1676/1510

1510
GW 220
KING/KENT

SECOR
International Incorporated

April 2, 1997

APR 9 1997

Mr. Jeff Goold
Texaco Refining and Marketing
Environment, Health & Safety
3400 188th Street SW, Suite 630
Lynnwood, Washington 98037

RECEIVED
JUN 13 1997
DEPT. OF ECOLOGY

RE: MONTHLY REMEDIATION SYSTEM STATUS REPORT
FEBRUARY 1997
TEXACO FACILITY 63-232-0307
1637 WEST MEEKER STREET, KENT, WASHINGTON
SECOR PN: 00111-101-15

Dear Mr. Goold:

SECOR International Incorporated (SECOR) has prepared this monthly summary in accordance with the scope of work outlined in our proposal dated October 25, 1996. The soil and groundwater remedial system installed at the site contains three different components for the extraction of groundwater, soil-vapor, and the injection of oxygen through air-sparging. A description of these systems and a description of the performance during the month of February is contained in the following sections.

LIQUID RING VACUUM EXTRACTION SYSTEM

Soil vapor and groundwater extraction is accomplished by a liquid-ring vacuum pump connected to recovery wells RW-6, RW-7, RW-8, RW-9, and RW-10 (Figure 1, Site Plan). Groundwater is treated along with the water extracted from the electric submersible pump system through an air stripping tower prior to discharge. A summary of the operational data for the liquid ring pump system is included in Table 1.

The fouling from iron is currently being addressed by proactive maintenance and periodic addition of acid to the extraction wells. A summary of the operational performance is included as Table 2. Unscheduled system maintenance (see field notes) was performed during each site visit in conjunction with routine monitoring activities during the month of February. SECOR will continue performing out of scope maintenance but is proactively developing a scheduled maintenance program to address iron scale buildup and increase operation time. Field notes from site visits conducted during the month are included as Attachment 1.

A total of 66,846 gallons of groundwater were extracted by the liquid ring vacuum extraction system during the month which removed 6 pounds of hydrocarbon mass. Since initial system operation on May 21, 1996, the dual phase extraction unit has recovered a total of 1,491,970 gallons of groundwater. Total hydrocarbon mass removal from groundwater since startup is estimated at 104 pounds of total petroleum hydrocarbons (TPH).

15400 S.E. 30th Place, Suite 100, Bellevue, WA 98007-6546 (206) 641-9900 (206) 641-9092 FAX www.secor.com

A total of 50 pounds of TPH was removed in January in the vapor phase from the liquid ring vacuum extraction system. Since startup, total hydrocarbon mass removal from soil vapors is estimated at 1,096 pounds of TPH.

ELECTRIC SUBMERSIBLE PUMP GROUNDWATER EXTRACTION SYSTEM

Groundwater is extracted from off-site wells RW-2, RW-11, RW-12, and RW-13 using individual submersible pumps and is treated along with the water extracted from the liquid ring extraction unit through an air stripping tower prior to discharge.

In February, the target groundwater extraction rates were as follows:

RW-2	5 gpm
RW-11	0.8 gpm
RW-12	3 gpm
RW-13	2 gpm

The iron fouling associated with the operation of the electric submersible pumping system continued to be addressed with proactive maintenance during the month. SECOR is currently addressing ongoing operational problems with the submersible pumps. A summary of the operational data for the electric submersible pump system is included as Table 3.

A total of 294,930 gallons of groundwater were extracted during the month which removed approximately 0.9 pound of hydrocarbon mass. Since initial system operation on June 26, 1996, the groundwater extraction unit has recovered a total of 1,686,470 gallons of groundwater. Total hydrocarbon mass removal is estimated at 5.7 pounds of TPH since startup.

Groundwater elevations increased approximately 0.8 feet relative to January 1997. A total of 2.6 inches of precipitation were recorded at the site during the month. Groundwater elevations are anticipated to continue to increase during the month of March and groundwater extraction rates will be adjusted to maintain capture at the minimum pumping rate.

Unscheduled system maintenance was conducted four times during the month (see attached Field Reports). A summary of the operational performance is included at Table 2. Field notes from site visits conducted during the month are included as Attachment 1.

AIR SPARGING AND SOIL VAPOR EXTRACTION

Soil vapor extraction is accomplished from recovery wells RW-2, RW-11, RW-12, and RW-13 using a 3 horsepower Rotron™ regenerative vacuum blower. Extracted vapors from the system are treated through vapor phase activated carbon prior to discharge to the atmosphere.

Air sparging is conducted in off-site air injection wells AI-1 through AI-7. Air injection is accomplished through the use of oil-less air compressors located in the on-site treatment compound.

The vapor extraction system removed 8 pounds of hydrocarbon mass in February and a total of 78 pounds of hydrocarbon mass have been removed since startup. Table 3 presents a summary of vapor extraction and air sparging data. Air injection flow has been distributed to sparge wells AI-4, AI-5, AI-6, and AI-7, with limited flow going to injection wells AI-1, AI-2, and AI-3. The distribution of the air was adjusted to minimize iron precipitate in the groundwater extraction wells.

COMBINED SYSTEM DATA

The combined remediation system removed over 65 pounds of TPH in the month of February and 1,284 pounds of TPH since startup. The system is currently operating within the operating limitations of the NPDES discharge permit and the PSAPCA operating permit. Analytical results of water and air samples collected during the month are presented on Table 5.

PLANNED ACTIVITIES FOR MARCH

- Perform routine monitoring
- Continue to troubleshoot maintenance problems with iron fouling

SECOR appreciates the opportunity to provide consulting services to Texaco. If you have any questions, comments, or require additional information, please call us at (206) 641-9900.

Sincerely,

SECOR International Incorporated

Christian E. Houck, P.E.
Associate Engineer

Paul R. Woods, P.E.
Principal Engineer

CEH/PRW:kds

Attachments

TABLES

Monthly Remediation System Status Report
February 1997
Texaco Facility 63-232-0307
1637 West Meeker Street
Kent, Washington
Texaco Refining and Marketing
SECOR PN: 00111-101-15
April 2, 1997

Table 1: Liquid Ring Pump Extraction System
February 1997 Data Summary
Texaco Facility No. 63-232-0307
1637 West Meeker Street
Kent, Washington

Date	LRP (Total Gallonage)	LRP (GPM)	Air Flow (ACFM)	PID
1/31/97	1,425,124	2.7	--	--
2/1/97	1,427,014	1.3	--	--
2/2/97	1,432,318	1.7	--	--
2/3/97	1,434,578	1.6	--	--
2/4/97	1,436,218	1.1	--	--
2/5/97	1,438,198	1.4	--	--
2/6/97*	1,441,818	2.5	56	160
2/7/97	1,445,758	2.7	--	--
2/8/97	1,449,438	2.6	--	--
2/9/97	1,453,448	2.8	--	--
2/10/97	1,457,198	2.6	--	--
2/11/97	1,459,948	1.9	61	58
2/12/97	1,462,238	1.6	--	--
2/13/97	1,464,338	1.5	--	--
2/14/97	1,466,288	1.4	--	--
2/15/97	1,467,978	1.2	--	--
2/16/97	1,469,678	1.2	--	--
2/17/97	1,470,428	0.5	--	--
2/18/97	1,471,311	0.7	76	57
2/19/97	1,473,171	1.3	--	--
2/20/97	1,475,071	1.3	--	--
2/21/97	1,476,841	1.2	--	--
2/22/97	1,478,501	1.2	--	--
2/23/97	1,481,851	2.3	--	--
2/24/97	1,486,411	3.2	--	--
2/25/97	1,490,781	3.0	--	--
2/26/97	1,491,970	1.4	58	56
2/27/97	1,491,970	0.0	--	--
2/28/97	1,491,970	0.0	--	--
Monthly Total	66,846	--	--	--
Average	--	1.6	62	83

* Sample Date

-- = Not Measured

Total Pounds in TPH Removed in February

Water = 6

Vapor = 50

Total Pounds TPH Removed Project to Date

Water = 104

Vapor = 1096

Table 2: System Monitoring and Maintenance Summary
February 1997 Data Summary
Texaco Facility No. 63-232-0307
1637 West Meeker Street
Kent, Washington

Date	Activity
2/6/97	Routine Monitoring and Unscheduled Maintenance * Performed monthly performance and NPDES compliance monitoring. * Discharge from groundwater treatment continuing under NPDES discharge authorization. * Vapor emmissions from LRP and VES treated through carbon and discharged under PSAPCA authorization. * RW-12 pump breaker tripped. Restarted pump.
2/11/97	Routine Monitoring and Unscheduled Maintenance * Perform NPDES compliance monitoring. * Discharge from groundwater treatment continuing under NPDES discharge authorization. * Vapor emmissions from LRP and VES treated through carbon and discharged under PSAPCA authorization. * Disassembled and cleaned pumps for RW-2 and RW-13 to remove iron scaling. * Disassembled and cleaned flow meter for RW-13 to remove iron scaling. * Drained air sparging rotameters due to condensate buildup.
2/18/97	Routine Monitoring and Unscheduled Maintenance * Perform NPDES compliance monitoring. * Discharge from groundwater treatment continuing under NPDES discharge authorization. * Vapor emmissions from LRP and VES treated through carbon and discharged under PSAPCA authorization. * Cleaned the liquid ring pump recirculation line, Y-strainer, and flow regulator to remove iron scaling.
2/26/97	Routine Monitoring and Unscheduled Maintenance * Performed NPDES compliance monitoring. * Installed new pump in RW-2, cleaned batch tank, effluent tank, and all four groundwater flow meters to remove iron scaling.

Table 3: Electric Submersible Pump Groundwater Extraction System
February 1997 Data Summary
Texaco Facility No. 63-232-0307
1637 West Meeker Street
Kent, Washington

Date	RW-11		RW-12		RW-13		RW-2		Pumping System Total (Gallonage)	Rain (Inches)
	Total Gallonage	GPM	Total Gallonage	GPM	Total Gallonage	GPM	Total Gallonage	GPM		
1/31/97	114,610	2.2	489,880	3.3	337,020	1.2	450,030	2.1	1,391,540	0.4
2/1/97	117,820	2.2	503,040	9.1	338,290	0.9	451,830	1.3	1,410,980	0.1
2/2/97	121,130	2.3	516,090	9.1	339,390	0.8	453,580	1.2	1,430,190	0.0
2/3/97	124,560	2.4	528,910	8.9	340,310	0.6	455,360	1.2	1,449,140	0.0
2/4/97	128,010	2.4	541,490	8.7	341,240	0.6	457,130	1.2	1,467,870	0.0
2/5/97	131,440	2.4	551,000	6.6	342,020	0.5	459,320	1.5	1,483,780	0.0
2/6/97	134,720	2.3	555,480	3.1	342,650	0.4	462,170	2.0	1,495,020	0.0
2/7/97	137,760	2.1	566,620	7.7	343,230	0.4	464,110	1.3	1,511,720	0.0
2/8/97	140,630	2.0	577,550	7.6	343,920	0.5	465,960	1.3	1,528,060	0.0
2/9/97	143,370	1.9	588,220	7.4	344,330	0.3	467,780	1.3	1,543,700	0.0
2/10/97	145,980	1.8	598,550	7.2	345,000	0.5	469,550	1.2	1,559,080	0.0
2/11/97	148,430	1.7	605,470	4.8	345,220	0.2	471,390	1.3	1,570,510	0.4
2/12/97	150,690	1.6	609,130	2.5	345,220	0.0	473,960	1.8	1,579,000	0.1
2/13/97	152,970	1.6	612,450	2.3	345,220	0.0	476,540	1.8	1,587,180	0.1
2/14/97	155,310	1.6	615,570	2.2	345,220	0.0	479,060	1.8	1,595,160	0.2
2/15/97	157,840	1.8	618,540	2.1	345,220	0.0	481,420	1.6	1,603,020	0.0
2/16/97	160,760	2.0	618,540	0.0	345,220	0.0	483,460	1.4	1,607,980	0.0
2/17/97	163,810	2.1	618,540	0.0	345,220	0.0	485,280	1.3	1,612,850	0.0
2/18/97	166,870	2.1	621,760	2.2	345,220	0.0	486,720	1.0	1,620,570	0.4
2/19/97	169,920	2.1	631,480	6.8	345,220	0.0	487,610	0.6	1,634,230	0.5
2/20/97	172,950	2.1	640,780	6.5	345,220	0.0	488,410	0.6	1,647,360	0.0
2/21/97	175,980	2.1	649,640	6.2	345,220	0.0	489,320	0.6	1,660,160	0.0
2/22/97	178,830	2.0	658,200	5.9	345,220	0.0	490,240	0.6	1,672,490	0.0

Table 3: Electric Submersible Pump Groundwater Extraction System
February 1997 Data Summary
Texaco Facility No. 63-232-0307
1637 West Meeker Street
Kent, Washington

Date	RW-11		RW-12		RW-13		RW-2		Pumping System Total (Gallonage)	Rain (Inches)
	Total Gallonage	GPM	Total Gallonage	GPM	Total Gallonage	GPM	Total Gallonage	GPM		
2/23/97	181,540	1.9	661,000	1.9	345,220	0.0	490,920	0.5	1,678,680	0.0
2/24/97	184,120	1.8	661,000	0.0	345,220	0.0	490,920	0.0	1,681,260	0.0
2/25/97	186,580	1.7	661,000	0.0	345,220	0.0	490,920	0.0	1,683,720	0.0
2/26/97	188,030	1.0	661,920	0.6	345,460	0.2	491,060	0.1	1,686,470	0.1
2/27/97	188,030	0.0	661,920	0.0	345,460	0.0	491,060	0.0	1,686,470	0.2
2/28/97	188,030	0.0	661,920	0.0	345,460	0.0	491,060	0.0	1,686,470	0.1
Monthly Total	73,420	--	172,040	--	8,440	--	41,030	--	294,930	2.6

Total Pounds TPH Removed in February = 0.9
Total Pounds TPH Removed Project to Date = 5.7

* Influent Sampling Date

Table 4: Vapor Extraction and Air Sparging System
February 1997 Data Summary
Texaco Facility No. 63-232-0307
1637 West Meeker Street
Kent, Washington

VAPOR EXTRACTION SYSTEM

	RW-2		RW-11		RW-12*		RW-13*		Total	
Date	Flow Rate (cfm)	PID	Flow Rate (cfm)	PID	Flow Rate (cfm)	PID	Flow Rate (cfm)	PID	Flow Rate (cfm)	PID
2/6/97	6.6	22.0	27.9	22.0	--	--	--	--	34.5	22.0
Average	6.6	22.0	27.9	22.0	--	--	--	--	34.5	22.0

* Flow to RW-12 and RW-13 was closed to maximize the vacuum applied to RW-2 and RW-11 on November 18, 1996.

Total Pounds Removed in February 1997 = 8
Total Pounds Removed Project To Date = 78

AIR SPARGING SYSTEM

Date	Flow to AI-1 (cfm)	Flow to AI-2 (cfm)	Flow to AI-3 (cfm)	Flow to AI-4 (cfm)	Flow to AI-5 (cfm)	Flow to AI-6 (cfm)	Flow to AI-7 (cfm)
2/6/97	--	--	--	3.1	2.5	3.1	1.6
2/11/97	--	--	1.8	3.2	1.6	1.6	1.6
2/18/97	--	--	1.9	1.8	2.0	2.0	1.9
2/26/97	--	--	--	1.8	8.6	2.6	2.4

Table 5: System Laboratory Analytical Data
February 1997 Data Summary
Texaco Facility No. 63-232-0307
1637 West Meeker Street
Kent, Washington

Sample Date	Matrix	Sample Location	TPH-g	Benzene	Toluene	Ethyl Benzene	Total Xylenes
2/6/97	Water	RW-2	<50.0	6.73	<0.50	1.00	5.42
2/6/97	Water	RW-11	1310	3.2	1.4	33.3	155
2/6/97	Water	RW-12	<50.0	0.56	<0.50	<0.50	<1.00
2/6/97	Water	RW-13	<50.0	9.34	<0.50	<0.50	<1.00
2/6/97	Water	LRP Effluent	721	62.7	114	14.0	103
2/6/97	Water	Stripper Effluent	<50.0	1.83	2.85	1.02	5.38
2/11/97	Water	Stripper Effluent	77.1	3.78	6.35	1.35	8.04
2/18/97	Water	Stripper Effluent	99.4	4.13	7.05	1.39	8.89
2/26/97	Water	Stripper Effluent	51.5	2.81	4.76	0.91	5.47
2/6/97	Water	Stripper Influent	276	13.6	20.8	6.23	37.5
2/11/97	Water	Stripper Influent	425	19.5	32.1	7.67	44.2
2/18/97	Water	Stripper Influent	519	24.6	41.7	7.93	50.3
2/26/97	Water	Stripper Influent	392	23.1	40.0	7.73	47.4

NOTES:

1. Water matrix expressed in micrograms per liter (µg/l).
2. Air matrix expressed in milligrams per cubic meter (mg/m^3).
3. Gasoline range total petroleum hyudrocarbons (TPH-g) by Ecology Method WTPH-g.
4. Benzene, Toluene, ethyl benzene, and total xylenes by EPA Method 8020A.

ATTACHMENT 1
FIELD NOTES

Monthly Remediation System Status Report
February 1997
Texaco Facility 63-232-0307
1637 West Meeker Street
Kent, Washington
Texaco Refining and Marketing
SECOR PN: 00111-101-15
April 2, 1997

SECOR

Field Report

Field Office: Bellevue

To:

Attn: C. Hewlett

Page 1 of 2

Date: 2/6/97

Job No.: 00111.101.15

Task No.: O+M

Project: 1x 63-232-0307

Location: 1637 W. Meeker St.

Weather: Sunny

Temp.: 45°F

Client: Texaco

Contractor:

11:00 Leave Office

11:40 Arrive @ site

- Insulation in the ceiling is hanging down in several areas. Secure insulation in the ceiling
- All systems running

11:45 Begin sampling system.

- EFFLRP, INFTS, & EFFTS water samples were lt orange in color & had little signs of turbidity with no odor or sheen.

12:40 Begin Monitoring system

- Clean Recirc. strainer

13:00 W. Adams Arrives @ site

- RW-12 pump breaker is tripped. Restart pump.

14:20 Call M. Murphy. Informed me to ~~to~~ partially close off the ball valve to the batch pump to create more back pressure on the pump.

- Close batch pump ball valve ≈ 40% watch water levels in batch tanks. Levels are O.K.

14:30 Begin logging H_2O levels to computer

Computer time - 14:28:48 Watch time - 14:28:40

Equipment Used:

Contractor Hours:

Staff Hrs. 6½ Hrs

Mileage:

Copies To:

Project Manager:

Reviewed By:

Prepared By: Ben Kalil

SECOR Field Report Rev. 9/94

SECOR

Field Report

Field Office: Bellevue

To:

Attn: C. Hoeck

Page 2 of 2

Date: 2/6/97

Job No.: 00111-101-15

Task No.:

Project: Tx 63-232-0307

Location:

Weather:

Temp.:

Client:

Contractor:

- Begin taking H_2O levels
- RMW-1 is covered by a car.
- Water in B5 is bubbling over well head.
- RW-8 is stagnated. Restart well
- Call M. Murphy. Informed me to start up AI-3 + decrease flow to AI-6.

16:16 Finish taking water levels
- Decrease Flow to AI-6. Flow @ 1.5 SCFM
- Increase Flow to AI-3. Flow @ 3.0 SCFM

1635 Secure site/MOB

Note:

W. Adams left site @ 15:35

Equipment Used:

Contractor Hours:

Staff Hrs. 6 ½ Hrs

Mileage:

Copies To:

Project Manager:

Reviewed By:

Prepared By:

WEEKLY FIELD DATA COLLECTION FORM
SOIL AND GROUNDWATER REMEDIATION SYSTEM
Texaco Facility No. 63-232-0307
1637 West Meeker Street, Kent, WA

Date: ___/___/___
Time: _____
SECOR Rep: _____

Equipment Calibration Information		Groundwater Treatment Unit:		Vapor Extraction Unit:		Air Sparging Unit:	
		Operating upon arrival (Y/N):		Operating upon arrival (Y/N):		Operating upon arrival (Y/N):	
		Effluent recipient (storm/sanitary):		Air Flow from RW-2 (acfm):		Flow to AI-1 (cfm):	
		Effluent Velocity (digital meter on panel)		Air Temperature from RW-2 (°F):		Pressure to AI-1 (psi):	
		Operating upon departure (Y/N):		RW-2 Vacuum ("H_20):		Flow to AI-2 (cfm):	
Sample Name	Time	Groundwater Extraction Unit:		RW-2 PID reading (ddu):		Pressure to AI-2 (psi):	
W0307-INFTS		Operating upon arrival (Y/N):		Air Flow from RW-11 (acfm):		Flow to AI-3 (cfm):	
W0307-EFFTS		RW-2 meter reading (gallons):		Air Temperature from RW-11 (°F):		Pressure to AI-3 (psi):	
Dual Phase Extraction Unit:		RW-2 pressure (psi):		RW-11 Vacuum ("H_20):		Flow to AI-4 (cfm):	
Operating upon arrival (Y/N):		RW-2 flow rate (gpm):		RW-11 PID reading (ddu):		Pressure to AI-4 (psi):	
Vacuum at Inlet to LRP ("Hg):		RW-11 meter reading (gallons):		Air Flow from RW-12 (acfm):		Flow to AI-5 (cfm):	
Air Flow from DPE unit (acfm):		RW-11 pressure (psi):		Air Temperature from RW-12 (°F):		Pressure to AI-5 (psi):	
Air Temperature from DPE unit (oF):		RW-11 flow rate (gpm):		RW-12 Vacuum ("H_20):		Flow to AI-6 (cfm):	
Pressure at air flow port ("H20):		RW-12 meter reading (gallons):		RW-12 PID reading (ddu):		Pressure to AI-6 (psi):	
Effluent DPE PID reading (ddu):		RW-12 pressure (psi):		Air Flow from RW-13 (acfm):		Flow to AI-7 (cfm):	
Operating upon departure (Y/N):		RW-12 flow rate (gpm):		Air Temperature from RW-13 (°F):		Pressure to AI-7 (psi):	
Vapor Treatment Unit:		RW-13 meter reading (gallons):		RW-13 Vacuum ("H_20):		Operating upon departure (Y/N):	
PID between carbon (ddu):		RW-13 pressure (psi):		RW-13 PID reading (ddu):			
PID after carbon (ddu):		RW-13 flow rate (gpm):		Operating upon departure (Y/N):			
Change carbon (# drums/N)		Operating upon departure (Y/N):					

Time	Well	Frequency	Well Elevation (Ft-MSL)	Depth To Water (feet)	Depth To Product (feet)	Measured Product Thickness (feet)	Vacuum Response ("WC/"Hg)
	MW-5	weekly	35.42				
	MW-6	weekly	35.74				
	MW-21	weekly	36.43				
	MW-22	weekly	36.57				
	RW-3	weekly	33.65				
	RW-5	weekly	35.26				
	RW-6	weekly	35.23				
	RW-7	weekly	36.02				
	RW-8	weekly	35.16				
	RW-9	weekly	35.83				
	RW-10	weekly	35.41				

SCOPE OF WORK

Project: Texaco Facility 63-232-0307 O&M **Location:** 1637 W. Meeker Street, Kent, WA **SECOR PN:** 00111-101-15/O&M **SECOR PM:** Chris Houck (401-7641) **Texaco Job#:** TJBG0413 **Texaco PM:** Jeff Goold **Contract Period:** **Rate Schedule:** 179	**Required Equipment:** O&M Field Kit (hand pump, gauges, camera, amp meter) Tools, Level D Safety Equipment PID, Anemometer Water Level Indicator Product Interface Probe pH Meter Computer and Wonderware™ key Sample containers, cooler, and ice.

SCOPE OF WORK:

Operate and maintain the soil and groundwater remediation system for a period of six months.

Weekly:

Weekly visits will be conducted the 2nd, 3rd, and 4th weeks of the month. Complete the attached weekly monitoring form during the weekly site visits. *Be sure to log the transducer data with the laptop computer while collecting the depth to groundwater data.* Syncronize your watch to the PLC's time. In addition to collecting the information on the form, sample the influent and effluent of the turbostripper. Submit the samples for analysis of TPH-g, BTEX, and pH (turbostripper effluent only).

Monthly:

Monthly visits will be conducted during the first week of the month. Complete the attached monthly monitoring form during the monthly site visit. *Be sure to log the transducer data with the laptop computer while collecting the depth to groundwater data.* Syncronize your watch to the PLC's time. In additon to collecting the information on the form, submit samples collected from the locations described on the form and in the O&M Manual for analysis of TPH-g BTEX, and pH (turbostripper effluent only):

Each Visit:

Adjust the electric submersible pumps to extract groundwater greater or equal to the following target rates:

Recovery Well	Target Extraction Rate
RW-2	5 gpm (Maximize)
RW-11	0.8 gpm (Maximize)
RW-12	3 gpm
RW-13	2 gpm

Operate the system in accordance with the regulatory limitations on the back of the page.

Include travel time, preparation of field notes, preparation of laboratory notes, and van usage. Equipment charges are not allowed. Materials must be approved prior to purchase.

COMMENTS:

DATE OF VISIT: 2/6/97

- Install acid introduction equipment in RW-13.
- Add acid into RW-13 at a low flow rate while other person at the effluent tank monitoring pH. Adjust pH as required. Add approximately 2 quarts
- Clean RW-2 pump & RW-13 pump

MONTHLY FIELD DATA COLLECTION FORM
SOIL AND GROUNDWATER REMEDIATION SYSTEM
Texaco Facility No. 63-232-0307
1637 West Meeker Street, Kent, WA

Date: 2/6/97
Time: 11:30
SECOR Rep: BS

Sample Name	Time
W0307-RW2	14 00
W0307-RW11	14:10
W0307-RW12	1405
W0307-RW13	1355
W0307-EFFLRP	1235
W0307-INFTS	12:30
W0307-EFFTS	1150
A0307-RW2	1350
A0307-RW11	1355
A0307-RW12	—
A0307-RW13	—
A0307-EFFLRP	14:20

Dual Phase Extraction Unit:	
Operating upon arrival (Y/N):	Y
Vacuum at Inlet to LRP ("Hg):	15
LRP Volts/Amps	35.5 35.2 / 208 / 35.7
Air Flow from DPE unit (acfm):	55.5
Air Temperature from DPE unit (°F):	73
Pressure at air flow port ("H_2O):	5
Effluent DPE PID reading (ddu):	160
Operating upon departure (Y/N):	

Vapor Treatment Unit:	
PID between carbon (ddu):	57
PID after carbon (ddu):	9.3
Change carbon (# drums/N)	

Groundwater Treatment Unit:	
Operating upon arrival (Y/N):	Y
Effluent recipient (storm/sanitary):	Storm
Effluent Velocity (digital meter on panel)	4C
Fan Volts/Amps	11.0, 11.2 / 208 / 11.4
Batch Pump Volts/Amps	2.8, 2.8 / 208 / 2.7
Pressure before meter (psi): Strip	15
Operating upon departure (Y/N):	

Groundwater Extraction Unit:	
Operating upon arrival (Y/N):	Y
RW-2 meter reading (gallons):	(1335) 482778
RW-2 pressure (psi):	5
RW-2 Pump Volts/Amps	241 / 5.6 5.4
RW-2 flow rate (gpm):	3.2
RW-11 meter reading (gallons):	(1335) 133475
RW-11 pressure (psi):	29
RW-11 Pump Volts/Amps	241 / 5.3 5.5
RW-11 flow rate (gpm):	8.0
RW-12 meter reading (gallons):	(1335) 56012
RW-12 pressure (psi):	0/30
RW-12 Pump Volts/Amps	241 / 5.9 5.9
RW-12 flow rate (gpm):	0 / 8.8 / 8
RW-13 meter reading (gallons):	(1335) 349359
RW-13 pressure (psi):	5
RW-13 Pump Volts/Amps	241 / 5.2 5.2
RW-13 flow rate (gpm):	0.6
Operating upon departure (Y/N):	

Vapor Extraction Unit:	
Operating upon arrival (Y/N):	Y
VE Blower Volts/Amps	240 / 11.7 11.5
Vacuum at on-site riser ("H_2O):	70
Vacuum at off-site riser ("H_2O):	65
Air Flow from RW-2 (acfm):	6.60
Air Temperature from RW-2 (°F):	56
RW-2 Vacuum ("H_2O):	65
RW-2 PID reading (ddu):	22
Air Flow from RW-11 (acfm):	27.9
Air Temperature from RW-11 (°F):	50
RW-11 Vacuum ("H_2O):	65
RW-11 PID reading (ddu):	22
Air Flow from RW-12 (acfm):	Turned
Air Temperature from RW-12 (°F):	OFF
RW-12 Vacuum ("H_2O):	
RW-12 PID reading (ddu):	
Air Flow from RW-13 (acfm):	
Air Temperature from RW-13 (°F):	
RW-13 Vacuum ("H_2O):	
RW-13 PID reading (ddu):	
Air Flow from blower (acfm):	17.9
Air Temperature from blower (°F):	114
Pressure after blower ("H_2O):	10
Operating upon departure (Y/N):	

Air Sparging Unit:	
Operating upon arrival (Y/N):	Y
AS 1 Volts/Amps	Turned
AS 2 Volts/Amps	OFF
AS 3 Volts/Amps	240 / 6.3 6.3
AS 4 Volts/Amps	240 / 6.2 6.2
Flow to AI-1 (cfm):	Turned
Pressure to AI-1 (psi):	OFF
Flow to AI-2 (cfm):	
Pressure to AI-2 (psi):	
Flow to AI-3 (cfm):	
Pressure to AI-3 (psi):	
Flow to AI-4 (cfm):	3.1
Pressure to AI-4 (psi):	10
Flow to AI-5 (cfm):	2.5
Pressure to AI-5 (psi):	14
Flow to AI-6 (cfm):	3.1
Pressure to AI-6 (psi):	11
Flow to AI-7 (cfm):	1.6
Pressure to AI-7 (psi):	10
Operating upon departure (Y/N):	

Equipment Calibration Information
Micro. pH 7000
S/N BA9101a.06 cal
w/ Isobutylene 98 ppm @ 12°C
Orion AZ 23UA
S/N 009365 cal @ 240

Effluent Tank pH = 6.4 units

TSI ANE 8353
S/N 501141 cal 5/96

SECOR

Field Report

Field Office: Bellevue

To:

Attn:

Page 1 of 8

Date: FEBRUARY 11, 1997

Job No.: 00111-101-15

Task No.: O&M

Project: 63-232-0307

Location: 1637 W. MEEKER ST.

Weather: Cloudy

Temp.: ~~45~~ 50

Client: TEXACO

Contractor: N/A

6:30 LOAD VAN

7:15 LEAVE SECOR - STOPPED FOR GAS

8:10 ARRIVE @SITE - REVIEW HASP & WORKSCOPE

MONITORED SYSTEM PER ATTACHED WORKSCOPE

APPROX. 2" of IRON SLUDGE in the berm sump

IRON DUST IS COVERING all the equipment IN the compound.

DROPPED PID - BATTERY SHELL BROKE

DIDN'T COLLECT a BETWEEN CARBON PID READING.

8:45 START MEASURING water levels w/ in the L. Ring EXTRACTION WELLS. Drop tubes are 10' long - All 5 wells have water levels below this. RAIN IS predicted for all this week - will wait to determine if the drop tubes need to be extended.

9:20 FINISH MONITORING the ON-SITE - went to the off-site

9:30 START MONITORING the off-site - SEE WORK SCOPE.

Equipment Used: VAN #1, PID, ANEMOMETER, O&M KIT, HAND TOOLS, CLEANING EQUIPMENT.

Contractor Hours:

Staff Hrs.

Mileage:

Copies To:

Project Manager: C. Houck

Reviewed By:

Prepared By: W. ADAMS

SECOR

Field Office: _____

To: _____

Attn: _____

Page 2 of 8

Field Report

Date: FEB. 11, 1997 (Cont.)

Job No.: 00111-101-15

Task No.: O&M

Project:

Location:

Weather:

Temp.:

Client:

Contractor:

A.S. Rotometers are filled w/ condensate - need to be drained.

RW-11 pressure @ 42 psi - meter may need cleaning.
RW-11 is cycling on & off - Approx. run time 1½ minutes.
Approx. off time 4½-5 minutes.

Iron staining on 2" stub-ups for the comb. eff to on-site (G.W.) - may indicate the line is becoming fouled.

Collected a comb. inf PID sample from the VE
Swept the off-site compound - covered w/ dried iron.
10:00 Shut down RW-2 & RW-13 to remove & clean pumps.
10:30 Pulled & removed pump end from RW-13
10:50 RW-2 is a sand handler - generally, these pumps can't be cleaned - Attempted to clean the meter - Soft scaling was removed. Thin layer of hard scaling was still present.
No change in flow rate -

Equipment Used:

Contractor Hours: Staff Hrs. Mileage:

Copies To:

Project Manager:

Reviewed By:

Prepared By:

SECOR

Field Report

Field Office: _____

To: _____

Attn: _____

Page 3 of 4

Date: FEB. 11, 1997 (Cont.)

Job No.: 00111-101-15 | Task No.: O & M

Project:

Location:

Weather: | Temp.:

Client:

Contractor:

11:15 Contact M. Murphy - He realizes that sanohandlers are difficult to clean - Give it a try anyway.

11:30 Removed the pump end.

Removed the flow meter for RW-13 to clean

Went to on-site & started cleaning the pump ends for RW-2 & RW-13 and the internal meter components for RW-13 w/ Muriatic Acid.

Flow meter for RW-13 ~~was~~ cleaned up perfectly looks brand new after a 10 minute soak.

4 impellars for RW-13 are damaged - appears that muriatic acid weakened the spot welds after 3 cleanings to the point that they failed when the pump came on. May explain the High Amps measured a few weeks ago. Packed the pump end up in a bucket.

Equipment Used:

Contractor Hours: | Staff Hrs. | Mileage:

Copies To:

Project Manager:

Reviewed By:

Prepared By:

SECOR

Field Office: _____

To: _____

Attn: _____

Page 4 of 8

Field Report

Date: FEB. 11, 1997 (Cont.)

Job No.: 00111-101-15 | Task No.: O & M

Project:

Location:

Weather: | Temp.:

Client:

Contractor:

1:00 Finished Cleaning Pump end for RW-2. I was unable to dismantle - had to soak the entire pump end in Muriatic.

1:30 Reinstalled RW-2 - Flow Rate is @ 1.8 gpm
Reinstalled the meter for RW-13.

1:45 No Air flow @ RW-2 or RW-11 for the VE.
Connected L. Ring to Remove water out of the lines.

2:15 Confirmed flow from RW-2 & RW-11 - Tightened well seals
Slight air leaks @ the electrical junction boxes in the vaults -
Ensured Flow @ L. Ring Wells - Blower shutdown due to a thermal overload - took 3 trys -
Blower Amps @ 11.4 w/ Air dilution closed & Vapor Flow concentrated on RW-2 & RW-11

Equipment Used:

Contractor Hours: | Staff Hrs. | Mileage:

Copies To:

Project Manager:

Reviewed By:

Prepared By:

SECOR

Field Office: _____

To: _____

Attn: _____

Page 5 of 8

Field Report

Date: FEB. 11, 1997 (cont.)

Job No. | Task No.

Project

Location

Weather | Temp.

Client

Contractor

2:45 NEUTRALIZED MURIATIC W/ 50% NaOH SOLUTION.
PH of 8.4
BATCH TANK PH PRIOR WAS 6.8 AFTER SOLUTION IT WAS 7.3 pH.

3:00 LOAD TOOLS & EQUIPMENT - CLEAN PART OF THE COMPOUND. LOTS OF CLEANING NEEDED.

3:15 SECURED SITE / MOB

4:00 ARRIVE @ SECOR

Equipment Used:

Contractor Hours: | Staff Hrs. | Mileage:

Copies To:

Project Manager:

Reviewed By:

Prepared By:

SCOPE OF WORK

Project: Texaco Facility 63-232-0307 O&M **Location:** 1637 W. Meeker Street, Kent, WA **SECOR PN:** 00111-101-15/O&M **SECOR PM:** Chris Houck (401-7641) **Texaco Job#:** TJBG0413 **Texaco PM:** Jeff Goold **Contract Period:** November 1, 1996 through April 30, 1997 **Rate Schedule:** 179	**Required Equipment:** O&M Field Kit (hand pump, gauges, camera, amp meter) Tools, Level D Safety Equipment PID, Anemometer Water Level Indicator Product Interface Probe pH Meter Computer and Wonderware™ key Sample containers, cooler, and ice.

SCOPE OF WORK:

Operate and maintain the soil and groundwater remediation system for a period of six months.

Weekly:

Weekly visits will be conducted the 2nd, 3rd, and 4th weeks of the month. Complete the attached weekly monitoring form during the weekly site visits. *Be sure to log the transducer data with the laptop computer while collecting the depth to groundwater data.* Syncronize your watch to the PLC's time. In addition to collecting the information on the form, sample the influent and effluent of the turbostripper. Submit the samples for analysis of TPH-g, BTEX, and pH (turbostripper effluent only).

Monthly:

Monthly visits will be conducted during the first week of the month. Complete the attached monthly monitoring form during the monthly site visit. *Be sure to log the transducer data with the laptop computer while collecting the depth to groundwater data.* Syncronize your watch to the PLC's time. In additon to collecting the information on the form, submit samples collected from the locations described on the form and in the O&M Manual for analysis of TPH-g BTEX, and pH (turbostripper effluent only):

Each Visit:

Adjust the electric submersible pumps to extract groundwater greater or equal to the following target rates:

Recovery Well	Target Extraction Rate
RW-2	5 gpm (Maximize)
RW-11	0.8 gpm (Maximize)
RW-12	3 gpm
RW-13	2 gpm

Operate the system in accordance with the regulatory limitations on the back of the page. Document the hours spent on the site on the back of the page. Separate hours spent on out-of-scope tasks and describe the work performed in the space provided. Include travel time, preparation of field notes, and preparation of laboratory samples when calculating your hours. Equipment charges other than the van are not allowed. Materials must be approved prior to purchase.

COMMENTS:

1) Clean RW-2, RW-13 pumps and meters.
2) If time, investigate cause of batch pump low performance.

DATE OF VISIT: 2/11/97

WEEKLY FIELD DATA COLLECTION FORM
SOIL AND GROUNDWATER REMEDIATION SYSTEM
Texaco Facility No. 63-232-0307
1637 West Meeker Street, Kent, WA

Date: 2/11/97
Time: 8:15
SECOR Rep: W.H

All Systems Operating Upon Arrival	Y (N)	All Systems Operating Upon Departure	Y (N)
If "No", circle units NOT operating upon arrival and describe why: LRP GW pumps Air Sparge VE TurboStripper		If "No", circle units NOT operating upon departure and describe why: LRP (GW pumps) Air Sparge VE TurboStripper	
		RW-2 limping RW-13 has been removed	

Equipment Calibration Information		Groundwater Treatment Unit:		Air Sparging Unit:	
PA 910606 Read 99 → 98 ppm		Effluent recipient (storm/sanitary):	?	Flow to AI-1 (cfm):	—
Baseline PID 5.3 dd		Effluent Velocity (digital meter on panel)	40-50	Pressure to AI-1 (psi):	—
		Groundwater Extraction Unit:		Flow to AI-2 (cfm):	—
		RW-2 pressure (psi):	19	Pressure to AI-2 (psi):	—
Sample Name	Time	RW-2 flow rate (gpm):	1.8	Flow to AI-3 (cfm):	1.8
W0307-INFTS	8:50	RW-11 pressure (psi):	42	Pressure to AI-3 (psi):	8
W0307-EFFTS	8:45	RW-11 flow rate (gpm):	~7 gpm	Flow to AI-4 (cfm):	3.2
Dual Phase Extraction Unit:		RW-12 pressure (psi):	20	Pressure to AI-4 (psi):	9 1/2
Vacuum at Inlet to LRP ("Hg):	13-14" of Hg	RW-12 flow rate (gpm):	7 gpm	Flow to AI-5 (cfm):	1.6 - 6
Air Flow from DPE unit (acfm):	61 cfm	RW-13 pressure (psi):	18	Pressure to AI-5 (psi):	11
Air Temperature from DPE unit (°F):	63°F	RW-13 flow rate (gpm):	0.3	Flow to AI-6 (cfm):	1.6
Pressure at air flow port ("$H_2$0):	6-7" of H_2O	Vapor Extraction Unit:		Pressure to AI-6 (psi):	10
Effluent DPE PID reading (ppm):	58 dd	Combined Air Flow[off-site] (acfm):	40	Flow to AI-7 (cfm):	1.6
Vapor Treatment Unit:		Combined Air Temperature (°F):	47	Pressure to AI-7 (psi):	9
PID between carbon (ppm):	—	Combined Vacuum ("$H_2$0):	54" of H_2O		
PID after carbon (ppm):	14.8	Combined PID Reading (ppm):			
Change carbon (# drums/N)	ϕ				

Time	Well	Frequency	Depth To Water (feet)	Length of Drop Tube (feet)	Vacuum Response ("WC/"Hg)
8:57	RW-6	weekly	11.80'	~18'	6" Hg
9:00	RW-7	weekly	11.80'	~18'	7-7 1/2" Hg
9:04	RW-8	weekly	12.25'	~18'	6" Hg
9:06	RW-9	weekly	13.22'	~18'	11" Hg
9:09	RW-10	weekly	11.88	~18'	7 1/2" Hg

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) 481-9200 FAX 485-2992
East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

TEXACO CHAIN OF CUSTODY REPORT Work Order #:

CONSULTANT: SECOR

PROJECT MANAGER: CHRIS HOUCK

ADDRESS: 15400 S.E. 30TH PL. BELLEVUE, WA. 98007

PHONE: (206) 641-9900 FAX: (206) 641-9092

PROJECT NAME: MEEKER

PROJECT NUMBER: 00111-101-15

SAMPLED BY: W. ADAMS

TEXACO INFORMATION

TEXACO PROJECT MANAGER: JEFF GOULD

TEXACO FACILITY NUMBER: 63-232-0307

SITE ADDRESS: 1637 W MEEKER ST. KENT, WA

State Hydrocarbon Methods (please circle): (WA) OR AK ID

TURNAROUND REQUEST in Business Days

Organic & Inorganic Analyses *: [X] 10 | 5 | 3 | 1

Air Analyses *: 3 | 1

OTHER Specify:

* Standard Turnaround for Organic & Inorganic Analyses is 10 Days

* Standard Turnaround for Air Analyses is 3 Days

NCA SAMPLE NUMBER	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	Analysis Request: TPH-G/BTEX	TPH-D	TPH-D Extended	TPH-418.1	TPH-HCID	TotDiss Lead				MATRIX (W, S, O)	# OF CONTAINERS	COMMENTS & PRESERVATIVES USED
	1. W0307-INFTS	2/11/97 - 8:50	✓									W	2	HCl
	2. W0307-EFFTS	2/11/97 - 8:45	✓									W	2	HCl
	3.													
	4.													
	5.													
	6.													
	7.													
	8.													
	9.													
	10.													

RELINQUISHED BY: _____ DATE: 2/13/97

PRINT NAME: W. ADAMS FIRM: SECOR TIME: 8:00

RECEIVED BY: _____ DATE: _____

PRINT NAME: _____ FIRM: _____ TIME: _____

RELINQUISHED BY: _____ DATE: _____

PRINT NAME: _____ FIRM: _____ TIME: _____

RECEIVED BY: _____ DATE: _____

PRINT NAME: _____ FIRM: _____ TIME: _____

ADDITIONAL REMARKS:

PAGE 1 OF 1

TEXCOC.REV2, 11/95

SECOR

Field Office: BELLEVUE

To:

Attn:

Page 1 of 7

Field Report

Date: FEBRUARY 18, 1997

Job No.: 00111-101-15

Task No.: O&M

Project: MEEKER 63-232-0307

Location: 1637 W. MEEKER ST.

Weather: RAIN

Temp.: 45°

Client: TEXACO

Contractor: N/A

8:15 LOAD VAN

9:00 LEAVE SECOR

9:30 ARRIVE @ SITE - REVIEW HASP & WORKSCOPE

AIR STRIPPER HAS APPEARED TO HAVE LOST IT'S PRIME - WATER IS BUBBLING INTO THE eff. TANK - VIA THE AIR STRIPPER LINE - CLOSED GATE VALVE @ TANK TO ALLOW WATER TO BUILD UP.

L. RING APPEARS TO BE RUNNING dry - CHECK WELLS NO FLOW. EXCEPT @ RW-7. 2-3" of Hg @ inlet to the pump.

9:45 SHUT DOWN THE L. RING PUMP.

CHECK REST of the system. VAC. @ RW-2 & RW-11

FLOW @ RW-2 IS 1.5 gpm, @ RW-11 IS ~~8~~ 8 gpm, @ RW-12 IS 0 gpm.

10:00 START CLEANING the RECIRC. LINE - INCLUDES flex HOSE, BOTH Y-STRAINERS & the FLOW REGULATOR

ALSO CLEANED the INLET STRAINER - HARD FOULING HAD TO USE ACID.

10:30 SHUTDOWN THE VE system - AIR FLOW FROM the BLOWER EFF. WAS COMING through the pump - MAY HAVE PREVENTED

Equipment Used: VAN #1, PID, ANEMOMETER, O&M K.t, Ph meter, Water level, HAND TOOLS.

Contractor Hours: N/A

Staff Hrs.

Mileage:

Copies To:

Project Manager: C. HOUCK

Reviewed By:

Prepared By: W. ADAMS

SECOR

Field Report

Field Office: _____

To: _____

Attn: _____

Page 2 of 7

Date: 2/18/91 (Cont.)

Job No. | Task No.

Project

Location

Weather | Temp.

Client

Contractor

RECIRC WATER FROM ENTERING THE PUMP.

11:20 RESTARTED THE L. Ring pump & CREATED A FLOW @ ALL 5 WELLS. INLET VAC. @ 20" Hg.

INSPECT High level SENSOR ON THE AIR STRIPPER - REMOVED HARD SCALING ON THE SENSOR. REDID THE AIRSEAL FOR THE SENSOR USING Compression FITTING, WASHER, AND ELECTRICAL TAPE.

12:30 Amps on the L. Ring @ 43

Spoke w/ Chris & MARK - Give the L. Ring an ACID BATH.

12:40 START MONITORING THE System (SEE ATTACHED FORM).

BASELINE PID WAS 11.6 ddu

2:20 FINISHED MONITORING THE System

2:30 START CLEANING FLOW METERS FOR RW-2, RW-11, & RW-12.

RW-2 WAS PRETTY CLEAN. MAY ONLY HAVE TO DO Bi-WEEKLY.

3:00 RESTARTED RW-12 AFTER TROUBLESHOOTING - RESET THE THERMAL OVERLOAD.

Equipment Used:

Contractor Hours: Staff Hrs. Mileage:

Copies To:

Project Manager:

Reviewed By:

Prepared By:

SECOR

Field Report

Field Office: _____

To: _____

Attn: _____

Page 3 of 7

Date: 2/18/97 (CONT.)

Job No. | Task No.

Project

Location

Weather | Temp.

Client

Contractor

CLOSED FLOW CONTROL VALVE FOR AI-3

3:15 STARTED THE ACID RINSE FOR THE L.RING PUMP. ACID WAS ADDED INTO RW-7 THROUGH THE S.LOCK FITTING.

CONTINUOUSLY MONITORED THE PH IN BOTH THE BATCH TANK & THE EFFLUENT TANK.

PH IN BATCH TANK DROPPED TO 2.8 ADDED BASE UNTIL PH READ ~~6~~ 6.2.

4:00 FINAL READINGS IN BATCH TANK WAS 6.2 PH & 8.4 PH IN THE EFFLUENT TANK.

WALKED THROUGH SYSTEM & COLLECTED GARBAGE.

L.RING IS RECIRCULATING THROUGH THE AIR/WATER SEPARATOR INSTEAD OF THE BATCH TANK - WILL CHANGE NEXT WEEK BACK TO THE BATCH TANK.

L.RING PUMP AMPS @ 43.

4:15 LOADED TOOLS & EQUIPMENT

4:30 LEFT SITE

5:00 ARRIVE @ SECOR

Equipment Used: VAN #1, PID, WATER LEVEL, ANEMOMETER, PH METER, O&M KIT, TOOLS.

Contractor Hours:

Staff Hrs.

Mileage:

Copies To:

Project Manager: C. HOUCK

Reviewed By:

Prepared By: W. ADAMS

SCOPE OF WORK

Project: Texaco Facility 63-232-0307 O&M **Location:** 1637 W. Meeker Street, Kent, WA **SECOR PN:** 00111-101-15/O&M **SECOR PM:** Chris Houck (401-7641) **Texaco Job#:** TJBG0413 **Texaco PM:** Jeff Goold **Contract Period:** November 1, 1996 through April 30, 1997 **Rate Schedule:** 179	**Required Equipment:** O&M Field Kit (hand pump, gauges, camera, amp meter) Tools, Level D Safety Equipment PID, Anemometer Water Level Indicator Product Interface Probe pH Meter Computer and Wonderware™ key Sample containers, cooler, and ice.

SCOPE OF WORK:

Operate and maintain the soil and groundwater remediation system for a period of six months.

Weekly:

Weekly visits will be conducted the 2nd, 3rd, and 4th weeks of the month. Complete the attached weekly monitoring form during the weekly site visits. *Be sure to log the transducer data with the laptop computer while collecting the depth to groundwater data.* Syncronize your watch to the PLC's time. In addition to collecting the information on the form, sample the influent and effluent of the turbostripper. Submit the samples for analysis of TPH-g, BTEX, and pH (turbostripper effluent only).

Monthly:

Monthly visits will be conducted during the first week of the month. Complete the attached monthly monitoring form during the monthly site visit. *Be sure to log the transducer data with the laptop computer while collecting the depth to groundwater data.* Syncronize your watch to the PLC's time. In additon to collecting the information on the form, submit samples collected from the locations described on the form and in the O&M Manual for analysis of TPH-g BTEX, and pH (turbostripper effluent only):

Each Visit:

Adjust the electric submersible pumps to extract groundwater greater or equal to the following target rates:

Recovery Well	Target Extraction Rate
RW-2	5 gpm (Maximize)
RW-11	0.8 gpm (Maximize)
RW-12	3 gpm
RW-13	2 gpm

Operate the system in accordance with the regulatory limitations on the back of the page. Document the hours spent on the site on the back of the page. Separate hours spent on out-of-scope tasks and describe the work performed in the space provided. Include travel time, preparation of field notes, and preparation of laboratory samples when calculating your hours. Equipment charges other than the van are not allowed. Materials must be approved prior to purchase.

COMMENTS:

DATE OF VISIT: 2/18/97

- ✓ Clean all meters
- ✓ Sample for lead and VOC's per NPDES permit.
- ✓ clean strainer (in /recirc) on LRP
- tot me • look into batch pump flow – install swagelok before flow control to measure back pressure. If possible, elbow line from [illegible]

WEEKLY FIELD DATA COLLECTION FORM
SOIL AND GROUNDWATER REMEDIATION SYSTEM
Texaco Facility No. 63-232-0307
1637 West Meeker Street, Kent, WA

Date: 2/18/97
Time: 9:30
SECOR Rep: GHF

All Systems Operating Upon Arrival	Y (N)	All Systems Operating Upon Departure	Y (N)
If "No", circle units NOT operating upon arrival and describe why: (LRP) (GW pumps) Air Sparge VE TurboStripper		If "No", circle units NOT operating upon departure and describe why: LRP (GW pumps) Air Sparge VE TurboStripper	
LRP-DRY RW-12 & RW-13		RW-13 NOT OPERATING	

Equipment Calibration Information	
PID S/N PA910606	
Read 98.3-798 ppm	
Anemometer S/N 501141	

Sample Name	Time
W0307-INFTS	1:10
W0307-EFFTS	12:55

Dual Phase Extraction Unit:	
Vacuum at Inlet to LRP ("Hg):	20-21" Hg.
Air Flow from DPE unit (acfm):	75.5 cfm
Air Temperature from DPE unit (°F):	67°F
Pressure at air flow port ("H_2O):	12" H_2O.
Effluent DPE PID reading (ppm):	569 ddu

Vapor Treatment Unit:	
PID between carbon (ppm):	19 ddu
PID after carbon (ppm):	19 ppm
Change carbon (# drums/N)	~~55~~ 0

Groundwater Treatment Unit:	
Effluent recipient (storm/sanitary):	?
Effluent Velocity (digital meter on panel)	0

Groundwater Extraction Unit:	
RW-2 pressure (psi):	2
RW-2 flow rate (gpm):	1.4
RW-11 pressure (psi):	23
RW-11 flow rate (gpm):	7.5
RW-12 pressure (psi):	2
RW-12 flow rate (gpm):	@ 6gpm
RW-13 pressure (psi):	Not Running
RW-13 flow rate (gpm):	N/R

Vapor Extraction Unit:	
Combined Air Flow[off-site] (acfm): ON-SITE	~~35~~ 38 cfm ~~35 ddu~~
Combined Air Temperature (°F):	52°
Combined Vacuum ("H_2O): ON-SITE/OFF	61" H_2O / 56" H_2O
Combined PID Reading (ppm):	35 ddu

Air Sparging Unit:	
Flow to AI-1 (cfm):	CLOSED
Pressure to AI-1 (psi):	CLOSED
Flow to AI-2 (cfm):	CLOSED
Pressure to AI-2 (psi):	CLOSED
Flow to AI-3 (cfm):	1.9
Pressure to AI-3 (psi):	10
Flow to AI-4 (cfm):	1.9
Pressure to AI-4 (psi):	10
Flow to AI-5 (cfm):	2.0
Pressure to AI-5 (psi):	12
Flow to AI-6 (cfm):	2.0
Pressure to AI-6 (psi):	12
Flow to AI-7 (cfm):	1.9
Pressure to AI-7 (psi):	11

Time	Well	Frequency	Depth To Water (feet)	Length of Drop Tube (feet)	Vacuum Response ("WC/"Hg)
1:58	RW-6	weekly	11.76'	≈10'	5 1/2" Hg
2:01	RW-7	weekly	11.80'	≈10'	6 1/2" Hg
2:06	RW-8	weekly	11.74'	≈10'	7 1/2" Hg
2:09	RW-9	weekly	13.26'	≈10'	10 1/2" Hg
2:13	RW-10	weekly	12.13'	≈10'	5 1/2" Hg.

NORTH CREEK ANALYTICAL
18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) 481-9200 FAX 485-2992
East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 F 14-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

TEXACO CHAIN OF CUSTODY REPORT

Work Order #:

CONSULTANT: SECOR

PROJECT MANAGER: CHRIS HOUCK

ADDRESS: 15400 SE 30th Pl
BELLEVUE, WA. 98007

PHONE: (206) 641-9900 FAX: (206) 641-9892

PROJECT NAME: MEEKER

PROJECT NUMBER: 00111-101-15

SAMPLED BY: W. ADAMS

TEXACO INFORMATION

TEXACO PROJECT MANAGER: JEFF GOULD

TEXACO FACILITY NUMBER: 63-232-0307

SITE ADDRESS: 1637 W. MEEKER ST.
KENT, WA.

State Hydrocarbon Methods (please circle): (WA) OR AK ID

TURNAROUND REQUEST in Business Days

Organic & Inorganic Analyses *: (10) 5 3 1

Air Analyses *: 3 1

OTHER Specify:

* Standard Turnaround for Organic & Inorganic Analyses is 10 Days

* Standard Turnaround for Air Analyses is 3 Days

NCA SAMPLE NUMBER	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	TPH-G/BTEX	TPH-D	TPH-D Extended	TPH-418.1	TPH-HCID	Tot/Diss Lead	Lead 8/239.2	EPA Method 624	Rush	MATRIX (W, S, O)	# OF CONTAINERS	COMMENTS & PRESERVATIVES USED
	1. W0307-INFTS	2/18/97 - 1:10	✓									W	2	HCl
	2. W0307-EFFTS	2/18/97 - 12:55	✓						✓	✓	✓	W	6	PSP PERMIT
	3.													
	4.													
	5.													
	6.													
	7.													
	8.													
	9.													
	10.													

RELINQUISHED BY: [signature] DATE: 2/19/97

PRINT NAME: W. ADAMS FIRM: SECOR TIME: 12:00

RECEIVED BY: DATE:

PRINT NAME: FIRM: TIME:

RELINQUISHED BY: DATE:

PRINT NAME: FIRM: TIME:

RECEIVED BY: DATE:

PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

PAGE 1 OF 1

TEXCOC.REV2,11/95