91
Called lab about UG/KG. According to their records, sample was water + should be UG/L. Will send corrected lab report.
J Cooper

SAMPLE DESCRIPTION: STOCKMAN TMW-2

EPA 610	UNITS, UG/L	QUALIFIER
ACENAPHTHENE	10	U
ACENAPHTHYLENE	10	U
ANTHRACENE	10	U
BENZO(A)ANTHRACENE	10	U
BENZO(A)PYRENE	10	U
BENZO(B)FLUORANTHENE	10	U
BENZO(G,H,I)PERYLENE	10	U
BENZO(K)FLUORANTHENE	10	U
CHRYSENE	10	U
DIBENZO(A,H)ANTHRACENE	10	U
FLUORANTHENE	10	U
FLUORENE	10	U
INDENO(1,2,3-CD)PYRENE	10	U
NAPHTHALENE	10	U
PHENANTHRENE	10	U
PYRENE	10	U

APPROVED BY: _____ 10/29/90
LEWIS FREDERICK
LABORATORY DIRECTOR

ENVIRO... LABS, INC.

CHAIN-OF-CUSTODY RECORD

BILLING CO. Environmental Company, IL ...ineering
ADDRESS: P.O. Box 11847
CITY, ST. Columbia, S.C. 29211
CONTACT PERSON Donald A. Duncan

PROJECT NAME: Stockman O.U.
PROJECT NUMBER:
SAMPLERS (SIGNATURE)

Donald A. Duncan
PRINTED NAME

CLIENT ID (9 CHARACTERS)

1	2	3	4	5	6	7	8	9
9	0	1	2	1	5	3	-	1
			2	1	5	3	-	2

#	GC/MS					GC						INORGANICS				OTHER										MATRIX: Water/Soil	SAMPLING INFO		REMARKS
No. of Bottles/Vials	624-8240	625-8270	TCL-VOA	TCL-SVOA	Other:	601-8010	602-8020	608-8080	8140	TCL PEST/PCB's	Herbicides	Other:	Metals	Cyanide	TAL Metals	Other:	TOC	TOX	Oil & Grease	Pet. Hydro.	Phenols	BTEX	TPH	EPA Method 610			DATE	TIME	
																						X				9/21/90	16:01	Stockman TMW-1
																							X			9/21/90	16:56	Stockman TMW-2

RELINQUISHED BY:	Date/Time	RELINQUISHED BY:	Date/Time	RELINQUISHED BY:	Date/Time	SHIPPING INFORMATION
Don Duncan	9/21/90					Number of Shipping Containers-
COMPANY NAME: EEC Inc	18:58	COMPANY NAME:		COMPANY NAME:		Method of Shipment
RECEIVED BY: Ted Faller	Date/Time 9/21/90	RECEIVED BY: M. Cates	Date/Time 9/24/90	RECEIVED BY:	Date/Time	
COMPANY NAME: EEC Inc	18:54	COMPANY NAME: Enviro Labs	10:15	COMPANY NAME:		
RELINQUISHED BY: Ted Faller	Date/Time 9/24	RELINQUISHED BY:	Date/Time	RELINQUISHED BY:	Date/Time	Special Handling Requirements
COMPANY NAME: EEC To ENVIRO LAB	10:15	COMPANY NAME:		COMPANY NAME:		

DRILLING LOG

LOCATION: Stockman Oil Co. Bulk Plant
1138 Reynolds St.
Greenwood, South Carolina

DATE: 9/21/90

EEC, Inc. Job Number: UT0980

BORING NO: TMW-1

DEPTH (feet)	SOIL DESCRIPTION
0.0 - 0.3	Asphalt
0.3 - 6.0	Lt. brown/gray silty, medium to coarse sand
6.0 - 8.0	Brownish red clayey, sandy silt
8.0 - 12.0	Lt.tan clayey, sandy, silt (micaceous)
12.0 - 18.0	Lt.brown sandy silt (micaceous)
18.0 - 24.0	Lt.brown/tan clayey, sandy silt (micaceous)
24.0 - 28.5	Brown clayey sandy silt (micaceous)

NOTE: 1) A temporary monitoring well was installed to a depth of 28.5 feet below land surface following completion of drilling.

2) Water table at time of drilling was measured at 27.3 ft. below land surface.

3) Temporary monitoring well was closed by: a) pulling screen and casing; b) back-filling bore hole with soils to within 2 ft. of land surface; and c) grouting remainder of bore hole with neat cement.

DRILLING LOG

LOCATION: Stockman Oil Co. Bulk Plant
1138 Reynolds St.
Greenwood, South Carolina

DATE: 9/21/90

EEC, Inc. Job Number: UT0980

BORING NO: TMW-2

DEPTH (feet)	SOIL DESCRIPTION
0.0 - 0.5	Topsoil
0.5 - 3.0	Orange/brown clayey medium sand
3.0 - 8.0	Lt.gray/black/tannish yellow clayey, sandy silt (weathered mica schist)
8.0 - 15.0	Lt. brown clayey, slightly sandy silt
15.0 - 18.0	Lt. gray sandy silt (micaceous)
18.0 - 24.0	Lt.tan sandy silt (micaceous)
24.0 - 28.5	Lt. brown clayey, slightly sandy silt (micaceous)

NOTE: 1) A temporary monitoring well was installed to a depth of 28.5 feet below land surface following completion of drilling.

2) Water table at time of drilling was measured at 25.6 ft. below land surface.

3) Temporary monitoring well was closed by: a) pulling screen and casing; b) back-filling bore hole with soils to within 2 ft. of land surface; and c) grouting remainder of bore hole with neat cement.

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

Ground Water Protection Division **2600 Bull Street** **Columbia, S.C. 29201** **(803) 734-5331** **Water Well Record**

1. LOCATION OF WELL

County: Greenwood System Name: TMW-1

Latitude: Longitude:

Distance And Direction from Road Intersections

1138 Reynolds St, Greenwood, SC

Street address & City of Well Location

Sketch Map: (See example on back)

Previously Forwarded

2. CUTTING SAMPLES ☐ Yes ☒ No

Geophysical Logs ☐ Yes (Please enclose) ☒ No

FORMATION DESCRIPTION	*THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Asphalt	0.3	0.3
Lt. Brown/gray silty, medium to crs sand	5.7	6.0
Brownish red clayey, sandy silt	2.0	8.0
Lt. tan clayey, sandy silt (micaceous)	4.0	12.0
Lt. brown sandy silt (micaceous)	6.0	18.0
Lt. brown/tan clayey, sandy silt (micaceous)	6.0	24.0
Brown clayey sandy silt (micaceous)	4.5	28.5
NOTE! TMW-1 was closed on 9/21/90 by 1) pulling screen and casing		
2) back-filling hole with soil to within 2ft of surface		
3) grouting remainder of borehole w/ neat cement		

* Indicate water bearing zones

(use a 2nd sheet if needed)

3. REMARKS

4. OWNER OF WELL:
Address: Stockman Oil Co., Inc., 1138 Reynolds St, Greenwood, SC 29648
Telephone No. 803-223-8486

Engineer
Address: EEC, Inc., P.O. Box 11847, Columbia, SC 29211
Telephone No.

5. WELL DEPTH (Completed) 28.5 ft. Date Started: 9/21/90 Date Completed: 9/21/90

6. ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. USE:
☐ Domestic ☐ Public Supply-Permit No. ☐ Industry
☐ Irrigation ☐ Air Conditioning ☐ Commercial
☐ Test Well ☒ Monitoring Well

8. CASING: ☐ Threaded ☐ Welded
Diam. 2" SS Rivet
Type ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
2 in. to 5.5 ft. depth
in. to ft. depth
Height: (Above)/Below Surface 2.5 ft.
Weight — lbs./ft.
Drive Shoe? ☒ Yes ☐ No

9. SCREEN:
Type: PVC Diam. 2-inch
Slot/Gauze 0.010 Length 23-ft.
Set Between 5.5 ft. and 28.5 ft.
ft. and ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (Please enclose) ☒ No

10. STATIC WATER LEVEL
27.3 ft. below land surface ~~after 24 hours~~ Time of Drilling

11. PUMPING LEVEL Below Land Surface N/A
ft. after hrs. pumping G.P.M.
Pumping Test: ☐ Yes (Please enclose) ☐ No
Yield

12. WATER QUALITY
Chemical Analysis ☒ Yes ☐ No Bacterial Analysis ☐ Yes ☒ No
Please Enclose Lab Results.

13. ARTIFICIAL FILTER (Gravel Pack) ☐ Yes ☒ No
Installed from ft. to ft.
Effective size uniformity coefficient

14. WELL GROUTED? ☐ Yes ☒ No
Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other ☐
Depth From ft. to ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: 5 Feet NW Direction
Petroleum Type Well disinfected upon completion ☐ Yes ☒ No Type Amount

16. PUMP: Date Installed not installed ☐
Mfr. name N/A model no.
H.P. volts length of drop pipe ft. capacity gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
REGISTERED BUSINESS NAME EEC, Inc. ADDRESS P.O. Box 11847 Col, SC 29211
Signed AUTHORIZED REPRESENTATIVE CERT. NO. 896 Date

DHEC # 1903 (10/86) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

Ground Water Protection Division | **2600 Bull Street** | **Columbia, S.C. 29201** | **(803) 734-5331** | **Water Well Record**

1. LOCATION OF WELL

County: Greenwood | System Name: TMW-2

Latitude: | Longitude:

Distance And Direction from Road Intersections: 1138 Reynolds St, Greenwood, SC

Street address & City of Well Location

Sketch Map (See example on back): Previously Forwarded

2. CUTTING SAMPLES [ ] Yes [X] No

Geophysical Logs [ ] Yes (Please enclose) [X] No

FORMATION DESCRIPTION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM
Topsoil	0.5	0.5
Orange/brown clayey medium sand	2.5	3.0
Lt. grey/black/tannish yellow clayey sandy silt	5.0	8.0
Lt. brown clayey, slightly sandy silt	7.0	15.0
Lt. grey sandy silt (micaceous)	3.0	18.0
Lt. tan sandy silt (micaceous)	6.0	24.0
Lt. brown clayey, slightly sandy silt (calcareous)	4.5	28.5
NOTE: TMW-2 was closed on 9/21/00 by 1) pulling screen & casing 2) back-filling with soil to within 2ft of surface 3) grouting remainder of bore hole w/ neat cement		

* Indicate water bearing zones (use a 2nd sheet if needed)

3. REMARKS

4. OWNER OF WELL
Address: Stockman Oil Co., Inc., 1138 Reynolds St., Greenwood, SC 29646
Telephone No: 803-223-8416

Engineer
Address: EEC, Inc., P.O. Box 11847, Columbia, SC 29211
Telephone No:

5. WELL DEPTH (Completed): 28.5 ft | Date Started: 9/21/00 | Date Completed: 9/21/00

6 [ ] Mud Rotary [ ] Jetted [X] Bored [ ] Dug [ ] Air Rotary [ ] Driven [ ] Cable tool [ ] Other

7. USE [ ] Domestic [ ] Public Supply Permit No [ ] Industry [ ] Irrigation [ ] Air Conditioning [ ] Commercial [ ] Test Well [X] Monitoring Well

8 CASING [ ] Threaded [ ] Welded
Diam 2" SS Rivet | Type [X] PVC [ ] Galvanized [ ] Steel [ ] Other
2 in to 5.5 ft depth
in to ft depth
Height (Above/Below) Surface 2.5 ft | Weight lbs./ft | Drive Shoe? [X] Yes [ ] No

9 SCREEN.
Type PVC | Diam 2"
Slot/Gauze 0.010 | Length 10'
Set Between 5.5 ft and 28.5 ft
ft and ft
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis [ ] Yes (Please enclose) [X] No

10. STATIC WATER LEVEL
27.3 ft. below land surface ~~after 24 hours~~ Time of Drilling

11. PUMPING LEVEL Below Land Surface N/A
ft after hrs. pumping G.P.M.
Pumping Test [ ] Yes (Please enclose) [ ] No
Yield

12. WATER QUALITY
Chemical Analysis [X] Yes [ ] No | Bacterial Analysis [ ] Yes [X] No
Please Enclose Lab Results

13. ARTIFICIAL FILTER (Gravel Pack) [ ] Yes [X] No
Installed from ft. to ft
Effective size uniformity coefficient

14. WELL GROUTED? [ ] Yes [X] No
Neat Cement [ ] Sand Cement [ ] Concrete [ ] Other [ ]
Depth From ft to ft.

15 NEAREST SOURCE OF POSSIBLE CONTAMINATION 5 Feet NW Direction
Petroleum Type | Well disinfected upon completion [ ] Yes Type [X] No Amount

16. PUMP. Date Installed not installed [ ]
Mfr. name N/A model no.
H.P. volts length of drop pipe ft capacity gpm
TYPE [ ] Submersible [ ] Jet (shallow) [ ] Turbine [ ] Jet (deep) [ ] Reciprocating [ ] Centrifugal

17. WATER WELL CONTRACTOR'S CERTIFICATION. This well was drilled under my direction and this report is true to the best of my knowledge and belief.
REGISTERED BUSINESS NAME: EEC, Inc. | ADDRESS: P.O. Box 11847, Cola, SC 29211
Signed (AUTHORIZED REPRESENTATIVE) | CERT. NO. 896 | Date 9/24/00

DHEC # 1903 (10/86) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

EEC
Environmental Engineering Company, Inc. Post Office Box 11847 Columbia, SC 29211 (803) 256-7846

FACSIMILE MESSAGE

Environmental Engineering Company, Inc.'s FAX Number 803/779-0720

TO: Pierce Stockman
Stockman Oil Coy Inc

DATE: 10/23/90

Page 1 of 3

FAX Number: 803-223-2331

FROM: Jim Kotti
EEC, Inc.

RE: Analytical results of ground-water samples.

MESSAGE: The laboratory data indicates that ground water in the vicinity of TMW-1 (which was installed in the area of the gasoline and kerosene tanks) has been impacted with gasoline constituents. SUPERB funding should be approved for this site based on the results from TMW-1. No contamination was detected in ground-water from TMW-2. jjk

Orig:

cc:

RECEIVED
SEP 30 1990
Groundwater Protection Division

ENVIROLABS, INC.

TELECOMMUNICATION

To: EEQ Attn: TED FALLER

Fax: 779-0720

Date: 10/23/90

Subject: STOCKMAN OIL RESULTS

Pages (including this page): 2

Message (if any):

U = ANALYZED FOR BUT NOT DETECTED. HARD COPY TO COME VIA MAIL. SORRY FOR THE DELAY.

Debbie

From:

200 Rich Lex Drive • Lexington, S.C. 29072 • (803) 796-8623 • FAX: 796-1602

ENVIROLABS, INC.

EEC, INC.
500 RIVERMONT DR.
COLUMBIA, SC 29211
ATTN: DON DUNCAN

DATE RECEIVED: 9/24/90
DATE REPORTED: 10/23/90
REFERENCE NO. 9012153

PROJECT NAME: STOCKMAN OIL

SAMPLE DESCRIPTION: STOCKMAN TMW-1
BENZENE - 130 UG/KG
TOLUENE - 54 UG/KG
ETHYLBENZENE - 62 UG/KG
XYLENE - 360 UG/KG

SAMPLE DESCRIPTION: STOCKMAN TMW-2

EPA 610	UNITS, UG/L	QUALIFIER
ACENAPHTHENE	10	U
ACENAPHTHYLENE	10	U
ANTHRACENE	10	U
BENZO(A)ANTHRACENE	10	U
BENZO(A)PYRENE	10	U
BENZO(B)FLUORANTHENE	10	U
BENZO(G,H,I)PERYLENE	10	U
BENZO(K)FLUORANTHENE	10	U
CHRYSENE	10	U
DIBENZO(A,H)ANTHRACENE	10	U
FLUORANTHENE	10	U
FLUORENE	10	U
INDENO(1,2,3-CD)PYRENE	10	U
NAPHTHALENE	10	U
PHENANTHRENE	10	U
PYRENE	10	U

APPROVED BY: _____ 10/23/90
LEWIS FREDERICK
LABORATORY DIRECTOR

File

South Carolina
DHEC
Department of Health and Environmental Control
2600 Bull Street, Columbia, SC 29201

Commissioner: Michael D. Jarrett

Board: John B. Pate, MD, Chairman
William E. Applegate, III, Vice Chairman
John H. Burriss, Secretary
Toney Graham, Jr., MD
Richard E. Jabbour, DDS
Henry S. Jordan, MD
Currie B. Spivey, Jr.

Promoting Health, Protecting the Environment

Monitoring Well Approval

Approval is hereby granted to: Environmental Engineering Co.
P. O. Box 11847
Columbia, SC 29211

RE: Stockman Oil Co. Bulk Plant
1138 Reynolds Street
Greenwood, SC

for the construction of monitoring wells designated TMW-1 and TMW-2 in accordance with the construction plans and specifications submitted on September 19, 1990. These wells will be constructed to the approximate depth of 30 feet below the surface and screened in the upper most aquifer for the purpose of monitoring for the presents of petroleum hydrocarbons.

Conditions: That the latitude and longitude and actual construction details for each well be submitted within 30 days after installation.

This approval is pursuant to the provisions of Section 44-55-40 of the 1976 South Carolina Code of Laws and the Department of Health and Environmental Control Regulations R.61-71.

Date of Issue:September 19, 1990

James R. Hess, P. G., Manager
Underground Storage Tank Section
Ground-Water Protection Division
Bureau of Drinking Water Protection

cc: Billy DuPre, Upper Savannah District EQC

RJD/0919901669

recycled paper

1669

Environmental Engineering Company, Inc. Post Office Box 11847 Columbia, SC 29211 (803) 256-7846

September 18, 1990

RECEIVED
SEP 19 1990
GROUND-WATER
PROTECTION DIVISION

Mr. Rob Devlin, Hydrogeologist
Ground-Water Protection Division
South Carolina Department of Health
and Environmental Control
2600 Bull Street
Columbia, SC 29201

Subject: Temporary Monitoring Well Installations
Stockman Oil Company Bulk Plant (PCAS #7315)
Greenwood, South Carolina

Dear Mr. Devlin:

This correspondence is submitted in reference to your August 10, 1990 letter of correspondence concerning the Stockman Oil Company Bulk Plant located at 1138 Reynolds Street in Greenwood, South Carolina and the proposed Phase I Soil and Ground-water Assessment Plan (dated July 30, 1990) submitted to your office for review. In addition, this correspondence is provided as confirmation of our telephone conversation on September 11, 1990.

As a part of our discussion, you indicated that the collection of a ground-water sample was necessary from each of the two underground storage tank areas to provide preliminary data concerning the vertical extent of contamination at the site, thereby expediting a decision in regard to applicability of SUPERB funding at this site. Environmental Engineering Company, Inc. therefore proposes the installation of two temporary monitoring wells (TMW-1 and TMW-2) at the generalized locations indicated on the attached site facility map (Figure 1). The temporary monitoring wells will be installed in accordance with procedures outlined in Attachment 1 and as illustrated in Figure 2, a typical monitoring well diagram.

Following installation of the two temporary monitoring wells, ground-water samples will be collected. The ground-water samples will be collected as described in Attachment 1. The ground-water sample from TMW-1 will be analyzed for parameters of benzene, toluene, ethylbenzene, and xylenes (BTEX). The ground-water sample from TMW-2 will be analyzed for total petroleum hydrocarbons (TPH). Subsequent to the completion of the laboratory analysis, a copy of the analytical data will be forwarded to your office.

Thank you for your consideration with respect to this matter and if you require any further information, please do not hesitate to contact our office at (803) 256-7846.

Yours very truly,

ENVIRONMENTAL ENGINEERING COMPANY, INC.

James D. Kotti, P.G.
Hydrogeologist

JDK:dko

cc: Mr. A. Pierce Stockman
Stockman Oil Company, Inc.
1138 Reynolds Street
Greenwood, SC 29648

File UT1369

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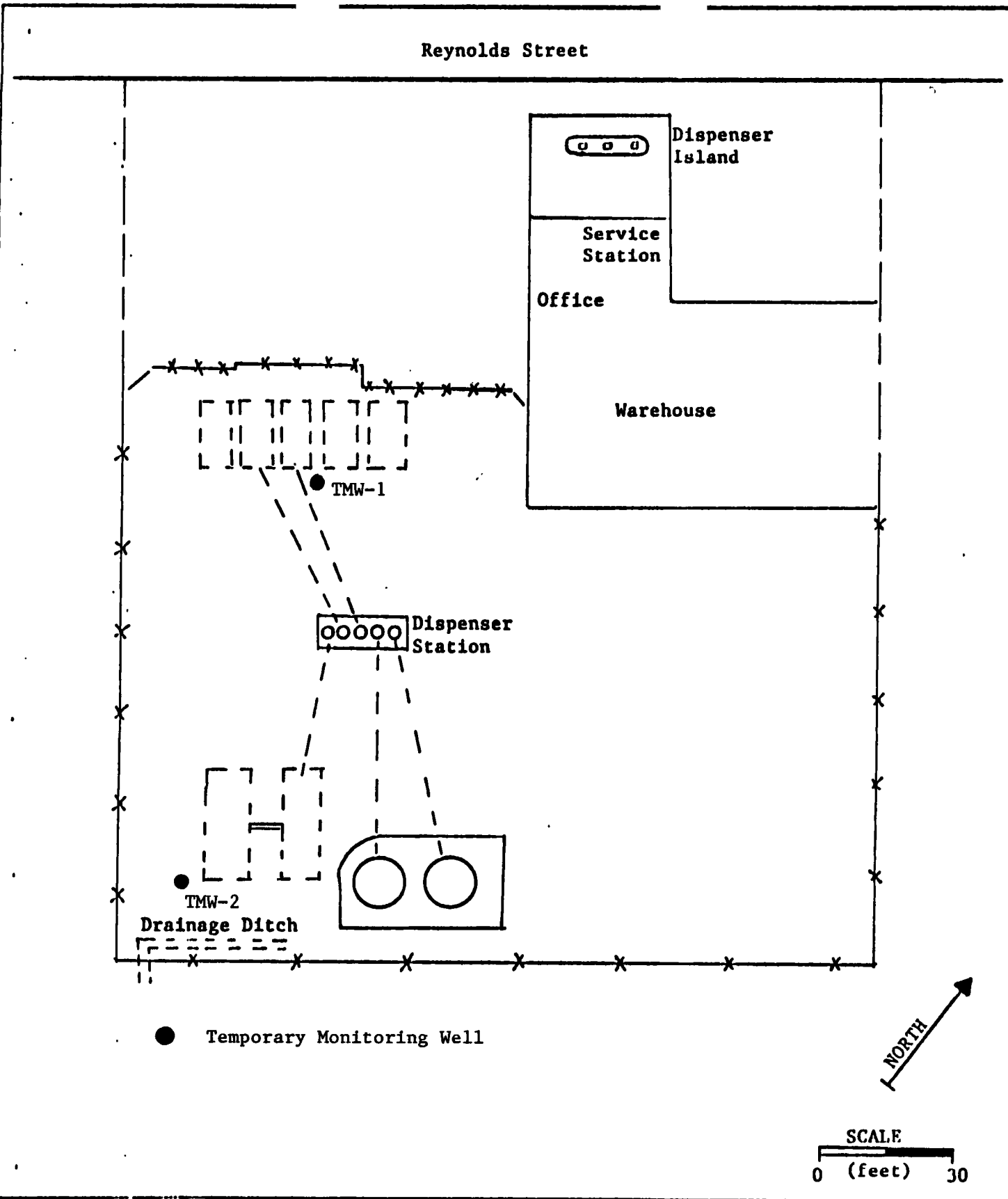
SEP 19 1990
GROUND-WATER
PROTECTION DIVISION

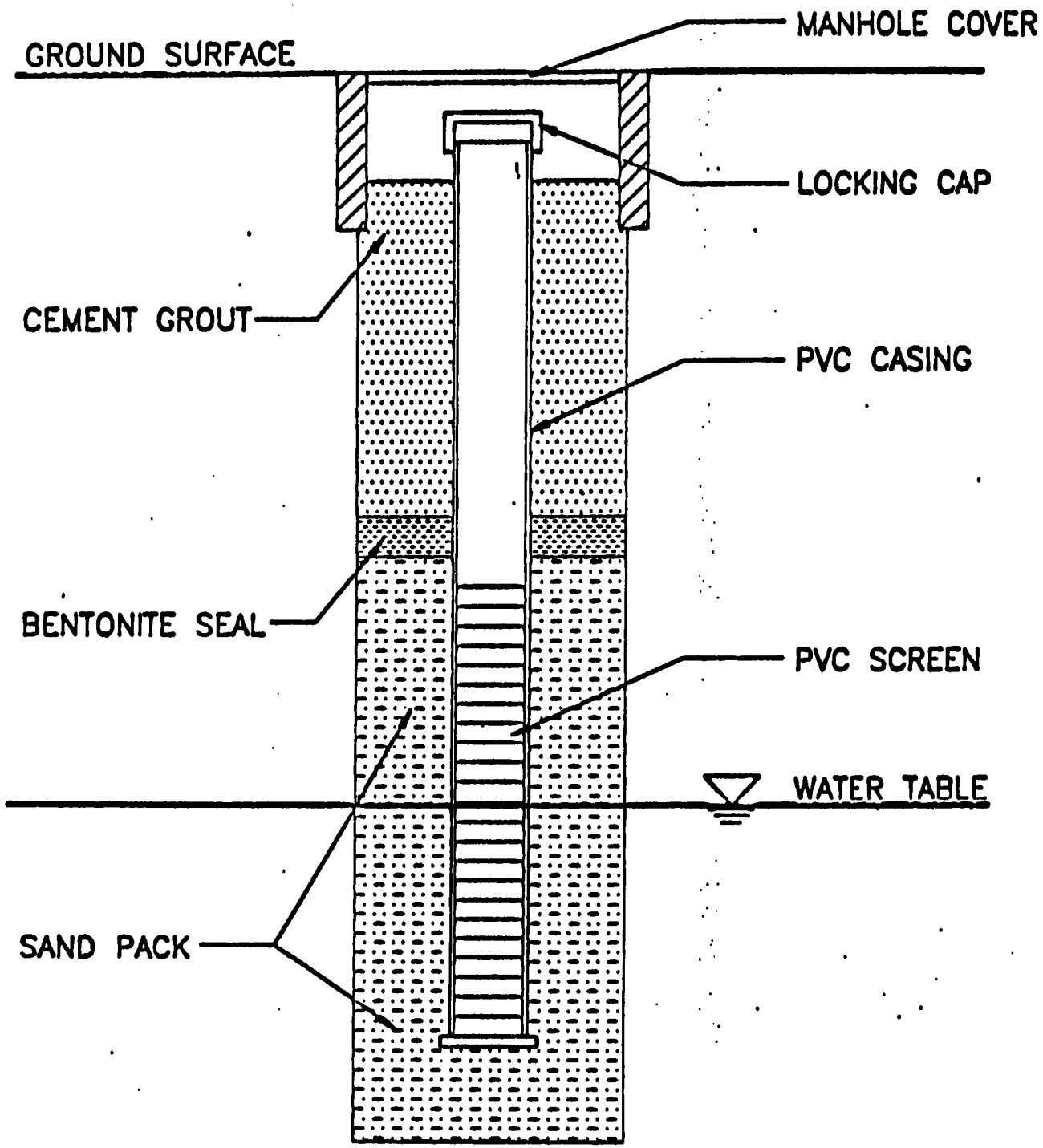


EEC
ENVIRONMENTAL ENGINEERING COMPANY, INC.
P. O. Box 11047 Columbia, SC 29211
(803) 256-7046

Figure 1: Site Facility Map

Stockman Oil Company Bulk Plant
1138 Reynolds Street
Greenwood, South Carolina

July 31, 1990; JDK



TYPICAL MONITORING WELL DESIGN

Stockman Oil Company Bulk Plant 1138 Reynolds Street Greenwood, South Carolina	EEC ENVIRONMENTAL ENGINEERING COMPANY, INC.	DATE: 9/18/90 DRAWN BY: EEC JOB NO. : UT1369 FIGURE NO. : 2

ATTACHMENT 1

TEMPORARY MONITORING WELL INSTALLATION

1. For each temporary monitoring well, a soil boring will be drilled to a depth approximately 5 feet below the time-of-drilling water table. The preferred method of drilling will be by power auger with 4.5-inch auger flights, five feet in length. Drilling tools and equipment will be decontaminated prior to commencement of each soil boring. Soils will be classified by a hydrogeologist during drilling of each soil boring, and a drilling log will be maintained by the hydrogeologist in the field.

2. A temporary monitoring well will be installed at each soil boring to facilitate collection of a ground-water sample. The temporary monitoring wells will be constructed of 2-inch, schedule 40, PVC screen and casing. The screen will have 0.010-inch slot openings. These materials will be decontaminated prior to installation.

GROUND-WATER SAMPLING AND ANALYSIS

Ground-water samples will be collected from each temporary monitoring well. The ground-water samples will be collected with a designated, decontaminated sampling bailer. Ground-water samples will be placed in laboratory prepared 40 ml glass sample bottles in anticipation of BTEX and TPH analyses. If EPA Method 625 is to be performed, the perspective ground-water sample will be placed in a 1-liter amber bottle. The samples will be maintained at a temperature of 4 degrees centigrade in an ice chest during transportation to the laboratory. Chain-of-custody records will be maintained for each sample and will accompany each sample to the laboratory.

Inventory records recycled 3/29/94

Stockman Oil

Mobil
AUTOMOTIVE — INDUSTRIAL LUBRICANTS

1138 REYNOLDS AVENUE
GREENWOOD, SC 29649

PHONE 803-223-8486
1-800-868-7569
FAX 803-223-2331

August 21, 1990

Robertha Dorsey
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, S.C. 29201

We have no insurance policy covering underground storage tanks.

Thank you,

Sincerely,

STOCKMAN OIL COMPANY
Pierce Stockman (BMS)
Pierce Stockman

PS/bs

Enclosures

RECEIVED
AUG 22 1990
GROUND-WATER
PROTECTION DIVISION

F 9

South Carolina
DHEC
Department of Health and Environmental Control
2600 Bull Street, Columbia, SC 29201

Commissioner: Michael D. Jarrett

Board: John B. Pate, MD, Chairman
William E. Applegate, III, Vice Chairman
John H. Burriss, Secretary
Toney Graham, Jr., MD
Richard E. Jabbour, DDS
Henry S. Jordan, MD
Currie B. Spivey, Jr.

Promoting Health, Protecting the Environment

August 10, 1990

A. Pierce Stockman
Stockman Oil Co.
1138 Reynolds St.
Greenwood, SC 29648

Re: Stockman Oil Bulk Plant
July 30, 1990 Assessment Plan
Number N-24-NO-04236
PCAS # 7315

Dear Mr. Stockman:

The Ground-Water Protection Division (GWPD) of the S. C. Department of Health and Environmental Control (SCDHEC) has reviewed the July 30, 1990 submittal prepared by Environmental Engineering Company for the referenced facility. The submittal is the soil and/or ground-water assessment plan requested by the Department in response to the December 27, 1989 assessment that indicated a release of a regulated substance had occurred at the referenced facility.

In accordance with the South Carolina Underground Storage Tank Control Regulations, Part 280, Subpart F, you are required to take necessary abatement actions to stop any leak (280.61). This may entail emptying the tanks or you may provide the results of tank and line tests, performed since the leak, indicating that none of the tanks or lines are currently leaking. The results of the tank and line tests or information on the emptying of the tanks should be submitted to this office by September 26, 1990.

The July 30, 1990 plan prepared by Environmental Engineering Company has been reviewed. The six soil borings proposed in the referenced plan do not address the vertical extent of the areas previously identified as contaminated. The analysis proposed in the plan for soil samples include benzene, toluene, ethylbenzene and xylene (BTEX) and total petroleum hydrocarbons (TPH) as appropriate. Since the contents of some of the tanks (gear oil, motor oil, and hydraulic fluid) are not as volatile as gasoline the Department recommends sampling the worst case well from each area using EPA Method 625.

recycled paper

If you have any questions, please feel free to call at (803)734-4672.

Sincerely,

Robert Devlin

Robert Devlin, Hydrogeologist
Underground Storage Tank Section
Ground-Water Protection Division
Bureau of Drinking Water Protection

cc: Billy DuPre, Upper Savannah District EQC
Stan Clark, Trust Section

South Carolina
DHEC
Department of Health and Environmental Control

File

August 6, 1990

TO: Stockman Oil
1138 Reynolds Avenue
Greenwood, SC 29646

RE: Request for SUPERB qualification
Facility: Stockman Oil
N-24-NO-04672 (PCAS-7315)

Dear Sir:

The South Carolina Department of Health and Environmental Control (SCDHEC) has received your December 22, 1989 request for The State Underground Petroleum Environmental Response Bank Act of 1988 (SUPERB) qualification. Due to the enormous amount of release reports during the SUPERB grace period, some time delays are to be expected before the submittal can be technically reviewed. To complete the submittal (In accordance with Section 44-2-130 (E) (1) of SUPERB) please forward twelve months of inventory records in accordance with Section R.61-92.8 of the 1985 Underground Storage Tank Regulations to this office for review. Also, please forward a copy of any insurance policy covering underground storage tank releases at the referenced facility. If no policy exists, a letter stating that fact will be acceptable. Please identify the notification number / permit number and/or PCAS number for the site when submitting the above information.

If you have any questions, feel free to call me at 734-5331.

Sincerely,

Robertha Dorsey

Robertha Dorsey, Data Coordinator
Trust Section
Ground-Water Protection Division
Bureau of Drinking Water Protection

Commissioner: Michael D. Jarrett Board: Henry S. Jordan MD, Chairman John B. Pate, MD, Vice Chairman William E. Applegate, III, Secretary
Toney Graham, Jr., MD John H. Burriss Richard E. Jabbour, DDS Currie B. Spivey, Jr.

2600 Bull Street Columbia, South Carolina 29201

EEC
Environmental Engineering Company, Inc. Post Office Box 11847 Columbia, SC 29211 (803) 256-7846

August 3, 1990

Robert Devlin, Hydrogeologist
Underground Storage Tank Section
Ground-Water Protection Division
South Carolina Department of Health
and Environmental Control
2600 Bull Street
Columbia, SC 29201

Subject: Phase I Soil and Ground-Water Assessment Plan
Stockman Oil Company - Bulk Plant
Greenwood, South Carolina

Dear Mr. Devlin:

Please find enclosed two (2) copies of the Phase I Soil and Ground-Water Assessment Plan for the Stockman Oil Company, Bulk Plant, located at 1130 Reynolds Street, Greenwood, South Carolina. This assessment plan was prepared as per your letter of June 20, 1990 to A. Pierce Stockman of Stockman Oil Company.

Mr. Stockman has requested that the South Carolina Department of Health and Environmental Control (SCDHEC) approve this project for SUPERB funding. Once the project has been approved for SUPERB funding, a cost estimate for implementation of the enclosed plan will be submitted for your review and approval for the preparation of a purchase order with respect to this project.

If you have any questions, comments or require any additional information, please do not hesitate to contact me at (803) 256-7846.

Yours very truly,

ENVIRONMENTAL ENGINEERING COMPANY, INC.

Donald A. Duncan, P.G.
Manager of Geological Services

DAD:dko

cc: A. Pierce Stockman
Stockman Oil Company
1138 Reynolds Street
Greenwood, SC 29648

File UT1329

RECEIVED
AUG 03 1990
WATER
PROTECTION DIVISION

Stockman Oil

1138 REYNOLDS AVENUE
GREENWOOD, SC 29646

Mobil
AUTOMOTIVE — INDUSTRIAL LUBRICANTS

PHONE 803-223-8486
1-800-868-7569
FAX 803-223-2331

July 24, 1990

Mr. Robert Devlin
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, S.C. 29201

Ref: N-24-NO-04236

Dear Mr. Devlin,

I have contracted with Mr. Don Duncan of Environmental Engineering Company, Inc. to provide DHEC with a plan for soil and/or ground water investigation. He has assured me that with the help of his company, Stockman Oil will be brought into compliance within the assigned schedule.

Sincerely,

STOCKMAN OIL COMPANY

Pierce Stockman

cc: Mr. Don Duncan
Environmental Engineering Company, Inc.

RECEIVED
JUL 25 1990
ER
PR[illegible] VISION

File copy

South Carolina
DHEC
Department of Health and Environmental Control

June 20, 1990

A. Pierce Stockman
Stockman Oil Co.
1138 Reynolds St.
Greenwood, SC 29648

Re: Laboratory Results-Soil Samples
Stockman Oil Bulk Plant
Number N-24-NO-04236
PCAS # 7315

Dear Mr. Stockman:

The Ground-Water Protection Division (GWPD) of the S. C. Department of Health and Environmental Control (SCDHEC) has reviewed the December 27, 1989 submittal prepared by Environmental Engineering Company for the referenced facility. This submittal is considered a report of a suspected release in the South Carolina Underground Storage Tank Regulations R.61-92 Section 280.50. The analytical results (102 mg/kg and 116 mg/kg Total Petroleum Hydrocarbons and 16 mg/kg Total BTEX) indicate that a release of regulated substance has occurred at the facility. Therefore in accordance with Section 280.52(b1), a release investigation must be undertaken and the procedures outlined in Section 280.62(a6) followed.

Please be reminded that while your request for SUPERB funding for possible cleanup is being evaluated, the requirement of the South Carolina Underground Storage Tank Regulations R.61-92 Section 280 apply. There are specific actions and reports required to be completed within specific time frames. These time frames cannot be delayed while awaiting SUPERB funding; the actions and reports must be completed as required as the application for SUPERB eligibility is being evaluated concurrently.

To fulfill the requirements of Section 280.62(a6), include samples analyzed for benzene, toluene, ethylbenzene and xylene (BTEX). This investigation should define the vertical and horizontal extent of the contamination. A plan for soil and/or ground-water investigation should be submitted to my attention no later than August 1, 1990.

Upon SCDHEC approval and initiation of the preliminary assessment plan requested above, please be reminded that the initial response and reporting requirements outlined in Section 280.60 apply.

Commissioner: Michael D. Jarrett Board: Henry S. Jordan MD, Chairman John B. Pate, MD, Vice Chairman William E. Applegate, III, Secretary
Toney Graham, Jr., MD John H. Burriss Richard E. Jabbour, DDS Currie B. Spivey, Jr.

2600 Bull Street Columbia, South Carolina 29201

If you have any questions, contact me at (803) 734-4672.

Sincerely,

Robert Devlin, Hydrogeologist
Underground Storage Tank Section
Ground Water Protection Division
Bureau of Drinking Water Protection

RD

cc: Stan Clark, Trust Section
Upper Savannah District EQC

N-24-ND-0423.

AA - RD

Stockman Oil

Mobil
AUTOMOTIVE — INDUSTRIAL LUBRICANTS

1138 REYNOLDS AVENUE
GREENWOOD, SC 29646

PHONE 803-223-8486
1-800-868-7569
FAX 803-223-2331

May 17, 1990

Mr. Wayne Corley
South Carolina Department Of Health And Environmental Control
Groundwater Protection Division
2600 Bull Street
Columbia, S.C. 29201

Dear Mr. Corley,

We sent the enclosed letter on December 22 requesting recommendations regarding corrective action on our soil contamination. If cleaning is required, we wanted to be covered by the Superb Act; that is, compensated for our expenses by the state fund.

To date, we have received no response from DHEC, and are awaiting instructions.

Yours truly,

STOCKMAN OIL COMPANY

Pierce Stockman

PS/bs

Enclosures

MAY 21 1990
GROUND-WATER
PROTECTION DIVISION

Stockman Oil

Mobil
AUTOMOTIVE — INDUSTRIAL LUBRICANTS

1138 REYNOLDS AVENUE
GREENWOOD, SC 29646

PHONE 803-223-8486
1-800-868-7569
FAX 803-223-2331

December 22, 1989

South Carolina Department Of Health And Environmental Control
Groundwater Protection Division
Sims-Aycock Building
2600 Bull Street
Columbia, S.C. 29201

Dear Sir,

I have enclosed a copy of our laboratory results of soil samples taken from soil borings at Stockman Oil. Please review these and forward your comments and recommendations regarding future actions Stockman Oil should take in this matter.

Should any cleanup or corrective action be required, Stockman Oil is, by this notice, applying for coverage under the Superb Act.

Sincerely,

STOCKMAN OIL COMPANY

Pierce Stockman

PS/bs

Enclosure

RECEIVED
MAY 21 1990
GROUNDWATER
PROTECTION DIVISION

EEC

Environmental Engineering Company, Inc. Post Office Box 11847 Columbia, SC 29211 (803) 256-7846

December 19, 1989

A. Pierce Stockman
Stockman Oil Company
1138 Reynolds Street
Greenwood, South Carolina 29646

Re: Laboratory Results-Soil Samples
Stockman Oil Company Bulk Plant

Dear Mr. Stockman:

Please find enclosed the laboratory results for the five soil samples collected from the soil borings made by Environmental Engineering Company, Inc. on December 9, 1989.

The analytical results for the samples indicate contamination of soil from all samples with the exception of boring no. 3. A copy of the laboratory analytical results are enclosed. The more significant contamination was from soil borings 4 and 5 near the gasoline tanks.

Environmental Engineering Company, Inc. recommends that you submit this information along with a copy of the laboratory results to the Ground Water Protection Division of the South Carolina Department of Health and Environmental Control. In your letter of transmittal to DHEC, you should ask for their technical review and comments for these laboratory results, and for their recommendations and/or future actions that Stockman Oil Company should take with respect to this matter.

Additionally, you should also notify DHEC in your letter that should any cleanup or corrective action be required at this location, that you are by this notice applying for coverage under the Superb Act.

Also as per your request I am enclosing an invoice for the professional services provided by Environmental Engineering Company, Inc.

If you have any questions regarding this matter or if I can be of further service to you and Stockman Oil Company, please do not hesitate to call.

Yours very truly,

ENVIRONMENTAL ENGINEERING COMPANY, INC.

Donald A. Duncan, P.G.
Manager of Geological Services

DAD/gfn

Enclosure

MAY 21 1990
GROUND-WATER
PROTECTION DIVISION

Stockman Oil
1138 REYNOLDS AVENUE
GREENWOOD, SC 29646

South Carolina Department of Health & Environmental Control
Groundwater Protection Division
Sims-Aycock Building
2600 Bull Street
Columbia, S.C. 29201

EA Services

EEC, INC.

500 RIVERMONT DR.
COLUMBIA SC 29210
ATTN:

Description: 5 Samples Received on 12/11/89

Sampled By: CLIENT Client Job/PO Number:

Reference Number: 8829283 Reported Date : 12/18/89
Invoice Number:

Sample	Description	Client Id
0001	SO-SB-1	EEC, INC.
0002	SO-SB-2	EEC, INC.
0003	SO-SB-3	EEC, INC.
0004	SO-SB-4	EEC, INC.
0005	SO-SB-5	EEC, INC.

PARAMETER		SAMPLE NUMBER 0001	0002	0003	0004	0005
BENZENE	UG/KG			5*	58	25*
ETHYL BENZENE	UG/KG			5*	2300	570
TOLUENE	UG/KG			5*	26	4
TOTAL REC. PETROLEUM HYDROCARBON	PPB	** 01 **	** 02 **			
XYLENES	UG/KG			5*	14000	5500

FOOTNOTES

** 01 ** 102.0 MG/KG ** 02 ** 116.0 MG/KG

*ANALYZED FOR BUT NOT DETECTED

APPROVED BY:
Lewis Frederick
Laboratory Director

Lab Certification #32112

24 (2) RD PCAS 7315 RD

Stockman Oil

Mobil
AUTOMOTIVE — INDUSTRIAL LUBRICANTS

1138 REYNOLDS AVENUE
GREENWOOD, SC 29646

PHONE 803-223-8486
1-800-868-7569
FAX 803-223-2331

December 22, 1989

South Carolina Department Of Health And Environmental Control
Groundwater Protection Division
Sims-Aycock Building
2600 Bull Street
Columbia, S.C. 29201

Dear Sir,

I have enclosed a copy of our laboratory results of [redacted] taken from soil borings at Stockman Oil. Please review these and forward your comments and recommendations regarding future actions Stockman Oil should take in this matter.

Should any cleanup or corrective action be required, Stockman Oil is, by this notice, applying for coverage under the [redacted]

Sincerely,

STOCKMAN OIL COMPANY

Pierce Stockman

Pierce Stockman

PS/bs

Enclosure

RECEIVED
DEC 27 1989
GROUNDWATER
PROTECTION DIVISION

N-24-NO-
04236

EA Services

EEC, INC.

500 RIVERMONT DR.
COLUMBIA SC 29210
ATTN:

Description: 5 Samples Received on 12/11/89

Sampled By: CLIENT Client Job/PO Number:

Reference Number: 8829283 Reported Date : 12/18/89
Invoice Number:

Sample	Description	Client Id
0001	SO-SB-1	EEC, INC.
0002	SO-SB-2	EEC, INC.
0003	SO-SB-3	EEC, INC.
0004	SO-SB-4	EEC, INC.
0005	SO-SB-5 .	EEC, INC.

PARAMETER		SAMPLE NUMBER 0001	0002	0003	0004	0005
BENZENE	UG/KG			5*	58	25*
ETHYL BENZENE	UG/KG			5*	2300	570
TOLUENE	UG/KG			5*	26	4
TOTAL REC. PETROLEUM HYDROCARBON	PPB	** 01 **	** 02 **			
XYLENES	UG/KG			5*	[redacted]	5500

FOOTNOTES

** 01 [redacted] ** 02 ** [redacted]

*ANALYZED FOR BUT NOT DETECTED

RECEIVED
DEC 27 1989
GROUNDWATER PROTECTION DIVISION

APPROVED BY:
Lewis Frederick
Laboratory Director

Lab Certification #32112

Ok w/ Donna about
total fees!

Needs letter
about level of
contamination
very low
12/29/93

4/8/91

Jim,

I called Enviro Lab & asked what tests were run for the Stockman Oil (Lab reference # 9012153) site. I was told 2 water samples were tested according to their records. TMW-1 was tested for BTEX (well was near unleaded (UP) plus tank). TMW-2 was tested for EPA-610 (well was near hydraulic tank). A corrected lab report with UG/L is coming. According to the test results, water has been impacted around the UP tanks.

J Hooper

DHEC
PROMOTE PROTECT PROSPER

Tier II Assessment Plan
Underground Storage Tank Program

RECEIVED
DEC 11 2003
UNDERGROUND STORAGE TANK PROGRAM

UST Permit #: 04736 County: Greenwood Facility Name: Stockman Oil Two, Inc.
Facility Address: 1138 Reynolds Ave. City: Greenwood State: South Carolina Zipcode: 29649
Responsible Party: Stockman Oil Two, Inc. Address: 1138 Reynolds Ave.
City: Greenwood State: South Carolina Zipcode: 29649
No. USTs: 5 Removed? 11/15/1990 (date: MM/DD/YYYY) Replaced? 12/01/1990 (date: MM/DD/YYYY)
Current use of facility/property:

Currently the facility is an in service convenience store and bulk plant.

Current property owner name: Stockman Oil Two, Inc. Address: 1138 Reynolds Ave.
City: Greenwood State: South Carolina Zipcode: 29649

Field Screening Methodology

Specify the field screening methodology to be used. The use of field screening methods to optimize the number and location of permanent wells is required.

Field screening will be attempted utilizing a geoprobe direct push rig or drill rig using solid stem augers to obtain groundwater samples. If groundwater samples can not be obtained in a reasonable time frame due to geologic conditions, KLM will submit soil samples from the bottom of the temporary wells in an attempt to delineate the contaminant plume. Field screening will be completed using a mobile gas chromatograph for water samples and a photoionization detector for soil samples. Due to the depth to groundwater at the site probe footage is estimated at 870 feet.

Permanent Monitoring Wells (estimate number and total completed depth)

of shallow wells: 10 Total depth: 350
# of deep wells: 1 Total depth: 75

Comments, if warranted:

twenty shallow probe locations (36 feet) and two deep probe locations (75 feet)

Analyses

List the analytical parameters (e.g., BTEX, MTBE) and estimated number.

BTEX, Naph, MTBE	37	Soil - PAH's	10
EDB	15		
1,2 DCA	15		
PAH's	15		
Methane	15		
Filtered Lead	15		
Nitrate/Sulfate/FE	15		
8 Oxygenates	15		
Soil - BTEX, Naph, MTBE	10		

UST DOCKET

Implementation Schedule *(Use MM/DD/YYYY format - Example 01/23/2004)*

Start up date: _____ *(MM/DD/YYYY)* Completion date: _____ *(MM/DD/YYYY)*

Report submittal date: _____ *(MM/DD/YYYY)*

UST Permit #: 04736 Facility Name: Stockman Oil Two, Inc.

Site Maps

DEC 11 2013
UNDERGROUND STORAGE TANK PROGRAM

1. Attach a copy of the relevant portion of the USGS topographic map showing the site location.

2. Prepare a site base map. This map must be accurately scaled, but does not need to be surveyed. The map must include the following:

North arrow	Legend with facility name and address, UST Permit number, date, and a bar scale
Location of property lines	Streets or highways (indicate names and numbers)
Location of buildings	Identification of located buildings
Paved areas on or adjacent to site	Location of all present and former ASTs and USTs
Previous soil sampling locations	Underground and above ground utilities on or adjacent to site
Previous monitoring well locations	Location of any other potential receptor

Aquifer Characterization

Pump test: ☐ Slug tests: ☑ (check one and provide explanation for choice)

slug test on two shallow monitoring wells and the telescoping deep well.

Small Volume Disposal Type and Method

Soil:

American Biomass in Walterboro, SC

Purge water:

U.S. Water in Goose Creek, SC

Additional comments:

twenty shallow probe locations (36 feet) and two deep probe locations (75 feet)

D H E C

PROMOTE PROTECT PROSPER

2600 Bull Street
Columbia, SC 29201-1708

Tier II Plan

SOUTH CAROLINA

Department of Health and Environmental Control (DHEC)

Bureau of Underground Storage Tank Management

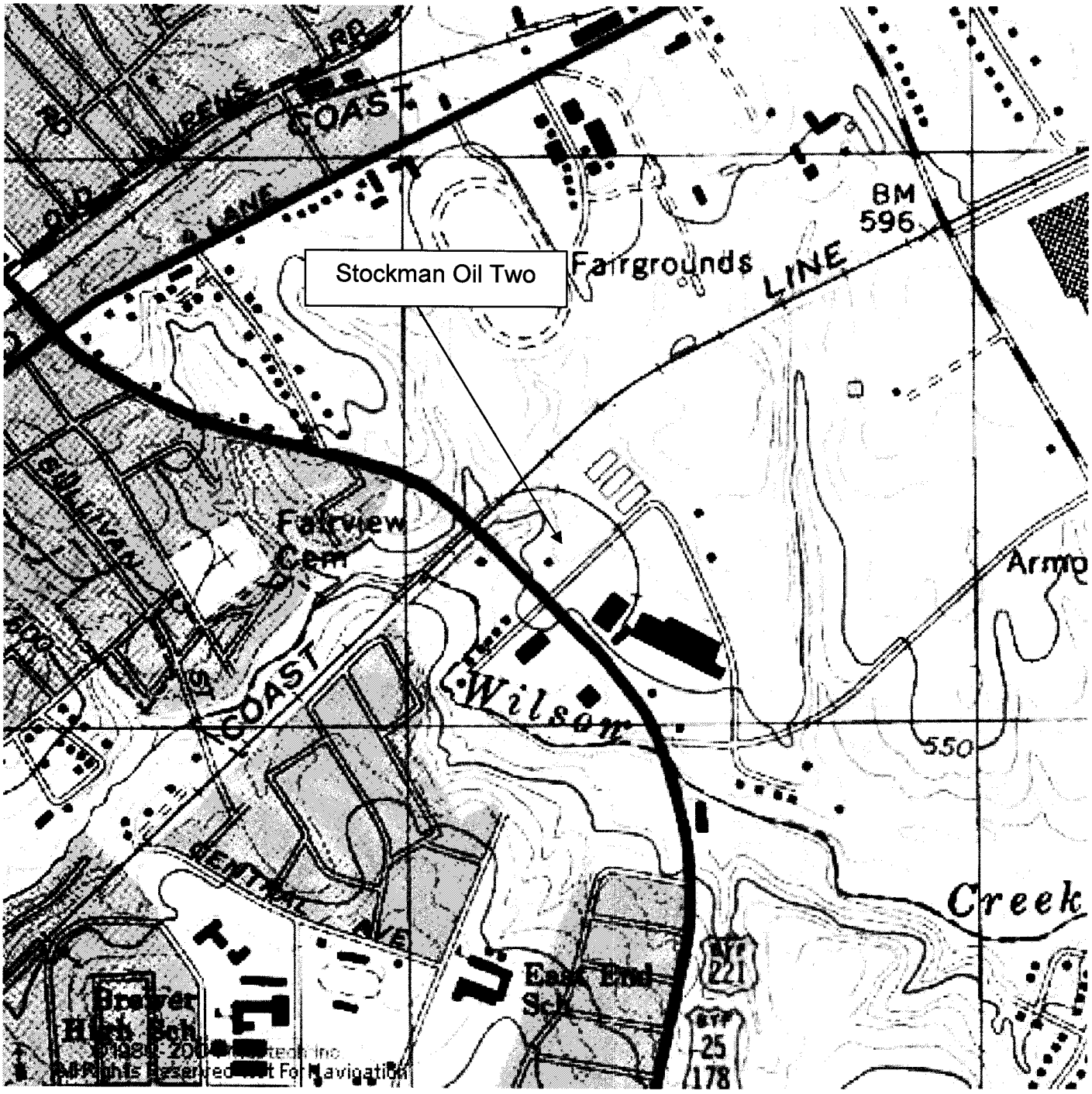
Facility Name: **Stockman Oil Two, Inc.**

UST Permit#: **04736** Cost Agreement #:

		QTY	UNIT	UNIT PRICE	TOTAL
1	Plan*	1	x	100.00	100.00
	B. Tax Maps	1	x	50.00	50.00
2	Receptor Survey*	1	x	500.00	500.00
3	Comprehensive Survey		x	1,000.00	-
4	Mob/Demob (List component #)				
	A. Equipment (6,9,17)	3	x	575.00	1,725.00
	B. Personnel (1,6,9,10,12,16,17)	7	x	290.00	2,030.00
	C. Adverse Terrain Vehicle		x	575.00	-
5	Soil Borings (hand auger)*		feet x	14.00	-
6	Soil Borings (drilled) and Field Screening* (Includes collection and quantification)	870	feet x	17.00	14,790.00
	B. Alternative, on-site		feet x	12.50	-
	C. Fractured Rock		feet x	27.50	-
7	Soil Leachability Model		each x	200.00	-
8	Abandonment*	870	feet x	5.00	4,350.00
9	Well Installation * (includes drilling costs)				
	A. Water Table (hand auger)		feet x	20.00	-
	B. Water Table (drilled)	350	feet x	38.00	13,300.00
	C. Telescoping	75	feet x	58.00	4,350.00
	D. Rock Drilling		feet x	58.00	-
	E. 2" Rock Coring		feet x	44.10	-
	F. 4" Rock Coring		feet x	50.40	-
	G. Multi sampling port/screen		each x	47.20	-
10	Sample Collection*				
	A. Ground-water	11	samples x	55.00	605.00
	B. Air/Vapor		samples x	90.00	-
	C. Water Supply		samples x	25.00	-
	D. Groundwater No Purge	4	samples x	35.00	140.00
	E. Gauge Well Only		per well x	20.00	-
	F. Sample Below Product		samples x	50.00	-
	G. Passive Diffusion Bag		each x	40.00	-
11	Analyses-Groundwater (See Analytical Methodology for analyses)				
	A. BTEX + Napth. + MTBE	37	samples x	100.00	3,700.00
	B. Rush BTEX Analysis		samples x	120.00	-
	D. PAH's	15	samples x	120.00	1,800.00
	E. Lead	15	samples x	20.00	300.00
	F. EDB	15	samples x	55.00	825.00
	G. 8 RCRA Metals		samples x	140.00	-
	H. TPH (9070)		samples x	55.00	-
	J. BOD		samples x	40.00	-
	K. Nitrate	15	samples x	20.00	300.00
	L. Sulfate	15	samples x	20.00	300.00
	M. Ferrous Iron	15	samples x	20.00	300.00
	N. Methane	15	samples x	110.00	1,650.00
	O. Organic Lead		samples x	100.00	-
	P. 8 Oxygenates	15	samples x	85.00	1,275.00
	AA. Filtered Lead	15	samples x	46.00	690.00
	BB. 1,2-DCA	15	samples x	10.75	161.25

UST Facility Name	Stockman Oil Two, Inc.			Cost Agreement #	00000
UST Permit#	04736				
		QTY	UNIT	UNIT PRICE	TOTAL
11	Analyses-Soil				
	Q. BTEX + Napth.	10	samples x	100.00	1,000.00
	R. PAH's	10	samples x	120.00	1,200.00
	S. 8 RCRA Metals		samples x	150.00	-
	T. TPH (9071)		samples x	60.00	-
	U. TPH (3550B/8015B)		samples x	65.00	-
	V. TPH (5030/8015B)		samples x	65.00	-
	W. Grain size/hydrometer		samples x	75.00	-
	X. Total Organic Carbon		samples x	35.00	-
11	Analyses-Air				
	Y. BTEX + Napth.		samples x	247.50	-
	Z. Hydrocarbon Fuel Identification		samples x	620.00	-
12	Aquifer Characterization*				
	A. Pumping Test		hours x	120.00	-
	B. Slug Test	3	tests x	150.00	450.00
13	Free Product Recovery Rate Test*		tests x	120.00	-
14	Fate/Transport Modeling				
	A. Mathematical Model		models x	300.00	-
	B. Computer Model		models x	500.00	-
15	Risk Evaluation				
	A. Tier I		x	300.00	-
	B. Tier II		x	500.00	-
16	Subsequent Survey*	1	x	260.00	260.00
17	Disposal				
	A. Wastewater				
	1. Purging/Sampling	2	drums x	90.00	180.00
	2. Pumping Test/EFR		gallons x	0.60	-
	B. Free Product		drums x	110.00	-
	C. Soil (Treatment/Disposal)	25	drum/ton x	50.00	1,250.00
18	Miscellaneous (attach receipts)		x		-
	Tractor Mob. For Land Clearing		x		-
	Per Stephanie Briney		x		-
23	EFR				
	A. 8-hour Event*		each x	3,000.00	-
	B. Additional Hour		per hour x	204.00	-
	C. Off-gas treatment		per hour x	35.00	-
24	Granulated Activated Carbor (GAC) filter system installation & service:				
	A. New GAC System Installation*		each x	2,500.00	-
	B. Refurbished GAC Sys. Install*		each x	850.00	-
	C. Filter replacement/removal*		each x	450.00	-
	D. GAC System removal,cleaning		each x	450.00	-
	E. GAC System housing		each x	450.00	-
	F. In-line particulate filter		each x	140.00	-
	G. Additional piping & fittings		feet x	4.00	-
25	Well Repair				
	A. Additional Copies of Report		each x	25.00	-
	B. Repair 2x2 MW Pad		each x	100.00	-
	C. Repair 4x4 MW Pad		each x	150.00	-
	D. Repair Well Vault		each x	225.00	-
	E. Replace well cover & gasket		each x	30.00	-
	F. Replace well cover bolts		each x	10.00	-
	G. Replace locking well cap & lock		each x	15.00	-
				sub-total	4,340.00
19	Report/Project Management and Coordination (Subtotal x .15)		x	**Sub-Total** 0.15	**$57,581.25** 8,637.19
20	**Total**				**$66,218.44**

* The appropriate mobilization cost can be added to complete these tasks, as necessary.



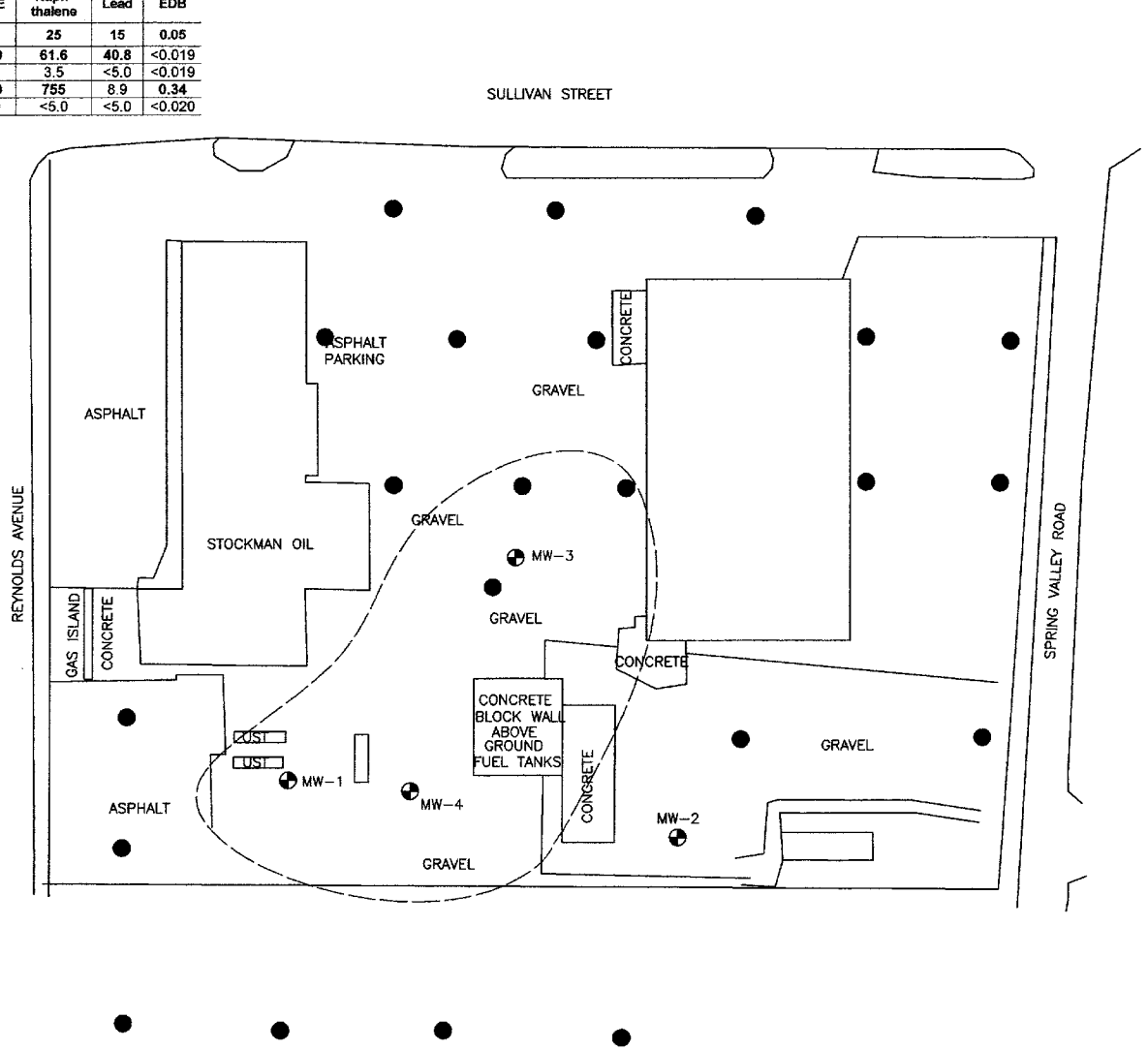
KLM Environmental, LLC

Phase I· Phase II· Underground Storage Tanks· Soil & Water Sampling· Well Installation

Figure 1
USGS Map
Stockman Oil Two
Greenwood, SC
Project # 05086.1

TABLE 2
Summary of Analytical Data
Stockman Oil
Greenwood, SC

Well #	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Naph-thalene	Lead	EDB
RBSL	–	5	1000	700	10000	40	25	15	0.05
MW-1	11/17/08	**132**	32.0	28.0	466	**1200**	**61.6**	**40.8**	<0.019
MW-2	11/17/08	<5.0	<5.0	<5.0	<10.0	13.7	3.5	<5.0	<0.019
MW-3	11/17/08	**24500**	**39400**	**2620**	**11400**	**6720**	**755**	8.9	**0.34**
MW-4	11/17/08	**5.7**	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020



LEGEND

MW-1 MONITORING WELL

ANTICIPATED PROBE LOCATIONS

0 30 60

KLM Environmental, LLC

Phase I Phase II Underground Storage Tanks Soil & Water Sampling Well Installation

FIGURE 2
PROPOSED PROBE LOCATIONS
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

BOARD:
Paul C. Aughtry, III
Chairman
Edwin H. Cooper, III
Vice Chairman
Steven G. Kisner
Secretary

D H E C
PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

BOARD:
Henry C. Scott
M. David Mitchell, MD
Glenn A. McCall
Coleman F. Buckhouse, MD

Promoting and protecting the health of the public and the environment

JUL 22 2009

MR PIERCE STOCKMAN
STOCKMAN OIL TWO INCORPORATED
1138 REYNOLDS AVE
GREENWOOD SC 29646-2736

Re: Tier II Directive
Stockman Oil Two, Inc., 1138 Reynolds Ave, Greenwood, SC
UST Permit #04736; Cost Agreement #34788; MWA UMW-22365
Release reported December 27, 1989
Tier II Plan received December 11, 2008
Greenwood County

Dear Mr. Stockman:

The Underground Storage Tank (UST) Program of the South Carolina Department of Health and Environmental Control (SCDHEC) recognizes your commitment to continue work at this site utilizing your own contractor. The UST Program has reviewed the referenced Tier II Assessment Plan and cost agreement submitted by KLM Environmental. The Tier II assessment document and appendices may be obtained from our website at http://www.scdhec.gov/environment/lwm/html/ust_guidance_docs.htm.

Assessment activities at the site should begin immediately upon receipt of this letter. Cost agreement number has been approved for the amount shown on the enclosed cost agreement form. Please be aware that the February 1, 2006 SUPERB Allowable Costs sheet states "If vertical and horizontal extent of chemicals of concern are not fully defined by this tier report, additional mobilizations may not be approved by the Department." **Please contact the department prior to well installation for concurrence regarding the final well locations**. Please note that the screens of the permanent monitoring wells must bracket the water table, and all monitoring well locations must be technically justified or installation costs will not be approved. Field screening points converted to wells will be compensated at the permanent well installation rate. No-purge sampling is required for previously installed monitoring wells (except deep wells) where the screens bracket the water table. Cost agreement # 34788 has been approved for the amount shown on the enclosed cost proposal form. Please note the following adjustments to the submitted cost agreement:

- Receptor Survey and Comprehensive Survey were omitted since they were performed during previous assessments.
- Personnel mobilizations were reduced from seven to five
- Field Screening footage has been approved for 1160 feet to allow for eight additional field screening points (please see enclosed site map).
- Number of groundwater samples is approved for the one new telescoping well, ten new shallow wells, and four existing shallow wells.
- Groundwater analysis for BTEX + Naphth. + MtBE has been approved for all permanent wells, and fourteen of the field screening points. The field screening and laboratory data must be submitted to the project manager before monitoring wells are to be installed. Nitrate, sulfate, and ferrous iron analysis are necessary for new well development only. Methane, PAH's, and filtered lead analyses have been removed from the cost agreement.

UST 2 tech DOCKET

The UST Program, because of unnecessary dilution, cannot make decisions if the reporting limit of individual petroleum Chemicals of Concern (CoC) exceeds Risk-Based Screening Levels (RBSLs). Note that the Program may deny payment for any non-detect analysis where the reporting limit exceeds the RBSL. The UST Program encourages the use of 'J' values as necessary so the appropriate action can be determined for a release.

Beginning in 2009, the UST Program will begin requiring that laboratories be certified through the SCDHEC Office of Environmental Laboratory Certification for the oxygenate compounds. The UST Program will require that laboratories submit the application for certification no later than December 31, 2008. Beginning April 1, 2009, the UST Program will no longer reimburse costs for oxygenate analysis for any laboratory that is not certified. Detailed information regarding the oxygenate certification can be found on the UST Guidance Documents webpage. (http://www.scdhec.gov/environment/envserv/docs/OxygenateCertification.pdf. The document can also be accessed from the UST documents page at http://www.scdhec.net/environment/ lwm/forms/). Any laboratory with questions regarding the certification requirements, should contact the Office of Environmental Laboratory Certification at (803) 896-0970.

KLM Environmental can submit an invoice for direct billing from the State Underground Petroleum Environmental Response Bank (SUPERB) Account. Please note that all applicable South Carolina certification requirements apply to the laboratory services, well installation, and report preparation. All site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor.

A Report of Findings and the invoice are due within 90 days from the date of this letter. An interim well drilling invoice may be submitted for this scope of work. If the invoice and completed report are not submitted within 120 days from the date of this letter, monies allocated to pay this invoice will be uncommitted. This means that the invoice will not be processed for payment until all other committed funds are paid or monies become available.

Please note that you and/or your contractor are responsible for obtaining all off-site access agreements and/or encroachment permits necessary for this scope of work.

Please note that Sections 44-2-110(4) and 44-2-130 of the SUPERB Statute state that no costs will be allowed unless prior approval from the Program is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the Department for the cost to be paid. The SCDHEC reserves the authority to pay only for work properly performed and/or technically justified and will only pay rates in accordance with established criteria. Further, SCDHEC reserves the right to question and/or reject costs if deemed unreasonable. The SCDHEC reserves the right to audit project records at any time during the project or after completion of work.

The Department grants pre-approval for transportation of virgin petroleum impacted soil and groundwater from the referenced site to a permitted treatment facility. There can be no spillage or leakage in transport. All investigation derived waste (IDW) must be properly contained and labeled prior to disposal. IDW should not be stored on-site longer than ninety (90) days. A copy of the disposal manifest and/or acceptance letter from the receiving facility that clearly designates the quantity received must be included as an appendix to the report. If the COC concentrations based on laboratory analysis are below Risk Based Screening Levels (RBSLs), please contact the project manager for approval to dispose of soil and/or groundwater on site. The SUPERB Account will not reimburse for transportation or treatment of soil and/or groundwater with concentrations below RBSLs.

On all correspondence regarding this site and scope of work, please reference UST Permit #04736 and CA #34788. If you have any questions concerning this correspondence, please contact me at (803) 896-6396, fax me at (803) 896-6245, or e-mail me at bosnicvj@dhec.sc.gov.

Sincerely,

Victoria F Bosnick

Victoria Bosnick, Hydrogeologist
Assessment Section
Assessment and Corrective Action Division
Underground Storage Tank program
Bureau of Land and Waste Management

enc.: Approved Cost Agreement
Monitoring Well Approval
Site Map

cc: KLM Environmental, PO Box 2704, West Columbia, SC 29169 (with enc.)
Technical File (with enc.)

BOARD:
Paul C. Aughtry, III
Chairman

Edwin H. Cooper, III
Vice Chairman

Steven G. Kisner
Secretary

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment

BOARD:
Henry C. Scott

M. David Mitchell, MD

Glenn A. McCall

Coleman F. Buckhouse, MD

Monitoring Well Approval

Approval is hereby granted to:	KLM Environmental
(On behalf of):	Stockman Oil Two, Inc.
Facility:	Stockman Oil Two, Inc., 1138 Reynolds Ave, Greenwood, SC
UST Permit Number:	04736
County:	Greenwood

This approval is for the installation of twenty-eight temporary, ten shallow permanent, and one deep permament groundwater monitoring wells. The monitoring wells are to be installed in the approved locations. Monitoring wells are to be installed following the South Carolina Well Standards, R.61-71, and the applicable guidance documents.

Please note that R.61-71 requires the following:

1. All wells shall be drilled, constructed, and abandoned by a South Carolina certified well driller per R.61-71.D.1.

2. All monitoring wells shall be labeled as required by R.61-71.H.2.c.

3. A Water Well Record Form or other form provided or approved by the Department shall be completed and submitted to the Department within 30 days after well completion or abandonment unless another schedule has been approved by the Department. The form should contain the "as-built" construction details and all other information required by R.61-71.H.1.f

4. All analytical data and water levels obtained from each monitoring well shall be submitted to the Department within 30 days of receipt of laboratory results unless another schedule has been approved by the Department as required by R.61-71.H.1.d.

5. If any of the information provided to the Department changes, notification to Victoria Bosnick, the project manager (tel: (803) 896-6396 or e-mail: bosnicvj@dhec.sc.gov) shall be provided a minimum of twenty-four (24) hours prior to well construction as required by R.61-71.H.1.a.

6. All temporary monitoring wells shall be abandoned within 5 days of borehole completion using appropriate methods as required by R.61-71.H.4.c. All other wells shall be properly developed per R.61-71.H.2.d.

7. Departmental approval is required prior to abandonment of all monitoring wells as required by R.61-71.H.1.a.

This approval is pursuant to the provisions of Section 44-55-40 of the 1976 South Carolina Code of Laws and R.61-71 of the South Carolina Well Standards and Regulations, dated April 26, 2002. A copy of this approval should be on the site during well installation.

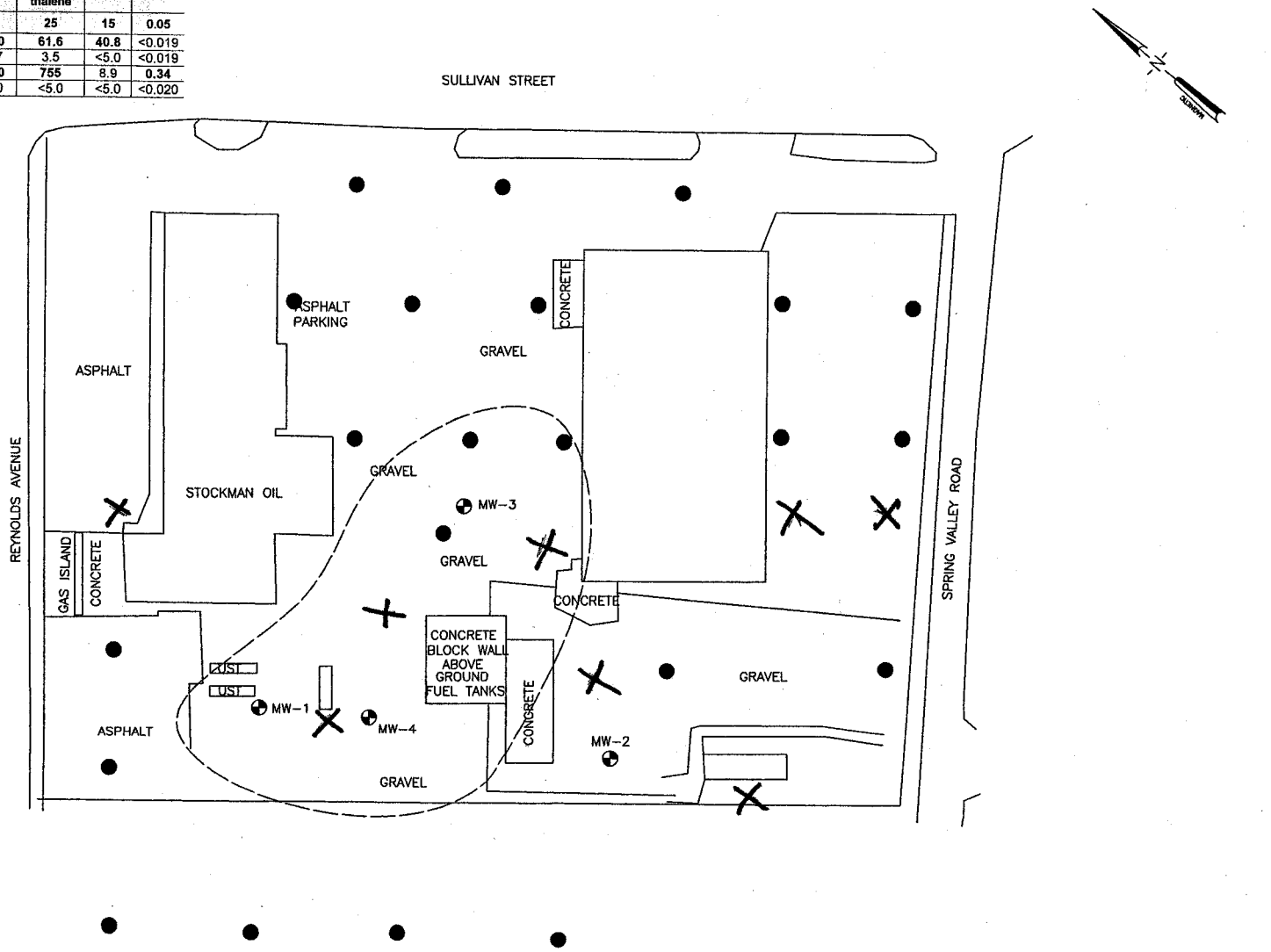
Date of Issuance: **December 18, 2008** **Approval #:** **UMW-22365**

Victoria F Bosnick

Victoria Bosnick, Hydrogeologist
Assessment Section
Division of Assessment and Corrective Action
Underground Storage Tank Program
Bureau of Land and Waste Management

TABLE 2
Summary of Analytical Data
Stockman Oil
Greenwood, SC

Well #	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Naph-thalene	Lead	EDB
RBSL	--	5	1000	700	10000	40	25	15	0.05
MW-1	11/17/08	132	32.0	28.0	466	1200	61.6	40.8	<0.019
MW-2	11/17/08	<5.0	<5.0	<5.0	<10.0	13.7	3.5	<5.0	<0.019
MW-3	11/17/08	24500	39400	2620	11400	6720	755	8.9	0.34
MW-4	11/17/08	5.7	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020



LEGEND

MW-1 MONITORING WELL

ANTICIPATED PROBE LOCATIONS

0 30 60

KLM Environmental, LLC

Phase I Phase II Underground Storage Tanks Soil & Water Sampling Well Installation

FIGURE 2
PROPOSED PROBE LOCATIONS
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

Approved Cost Agreement 34788

Facility: 04736 STOCKMAN OIL TWO INC
BOSNICVJ
PO Number:

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
01 PLAN						
		A	PLAN PREPARATION	1.0000	100.00	100.00
04 MOB/DEMOB						
		A	EQUIPMENT	3.0000	575.00	1,725.00
		B	PERSONNEL	5.0000	290.00	1,450.00
06 SOIL BORINGS (DRILLED)						
		A	SOIL BORINGS & FLD SCREENING	1,160.0000	17.00	19,720.00
08 ABANDONMENT						
			ABANDONMENT	1,160.0000	5.00	5,800.00
09 WELL INSTALLATION						
		B	WATER TABLE (DRILLED)	350.0000	38.00	13,300.00
		C	TELESCOPING	75.0000	58.00	4,350.00
10 SAMPLE COLLECTION						
		A	GROUND WATER	11.0000	55.00	605.00
		D	GROUNDWATER NO-PURGE	4.0000	35.00	140.00
11 ANALYSES						
	GW GROUNDWATER	A	BTEX+NAPTH+MTBE	29.0000	100.00	2,900.00
		BB	1,2-DCA	15.0000	10.75	161.25
		E	LEAD	15.0000	20.00	300.00
		F	EDB	15.0000	55.00	825.00
		K	NITRATE	11.0000	20.00	220.00
		L	SULFATE	11.0000	20.00	220.00
		M	FERROUS IRON	11.0000	20.00	220.00
		P	8 OXYGENATES	15.0000	85.00	1,275.00
	SOIL SOIL	Q	BTEX+NAPTH	10.0000	100.00	1,000.00
12 AQUIFER CHARACTERIZATION						
		B	SLUG TEST	3.0000	150.00	450.00
16 SUBSEQUENT SURVEY						
			SUBSEQUENT SURVEY	1.0000	260.00	260.00
17 DISPOSAL						
		A1	WASTEWATER - PURGING/SAMPLING	2.0000	90.00	180.00
		C	SOIL (TREATMENT/DISPOSAL)	25.0000	50.00	1,250.00
19 RPT/PROJECT MNGT & COORDINATIO						
			PCT PERCENT	0.1500	56,451.25	8,467.69
					Total Amount	64,918.94

Chris

04736

SIGNATURE PAGE

This report entitled "**TIER II ASSESSMENT" for Stockman Oil Two, Inc.** has been prepared at the request of and for the exclusive use of the South Carolina Department of Health and Environmental Control. It has been prepared and reviewed by the undersigned.

UST DEC 21 2009 PROGRAM

Prepared By:

A duplinger For:

J. Micah Bennett
Hydrogeologist

Reviewed By:

Mark L. Keller, PG
President

6 tech UST DOCKET

12/16/09

Date

MARK L. KELLER REGISTERED No. 2311 12/16/09 SOUTH CAROLINA PROFESSIONAL GEOLOGIST

UST
DEC 2 1 2009
PROGRAM

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1.0 INTRODUCTION

The Stockman Oil site is located at 1138 Reynolds Avenue in Greenwood, South Carolina. A general site location map is provided as Figure 1 in Appendix A. The initial release was reported on December 27th, 1989 and the site has been undergoing assessment and monitoring activities since that date. The Stockman Oil site has been an in service gas station since the 1930's. The dispensers and the location of the underground storage tanks has not changed since that time. The UST's were upgraded by Stockman Oil in 1980. This Tier II Report serves to illustrate the findings of this Tier II Assessment at the site.

2.0 ASSESSMENT INFORMATION

2.1 Piezometric Data

Figure 2 in Appendix A serves as the comprehensive site map showing the locations of the fifteen monitoring wells located at the Stockman Oil Two site. Shallow monitoring wells MW-5 through MW-7 and MW-9 through MW-14 were installed on November 11th, 2009, along with the casing for the telescoping monitoring well. Telescoping monitoring well DW-1 and MW-8 were completed on November 12th, 2009. The well logs for the recent well installation event are provided in Appendix B. Soil sampling was conducted during the well installation activities. Those results are presented in Table 7 and laboratory data is provided in Appendix E. Piezometric data for all monitoring wells associated with the release at the Stockman Oil Two site can be found in Table 1. A piezometric map was created utilizing the data obtained during surveying activities, which were performed by KLM Environmental, LLC personnel. A piezometric map is included in Appendix A as Figure 3.

TABLE 1
Groundwater Data (feet)
Stockman Oil Two, Inc.
Greenwood, SC

Monitoring Well	Date	TOC Elevation	Screened Interval	TOC to FP	TOC to GW	GW Elevation
MW-1	11/18/09	100.00	14.6-29.6	--	25.87	74.13
MW-2	11/18/09	92.79	20-30	--	21.79	71.00
MW-3	11/18/09	94.82	25-35	--	23.44	71.38
MW-4	11/18/09	97.52	25-35	--	24.38	73.14
MW-5	11/18/09	104.40	20-40	28.24	37.97	--
MW-6	11/18/09	104.92	20-40	25.61	37.20	--
MW-7	11/18/09	104.13	20-40	--	27.05	77.08
MW-8	11/18/09	98.19	15-35	--	26.99	71.20
MW-9	11/18/09	95.10	15-35	--	25.64	69.46
MW-10	11/18/09	104.25	20-40	--	29.38	74.87
MW-11	11/18/09	90.86	15-30	--	23.96	66.90
MW-12	11/18/09	89.44	15-30	--	23.33	66.11
MW-13	11/18/09	92.36	15-35	--	21.23	71.13
MW-14	11/18/09	99.74	15-35	--	24.84	74.90
DW-1	11/18/09	95.18	56-61	--	23.66	71.52

*** Telescoping wells not used to construct the shallow piezometric map**

Depths to fluid measurements were collected relative to the top of casing for each well with the accuracy of measurements being within 0.01 foot or 1/8 inch. A hydrocarbon interface probe capable of detecting and measuring a hydrocarbon product thickness of 0.01 foot or 1/8 inch was used for depth to fluid measurements. Historical groundwater elevations are provided in Appendix H.

2.2 Hydraulic Conductivity & Transmissivity

Shallow wells, MW-8 and MW-11, along with deep well DW-1 were slug tested during this Tier II. The average hydraulic conductivity for MW-8 and MW-11 was calculated to be 0.082531 m/day, with a transmissivity of 1.5345 m^2/day. The hydraulic conductivity was calculated at deep well DW-1 to be 0.012342 m/day. The transmissivity was calculated to be 0.229475 m^2/day. Hydraulic conductivity and transmissivity calculations were calculated utilizing the Bouwer-Rice method and can be found in Appendix C.

2.3 Average Linear Flow Velocity and Hydraulic Gradient

The hydraulic gradient calculation was performed utilizing data from monitoring wells MW-2, MW-10, and MW-11. The resulting hydraulic gradient is calculated to be 0.02387 ft/ft. The linear flow velocity is calculated using a modified form of Darcy's Law:

$$V=K/n\ (\Delta h/\Delta L)$$

where: V = the average linear flow velocity (L/t)
K = the hydraulic conductivity (L/t)
n = the estimated effective porosity (%) = 45%
$\Delta h/\Delta l$ = the hydraulic gradient (L/L)

The linear flow velocity is calculated to be 0.0043778 m/day or 0.01436 ft/day or 5.24 ft/year. This is used to represent the migration of COC. The vertical gradient was also calculated using information from MW-3 and DW-1. The vertical gradient is calculated to be 0.00546 ft/ft which indicates an upward flow (discharging aquifer). Calculations are provided in Appendix C.

2.4 Vertical and Horizontal Plume Delineation

Horizontal delineation of the contaminant plume was accomplished with the use of a Geoprobe Model 5400 with dynamic hammering capabilities. Field screening results are provided in Table 2. Fifteen groundwater samples were submitted to Pace Analytical Services for verification analysis and are presented in Table 3 and Appendix D. The boring locations and delineation information are identified on Figure 4 in Appendix A.

TABLE 2
Field Screening Analytical Data
Stockman Oil
Greenwood, SC

Sample ID	Matrix	Depth (ft)	Date	Time	PID (ppm)	Comments
B-1	GW	41	9/3/09	1200	0.0	Sent to Pace Analytical
B-2	GW	41	9/3/09	945	0.0	Sent to Pace Analytical
B-3	GW	41	9/3/09	850	0.0	Sent to Pace Analytical
B-4	GW	41	9/3/09	800	0.0	Sent to Pace Analytical
B-5	GW	41	9/3/09	1500	0.0	Sent to Pace Analytical
B-6	GW	41	9/2/09	1540	0.0	
B-7	GW	41	9/2/09	1500	74.3	
B-8	GW	41	9/2/09	1400	0.0	Sent to Pace Analytical
B-9	GW	41	9/2/09	1850	10.1	
B-10	GW	41	9/2/09	2000	22.3	Sent to Pace Analytical
B-11	GW	41	9/3/09	1244	0.0	Sent to Pace Analytical
B-12	GW	45	9/2/09	2100	FP	1 inch free product
B-13	GW	41	9/2/09	1925	92.4	
B-14	GW	41	9/2/09	1810	95.7	Sent to Pace Analytical
B-15	GW	41	9/2/09	1720	10.1	Sent to Pace Analytical
B-16	GW	41	9/2/09	1655	10.7	
B-17	GW	41	9/2/09	1630	0.0	Sent to Pace Analytical
B-18	GW	41	9/3/09	1630	0.0	
B-19	GW	41	9/3/09	1700	0.0	Sent to Pace Analytical
B-20	GW	41	9/2/09	1745	40.3	
B-21	GW	41	9/2/09	1300	35.7	
B-22	GW	41	9/3/09	1347	56.3	
B-23	GW	45	9/3/09	1120	0.0	Sent to Pace Analytical
B-24	GW	41	9/3/09	1310	10.3	
B-25	GW	45	9/3/09	1052	24.1	
B-26	GW	41	9/3/09	1525	0.0	
B-27	GW	41	9/3/09	1600	0.0	Sent to Pace Analytical
B-28	GW	41	9/3/09	1407	0.0	

TABLE 3
Delineation Verification Data
Stockman Oil Two, Inc.
Greenwood, SC

Sample ID	Matrix	Depth	Benzene (5)	Toluene (1000)	Ethyl-benzene (700)	Xylenes (10000)	MTBE (40)	Naph-thalene (25)
B-1	GW	41	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0
B-2	GW	41	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0
B-3	GW	41	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0
B-4	GW	41	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0
B-5	GW	41	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0
B-8	GW	41	**6.5**	<5.0	<5.0	<10.0	<5.0	3.2
B-10	GW	41	190	985	224	1090	26.4	**171**
B-11	GW	41	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0
B-14	GW	41	**4730**	**2030**	353	1830	**483**	**221**
B-15	GW	41	**123**	<250	<250	<500	**<250**	**<250**
B-17	GW	41	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0
B-19	GW	41	**5.1**	<5.0	<5.0	<10.0	<5.0	<5.0
B-23	GW	45	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0
B-27	GW	41	**33.8**	<5.0	<5.0	<10.0	<5.0	3.9

Permanent monitoring wells were sampled on November 18th, 2009 and these samples were submitted to Pace Analytical Services (SCDHEC Certification # 99006). Analytical results are provided in Tables 4 thru 6 and in Appendix E. Field sampling sheets from this event are provided in Appendix F. A map is provided as Figure 5 in Appendix A showing the sample results along with the well locations and delineation information. Figures 6 through 8 provide a detailed cross section of the site based on information obtained during the well installation activities.

A disposal manifest for contaminated soil and groundwater generated during the event is provided in Appendix G. Twenty-five drums of contaminated soil and twenty-seven gallons of contaminated groundwater were generated during drilling and sampling activities. Results for all wells sampled are as follows:

TABLE 4
Summary of Analytical Data
Stockman Oil Two, Inc.
Greenwood, SC

Well #	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Naph-thalene	Lead	EDB
RBSL	--	**5**	**1000**	**700**	**10000**	**40**	**25**	**15**	**0.05**
MW-1	11/17/08	**132**	32.0	28.0	466	**1200**	**61.6**	**40.8**	<0.019
	11/18/09	**230**	116	113	929	**6320**	**202**	**42.4**	**0.072**
MW-2	11/17/08	<5.0	<5.0	<5.0	<10.0	13.7	3.5	<5.0	<0.019
	11/18/09	<5.0	<5.0	<5.0	<10.0	2.7	<5.0	<5.0	<0.020
MW-3	11/17/08	**24500**	**39400**	**2620**	**11400**	**6720**	**755**	8.9	**0.34**
	11/18/09	**21400**	**34700**	**2150**	**11700**	**5780**	**<580**	<5.0	<0.019
MW-4	11/17/08	**5.7**	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
	11/18/09	**13.9**	<5.0	<5.0	3.4	<5.0	<5.0	<5.0	<0.019
MW-5	11/18/09	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
MW-6	11/18/09	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
MW-7	11/18/09	<5.0	5.4	2.2	12.0	<5.0	<5.0	**15.7**	<0.019
MW-8	11/18/09	<5.0	2.3	1.2	7.5	<5.0	<5.0	**30.8**	<0.020
MW-9	11/18/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	**22.4**	<0.020
MW-10	11/18/09	<5.0	<5.0	<5.0	3.6	<5.0	<5.0	10.6	<0.019
MW-11	11/18/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	**21.2**	<0.020
MW-12	11/18/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	**79.5**	<0.019
MW-13	11/18/09	**19.6**	24.0	2.6	8.2	38.7	<5.0	**34.2**	<0.019
MW-14	11/18/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	13.7	<0.020
DW-1	11/18/09	**70.2**	128	15.6	97.7	25.3	7.1	**137**	<0.020

Note: All results in µg/l. Numbers in bold exceed RBSL. FP = Free Product NS = Not Sampled for that parameter.

TABLE 5
Oxygenate Data
Stockman Oil
Greenwood, SC

Well #	Date Sampled	Ethanol	(ETBE)	(DIPE)	(ETBA)	(TBA)	(TAME)	(TAA)	(TBF)
RBSL	--	**10000**	**47**	**150**	--	**1400**	**128**	**240**	--
MW-1	11/18/09	<2000	<100	**176**	<1000	397	**147**	**<1000**	<500
MW-2	11/18/09	<200	<10.0	<5.0	<100	<100	<10.0	<100	<50.0
MW-3	11/18/09	**<40000**	**<2000**	**1390**	<20000	**<20000**	**1130**	**76600**	<10000
MW-4	11/18/09	<200	<10.0	<5.0	<100	<100	<10.0	<100	<50.0
MW-5	11/18/09	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
MW-6	11/18/09	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
MW-7	11/18/09	<200	<10.0	<5.0	<100	<100	<10.0	<100	<50.0
MW-8	11/18/09	<200	<10.0	<5.0	<100	<100	<10.0	<100	<50.0
MW-9	11/18/09	<200	<10.0	<5.0	<100	<100	<10.0	<100	<50.0
MW-10	11/18/09	<200	<10.0	<5.0	<100	<100	<10.0	<100	<50.0
MW-11	11/18/09	<200	<10.0	<5.0	<100	<100	<10.0	<100	<50.0
MW-12	11/18/09	<200	<10.0	3.0	<100	<100	<10.0	198	<50.0
MW-13	11/18/09	<200	<10.0	<5.0	<100	49.2	<10.0	**1130**	<50.0
MW-14	11/18/09	435	<10.0	<5.0	<100	<100	<10.0	<100	<50.0
DW-1	11/18/09	495	<10.0	4.9	<100	<100	<10.0	**309**	<50.0

TABLE 6
Summary of Auxiliary Data
Stockman Oil Two, Inc.
Charleston, SC

Well #	Date Sampled	Methane	Ferrous Iron (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	1,2 DCA	PAH's
**	--	--	--	--	--	5	--
MW-1	11/18/09	NS	NS	NS	NS	**<13.0**	NS
MW-2	11/18/09	NS	NS	NS	NS	<5.0	NS
MW-3	11/18/09	NS	NS	NS	NS	**<260**	NS
MW-4	11/18/09	NS	NS	NS	NS	<5.0	NS
MW-5	11/18/09	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
MW-6	11/18/09	**FP**	**FP**	**FP**	**FP**	**FP**	**FP**
MW-7	11/18/09	NS	<0.50	29.8	13	<5.0	NS
MW-8	11/18/09	NS	<0.50	2.9	1.8	<5.0	NS
MW-9	11/18/09	NS	<0.50	4.0	7.7	<5.0	NS
MW-10	11/18/09	NS	<0.50	2.0	2.1	<5.0	NS
MW-11	11/18/09	NS	<0.50	0.88	59	<5.0	NS
MW-12	11/18/09	NS	<0.50	2.3	48	2.8	NS
MW-13	11/18/09	NS	<0.50	<0.10	96	<5.0	NS
MW-14	11/18/09	NS	<0.50	2.6	<1.0	<5.0	NS
DW-1	11/18/09	NS	<0.50	0.17	12	<5.0	NS

Note: All results in µg/l. Numbers in bold exceed RBSL. FP = Free Product NS = Not Sampled for that parameter.

TABLE 7
Summary of Soil Analytical Data
Stockman Oil Two, Inc.
Greenwood, SC

Well #	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Naph-thalene	PAH's
RBSL	--	**187**	**12085**	**1114500**	**176800**	--	**292**	--
MW-5	11/11/09	<4.2	<4.2	<4.2	<8.4	<4.2	6.4	NS
MW-6	11/11/09	**<239**	<239	<239	<477	<239	**506**	NS
MW-7	11/11/09	<4.6	<4.6	<4.6	<9.2	<4.6	2.1	NS
MW-8	11/11/09	<4.0	<4.0	<4.0	<8.0	<4.0	<4.0	NS
MW-9	11/11/09	<5.1	<5.1	<5.1	<10.3	<5.1	1.7	NS
MW-10	11/11/09	<5.1	<5.1	<5.1	<10.2	<5.1	<5.1	NS
MW-11	11/11/09	<4.0	<4.0	<4.0	<7.9	<4.0	<4.0	NS
MW-12	11/11/09	<5.4	<5.4	<5.4	<10.7	<5.4	<5.4	NS
MW-13	11/11/09	<4.7	<4.7	<4.7	<9.5	<4.7	<4.7	NS
MW-14	11/11/09	<4.6	<4.6	<4.6	<9.2	<4.6	<4.6	NS

Note: All results in µg/l. Numbers in bold exceed RBSL. FP = Free Product NS = Not Sampled for that parameter.

3.0 CONCLUSIONS

The contaminant plume is currently roughly defined horizontally. Free phase petroleum product was detected in monitoring wells MW-5 and MW-6 at 9.73 and 11.59 feet respectively. These levels were measured seven days after well completion at the site. The telescoping well was installed to a depth of 61 feet where rock was encountered. Results from the sampling indicate the telescoping well is impacted at the site.

The Stockman Oil Two site has been an in service gas station since the 1930's. Since beginning operations the dispenser location and underground storage tank area have not changed. In 1980 the underground storage tanks were upgraded to what is presently on site. The testing records were verified and no problems with the tanks or lines have been found. The very long history of gas station operations accounts for the severe thickness of free product found in the area of the dispensers.

Based on the sampling results, vertical delineation at the site is not complete. A drill rig capable of rock drilling will need to be utilized to perform any vertical delineation in future events. Delineation horizontally could be better defined by the installation of a monitoring well across Reynolds Avenue from MW-5. Free product delineation should also be conducted due to the thickness measured during the sampling event. Immediate Aggressive Fluid Vapor Recovery (AFVR) events should be conducted to begin the removal of the free phase product.

4.0 REFERENCES

KLM Environmental, LLC, *Monitoring Report*, December, 2008.

Force & Associates, Inc., *Tier I Report*, July, 2002.

South Carolina Department of Health and Environmental Control Bureau of Land and Waste Management Underground Storage Tank Program, *Guidance Document: Tier II Assessment,* December 6th, 2005.

South Carolina Department of Health and Environmental Control Bureau of Land and Waste Management Underground Storage Tank Program, *South Carolina Risk-Based Corrective Action for Petroleum Releases*, May 15, 2001.

APPENDIX A

Figures

KLM Environmental, LLC

Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation

Figure 1
USGS Map
Stockman Oil Two
Greenwood, SC
Project # 05086.2

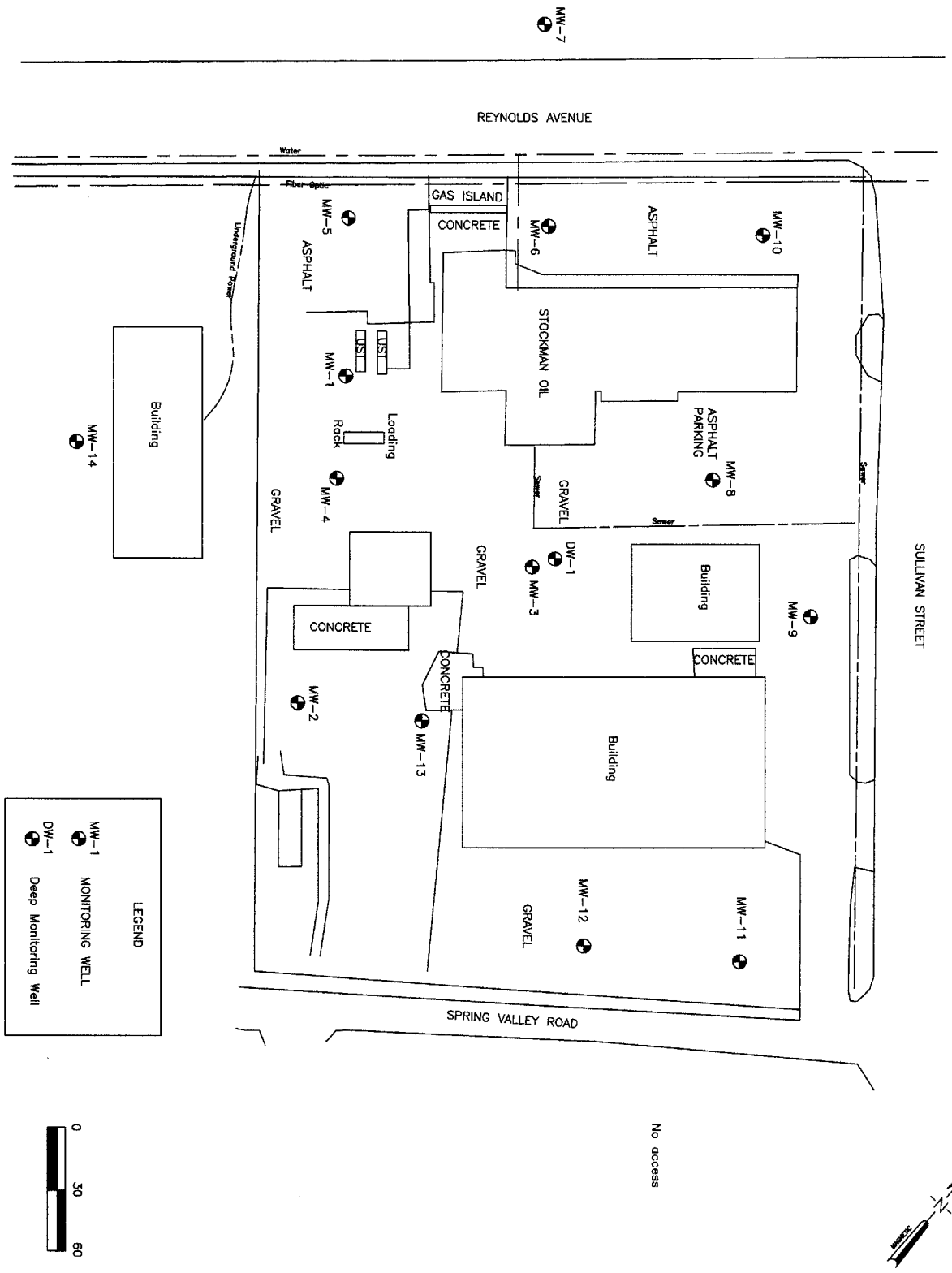


FIGURE 2
SITE MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

KLM Environmental, LLC
Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation

TABLE 1
Groundwater Data (feet)
Stockman Oil Two, Inc.
Greenwood, SC

Monitoring Well	Date	TOC Elevation	Screened Interval	TOC to FP	TOC to GW	GW Elevation
MW-1	11/18/09	100.00	14.5-29.6	--	25.87	74.13
MW-2	11/18/09	92.79	20-30	--	21.79	71.00
MW-3	11/18/09	94.82	25-35	--	23.44	71.38
MW-4	11/18/09	97.52	25-35	28.24	24.38	73.14
MW-5	11/18/09	104.40	20-40	--	31.37	--
MW-6	11/18/09	104.92	20-40	25.61	31.20	--
MW-7	11/18/09	104.13	20-40	--	27.05	77.08
MW-8	11/18/09	98.19	15-35	--	24.99	73.20
MW-9	11/18/09	95.10	15-35	--	25.64	69.46
MW-10	11/18/09	104.25	20-40	--	29.38	74.87
MW-11	11/18/09	90.86	15-30	--	23.96	66.90
MW-12	11/18/09	89.44	15-30	--	23.33	66.11
MW-13	11/18/09	92.36	15-35	--	21.23	71.13
MW-14	11/18/09	99.74	15-35	--	24.84	74.90
DW-1	11/18/09	95.18	55-61	--	23.66	71.52

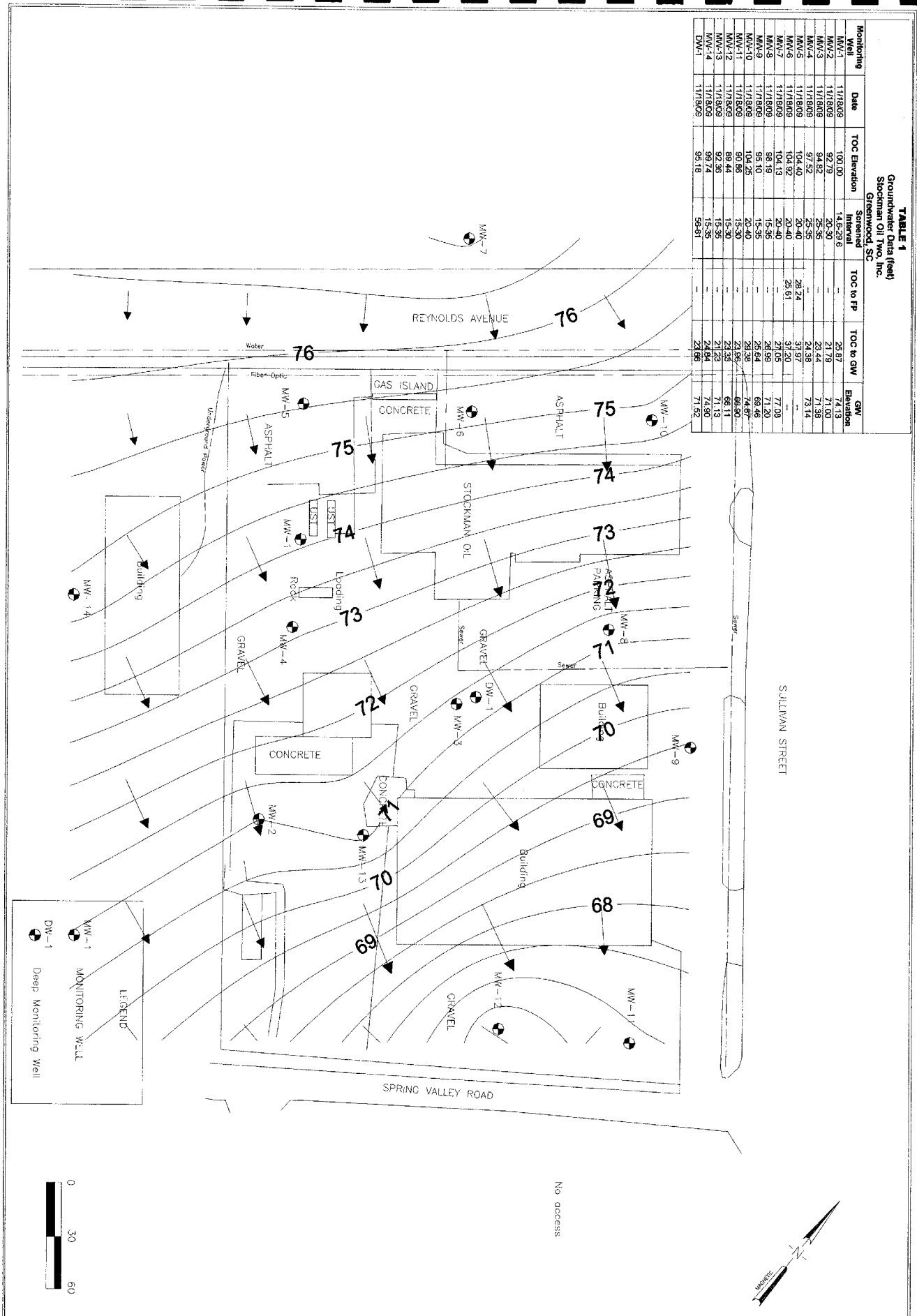


FIGURE 3
PIEZOMETRIC MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

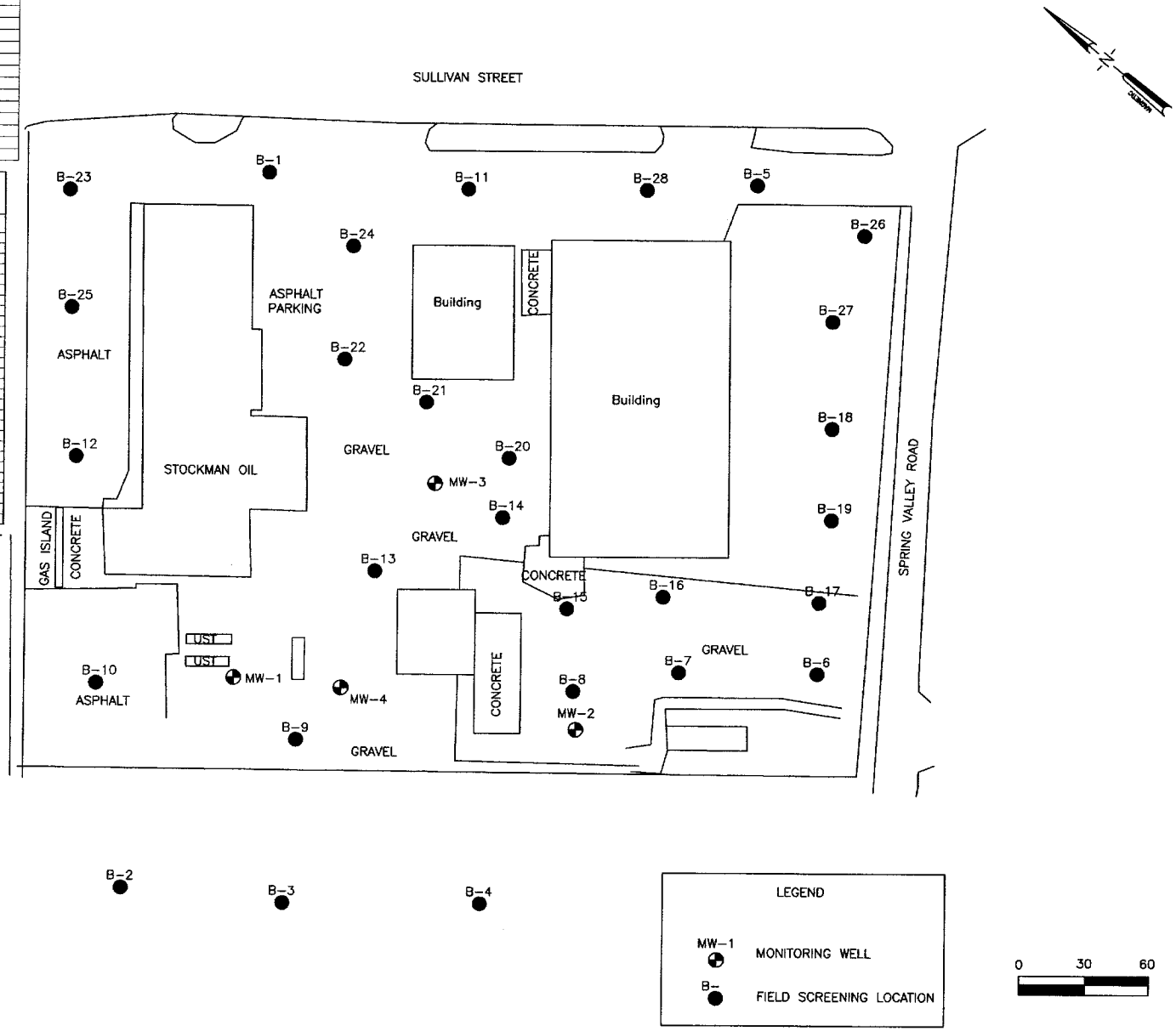
KLM Environmental, LLC
Phase I Phase II Underground Storage Tanks Soil & Water Sampling Well Installation

TABLE 4
Laboratory Confirmation Data
Stockman Oil
Greenwood, SC

Sample ID	Matrix	Depth (ft)	Benzene (5)	Toluene (1000)	Ethylbenzene (700)	Xylenes (10000)	MTBE (40)	Naphthalene (25)
B-1	GW	41	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0
B-2	GW	41	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0
B-3	GW	41	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0
B-4	GW	41	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0
B-5	GW	41	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0
B-8	GW	41	**6.5**	<5.0	<5.0	<10.0	<5.0	3.2
B-10	GW	41	**190**	985	224	1060	26.4	**171**
B-11	GW	41	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0
B-14	GW	41	**4730**	**2030**	353	1830	**483**	**221**
B-15	GW	41	**123**	<250	<250	<500	<250	<250
B-17	GW	41	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0
B-19	GW	41	5.1	<5.0	<5.0	<10.0	<5.0	<5.0
B-23	GW	45	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0
B-27	GW	41	**33.8**	<5.0	<5.0	<10.0	<5.0	3.9

TABLE 3
Field Screening Analytical Data
Stockman Oil
Greenwood, SC

Sample ID	Matrix	Depth (ft)	Date	Time	PID (ppm)	Comments
B-1	GW	41	9/3/09	1200	0.0	Sent to Pace Analytical
B-2	GW	41	9/3/09	945	0.0	Sent to Pace Analytical
B-3	GW	41	9/3/09	850	0.0	Sent to Pace Analytical
B-4	GW	41	9/3/09	800	0.0	Sent to Pace Analytical
B-5	GW	41	9/3/09	1500	0.0	Sent to Pace Analytical
B-6	GW	41	9/2/09	1540	0.0	
B-7	GW	41	9/2/09	1500	74.3	
B-8	GW	41	9/2/09	1400	0.0	Sent to Pace Analytical
B-9	GW	41	9/2/09	1850	10.1	
B-10	GW	41	9/2/09	2000	22.3	Sent to Pace Analytical
B-11	GW	41	9/3/09	1244	0.0	Sent to Pace Analytical
B-12	GW	45	9/2/09	2100	FP	1 inch free product
B-13	GW	41	9/2/09	1925	92.4	
B-14	GW	41	9/2/09	1810	95.7	Sent to Pace Analytical
B-15	GW	41	9/2/09	1720	10.1	Sent to Pace Analytical
B-16	GW	41	9/2/09	1655	10.7	
B-17	GW	41	9/2/09	1630	0.0	Sent to Pace Analytical
B-18	GW	41	9/3/09	1630	0.0	
B-19	GW	41	9/3/09	1700	0.0	Sent to Pace Analytical
B-20	GW	41	9/2/09	1745	40.3	
B-21	GW	41	9/2/09	1300	35.7	
B-22	GW	41	9/3/09	1347	56.3	
B-23	GW	45	9/3/09	1120	0.0	Sent to Pace Analytical
B-24	GW	41	9/3/09	1310	10.3	
B-25	GW	45	9/3/09	1052	24.1	
B-26	GW	41	9/3/09	1525	0.0	
B-27	GW	41	9/3/09	1600	0.0	Sent to Pace Analytical
B-28	GW	41	9/3/09	1407	0.0	

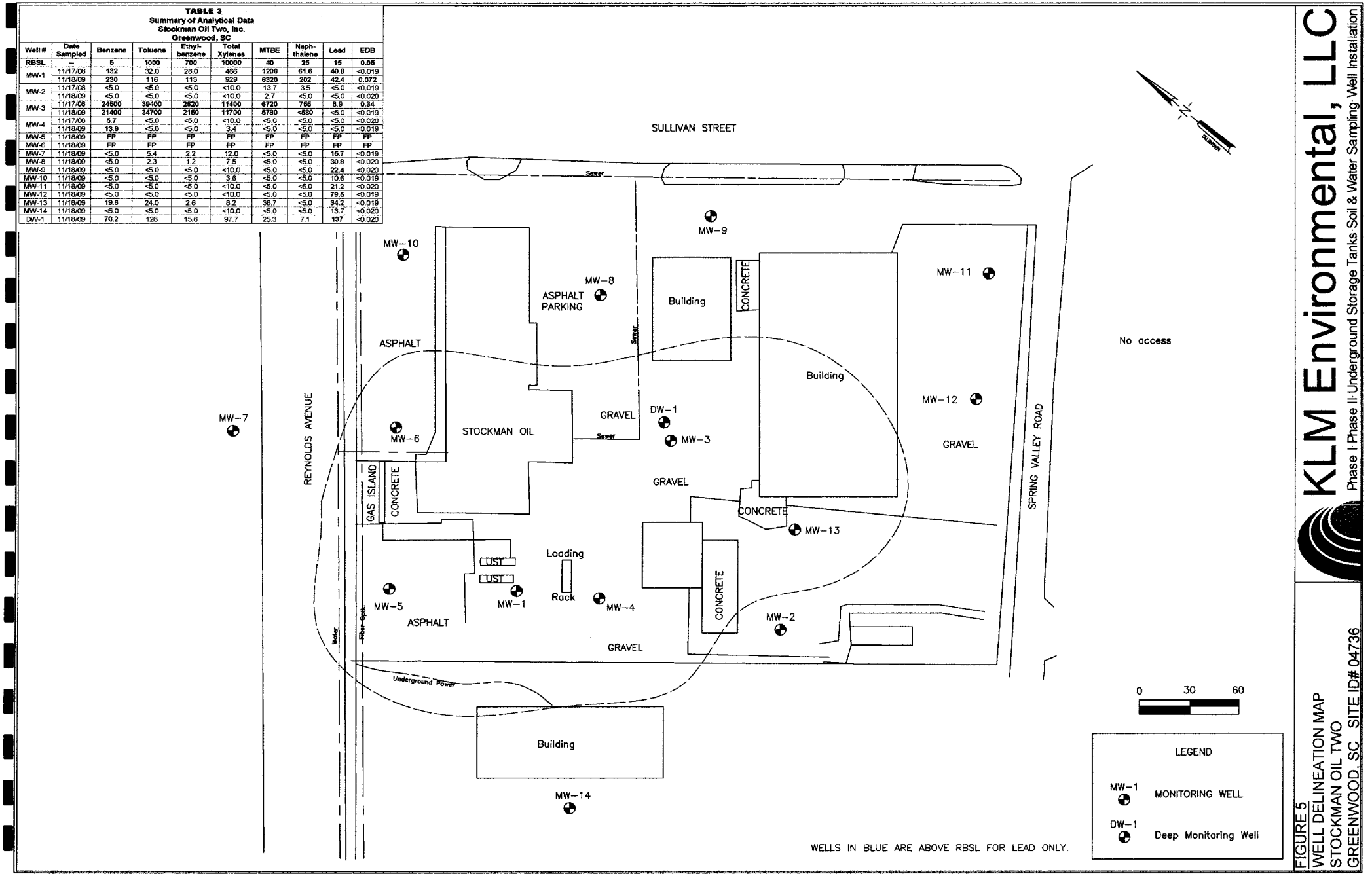


KLM Environmental, LLC
Phase I Phase II Underground Storage Tanks Soil & Water Sampling Well Installation

FIGURE 4
FIELD SCREENING MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

TABLE 3
Summary of Analytical Data
Stockman Oil Two, Inc.
Greenwood, SC

Well #	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Naph-thalene	Lead	EDB
RBSL	–	5	1000	700	10000	40	25	15	0.05
MW-1	11/17/08	132	32.0	28.0	486	1200	61.6	40.8	<0.019
	11/18/09	230	116	113	929	6320	202	42.4	0.072
MW-2	11/17/08	<5.0	<5.0	<5.0	<10.0	13.7	3.5	<5.0	<0.019
	11/18/09	<5.0	<5.0	<5.0	<10.0	2.7	<5.0	<5.0	<0.020
MW-3	11/17/08	24500	39400	2620	11400	6720	755	8.9	0.34
	11/18/09	21400	34700	2150	11700	5780	<580	<5.0	<0.019
MW-4	11/17/08	5.7	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020
	11/18/09	13.9	<5.0	<5.0	3.4	<5.0	<5.0	<5.0	<0.019
MW-5	11/18/09	FP	FP	FP	FP	FP	FP	FP	FP
MW-6	11/18/09	FP	FP	FP	FP	FP	FP	FP	FP
MW-7	11/18/09	<5.0	5.4	2.2	12.0	<5.0	<5.0	16.7	<0.019
MW-8	11/18/09	<5.0	2.3	1.2	7.5	<5.0	<5.0	30.8	<0.020
MW-9	11/18/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	22.4	<0.020
MW-10	11/18/09	<5.0	<5.0	<5.0	3.6	<5.0	<5.0	10.6	<0.019
MW-11	11/18/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	21.2	<0.020
MW-12	11/18/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	79.5	<0.019
MW-13	11/18/09	19.6	24.0	2.6	8.2	38.7	<5.0	34.2	<0.019
MW-14	11/18/09	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	13.7	<0.020
DW-1	11/18/09	70.2	128	15.6	97.7	25.3	7.1	137	<0.020



KLM Environmental, LLC

Phase I: Phase II: Underground Storage Tanks: Soil & Water Sampling: Well Installation

FIGURE 5
WELL DELINEATION MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

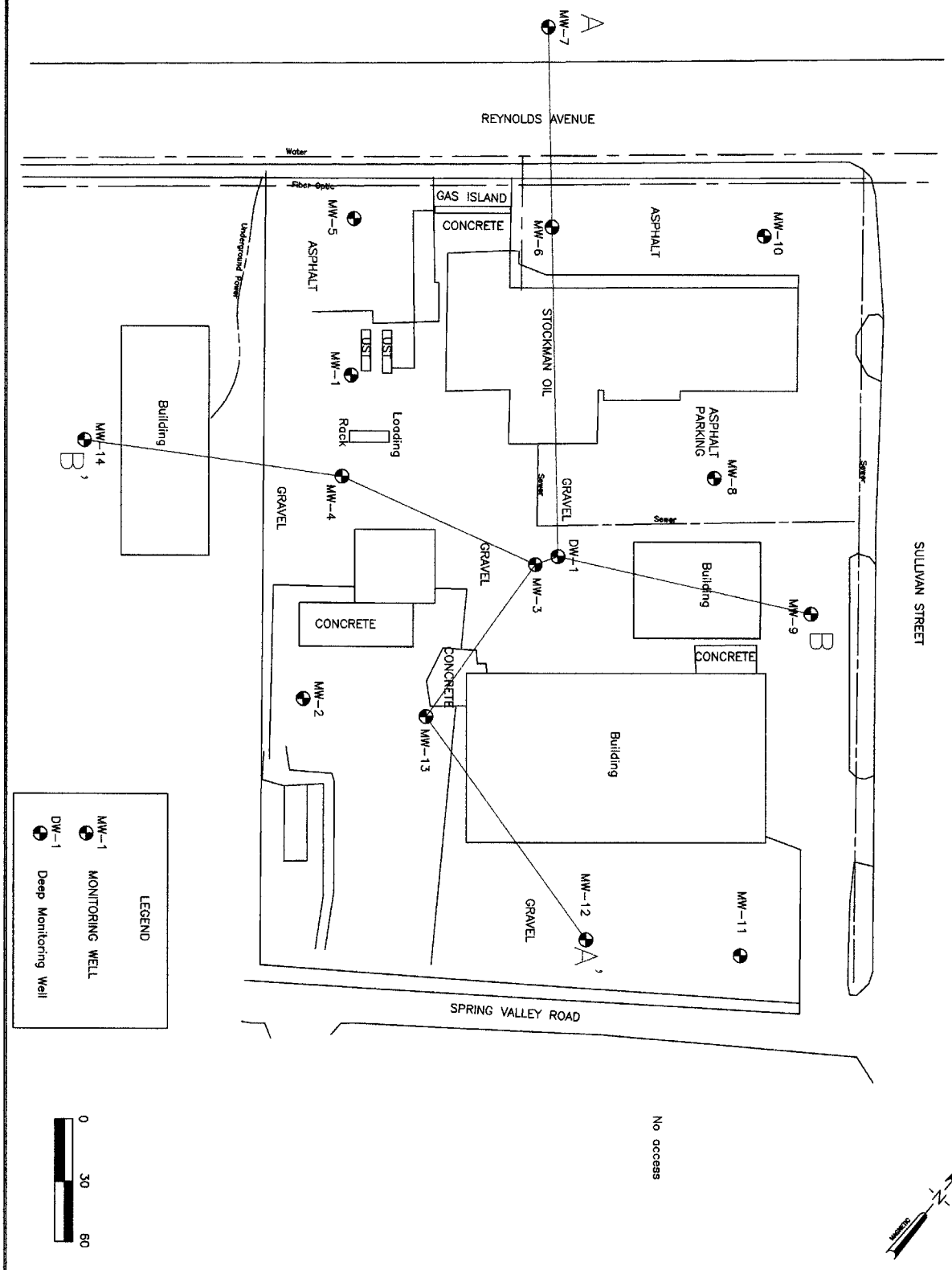
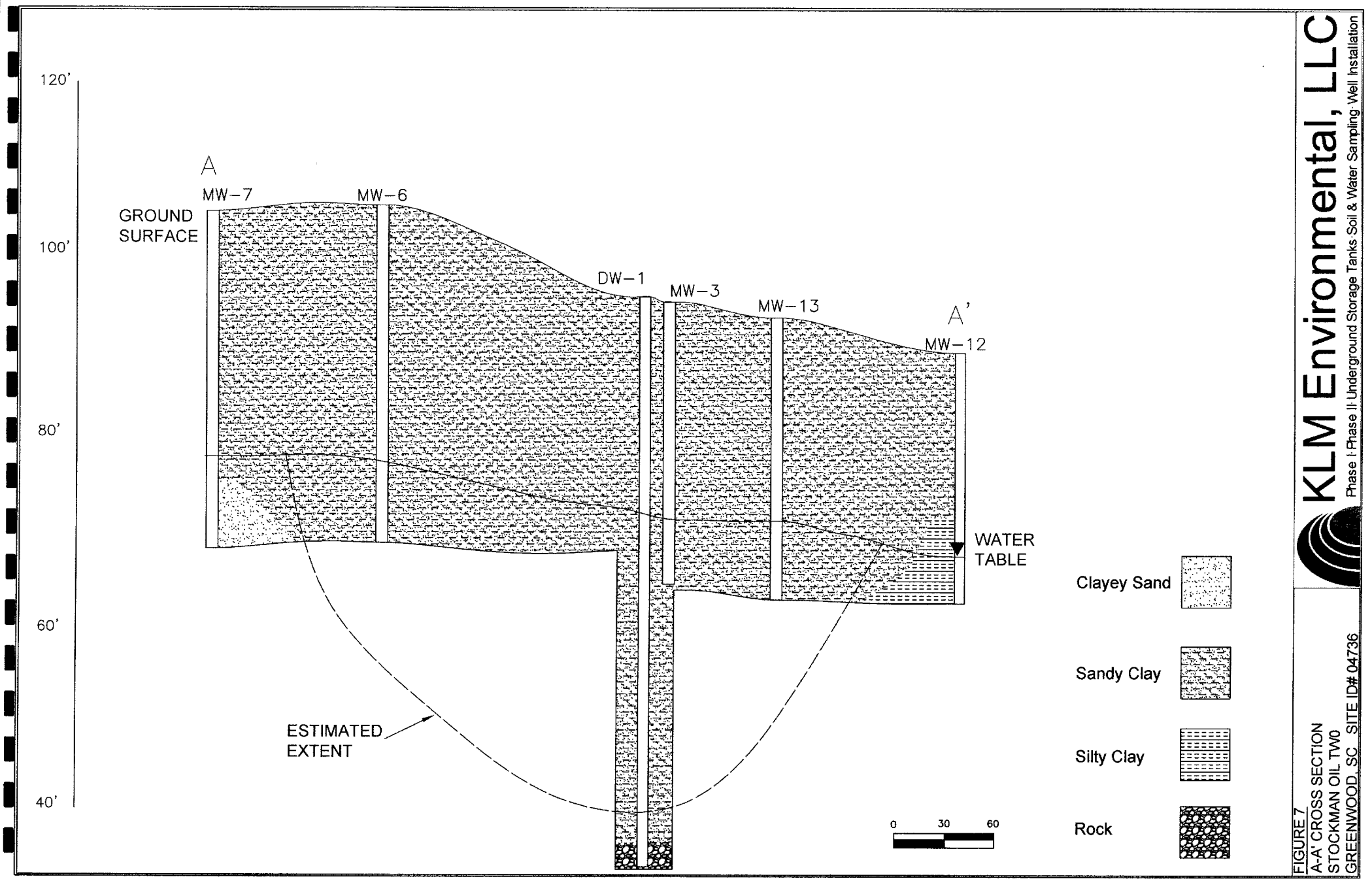


FIGURE 6
CROSS SECTION
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

KLM Environmental, LLC

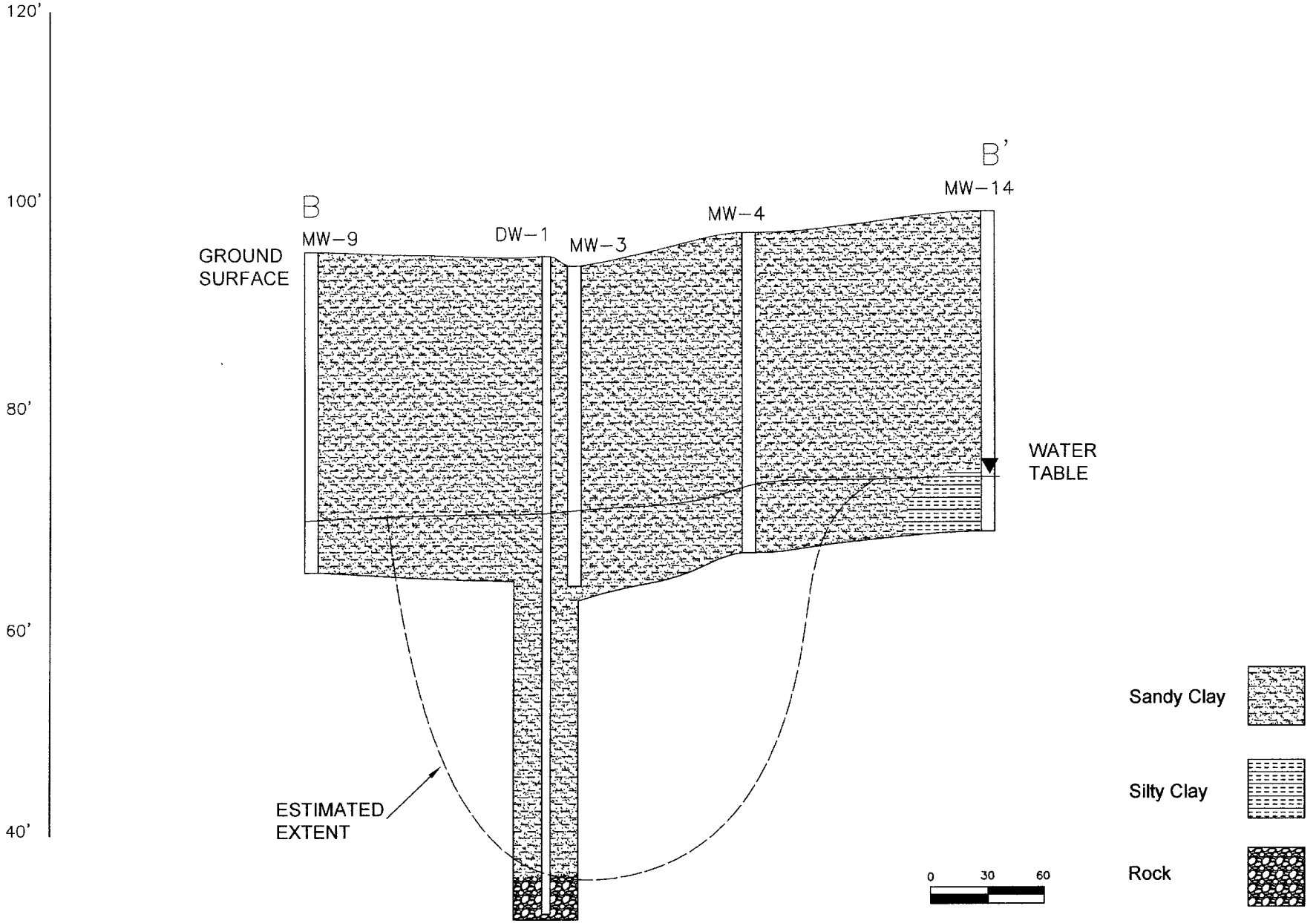
Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation



KLM Environmental, LLC

Phase I Phase II Underground Storage Tanks Soil & Water Sampling Well Installation

FIGURE 7
A-A' CROSS SECTION
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736



KLM Environmental, LLC

Phase I Phase II Underground Storage Tanks Soil & Water Sampling Well Installation

FIGURE 8
B-B' CROSS SECTION
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

APPENDIX B

Well Construction Logs

DHEC
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Stockman Oil Two Inc. (last) (first)
Address: 1138 Reynolds Ave.
City: Greenwood State: SC Zip: 29646
Telephone. Work: Home:

2. LOCATION OF WELL: COUNTY: Greenwood
Name: Stockman Oil Two Inc.
Street Address: 1138 Reynolds Ave.
City: Greenwood State: SC Zip: 29646
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: PUBLIC SYSTEM NUMBER: MW-5

4. ABANDONIMENT: ☐ Yes ☒ No
Grouted Depth: from ft. to ft.

Formation Description	• Thickness of Stratum	Depth to Bottom of Stratum
Orange sandy clay	30 ft	0 - 30 ft
Brown sandy clay	10 ft	30 - 40 ft
• Indicate Water Bearing Zones (Use a 2nd sheet if needed)		
5. REMARKS:		

6. TYPE: ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-22365

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☒ MonitorWell ☐ Replacement

9. WELL DEPTH (completed) Date Started: 11/11/2009
40 ft ft. Date Completed: 11/11/2009

10. CASING: ☒ Threaded ☐ Welded
Diam.: 2"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
2 in. to 20 ft. depth
in. to ft, depth
Height Above ☐ Below ☐
Surface ft
Weight lb./ft,
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2"
Slot/Gauge: 0.010 Length: 20 ft
Set Between: 20 ft. and 40 ft
ft. and ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL 32 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
ft. after hrs. Pumping G.P.M
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield:

14. WATER QUALITY
Chemical Analysis ☒ Yes ☐ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☒ Yes ☐ No
Installed from 18 ft. to 40 ft.
Effective size # 2 Uniformity Coefficient

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other
Depth: From 0 ft. to 5 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft. direction
Type
Well Disinfected ☐ Yes Type: Amount:

18. PUMP: Date installed: Not installed ☒
Mfr. Name: Model No.:
H.P. volts Length of drop pipe - ft. Capacity gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Jim A. Peurifoy CERT. NO.: 835
Address: (Print)
Cypress Bay Geological
262 Geology Lane
Walterboro, South Carolina 29488
Level A ☒ B ☐ C ☐ D ☐
Telephone No.: 843.908.5050 Fax No.: 843.538.4017

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Well Driller Date: 11/17/2009

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) COPY I MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

DHEC
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Stockman Oil Two Inc. (last) _____ (first)
Address: 1138 Reynolds Ave.
City: Greenwood State: SC Zip: 29646
Telephone. Work: _____ Home: _____

2. LOCATION OF WELL: COUNTY: Greenwood
Name: Stockman Oil Two Inc.
Street Address: 1138 Reynolds Ave.
City: Greenwood State: SC Zip: 29646
Latitude: _____ Longitude: _____

3. PUBLIC SYSTEM NAME: _____ PUBLIC SYSTEM NUMBER: MW-6

4. ABANDONIMENT: ☐ Yes ☒ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	• Thickness of Stratum	Depth to Bottom of Stratum
Orange sandy clay	25 ft	0 - 25 ft
Brown sandy clay	15 ft	25 - 40 ft
• Indicate Water Bearing Zones (Use a 2nd sheet if needed)		
5. REMARKS:		

6. TYPE: ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-22365

8. USE:
☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☒ MonitorWell ☐ Replacement

9. WELL DEPTH (completed) 40 ft ft. Date Started: 11/11/2009 Date Completed: 11/11/2009

10. CASING: ☒ Threaded ☐ Welded
Diam.: 2"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
2 in. to 20 ft. depth
_____ in. to _____ ft, depth
Height Above ☐ Below ☐ Surface _____ ft
Weight _____ lb./ft,
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2"
Slot/Gauge: 0.010 Length: 20 ft
Set Between: 20 ft. and 40 ft
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL 32 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☒ Yes ☐ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☒ Yes ☐ No
Installed from 18 ft. to 40 lt.
Effective size # 2 Uniformity Coefficient _____

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0 ft. to 5 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☒
Mfr. Name: _____ Model No.: _____
H.P._____ volts_____ Length of drop pipe - ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Jim A. Peurifoy CERT. NO.: 835
Address: (Print)
Cypress Bay Geological
262 Geology Lane
Walterboro, South Carolina 29488
Level A ☒ B ☐ C ☐ D
Telephone No.: 843.908.5050 Fax No.: 843.538.4017

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: _____ (Well Driller) Date: 11/17/2009
If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) COPY I MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

D H E C
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Stockman Oil Two Inc. (last) (first)
Address: 1138 Reynolds Ave.
City: Greenwood State: SC Zip: 29646
Telephone. Work: Home:

2. LOCATION OF WELL: COUNTY: Greenwood
Name: Stockman Oil Two Inc.
Street Address: 1138 Reynolds Ave.
City: Greenwood State: SC Zip: 29646
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: PUBLIC SYSTEM NUMBER: MW-7

4. ABANDONIMENT: ☐ Yes ☒ No
Grouted Depth: from ft. to ft.

Formation Description	• Thickness of Stratum	Depth to Bottom of Stratum
Orange sandy clay	25 ft	0 - 25 ft
Brown sandy clay	10 ft	25 - 35 ft
White clayey sand	5 ft	35 - 40 ft
• Indicate Water Bearing Zones (Use a 2nd sheet if needed)		
5. REMARKS:		

6. TYPE: ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-22365

8. USE:
☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☒ MonitorWell ☐ Replacement

9. WELL DEPTH (completed) Date Started: 11/11/2009
40 ft ft. Date Completed: 11/11/2009

10. CASING: ☒ Threaded ☐ Welded
Diam.: 2"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
2 in. to 20 ft. depth
in. to ft, depth
Height Above ☐ Below ☐
Surface ft
Weight lb./ft,
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2"
Slot/Gauge: 0.010 Length: 20 ft
Set Between: 20 ft. and 40 ft
ft. and ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL 32 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
ft. after hrs. Pumping G.P.M
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield:

14. WATER QUALITY
Chemical Analysis ☒ Yes ☐ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☒ Yes ☐ No
Installed from 18 ft. to 40 ft.
Effective size # 2 Uniformity Coefficient

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other
Depth: From 0 ft. to 5 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft. direction
Type
Well Disinfected ☐ Yes Type: Amount:

18. PUMP: Date installed: Not installed ☒
Mfr. Name: Model No.:
H.P. volts Length of drop pipe - ft. Capacity gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Jim A. Peurifoy CERT. NO.: 835
Address: (Print)
Cypress Bay Geological
262 Geology Lane
Walterboro, South Carolina 29488
Level A ☒ B ☐ C ☐ D ☐
Telephone No.: 843.908.5050 Fax No.: 843.538.4017

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Well Driller Date: 11/17/2009

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) COPY I MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

DHEC
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Stockman Oil Two Inc. (last) (first)
Address: 1138 Reynolds Ave.
City: Greenwood State: SC Zip: 29646
Telephone. Work: Home:

2. LOCATION OF WELL: COUNTY: Greenwood
Name: Stockman Oil Two Inc.
Street Address: 1138 Reynolds Ave.
City: Greenwood State: SC Zip: 29646
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: PUBLIC SYSTEM NUMBER: MW-8

4. ABANDONIMENT: ☐ Yes ☒ No
Grouted Depth: from ft. to ft.

Formation Description	• Thickness of Stratum	Depth to Bottom of Stratum
Orange sandy clay	25 ft	0 - 25 ft
Brown sandy clay	10 ft	25 - 35 ft
• Indicate Water Bearing Zones (Use a 2nd sheet if needed)		
5. REMARKS:		

6. TYPE: ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-22365

8. USE:
☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☒ MonitorWell ☐ Replacement

9. WELL DEPTH (completed) Date Started: 11/12/2009
35 ft ft. Date Completed: 11/12/2009

10. CASING: ☒ Threaded ☐ Welded
Diam.: 2"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
2 in. to 15 ft. depth
in. to ft, depth
Height Above ☐ Below ☐
Surface ft
Weight lb./ft,
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2"
Slot/Gauge: 0.010 Length: 20 ft
Set Between: 15 ft. and 35 ft NOTE: MULTIPLE SCREENS
ft. and ft. USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL 28 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
ft. after hrs. Pumping G.P.M
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield:

14. WATER QUALITY
Chemical Analysis ☒ Yes ☐ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☒ Yes ☐ No
Installed from 13 ft. to 35 lt.
Effective size # 2 Uniformity Coefficient

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other
Depth: From 0 ft. to 5 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft. direction
Type
Well Disinfected ☐ Yes Type: Amount:

18. PUMP: Date installed: Not installed ☒
Mfr. Name: Model No.:
H.P. volts Length of drop pipe - ft. Capacity gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Jim A. Peurifoy CERT. NO.: 835
Address: (Print)
Cypress Bay Geological
262 Geology Lane
Walterboro, South Carolina 29488
Level A ☒ B ☐ C ☐ D
Telephone No.: 843.908.5050 Fax No.: 843.538.4017

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Well Driller Date: 11/17/2009

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) COPY I MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

DHEC
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: **Stockman Oil Two Inc.** (last) (first)
Address: **1138 Reynolds Ave.**
City: **Greenwood** State: **SC** Zip: **29646**
Telephone. Work: Home:

2. LOCATION OF WELL: COUNTY: **Greenwood**
Name: **Stockman Oil Two Inc.**
Street Address: **1138 Reynolds Ave.**
City: **Greenwood** State: **SC** Zip: **29646**
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: PUBLIC SYSTEM NUMBER: **MW-9**

4. ABANDONIMENT: ☐ Yes ☒ No
Grouted Depth: from ft. to ft.

Formation Description	• Thickness of Stratum	Depth to Bottom of Stratum
Orange sandy clay	25 ft	0 - 25 ft
Brown sandy clay	10 ft	25 - 35 ft
• Indicate Water Bearing Zones (Use a 2nd sheet if needed)		
5. REMARKS:		

6. TYPE: ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: **UMW-22365**

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☒ MonitorWell ☐ Replacement

9. WELL DEPTH (completed) Date Started: **11/11/2009**
35 ft ft. Date Completed: **11/11/2009**

10. CASING: ☒ Threaded ☐ Welded
Diam.: **2"**
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
2 in. to **15** ft. depth
in. to ft, depth
Height Above ☐ Below ☐
Surface ft
Weight lb./ft,
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: **PVC** Diam.: **2"**
Slot/Gauge: **0.010** Length: **20 ft**
Set Between: **15** ft. and **35** ft
ft. and ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL **28** ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
ft. after hrs. Pumping G.P.M
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield:

14. WATER QUALITY
Chemical Analysis ☒ Yes ☐ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☒ Yes ☐ No
Installed from **13** ft. to **35** ft.
Effective size **# 2** Uniformity Coefficient

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other
Depth: From **0** ft. to **5** ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft. direction
Type
Well Disinfected ☐ Yes Type: Amount:

18. PUMP: Date installed: Not installed ☒
Mfr. Name: Model No.:
H.P. volts Length of drop pipe - ft. Capacity gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: **Jim A. Peurifoy** CERT. NO.: **835**
Address: (Print)
Cypress Bay Geological
262 Geology Lane
Walterboro, South Carolina 29488
Level A ☒ B ☐ C ☐ D ☐
Telephone No.: **843.908.5050** Fax No.: **843.538.4017**

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Well Driller Date: **11/17/2009**

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) COPY I MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

DHEC
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: **Stockman Oil Two Inc.** (last) (first)
Address: **1138 Reynolds Ave.**
City: **Greenwood** State: **SC** Zip: **29646**
Telephone. Work: Home:

2. LOCATION OF WELL: COUNTY: **Greenwood**
Name: **Stockman Oil Two Inc.**
Street Address: **1138 Reynolds Ave.**
City: **Greenwood** State: **SC** Zip: **29646**
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: PUBLIC SYSTEM NUMBER: **MW-10**

4. ABANDONIMENT: ☐ Yes ☒ No
Grouted Depth: from ft. to ft.

Formation Description	• Thickness of Stratum	Depth to Bottom of Stratum
Orange sandy clay	25 ft	0 - 25 ft
Brown sandy clay	15 ft	25 - 40 ft
• Indicate Water Bearing Zones (Use a 2nd sheet if needed)		
5. REMARKS:		

6. TYPE: ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: **UMW-22365**

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☒ MonitorWell ☐ Replacement

9. WELL DEPTH (completed) Date Started: **11/11/2009**
40 ft ft. Date Completed: **11/11/2009**

10. CASING: ☒ Threaded ☐ Welded
Diam.: **2"**
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
2 in. to **20** ft. depth
in. to ft, depth
Height Above ☐ Below ☐
Surface ft
Weight lb./ft,
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: **PVC** Diam.: **2"**
Slot/Gauge: **0.010** Length: **20 ft**
Set Between: **20** ft. and **40** ft
ft. and ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL **32** ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
ft. after hrs. Pumping G.P.M
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield:

14. WATER QUALITY
Chemical Analysis ☒ Yes ☐ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☒ Yes ☐ No
Installed from **18** ft. to **40** ft.
Effective size **# 2** Uniformity Coefficient

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other
Depth: From **0** ft. to **5** ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft. direction
Type
Well Disinfected ☐ Yes Type: Amount:

18. PUMP: Date installed: Not installed ☒
Mfr. Name: Model No.:
H.P. volts Length of drop pipe - ft. Capacity gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: **Jim A. Peurifoy** CERT. NO.: **835**
Address: (Print)
Cypress Bay Geological
262 Geology Lane
Walterboro, South Carolina 29488
Level A ☒ B ☐ C ☐ D
Telephone No.: **843.908.5050** Fax No.: **843.538.4017**

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Well Driller Date: **11/17/2009**

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) COPY I MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

DHEC
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: **Stockman Oil Two Inc.** (last) (first)
Address: **1138 Reynolds Ave.**
City: **Greenwood** State: **SC** Zip: **29646**
Telephone. Work: Home:

2. LOCATION OF WELL: COUNTY: **Greenwood**
Name: **Stockman Oil Two Inc.**
Street Address: **1138 Reynolds Ave.**
City: **Greenwood** State: **SC** Zip: **29646**
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: PUBLIC SYSTEM NUMBER: **MW-11**

4. ABANDONIMENT: ☐ Yes ☒ No
Grouted Depth: from ft. to ft.

Formation Description	• Thickness of Stratum	Depth to Bottom of Stratum
Orange sandy clay	20 ft	0 - 20 ft
Tan silty clay	10 ft	20 - 30 ft
• Indicate Water Bearing Zones (Use a 2nd sheet if needed)		
5. REMARKS:		

6. TYPE: ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: **UMW-22365**

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☒ MonitorWell ☐ Replacement

9. WELL DEPTH (completed) Date Started: **11/11/2009**
30 ft ft. Date Completed: **11/11/2009**

10. CASING: ☒ Threaded ☐ Welded
Diam.: **2"**
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
2 in. to **15** ft. depth
in. to ft, depth
Height Above ☐ Below ☐
Surface ft
Weight lb./ft,
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: **PVC** Diam.: **2"**
Slot/Gauge: **0.010** Length: **15 ft**
Set Between: **15** ft. and **30** ft
ft. and ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL **22** ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
ft. after hrs. Pumping G.P.M
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield:

14. WATER QUALITY
Chemical Analysis ☒ Yes ☐ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☒ Yes ☐ No
Installed from **13** ft. to **30** ft.
Effective size **# 2** Uniformity Coefficient

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other
Depth: From **0** ft. to **5** ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft. direction
Type
Well Disinfected ☐ Yes Type: Amount:

18. PUMP: Date installed: Not installed ☒
Mfr. Name: Model No.:
H.P. volts Length of drop pipe - ft. Capacity gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: **Jim A. Peurifoy** CERT. NO.: **835**
Address: (Print)
Cypress Bay Geological
262 Geology Lane
Walterboro, South Carolina 29488
Level A ☒ B ☐ C ☐ D
Telephone No.: **843.908.5050** Fax No.: **843.538.4017**

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: Well Driller Date: **11/17/2009**
If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) COPY I MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

DHEC
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Stockman Oil Two Inc. (last) (first)
Address: 1138 Reynolds Ave.
City: Greenwood State: SC Zip: 29646
Telephone. Work: Home:

2. LOCATION OF WELL: COUNTY: Greenwood
Name: Stockman Oil Two Inc.
Street Address: 1138 Reynolds Ave.
City: Greenwood State: SC Zip: 29646
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: PUBLIC SYSTEM NUMBER: MW-12

4. ABANDONIMENT: ☐ Yes ☒ No
Grouted Depth: from ft. to ft.

Formation Description	• Thickness of Stratum	Depth to Bottom of Stratum
Orange sandy clay	20 ft	0 - 20 ft
Tan silty clay	10 ft	20 - 30 ft
• Indicate Water Bearing Zones (Use a 2nd sheet if needed)		
5. REMARKS:		

6. TYPE: ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-22365

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☒ MonitorWell ☐ Replacement

9. WELL DEPTH (completed) Date Started: 11/11/2009
30 ft ft. Date Completed: 11/11/2009

10. CASING: ☒ Threaded ☐ Welded
Diam.: 2"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
2 in. to 15 ft. depth
in. to ft, depth
Height Above ☐ Below ☐
Surface ft
Weight lb./ft,
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2"
Slot/Gauge: 0.010 Length: 15 ft
Set Between: 15 ft. and 30 ft NOTE: MULTIPLE SCREENS
ft. and ft. USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL 22 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
ft. after hrs. Pumping G.P.M
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield:

14. WATER QUALITY
Chemical Analysis ☒ Yes ☐ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☒ Yes ☐ No
Installed from 13 ft. to 30 lt.
Effective size # 2 Uniformity Coefficient

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other
Depth: From 0 ft. to 5 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft. direction
Type
Well Disinfected ☐ Yes Type: Amount:

18. PUMP: Date installed: Not installed ☒
Mfr. Name: Model No.:
H.P. volts Length of drop pipe - ft. Capacity gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Jim A. Peurifoy CERT. NO.: 835
Address: (Print)
Cypress Bay Geological
262 Geology Lane
Walterboro, South Carolina 29488
Level A ☒ B ☐ C ☐ D
Telephone No.: 843.908.5050 Fax No.: 843.538.4017

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Well Driller Date: 11/17/2009

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) COPY I MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

DHEC
South Carolina Department of Health and Environmental Control

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Stockman Oil Two Inc. (last) (first)
Address: 1138 Reynolds Ave.
City: Greenwood State: SC Zip: 29646
Telephone. Work: Home:

2. LOCATION OF WELL: COUNTY: Greenwood
Name: Stockman Oil Two Inc.
Street Address: 1138 Reynolds Ave.
City: Greenwood State: SC Zip: 29646
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: PUBLIC SYSTEM NUMBER: MW-13

4. ABANDONIMENT: ☐ Yes ☒ No
Grouted Depth: from ft. to ft.

Formation Description	• Thickness of Stratum	Depth to Bottom of Stratum
Orange sandy clay	25 ft	0 - 25 ft
Brown sandy clay	10 ft	25 - 35 ft
• Indicate Water Bearing Zones (Use a 2nd sheet if needed)		
5. REMARKS:		

6. TYPE: ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-22365

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☒ MonitorWell ☐ Replacement

9. WELL DEPTH (completed) Date Started: 11/11/2009
35 ft ft. Date Completed: 11/11/2009

10. CASING: ☒ Threaded ☐ Welded
Diam.: 2"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
2 in. to 15 ft. depth
in. to ft, depth
Height Above ☐ Below ☐
Surface ft
Weight lb./ft,
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2"
Slot/Gauge: 0.010 Length: 20 ft
Set Between: 15 ft. and 35 ft
ft. and ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL 28 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
ft. after hrs. Pumping G.P.M
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield:

14. WATER QUALITY
Chemical Analysis ☒ Yes ☐ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☒ Yes ☐ No
Installed from 13 ft. to 35 lt.
Effective size # 2 Uniformity Coefficient

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other
Depth: From 0 ft. to 5 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft. direction
Type
Well Disinfected ☐ Yes Type: Amount:

18. PUMP: Date installed: Not installed ☒
Mfr. Name: Model No.:
H.P. volts Length of drop pipe - ft. Capacity gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Jim A. Peurifoy CERT. NO.: 835
Address: (Print)
Cypress Bay Geological
262 Geology Lane
Walterboro, South Carolina 29488
Level A ☒ B ☐ C ☐ D ☐
Telephone No.: 843.908.5050 Fax No.: 843.538.4017

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: Well Driller Date: 11/17/2009
If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) COPY I MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

DHEC
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Stockman Oil Two Inc. (last) (first)
Address: 1138 Reynolds Ave.
City: Greenwood State: SC Zip: 29646
Telephone. Work: Home:

2. LOCATION OF WELL: COUNTY: Greenwood
Name: Stockman Oil Two Inc.
Street Address: 1138 Reynolds Ave.
City: Greenwood State: SC Zip: 29646
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: PUBLIC SYSTEM NUMBER: MW-14

4. ABANDONIMENT: ☐ Yes ☒ No
Grouted Depth: from ft. to ft.

Formation Description	• Thickness of Stratum	Depth to Bottom of Stratum
Orange sandy clay	25 ft	0 - 25 ft
Brown sandy clay	5 ft	25 - 30 ft
Tan silty clay	5 ft	30 - 35 ft
• Indicate Water Bearing Zones (Use a 2nd sheet if needed)		
5. REMARKS:		

6. TYPE: ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-22365

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☒ MonitorWell ☐ Replacement

9. WELL DEPTH (completed) Date Started: 11/11/2009
35 ft ft. Date Completed: 11/11/2009

10. CASING: ☒ Threaded ☐ Welded
Diam.: 2"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
2 in. to 15 ft. depth
in. to ft, depth
Height Above ☐ Below ☐
Surface ft
Weight lb./ft,
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2"
Slot/Gauge: 0.010 Length: 20 ft
Set Between: 15 ft. and 35 ft
ft. and ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL 30 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
ft. after hrs. Pumping G.P.M
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield:

14. WATER QUALITY
Chemical Analysis ☒ Yes ☐ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☒ Yes ☐ No
Installed from 13 ft. to 35 ft.
Effective size # 2 Uniformity Coefficient

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other
Depth: From 0 ft. to 5 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft. direction
Type
Well Disinfected ☐ Yes Type: Amount:

18. PUMP: Date installed: Not installed ☒
Mfr. Name: Model No.:
H.P. volts Length of drop pipe - ft. Capacity gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Jim A. Peurifoy CERT. NO.: 835
Address: (Print)
Cypress Bay Geological
262 Geology Lane
Walterboro, South Carolina 29488
Level A ☒ B ☐ C ☐ D
Telephone No.: 843.908.5050 Fax No.: 843.538.4017

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Well Driller Date: 11/17/2009

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) COPY I MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

DHEC
PROMOTE PROTECT PROSPER
South Carolina Department of Health and Environmental Control

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Stockman Oil Two Inc. (last) (first)
Address: 1138 Reynolds Ave.
City: Greenwood State: SC Zip: 29646
Telephone. Work: Home:

2. LOCATION OF WELL: COUNTY: Greenwood
Name: Stockman Oil Two Inc.
Street Address: 1138 Reynolds Ave.
City: Greenwood State: SC Zip: 29646
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: PUBLIC SYSTEM NUMBER: DW-1

4. ABANDONIMENT: ☐ Yes ☒ No
Grouted Depth: from ft. to ft.

Formation Description	• Thickness of Stratum	Depth to Bottom of Stratum
Orange sandy clay	25 ft	0 - 25 ft
Brown sandy clay	5 ft	25 - 30 ft
Tan sandy clay	15 ft	30 - 55 ft
Gray sandy clay	3 ft	55 - 58 ft
Rock	3 ft	58 - 61 ft
• Indicate Water Bearing Zones (Use a 2nd sheet if needed)		
5. REMARKS:		

6. TYPE: ☒ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-22365

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☒ MonitorWell ☐ Replacement

9. WELL DEPTH (completed) Date Started: 11/11/2009
61 ft ft. Date Completed: 11/12/2009

10. CASING: ☒ Threaded ☐ Welded
Diam.: 2"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
2 in. to 56 ft. depth
6 in. to 45 ft, depth
Height Above ☐ Below ☐
Surface ft
Weight lb./ft,
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: PVC Diam.: 2"
Slot/Gauge: 0.010 Length: 5 ft
Set Between: 56 ft. and 61 ft
ft. and ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

12. STATIC WATER LEVEL ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
ft. after hrs. Pumping G.P.M
Pumping Test: ☐ Yes (please enclose) ☒ No
Yield:

14. WATER QUALITY
Chemical Analysis ☒ Yes ☐ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☒ Yes ☐ No
Installed from 54 ft. to 61 lt.
Effective size # 2 Uniformity Coefficient

16. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other
Depth: From 0 ft. to 50 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ft. direction
Type
Well Disinfected ☐ Yes Type: Amount:

18. PUMP: Date installed: Not installed ☒
Mfr. Name: Model No.:
H.P. volts Length of drop pipe - ft. Capacity gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Jim A. Peurifoy CERT. NO.: 835
Address: (Print)
Cypress Bay Geological
262 Geology Lane
Walterboro, South Carolina 29488
Level A ☒ B ☐ C ☐ D
Telephone No.: 843.908.5050 Fax No.: 843.538.4017

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Well Driller Date: 11/17/2009

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) COPY I MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

APPENDIX C

Aquifer Calculations

SUMMARY of SLUG TEST

SOUTH CAROLINA
Department of Health and Environmental Control (DHEC)

Site Data

SITE ID# 04736 COUNTY: Greenwood

FACILITY NAME: Stockman Oil Two, Inc.

Slug Data

See Appendix C Table _____ Figure _____ for a list of all data measurements.
(water level logs, etc.) (Complete as appropriate)
Water Level Recovery Data was measured by Troll™ Data Logger
(Hermit Data Logger, Manually with Water Level Indicator, etc.) (List Method).

Complete the following table for each well tested.
COMPLETE A SECOND SHEET IF MORE THAN FOUR WELLS ARE TESTED.

Slug Test Conducted in well(s) number	MW-8	MW-11	DW-1	
Initial Rise/Drawdown in well (feet)	1.41	0.96	1.83	
Radius of Well Casing (feet)	0.08333	0.08333	0.08333	
Effective Radius of Well (feet)	0.25	0.25	0.25	
Static Saturated Aquifer Thickness (feet)	61	61	61	
Length of Well Screen (feet)	20	15	5	
Static Height of Water Column in Well (feet)	8.01	6.04	37.34	

Calculations

See Appendix D Table _____ Figure _____ for calculations. (Complete as appropriate).
The method for aquifer calculations was Bouwer-Rice (i.e. Bouwer-Rice, Cooper, etc.)

Calculated values by well were as follows:

Slug Test Conducted in well(s) number	MW-8	MW-11	DW-1
Hydraulic Conductivity	0.0999 m/d	0.06506 m/d	0.01234 m/d

Thickness of the aquifer used to calculate hydraulic conductivity was 61 feet.

The aquifer is _____ confined ____ semi-confined X water table
(Check as appropriate)

The estimated seepage velocity is 5.24 feet per year based on a hydraulic conductivity of 0.082531 m/day, a hydraulic gradient of 0.02387 ft/ft, and a porosity of 45 percent for sandy clay soil (list type i.e., silty sand, clay, etc.).

SUMMARY of SLUG TEST

Vertical Potential Hydraulic Gradient
Between Shallow MW-3 and Deep DW-1

$$\frac{Dh}{Dl} = \frac{[(\text{GW Elevation DW-1})-(\text{GW Elevation MW-3})]}{[(\text{Base of Screen MW-3})-(\text{Base of Screen DW-1})]}$$

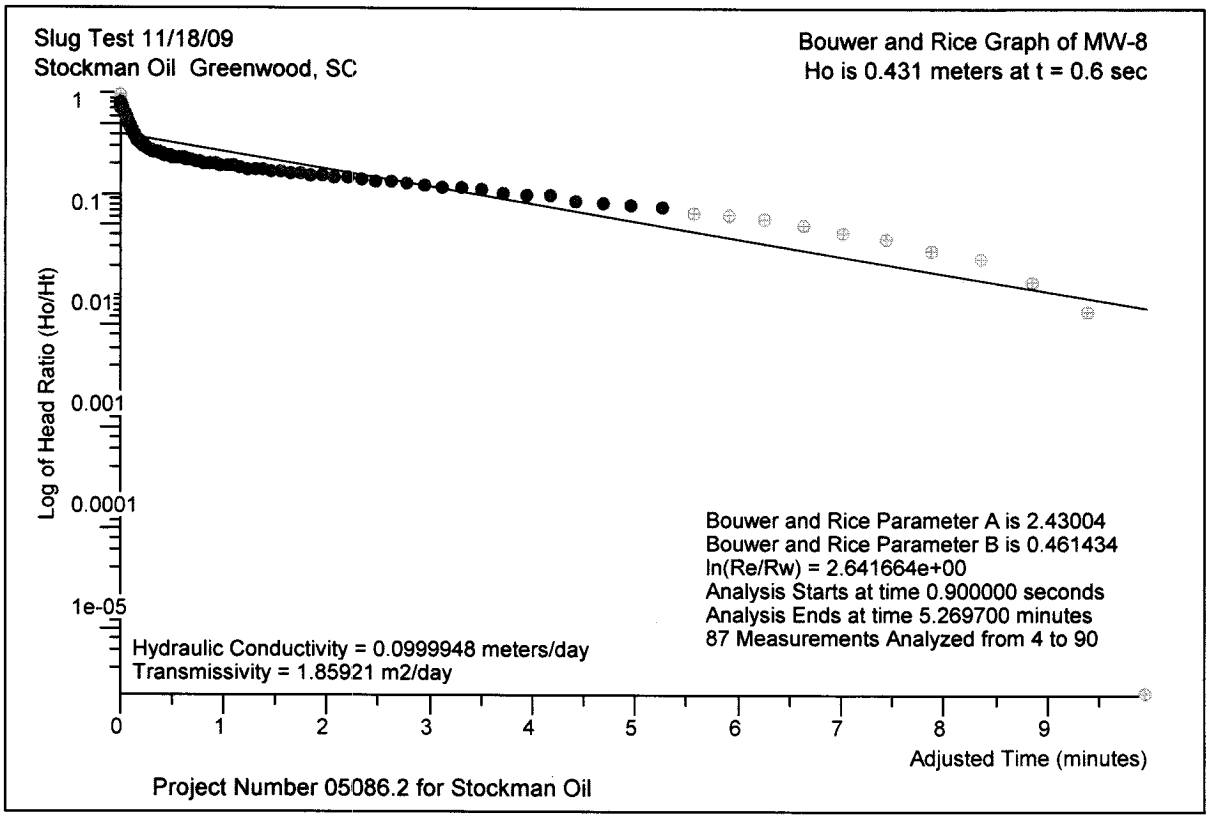
$$\frac{Dh}{Dl} = \frac{71.52 - 71.38}{59.82-(34.18)} = 0.00546 \text{ ft/ft}$$

Head Elevation of MW-3 is lower than DW-1 so Vertical Flow is upward (Discharging)

Data from file: C:\DOCUME~1\MARK\MYDOCU~1\KLMENV~1\KLMJOB~1\05086S~1\05086~1.2
Title: Slug Test
Site Name: Stockman Oil
Location: Greenwood, SC
Client: Stockman Oil
Project Number: 05086.2
Test Date: 11/18/09
Well Number: MW-8
Casing Radius: 1 inches
Effective Well Radius: 3 inches
Aquifer Thickness: 61 feet
Water Table to Screen Bottom: 8.01 feet
Screen Length: 20 feet
Static Water Level: 2.323 meters
K ratio is not entered
There are 101 time and drawdown measurements
Tests starts with trial 3
Time values will be adjusted by 6.94444e-06 days (0.600000 seconds)

Trial	Time (minutes)	Adjusted Time (minutes)	Drawdown (meters)	Head (meters)	Head Ratio
1	0	-0.01	1.956	0.367	0.851508
2	0.005	-0.005	2.034	0.289001	0.670534
3	0.01	0	1.892	0.431	1
4	0.015	0.005	2.009	0.314	0.728538
5	0.02	0.01	1.974	0.349	0.809745
6	0.025	0.015	1.994	0.329	0.763341
7	0.03	0.02	2.002	0.321	0.74478
8	0.035	0.025	2.007	0.316	0.733179
9	0.04	0.03	2.02	0.303	0.703017
10	0.045	0.035	2.021	0.302001	0.700697
11	0.05	0.04	2.037	0.286	0.663573
12	0.055	0.045	2.042	0.281	0.651972
13	0.06	0.05	2.048	0.275	0.638051
14	0.065	0.055	2.06	0.263	0.610209
15	0.07	0.06	2.068	0.255	0.591648
16	0.075	0.065	2.073	0.25	0.580047
17	0.08	0.07	2.08	0.243001	0.563806
18	0.085	0.075	2.089	0.234	0.542924
19	0.09	0.08	2.094	0.229	0.531323
20	0.095	0.085	2.099	0.224	0.519722
21	0.1	0.09	2.111	0.212	0.49188
22	0.1058	0.0958	2.116	0.207	0.480279
23	0.112	0.102	2.12	0.203001	0.470998
24	0.1185	0.1085	2.129	0.194	0.450117
25	0.1255	0.1155	2.134	0.189	0.438515
26	0.1328	0.1228	2.141	0.182	0.422274
27	0.1407	0.1307	2.147	0.176	0.408353
28	0.149	0.139	2.154	0.169	0.392112
29	0.1578	0.1478	2.159	0.164001	0.380511
30	0.1672	0.1572	2.165	0.158	0.36659
31	0.177	0.167	2.17	0.153	0.354989
32	0.1875	0.1775	2.175	0.148	0.343388
33	0.1985	0.1885	2.179	0.144001	0.334108
34	0.2102	0.2002	2.183	0.14	0.324826
35	0.2227	0.2127	2.187	0.136	0.315546
36	0.2358	0.2258	2.191	0.132	0.306265
37	0.2498	0.2398	2.194	0.129	0.299305
38	0.2647	0.2547	2.196	0.127	0.294664
39	0.2803	0.2703	2.201	0.122	0.283063
40	0.297	0.287	2.203	0.12	0.278423
41	0.3147	0.3047	2.205	0.118001	0.273783
42	0.3333	0.3233	2.207	0.116	0.269142
43	0.3532	0.3432	2.209	0.114	0.264502

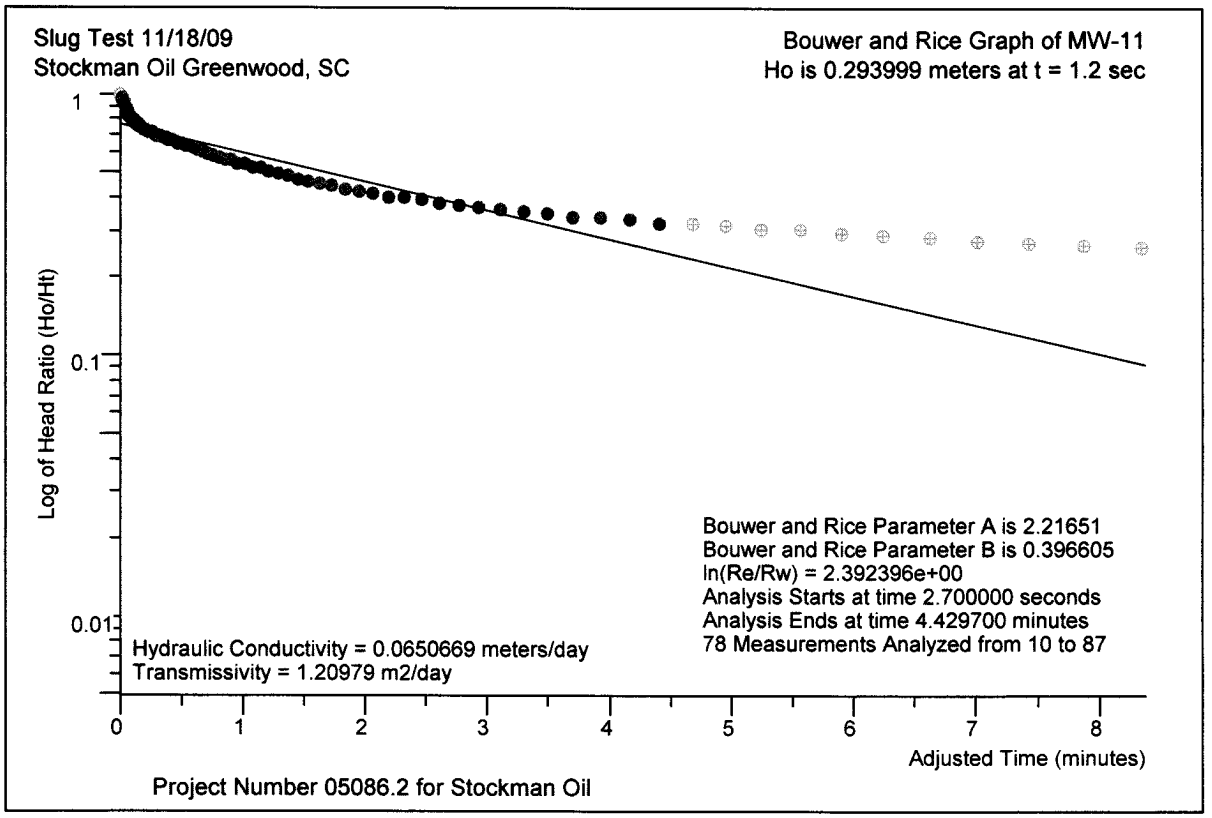
Trial	Time (minutes)	Adjusted Time (minutes)	Drawdown (meters)	Head (meters)	Head Ratio
44	0.3742	0.3642	2.211	0.112	0.259862
45	0.3963	0.3863	2.213	0.11	0.255221
46	0.4198	0.4098	2.215	0.108001	0.250581
47	0.4447	0.4347	2.217	0.106	0.24594
48	0.4697	0.4597	2.219	0.104	0.2413
49	0.4963	0.4863	2.22	0.103	0.23898
50	0.5247	0.5147	2.222	0.101001	0.23434
51	0.5547	0.5447	2.223	0.1	0.232019
52	0.5863	0.5763	2.225	0.0980005	0.227379
53	0.6213	0.6113	2.225	0.0980005	0.227379
54	0.658	0.648	2.227	0.0960004	0.222739
55	0.6963	0.6863	2.229	0.0940003	0.218098
56	0.738	0.728	2.23	0.0930004	0.215778
57	0.7813	0.7713	2.232	0.0910003	0.211137
58	0.828	0.818	2.234	0.0890005	0.206497
59	0.8763	0.8663	2.235	0.0880005	0.204177
60	0.928	0.918	2.236	0.0870004	0.201857
61	0.983	0.973	2.238	0.0850005	0.197217
62	1.0413	1.0313	2.239	0.0840003	0.194896
63	1.103	1.093	2.241	0.0820005	0.190256
64	1.168	1.158	2.243	0.0800004	0.185616
65	1.238	1.228	2.246	0.0770004	0.178655
66	1.3113	1.3013	2.246	0.0770004	0.178655
67	1.3897	1.3797	2.248	0.0750005	0.174015
68	1.473	1.463	2.249	0.0740004	0.171694
69	1.5613	1.5513	2.251	0.0720005	0.167054
70	1.6547	1.6447	2.253	0.0700004	0.162414
71	1.753	1.743	2.253	0.0700004	0.162414
72	1.858	1.848	2.255	0.0680003	0.157773
73	1.968	1.958	2.257	0.0660005	0.153133
74	2.0847	2.0747	2.258	0.0650005	0.150813
75	2.2097	2.1997	2.26	0.0630004	0.146173
76	2.3413	2.3313	2.262	0.0610003	0.141532
77	2.4813	2.4713	2.264	0.0590005	0.136892
78	2.6297	2.6197	2.266	0.0570004	0.132251
79	2.7863	2.7763	2.267	0.0560005	0.129931
80	2.953	2.943	2.269	0.0540004	0.125291
81	3.1297	3.1197	2.272	0.0510004	0.11833
82	3.3163	3.3063	2.273	0.0500004	0.11601
83	3.5147	3.5047	2.275	0.0480003	0.11137
84	3.7247	3.7147	2.278	0.0450003	0.104409
85	3.9463	3.9363	2.28	0.0430005	0.0997689
86	4.1813	4.1713	2.281	0.0420005	0.0974489
87	4.4297	4.4197	2.285	0.0380003	0.0881678
88	4.693	4.683	2.287	0.0360005	0.0835277
89	4.973	4.963	2.289	0.0340004	0.0788871
90	5.2697	5.2597	2.291	0.0320005	0.0742471
91	5.583	5.573	2.294	0.0290005	0.0672865
92	5.9147	5.9047	2.296	0.0270004	0.0626459
93	6.2663	6.2563	2.298	0.0250003	0.0580054
94	6.6397	6.6297	2.301	0.0220003	0.0510448
95	7.0347	7.0247	2.305	0.0180004	0.0417641
96	7.453	7.443	2.307	0.0160005	0.0371241
97	7.8963	7.8863	2.311	0.0120003	0.0278429
98	8.3663	8.3563	2.313	0.0100005	0.0232029
99	8.8647	8.8547	2.317	0.00600052	0.0139223
100	9.3913	9.3813	2.32	0.0030005	0.0069617
101	9.9497	9.9397	2.323	4.76837e-07	1.10635e-06


Slug Test 11/18/09
Stockman Oil Greenwood, SC
Bouwer and Rice Graph of MW-8
Ho is 0.431 meters at t = 0.6 sec
Log of Head Ratio (Ho/Ht)
1
0.1
0.01
0.001
0.0001
1e-05
Bouwer and Rice Parameter A is 2.43004
Bouwer and Rice Parameter B is 0.461434
ln(Re/Rw) = 2.641664e+00
Analysis Starts at time 0.900000 seconds
Analysis Ends at time 5.269700 minutes
87 Measurements Analyzed from 4 to 90
Hydraulic Conductivity = 0.0999948 meters/day
Transmissivity = 1.85921 m2/day
0
1
2
3
4
5
6
7
8
9
Adjusted Time (minutes)
Project Number 05086.2 for Stockman Oil

Data from file: C:\DOCUME~1\MARK\MYDOCU~1\KLMENV~1\KLMJOB~1\05086S~1\05086~1.2
Title: Slug Test
Site Name: Stockman Oil
Location: Greenwood, SC
Client: Stockman Oil
Project Number: 05086.2
Test Date: 11/18/09
Well Number: MW-11
Casing Radius: 1 inches
Effective Well Radius: 3 inches
Aquifer Thickness: 61 feet
Water Table to Screen Bottom: 6.04 feet
Screen Length: 15 feet
Static Water Level: 0.990999 meters
K ratio is not entered
There are 98 time and drawdown measurements
Tests starts with trial 5
Time values will be adjusted by 1.38889e-05 days (1.200000 seconds)

Trial	Time (minutes)	Adjusted Time (minutes)	Drawdown (meters)	Head (meters)	Head Ratio
1	0	-0.02	0.991	-8.9407e-07	-3.04106e-06
2	0.005	-0.015	0.991	-8.9407e-07	-3.04106e-06
3	0.01	-0.01	0.991	-8.9407e-07	-3.04106e-06
4	0.015	-0.005	0.99	0.000999093	0.00339829
5	0.02	0	0.697	0.293999	1
6	0.025	0.005	0.705	0.285999	0.972789
7	0.03	0.01	0.702	0.288999	0.982993
8	0.035	0.015	0.699	0.291999	0.993197
9	0.04	0.02	0.71	0.280999	0.955782
10	0.045	0.025	0.709	0.281999	0.959184
11	0.05	0.03	0.714	0.276999	0.942177
12	0.055	0.035	0.718	0.272999	0.928571
13	0.06	0.04	0.723	0.267999	0.911564
14	0.065	0.045	0.726	0.264999	0.90136
15	0.07	0.05	0.732	0.258999	0.880952
16	0.075	0.055	0.734	0.256999	0.874149
17	0.08	0.06	0.739	0.251999	0.857142
18	0.085	0.065	0.743	0.247999	0.843537
19	0.09	0.07	0.745	0.245999	0.836734
20	0.095	0.075	0.747	0.243999	0.829932
21	0.1	0.08	0.75	0.240999	0.819727
22	0.1058	0.0858	0.752	0.238999	0.812925
23	0.112	0.092	0.754	0.236999	0.806122
24	0.1185	0.0985	0.756	0.234999	0.799319
25	0.1255	0.1055	0.758	0.232999	0.792516
26	0.1328	0.1128	0.759	0.231999	0.789115
27	0.1407	0.1207	0.761	0.229999	0.782312
28	0.149	0.129	0.764	0.226999	0.772108
29	0.1578	0.1378	0.766	0.224999	0.765306
30	0.1672	0.1472	0.767	0.223999	0.761904
31	0.177	0.157	0.769	0.221999	0.755101
32	0.1875	0.1675	0.771	0.219999	0.748299
33	0.1985	0.1785	0.773	0.217999	0.741496
34	0.2102	0.1902	0.774	0.216999	0.738095
35	0.2227	0.2027	0.776	0.214999	0.731292
36	0.2358	0.2158	0.778	0.212999	0.724489
37	0.2498	0.2298	0.78	0.210999	0.717686
38	0.2647	0.2447	0.782	0.208999	0.710884
39	0.2803	0.2603	0.783	0.207999	0.707482
40	0.297	0.277	0.785	0.205999	0.700679
41	0.3147	0.2947	0.787	0.203999	0.693877
42	0.3333	0.3133	0.788	0.202999	0.690475
43	0.3532	0.3332	0.79	0.200999	0.683672

Trial	Time (minutes)	Adjusted Time (minutes)	Drawdown (meters)	Head (meters)	Head Ratio
44	0.3742	0.3542	0.792	0.198999	0.67687
45	0.3963	0.3763	0.793	0.197999	0.673469
46	0.4198	0.3998	0.795	0.195999	0.666666
47	0.4447	0.4247	0.797	0.193999	0.659863
48	0.4697	0.4497	0.799	0.191999	0.65306
49	0.4963	0.4763	0.801	0.189999	0.646257
50	0.5247	0.5047	0.803	0.187999	0.639455
51	0.5547	0.5347	0.805	0.185999	0.632652
52	0.5863	0.5663	0.807	0.183999	0.625849
53	0.6213	0.6013	0.81	0.180999	0.615645
54	0.658	0.638	0.813	0.177999	0.605441
55	0.6963	0.6763	0.814	0.176999	0.60204
56	0.738	0.718	0.817	0.173999	0.591836
57	0.7813	0.7613	0.82	0.170999	0.581631
58	0.828	0.808	0.823	0.167999	0.571427
59	0.8763	0.8563	0.826	0.164999	0.561223
60	0.928	0.908	0.828	0.162999	0.55442
61	0.983	0.963	0.831	0.159999	0.544216
62	1.0413	1.0213	0.833	0.157999	0.537414
63	1.103	1.083	0.837	0.153999	0.523808
64	1.168	1.148	0.839	0.151999	0.517005
65	1.238	1.218	0.842	0.148999	0.506801
66	1.3113	1.2913	0.846	0.144999	0.493196
67	1.3897	1.3697	0.849	0.141999	0.482992
68	1.473	1.453	0.852	0.138999	0.472788
69	1.5613	1.5413	0.856	0.134999	0.459182
70	1.6547	1.6347	0.858	0.132999	0.452379
71	1.753	1.733	0.861	0.129999	0.442175
72	1.858	1.838	0.864	0.126999	0.431971
73	1.968	1.948	0.867	0.123999	0.421767
74	2.0847	2.0647	0.869	0.121999	0.414964
75	2.2097	2.1897	0.872	0.118999	0.40476
76	2.3413	2.3213	0.873	0.117999	0.401359
77	2.4813	2.4613	0.875	0.115999	0.394556
78	2.6297	2.6097	0.878	0.112999	0.384352
79	2.7863	2.7663	0.881	0.109999	0.374148
80	2.953	2.933	0.883	0.107999	0.367345
81	3.1297	3.1097	0.885	0.105999	0.360542
82	3.3163	3.2963	0.887	0.103999	0.353739
83	3.5147	3.4947	0.889	0.101999	0.346937
84	3.7247	3.7047	0.891	0.0999991	0.340134
85	3.9463	3.9263	0.892	0.0989991	0.336733
86	4.1813	4.1613	0.894	0.0969991	0.32993
87	4.4297	4.4097	0.896	0.0949991	0.323127
88	4.693	4.673	0.896	0.0949991	0.323127
89	4.973	4.953	0.899	0.0919991	0.312923
90	5.2697	5.2497	0.901	0.0899991	0.30612
91	5.583	5.563	0.902	0.0889991	0.302719
92	5.9147	5.8947	0.904	0.0869991	0.295916
93	6.2663	6.2463	0.906	0.0849991	0.289113
94	6.6397	6.6197	0.908	0.0829991	0.282311
95	7.0347	7.0147	0.91	0.0809991	0.275508
96	7.453	7.433	0.912	0.0789991	0.268705
97	7.8963	7.8763	0.913	0.0779991	0.265304
98	8.3663	8.3463	0.915	0.0759991	0.258501

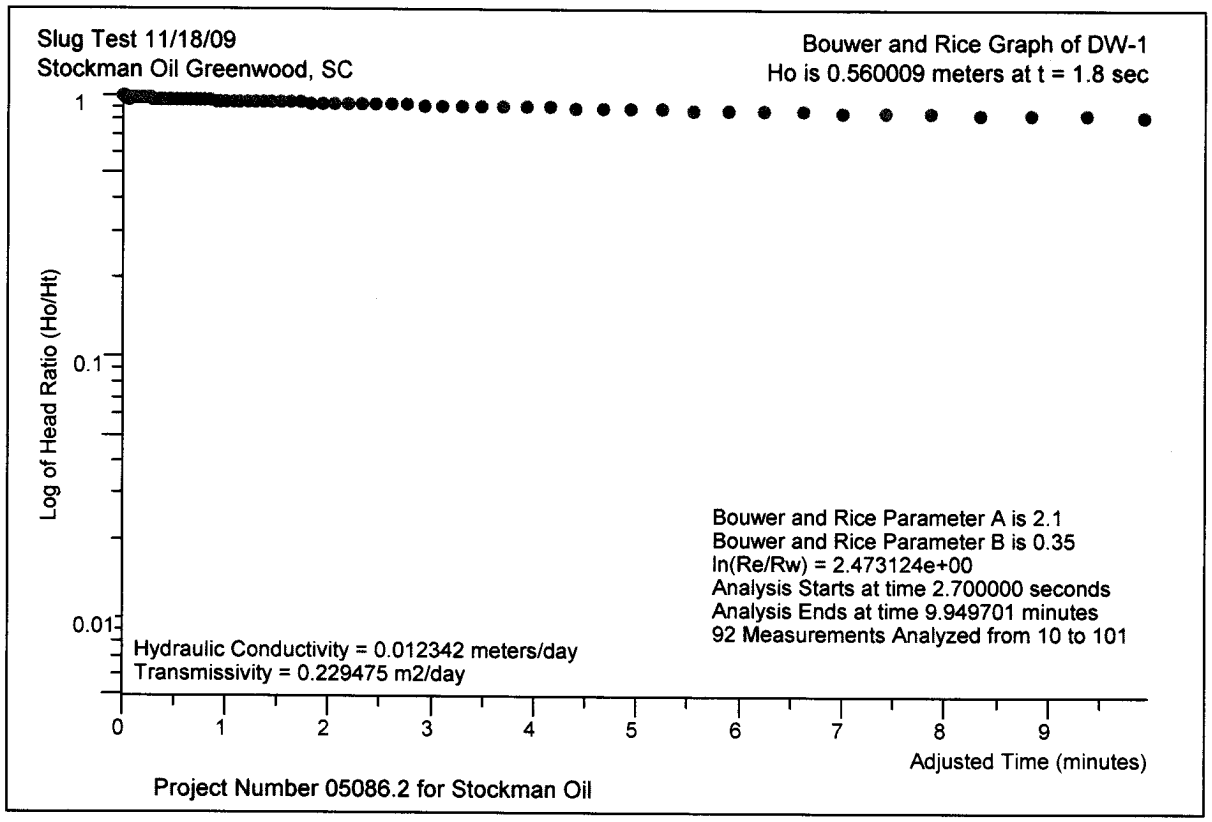

Slug Test 11/18/09
Stockman Oil Greenwood, SC
Bouwer and Rice Graph of MW-11
Ho is 0.293999 meters at t = 1.2 sec
Log of Head Ratio (Ho/Ht)
1
0.1
0.01
Bouwer and Rice Parameter A is 2.21651
Bouwer and Rice Parameter B is 0.396605
ln(Re/Rw) = 2.392396e+00
Analysis Starts at time 2.700000 seconds
Analysis Ends at time 4.429700 minutes
78 Measurements Analyzed from 10 to 87
Hydraulic Conductivity = 0.0650669 meters/day
Transmissivity = 1.20979 m2/day
0
1
2
3
4
5
6
7
8
Adjusted Time (minutes)
Project Number 05086.2 for Stockman Oil

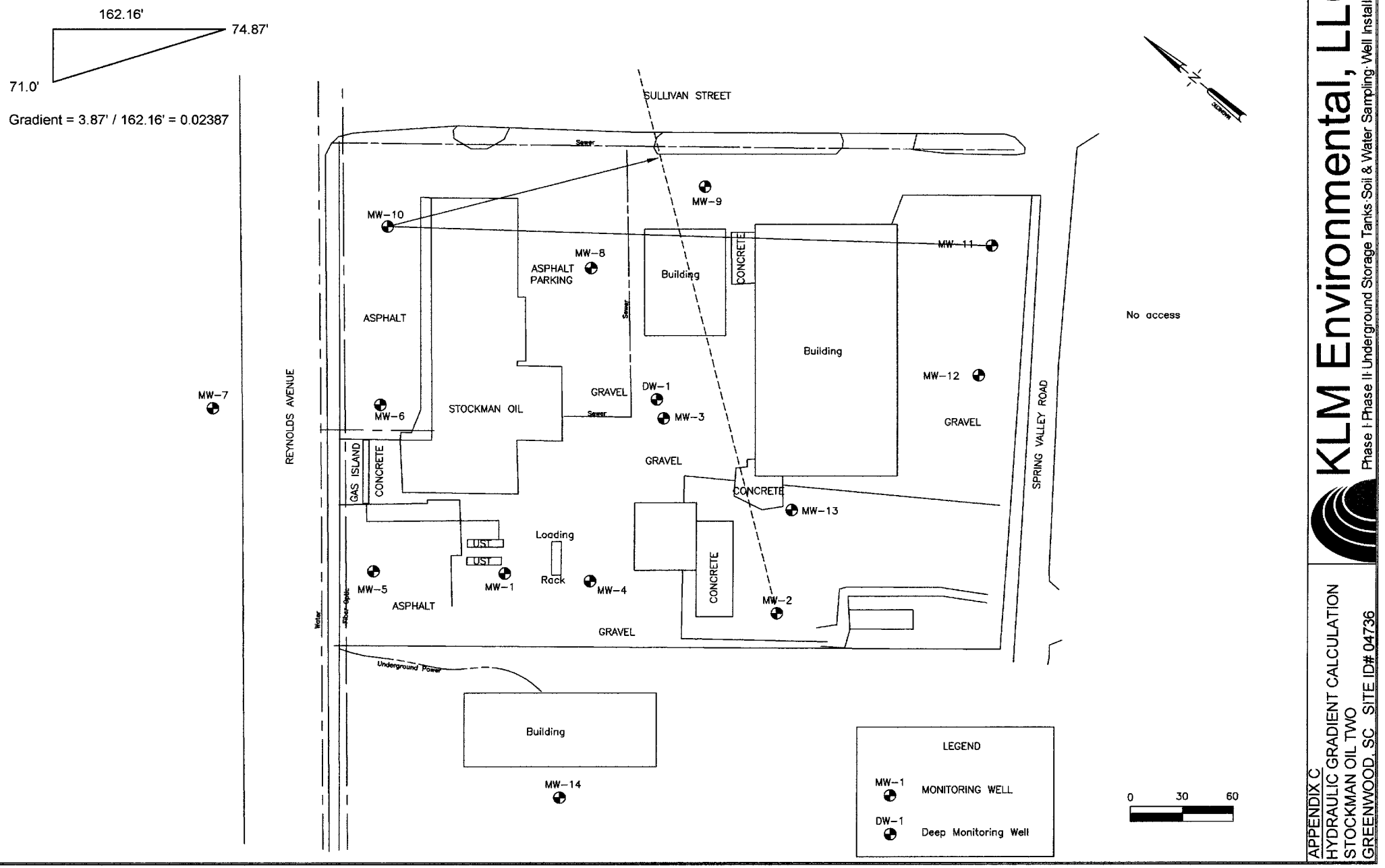
Data from file:	C:\DOCUME~1\MARK\MYDOCU~1\KLMENV~1\KLMJOB~1\05086S~1\05086~1.2
Title:	Slug Test
Site Name:	Stockman Oil
Location:	Greenwood, SC
Client:	Stockman Oil
Project Number:	05086.2
Test Date:	11/18/09
Well Number:	DW-1
Casing Radius:	1 inches
Effective Well Radius:	3 inches
Aquifer Thickness:	61 feet
Water Table to Screen Bottom:	37.34 feet
Screen Length:	5 feet
Static Water Level:	3.71001 meters

K ratio is not entered
There are 101 time and drawdown measurements
Tests starts with trial 7
Time values will be adjusted by 2.08333e-05 days (1.800000 seconds)

Trial	Time (minutes)	Adjusted Time (minutes)	Drawdown (meters)	Head (meters)	Head Ratio
1	0	-0.03	3.71	9.53674e-06	1.70296e-05
2	0.005	-0.025	3.709	0.00100946	0.00180258
3	0.01	-0.02	3.71	9.53674e-06	1.70296e-05
4	0.015	-0.015	3.709	0.00100946	0.00180258
5	0.02	-0.01	3.252	0.458009	0.81786
6	0.025	-0.005	3.169	0.54101	0.966072
7	0.03	0	3.15	0.560009	1
8	0.035	0.005	3.159	0.55101	0.983929
9	0.04	0.01	3.153	0.557009	0.994643
10	0.045	0.015	3.159	0.55101	0.983929
11	0.05	0.02	3.157	0.55301	0.9875
12	0.055	0.025	3.162	0.54801	0.978572
13	0.06	0.03	3.16	0.550009	0.982143
14	0.065	0.035	3.162	0.54801	0.978572
15	0.07	0.04	3.162	0.54801	0.978572
16	0.075	0.045	3.162	0.54801	0.978572
17	0.08	0.05	3.162	0.54801	0.978572
18	0.085	0.055	3.16	0.550009	0.982143
19	0.09	0.06	3.16	0.550009	0.982143
20	0.095	0.065	3.162	0.54801	0.978572
21	0.1	0.07	3.164	0.54601	0.975001
22	0.1058	0.0758	3.171	0.53901	0.962501
23	0.112	0.082	3.164	0.54601	0.975001
24	0.1185	0.0885	3.166	0.54401	0.971429
25	0.1255	0.0955	3.166	0.54401	0.971429
26	0.1328	0.1028	3.165	0.54501	0.973215
27	0.1407	0.1107	3.166	0.54401	0.971429
28	0.149	0.119	3.167	0.54301	0.969643
29	0.1578	0.1278	3.167	0.54301	0.969643
30	0.1672	0.1372	3.167	0.54301	0.969643
31	0.177	0.147	3.167	0.54301	0.969643
32	0.1875	0.1575	3.167	0.54301	0.969643
33	0.1985	0.1685	3.167	0.54301	0.969643
34	0.2102	0.1802	3.168	0.54201	0.967858
35	0.2227	0.1927	3.168	0.54201	0.967858
36	0.2358	0.2058	3.168	0.54201	0.967858
37	0.2498	0.2198	3.169	0.54101	0.966072
38	0.2647	0.2347	3.169	0.54101	0.966072
39	0.2803	0.2503	3.169	0.54101	0.966072
40	0.297	0.267	3.169	0.54101	0.966072
41	0.3147	0.2847	3.169	0.54101	0.966072
42	0.3333	0.3033	3.17	0.540009	0.964286
43	0.3532	0.3232	3.171	0.53901	0.962501

Trial	Time (minutes)	Adjusted Time (minutes)	Drawdown (meters)	Head (meters)	Head Ratio
44	0.3742	0.3442	3.171	0.53901	0.962501
45	0.3963	0.3663	3.171	0.53901	0.962501
46	0.4198	0.3898	3.172	0.53801	0.960715
47	0.4447	0.4147	3.172	0.53801	0.960715
48	0.4697	0.4397	3.172	0.53801	0.960715
49	0.4963	0.4663	3.173	0.537009	0.958929
50	0.5247	0.4947	3.173	0.537009	0.958929
51	0.5547	0.5247	3.174	0.53601	0.957144
52	0.5863	0.5563	3.174	0.53601	0.957144
53	0.6213	0.5913	3.175	0.53501	0.955358
54	0.658	0.628	3.176	0.534009	0.953572
55	0.6963	0.6663	3.176	0.534009	0.953572
56	0.738	0.708	3.176	0.534009	0.953572
57	0.7813	0.7513	3.176	0.534009	0.953572
58	0.828	0.798	3.177	0.53301	0.951787
59	0.8763	0.8463	3.178	0.53201	0.950001
60	0.928	0.898	3.179	0.53101	0.948216
61	0.983	0.953	3.179	0.53101	0.948216
62	1.0413	1.0113	3.179	0.53101	0.948216
63	1.103	1.073	3.181	0.52901	0.944644
64	1.168	1.138	3.181	0.52901	0.944644
65	1.238	1.208	3.181	0.52901	0.944644
66	1.3113	1.2813	3.183	0.527009	0.941072
67	1.3897	1.3597	3.184	0.52601	0.939287
68	1.473	1.443	3.184	0.52601	0.939287
69	1.5613	1.5313	3.185	0.52501	0.937501
70	1.6547	1.6247	3.186	0.524009	0.935715
71	1.753	1.723	3.187	0.52301	0.93393
72	1.858	1.828	3.188	0.52201	0.932144
73	1.968	1.938	3.188	0.52201	0.932144
74	2.0847	2.0547	3.19	0.52001	0.928573
75	2.2097	2.1797	3.191	0.51901	0.926787
76	2.3413	2.3113	3.192	0.51801	0.925002
77	2.4813	2.4513	3.194	0.51601	0.92143
78	2.6297	2.5997	3.195	0.51501	0.919645
79	2.7863	2.7563	3.195	0.51501	0.919645
80	2.953	2.923	3.198	0.51201	0.914287
81	3.1297	3.0997	3.198	0.51201	0.914287
82	3.3163	3.2863	3.2	0.51001	0.910716
83	3.5147	3.4847	3.201	0.50901	0.90893
84	3.7247	3.6947	3.202	0.50801	0.907145
85	3.9463	3.9163	3.204	0.50601	0.903573
86	4.1813	4.1513	3.205	0.50501	0.901788
87	4.4297	4.3997	3.207	0.50301	0.898216
88	4.693	4.663	3.209	0.501009	0.894645
89	4.973	4.943	3.211	0.49901	0.891074
90	5.2697	5.2397	3.214	0.49601	0.885716
91	5.583	5.553	3.215	0.49501	0.883931
92	5.9147	5.8847	3.217	0.49301	0.880359
93	6.2663	6.2363	3.22	0.49001	0.875002
94	6.6397	6.6097	3.222	0.48801	0.871431
95	7.0347	7.0047	3.224	0.48601	0.86786
96	7.453	7.423	3.227	0.48301	0.862503
97	7.8963	7.8663	3.23	0.48001	0.857145
98	8.3663	8.3363	3.233	0.47701	0.851788
99	8.8647	8.8347	3.235	0.47501	0.848217
100	9.3913	9.3613	3.238	0.47201	0.84286
101	9.9497	9.9197	3.242	0.468009	0.835717


Slug Test 11/18/09
Stockman Oil Greenwood, SC
Bouwer and Rice Graph of DW-1
Ho is 0.560009 meters at t = 1.8 sec
Log of Head Ratio (Ho/Ht)
1
0.1
0.01
Bouwer and Rice Parameter A is 2.1
Bouwer and Rice Parameter B is 0.35
ln(Re/Rw) = 2.473124e+00
Analysis Starts at time 2.700000 seconds
Analysis Ends at time 9.949701 minutes
92 Measurements Analyzed from 10 to 101
Hydraulic Conductivity = 0.012342 meters/day
Transmissivity = 0.229475 m2/day
0
1
2
3
4
5
6
7
8
9
Adjusted Time (minutes)
Project Number 05086.2 for Stockman Oil



KLM Environmental, LLC

Phase I Phase II Underground Storage Tanks Soil & Water Sampling Well Installation

APPENDIX C
HYDRAULIC GRADIENT CALCULATION
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

APPENDIX D

Field Screening Results

Pace Analytical®
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2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

September 17, 2009

Mr. Mark Keller
KLM Environmental
PO Box 2704
Goose Creek, SC 29445

RE: Project: Stockman Oil
Pace Project No.: 9252639

Dear Mr. Keller:
Enclosed are the analytical results for sample(s) received by the laboratory on September 09, 2009. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Inorganic Wet Chemistry and Metals analyses were performed at our Pace Asheville laboratory and Organic testing was performed at our Pace Huntersville laboratory unless otherwise footnoted. All Microbiological analyses were performed at the laboratory where the samples were received.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Herring

kevin.herring@pacelabs.com
Project Manager

Enclosures

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(704)875-9092

CERTIFICATIONS

Project: Stockman Oil
Pace Project No.: 9252639

Charlotte Certification IDs

West Virginia Certification #: 357
Virginia Certification #: 00213
Tennessee Certification #: 04010
South Carolina Drinking Water Cert. #: 990060003
South Carolina Certification #: 990060001
Pennsylvania Certification #: 68-00784
Connecticut Certification #: PH-0104
North Carolina Field Services Certification #: 5342
North Carolina Drinking Water Certification #: 37706
New Jersey Certification #: NC012
Louisiana/LELAP Certification #: 04034
Kentucky UST Certification #: 84
Florida/NELAP Certification #: E87627
North Carolina Wastewater Certification #: 12

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SAMPLE SUMMARY

Project: Stockman Oil
Pace Project No.: 9252639

Lab ID	Sample ID	Matrix	Date Collected	Date Received
9252639001	**B-1**	Water	09/03/09 12:00	09/09/09 09:30
9252639002	**B-2**	Water	09/03/09 09:45	09/09/09 09:30
9252639003	**B-3**	Water	09/03/09 08:45	09/09/09 09:30
9252639004	**B-4**	Water	09/03/09 08:00	09/09/09 09:30
9252639005	**B-5**	Water	09/03/09 15:00	09/09/09 09:30
9252639006	**B-8**	Water	09/02/09 14:00	09/09/09 09:30
9252639007	**B-10**	Water	09/02/09 20:00	09/09/09 09:30
9252639008	**B-11**	Water	09/03/09 12:44	09/09/09 09:30
9252639009	**B-14**	Water	09/02/09 18:10	09/09/09 09:30
9252639010	**B-15**	Water	09/02/09 17:20	09/09/09 09:30
9252639011	**B-17**	Water	09/02/09 16:30	09/09/09 09:30
9252639012	**B-19**	Water	09/03/09 17:00	09/09/09 09:30
9252639013	**B-23**	Water	09/03/09 11:20	09/09/09 09:30
9252639014	**B-27**	Water	09/03/09 16:00	09/09/09 09:30

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SAMPLE ANALYTE COUNT

Project: Stockman Oil
Pace Project No.: 9252639

Lab ID	Sample ID	Method	Analysts	Analytes Reported
9252639001	**B-1**	EPA 8260	KJM	12
9252639002	**B-2**	EPA 8260	KJM	12
9252639003	**B-3**	EPA 8260	KJM	12
9252639004	**B-4**	EPA 8260	KJM	12
9252639005	**B-5**	EPA 8260	KJM	12
9252639006	**B-8**	EPA 8260	KJM	12
9252639007	**B-10**	EPA 8260	KJM	12
9252639008	**B-11**	EPA 8260	KJM	12
9252639009	**B-14**	EPA 8260	KJM	12
9252639010	**B-15**	EPA 8260	KJM	12
9252639011	**B-17**	EPA 8260	KJM	12
9252639012	**B-19**	EPA 8260	KJM	12
9252639013	**B-23**	EPA 8260	KJM	12
9252639014	**B-27**	EPA 8260	KJM	12

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ANALYTICAL RESULTS

Project: Stockman Oil
Pace Project No.: 9252639

Sample: B-1 **Lab ID: 9252639001** Collected: 09/03/09 12:00 Received: 09/09/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Benzene	ND	ug/L	5.0	1.2	1		09/11/09 18:05	71-43-2	HS
Ethylbenzene	ND	ug/L	5.0	1.1	1		09/11/09 18:05	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	5.0	2.0	1		09/11/09 18:05	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.9	1		09/11/09 18:05	91-20-3	
Toluene	ND	ug/L	5.0	1.8	1		09/11/09 18:05	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		09/11/09 18:05	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	2.7	1		09/11/09 18:05	1330-20-7	
o-Xylene	ND	ug/L	5.0	1.7	1		09/11/09 18:05	95-47-6	
4-Bromofluorobenzene (S)	104	%	87-109		1		09/11/09 18:05	460-00-4	
Dibromofluoromethane (S)	93	%	85-115		1		09/11/09 18:05	1868-53-7	
1,2-Dichloroethane-d4 (S)	94	%	79-120		1		09/11/09 18:05	17060-07-0	
Toluene-d8 (S)	99	%	70-120		1		09/11/09 18:05	2037-26-5	

Sample: B-2 **Lab ID: 9252639002** Collected: 09/03/09 09:45 Received: 09/09/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Benzene	ND	ug/L	5.0	1.2	1		09/11/09 18:23	71-43-2	HS
Ethylbenzene	ND	ug/L	5.0	1.1	1		09/11/09 18:23	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	5.0	2.0	1		09/11/09 18:23	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.9	1		09/11/09 18:23	91-20-3	
Toluene	ND	ug/L	5.0	1.8	1		09/11/09 18:23	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		09/11/09 18:23	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	2.7	1		09/11/09 18:23	1330-20-7	
o-Xylene	ND	ug/L	5.0	1.7	1		09/11/09 18:23	95-47-6	
4-Bromofluorobenzene (S)	104	%	87-109		1		09/11/09 18:23	460-00-4	
Dibromofluoromethane (S)	89	%	85-115		1		09/11/09 18:23	1868-53-7	
1,2-Dichloroethane-d4 (S)	94	%	79-120		1		09/11/09 18:23	17060-07-0	
Toluene-d8 (S)	99	%	70-120		1		09/11/09 18:23	2037-26-5	

Sample: B-3 **Lab ID: 9252639003** Collected: 09/03/09 08:45 Received: 09/09/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Benzene	ND	ug/L	5.0	1.2	1		09/11/09 18:41	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1.1	1		09/11/09 18:41	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	5.0	2.0	1		09/11/09 18:41	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.9	1		09/11/09 18:41	91-20-3	
Toluene	ND	ug/L	5.0	1.8	1		09/11/09 18:41	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		09/11/09 18:41	1330-20-7	

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ANALYTICAL RESULTS

Project: Stockman Oil
Pace Project No.: 9252639

Sample: B-3 **Lab ID: 9252639003** Collected: 09/03/09 08:45 Received: 09/09/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
m&p-Xylene	ND	ug/L	10.0	2.7	1		09/11/09 18:41	1330-20-7	
o-Xylene	ND	ug/L	5.0	1.7	1		09/11/09 18:41	95-47-6	
4-Bromofluorobenzene (S)	99	%	87-109		1		09/11/09 18:41	460-00-4	
Dibromofluoromethane (S)	91	%	85-115		1		09/11/09 18:41	1868-53-7	
1,2-Dichloroethane-d4 (S)	96	%	79-120		1		09/11/09 18:41	17060-07-0	
Toluene-d8 (S)	98	%	70-120		1		09/11/09 18:41	2037-26-5	

Sample: B-4 **Lab ID: 9252639004** Collected: 09/03/09 08:00 Received: 09/09/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Benzene	ND	ug/L	5.0	1.2	1		09/11/09 18:59	71-43-2	HS
Ethylbenzene	ND	ug/L	5.0	1.1	1		09/11/09 18:59	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	5.0	2.0	1		09/11/09 18:59	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.9	1		09/11/09 18:59	91-20-3	
Toluene	ND	ug/L	5.0	1.8	1		09/11/09 18:59	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		09/11/09 18:59	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	2.7	1		09/11/09 18:59	1330-20-7	
o-Xylene	ND	ug/L	5.0	1.7	1		09/11/09 18:59	95-47-6	
4-Bromofluorobenzene (S)	102	%	87-109		1		09/11/09 18:59	460-00-4	
Dibromofluoromethane (S)	89	%	85-115		1		09/11/09 18:59	1868-53-7	
1,2-Dichloroethane-d4 (S)	97	%	79-120		1		09/11/09 18:59	17060-07-0	
Toluene-d8 (S)	99	%	70-120		1		09/11/09 18:59	2037-26-5	

Sample: B-5 **Lab ID: 9252639005** Collected: 09/03/09 15:00 Received: 09/09/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Benzene	ND	ug/L	5.0	1.2	1		09/11/09 19:18	71-43-2	HS
Ethylbenzene	ND	ug/L	5.0	1.1	1		09/11/09 19:18	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	5.0	2.0	1		09/11/09 19:18	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.9	1		09/11/09 19:18	91-20-3	
Toluene	ND	ug/L	5.0	1.8	1		09/11/09 19:18	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		09/11/09 19:18	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	2.7	1		09/11/09 19:18	1330-20-7	
o-Xylene	ND	ug/L	5.0	1.7	1		09/11/09 19:18	95-47-6	
4-Bromofluorobenzene (S)	101	%	87-109		1		09/11/09 19:18	460-00-4	
Dibromofluoromethane (S)	91	%	85-115		1		09/11/09 19:18	1868-53-7	
1,2-Dichloroethane-d4 (S)	95	%	79-120		1		09/11/09 19:18	17060-07-0	
Toluene-d8 (S)	98	%	70-120		1		09/11/09 19:18	2037-26-5	

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Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: Stockman Oil
Pace Project No.: 9252639

Sample: B-8 **Lab ID: 9252639006** Collected: 09/02/09 14:00 Received: 09/09/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Benzene	**6.5**	ug/L	5.0	1.2	1		09/11/09 19:36	71-43-2	HS
Ethylbenzene	ND	ug/L	5.0	1.1	1		09/11/09 19:36	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	5.0	2.0	1		09/11/09 19:36	1634-04-4	
Naphthalene	**3.2J**	ug/L	5.0	2.9	1		09/11/09 19:36	91-20-3	
Toluene	ND	ug/L	5.0	1.8	1		09/11/09 19:36	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		09/11/09 19:36	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	2.7	1		09/11/09 19:36	1330-20-7	
o-Xylene	ND	ug/L	5.0	1.7	1		09/11/09 19:36	95-47-6	
4-Bromofluorobenzene (S)	101	%	87-109		1		09/11/09 19:36	460-00-4	
Dibromofluoromethane (S)	92	%	85-115		1		09/11/09 19:36	1868-53-7	
1,2-Dichloroethane-d4 (S)	95	%	79-120		1		09/11/09 19:36	17060-07-0	
Toluene-d8 (S)	100	%	70-120		1		09/11/09 19:36	2037-26-5	

Sample: B-10 **Lab ID: 9252639007** Collected: 09/02/09 20:00 Received: 09/09/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Benzene	**190**	ug/L	50.0	12.0	10		09/14/09 11:21	71-43-2	HS
Ethylbenzene	**224**	ug/L	50.0	11.0	10		09/14/09 11:21	100-41-4	
Methyl-tert-butyl ether	**26.4J**	ug/L	50.0	20.0	10		09/14/09 11:21	1634-04-4	
Naphthalene	**171**	ug/L	50.0	29.0	10		09/14/09 11:21	91-20-3	
Toluene	**985**	ug/L	50.0	18.0	10		09/14/09 11:21	108-88-3	
Xylene (Total)	**1090**	ug/L	100	27.0	10		09/14/09 11:21	1330-20-7	
m&p-Xylene	**729**	ug/L	100	27.0	10		09/14/09 11:21	1330-20-7	
o-Xylene	**359**	ug/L	50.0	17.0	10		09/14/09 11:21	95-47-6	
4-Bromofluorobenzene (S)	105	%	87-109		10		09/14/09 11:21	460-00-4	
Dibromofluoromethane (S)	88	%	85-115		10		09/14/09 11:21	1868-53-7	
1,2-Dichloroethane-d4 (S)	87	%	79-120		10		09/14/09 11:21	17060-07-0	
Toluene-d8 (S)	99	%	70-120		10		09/14/09 11:21	2037-26-5	

Sample: B-11 **Lab ID: 9252639008** Collected: 09/03/09 12:44 Received: 09/09/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Benzene	ND	ug/L	5.0	1.2	1		09/11/09 23:13	71-43-2	HS
Ethylbenzene	ND	ug/L	5.0	1.1	1		09/11/09 23:13	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	5.0	2.0	1		09/11/09 23:13	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.9	1		09/11/09 23:13	91-20-3	
Toluene	ND	ug/L	5.0	1.8	1		09/11/09 23:13	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		09/11/09 23:13	1330-20-7	

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Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: Stockman Oil
Pace Project No.: 9252639

Sample: B-11 **Lab ID: 9252639008** Collected: 09/03/09 12:44 Received: 09/09/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
m&p-Xylene	ND	ug/L	10.0	2.7	1		09/11/09 23:13	1330-20-7	
o-Xylene	ND	ug/L	5.0	1.7	1		09/11/09 23:13	95-47-6	
4-Bromofluorobenzene (S)	110	%	87-109		1		09/11/09 23:13	460-00-4	S3
Dibromofluoromethane (S)	91	%	85-115		1		09/11/09 23:13	1868-53-7	
1,2-Dichloroethane-d4 (S)	97	%	79-120		1		09/11/09 23:13	17060-07-0	
Toluene-d8 (S)	98	%	70-120		1		09/11/09 23:13	2037-26-5	

Sample: B-14 **Lab ID: 9252639009** Collected: 09/02/09 18:10 Received: 09/09/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Benzene	**4730**	ug/L	250	60.0	50		09/11/09 23:31	71-43-2	HS
Ethylbenzene	**353**	ug/L	250	55.0	50		09/11/09 23:31	100-41-4	
Methyl-tert-butyl ether	**483**	ug/L	250	100	50		09/11/09 23:31	1634-04-4	
Naphthalene	**221J**	ug/L	250	145	50		09/11/09 23:31	91-20-3	
Toluene	**2030**	ug/L	250	90.0	50		09/11/09 23:31	108-88-3	
Xylene (Total)	**1830**	ug/L	500	135	50		09/11/09 23:31	1330-20-7	
m&p-Xylene	**1180**	ug/L	500	135	50		09/11/09 23:31	1330-20-7	
o-Xylene	**648**	ug/L	250	85.0	50		09/11/09 23:31	95-47-6	
4-Bromofluorobenzene (S)	101	%	87-109		50		09/11/09 23:31	460-00-4	
Dibromofluoromethane (S)	91	%	85-115		50		09/11/09 23:31	1868-53-7	
1,2-Dichloroethane-d4 (S)	93	%	79-120		50		09/11/09 23:31	17060-07-0	
Toluene-d8 (S)	98	%	70-120		50		09/11/09 23:31	2037-26-5	

Sample: B-15 **Lab ID: 9252639010** Collected: 09/02/09 17:20 Received: 09/09/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Benzene	**123J**	ug/L	250	60.0	50		09/11/09 23:50	71-43-2	HS,T3
Ethylbenzene	ND	ug/L	250	55.0	50		09/11/09 23:50	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	250	100	50		09/11/09 23:50	1634-04-4	
Naphthalene	ND	ug/L	250	145	50		09/11/09 23:50	91-20-3	
Toluene	ND	ug/L	250	90.0	50		09/11/09 23:50	108-88-3	
Xylene (Total)	ND	ug/L	500	135	50		09/11/09 23:50	1330-20-7	
m&p-Xylene	ND	ug/L	500	135	50		09/11/09 23:50	1330-20-7	
o-Xylene	ND	ug/L	250	85.0	50		09/11/09 23:50	95-47-6	
4-Bromofluorobenzene (S)	105	%	87-109		50		09/11/09 23:50	460-00-4	
Dibromofluoromethane (S)	91	%	85-115		50		09/11/09 23:50	1868-53-7	
1,2-Dichloroethane-d4 (S)	98	%	79-120		50		09/11/09 23:50	17060-07-0	
Toluene-d8 (S)	98	%	70-120		50		09/11/09 23:50	2037-26-5	

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(704)875-9092

ANALYTICAL RESULTS

Project: Stockman Oil
Pace Project No.: 9252639

Sample: B-17 **Lab ID: 9252639011** Collected: 09/02/09 16:30 Received: 09/09/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Benzene	ND	ug/L	5.0	1.2	1		09/12/09 00:08	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1.1	1		09/12/09 00:08	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	5.0	2.0	1		09/12/09 00:08	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.9	1		09/12/09 00:08	91-20-3	
Toluene	ND	ug/L	5.0	1.8	1		09/12/09 00:08	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		09/12/09 00:08	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	2.7	1		09/12/09 00:08	1330-20-7	
o-Xylene	ND	ug/L	5.0	1.7	1		09/12/09 00:08	95-47-6	
4-Bromofluorobenzene (S)	108	%	87-109		1		09/12/09 00:08	460-00-4	
Dibromofluoromethane (S)	92	%	85-115		1		09/12/09 00:08	1868-53-7	
1,2-Dichloroethane-d4 (S)	97	%	79-120		1		09/12/09 00:08	17060-07-0	
Toluene-d8 (S)	99	%	70-120		1		09/12/09 00:08	2037-26-5	

Sample: B-19 **Lab ID: 9252639012** Collected: 09/03/09 17:00 Received: 09/09/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Benzene	**5.1**	ug/L	5.0	1.2	1		09/12/09 00:26	71-43-2	HS
Ethylbenzene	ND	ug/L	5.0	1.1	1		09/12/09 00:26	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	5.0	2.0	1		09/12/09 00:26	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.9	1		09/12/09 00:26	91-20-3	
Toluene	ND	ug/L	5.0	1.8	1		09/12/09 00:26	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		09/12/09 00:26	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	2.7	1		09/12/09 00:26	1330-20-7	
o-Xylene	ND	ug/L	5.0	1.7	1		09/12/09 00:26	95-47-6	
4-Bromofluorobenzene (S)	98	%	87-109		1		09/12/09 00:26	460-00-4	
Dibromofluoromethane (S)	93	%	85-115		1		09/12/09 00:26	1868-53-7	
1,2-Dichloroethane-d4 (S)	97	%	79-120		1		09/12/09 00:26	17060-07-0	
Toluene-d8 (S)	99	%	70-120		1		09/12/09 00:26	2037-26-5	

Sample: B-23 **Lab ID: 9252639013** Collected: 09/03/09 11:20 Received: 09/09/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Benzene	ND	ug/L	5.0	1.2	1		09/12/09 00:44	71-43-2	HS
Ethylbenzene	ND	ug/L	5.0	1.1	1		09/12/09 00:44	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	5.0	2.0	1		09/12/09 00:44	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.9	1		09/12/09 00:44	91-20-3	
Toluene	ND	ug/L	5.0	1.8	1		09/12/09 00:44	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		09/12/09 00:44	1330-20-7	

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(704)875-9092

ANALYTICAL RESULTS

Project: Stockman Oil
Pace Project No.: 9252639

Sample: B-23 **Lab ID: 9252639013** Collected: 09/03/09 11:20 Received: 09/09/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
m&p-Xylene	ND	ug/L	10.0	2.7	1		09/12/09 00:44	1330-20-7	
o-Xylene	ND	ug/L	5.0	1.7	1		09/12/09 00:44	95-47-6	
4-Bromofluorobenzene (S)	104	%	87-109		1		09/12/09 00:44	460-00-4	
Dibromofluoromethane (S)	93	%	85-115		1		09/12/09 00:44	1868-53-7	
1,2-Dichloroethane-d4 (S)	96	%	79-120		1		09/12/09 00:44	17060-07-0	
Toluene-d8 (S)	98	%	70-120		1		09/12/09 00:44	2037-26-5	

Sample: B-27 **Lab ID: 9252639014** Collected: 09/03/09 16:00 Received: 09/09/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Benzene	**33.8**	ug/L	5.0	1.2	1		09/12/09 01:02	71-43-2	HS
Ethylbenzene	ND	ug/L	5.0	1.1	1		09/12/09 01:02	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	5.0	2.0	1		09/12/09 01:02	1634-04-4	
Naphthalene	**3.9J**	ug/L	5.0	2.9	1		09/12/09 01:02	91-20-3	
Toluene	ND	ug/L	5.0	1.8	1		09/12/09 01:02	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		09/12/09 01:02	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	2.7	1		09/12/09 01:02	1330-20-7	
o-Xylene	ND	ug/L	5.0	1.7	1		09/12/09 01:02	95-47-6	
4-Bromofluorobenzene (S)	107	%	87-109		1		09/12/09 01:02	460-00-4	
Dibromofluoromethane (S)	92	%	85-115		1		09/12/09 01:02	1868-53-7	
1,2-Dichloroethane-d4 (S)	93	%	79-120		1		09/12/09 01:02	17060-07-0	
Toluene-d8 (S)	100	%	70-120		1		09/12/09 01:02	2037-26-5	

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QUALITY CONTROL DATA

Project: Stockman Oil
Pace Project No.: 9252639

QC Batch: MSV/8252 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV
Associated Lab Samples: 9252639001, 9252639002, 9252639003, 9252639004, 9252639005, 9252639006

METHOD BLANK: 334993 Matrix: Water
Associated Lab Samples: 9252639001, 9252639002, 9252639003, 9252639004, 9252639005, 9252639006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	5.0	09/11/09 10:38	
Ethylbenzene	ug/L	ND	5.0	09/11/09 10:38	
m&p-Xylene	ug/L	ND	10.0	09/11/09 10:38	
Methyl-tert-butyl ether	ug/L	ND	5.0	09/11/09 10:38	
Naphthalene	ug/L	ND	5.0	09/11/09 10:38	
o-Xylene	ug/L	ND	5.0	09/11/09 10:38	
Toluene	ug/L	ND	5.0	09/11/09 10:38	
Xylene (Total)	ug/L	ND	10.0	09/11/09 10:38	
1,2-Dichloroethane-d4 (S)	%	95	79-120	09/11/09 10:38	
4-Bromofluorobenzene (S)	%	100	87-109	09/11/09 10:38	
Dibromofluoromethane (S)	%	92	85-115	09/11/09 10:38	
Toluene-d8 (S)	%	101	70-120	09/11/09 10:38	

LABORATORY CONTROL SAMPLE: 334994

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	47.7	95	78-128	
Ethylbenzene	ug/L	50	50.1	100	80-127	
m&p-Xylene	ug/L	100	103	103	82-127	
Methyl-tert-butyl ether	ug/L	50	50.1	100	71-130	
Naphthalene	ug/L	50	51.7	103	52-136	
o-Xylene	ug/L	50	49.5	99	83-124	
Toluene	ug/L	50	51.4	103	76-126	
Xylene (Total)	ug/L	150	152	101	83-125	
1,2-Dichloroethane-d4 (S)	%			95	79-120	
4-Bromofluorobenzene (S)	%			97	87-109	
Dibromofluoromethane (S)	%			94	85-115	
Toluene-d8 (S)	%			102	70-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 335013 335014

Parameter	Units	9252415002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	ND	50	50	51.2	50.0	102	100	74-136	2	30	
Toluene	ug/L	ND	50	50	51.6	51.3	102	101	73-131	1	30	
1,2-Dichloroethane-d4 (S)	%						94	94	79-120			
4-Bromofluorobenzene (S)	%						101	107	87-109			
Dibromofluoromethane (S)	%						89	92	85-115			
Toluene-d8 (S)	%						98	100	70-120			

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Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: Stockman Oil
Pace Project No.: 9252639

QC Batch: MSV/8262
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV
Associated Lab Samples: 9252639007

METHOD BLANK: 335669
Matrix: Water
Associated Lab Samples: 9252639007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	5.0	09/13/09 09:59	
Ethylbenzene	ug/L	ND	5.0	09/13/09 09:59	
m&p-Xylene	ug/L	ND	10.0	09/13/09 09:59	
Methyl-tert-butyl ether	ug/L	ND	5.0	09/13/09 09:59	
Naphthalene	ug/L	ND	5.0	09/13/09 09:59	
o-Xylene	ug/L	ND	5.0	09/13/09 09:59	
Toluene	ug/L	ND	5.0	09/13/09 09:59	
Xylene (Total)	ug/L	ND	10.0	09/13/09 09:59	
1,2-Dichloroethane-d4 (S)	%	90	79-120	09/13/09 09:59	
4-Bromofluorobenzene (S)	%	97	87-109	09/13/09 09:59	
Dibromofluoromethane (S)	%	89	85-115	09/13/09 09:59	
Toluene-d8 (S)	%	98	70-120	09/13/09 09:59	

LABORATORY CONTROL SAMPLE: 335670

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	47.3	95	78-128	
Ethylbenzene	ug/L	50	47.9	96	80-127	
m&p-Xylene	ug/L	100	97.1	97	82-127	
Methyl-tert-butyl ether	ug/L	50	44.7	89	71-130	
Naphthalene	ug/L	50	53.8	108	52-136	
o-Xylene	ug/L	50	48.8	98	83-124	
Toluene	ug/L	50	48.6	97	76-126	
Xylene (Total)	ug/L	150	146	97	83-125	
1,2-Dichloroethane-d4 (S)	%			90	79-120	
4-Bromofluorobenzene (S)	%			106	87-109	
Dibromofluoromethane (S)	%			90	85-115	
Toluene-d8 (S)	%			99	70-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 335671 335672

Parameter	Units	9252494010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	ND	50	50	43.3	49.0	87	98	74-136	12	30	
Toluene	ug/L	ND	50	50	44.2	50.3	88	100	73-131	13	30	
1,2-Dichloroethane-d4 (S)	%						95	91	79-120			
4-Bromofluorobenzene (S)	%						104	101	87-109			
Dibromofluoromethane (S)	%						87	87	85-115			
Toluene-d8 (S)	%						97	97	70-120			

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QUALITY CONTROL DATA

Project: Stockman Oil
Pace Project No.: 9252639

QC Batch: MSV/8253 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV
Associated Lab Samples: 9252639008, 9252639009, 9252639010, 9252639011, 9252639012, 9252639013, 9252639014

METHOD BLANK: 335130 Matrix: Water
Associated Lab Samples: 9252639008, 9252639009, 9252639010, 9252639011, 9252639012, 9252639013, 9252639014

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	5.0	09/11/09 22:37	
Ethylbenzene	ug/L	ND	5.0	09/11/09 22:37	
m&p-Xylene	ug/L	ND	10.0	09/11/09 22:37	
Methyl-tert-butyl ether	ug/L	ND	5.0	09/11/09 22:37	
Naphthalene	ug/L	ND	5.0	09/11/09 22:37	
o-Xylene	ug/L	ND	5.0	09/11/09 22:37	
Toluene	ug/L	ND	5.0	09/11/09 22:37	
Xylene (Total)	ug/L	ND	10.0	09/11/09 22:37	
1,2-Dichloroethane-d4 (S)	%	93	79-120	09/11/09 22:37	
4-Bromofluorobenzene (S)	%	101	87-109	09/11/09 22:37	
Dibromofluoromethane (S)	%	88	85-115	09/11/09 22:37	
Toluene-d8 (S)	%	99	70-120	09/11/09 22:37	

LABORATORY CONTROL SAMPLE: 335131

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	44.3	89	78-128	
Ethylbenzene	ug/L	50	45.7	91	80-127	
m&p-Xylene	ug/L	100	92.8	93	82-127	
Methyl-tert-butyl ether	ug/L	50	46.2	92	71-130	
Naphthalene	ug/L	50	55.0	110	52-136	
o-Xylene	ug/L	50	46.1	92	83-124	
Toluene	ug/L	50	45.9	92	76-126	
Xylene (Total)	ug/L	150	139	93	83-125	
1,2-Dichloroethane-d4 (S)	%			95	79-120	
4-Bromofluorobenzene (S)	%			105	87-109	
Dibromofluoromethane (S)	%			92	85-115	
Toluene-d8 (S)	%			98	70-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 335132 335133

Parameter	Units	9252283001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	ND	50	50	54.3	49.4	109	99	74-136	9	30	
Toluene	ug/L	148	50	50	232	208	168	122	73-131	11	30	E,M3
1,2-Dichloroethane-d4 (S)	%						95	95	79-120			
4-Bromofluorobenzene (S)	%						100	109	87-109			
Dibromofluoromethane (S)	%						85	88	85-115			
Toluene-d8 (S)	%						98	98	70-120			

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QUALIFIERS

Project: Stockman Oil
Pace Project No.: 9252639

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

U - Indicates the compound was analyzed for, but not detected.

ANALYTE QUALIFIERS

E	Analyte concentration exceeded the calibration range. The reported result is estimated.
HS	Results are from sample aliquot taken from VOA vial with headspace (air bubble greater than 6 mm diameter).
M3	Matrix spike recovery was outside laboratory control limits due to matrix interferences.
S3	Surrogate recovery exceeded laboratory control limits. Analyte presence below reporting limits in associated samples. Results unaffected by high bias.
T3	Insufficient sample received from client to perform the analysis per EPA method requirements.

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 2

1326229

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: KLM Env	Report To: Mark Keller	Attention:
Address: PO Box 2704	Copy To:	Company Name:
Goose Creek SC 29445		Address:
Email To: mkeller131@comcast.net	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name: Stockman Oil	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #: 824-5

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☒ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: SC

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	BTEXNM	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 9252639
1	B-1	wt	G	9/3			1200												X		001
2	B-2			9/3			945														002
3	B-3			9/3			845														003
4	B-4			9/3			800														004
5	B-5			9/3			1500														005
6	B-8			9/2			1400														006
7	B-10			9/2			2000														007
8	B-11			9/3			1244														008
9	B-14			9/2			1810														009
10	B-15			9/2			1720														010
11	B-17			9/2			1630														011
12	B-19	X	X	9/3			1700												X		012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	[signature]	9/8/09	1700	Jonnell Cloud Pace	9/9/09	930	4.5	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

1324464

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	KLM Env.	Report To:	Marlc Keller	Attention:	
Address:	Po Box 2704	Copy To:		Company Name:	
	Goose Creek SC 29445			Address:	
Email To:	mkeller131@comcast.net	Purchase Order No.:		Pace Quote Reference:	
Phone:	Fax:	Project Name:	Stokmen oil	Pace Project Manager:	
Requested Due Date/TAT:		Project Number:		Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☒ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: SC

Section D Required Client Information

Matrix Codes (MATRIX / CODE)

Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Tissue	TS
Other	OT

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test ↓: BTEX N/M	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	B-23	WT	G	9/3			1120												X		9252639 013
2	B-27	WT	G	9/3			1600												X		014
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
		9/8/09	1700	Jamell Cloud Pace	9/9/09	930	4.5	4	N	4

ORIGINAL

SAMPLER NAME AND SIGNATURE		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:					
SIGNATURE of SAMPLER:	DATE Signed (MM/DD/YY):				

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

APPENDIX E

Analytical Data

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December 07, 2009

Mr. Mark Keller
KLM Environmental
PO Box 2704
Goose Creek, SC 29445

RE: Project: STOCKMAN OIL
Pace Project No.: 9257894

Dear Mr. Keller:
Enclosed are the analytical results for sample(s) received by the laboratory on November 19, 2009. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Inorganic Wet Chemistry and Metals analyses were performed at our Pace Asheville laboratory and Organic testing was performed at our Pace Huntersville laboratory unless otherwise footnoted. All Microbiological analyses were performed at the laboratory where the samples were received.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Herring

kevin.herring@pacelabs.com
Project Manager

Enclosures

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CERTIFICATIONS

Project: STOCKMAN OIL
Pace Project No.: 9257894

Charlotte Certification IDs
Connecticut Certification #: PH-0104
Florida/NELAP Certification #: E87627
9800 Kincey Ave. - Ste 100 Huntersville, NC 28078
West Virginia Certification #: 357
Virginia Certification #: 00213
Tennessee Certification #: 04010
South Carolina Drinking Water Cert. #: 990060003
South Carolina Certification #: 990060001
Pennsylvania Certification #: 68-00784
North Carolina Wastewater Certification #: 12
North Carolina Field Services Certification #: 5342
North Carolina Drinking Water Certification #: 37706
New Jersey Certification #: NC012
Louisiana/LELAP Certification #: 04034
Kentucky UST Certification #: 84

Asheville Certification IDs
Connecticut Certification #: PH-0106
2225 Riverside Dr. Asheville, NC 28804
Virginia Certification #: 00072
Tennessee Certification #: 2980
South Carolina Certification #: 99030001
South Carolina Bioassay Certification #: 99030002
Pennsylvania Certification #: 68-03578
North Carolina Wastewater Certification #: 40
North Carolina Drinking Water Certification #: 37712
North Carolina Bioassay Certification #: 9
New Jersey Certification #: NC011
Massachusetts Certification #: M-NC030
Louisiana/LELAP Certification #: 03095
Florida/NELAP Certification #: E87648
West Virginia Certification #: 356

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SAMPLE SUMMARY

Project: STOCKMAN OIL
Pace Project No.: 9257894

Lab ID	Sample ID	Matrix	Date Collected	Date Received
9257894001	**MW1**	Water	11/18/09 10:30	11/19/09 09:30
9257894002	**MW2**	Water	11/18/09 10:40	11/19/09 09:30
9257894003	**MW3**	Water	11/18/09 10:50	11/19/09 09:30
9257894004	**MW4**	Water	11/18/09 11:00	11/19/09 09:30
9257894005	**MW7**	Water	11/18/09 11:30	11/19/09 09:30
9257894006	**MW8**	Water	11/18/09 11:40	11/19/09 09:30
9257894007	**MW9**	Water	11/18/09 11:50	11/19/09 09:30
9257894008	**MW10**	Water	11/18/09 12:00	11/19/09 09:30
9257894009	**MW11**	Water	11/18/09 12:10	11/19/09 09:30
9257894010	**MW12**	Water	11/18/09 12:20	11/19/09 09:30
9257894011	**MW13**	Water	11/18/09 12:30	11/19/09 09:30
9257894012	**MW14**	Water	11/18/09 12:40	11/19/09 09:30
9257894013	**DW1**	Water	11/18/09 13:00	11/19/09 09:30

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SAMPLE ANALYTE COUNT

Project: STOCKMAN OIL
Pace Project No.: 9257894

Lab ID	Sample ID	Method	Analysts	Analytes Reported
9257894001	**MW1**	EPA 6010	JMW	1
		EPA 8011	RES	2
		EPA 8260	MCK	21
9257894002	**MW2**	EPA 6010	JMW	1
		EPA 8011	RES	2
		EPA 8260	MCK	21
9257894003	**MW3**	EPA 6010	JMW	1
		EPA 8011	RES	2
		EPA 8260	MCK	21
9257894004	**MW4**	EPA 6010	JMW	1
		EPA 8011	RES	2
		EPA 8260	MCK	21
9257894005	**MW7**	EPA 353.2	DMN	1
		EPA 6010	JMW	1
		EPA 8011	RES	2
		EPA 8260	MCK	21
		SM 3500-Fe D#4	LEP	1
9257894006	**MW8**	EPA 353.2	DMN	1
		EPA 6010	JMW	1
		EPA 8011	RES	2
		EPA 8260	MCK	21
		SM 3500-Fe D#4	LEP	1
9257894007	**MW9**	EPA 353.2	DMN	1
		EPA 6010	JMW	1
		EPA 8011	RES	2
		EPA 8260	MCK	21
		SM 3500-Fe D#4	LEP	1
9257894008	**MW10**	EPA 353.2	DMN	1
		EPA 6010	JMW	1
		EPA 8011	RES	2
		EPA 8260	MCK	21
		SM 3500-Fe D#4	LEP	1
9257894009	**MW11**	EPA 353.2	DMN	1
		EPA 6010	JMW	1
		EPA 8011	RES	2
		EPA 8260	MCK	21
		SM 3500-Fe D#4	LEP	1

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SAMPLE ANALYTE COUNT

Project: STOCKMAN OIL
Pace Project No.: 9257894

Lab ID	Sample ID	Method	Analysts	Analytes Reported
9257894010	**MW12**	EPA 353.2	RAB	1
		EPA 6010	JMW	1
		EPA 8011	RES	2
		EPA 8260	MCK	21
		SM 3500-Fe D#4	LEP	1
9257894011	**MW13**	EPA 353.2	RAB	1
		EPA 6010	JMW	1
		EPA 8011	RES	2
		EPA 8260	MCK	21
		SM 3500-Fe D#4	LEP	1
9257894012	**MW14**	EPA 353.2	RAB	1
		EPA 6010	JMW	1
		EPA 8011	RES	2
		EPA 8260	MCK	21
		SM 3500-Fe D#4	DMN	1
9257894013	**DW1**	EPA 353.2	RAB	1
		EPA 6010	JMW	1
		EPA 8011	RES	2
		EPA 8260	MCK	21
		SM 3500-Fe D#4	DMN	1

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ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 9257894

Sample: MW1 **Lab ID: 9257894001** Collected: 11/18/09 10:30 Received: 11/19/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	**0.072**	ug/L	0.019	0.019	1	12/01/09 15:19	12/05/09 00:30	106-93-4	
1-Chloro-2-bromopropane (S)	96	%	60-140		1	12/01/09 15:19	12/05/09 00:30	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**42.4**	ug/L	5.0	4.0	1	11/24/09 11:00	11/25/09 02:39	7439-92-1	
8260 MSV Oxygenates	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	1000	620	10		11/30/09 10:22	75-85-4	
tert-Amylmethyl ether	**147**	ug/L	100	45.0	10		11/30/09 10:22	994-05-8	
Benzene	**230**	ug/L	50.0	12.0	10		11/30/09 10:22	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	1000	480	10		11/30/09 10:22	624-95-3	
tert-Butyl Alcohol	**397J**	ug/L	1000	270	10		11/30/09 10:22	75-65-0	
tert-Butyl Formate	ND	ug/L	500	90.0	10		11/30/09 10:22	762-75-4	
1,2-Dichloroethane	ND	ug/L	50.0	13.0	10		11/30/09 10:22	107-06-2	
Diisopropyl ether	**176**	ug/L	50.0	27.0	10		11/30/09 10:22	108-20-3	
Ethanol	ND	ug/L	2000	1700	10		11/30/09 10:22	64-17-5	
Ethylbenzene	**113**	ug/L	50.0	11.0	10		11/30/09 10:22	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	100	46.0	10		11/30/09 10:22	637-92-3	
Methyl-tert-butyl ether	**6320**	ug/L	250	100	50		11/30/09 16:18	1634-04-4	
Naphthalene	**202**	ug/L	50.0	29.0	10		11/30/09 10:22	91-20-3	
Toluene	**116**	ug/L	50.0	18.0	10		11/30/09 10:22	108-88-3	
Xylene (Total)	**929**	ug/L	100	27.0	10		11/30/09 10:22	1330-20-7	
m&p-Xylene	**527**	ug/L	100	27.0	10		11/30/09 10:22	1330-20-7	
o-Xylene	**402**	ug/L	50.0	17.0	10		11/30/09 10:22	95-47-6	
Dibromofluoromethane (S)	98	%	85-115		10		11/30/09 10:22	1868-53-7	
Toluene-d8 (S)	99	%	70-120		10		11/30/09 10:22	2037-26-5	
4-Bromofluorobenzene (S)	108	%	87-109		10		11/30/09 10:22	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	79-120		10		11/30/09 10:22	17060-07-0	

Sample: MW2 **Lab ID: 9257894002** Collected: 11/18/09 10:40 Received: 11/19/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	12/01/09 15:23	12/05/09 00:50	106-93-4	
1-Chloro-2-bromopropane (S)	102	%	60-140		1	12/01/09 15:23	12/05/09 00:50	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	ND	ug/L	5.0	4.0	1	11/24/09 11:00	11/25/09 02:48	7439-92-1	
8260 MSV Oxygenates	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	62.0	1		11/27/09 14:00	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	4.5	1		11/27/09 14:00	994-05-8	
Benzene	ND	ug/L	5.0	1.2	1		11/27/09 14:00	71-43-2	

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9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 9257894

Sample: MW2 **Lab ID: 9257894002** Collected: 11/18/09 10:40 Received: 11/19/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Oxygenates	Analytical Method: EPA 8260								
3,3-Dimethyl-1-Butanol	ND	ug/L	100	48.0	1		11/27/09 14:00	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	27.0	1		11/27/09 14:00	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	9.0	1		11/27/09 14:00	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.3	1		11/27/09 14:00	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	2.7	1		11/27/09 14:00	108-20-3	
Ethanol	ND	ug/L	200	170	1		11/27/09 14:00	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.1	1		11/27/09 14:00	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	4.6	1		11/27/09 14:00	637-92-3	
Methyl-tert-butyl ether	**2.7J**	ug/L	5.0	2.0	1		11/27/09 14:00	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.9	1		11/27/09 14:00	91-20-3	
Toluene	ND	ug/L	5.0	1.8	1		11/27/09 14:00	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		11/27/09 14:00	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	2.7	1		11/27/09 14:00	1330-20-7	
o-Xylene	ND	ug/L	5.0	1.7	1		11/27/09 14:00	95-47-6	
Dibromofluoromethane (S)	98	%	85-115		1		11/27/09 14:00	1868-53-7	
Toluene-d8 (S)	100	%	70-120		1		11/27/09 14:00	2037-26-5	
4-Bromofluorobenzene (S)	105	%	87-109		1		11/27/09 14:00	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	79-120		1		11/27/09 14:00	17060-07-0	

Sample: MW3 **Lab ID: 9257894003** Collected: 11/18/09 10:50 Received: 11/19/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	12/01/09 15:23	12/05/09 01:11	106-93-4	
1-Chloro-2-bromopropane (S)	111	%	60-140		1	12/01/09 15:23	12/05/09 01:11	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	ND	ug/L	5.0	4.0	1	11/24/09 11:00	11/25/09 02:55	7439-92-1	
8260 MSV Oxygenates	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**76600**	ug/L	20000	12400	200		11/27/09 14:18	75-85-4	
tert-Amylmethyl ether	**1130J**	ug/L	2000	900	200		11/27/09 14:18	994-05-8	
Benzene	**21400**	ug/L	1000	240	200		11/27/09 14:18	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	20000	9600	200		11/27/09 14:18	624-95-3	
tert-Butyl Alcohol	ND	ug/L	20000	5400	200		11/27/09 14:18	75-65-0	
tert-Butyl Formate	ND	ug/L	10000	1800	200		11/27/09 14:18	762-75-4	
1,2-Dichloroethane	ND	ug/L	1000	260	200		11/27/09 14:18	107-06-2	
Diisopropyl ether	**1390**	ug/L	1000	540	200		11/27/09 14:18	108-20-3	
Ethanol	ND	ug/L	40000	34000	200		11/27/09 14:18	64-17-5	
Ethylbenzene	**2150**	ug/L	1000	220	200		11/27/09 14:18	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	2000	920	200		11/27/09 14:18	637-92-3	
Methyl-tert-butyl ether	**5780**	ug/L	1000	400	200		11/27/09 14:18	1634-04-4	
Naphthalene	ND	ug/L	1000	580	200		11/27/09 14:18	91-20-3	

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Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 9257894

Sample: MW3 **Lab ID: 9257894003** Collected: 11/18/09 10:50 Received: 11/19/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Oxygenates	Analytical Method: EPA 8260								
Toluene	**34700**	ug/L	1000	360	200		11/27/09 14:18	108-88-3	
Xylene (Total)	**11700**	ug/L	2000	540	200		11/27/09 14:18	1330-20-7	
m&p-Xylene	**7650**	ug/L	2000	540	200		11/27/09 14:18	1330-20-7	
o-Xylene	**4040**	ug/L	1000	340	200		11/27/09 14:18	95-47-6	
Dibromofluoromethane (S)	98	%	85-115		200		11/27/09 14:18	1868-53-7	
Toluene-d8 (S)	99	%	70-120		200		11/27/09 14:18	2037-26-5	
4-Bromofluorobenzene (S)	104	%	87-109		200		11/27/09 14:18	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%	79-120		200		11/27/09 14:18	17060-07-0	

Sample: MW4 **Lab ID: 9257894004** Collected: 11/18/09 11:00 Received: 11/19/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	12/01/09 15:23	12/05/09 01:31	106-93-4	
1-Chloro-2-bromopropane (S)	111	%	60-140		1	12/01/09 15:23	12/05/09 01:31	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	ND	ug/L	5.0	4.0	1	11/24/09 11:00	11/25/09 03:10	7439-92-1	
8260 MSV Oxygenates	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	62.0	1		11/27/09 14:36	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	4.5	1		11/27/09 14:36	994-05-8	
Benzene	**13.9**	ug/L	5.0	1.2	1		11/27/09 14:36	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	48.0	1		11/27/09 14:36	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	27.0	1		11/27/09 14:36	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	9.0	1		11/27/09 14:36	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.3	1		11/27/09 14:36	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	2.7	1		11/27/09 14:36	108-20-3	
Ethanol	ND	ug/L	200	170	1		11/27/09 14:36	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.1	1		11/27/09 14:36	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	4.6	1		11/27/09 14:36	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	2.0	1		11/27/09 14:36	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.9	1		11/27/09 14:36	91-20-3	
Toluene	ND	ug/L	5.0	1.8	1		11/27/09 14:36	108-88-3	
Xylene (Total)	**3.4J**	ug/L	10.0	2.7	1		11/27/09 14:36	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	2.7	1		11/27/09 14:36	1330-20-7	
o-Xylene	ND	ug/L	5.0	1.7	1		11/27/09 14:36	95-47-6	
Dibromofluoromethane (S)	98	%	85-115		1		11/27/09 14:36	1868-53-7	
Toluene-d8 (S)	99	%	70-120		1		11/27/09 14:36	2037-26-5	
4-Bromofluorobenzene (S)	103	%	87-109		1		11/27/09 14:36	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	79-120		1		11/27/09 14:36	17060-07-0	

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(704)875-9092

ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 9257894

Sample: MW7 **Lab ID: 9257894005** Collected: 11/18/09 11:30 Received: 11/19/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	12/01/09 15:23	12/05/09 01:51	106-93-4	
1-Chloro-2-bromopropane (S)	102	%	60-140		1	12/01/09 15:23	12/05/09 01:51	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**15.7**	ug/L	5.0	4.0	1	11/24/09 11:00	11/25/09 03:14	7439-92-1	
8260 MSV Oxygenates	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	62.0	1		11/30/09 01:42	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	4.5	1		11/30/09 01:42	994-05-8	
Benzene	ND	ug/L	5.0	1.2	1		11/30/09 01:42	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	48.0	1		11/30/09 01:42	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	27.0	1		11/30/09 01:42	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	9.0	1		11/30/09 01:42	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.3	1		11/30/09 01:42	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	2.7	1		11/30/09 01:42	108-20-3	
Ethanol	ND	ug/L	200	170	1		11/30/09 01:42	64-17-5	
Ethylbenzene	**2.2J**	ug/L	5.0	1.1	1		11/30/09 01:42	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	4.6	1		11/30/09 01:42	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	2.0	1		11/30/09 01:42	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.9	1		11/30/09 01:42	91-20-3	
Toluene	**5.4**	ug/L	5.0	1.8	1		11/30/09 01:42	108-88-3	
Xylene (Total)	**12.0**	ug/L	10.0	2.7	1		11/30/09 01:42	1330-20-7	
m&p-Xylene	**7.8J**	ug/L	10.0	2.7	1		11/30/09 01:42	1330-20-7	
o-Xylene	**4.2J**	ug/L	5.0	1.7	1		11/30/09 01:42	95-47-6	
Dibromofluoromethane (S)	98	%	85-115		1		11/30/09 01:42	1868-53-7	
Toluene-d8 (S)	91	%	70-120		1		11/30/09 01:42	2037-26-5	
4-Bromofluorobenzene (S)	108	%	87-109		1		11/30/09 01:42	460-00-4	
1,2-Dichloroethane-d4 (S)	101	%	79-120		1		11/30/09 01:42	17060-07-0	
Iron, Ferrous	Analytical Method: SM 3500-Fe D#4								
Iron, Ferrous	ND	mg/L	0.50	0.50	1		12/01/09 16:52		H1
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2								
Nitrogen, Nitrate	**29.8**	mg/L	0.50	0.50	5		11/20/09 00:28		

Sample: MW8 **Lab ID: 9257894006** Collected: 11/18/09 11:40 Received: 11/19/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	12/01/09 15:23	12/05/09 02:11	106-93-4	
1-Chloro-2-bromopropane (S)	107	%	60-140		1	12/01/09 15:23	12/05/09 02:11	301-79-56	

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ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 9257894

Sample: MW8 **Lab ID: 9257894006** Collected: 11/18/09 11:40 Received: 11/19/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**30.8**	ug/L	5.0	4.0	1	11/24/09 11:00	11/25/09 03:18	7439-92-1	
8260 MSV Oxygenates	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	62.0	1		11/30/09 02:00	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	4.5	1		11/30/09 02:00	994-05-8	
Benzene	ND	ug/L	5.0	1.2	1		11/30/09 02:00	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	48.0	1		11/30/09 02:00	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	27.0	1		11/30/09 02:00	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	9.0	1		11/30/09 02:00	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.3	1		11/30/09 02:00	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	2.7	1		11/30/09 02:00	108-20-3	
Ethanol	ND	ug/L	200	170	1		11/30/09 02:00	64-17-5	
Ethylbenzene	**1.2J**	ug/L	5.0	1.1	1		11/30/09 02:00	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	4.6	1		11/30/09 02:00	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	2.0	1		11/30/09 02:00	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.9	1		11/30/09 02:00	91-20-3	
Toluene	**2.3J**	ug/L	5.0	1.8	1		11/30/09 02:00	108-88-3	
Xylene (Total)	**7.5J**	ug/L	10.0	2.7	1		11/30/09 02:00	1330-20-7	
m&p-Xylene	**5.1J**	ug/L	10.0	2.7	1		11/30/09 02:00	1330-20-7	
o-Xylene	**2.5J**	ug/L	5.0	1.7	1		11/30/09 02:00	95-47-6	
Dibromofluoromethane (S)	103	%	85-115		1		11/30/09 02:00	1868-53-7	
Toluene-d8 (S)	92	%	70-120		1		11/30/09 02:00	2037-26-5	
4-Bromofluorobenzene (S)	106	%	87-109		1		11/30/09 02:00	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	79-120		1		11/30/09 02:00	17060-07-0	
Iron, Ferrous	Analytical Method: SM 3500-Fe D#4								
Iron, Ferrous	ND	mg/L	0.50	0.50	1		12/01/09 16:54		H1
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2								
Nitrogen, Nitrate	**2.9**	mg/L	0.10	0.10	1		11/20/09 00:21		

Sample: MW9 **Lab ID: 9257894007** Collected: 11/18/09 11:50 Received: 11/19/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	12/01/09 15:27	12/04/09 02:21	106-93-4	
1-Chloro-2-bromopropane (S)	97	%	60-140		1	12/01/09 15:27	12/04/09 02:21	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**22.4**	ug/L	5.0	4.0	1	11/24/09 11:00	11/25/09 03:22	7439-92-1	

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ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 9257894

Sample: MW9 **Lab ID: 9257894007** Collected: 11/18/09 11:50 Received: 11/19/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Oxygenates	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	62.0	1		11/30/09 02:18	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	4.5	1		11/30/09 02:18	994-05-8	
Benzene	ND	ug/L	5.0	1.2	1		11/30/09 02:18	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	48.0	1		11/30/09 02:18	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	27.0	1		11/30/09 02:18	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	9.0	1		11/30/09 02:18	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.3	1		11/30/09 02:18	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	2.7	1		11/30/09 02:18	108-20-3	
Ethanol	ND	ug/L	200	170	1		11/30/09 02:18	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.1	1		11/30/09 02:18	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	4.6	1		11/30/09 02:18	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	2.0	1		11/30/09 02:18	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.9	1		11/30/09 02:18	91-20-3	
Toluene	ND	ug/L	5.0	1.8	1		11/30/09 02:18	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		11/30/09 02:18	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	2.7	1		11/30/09 02:18	1330-20-7	
o-Xylene	ND	ug/L	5.0	1.7	1		11/30/09 02:18	95-47-6	
Dibromofluoromethane (S)	102	%	85-115		1		11/30/09 02:18	1868-53-7	
Toluene-d8 (S)	92	%	70-120		1		11/30/09 02:18	2037-26-5	
4-Bromofluorobenzene (S)	106	%	87-109		1		11/30/09 02:18	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%	79-120		1		11/30/09 02:18	17060-07-0	
Iron, Ferrous	Analytical Method: SM 3500-Fe D#4								
Iron, Ferrous	ND	mg/L	0.50	0.50	1		12/01/09 16:55		H1
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2								
Nitrogen, Nitrate	**4.0**	mg/L	0.10	0.10	1		11/20/09 00:22		

Sample: MW10 **Lab ID: 9257894008** Collected: 11/18/09 12:00 Received: 11/19/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	12/01/09 15:28	12/04/09 02:41	106-93-4	
1-Chloro-2-bromopropane (S)	114	%	60-140		1	12/01/09 15:28	12/04/09 02:41	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**10.6**	ug/L	5.0	4.0	1	11/24/09 11:00	11/25/09 03:26	7439-92-1	
8260 MSV Oxygenates	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	62.0	1		11/30/09 02:36	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	4.5	1		11/30/09 02:36	994-05-8	
Benzene	ND	ug/L	5.0	1.2	1		11/30/09 02:36	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	48.0	1		11/30/09 02:36	624-95-3	

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Pace Analytical Services, Inc.
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Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 9257894

Sample: MW10 **Lab ID: 9257894008** Collected: 11/18/09 12:00 Received: 11/19/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Oxygenates	Analytical Method: EPA 8260								
tert-Butyl Alcohol	ND	ug/L	100	27.0	1		11/30/09 02:36	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	9.0	1		11/30/09 02:36	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.3	1		11/30/09 02:36	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	2.7	1		11/30/09 02:36	108-20-3	
Ethanol	ND	ug/L	200	170	1		11/30/09 02:36	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.1	1		11/30/09 02:36	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	4.6	1		11/30/09 02:36	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	2.0	1		11/30/09 02:36	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.9	1		11/30/09 02:36	91-20-3	
Toluene	ND	ug/L	5.0	1.8	1		11/30/09 02:36	108-88-3	
Xylene (Total)	**3.6J**	ug/L	10.0	2.7	1		11/30/09 02:36	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	2.7	1		11/30/09 02:36	1330-20-7	
o-Xylene	ND	ug/L	5.0	1.7	1		11/30/09 02:36	95-47-6	
Dibromofluoromethane (S)	103	%	85-115		1		11/30/09 02:36	1868-53-7	
Toluene-d8 (S)	97	%	70-120		1		11/30/09 02:36	2037-26-5	
4-Bromofluorobenzene (S)	107	%	87-109		1		11/30/09 02:36	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	79-120		1		11/30/09 02:36	17060-07-0	
Iron, Ferrous	Analytical Method: SM 3500-Fe D#4								
Iron, Ferrous	ND	mg/L	0.50	0.50	1		12/01/09 16:58		H1
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2								
Nitrogen, Nitrate	**2.0**	mg/L	0.10	0.10	1		11/20/09 00:25		

Sample: MW11 **Lab ID: 9257894009** Collected: 11/18/09 12:10 Received: 11/19/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	12/01/09 15:28	12/04/09 03:01	106-93-4	
1-Chloro-2-bromopropane (S)	102	%	60-140		1	12/01/09 15:28	12/04/09 03:01	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**21.2**	ug/L	5.0	4.0	1	11/24/09 11:00	11/25/09 03:30	7439-92-1	
8260 MSV Oxygenates	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	62.0	1		11/30/09 02:55	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	4.5	1		11/30/09 02:55	994-05-8	
Benzene	ND	ug/L	5.0	1.2	1		11/30/09 02:55	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	48.0	1		11/30/09 02:55	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	27.0	1		11/30/09 02:55	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	9.0	1		11/30/09 02:55	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.3	1		11/30/09 02:55	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	2.7	1		11/30/09 02:55	108-20-3	

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9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 9257894

Sample: MW11 **Lab ID: 9257894009** Collected: 11/18/09 12:10 Received: 11/19/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Oxygenates	Analytical Method: EPA 8260								
Ethanol	ND	ug/L	200	170	1		11/30/09 02:55	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.1	1		11/30/09 02:55	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	4.6	1		11/30/09 02:55	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	2.0	1		11/30/09 02:55	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.9	1		11/30/09 02:55	91-20-3	
Toluene	ND	ug/L	5.0	1.8	1		11/30/09 02:55	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		11/30/09 02:55	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	2.7	1		11/30/09 02:55	1330-20-7	
o-Xylene	ND	ug/L	5.0	1.7	1		11/30/09 02:55	95-47-6	
Dibromofluoromethane (S)	101	%	85-115		1		11/30/09 02:55	1868-53-7	
Toluene-d8 (S)	89	%	70-120		1		11/30/09 02:55	2037-26-5	
4-Bromofluorobenzene (S)	107	%	87-109		1		11/30/09 02:55	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	79-120		1		11/30/09 02:55	17060-07-0	
Iron, Ferrous	Analytical Method: SM 3500-Fe D#4								
Iron, Ferrous	ND	mg/L	0.50	0.50	1		12/01/09 17:01		H1
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2								
Nitrogen, Nitrate	**0.88**	mg/L	0.10	0.10	1		11/20/09 00:26		

Sample: MW12 **Lab ID: 9257894010** Collected: 11/18/09 12:20 Received: 11/19/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	12/01/09 15:28	12/04/09 03:21	106-93-4	
1-Chloro-2-bromopropane (S)	91	%	60-140		1	12/01/09 15:28	12/04/09 03:21	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**79.5**	ug/L	5.0	4.0	1	11/24/09 11:00	11/25/09 03:35	7439-92-1	
8260 MSV Oxygenates	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**198**	ug/L	100	62.0	1		11/30/09 03:13	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	4.5	1		11/30/09 03:13	994-05-8	
Benzene	ND	ug/L	5.0	1.2	1		11/30/09 03:13	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	48.0	1		11/30/09 03:13	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	27.0	1		11/30/09 03:13	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	9.0	1		11/30/09 03:13	762-75-4	
1,2-Dichloroethane	**2.8J**	ug/L	5.0	1.3	1		11/30/09 03:13	107-06-2	
Diisopropyl ether	**3.0J**	ug/L	5.0	2.7	1		11/30/09 03:13	108-20-3	
Ethanol	ND	ug/L	200	170	1		11/30/09 03:13	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.1	1		11/30/09 03:13	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	4.6	1		11/30/09 03:13	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	2.0	1		11/30/09 03:13	1634-04-4	

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Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 9257894

Sample: MW12 **Lab ID: 9257894010** Collected: 11/18/09 12:20 Received: 11/19/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Oxygenates	Analytical Method: EPA 8260								
Naphthalene	ND	ug/L	5.0	2.9	1		11/30/09 03:13	91-20-3	
Toluene	ND	ug/L	5.0	1.8	1		11/30/09 03:13	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		11/30/09 03:13	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	2.7	1		11/30/09 03:13	1330-20-7	
o-Xylene	ND	ug/L	5.0	1.7	1		11/30/09 03:13	95-47-6	
Dibromofluoromethane (S)	101	%	85-115		1		11/30/09 03:13	1868-53-7	
Toluene-d8 (S)	89	%	70-120		1		11/30/09 03:13	2037-26-5	
4-Bromofluorobenzene (S)	107	%	87-109		1		11/30/09 03:13	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	79-120		1		11/30/09 03:13	17060-07-0	
Iron, Ferrous	Analytical Method: SM 3500-Fe D#4								
Iron, Ferrous	ND	mg/L	0.50	0.50	1		12/01/09 17:03		H1
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2								
Nitrogen, Nitrate	**2.3**	mg/L	0.10	0.10	1		11/20/09 09:30		

Sample: MW13 **Lab ID: 9257894011** Collected: 11/18/09 12:30 Received: 11/19/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	12/01/09 15:28	12/04/09 03:41	106-93-4	
1-Chloro-2-bromopropane (S)	94	%	60-140		1	12/01/09 15:28	12/04/09 03:41	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**34.2**	ug/L	5.0	4.0	1	11/24/09 11:00	11/25/09 03:40	7439-92-1	
8260 MSV Oxygenates	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**1130**	ug/L	100	62.0	1		11/30/09 03:31	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	4.5	1		11/30/09 03:31	994-05-8	
Benzene	**19.6**	ug/L	5.0	1.2	1		11/30/09 03:31	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	48.0	1		11/30/09 03:31	624-95-3	
tert-Butyl Alcohol	**49.2J**	ug/L	100	27.0	1		11/30/09 03:31	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	9.0	1		11/30/09 03:31	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.3	1		11/30/09 03:31	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	2.7	1		11/30/09 03:31	108-20-3	
Ethanol	ND	ug/L	200	170	1		11/30/09 03:31	64-17-5	
Ethylbenzene	**2.6J**	ug/L	5.0	1.1	1		11/30/09 03:31	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	4.6	1		11/30/09 03:31	637-92-3	
Methyl-tert-butyl ether	**38.7**	ug/L	5.0	2.0	1		11/30/09 03:31	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.9	1		11/30/09 03:31	91-20-3	
Toluene	**24.0**	ug/L	5.0	1.8	1		11/30/09 03:31	108-88-3	
Xylene (Total)	**8.2J**	ug/L	10.0	2.7	1		11/30/09 03:31	1330-20-7	
m&p-Xylene	**7.3J**	ug/L	10.0	2.7	1		11/30/09 03:31	1330-20-7	

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ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 9257894

Sample: MW13 **Lab ID: 9257894011** Collected: 11/18/09 12:30 Received: 11/19/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Oxygenates	Analytical Method: EPA 8260								
o-Xylene	ND	ug/L	5.0	1.7	1		11/30/09 03:31	95-47-6	
Dibromofluoromethane (S)	98	%	85-115		1		11/30/09 03:31	1868-53-7	
Toluene-d8 (S)	95	%	70-120		1		11/30/09 03:31	2037-26-5	
4-Bromofluorobenzene (S)	107	%	87-109		1		11/30/09 03:31	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	79-120		1		11/30/09 03:31	17060-07-0	
Iron, Ferrous	Analytical Method: SM 3500-Fe D#4								
Iron, Ferrous	ND	mg/L	0.50	0.50	1		12/01/09 17:05		H1
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2								
Nitrogen, Nitrate	ND	mg/L	0.10	0.10	1		11/20/09 09:30		

Sample: MW14 **Lab ID: 9257894012** Collected: 11/18/09 12:40 Received: 11/19/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	12/01/09 15:28	12/04/09 04:02	106-93-4	
1-Chloro-2-bromopropane (S)	97	%	60-140		1	12/01/09 15:28	12/04/09 04:02	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**13.7**	ug/L	5.0	4.0	1	11/24/09 11:00	11/25/09 03:44	7439-92-1	
8260 MSV Oxygenates	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	62.0	1		11/30/09 03:49	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	4.5	1		11/30/09 03:49	994-05-8	
Benzene	ND	ug/L	5.0	1.2	1		11/30/09 03:49	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	48.0	1		11/30/09 03:49	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	27.0	1		11/30/09 03:49	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	9.0	1		11/30/09 03:49	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.3	1		11/30/09 03:49	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	2.7	1		11/30/09 03:49	108-20-3	
Ethanol	**435**	ug/L	200	170	1		11/30/09 03:49	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.1	1		11/30/09 03:49	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	4.6	1		11/30/09 03:49	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	2.0	1		11/30/09 03:49	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.9	1		11/30/09 03:49	91-20-3	
Toluene	ND	ug/L	5.0	1.8	1		11/30/09 03:49	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		11/30/09 03:49	1330-20-7	
m&p-Xylene	ND	ug/L	10.0	2.7	1		11/30/09 03:49	1330-20-7	
o-Xylene	ND	ug/L	5.0	1.7	1		11/30/09 03:49	95-47-6	
Dibromofluoromethane (S)	100	%	85-115		1		11/30/09 03:49	1868-53-7	
Toluene-d8 (S)	93	%	70-120		1		11/30/09 03:49	2037-26-5	
4-Bromofluorobenzene (S)	108	%	87-109		1		11/30/09 03:49	460-00-4	

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(704)875-9092

ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 9257894

Sample: MW14 **Lab ID: 9257894012** Collected: 11/18/09 12:40 Received: 11/19/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Oxygenates	Analytical Method: EPA 8260								
1,2-Dichloroethane-d4 (S)	99	%	79-120		1		11/30/09 03:49	17060-07-0	
Iron, Ferrous	Analytical Method: SM 3500-Fe D#4								
Iron, Ferrous	ND	mg/L	0.50	0.50	1		12/01/09 21:04		H1
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2								
Nitrogen, Nitrate	**2.6**	mg/L	0.10	0.10	1		11/20/09 09:30		

Sample: DW1 **Lab ID: 9257894013** Collected: 11/18/09 13:00 Received: 11/19/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	12/01/09 15:28	12/04/09 04:22	106-93-4	
1-Chloro-2-bromopropane (S)	105	%	60-140		1	12/01/09 15:28	12/04/09 04:22	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**137**	ug/L	5.0	4.0	1	11/24/09 11:00	11/25/09 03:48	7439-92-1	
8260 MSV Oxygenates	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**309**	ug/L	100	62.0	1		11/30/09 04:07	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	4.5	1		11/30/09 04:07	994-05-8	
Benzene	**70.2**	ug/L	5.0	1.2	1		11/30/09 04:07	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	48.0	1		11/30/09 04:07	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	27.0	1		11/30/09 04:07	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	9.0	1		11/30/09 04:07	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.3	1		11/30/09 04:07	107-06-2	
Diisopropyl ether	**4.9J**	ug/L	5.0	2.7	1		11/30/09 04:07	108-20-3	
Ethanol	**495**	ug/L	200	170	1		11/30/09 04:07	64-17-5	
Ethylbenzene	**15.6**	ug/L	5.0	1.1	1		11/30/09 04:07	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	4.6	1		11/30/09 04:07	637-92-3	
Methyl-tert-butyl ether	**25.3**	ug/L	5.0	2.0	1		11/30/09 04:07	1634-04-4	
Naphthalene	**7.1**	ug/L	5.0	2.9	1		11/30/09 04:07	91-20-3	
Toluene	**128**	ug/L	5.0	1.8	1		11/30/09 04:07	108-88-3	
Xylene (Total)	**97.7**	ug/L	10.0	2.7	1		11/30/09 04:07	1330-20-7	
m&p-Xylene	**57.5**	ug/L	10.0	2.7	1		11/30/09 04:07	1330-20-7	
o-Xylene	**40.2**	ug/L	5.0	1.7	1		11/30/09 04:07	95-47-6	
Dibromofluoromethane (S)	102	%	85-115		1		11/30/09 04:07	1868-53-7	
Toluene-d8 (S)	101	%	70-120		1		11/30/09 04:07	2037-26-5	
4-Bromofluorobenzene (S)	107	%	87-109		1		11/30/09 04:07	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	79-120		1		11/30/09 04:07	17060-07-0	

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(704)875-9092

ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 9257894

Sample: DW1 **Lab ID: 9257894013** Collected: 11/18/09 13:00 Received: 11/19/09 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Iron, Ferrous	Analytical Method: SM 3500-Fe D#4								
Iron, Ferrous	ND	mg/L	0.50	0.50	1		12/01/09 21:07		H1
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2								
Nitrogen, Nitrate	**0.17**	mg/L	0.10	0.10	1		11/20/09 09:30		

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 9257894

QC Batch: WET/10626 Analysis Method: SM 3500-Fe D#4
QC Batch Method: SM 3500-Fe D#4 Analysis Description: Iron, Ferrous
Associated Lab Samples: 9257894005, 9257894006, 9257894007, 9257894008, 9257894009, 9257894010, 9257894011

METHOD BLANK: 372374 Matrix: Water
Associated Lab Samples: 9257894005, 9257894006, 9257894007, 9257894008, 9257894009, 9257894010, 9257894011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron, Ferrous	mg/L	ND	0.50	12/01/09 16:31	

LABORATORY CONTROL SAMPLE: 372375

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron, Ferrous	mg/L	1.5	1.6	104	90-110	

SAMPLE DUPLICATE: 372376

Parameter	Units	9257831001 Result	Dup Result	RPD	Max RPD	Qualifiers
Iron, Ferrous	mg/L	ND	ND		20	

SAMPLE DUPLICATE: 372377

Parameter	Units	9257894005 Result	Dup Result	RPD	Max RPD	Qualifiers
Iron, Ferrous	mg/L	ND	ND		20	

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 9257894

QC Batch: OEXT/8691 Analysis Method: EPA 8011
QC Batch Method: EPA 8011 Analysis Description: GCS 8011 EDB DBCP
Associated Lab Samples: 9257894007, 9257894008, 9257894009, 9257894010, 9257894011, 9257894012, 9257894013

METHOD BLANK: 372845 Matrix: Water
Associated Lab Samples: 9257894007, 9257894008, 9257894009, 9257894010, 9257894011, 9257894012, 9257894013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.020	12/03/09 19:56	
1-Chloro-2-bromopropane (S)	%	103	60-140	12/03/09 19:56	

LABORATORY CONTROL SAMPLE & LCSD: 372846 372847

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.28	0.29	0.28	102	102	60-140	2	20	
1-Chloro-2-bromopropane (S)	%				101	99	60-140			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 372848 372849

Parameter	Units	9258085003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dibromoethane (EDB)	ug/L	ND	.28	.28	0.29	0.30	102	104	60-140	2	20	
1-Chloro-2-bromopropane (S)	%						97	96	60-140			

SAMPLE DUPLICATE: 372850

Parameter	Units	9258085005 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	ND		20	
1-Chloro-2-bromopropane (S)	%		97	0		

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 9257894

QC Batch: MSV/9172 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Oxygenates
Associated Lab Samples: 9257894005, 9257894006, 9257894007, 9257894008, 9257894009, 9257894010, 9257894011, 9257894012, 9257894013

METHOD BLANK: 372097 Matrix: Water
Associated Lab Samples: 9257894005, 9257894006, 9257894007, 9257894008, 9257894009, 9257894010, 9257894011, 9257894012, 9257894013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	11/30/09 01:05	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	11/30/09 01:05	
Benzene	ug/L	ND	5.0	11/30/09 01:05	
Diisopropyl ether	ug/L	ND	5.0	11/30/09 01:05	
Ethanol	ug/L	ND	200	11/30/09 01:05	
Ethyl-tert-butyl ether	ug/L	ND	10.0	11/30/09 01:05	
Ethylbenzene	ug/L	ND	5.0	11/30/09 01:05	
m&p-Xylene	ug/L	ND	10.0	11/30/09 01:05	
Methyl-tert-butyl ether	ug/L	ND	5.0	11/30/09 01:05	
Naphthalene	ug/L	ND	5.0	11/30/09 01:05	
o-Xylene	ug/L	ND	5.0	11/30/09 01:05	
tert-Amyl Alcohol	ug/L	ND	100	11/30/09 01:05	
tert-Amylmethyl ether	ug/L	ND	10.0	11/30/09 01:05	
tert-Butyl Alcohol	ug/L	ND	100	11/30/09 01:05	
tert-Butyl Formate	ug/L	ND	50.0	11/30/09 01:05	
Toluene	ug/L	ND	5.0	11/30/09 01:05	
Xylene (Total)	ug/L	ND	10.0	11/30/09 01:05	
1,2-Dichloroethane-d4 (S)	%	101	79-120	11/30/09 01:05	
4-Bromofluorobenzene (S)	%	106	87-109	11/30/09 01:05	
Dibromofluoromethane (S)	%	102	85-115	11/30/09 01:05	
Toluene-d8 (S)	%	94	70-120	11/30/09 01:05	

LABORATORY CONTROL SAMPLE: 372098

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	57.6	115	72-126	
3,3-Dimethyl-1-Butanol	ug/L	1000	1050	105	55-148	
Benzene	ug/L	50	53.8	108	78-128	
Diisopropyl ether	ug/L	50	58.1	116	74-131	
Ethanol	ug/L	2000	2680	134	53-150	
Ethyl-tert-butyl ether	ug/L	100	113	113	77-136	
Ethylbenzene	ug/L	50	51.6	103	80-127	
m&p-Xylene	ug/L	100	106	106	82-127	
Methyl-tert-butyl ether	ug/L	50	59.7	119	71-130	
Naphthalene	ug/L	50	59.5	119	52-136	
o-Xylene	ug/L	50	53.9	108	83-124	
tert-Amyl Alcohol	ug/L	1000	1210	121	50-150	
tert-Amylmethyl ether	ug/L	100	111	111	50-150	
tert-Butyl Alcohol	ug/L	500	637	127	50-150	
tert-Butyl Formate	ug/L	400	414	103	50-150	

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 9257894

LABORATORY CONTROL SAMPLE: 372098

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Toluene	ug/L	50	51.2	102	76-126	
Xylene (Total)	ug/L	150	160	107	83-125	
1,2-Dichloroethane-d4 (S)	%			102	79-120	
4-Bromofluorobenzene (S)	%			107	87-109	
Dibromofluoromethane (S)	%			103	85-115	
Toluene-d8 (S)	%			94	70-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 372099 372100

Parameter	Units	9258086005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	ND	50	50	67.4	61.3	135	123	74-136	10	30	
Toluene	ug/L	ND	50	50	64.5	59.7	129	119	73-131	8	30	
1,2-Dichloroethane-d4 (S)	%						101	100	79-120			
4-Bromofluorobenzene (S)	%						105	104	87-109			
Dibromofluoromethane (S)	%						99	100	85-115			
Toluene-d8 (S)	%						97	100	70-120			

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 9257894

QC Batch: OEXT/8690 Analysis Method: EPA 8011
QC Batch Method: EPA 8011 Analysis Description: GCS 8011 EDB DBCP
Associated Lab Samples: 9257894001, 9257894002, 9257894003, 9257894004, 9257894005, 9257894006

METHOD BLANK: 372839 Matrix: Water
Associated Lab Samples: 9257894001, 9257894002, 9257894003, 9257894004, 9257894005, 9257894006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.020	12/04/09 23:29	
1-Chloro-2-bromopropane (S)	%	100	60-140	12/04/09 23:29	

LABORATORY CONTROL SAMPLE & LCSD: 372840 372841

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.28	0.30	0.29	104	102	60-140	3	20	
1-Chloro-2-bromopropane (S)	%				101	99	60-140			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 372843 372844

Parameter	Units	9257901002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dibromoethane (EDB)	ug/L	ND	.27	.27	0.30	0.29	110	108	60-140	2	20	
1-Chloro-2-bromopropane (S)	%						105	104	60-140			

SAMPLE DUPLICATE: 372842

Parameter	Units	9257857011 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	ND		20	
1-Chloro-2-bromopropane (S)	%		98	2		

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 9257894

QC Batch: MSV/9173
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV Oxygenates
Associated Lab Samples: 9257894001

METHOD BLANK: 372101
Matrix: Water
Associated Lab Samples: 9257894001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	11/30/09 01:24	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	11/30/09 01:24	
Benzene	ug/L	ND	5.0	11/30/09 01:24	
Diisopropyl ether	ug/L	ND	5.0	11/30/09 01:24	
Ethanol	ug/L	ND	200	11/30/09 01:24	
Ethyl-tert-butyl ether	ug/L	ND	10.0	11/30/09 01:24	
Ethylbenzene	ug/L	ND	5.0	11/30/09 01:24	
m&p-Xylene	ug/L	ND	10.0	11/30/09 01:24	
Methyl-tert-butyl ether	ug/L	ND	5.0	11/30/09 01:24	
Naphthalene	ug/L	ND	5.0	11/30/09 01:24	
o-Xylene	ug/L	ND	5.0	11/30/09 01:24	
tert-Amyl Alcohol	ug/L	ND	100	11/30/09 01:24	
tert-Amylmethyl ether	ug/L	ND	10.0	11/30/09 01:24	
tert-Butyl Alcohol	ug/L	ND	100	11/30/09 01:24	
tert-Butyl Formate	ug/L	ND	50.0	11/30/09 01:24	
Toluene	ug/L	ND	5.0	11/30/09 01:24	
Xylene (Total)	ug/L	ND	10.0	11/30/09 01:24	
1,2-Dichloroethane-d4 (S)	%	100	79-120	11/30/09 01:24	
4-Bromofluorobenzene (S)	%	106	87-109	11/30/09 01:24	
Dibromofluoromethane (S)	%	100	85-115	11/30/09 01:24	
Toluene-d8 (S)	%	91	70-120	11/30/09 01:24	

LABORATORY CONTROL SAMPLE: 372102

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	57.3	115	72-126	
3,3-Dimethyl-1-Butanol	ug/L	1000	1030	103	55-148	
Benzene	ug/L	50	53.5	107	78-128	
Diisopropyl ether	ug/L	50	58.1	116	74-131	
Ethanol	ug/L	2000	2600	130	53-150	
Ethyl-tert-butyl ether	ug/L	100	113	113	77-136	
Ethylbenzene	ug/L	50	51.1	102	80-127	
m&p-Xylene	ug/L	100	104	104	82-127	
Methyl-tert-butyl ether	ug/L	50	60.7	121	71-130	
Naphthalene	ug/L	50	57.9	116	52-136	
o-Xylene	ug/L	50	52.7	105	83-124	
tert-Amyl Alcohol	ug/L	1000	1230	123	50-150	
tert-Amylmethyl ether	ug/L	100	112	112	50-150	
tert-Butyl Alcohol	ug/L	500	634	127	50-150	
tert-Butyl Formate	ug/L	400	396	99	50-150	
Toluene	ug/L	50	52.2	104	76-126	

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 9257894

LABORATORY CONTROL SAMPLE: 372102

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Xylene (Total)	ug/L	150	156	104	83-125	
1,2-Dichloroethane-d4 (S)	%			103	79-120	
4-Bromofluorobenzene (S)	%			108	87-109	
Dibromofluoromethane (S)	%			101	85-115	
Toluene-d8 (S)	%			93	70-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 372103 372104

Parameter	Units	9258278007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	ND	50	50	64.8	65.1	130	130	74-136	0	30	
Toluene	ug/L	ND	50	50	64.1	62.4	128	125	73-131	3	30	
1,2-Dichloroethane-d4 (S)	%						98	104	79-120			
4-Bromofluorobenzene (S)	%						109	109	87-109			
Dibromofluoromethane (S)	%						98	100	85-115			
Toluene-d8 (S)	%						101	98	70-120			

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 9257894

QC Batch: MPRP/5432 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 9257894001, 9257894002, 9257894003, 9257894004, 9257894005, 9257894006, 9257894007, 9257894008, 9257894009, 9257894010, 9257894011, 9257894012, 9257894013

METHOD BLANK: 370526 Matrix: Water
Associated Lab Samples: 9257894001, 9257894002, 9257894003, 9257894004, 9257894005, 9257894006, 9257894007, 9257894008, 9257894009, 9257894010, 9257894011, 9257894012, 9257894013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead	ug/L	ND	5.0	11/25/09 02:32	

LABORATORY CONTROL SAMPLE: 370527

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	500	509	102	80-120	

MATRIX SPIKE SAMPLE: 370528

Parameter	Units	9257894001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	42.4	500	479	87	75-125	

SAMPLE DUPLICATE: 370529

Parameter	Units	9257894002 Result	Dup Result	RPD	Max RPD	Qualifiers
Lead	ug/L	ND	ND		20	

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Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 9257894

QC Batch: MSV/9163 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Oxygenates
Associated Lab Samples: 9257894002, 9257894003, 9257894004

METHOD BLANK: 372042 Matrix: Water
Associated Lab Samples: 9257894002, 9257894003, 9257894004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	11/27/09 10:25	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	11/27/09 10:25	
Benzene	ug/L	ND	5.0	11/27/09 10:25	
Diisopropyl ether	ug/L	ND	5.0	11/27/09 10:25	
Ethanol	ug/L	ND	200	11/27/09 10:25	
Ethyl-tert-butyl ether	ug/L	ND	10.0	11/27/09 10:25	
Ethylbenzene	ug/L	ND	5.0	11/27/09 10:25	
m&p-Xylene	ug/L	ND	10.0	11/27/09 10:25	
Methyl-tert-butyl ether	ug/L	ND	5.0	11/27/09 10:25	
Naphthalene	ug/L	ND	5.0	11/27/09 10:25	
o-Xylene	ug/L	ND	5.0	11/27/09 10:25	
tert-Amyl Alcohol	ug/L	ND	100	11/27/09 10:25	
tert-Amylmethyl ether	ug/L	ND	10.0	11/27/09 10:25	
tert-Butyl Alcohol	ug/L	ND	100	11/27/09 10:25	
tert-Butyl Formate	ug/L	ND	50.0	11/27/09 10:25	
Toluene	ug/L	ND	5.0	11/27/09 10:25	
Xylene (Total)	ug/L	ND	10.0	11/27/09 10:25	
1,2-Dichloroethane-d4 (S)	%	97	79-120	11/27/09 10:25	
4-Bromofluorobenzene (S)	%	103	87-109	11/27/09 10:25	
Dibromofluoromethane (S)	%	97	85-115	11/27/09 10:25	
Toluene-d8 (S)	%	100	70-120	11/27/09 10:25	

LABORATORY CONTROL SAMPLE: 372043

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	52.3	105	72-126	
3,3-Dimethyl-1-Butanol	ug/L	1000	1080	108	55-148	
Benzene	ug/L	50	53.5	107	78-128	
Diisopropyl ether	ug/L	50	53.7	107	74-131	
Ethanol	ug/L	2000	2960	148	53-150	
Ethyl-tert-butyl ether	ug/L	100	103	103	77-136	
Ethylbenzene	ug/L	50	53.7	107	80-127	
m&p-Xylene	ug/L	100	111	111	82-127	
Methyl-tert-butyl ether	ug/L	50	51.7	103	71-130	
Naphthalene	ug/L	50	54.4	109	52-136	
o-Xylene	ug/L	50	55.4	111	83-124	
tert-Amyl Alcohol	ug/L	1000	1290	129	50-150	
tert-Amylmethyl ether	ug/L	100	105	105	50-150	
tert-Butyl Alcohol	ug/L	500	642	128	50-150	
tert-Butyl Formate	ug/L	400	413	103	50-150	
Toluene	ug/L	50	54.7	109	76-126	

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 9257894

LABORATORY CONTROL SAMPLE: 372043

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Xylene (Total)	ug/L	150	166	111	83-125	
1,2-Dichloroethane-d4 (S)	%			99	79-120	
4-Bromofluorobenzene (S)	%			104	87-109	
Dibromofluoromethane (S)	%			99	85-115	
Toluene-d8 (S)	%			101	70-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 372045 372046

Parameter	Units	9258095007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	ND	50	50	50.0	49.0	100	98	74-136	2	30	
Toluene	ug/L	ND	50	50	49.0	48.4	98	97	73-131	1	30	
1,2-Dichloroethane-d4 (S)	%						99	104	79-120			
4-Bromofluorobenzene (S)	%						105	101	87-109			
Dibromofluoromethane (S)	%						98	100	85-115			
Toluene-d8 (S)	%						100	101	70-120			

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 9257894

QC Batch: WETA/6291 Analysis Method: EPA 353.2
QC Batch Method: EPA 353.2 Analysis Description: 353.2 Nitrate + Nitrite, Unpres.
Associated Lab Samples: 9257894005, 9257894006, 9257894007, 9257894008, 9257894009

METHOD BLANK: 369388 Matrix: Water
Associated Lab Samples: 9257894005, 9257894006, 9257894007, 9257894008, 9257894009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Nitrate	mg/L	ND	0.10	11/19/09 23:47	

LABORATORY CONTROL SAMPLE: 369389

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	5	4.9	97	90-110	

MATRIX SPIKE SAMPLE: 369391

Parameter	Units	9257966011 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	0.50	5	5.3	97	90-110	

MATRIX SPIKE SAMPLE: 369394

Parameter	Units	9257978003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	ND	5	5.1	101	90-110	

SAMPLE DUPLICATE: 369392

Parameter	Units	9257777015 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Nitrate	mg/L	ND	ND		20	

SAMPLE DUPLICATE: 369393

Parameter	Units	9257966010 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Nitrate	mg/L	1.2	1.2	2	20	

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 9257894

QC Batch: WET/10627
QC Batch Method: SM 3500-Fe D#4
Analysis Method: SM 3500-Fe D#4
Analysis Description: Iron, Ferrous
Associated Lab Samples: 9257894012, 9257894013

METHOD BLANK: 372378 Matrix: Water
Associated Lab Samples: 9257894012, 9257894013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron, Ferrous	mg/L	ND	0.50	12/01/09 21:02	

LABORATORY CONTROL SAMPLE: 372379

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron, Ferrous	mg/L	1.5	1.6	108	90-110	

SAMPLE DUPLICATE: 372380

Parameter	Units	9257894012 Result	Dup Result	RPD	Max RPD	Qualifiers
Iron, Ferrous	mg/L	ND	ND		20	

SAMPLE DUPLICATE: 372381

Parameter	Units	9257966015 Result	Dup Result	RPD	Max RPD	Qualifiers
Iron, Ferrous	mg/L	ND	ND		20	

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(704)875-9092

QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 9257894

QC Batch: WETA/6293 Analysis Method: EPA 353.2
QC Batch Method: EPA 353.2 Analysis Description: 353.2 Nitrate + Nitrite, Unpres.
Associated Lab Samples: 9257894010, 9257894011, 9257894012, 9257894013

METHOD BLANK: 369416 Matrix: Water
Associated Lab Samples: 9257894010, 9257894011, 9257894012, 9257894013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Nitrate	mg/L	ND	0.10	11/20/09 09:30	

LABORATORY CONTROL SAMPLE: 369417

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	5	5.3	105	90-110	

MATRIX SPIKE SAMPLE: 369418

Parameter	Units	9257894010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	2.3	5	7.8	110	90-110	

MATRIX SPIKE SAMPLE: 369419

Parameter	Units	9257966005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	0.12	5	5.4	106	90-110	

SAMPLE DUPLICATE: 369420

Parameter	Units	9257894011 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Nitrate	mg/L	ND	ND		20	

SAMPLE DUPLICATE: 369421

Parameter	Units	9257894012 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Nitrate	mg/L	2.6	2.6	1	20	

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Huntersville, NC 28078
(704)875-9092

QUALIFIERS

Project: STOCKMAN OIL
Pace Project No.: 9257894

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

U - Indicates the compound was analyzed for, but not detected.

ANALYTE QUALIFIERS

H1 Analysis conducted outside the EPA method holding time.

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Environmental Monitoring & Laboratory Analysis
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(770) 734-4200 FAX (770) 734-4201

Laboratory Report

Prepared For:

Pace Analytical Services Inc. - Huntersville
9800 Kincey Avenue
Huntersville, NC 28078

Attention: Mr. Kevin Herring

Report Number: ASK0729
December 01, 2009
Project: Stockman Oil
Project #:9257894

We appreciate the opportunity to provide the analytical support for your project. The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Approved:

Elizabeth Bryant
Project Manager

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Analytical Services, Inc. certifies that the following analytical results meet all requirements of the National Environmental Laboratory Accreditation Conference(NELAC).
All test results relate only to the samples analyzed.

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9800 Kincey Avenue
Huntersville NC, 28078
Attention: Mr. Kevin Herring

December 01, 2009

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW7 /9257894005	ASK0729-01	Water	11/18/09 11:30	11/20/09 08:45
MW8 /9257894006	ASK0729-02	Water	11/18/09 11:40	11/20/09 08:45
MW9 /9257894007	ASK0729-03	Water	11/18/09 11:50	11/20/09 08:45
MW10 /9257894008	ASK0729-04	Water	11/18/09 12:00	11/20/09 08:45
MW11 /9257894009	ASK0729-05	Water	11/18/09 12:10	11/20/09 08:45
MW12 /9257894010	ASK0729-06	Water	11/18/09 12:20	11/20/09 08:45
MW13 /9257894011	ASK0729-07	Water	11/18/09 12:30	11/20/09 08:45
MW14 /9257894012	ASK0729-08	Water	11/18/09 12:40	11/20/09 08:45
DW1 /9257894013	ASK0729-09	Water	11/18/09 13:00	11/20/09 08:45

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December 01, 2009

Report No.: ASK0729
Client ID: MW7 /9257894005
Date/Time Sampled: 11/18/2009 11:30:00AM
Matrix: Water

Project: Stockman Oil
Lab Number ID: ASK0729-01
Date/Time Received: 11/20/2009 8:45:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Inorganic Anions										
Sulfate	13	1.0	mg/L	EPA 300.0		1	11/23/09 13:07	11/23/09 13:07	A911700	EMR

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December 01, 2009

Report No.: ASK0729
Client ID: MW8 /9257894006
Date/Time Sampled: 11/18/2009 11:40:00AM
Matrix: Water

Project: Stockman Oil
Lab Number ID: ASK0729-02
Date/Time Received: 11/20/2009 8:45:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Inorganic Anions										
Sulfate	1.8	1.0	mg/L	EPA 300.0		1	11/23/09 13:27	11/23/09 13:27	A911700	EMR

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December 01, 2009

Report No.: ASK0729
Client ID: MW9 /9257894007
Date/Time Sampled: 11/18/2009 11:50:00AM
Matrix: Water

Project: Stockman Oil
Lab Number ID: ASK0729-03
Date/Time Received: 11/20/2009 8:45:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Inorganic Anions										
Sulfate	7.7	1.0	mg/L	EPA 300.0		1	11/23/09 13:47	11/23/09 13:47	A911700	EMR

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Report No.: ASK0729
Client ID: MW10 /9257894008
Date/Time Sampled: 11/18/2009 12:00:00PM
Matrix: Water

Project: Stockman Oil
Lab Number ID: ASK0729-04
Date/Time Received: 11/20/2009 8:45:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Inorganic Anions										
Sulfate	2.1	1.0	mg/L	EPA 300.0		1	11/23/09 14:08	11/23/09 14:08	A911700	EMR

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Report No.: ASK0729
Client ID: MW11 /9257894009
Date/Time Sampled: 11/18/2009 12:10:00PM
Matrix: Water

Project: Stockman Oil
Lab Number ID: ASK0729-05
Date/Time Received: 11/20/2009 8:45:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Inorganic Anions										
Sulfate	59	10	mg/L	EPA 300.0		10	11/23/09 17:12	11/23/09 17:12	A911700	EMR

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December 01, 2009

Report No.: ASK0729
Client ID: MW12 /9257894010
Date/Time Sampled: 11/18/2009 12:20:00PM
Matrix: Water

Project: Stockman Oil
Lab Number ID: ASK0729-06
Date/Time Received: 11/20/2009 8:45:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Inorganic Anions										
Sulfate	48	10	mg/L	EPA 300.0		10	11/23/09 17:32	11/23/09 17:32	A911700	EMR

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December 01, 2009

Report No.: ASK0729
Client ID: MW13 /9257894011
Date/Time Sampled: 11/18/2009 12:30:00PM
Matrix: Water

Project: Stockman Oil
Lab Number ID: ASK0729-07
Date/Time Received: 11/20/2009 8:45:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Inorganic Anions										
Sulfate	96	10	mg/L	EPA 300.0		10	11/23/09 17:52	11/23/09 17:52	A911700	EMR

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December 01, 2009

Report No.: ASK0729
Client ID: MW14 /9257894012
Date/Time Sampled: 11/18/2009 12:40:00PM
Matrix: Water

Project: Stockman Oil
Lab Number ID: ASK0729-08
Date/Time Received: 11/20/2009 8:45:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Inorganic Anions										
Sulfate	ND	1.0	mg/L	EPA 300.0		1	11/23/09 15:30	11/23/09 15:30	A911700	EMR

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December 01, 2009

Report No.: ASK0729
Client ID: DW1 /9257894013
Date/Time Sampled: 11/18/2009 1:00:00PM
Matrix: Water

Project: Stockman Oil
Lab Number ID: ASK0729-09
Date/Time Received: 11/20/2009 8:45:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Inorganic Anions										
Sulfate	12	1.0	mg/L	EPA 300.0		1	11/23/09 15:50	11/23/09 15:50	A911700	EMR

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Report No.: ASK0729

Inorganic Anions - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch A911700 - EPA 9056A										
Blank (A911700-BLK1)					Prepared & Analyzed: 11/23/09					
Sulfate	ND	1.0	mg/L							
LCS (A911700-BS1)					Prepared & Analyzed: 11/23/09					
Sulfate	10.2	1.0	mg/L	10.000		102	90-110			
Matrix Spike (A911700-MS1)		**Source: ASK0740-16**			Prepared & Analyzed: 11/23/09					
Sulfate	13.0	1.0	mg/L	10.000	3.47	95	90-110			
Matrix Spike (A911700-MS2)		**Source: ASK0740-18**			Prepared & Analyzed: 11/23/09					
Sulfate	12.7	1.0	mg/L	10.000	3.10	96	90-110			
Matrix Spike Dup (A911700-MSD1)		**Source: ASK0740-16**			Prepared & Analyzed: 11/23/09					
Sulfate	13.0	1.0	mg/L	10.000	3.47	95	90-110	0.06	10	

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Huntersville NC, 28078
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December 01, 2009

Laboratory Certifications

Code	Description	Number	Expires
NELAC	NELAC (Drinking Water, Non-Potable Water, Solids)	E87315	06/30/2010
SC	South Carolina	98011001	06/30/2010

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December 01, 2009

Legend

Definition of Laboratory Terms

ND - None Detected at the Reporting Limit
TIC - Tentatively Identified Compound
CFU - Colony Forming Units
SOP - Method run per ASI Standard Operating Procedure
RL - Reporting Limit
DF - Dilution Factor
***** - Analyte not included in the NELAC list of certified analytes.

Sample Information

N-Nitrosodiphenylamine breaks down to diphenylamine in the GCMS; both analytes are reported as N-Nitrososdiphenylamine. ASI is not NELAC certified for diphenylamine.

Phthalic acid and phthalic anhydride are reported as dimethyl phthalate

Maleic acid and maleic anhydride are reported as dimethyl malate

1,2-Diphenylhydrazine breaks down to azobenzene in the GCMS; both analytes are reported as azobenzene

Definition of Qualifiers

Note: Unless otherwise noted, all results are reported on an as received basis.

ASI

ANALYTICAL SERVICES, INC.

Environmental Monitoring & Laboratory Analysis
110 Technology Parkway, Norcross, GA 30092
(770) 734-4200 FAX (770) 734-4201

Pace Analytical Services Inc. - Huntersv
9800 Kincey Avenue
Huntersville NC, 28078
Attention: Mr. Kevin Herring

December 01, 2009

Chain of Custody

Pace Analytical® www.pacelabs.com

Workorder: 9257894 **Workorder Name:** STOCKMAN OIL **Results Requested** 12/2/2009

Report / Invoice To
Kevin Herring
Pace Analytical Charlotte
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
Phone (704)875-9092
Email: kevin.herring@pacelabs.com

Subcontract To
ASI   P.O. CHS01c354

Requested Analysis

ASK0729
E4

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	LAB USE ONLY
1	MW7	11/18/2009 11:30	9257894005	Water		1
2	MW8	11/18/2009 11:40	9257894006	Water		2
3	MW9	11/18/2009 11:50	9257894007	Water		3
4	MW10	11/18/2009 12:00	9257894008	Water		4
5	MW11	11/18/2009 12:10	9257894009	Water		5
6	MW12	11/18/2009 12:20	9257894010	Water		6
7	MW13	11/18/2009 12:30	9257894011	Water		7
8	MW14	11/18/2009 12:40	9257894012	Water		8
9	DW1	11/18/2009 13:00	9257894013	Water		9
10						
11						
12						
13						

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	11/19/09 1700	Fed Ex	11/19/09 1700
2				
3				
4				
5				

Comments

Thursday, November 19, 2009 10:47:22 AM   FMT-ALL-C-002rev.00 24March2009   Page 1 of 1

Kalunan 11/20/09 0845, Ice, 2°C, No Seal, pH-N/A, Fedex

ASI

ANALYTICAL SERVICES, INC.

Environmental Monitoring & Laboratory Analysis
110 Technology Parkway, Norcross, GA 30092
(770) 734-4200 FAX (770) 734-4201

LOG-IN CHECKLIST **Printed: 12/1/2009 5:00:24PM**

Attn: Mr. Kevin Herring

Client: Pace Analytical Services Inc. - Huntersville
Project: Stockman Oil
Date Received: 11/20/09 08:45

Work Order: ASK0729
Logged In By: Mohammad M. Rahman

OBSERVATIONS

#Samples: 9 **#Containers:** 9

Minimum Temp(C): 2.0 **Maximum Temp(C):** 2.0 **Custody Seal(s) Used:** No

CHECKLIST ITEMS

COC included with Samples	YES
Sample Container(s) Intact	YES
Chain of Custody Complete	YES
Sample Container(s) Match COC	YES
Custody seal Intact	NO
Temperature in Compliance	YES
Sufficient Sample Volume for Analysis	YES
Zero Headspace Maintained for VOA Analyses	YES
Samples labeled preserved (If Applicable)	YES
Samples received within Allowable Hold Times	YES
Samples Received on Ice	YES
Preservation Confirmed	YES

Comments:

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 2

1309541

Section A Required Client Information:

Company: KLM Enviromental
Address: Po Box 2704
Goose Creek SC 29445
Email To: MKeller131@Comcast.net
Phone: 843-870-4285 Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: Mark Keller
Copy To:
Purchase Order No.:
Project Name: Stockman Oil
Project Number:

Section C Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #: 824-3

REGULATORY AGENCY

☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: SC Greenwood

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes — MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: BTEX+Naph+MTBE	1,2-DCA	Lead	EDB	Nitrate	Sulfate	Ferrous Iron	8 Oxygenates	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	mw1	WT	G			11-18	10:30											✓	✓	✓	✓				✓		001
2	mw 2						10:40																				002
3	mw 3						10:50																				003
4	mw 4						11:00																				004
5	mw 7						11:30															✓	✓	✓			005
6	mw 8						11:40																				006
7	mw 9						11:50																				007
8	mw 10						12:00																				008
9	mw 11						12:10																				009
10	mw 12						12:20																				010
11	mw 13						12:30																				011
12	mw 14	WT	G			11-18	12:40											J	✓	✓	✓	✓	✓	✓	✓		012

9257894

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Jason Boots	11-18-09	16:00	Fed Ex	11-19-09	1600				
				PPAE	11/19/09	0930	3.9	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jason Boots

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 11-18-09

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

2

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 2 of 2

1166854

Section A Required Client Information:

Company: KLM Environmental
Address: Po Box 2704
Goose Creek SC. 29445
Email To: mkeller131@comcast.net
Phone: 843-870-4285 Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: Mack Keller
Copy To:
Purchase Order No.:
Project Name: Stockman Oil
Project Number:

Section C Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: S.C Greenwood

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: BTEX+Naph+MTBE	1,2-DCA	Lead	EDB	Nitrate	Sulfate	Ferrous Iron	8 Oxygenates	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	DW1	WT	G			11-18	13:00											✓	✓	✓	✓	✓	✓	✓	✓		9257894 013
2																											
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											
11																											
12																											

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Jason Boots	11-18-09	16:00	Fed Ex	11-19-09	1600				
					11/19/09	0930	3.9	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jason Boots
SIGNATURE of SAMPLER:
DATE Signed (MM/DD/YY): 11-18-09

2

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

November 25, 2009

Mr. Mark Keller
KLM Environmental
PO Box 2704
Goose Creek, SC 29445

RE: Project: STOCKMAN OIL
Pace Project No.: 9257758

Dear Mr. Keller:
Enclosed are the analytical results for sample(s) received by the laboratory on November 18, 2009. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Inorganic Wet Chemistry and Metals analyses were performed at our Pace Asheville laboratory and Organic testing was performed at our Pace Huntersville laboratory unless otherwise footnoted. All Microbiological analyses were performed at the laboratory where the samples were received.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Herring

kevin.herring@pacelabs.com
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: STOCKMAN OIL
Pace Project No.: 9257758

Charlotte Certification IDs
9800 Kincey Ave. - Ste 100 Huntersville, NC 28078
Connecticut Certification #: PH-0104
Virginia Certification #: 00213
Tennessee Certification #: 04010
South Carolina Drinking Water Cert. #: 990060003
South Carolina Certification #: 990060001
Pennsylvania Certification #: 68-00784
North Carolina Wastewater Certification #: 12
North Carolina Field Services Certification #: 5342
North Carolina Drinking Water Certification #: 37706
New Jersey Certification #: NC012
Louisiana/LELAP Certification #: 04034
Kentucky UST Certification #: 84
Florida/NELAP Certification #: E87627
West Virginia Certification #: 357

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SAMPLE SUMMARY

Project: STOCKMAN OIL
Pace Project No.: 9257758

Lab ID	Sample ID	Matrix	Date Collected	Date Received
9257758001	**MW-5**	Solid	11/11/09 12:00	11/18/09 09:30
9257758002	**MW-6**	Solid	11/11/09 12:55	11/18/09 09:30
9257758003	**MW-7**	Solid	11/11/09 13:40	11/18/09 09:30
9257758004	**MW-8**	Solid	11/12/09 10:00	11/18/09 09:30
9257758005	**MW-9**	Solid	11/11/09 14:35	11/18/09 09:30
9257758006	**MW-10**	Solid	11/11/09 15:15	11/18/09 09:30
9257758007	**MW-11**	Solid	11/11/09 16:00	11/18/09 09:30
9257758008	**MW-12**	Solid	11/11/09 16:50	11/18/09 09:30
9257758009	**MW-13**	Solid	11/11/09 17:35	11/18/09 09:30
9257758010	**MW-14**	Solid	11/11/09 18:40	11/18/09 09:30

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SAMPLE ANALYTE COUNT

Project: STOCKMAN OIL
Pace Project No.: 9257758

Lab ID	Sample ID	Method	Analysts	Analytes Reported
9257758001	MW-5	ASTM D2974-87	TNM	1
		EPA 8260	DLK	12
9257758002	MW-6	ASTM D2974-87	TNM	1
		EPA 8260	DLK	12
9257758003	MW-7	ASTM D2974-87	TNM	1
		EPA 8260	DLK	12
9257758004	MW-8	ASTM D2974-87	TNM	1
		EPA 8260	DLK	12
9257758005	MW-9	ASTM D2974-87	TNM	1
		EPA 8260	DLK	12
9257758006	MW-10	ASTM D2974-87	TNM	1
		EPA 8260	DLK	12
9257758007	MW-11	ASTM D2974-87	TNM	1
		EPA 8260	DLK	12
9257758008	MW-12	ASTM D2974-87	TNM	1
		EPA 8260	DLK	12
9257758009	MW-13	ASTM D2974-87	TNM	1
		EPA 8260	DLK	12
9257758010	MW-14	ASTM D2974-87	TNM	1
		EPA 8260	DLK	12

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ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 9257758

Sample: MW-5 **Lab ID: 9257758001** Collected: 11/11/09 12:00 Received: 11/18/09 09:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Benzene	ND	ug/kg	4.2	1.3	1		11/19/09 21:03	71-43-2	
Ethylbenzene	ND	ug/kg	4.2	1.5	1		11/19/09 21:03	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	4.2	1.3	1		11/19/09 21:03	1634-04-4	
Naphthalene	**6.4**	ug/kg	4.2	1.0	1		11/19/09 21:03	91-20-3	
Toluene	ND	ug/kg	4.2	1.5	1		11/19/09 21:03	108-88-3	
Xylene (Total)	ND	ug/kg	8.4	3.0	1		11/19/09 21:03	1330-20-7	
m&p-Xylene	ND	ug/kg	8.4	3.0	1		11/19/09 21:03	1330-20-7	
o-Xylene	ND	ug/kg	4.2	1.6	1		11/19/09 21:03	95-47-6	
Dibromofluoromethane (S)	100	%	79-116		1		11/19/09 21:03	1868-53-7	
Toluene-d8 (S)	101	%	88-110		1		11/19/09 21:03	2037-26-5	
4-Bromofluorobenzene (S)	100	%	74-115		1		11/19/09 21:03	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	69-121		1		11/19/09 21:03	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**22.7**	%	0.10	0.10	1		11/19/09 08:56		

Sample: MW-6 **Lab ID: 9257758002** Collected: 11/11/09 12:55 Received: 11/18/09 09:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Benzene	ND	ug/kg	239	76.3	50		11/20/09 15:17	71-43-2	
Ethylbenzene	ND	ug/kg	239	85.9	50		11/20/09 15:17	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	239	71.6	50		11/20/09 15:17	1634-04-4	
Naphthalene	**506**	ug/kg	239	57.3	50		11/20/09 15:17	91-20-3	
Toluene	ND	ug/kg	239	85.9	50		11/20/09 15:17	108-88-3	
Xylene (Total)	ND	ug/kg	477	172	50		11/20/09 15:17	1330-20-7	
m&p-Xylene	ND	ug/kg	477	172	50		11/20/09 15:17	1330-20-7	
o-Xylene	ND	ug/kg	239	90.6	50		11/20/09 15:17	95-47-6	
Dibromofluoromethane (S)	94	%	79-116		50		11/20/09 15:17	1868-53-7	D3
Toluene-d8 (S)	98	%	88-110		50		11/20/09 15:17	2037-26-5	
4-Bromofluorobenzene (S)	97	%	74-115		50		11/20/09 15:17	460-00-4	
1,2-Dichloroethane-d4 (S)	89	%	69-121		50		11/20/09 15:17	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**20.6**	%	0.10	0.10	1		11/19/09 08:57		

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Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 9257758

Sample: MW-7 **Lab ID: 9257758003** Collected: 11/11/09 13:40 Received: 11/18/09 09:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Benzene	ND	ug/kg	4.6	1.5	1		11/19/09 16:29	71-43-2	
Ethylbenzene	ND	ug/kg	4.6	1.7	1		11/19/09 16:29	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	4.6	1.4	1		11/19/09 16:29	1634-04-4	
Naphthalene	**2.1J**	ug/kg	4.6	1.1	1		11/19/09 16:29	91-20-3	
Toluene	ND	ug/kg	4.6	1.7	1		11/19/09 16:29	108-88-3	
Xylene (Total)	ND	ug/kg	9.2	3.3	1		11/19/09 16:29	1330-20-7	
m&p-Xylene	ND	ug/kg	9.2	3.3	1		11/19/09 16:29	1330-20-7	
o-Xylene	ND	ug/kg	4.6	1.7	1		11/19/09 16:29	95-47-6	
Dibromofluoromethane (S)	104	%	79-116		1		11/19/09 16:29	1868-53-7	
Toluene-d8 (S)	101	%	88-110		1		11/19/09 16:29	2037-26-5	
4-Bromofluorobenzene (S)	99	%	74-115		1		11/19/09 16:29	460-00-4	
1,2-Dichloroethane-d4 (S)	111	%	69-121		1		11/19/09 16:29	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**22.5**	%	0.10	0.10	1		11/19/09 08:57		

Sample: MW-8 **Lab ID: 9257758004** Collected: 11/12/09 10:00 Received: 11/18/09 09:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Benzene	ND	ug/kg	4.0	1.3	1		11/19/09 18:00	71-43-2	
Ethylbenzene	ND	ug/kg	4.0	1.4	1		11/19/09 18:00	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	4.0	1.2	1		11/19/09 18:00	1634-04-4	
Naphthalene	ND	ug/kg	4.0	0.96	1		11/19/09 18:00	91-20-3	
Toluene	ND	ug/kg	4.0	1.4	1		11/19/09 18:00	108-88-3	
Xylene (Total)	ND	ug/kg	8.0	2.9	1		11/19/09 18:00	1330-20-7	
m&p-Xylene	ND	ug/kg	8.0	2.9	1		11/19/09 18:00	1330-20-7	
o-Xylene	ND	ug/kg	4.0	1.5	1		11/19/09 18:00	95-47-6	
Dibromofluoromethane (S)	99	%	79-116		1		11/19/09 18:00	1868-53-7	
Toluene-d8 (S)	100	%	88-110		1		11/19/09 18:00	2037-26-5	
4-Bromofluorobenzene (S)	101	%	74-115		1		11/19/09 18:00	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	69-121		1		11/19/09 18:00	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**17.3**	%	0.10	0.10	1		11/19/09 08:57		

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Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 9257758

Sample: MW-9 **Lab ID: 9257758005** Collected: 11/11/09 14:35 Received: 11/18/09 09:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Benzene	ND	ug/kg	5.1	1.6	1		11/19/09 16:47	71-43-2	
Ethylbenzene	ND	ug/kg	5.1	1.9	1		11/19/09 16:47	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	5.1	1.5	1		11/19/09 16:47	1634-04-4	
Naphthalene	**1.7J**	ug/kg	5.1	1.2	1		11/19/09 16:47	91-20-3	
Toluene	ND	ug/kg	5.1	1.9	1		11/19/09 16:47	108-88-3	
Xylene (Total)	ND	ug/kg	10.3	3.7	1		11/19/09 16:47	1330-20-7	
m&p-Xylene	ND	ug/kg	10.3	3.7	1		11/19/09 16:47	1330-20-7	
o-Xylene	ND	ug/kg	5.1	2.0	1		11/19/09 16:47	95-47-6	
Dibromofluoromethane (S)	102	%	79-116		1		11/19/09 16:47	1868-53-7	
Toluene-d8 (S)	102	%	88-110		1		11/19/09 16:47	2037-26-5	
4-Bromofluorobenzene (S)	98	%	74-115		1		11/19/09 16:47	460-00-4	
1,2-Dichloroethane-d4 (S)	109	%	69-121		1		11/19/09 16:47	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**21.6**	%	0.10	0.10	1		11/19/09 08:58		

Sample: MW-10 **Lab ID: 9257758006** Collected: 11/11/09 15:15 Received: 11/18/09 09:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Benzene	ND	ug/kg	5.1	1.6	1		11/19/09 21:21	71-43-2	
Ethylbenzene	ND	ug/kg	5.1	1.8	1		11/19/09 21:21	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	5.1	1.5	1		11/19/09 21:21	1634-04-4	
Naphthalene	ND	ug/kg	5.1	1.2	1		11/19/09 21:21	91-20-3	
Toluene	ND	ug/kg	5.1	1.8	1		11/19/09 21:21	108-88-3	
Xylene (Total)	ND	ug/kg	10.2	3.7	1		11/19/09 21:21	1330-20-7	
m&p-Xylene	ND	ug/kg	10.2	3.7	1		11/19/09 21:21	1330-20-7	
o-Xylene	ND	ug/kg	5.1	1.9	1		11/19/09 21:21	95-47-6	
Dibromofluoromethane (S)	105	%	79-116		1		11/19/09 21:21	1868-53-7	
Toluene-d8 (S)	102	%	88-110		1		11/19/09 21:21	2037-26-5	
4-Bromofluorobenzene (S)	99	%	74-115		1		11/19/09 21:21	460-00-4	
1,2-Dichloroethane-d4 (S)	106	%	69-121		1		11/19/09 21:21	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**24.1**	%	0.10	0.10	1		11/19/09 08:58		

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Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 9257758

Sample: MW-11 **Lab ID: 9257758007** Collected: 11/11/09 16:00 Received: 11/18/09 09:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Benzene	ND	ug/kg	4.0	1.3	1		11/19/09 17:05	71-43-2	
Ethylbenzene	ND	ug/kg	4.0	1.4	1		11/19/09 17:05	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	4.0	1.2	1		11/19/09 17:05	1634-04-4	
Naphthalene	ND	ug/kg	4.0	0.95	1		11/19/09 17:05	91-20-3	
Toluene	ND	ug/kg	4.0	1.4	1		11/19/09 17:05	108-88-3	
Xylene (Total)	ND	ug/kg	7.9	2.9	1		11/19/09 17:05	1330-20-7	
m&p-Xylene	ND	ug/kg	7.9	2.9	1		11/19/09 17:05	1330-20-7	
o-Xylene	ND	ug/kg	4.0	1.5	1		11/19/09 17:05	95-47-6	
Dibromofluoromethane (S)	105	%	79-116		1		11/19/09 17:05	1868-53-7	
Toluene-d8 (S)	101	%	88-110		1		11/19/09 17:05	2037-26-5	
4-Bromofluorobenzene (S)	99	%	74-115		1		11/19/09 17:05	460-00-4	
1,2-Dichloroethane-d4 (S)	108	%	69-121		1		11/19/09 17:05	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**18.2**	%	0.10	0.10	1		11/19/09 08:58		

Sample: MW-12 **Lab ID: 9257758008** Collected: 11/11/09 16:50 Received: 11/18/09 09:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Benzene	ND	ug/kg	5.4	1.7	1		11/19/09 21:39	71-43-2	
Ethylbenzene	ND	ug/kg	5.4	1.9	1		11/19/09 21:39	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	5.4	1.6	1		11/19/09 21:39	1634-04-4	
Naphthalene	ND	ug/kg	5.4	1.3	1		11/19/09 21:39	91-20-3	
Toluene	ND	ug/kg	5.4	1.9	1		11/19/09 21:39	108-88-3	
Xylene (Total)	ND	ug/kg	10.7	3.9	1		11/19/09 21:39	1330-20-7	
m&p-Xylene	ND	ug/kg	10.7	3.9	1		11/19/09 21:39	1330-20-7	
o-Xylene	ND	ug/kg	5.4	2.0	1		11/19/09 21:39	95-47-6	
Dibromofluoromethane (S)	103	%	79-116		1		11/19/09 21:39	1868-53-7	
Toluene-d8 (S)	102	%	88-110		1		11/19/09 21:39	2037-26-5	
4-Bromofluorobenzene (S)	101	%	74-115		1		11/19/09 21:39	460-00-4	
1,2-Dichloroethane-d4 (S)	108	%	69-121		1		11/19/09 21:39	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**20.3**	%	0.10	0.10	1		11/19/09 08:58		

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(704)875-9092

ANALYTICAL RESULTS

Project: STOCKMAN OIL
Pace Project No.: 9257758

Sample: MW-13 **Lab ID: 9257758009** Collected: 11/11/09 17:35 Received: 11/18/09 09:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Benzene	ND	ug/kg	4.7	1.5	1		11/19/09 17:23	71-43-2	
Ethylbenzene	ND	ug/kg	4.7	1.7	1		11/19/09 17:23	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	4.7	1.4	1		11/19/09 17:23	1634-04-4	
Naphthalene	ND	ug/kg	4.7	1.1	1		11/19/09 17:23	91-20-3	
Toluene	ND	ug/kg	4.7	1.7	1		11/19/09 17:23	108-88-3	
Xylene (Total)	ND	ug/kg	9.5	3.4	1		11/19/09 17:23	1330-20-7	
m&p-Xylene	ND	ug/kg	9.5	3.4	1		11/19/09 17:23	1330-20-7	
o-Xylene	ND	ug/kg	4.7	1.8	1		11/19/09 17:23	95-47-6	
Dibromofluoromethane (S)	108	%	79-116		1		11/19/09 17:23	1868-53-7	
Toluene-d8 (S)	102	%	88-110		1		11/19/09 17:23	2037-26-5	
4-Bromofluorobenzene (S)	102	%	74-115		1		11/19/09 17:23	460-00-4	
1,2-Dichloroethane-d4 (S)	108	%	69-121		1		11/19/09 17:23	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**23.2**	%	0.10	0.10	1		11/19/09 08:58		

Sample: MW-14 **Lab ID: 9257758010** Collected: 11/11/09 18:40 Received: 11/18/09 09:30 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Benzene	ND	ug/kg	4.6	1.5	1		11/19/09 17:42	71-43-2	
Ethylbenzene	ND	ug/kg	4.6	1.7	1		11/19/09 17:42	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	4.6	1.4	1		11/19/09 17:42	1634-04-4	
Naphthalene	ND	ug/kg	4.6	1.1	1		11/19/09 17:42	91-20-3	
Toluene	ND	ug/kg	4.6	1.7	1		11/19/09 17:42	108-88-3	
Xylene (Total)	ND	ug/kg	9.2	3.3	1		11/19/09 17:42	1330-20-7	
m&p-Xylene	ND	ug/kg	9.2	3.3	1		11/19/09 17:42	1330-20-7	
o-Xylene	ND	ug/kg	4.6	1.7	1		11/19/09 17:42	95-47-6	
Dibromofluoromethane (S)	105	%	79-116		1		11/19/09 17:42	1868-53-7	
Toluene-d8 (S)	103	%	88-110		1		11/19/09 17:42	2037-26-5	
4-Bromofluorobenzene (S)	100	%	74-115		1		11/19/09 17:42	460-00-4	
1,2-Dichloroethane-d4 (S)	108	%	69-121		1		11/19/09 17:42	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**17.5**	%	0.10	0.10	1		11/19/09 08:58		

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(704)875-9092

QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 9257758

QC Batch: PMST/2889
QC Batch Method: ASTM D2974-87
Analysis Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 9257758001, 9257758002, 9257758003, 9257758004, 9257758005, 9257758006, 9257758007, 9257758008, 9257758009, 9257758010

SAMPLE DUPLICATE: 368346

Parameter	Units	9257769001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	26.8	27.1	1	25	

SAMPLE DUPLICATE: 368347

Parameter	Units	9257760001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	82.6	82.8	0	25	

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 9257758

QC Batch: MSV/9098
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 9257758006, 9257758008

METHOD BLANK: 368816
Matrix: Solid
Associated Lab Samples: 9257758006, 9257758008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/kg	ND	5.0	11/19/09 13:44	
Ethylbenzene	ug/kg	ND	5.0	11/19/09 13:44	
m&p-Xylene	ug/kg	ND	10.0	11/19/09 13:44	
Methyl-tert-butyl ether	ug/kg	ND	5.0	11/19/09 13:44	
Naphthalene	ug/kg	ND	5.0	11/19/09 13:44	
o-Xylene	ug/kg	ND	5.0	11/19/09 13:44	
Toluene	ug/kg	ND	5.0	11/19/09 13:44	
Xylene (Total)	ug/kg	ND	10.0	11/19/09 13:44	
1,2-Dichloroethane-d4 (S)	%	107	69-121	11/19/09 13:44	
4-Bromofluorobenzene (S)	%	98	74-115	11/19/09 13:44	
Dibromofluoromethane (S)	%	104	79-116	11/19/09 13:44	
Toluene-d8 (S)	%	102	88-110	11/19/09 13:44	

LABORATORY CONTROL SAMPLE: 368817

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/kg	50	64.8	130	71-140	
Ethylbenzene	ug/kg	50	63.6	127	69-141	
m&p-Xylene	ug/kg	100	127	127	72-138	
Methyl-tert-butyl ether	ug/kg	50	61.8	124	2-138	
Naphthalene	ug/kg	50	63.9	128	61-138	
o-Xylene	ug/kg	50	64.0	128	74-137	
Toluene	ug/kg	50	62.5	125	69-139	
Xylene (Total)	ug/kg	150	191	127	73-138	
1,2-Dichloroethane-d4 (S)	%			100	69-121	
4-Bromofluorobenzene (S)	%			98	74-115	
Dibromofluoromethane (S)	%			101	79-116	
Toluene-d8 (S)	%			100	88-110	

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 9257758

QC Batch: MSV/9097 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 9257758001, 9257758002, 9257758003, 9257758004, 9257758005, 9257758007, 9257758009, 9257758010

METHOD BLANK: 368812 Matrix: Solid
Associated Lab Samples: 9257758001, 9257758002, 9257758003, 9257758004, 9257758005, 9257758007, 9257758009, 9257758010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/kg	ND	5.0	11/19/09 14:02	
Ethylbenzene	ug/kg	ND	5.0	11/19/09 14:02	
m&p-Xylene	ug/kg	ND	10.0	11/19/09 14:02	
Methyl-tert-butyl ether	ug/kg	ND	5.0	11/19/09 14:02	
Naphthalene	ug/kg	ND	5.0	11/19/09 14:02	
o-Xylene	ug/kg	ND	5.0	11/19/09 14:02	
Toluene	ug/kg	ND	5.0	11/19/09 14:02	
Xylene (Total)	ug/kg	ND	10.0	11/19/09 14:02	
1,2-Dichloroethane-d4 (S)	%	105	69-121	11/19/09 14:02	
4-Bromofluorobenzene (S)	%	96	74-115	11/19/09 14:02	
Dibromofluoromethane (S)	%	102	79-116	11/19/09 14:02	
Toluene-d8 (S)	%	100	88-110	11/19/09 14:02	

LABORATORY CONTROL SAMPLE: 368813

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/kg	50	61.0	122	71-140	
Ethylbenzene	ug/kg	50	59.0	118	69-141	
m&p-Xylene	ug/kg	100	118	118	72-138	
Methyl-tert-butyl ether	ug/kg	50	59.2	118	2-138	
Naphthalene	ug/kg	50	58.0	116	61-138	
o-Xylene	ug/kg	50	60.9	122	74-137	
Toluene	ug/kg	50	58.3	117	69-139	
Xylene (Total)	ug/kg	150	179	119	73-138	
1,2-Dichloroethane-d4 (S)	%			103	69-121	
4-Bromofluorobenzene (S)	%			98	74-115	
Dibromofluoromethane (S)	%			101	79-116	
Toluene-d8 (S)	%			100	88-110	

MATRIX SPIKE SAMPLE: 369434

Parameter	Units	9257758003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Benzene	ug/kg	ND	61.3	54.5	89	46-143	
Toluene	ug/kg	ND	61.3	53.1	87	38-145	
1,2-Dichloroethane-d4 (S)	%				109	69-121	
4-Bromofluorobenzene (S)	%				97	74-115	
Dibromofluoromethane (S)	%				104	79-116	
Toluene-d8 (S)	%				101	88-110	

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QUALITY CONTROL DATA

Project: STOCKMAN OIL
Pace Project No.: 9257758

SAMPLE DUPLICATE: 369433

Parameter	Units	9257774002 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/kg	ND	ND		30	
Ethylbenzene	ug/kg	ND	ND		30	
m&p-Xylene	ug/kg	ND	ND		30	
Methyl-tert-butyl ether	ug/kg	ND	ND		30	
Naphthalene	ug/kg	ND	ND		30	
o-Xylene	ug/kg	ND	ND		30	
Toluene	ug/kg	ND	ND		30	
Xylene (Total)	ug/kg	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	106	102	6		
4-Bromofluorobenzene (S)	%	96	104	6		
Dibromofluoromethane (S)	%	108	105	4		
Toluene-d8 (S)	%	103	107	2		

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QUALIFIERS

Project: STOCKMAN OIL
Pace Project No.: 9257758

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.
ND - Not Detected at or above adjusted reporting limit.
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
MDL - Adjusted Method Detection Limit.
S - Surrogate
1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.
LCS(D) - Laboratory Control Sample (Duplicate)
MS(D) - Matrix Spike (Duplicate)
DUP - Sample Duplicate
RPD - Relative Percent Difference
NC - Not Calculable.
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U - Indicates the compound was analyzed for, but not detected.

ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

1336580

Section A Required Client Information:

Company: KLM Envi
Address: PoBox 2704
Goose Creek SC 29445
Email To: mkellw131@comcast.net
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: Mark Keller
Copy To:
Purchase Order No.:
Project Name: Stockman oil
Project Number:

Section C Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #: 824-4

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☒ UST ☐ RCRA ☐ OTHER

Site Location STATE: SC

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	BTEX & MTBE	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-5	SL	G	11/11/09			1200												X		92577758 001
2	MW-6	"	"	11/11/09			1255												"		002
3	MW-7	"	"	11/11/09			1340												"		003
4	MW-8	"	"	11/12/09			1000												"		004
5	MW-9	"	"	11/11/09			1435												"		005
6	MW-10	"	"	11/11/09			1515												"		006
7	MW-11	"	"	11/11/09			1600												"		007
8	MW-12	"	"	11/11/09			1650												"		008
9	MW-13	"	"	11/11/09			1735												"		009
10	MW-14	X	X	11/11/09			1840												X		010
11																					
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	[signature]	11/17/09	1700	[signature] PACE	11/18/09	0930	2.9	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER:
SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

APPENDIX F

Field Sampling Sheets

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 11/18/09.
Field Personnel J. Boots, / W. Infinger.
General Weather Condition Sunny.
Ambient Air Temperature _____ °F
Facility Name Stockman Oil Two, Inc. Site ID# 04736

Quality Assurance:

pH Meter	Horiba	Conductivity Meter:	Horiba
serial no.		serial no.	
pH=4.0	Internal	Standard	Internal
pH=7.0	Internal	Standard	Internal
pH=10.0	Internal	Standard	Internal

Chain of Custody

Relinquished by Date/Time Received by Date/Time

Well # MW-1

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 29.6 ft.
Depth to GW (DWG) 25.87 ft.

Length of Water Column (LWC=TWD-DGW) _____ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	—							
Time (military)	10:30							
pH (s.u.)	5.88							
Specific Cond. (mS/cm)	.038							
Turbidity (*)	245							
Dissolved Oxygen	0.76							
Water Temp (°C)	19.1							
Salinity	0.00							
OVA Readings	—							

Sample Time: 10:30

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 11/18/09
Field Personnel J. Boots, / W. Infinger
General Weather Condition Sunny
Ambient Air Temperature ____ °F
Facility Name Stockman Oil Two, Inc. Site ID# 04736

Quality Assurance:

pH Meter	Horiba	Conductivity Meter:	Horiba
serial no.		serial no.	
pH=4.0	Internal	Standard	Internal
pH=7.0	Internal	Standard	Internal
pH=10.0	Internal	Standard	Internal

Chain of Custody

Relinquished by Date/Time Received by Date/Time

Well # MW-2

Well Diameter(D) 2 Inches or ____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 30 ft.
Depth to GW (DWG) 21.79 ft.

Length of Water Column (LWC=TWD-DGW) ____ft.

1 Csg. Volume (LWC*C)= ____ x .163 = ____ gals.
3 Csg. Volumes = 3 x ____ = ____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling ____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	—							
Time (military)	10:40							
pH (s.u.)	6.96							
Specific Cond. (mS/cm)	.081							
Turbidity (*)	19							
Dissolved Oxygen	1.08							
Water Temp (°C)	17.7							
Salinity	0.06							
OVA Readings	—							

Sample Time: 10:46

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 11/18/09
Field Personnel J. Boots, / W. Infinger
General Weather Condition Sunny
Ambient Air Temperature _____ °F
Facility Name Stockman Oil Two, Inc. Site ID# 04736

Quality Assurance:

pH Meter	Horiba	Conductivity Meter:	Horiba
serial no.		serial no.	
pH=4.0	Internal	Standard	Internal
pH=7.0	Internal	Standard	Internal
pH=10.0	Internal	Standard	Internal

Chain of Custody

Relinquished by	Date/Time	Received by	Date/Time

Well # MW- 3

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 35 ft.
Depth to GW (DWG) 23.44 ft.

Length of Water Column (LWC=TWD-DGW) _____ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	2.0							
Time (military)	10:50							
pH (s.u.)	7.36							
Specific Cond. (mS/cm)	.120							
Turbidity (*)	118							
Dissolved Oxygen	0.78							
Water Temp (°C)	18.7							
Salinity	0.00							
OVA Readings	—							

Sample Time: 10:50

Dry @ 2 gal.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 11/18/09
Field Personnel J. Boots, / W. Infinger
General Weather Condition Sunny
Ambient Air Temperature _____ °F
Facility Name Stockman Oil Two, Inc. Site ID# 04736

Quality Assurance:

pH Meter	Horiba	Conductivity Meter:	Horiba
serial no.		serial no.	
pH=4.0	Internal	Standard	Internal
pH=7.0	Internal	Standard	Internal
pH=10.0	Internal	Standard	Internal

Chain of Custody

Relinquished by	Date/Time	Received by	Date/Time

Well # MW-4

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 35 ft.
Depth to GW (DWG) 24.38 ft.

Length of Water Column (LWC=TWD-DGW) _____ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	2							
Time (military)	11:00							
pH (s.u.)	6.41							
Specific Cond. (mS/cm)	.0609							
Turbidity (*)	28							
Dissolved Oxygen	1.62							
Water Temp (°C)	17.8							
Salinity	0.00							
OVA Readings	—							

Sample Time: 11:00

Dye 2 gal

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 11/18/09.
Field Personnel J. Boots, / W. Infinger.
General Weather Condition Sunny.
Ambient Air Temperature _____ °F
Facility Name Stockman Oil Two, Inc. Site ID# 04736

Quality Assurance:

pH Meter	Horiba	Conductivity Meter:	Horiba
serial no.		serial no.	
pH=4.0	Internal	Standard	Internal
pH=7.0	Internal	Standard	Internal
pH=10.0	Internal	Standard	Internal

Chain of Custody

Relinquished by Date/Time Received by Date/Time

Well # MW-5

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ ft.
Depth to GW (DWG) 28.24 - 37.97 ft.

Length of Water Column (LWC=TWD-DGW) _____ ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
pH (s.u.)								
Specific Cond. (mS/cm)								
Turbidity (*)								
Dissolved Oxygen								
Water Temp (°C)								
Salinity								
OVA Readings								

Sample Time: Free product

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 11/18/09.
Field Personnel J. Boots, / W. Infinger.
General Weather Condition Sunny.
Ambient Air Temperature _____ °F
Facility Name Stockman Oil Two, Inc. Site ID# 04736

Quality Assurance:

pH Meter	Horiba	Conductivity Meter:	Horiba
serial no.		serial no.	
pH=4.0	Internal	Standard	Internal
pH=7.0	Internal	Standard	Internal
pH=10.0	Internal	Standard	Internal

Chain of Custody

Relinquished by	Date/Time	Received by	Date/Time

Well # MW-6

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) _____ft.
Depth to GW (DWG) ~~35.61~~ ft.
35.61 37.20
Length of Water Column (LWC=TWD-DGW) _____ft.

1 Csg. Volume (LWC*C)= _____ x .163 = _____ gals.
3 Csg. Volumes = 3 x _____ = _____ gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
pH (s.u.)								
Specific Cond. (mS/cm)								
Turbidity (*)								
Dissolved Oxygen								
Water Temp (°C)								
Salinity								
OVA Readings								

Sample Time: Free Product

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 11/18/09.
Field Personnel J. Boots, / W. Infinger.
General Weather Condition Sunny.
Ambient Air Temperature _____ °F
Facility Name Stockman Oil Two, Inc. Site ID# 04736

Quality Assurance:

pH Meter	Horiba	Conductivity Meter:	Horiba
serial no.		serial no.	
pH=4.0	Internal	Standard	Internal
pH=7.0	Internal	Standard	Internal
pH=10.0	Internal	Standard	Internal

Chain of Custody

Relinquished by	Date/Time	Received by	Date/Time

Well # MW-7

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 40 ft.
Depth to GW (DWG) 27.05 ft.

Length of Water Column (LWC=TWD-DGW) 12.95 ft.

1 Csg. Volume (LWC*C)= 12.95 x .163 = 2.1 gals.
3 Csg. Volumes = 3 x 2.1 = 6.3 gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	2.1							
Time (military)	11:25							
pH (s.u.)	5.78							
Specific Cond. (mS/cm)	.333							
Turbidity (*)								
Dissolved Oxygen	1.01							
Water Temp (°C)	20.9							
Salinity	0.01							
OVA Readings	—							

Sample Time: 11:36 DI4AT 2.5 gal

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 11/18/09
Field Personnel J. Boots, / W. Infinger
General Weather Condition Sunny
Ambient Air Temperature _____ °F
Facility Name Stockman Oil Two, Inc. Site ID# 04736

Quality Assurance:

pH Meter	Horiba	Conductivity Meter:	Horiba
serial no.		serial no.	
pH=4.0	Internal	Standard	Internal
pH=7.0	Internal	Standard	Internal
pH=10.0	Internal	Standard	Internal

Chain of Custody

Relinquished by	Date/Time	Received by	Date/Time

Well # MW-8

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 35 ft.
Depth to GW (DWG) 26.99 ft.

Length of Water Column (LWC=TWD-DGW) 8.01 ft.

1 Csg. Volume (LWC*C)= 8.01 x .163 = 1.3 gals.
3 Csg. Volumes = 3 x 1.3 = 3.9 gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	1.3							
Time (military)	11:35							
pH (s.u.)	5.65							
Specific Cond. (mS/cm)	.662							
Turbidity (*)								
Dissolved Oxygen	6.58							
Water Temp (°C)	21.1							
Salinity	0.00							
OVA Readings	—							

Sample Time: 11:40
Dry at 2 gal

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 11/18/09
Field Personnel J. Boots, / W. Infinger
General Weather Condition Sunny
Ambient Air Temperature _____ °F
Facility Name Stockman Oil Two, Inc. Site ID# 04736

Quality Assurance:

pH Meter	Horiba	Conductivity Meter:	Horiba
serial no.		serial no.	
pH=4.0	Internal	Standard	Internal
pH=7.0	Internal	Standard	Internal
pH=10.0	Internal	Standard	Internal

Chain of Custody

Relinquished by	Date/Time	Received by	Date/Time

Well # MW-9

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 35 ft.
Depth to GW (DWG) 25.64 ft.

Length of Water Column (LWC=TWD-DGW) 9.36 ft.

1 Csg. Volume (LWC*C)= 9.36 x .163 = 1.5 gals.
3 Csg. Volumes = 3 x 1.5 = 4.5 gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	1.5							
Time (military)	1150							
pH (s.u.)	6.06							
Specific Cond. (mS/cm)	.1161							
Turbidity (*)								
Dissolved Oxygen	1.07							
Water Temp (°C)	20.4							
Salinity	0.01							
OVA Readings	—							

Sample Time: 1150
DUP 2gA

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 11/18/09
Field Personnel J. Boots, / W. Infinger
General Weather Condition Sunny
Ambient Air Temperature _____ °F
Facility Name Stockman Oil Two, Inc. Site ID# 04736

Quality Assurance:

pH Meter	Horiba	Conductivity Meter:	Horiba
serial no.		serial no.	
pH=4.0	Internal	Standard	Internal
pH=7.0	Internal	Standard	Internal
pH=10.0	Internal	Standard	Internal

Chain of Custody

Relinquished by Date/Time Received by Date/Time

Well # MW-16

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 40. ft.
Depth to GW (DWG) 29.38 ft.

Length of Water Column (LWC=TWD-DGW) 10.62 ft.

1 Csg. Volume (LWC*C)= 10.62 x .163 = 1.7 gals.
3 Csg. Volumes = 3 x 1.7 = 5.1 gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	1.7							
Time (military)								
pH (s.u.)	5.76							
Specific Cond. (mS/cm)	.042							
Turbidity (*)								
Dissolved Oxygen	1.21							
Water Temp (°C)	20.2							
Salinity	0.06							
OVA Readings	—							

Sample Time: 12:00 Dry at 2.9gal

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 11/18/09
Field Personnel J. Boots, / W. Infinger
General Weather Condition Sunny
Ambient Air Temperature _____ °F
Facility Name Stockman Oil Two, Inc. Site ID# 04736

Quality Assurance:

pH Meter	Horiba	Conductivity Meter:	Horiba
serial no.		serial no.	
pH=4.0	Internal	Standard	Internal
pH=7.0	Internal	Standard	Internal
pH=10.0	Internal	Standard	Internal

Chain of Custody

Relinquished by Date/Time Received by Date/Time

Well # MW-11

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 30 ft.
Depth to GW (DWG) 23.96 ft.

Length of Water Column (LWC=TWD-DGW) 6.04 ft.

1 Csg. Volume (LWC*C)= 6.04 x .163 = .9 gals.
3 Csg. Volumes = 3 x .9 = 2.9 gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
pH (s.u.)	6.03							
Specific Cond. (mS/cm)	.162							
Turbidity (*)								
Dissolved Oxygen	1.23							
Water Temp (°C)	18.8							
Salinity	0.00							
OVA Readings	—							

Sample Time: 12:10
Dry at 1 gal

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 11/18/09
Field Personnel J. Boots, / W. Infinger
General Weather Condition Sunny
Ambient Air Temperature _____ °F
Facility Name Stockman Oil Two, Inc. Site ID# 04736

Quality Assurance:

pH Meter	Horiba	Conductivity Meter:	Horiba
serial no.		serial no.	
pH=4.0	Internal	Standard	Internal
pH=7.0	Internal	Standard	Internal
pH=10.0	Internal	Standard	Internal

Chain of Custody

Relinquished by Date/Time Received by Date/Time

Well # MW-12

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 30 ft.
Depth to GW (DWG) 23.33 ft.

Length of Water Column (LWC=TWD-DGW) 6.67 ft.

1 Csg. Volume (LWC*C)= 6.67 x .163 = 1.08 gals.
3 Csg. Volumes = 3 x 1.08 = 3.2 gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	1.2							
Time (military)	1217							
pH (s.u.)	5.95							
Specific Cond. (mS/cm)	.254							
Turbidity (*)	214							
Dissolved Oxygen	1.01							
Water Temp (°C)	18.6							
Salinity	0.01							
OVA Readings	—							

Sample Time: 1220

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 11/18/09
Field Personnel J. Boots, / W. Infinger
General Weather Condition Sunny
Ambient Air Temperature _____ °F
Facility Name Stockman Oil Two, Inc. Site ID# 04736

Quality Assurance:

pH Meter	Horiba	Conductivity Meter:	Horiba
serial no.		serial no.	
pH=4.0	Internal	Standard	Internal
pH=7.0	Internal	Standard	Internal
pH=10.0	Internal	Standard	Internal

Chain of Custody

Relinquished by Date/Time Received by Date/Time

Well # MW-13

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 35 ft.
Depth to GW (DWG) 21.23 ft.

Length of Water Column (LWC=TWD-DGW) 13.77 ft.

1 Csg. Volume (LWC*C)= 13.77 x .163 = 2.2 gals.
3 Csg. Volumes = 3 x 2.2 = 6.6 gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	2.2							
Time (military)	12:25							
pH (s.u.)	6.64							
Specific Cond. (mS/cm)	.458							
Turbidity (*)								
Dissolved Oxygen	0.37							
Water Temp (°C)	19.1							
Salinity	0.01							
OVA Readings	—							

Sample Time: 12:30 DUP @ 2.3

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 11/18/09
Field Personnel J. Boots, / W. Infinger
General Weather Condition Sunny
Ambient Air Temperature _____ °F
Facility Name Stockman Oil Two, Inc. Site ID# 04736

Quality Assurance:

pH Meter	Horiba	Conductivity Meter:	Horiba
serial no.		serial no.	
pH=4.0	Internal	Standard	Internal
pH=7.0	Internal	Standard	Internal
pH=10.0	Internal	Standard	Internal

Chain of Custody

Relinquished by Date/Time Received by Date/Time

Well # MW-14

Well Diameter(D) 2 Inches or _____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 35 ft.
Depth to GW (DWG) 24.84 ft.

Length of Water Column (LWC=TWD-DGW) 10.16 ft.

1 Csg. Volume (LWC*C)= 10.16 x .163 = 1.6 gals.
3 Csg. Volumes = 3 x 1.6 = 4.9 gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling _____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	1.6							
Time (military)	12:35							
pH (s.u.)	5.53							
Specific Cond. (mS/cm)	.034							
Turbidity (*)								
Dissolved Oxygen	0.75							
Water Temp (°C)	20.3							
Salinity	0.00							
OVA Readings	—							

Sample Time: 12:40 Dry at 2.9 gal

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date (mm/dd/yy) 11/18/09.
Field Personnel J. Boots, / W. Infinger.
General Weather Condition Sunny.
Ambient Air Temperature ____ °F
Facility Name Stockman Oil Two, Inc. Site ID# 04736

Quality Assurance:

pH Meter	Horiba	Conductivity Meter:	Horiba
serial no.		serial no.	
pH=4.0	Internal	Standard	Internal
pH=7.0	Internal	Standard	Internal
pH=10.0	Internal	Standard	Internal

Chain of Custody

Relinquished by	Date/Time	Received by	Date/Time

Well # ~~MW-~~ DW 3

Well Diameter(D) 2 Inches or ____ feet
conversion factor(C): $3.143*(D/2)^2$
for a 2 inch well C=0.163
4 inch well C=0.652
Total Well Depth (TWD) 64 ft.
Depth to GW (DWG) 23.66 ft.

Length of Water Column (LWC=TWD-DGW) 40.34 ft.

1 Csg. Volume (LWC*C)= 40.34 x .163 = 6.5 gals.
3 Csg. Volumes = 3 x 6.5 = 20 gals. (Std. Purge Volume)

Total Volume of Water Purged Before Sampling ____ gals.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	6.5	19.	20					
Time (military)	1250							
pH (s.u.)	6.73							
Specific Cond. (mS/cm)	.138							
Turbidity (*)	250							
Dissolved Oxygen	0.75							
Water Temp (°C)	18.5							
Salinity	0.00							
OVA Readings	—							

Sample Time: 13:00 Dry at 7 gal

APPENDIX G

Disposal Manifest

US Water Recovery

Non-Hazardous Wastewater Manifest Number:

1. Generator's EPA ID# (if applicable): Waste ID Number:

2. Generator's Name and Mailing Address: Phone ( )
Stockman Oil
P O #:

3. Agent of Generator and Mailing Address: Phone (843) 870-4285
KLM Environmental
PO Box 2704 Goose Creek S.C. 29445
P O #:

4. Transporter Company Name: Phone (843) 906-8739
Unicorn Recovery Tech
118 Spring Hill Dr. Suite E Goose Creek SC 29445
Truck & Trailer License Number:

5. Transporter U.S. EPA ID#:

6. Facility Name and Site Address:
U S Water Recovery
435 Old Mt. Holly Rd.
Mt. Holly, SC 29445
Phone: (843) 797-8674
Fax: (843) 797-2126

Mailing Address:
U S Water Recovery
210 S. Cedar Street
Summerville, SC 29483
Phone: (843) 797-3111
Fax: (843) 797-1884

7. Facility U.S. EPA ID#:

Start Level: End Level: Total Gallons: Tank Number

8. U.S. DOT Desciption	Container No.	Container Type	Unit	Quantity
a. Non-Hazardous, non-regulated waste water				27 gal

9. Generator's Certification: I hereby declare that the contents of this consignment are not hazardous by definition or listing and are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and the laws of the State of South Carolina. I further certify that the contents of this consignment are as represented by the description contained on the Waste Profile Form previously submitted to and approved by the Designated Facility.

Printed/Typed Name: Jason Bank Signature: Jason Bank Date: 12-14-09

10. Transporter Acknowledgement of Receipt of Materials
Printed/Typed Name: [illegible] Signature: [illegible] Date: 12-14-09

11. Discrepancy indication space:

12. Facility Owner or Operator: Certification of Receipt of Materials
Printed/Typed Name: David Ward Signature: David Ward Date: 12-14-09

White - Facility Yellow - Office Pink - Transporter Blue - Generator

6115

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number

GENERATOR

5. Generator's Name and Mailing Address: KLM Environmental, 262 Gadsby Ln, Walterboro SC 29488 — Generator's Site Address (if different than mailing address)

Generator's Phone:

6. Transporter 1 Company Name: KLM Environmental — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

Facility's Phone:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Stoekman Oil, Greenwood SC Drill Cuttings	25	DM			
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Generator's/Offeror's Printed/Typed Name: KLM Environmental — Signature — Month 11 Day 13 Year 09

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: KLM Environmental — Signature — Month 11 Day 13 Year 09

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Robert Hogan — Signature — Month Day Year

APPENDIX H

Historical Groundwater Elevations

TABLE 1 Groundwater Data (feet) Stockman Oil Two, Inc. Greenwood, SC						
Monitoring Well	**Date**	**TOC Elevation**	**Screened Interval**	**TOC to FP**	**TOC to GW**	**GW Elevation**
MW-1	6/10/02	100.00	14.6-29.6	--	25.85	74.15
	11/17/08			--	29.32	70.68
	11/18/09			--	25.87	74.13
MW-2	6/10/02	92.79	20-30	--	21.32	71.47
	11/17/08			--	24.74	68.05
	11/18/09			--	21.79	71.00
MW-3	6/10/02	94.82	25-35	--	22.96	71.86
	11/17/08			--	25.96	68.86
	11/18/09			--	23.44	71.38
MW-4	6/10/02	97.52	25-35	--	24.17	73.35
	11/17/08			--	27.37	70.15
	11/18/09			--	24.38	73.14
MW-5	11/18/09	104.40	20-40	28.24	37.97	--
MW-6	11/18/09	104.92	20-40	25.61	37.20	--
MW-7	11/18/09	104.13	20-40	--	27.05	77.08
MW-8	11/18/09	98.19	15-35	--	26.99	71.20
MW-9	11/18/09	95.10	15-35	--	25.64	69.46
MW-10	11/18/09	104.25	20-40	--	29.38	74.87
MW-11	11/18/09	90.86	15-30	--	23.96	66.90
MW-12	11/18/09	89.44	15-30	--	23.33	66.11
MW-13	11/18/09	92.36	15-35	--	21.23	71.13
MW-14	11/18/09	99.74	15-35	--	24.84	74.90
DW-1	11/18/09	95.18	56-61	--	23.66	71.52

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

MAY 0 4 2010

UST DOCKET 7tech

AP STOCKMAN III
STOCKMAN OIL TWO INC
1138 REYNOLDS AVENUE
GREENWOOD SC 29646

Re: **Aggressive Fluid Vapor Recovery Directive**
Stockman Oil Two Inc: 1138 Reynolds Avenue, Greenwood, SC
UST Permit # **04736; CA # 38854**
Release reported December 27, 1989
Assessment Report received December 21, 2009
Greenwood County

Dear Mr. Stockman:

The Underground Storage Tank Management Division (UST Division) of the South Carolina Department of Health and Environmental Control (SCDHEC) has reviewed the file and determined the next necessary scope of work is to conduct two (2) Aggressive Fluid/Vapor Recovery (AFVR) events to remove free phase product. Both events should last 24 hours and can be performed on consecutive days. The first event is to be performed on MW5 and the second event is to be on MW6.

Cost Agreement # **38854** has been approved in the amount shown on the enclosed cost agreement form for the aforementioned scope of work. The AFVR activities may proceed immediately upon receipt of this letter. The AFVR Report submitted at the completion of these activities should include the following:

- A narrative portion documenting the AFVR events noting site conditions, the name of the AFVR contractor, field personnel, date, time the AFVR events started and ended, ambient air temperature, and general weather conditions during the AFVR events.
- A brief description of the completed work scope and any relevant descriptions pertaining to the data tables.
- A table summarizing the airflow (in CFM) and volatile air emissions concentrations collected from the stack of the truck every thirty minutes through the duration of the events. The table shall also document which well(s) were being recovered from during that time interval.
- A table summarizing the magnehelic gauge measurements from all applicable wells on a thirty-minute time interval.
- The total volume of water recovered (gallons).
- The total volume of free phase product recovered (typically measured with a product/water interface device inserted into the top of the tanker at the completion of the event and then converted to an approximate volume).
- The total weight of petroleum removed as vapor. This is calculated based on the airflow rate and the concentration of vapor.
- A table documenting the free product thickness in each well before and after the recovery events.
- Scaled base map depicting the location of the extraction wells and the surrounding wells equipped with magnehelic gauges.
- Manifests for any contaminated soil and/or groundwater removed from the site for treatment and/or disposal.
- Signature and seal by a professional geologist or engineer registered in the State of South Carolina.

Magnehelic gauges must be installed on the extraction wells and monitoring wells immediately surrounding the extraction wells. The AFVR should be completed by establishing a vacuum on the subsurface through the existing monitoring wells. The unit must be capable of providing a minimum airflow of 250 cubic feet per minute (CPM) at 25 inches Mercury vacuum. An airtight seal must be established on the top of each extraction well. Drop tubes inserted in the well(s) should have an inside diameter of at least one (1) inch and should initially be installed six inches below the bottom of the product or the top of the well screen whichever is deeper. The drop tubes should be lowered deeper in the well only if the well exhibits slow recovery (repeatedly goes dry) or if it is deemed necessary to establish a steeper hydraulic gradient to enhance free product migration toward the well. The goal is to maximize the recovery of free product and petroleum vapors in the capillary fringe and minimize the recovery of ground water.

KLM Environmental can submit an invoice for direct billing from the SUPERB Account. Please note that all applicable South Carolina certification requirements apply to the laboratory services, well installation, and report preparation. All site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor.

An AFVR report and invoice are due within 90 days from the date of this letter. Interim invoices may be submitted for this scope of work. If the invoice is not submitted within 120 days from the date of this letter, monies allocated to pay this invoice will be uncommitted. This means that the invoice will not be processed for payment until all other committed funds are paid or monies become available.

Please note that Sections 44-2-110(4) and 44-2-130 of the SUPERB Statute state that no costs will be allowed unless prior approval from the UST Division is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the UST Division for the cost to be paid. The SCDHEC reserves the authority to pay only for work properly performed and/or technically justified and will only pay rates in accordance with established criteria. Further, SCDHEC reserves the right to question and/or reject costs if deemed unreasonable and the right to audit project records at any time during the project or after completion of work.

The Department grants pre-approval for transportation of virgin petroleum impacted groundwater from the referenced site to a permitted treatment facility. There can be no spillage or leakage in transport. All investigation derived waste (IDW) must be properly contained and labeled prior to disposal. IDW should not be stored on-site longer than ninety (90) days. A copy of the disposal manifest and/or acceptance letter from the receiving facility that clearly designates the quantity received must be included as an appendix to the report. If the COC concentrations, based on laboratory analysis, are below Risk Based Screening Levels (RBSLs), please contact the project manager for approval to dispose of soil and/or groundwater on site. The SUPERB Account will not reimburse for transportation or treatment of soil and/or groundwater with concentrations below RBSLs.

On all correspondence or inquiries regarding this project, please reference **UST Permit #04736 and CA#38854**. If you have any questions, please feel free to contact me by phone at (803) 896-6649, by fax at (803) 896-6245, or email at koonjt@dhec.sc.gov.

Sincerely,

Justin Koon, Engineer Associate
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

enc: Cost Agreement

cc: KLM Environmental: PO Box 2704, Goose Creek, SC 29445 (w/ enc)
Technical File (w/ enc)

Approved Cost Agreement 38854

Facility: 04736 STOCKMAN OIL TWO INC
KOONJT
PO Number:

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
04 MOB/DEMOB						
		A	EQUIPMENT	1.0000	575.00	575.00
		B	PERSONNEL	2.0000	290.00	580.00
17 DISPOSAL						
		A2	WASTEWATER - PUMPING TEST	3,000.0000	0.60	1,800.00
19 RPT/PROJECT MNGT & COORDINATIO						
		PCT	PERCENT	0.1500	17,163.00	2,574.45
23 EFR						
		A	8 HOUR EVENT	2.0000	3,000.00	6,000.00
		B	ADDITIONAL HOUR	32.0000	204.00	6,528.00
		C	OFF GAS TREATMENT	48.0000	35.00	1,680.00
				Total Amount		19,737.45

KLM Environmental, LLC

Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation
PO Box 2704 843-870-4285 Phone
Goose Creek, SC 29445 843-797-1893 Fax

UST
JUL 14 2010
PROGRAM

July 12, 2010

Mr. Justin Koon
SCDHEC – BUSTM
2600 Bull Street
Columbia, S.C. 29201

Re: Stockman Oil Two, Inc.
Permit # 04736 CA # 38854

Dear Mr. Koon,

This letter, along with its attachments, is presented to document the results of the Aggressive Fluid Vapor Recovery (AFVR) events performed on July 7th and July 8th, 2010. As you requested, the AFVR events on each well were conducted for 12 hours on consecutive days. Monitoring wells MW-5 and MW-6 contained free phase product and were gauged prior to each event. Results from each event are provided on the attached tables. A total of 11.5 gallons of petroleum product was recovered during the AFVR events. Emissions calculations were performed for each event and a total of 0.267 gallons of petroleum product were recovered as vapor. The actual amount recovered is most likely higher as exhaust gas concentrations were taken after carbon treatment which was necessary at this site. KLM recommends continued AFVR events at the site in order to remove the free phase petroleum product.

All of the remaining information requested in the AFVR letter is provided as an attachment. It has been a pleasure working with you on this project. Please call me directly if you have any questions at 843-870-4285.

Sincerely,

KLM Environmental, LLC

Mark L. Keller, PG
President

Enclosures(7): AFVR information tables; Waste Manifests; Emissions Calculations; Site Map

cc: Chip Stockman, Stockman Oil Two, Inc. (1138 Reynolds Ave., Greenwood, SC)

UST
DOCKET

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 7/7/10
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Wayne Infinger	General Weather Conditions: Sunny
Ambient Air Temperature: 76 Fahrenheit	Estimated Gallons of Product Removed: 6.5 gallons	Initial Product Thickness: MW-5 = 11.84, MW-6 = 8.94
Final Product Thickness: MW-5 = 0.84, MW-6 = 9.90	AFVR Start Time: 7:30	AFVR End Time: 19:30

Time(Readings Every 30 Minutes)	Recovery Rate				Air Emission Conc. Measurements in ppm (Carbon Filter on Exhaust Gas)*
	Vacuum Inches of Hg	Temp Degrees F	Stack Vel. mph	Humidity	
7:30	-21	80.1	3.0	77.3	17.7
8:00	-21	84.9	3.6	75.2	10.5
8:30	-21	87.4	3.7	67.2	31.8
9:00	-21	93.8	3.9	57.7	50.9
9:30	-21	102.4	4.0	51.5	99.6
10:00	-21	108.2	4.3	49.9	100.1
10:30	-21	117.8	4.4	45.3	80.3
11:00	-21	120.5	4.1	43.7	84.7
11:30	-21	120.1	3.5	42.6	55.6
12:00	-21	134.6	4.0	41.3	69.7
12:30	-21	129.0	3.7	36.4	44.5
13:00	-21	137.5	4.1	33.3	60.3
13:30	-21	134.5	4.1	31.7	75.7
14:00	-21	135.9	4.0	28.6	61.5
14:30	-21	133.5	3.8	30.8	42.2
15:00	-21	131.3	4.5	31.6	50.7
15:30	-21	128.8	4.3	29.4	44.3
16:00	-21	130.3	4.3	30.0	38.2
16:30	-21	132.6	4.5	31.1	66.8
17:00	-21	135.8	4.2	33.2	61.3
17:30	-21	126.6	4.6	28.4	54.4
18:00	-21	128.3	4.1	27.2	70.2
18:30	-21	130.3	3.9	23.1	55.8
19:00	-21	126.7	4.0	24.5	76.4
19:30	-21	135.0	3.7	21.7	50.9

	Start	End
MW-5	26.07 – 37.91	29.67 – 30.51
MW-6	25.32 – 34.26	25.02 – 34.92

KLM Environmental, LLC

Phase I· Phase II· Underground Storage Tanks·Soil & Water Sampling· Well Installation

AFVR Table
Stockman Oil Two, Inc.
1138 Reynolds Ave
Greenwood, SC
Site ID 04736 7/7/10

7/7/2010

Equations to determine Pollutant Mass Removal rate as gasoline (PMRg):

$PPM_w = PPM_{measured} =$	85.53529412
$PPM_d = PPM_w / (1-Bws) =$	97.18425078
$PPM_c = (PPM_d)(K) =$	388.7370031
$C_{c:m} = PPM_c(M_c/K_3) =$	193.9647448
$C_c = C_{c:m}(62.43x10^{-9}) =$	1.21092E-05
$PMR_c = C_c(Qstd)(60) =$	0.095894176
$PMR_g = (PMR_c)(M_g/M_{cg}) =$	**0.110978653 lbs of emissions per hour**
	0.142052676 Gallons of emissions per 12 hours

US Water Recovery

Non-Hazardous Wastewater Manifest

Number:

1. Generator's EPA ID# (if applicable): Waste ID Number:

2. Generator's Name and Mailing Address: Phone ( )
Stockman 0.1 (7-7-10)
PO#:

3. Agent of Generator and Mailing Address: Phone (843) 870-4285
KLM Environmental
Po Box 2704 Goose Creek SC 29445
PO#:

4. Transporter Company Name: Phone (843) 905-8759
Vaccum Recovery Tech
118 Spring Hall Dr. Suite E Goose Creek SC 29445
Truck & Trailer License Number:

5. Transporter U.S. EPA ID#:

6. Facility Name and Site Address: Phone: (843) 797-8674
U S Water Recovery
435 Old Mt. Holly Rd.
Mt. Holly, SC 29445
Fax: (843) 797-2126

Mailing Address: Phone: (843) 797-3111
U S Water Recovery
210 S. Cedar Street
Summerville, SC 29483
Fax: (843) 797-1884

7. Facility U.S. EPA ID#:

Start Level: End Level: Total Gallons: Tank Number

8. U.S. DOT Desciption	Container No.	Container Type	Unit	Quantity
Non-Hazardous, non-regulated waste water				208
Stockman 0.1 (7-8-10)				100
Youngs #53				81 (2drums)
Sm #133				46 (1drum)

9. Generator's Certification: I hereby declare that the contents of this consignment are not hazardous by definition or listing and are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and the laws of the State of South Carolina. I further certify that the contents of this consignment are as represented by the description contained on the Waste Profile Form previously submitted to and approved by the Designated Facility.

Printed/Typed Name: Jason Boots Signature: Jason Boots Date: 7-9-10

10. Transporter Acknowledgement of Receipt of Materials
Printed/Typed Name: Wayne J. Cross Signature: Wayne J. Cross Date: 7-9-10

11. Discrepancy indication space:

12. Facility Owner or Operator Certification of Receipt of Materials
Printed/Typed Name: David Wood Signature: David Wood Date: 7-9-10

White - Facility Yellow - Office Pink - Transporter Blue - Generator

6578

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 7/8/10
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Wayne Infinger	General Weather Conditions: Sunny
Ambient Air Temperature: 78 Fahrenheit	Estimated Gallons of Product Removed: 5 gallons	Initial Product Thickness: MW-6 = 7.72, MW-5 = 5.34
Final Product Thickness: MW-6 = 1.18, MW-5 = 6.56	AFVR Start Time: 4:30	AFVR End Time: 16:30

Time(Readings Every 30 Minutes)	Recovery Rate				Air Emission Conc. Measurements in ppm (Carbon Filter on Exhaust Gas)*
	Vacuum Inches of Hg	Temp Degrees F	Stack Vel. mph	Humidity	
4:30	-21	80.8	3.9	70.7	32.7
5:00	-21	84.2	4.2	69.2	27.5
5:30	-21	90.8	3.6	54.6	60.2
6:00	-21	94.5	3.7	55.2	53.9
6:30	-21	105.6	4.0	47.5	27.9
7:00	-21	111.9	4.3	44.7	34.8
7:30	-21	113.6	3.9	43.8	48.6
8:00	-21	119.3	4.1	40.3	50.2
8:30	-21	112.8	4.4	38.3	58.8
9:00	-21	121.2	4.3	37.9	70.5
9:30	-21	119.3	4.5	40.6	51.7
10:00	-21	120.9	4.1	38.8	64.8
10:30	-21	124.9	3.7	34.7	34.5
11:00	-21	128.8	4.8	31.1	31.1
11:30	-21	127.6	4.5	33.4	48.8
12:00	-21	130.3	4.7	32.6	30.7
12:30	-21	125.0	4.3	29.2	45.9
13:00	-21	133.2	4.8	26.7	51.9
13:30	-21	130.3	3.9	25.3	63.2
14:00	-21	132.1	4.3	24.9	41.6
14:30	-21	128.3	4.8	27.3	74.4
15:00	-21	131.1	4.4	29.4	61.7
15:30	-21	129.6	3.7	26.4	41.8
16:00	-21	132.1	4.1	25.6	46.3
16:30	-21	133.7	4.3	22.8	58.2

	Start	End
MW-5	26.07 – 37.91	29.67 – 30.51
MW-6	25.32 – 34.26	25.02 – 34.92

KLM Environmental, LLC
Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation

AFVR Table
Stockman Oil Two, Inc.
1138 Reynolds Ave
Greenwood, SC
Site ID 04736 7/8/10

7/8/2010

Equations to determine Pollutant Mass Removal rate as gasoline (PMRg):

$PPM_w = PPM_{measured} =$	71.27647059
$PPM_d = PPM_w / (1-Bws) =$	80.98353392
$PPM_c = (PPM_d)(K) =$	323.9341357
$C_{c:m} = PPM_c(M_c/K_3) =$	161.6306178
$C_c = C_{c:m}(62.43x10^{-9}) =$	1.00906E-05
$PMR_c = C_c(Qstd)(60) =$	0.084389964
$PMR_g = (PMR_c)(M_g/M_{cg}) =$	**0.097664789 lbs of emissions per hour**
	0.12501093 Gallons of emissions per 12 hours

US Water Recovery

Non-Hazardous Wastewater Manifest

Number:

1. Generator's EPA ID# (if applicable): Waste ID Number:

2. Generator's Name and Mailing Address: Phone ( )
Stockman 0.1 (7-7-10)
PO#:

3. Agent of Generator and Mailing Address: Phone (843) 870-4285
KLM Environmental
Po Box 2704 Goose Creek SC 29445
PO#:

4. Transporter Company Name: Phone (843) 908-8759
Vaccum Recovery Tech
118 Spring Hall Dr. Suite E Goose Creek SC 29445
Truck & Trailer License Number:

5. Transporter U.S. EPA ID#:

6. Facility Name and Site Address: Phone: (843) 797-8674
U S Water Recovery
435 Old Mt. Holly Rd.
Mt. Holly, SC 29445
Fax: (843) 797-2126

Mailing Address: Phone: (843) 797-3111
U S Water Recovery
210 S. Cedar Street
Summerville, SC 29483
Fax: (843) 797-1884

7. Facility U.S. EPA ID#:

Start Level: End Level: Total Gallons: Tank Number:

8. U.S. DOT Desciption	Container No.	Container Type	Unit	Quantity
Non-Hazardous, non-regulated waste water				208
Stockman 0.1 (7-8-10)				100
Youngs #53				81 (2 drums)
Jm #133				46 (1 drum)

9. Generator's Certification: I hereby declare that the contents of this consignment are not hazardous by definition or listing and are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and the laws of the State of South Carolina. I further certify that the contents of this consignment are as represented by the description contained on the Waste Profile Form previously submitted to and approved by the Designated Facility.

Printed/Typed Name: Signature: Date:
Jason Boot Jason Boot 7-9-10

10. Transporter Acknowledgement of Receipt of Materials
Printed/Typed Name: Signature: Date:
Wayne J. Cross Wayne J. Cross 7-9-10

11. Discrepancy indication space:

12. Facility Owner or Operator: Certification of Receipt of Materials
Printed/Typed Name: Signature: Date:
David Wood David Wood 7-9-10

White - Facility Yellow - Office Pink - Transporter Blue - Generator

6578

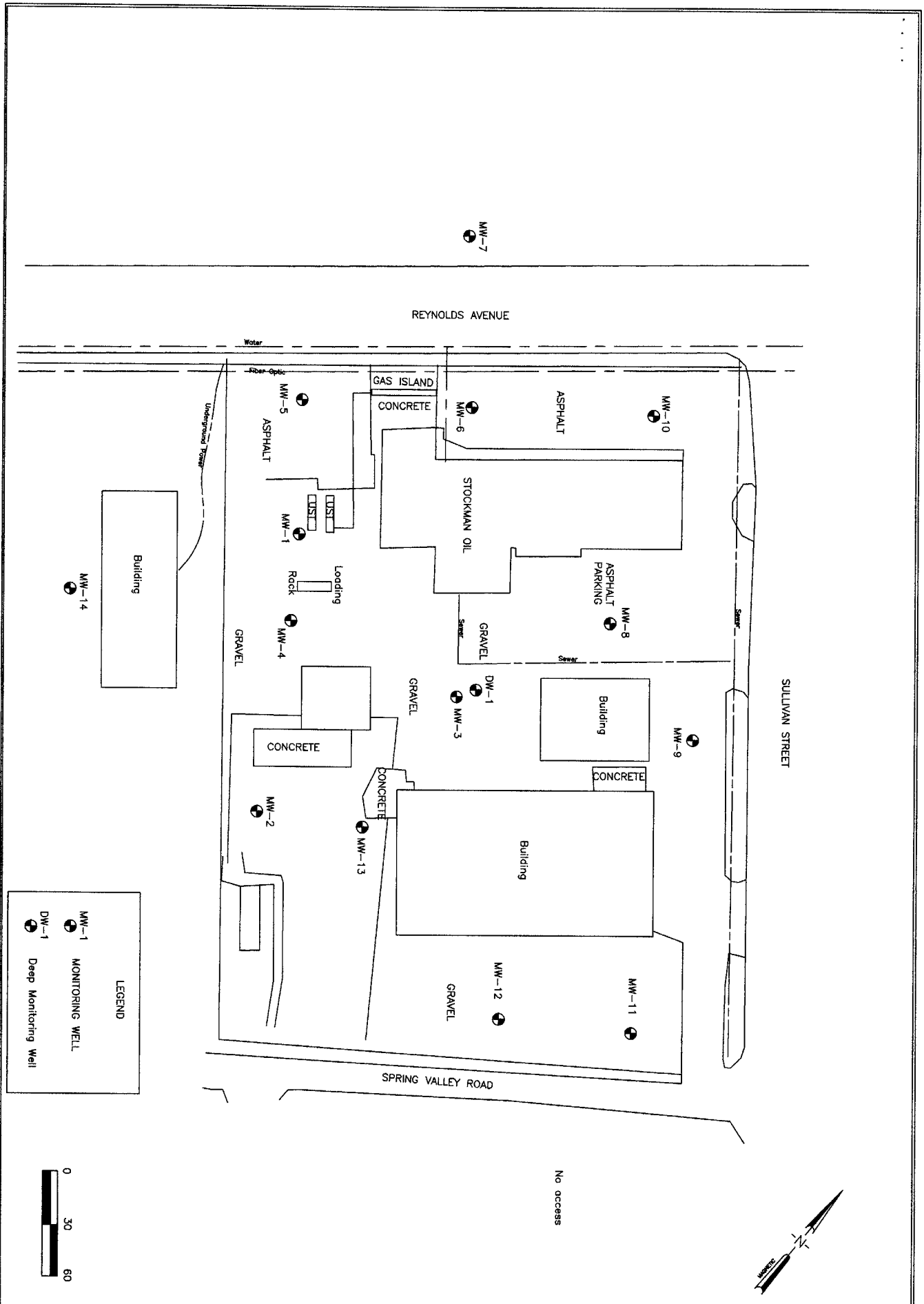

FIGURE 2
SITE MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

KLM Environmental, LLC
Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation

KLM Environmental, LLC

Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation
PO Box 2704
Goose Creek, SC 29445
843-870-4285 Phone
843-797-1893 Fax

UST
AUG 0 4 2010
PROGRAM

July 29, 2010

Mr. Justin Koon
SCDHEC – BUSTM
2600 Bull Street
Columbia, S.C. 29201

Re: Stockman Oil Two, Inc.
Permit # 04736 CA # 38854

Dear Mr. Koon,

This letter, along with its attachments, is presented to document the results of the Aggressive Fluid Vapor Recovery (AFVR) events performed on July 7th and July 8th, 2010. As you requested, the AFVR events on each well were conducted for 12 hours on consecutive days. Monitoring wells MW-5 and MW-6 contained free phase product and were gauged prior to each event. The drop tube was installed to a depth of six inches below the bottom of the product during the AFVR events. Results from each event are provided on the attached tables. A total of 11.5 gallons of petroleum product was recovered during the AFVR events. Emissions calculations were performed for each event and a total of 0.267 gallons of petroleum product were recovered as vapor. The actual amount recovered is most likely higher as exhaust gas concentrations were taken after carbon treatment which was necessary at this site. KLM recommends continued AFVR events at the site in order to remove the free phase petroleum product.

All of the remaining information requested in the AFVR letter is provided as an attachment. It has been a pleasure working with you on this project. Please call me directly if you have any questions at 843-870-4285.

Sincerely,

KLM Environmental, LLC

Mark L. Keller, PG
President

DOCKET
UST

Enclosures(7): AFVR information tables; Waste Manifests; Emissions Calculations; Site Map

cc: Chip Stockman, Stockman Oil Two, Inc. (1138 Reynolds Ave., Greenwood, SC)

MARK L. KELLER
REGISTERED
No. 2311
7/29/10
SOUTH CAROLINA
PROFESSIONAL GEOLOGIST

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 7/7/10
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Wayne Infinger	General Weather Conditions: Sunny
Ambient Air Temperature: 76 Fahrenheit	Estimated Gallons of Product Removed: 6.5 gallons	Initial Product Thickness: MW-5 = 11.84, MW-6 = 8.94
Final Product Thickness: MW-5 = 0.84, MW-6 = 9.90	AFVR Start Time: 7:30	AFVR End Time: 19:30

Time(Readings Every 30 Minutes)	Recovery Rate				Air Emission Conc. Measurements in ppm (Carbon Filter on Exhaust Gas)*
	Vacuum Inches of Hg	Temp Degrees F	Stack Vel. mph	Humidity	
7:30	-21	80.1	3.0	77.3	17.7
8:00	-21	84.9	3.6	75.2	10.5
8:30	-21	87.4	3.7	67.2	31.8
9:00	-21	93.8	3.9	57.7	50.9
9:30	-21	102.4	4.0	51.5	99.6
10:00	-21	108.2	4.3	49.9	100.1
10:30	-21	117.8	4.4	45.3	80.3
11:00	-21	120.5	4.1	43.7	84.7
11:30	-21	120.1	3.5	42.6	55.6
12:00	-21	134.6	4.0	41.3	69.7
12:30	-21	129.0	3.7	36.4	44.5
13:00	-21	137.5	4.1	33.3	60.3
13:30	-21	134.5	4.1	31.7	75.7
14:00	-21	135.9	4.0	28.6	61.5
14:30	-21	133.5	3.8	30.8	42.2
15:00	-21	131.3	4.5	31.6	50.7
15:30	-21	128.8	4.3	29.4	44.3
16:00	-21	130.3	4.3	30.0	38.2
16:30	-21	132.6	4.5	31.1	66.8
17:00	-21	135.8	4.2	33.2	61.3
17:30	-21	126.6	4.6	28.4	54.4
18:00	-21	128.3	4.1	27.2	70.2
18:30	-21	130.3	3.9	23.1	55.8
19:00	-21	126.7	4.0	24.5	76.4
19:30	-21	135.0	3.7	21.7	50.9

	Start	End
MW-5	26.07 – 37.91	29.67 – 30.51
MW-6	25.32 – 34.26	25.02 – 34.92

KLM Environmental, LLC

Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation

AFVR Table
Stockman Oil Two, Inc.
1138 Reynolds Ave
Greenwood, SC
Site ID 04736 7/7/10

7/7/2010

Equations to determine Pollutant Mass Removal rate as gasoline (PMRg):

$PPM_w = PPM_{measured} =$	85.53529412
$PPM_d = PPM_w / (1-Bws) =$	97.18425078
$PPM_c = (PPM_d)(K) =$	388.7370031
$C_{c:m} = PPM_c(M_c/K_3) =$	193.9647448
$C_c = C_{c:m}(62.43x10^{-9}) =$	1.21092E-05
$PMR_c = C_c(Qstd)(60) =$	0.095894176
$PMR_g = (PMR_c)(M_g/M_{cg}) =$	**0.110978653 lbs of emissions per hour**
	0.142052676 Gallons of emissions per 12 hours

Site Location: Stockman Oil Two Inc, 1138 Reynolds Ave, Greenwood, SC	Date: 7/8/10
Site Conditions: Site was in good condition. Wells were found in good condition.	

AFVR Contractor: Vacuum Recovery Technologies, LLC	Field Personnel: KLM Environmental, LLC: Wayne Infinger	General Weather Conditions: Sunny
Ambient Air Temperature: 78 Fahrenheit	Estimated Gallons of Product Removed: 5 gallons	Initial Product Thickness: MW-6 = 7.72, MW-5 = 5.34
Final Product Thickness: MW-6 = 1.18, MW-5 = 6.56	AFVR Start Time: 4:30	AFVR End Time: 16:30

Time(Readings Every 30 Minutes)	Recovery Rate				Air Emission Conc. Measurements in ppm (Carbon Filter on Exhaust Gas)*
	Vacuum Inches of Hg	Temp Degrees F	Stack Vel. mph	Humidity	
4:30	-21	80.8	3.9	70.7	32.7
5:00	-21	84.2	4.2	69.2	27.5
5:30	-21	90.8	3.6	54.6	60.2
6:00	-21	94.5	3.7	55.2	53.9
6:30	-21	105.6	4.0	47.5	27.9
7:00	-21	111.9	4.3	44.7	34.8
7:30	-21	113.6	3.9	43.8	48.6
8:00	-21	119.3	4.1	40.3	50.2
8:30	-21	112.8	4.4	38.3	58.8
9:00	-21	121.2	4.3	37.9	70.5
9:30	-21	119.3	4.5	40.6	51.7
10:00	-21	120.9	4.1	38.8	64.8
10:30	-21	124.9	3.7	34.7	34.5
11:00	-21	128.8	4.8	31.1	31.1
11:30	-21	127.6	4.5	33.4	48.8
12:00	-21	130.3	4.7	32.6	30.7
12:30	-21	125.0	4.3	29.2	45.9
13:00	-21	133.2	4.8	26.7	51.9
13:30	-21	130.3	3.9	25.3	63.2
14:00	-21	132.1	4.3	24.9	41.6
14:30	-21	128.3	4.8	27.3	74.4
15:00	-21	131.1	4.4	29.4	61.7
15:30	-21	129.6	3.7	26.4	41.8
16:00	-21	132.1	4.1	25.6	46.3
16:30	-21	133.7	4.3	22.8	58.2

	Start	End
MW-5	26.89 – 32.23	26.69 – 33.25
MW-6	25.69 – 33.41	26.93 – 28.11

KLM Environmental, LLC

Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation

AFVR Table
Stockman Oil Two, Inc.
1138 Reynolds Ave
Greenwood, SC
Site ID 04736 7/8/10

7/8/2010

Equations to determine Pollutant Mass Removal rate as gasoline (PMRg):

$PPM_w = PPM_{measured} =$	71.27647059
$PPM_d = PPM_w / (1-Bws) =$	80.98353392
$PPM_c = (PPM_d)(K) =$	323.9341357
$C_{c:m} = PPM_c(M_c/K_3) =$	161.6306178
$C_c = C_{c:m}(62.43x10^{-9}) =$	1.00906E-05
$PMR_c = C_c(Qstd)(60) =$	0.084389964
$PMR_g = (PMR_c)(M_g/M_{cg}) =$	**0.097664789 lbs of emissions per hour**
	0.12501093 Gallons of emissions per 12 hours

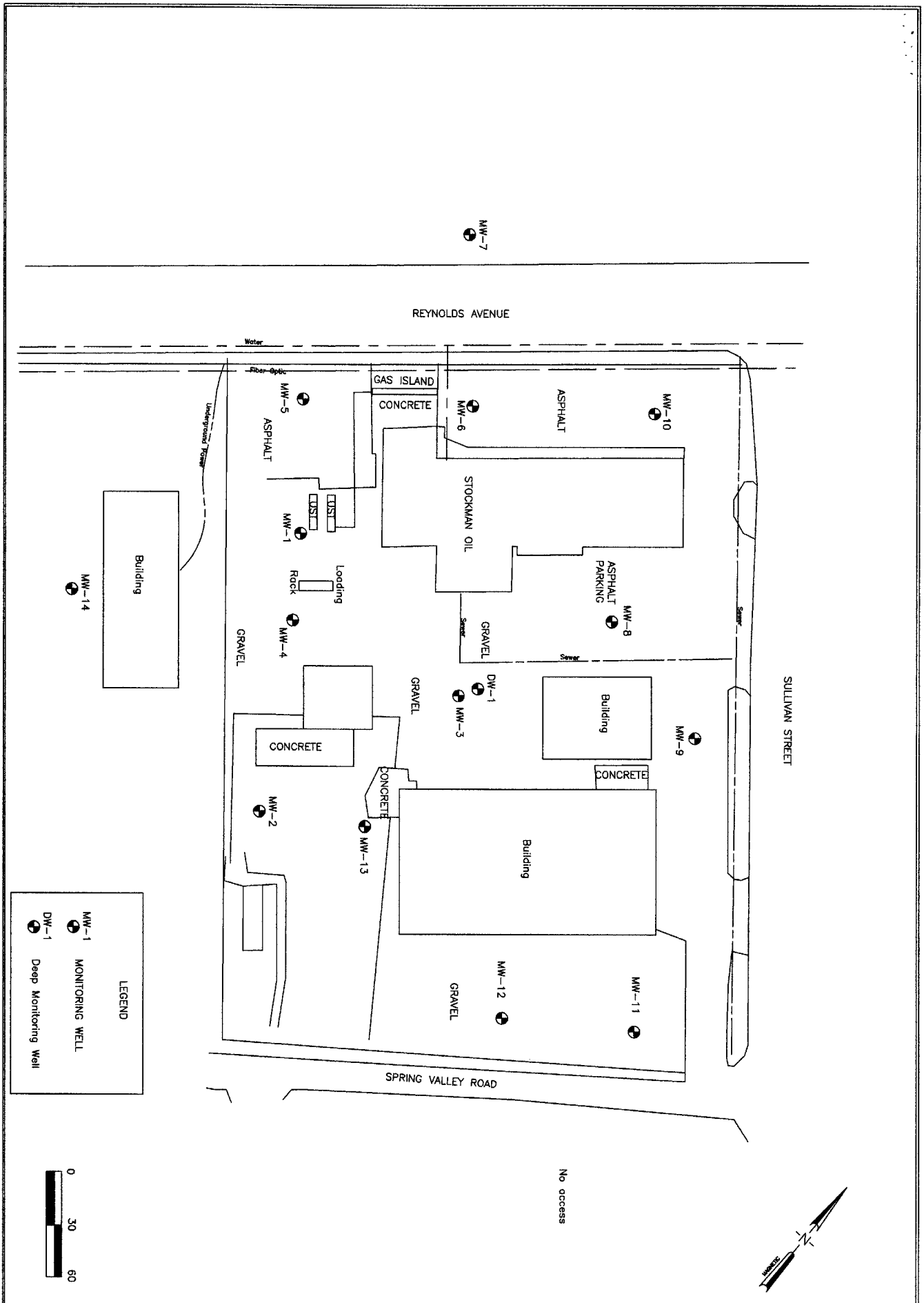

FIGURE 2
SITE MAP
STOCKMAN OIL TWO
GREENWOOD, SC SITE ID# 04736

KLM Environmental, LLC
Phase I·Phase II·Underground Storage Tanks·Soil & Water Sampling·Well Installation