(4)

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APR 10 1995
Winston-Salem
Regional Office

April 5, 1995

Mr. Waddell Waters
North Carolina Department of Environment,
Health and Natural Resources
Winston-Salem Regional Office-Groundwater Section
8025 North Point Blvd., Suite 100
Winston-Salem, NC 27106

Reference: Semi-Annual Groundwater Sampling Results and Status Report for Remediation System
NCDEHNR Incident No. 10119
Unocal Corporation
Former Unocal Facility #9787-214
1342 Trollingwood Road, Mebane, NC
S&ME Project No. 1354-94-603

Red Horse Truck Stop

Dear Mr. Watters:

Enclosed please find the March 12, 1995 semi-annual groundwater analytical results for all six (6) on-site monitor wells. Groundwater from these monitor wells was analyzed for unleaded gasoline and diesel constituents, which have been detected on-site, by EPA Test Methods 601, 602 (including MTBE and IPE) and 610. The method detection limits are provided on the laboratory reports. All analyses were performed by NC certified laboratory (#296), Flowers Chemical Laboratories, Inc. of Altamonte Springs, Fl. Groundwater from all six monitor wells was also analyzed for gasoline degrader bacteria plate counts and analyzed by the Unocal Research and Technology laboratory in Brea, California. A charcoal tube air sample was collected on December 14, 1994 for analysis of BTEX and TPH to evaluate hydrocarbon extraction and emission rates. Included herein are the analytical results, sample chain-of-custodies, well purging/sampling data, BTEX plume map, vacuum air flow calculations (Table 1), water level elevations (Table 2), historical groundwater quality data (Table 3) and VOC emissions calculation work sheet.

All six monitor wells (MW-1, 2, 3, 4, 6 and 7) were purged of three well volumes or until dry, and allowed to recover to static conditions before sampling. Individual, disposable polyethylene bailers and clean nylon rope were used for purging and sampling. Groundwater levels were taken prior to purging with the soil vapor extraction and air sparging remediation systems on. Therefore, groundwater elevations were not under static conditions, and thus were not contoured. Groundwater flow is towards the northwest.

March 12, 1995 Groundwater Analytical Results

The March 12, 1995 Flowers analytical results indicate a dramatic reduction in dissolved gasoline (BTEX and MTBE) concentrations in groundwater, as compared to the previous groundwater sampling events on November 10, 1994 (2.5 months into remediation) and January 18, 1993 (prior to remediation). No increase in dissolved hydrocarbon concentrations has been measured in any of the on-site monitor wells, except for a slight increase in BTEX at MW-6 (BQL to 6.52 ug/L). BTEX concentrations in groundwater on March 12, 1995, as compared to the November 10, 1994 results, have reduced substantially as a result of the remediation system, as follows: MW-4 from 87,400 ug/L to 11,700 ug/L and MW-3 from 203 ug/L to 1.52 ug/L. Figure 1 illustrates the BTEX plume map on March 12, 1995. MTBE concentrations in groundwater from MW-4 reduced from 15,700 ug/L on November 10, 1994 to 4370 ug/L on March 12, 1995. MTBE concentrations are below the 200 ug/L state 2L groundwater standard in all other monitor wells on-site.

Free product has not been detected on site, since retrofitting monitor well MW-4 as a vacuum well on December 7, 1994. IPE was only detected in groundwater from MW-3 on March 12, 1994 at a concentration of 1.73 ug/L. Method 601 compounds detected above state 2L standards consisted of the following: 1,2-DCA in MW-3 (3.38 ug/L), MW-4

(30.1 ug/L), chloroform in MW-4 (1.91 ug/L) and MW-7 (1.25 ug/L) and methylene chloride in MW-4 (1.08 ug/L). Method 610 compounds detected above state 2L standards consisted of the following: naphthalene in MW-4 (2090 ug/L), 1-methyl-naphthalene in MW-4 (121 ug/L) and 2-methyl-naphthalene in MW-4 (499 ug/L).

Table 3 indicates historical groundwater quality data from pre-remediation (January 1, 1993) through six months of remediation on March 12, 1995. The 2L groundwater standards for the unleaded gasoline and diesel compounds detected in groundwater are as follows: benzene (1 ug/L), toluene (1000 ug/L), ethylbenzene (29 ug/L), total xylenes (530 ug/L), MTBE (200 ug/L), 1,2-DCA (0.38 ug/L), chloroform (0.19 ug/L), methylene chloride (5 ug/L), naphthalene (21 ug/L). For compounds detected on-site but not listed in the 2L standards (i.e. IPE, 1-methyl-naphthalene and 2-methyl-naphthalene), the method detection limit is considered the 2L standard.

Remediation System Status Update

The air sparging (AS) and soil vapor extraction (SVE) systems are currently off, as of March 17, 1995 due to installation of two additional air/water separators before the vacuum and a new vacuum particulate filter. The vacuum had been in nearly continuous operation since start-up, with the exception of normal monthly maintenance shut-downs to service equipment and drain the air/water separators and power surge shutdowns. The SVE system was activated on August 19, 1994, whereas, the air sparging system was activated on August 25, 1994.

Soil Vapor Extraction (SVE)

The SVE system operated nearly continuously until shutdown on March 17, 1995 at a vacuum of approximately 4 to 10-inches of Hg and an air flow range of 180-380 scfm

(inlet and outlet). No ambient air is bled in, as the vacuum speed is controlled by a variable frequency drive. The two horizontal vacuum wells were operating 100% open at approximately 1.5 to 7-inches of Hg (depending of the vacuum at the SVE unit) and 90 to 190 scfm/each. Monitor well MW-4 has been retrofitted as a vacuum well by manifolding above ground piping from HVE-1. The purpose of this action was to expedite removal of phase separated hydrocarbons from the well, which was achieved. The 25-Hp vacuum has operated approximately 3500 hours since start-up. The vacuum radius of influence (ROI) for the three vacuum wells was approximately 40 to 80 feet, as measured by negative pressure readings and water table rise in peripheral wells.

The influent concentration on March 3, 1995 was 100 ppm, as measured by an Organic Vapor Analyzer (OVA). The hydrocarbon extraction (influent) rate, as measured by charcoal tube analysis, has reduced from 262.7 lbs./day on 8/19/94 to 5.5 lbs./day on 10/5/94 to 4.8 lbs./day on 12/14/94. The four vapor phase carbon units after the SVE unit have been taken off line, as the emission rate is less than the state guidance limit of 40 lbs./day. A carbon tube air sample is scheduled to be taken in April 1995 after the SVE and AS systems are back on-line. The estimated total mass of vaporous hydrocarbons recovered from the SVE and AS systems as of March 17, 1995 was approximately 1500 lbs., which is equivalent to approximately 250 gallons of petroleum in the vapor phase.

Air Sparging (AS)

The air compressor (sparge air) was operating on a 12-hour cycle at approximately 70 to 90 psi and 45 to 63 scfm. The eight air sparge wells on-site (AS - 1-8) were operating at between 20 to 40 psi and 5 to 30 scfm. The air compressor has also operated approximately 3500 hours since start-up. The air sparging radius of influence for the eight vertical air sparge wells was approximately 50 to 80 feet, as measured by positive

pressure, rise in water table, increase in dissolved oxygen levels and increase in gasoline degrader bacteria populations in groundwater.

Gasoline degrader plate counts are relatively high due to the sparging and range from 6.6×10^3 to 1.8×10^5 CFU/ml. The gasoline degrader plate count for groundwater sampled from the most contaminated well (MW-4) was the highest, which indicates that bioremediation is very active in this area due to a high concentration of hydrocarbon and high levels of dissolved oxygen. The microbial enumeration procedure measures only the viable microorganisms; those cells that are capable of growth on the plating medium used. The viable microorganisms will form colonies on the plating medium. The AS and SVE have greatly reduced the "hotspot" dissolved hydrocarbon area around MW-4 from free product levels (98,000 ug/L of BTEX) to 11,700 ug/L of BTEX in only 6 months of operation. No fugitive hydrocarbon sparge vapors have been reported inside the on-site building.

If you have any questions or need additional information, please do not hesitate to call.

Sincerely,

S&ME, Inc.

Stewart Hines 4/5/95

Stewart M. Hines, L.G.
Project Manager

Dane Horna, P.E.
Environmental Services Manager

Enclosures
cc: Mr. Wayne Holt - Unocal Corporation
Rick Holshouser - S&ME, Inc.
Ray Journigan - Property Owner

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TABLE 1
VACUUM SPEED AND AIR FLOW CALCULATIONS

UNOCAL-MEBANE #9787-214
1342 TROLLINGWOOD ROAD
MEBANE, NC

VFD FREQ (hertz)	BLOWER SPEED (rpm)	VE DP ("H20)	VE TEMP (Faren.)	VE VACUUM/DISCHARGE ("Hg)	Y (constant)	Q (SCFM)	DATE	VE WELLS ON/OFF	SPARGING WELLS ON/OFF	REMARKS
60	1760.00	3	72	9.4	178.30	308.82	8/19/94	HVE-1, HVE-2/NONE	NONE/AS-1-7 & DMW-5	INLET AIR FLOW, NO BLEED IN AIR
60	1760.00	2.45	164	2	194.19	303.95	8/19/94	HVE-1, HVE-2/NONE	NONE/AS-1-7 & DMW-5	OUTLET AIR FLOW, NO BLEED IN AIR
60	1584.00	2.85	72	9	180.17	304.17	8/19/94	HVE-1, HVE-2/NONE	NONE/AS-1-7 & DMW-5	INLET AIR FLOW, NO BLEED IN AIR
60	1584.00	2.5	168	1.6335	194.91	308.18	8/19/94	HVE-1, HVE-2/NONE	NONE/AS-1-7 & DMW-5	OUTLET AIR FLOW, NO BLEED IN AIR
60	1408.00	2	72	9	180.17	254.80	8/19/94	HVE-1/HVE-2	NONE/AS-1-7 & DMW-5	INLET AIR FLOW, NO BLEED IN AIR
60	880.00	0.4	72	12	165.59	104.73	8/19/94	HVE-2/HVE-1	NONE/AS-1-7 & DMW-5	INLET AIR FLOW, NO BLEED IN AIR
60	1584.00	3	72	9.2	179.24	310.45	8/25/94	HVE-1, HVE-2/NONE	AS-1-7 & DMW-5/NONE	INLET AIR FLOW, NO BLEED IN AIR
60	1584.00	2.6	169	2	193.42	311.87	8/25/94	HVE-1, HVE-2/NONE	AS-1-7 & DMW-5/NONE	OUTLET AIR FLOW, NO BLEED IN AIR
60	1056.00	1.6	76	5	197.22	249.46	8/31/94	HVE-1, HVE-2/NONE	AS-1-7 & DMW-5/NONE	INLET AIR FLOW, NO BLEED IN AIR
60	1056.00	1.5	124	1.22	203.68	249.46	8/31/94	HVE-1, HVE-2/NONE	AS-1-7 & DMW-5/NONE	OUTLET AIR FLOW, NO BLEED IN AIR
60	1760.00	3	61	8.7	183.47	317.79	10/5/94	HVE-1, HVE-2/NONE	AS-1-7 & DMW-5/NONE	INLET AIR FLOW, NO BLEED IN AIR
60	1760.00	2.7	150	2.035	196.27	322.51	10/5/94	HVE-1, HVE-2/NONE	AS-1-7 & DMW-5/NONE	OUTLET AIR FLOW, NO BLEED IN AIR
60	1760.00	4.2	50	9.2	183.06	375.17	11/23/94	HVE-1, HVE-2/NONE	AS-1-7 & DMW-5/NONE	INLET AIR FLOW, NO BLEED IN AIR
60	1760.00	3.2	135	2	198.86	355.74	11/23/94	HVE-1, HVE-2/NONE	AS-1-7 & DMW-5/NONE	OUTLET AIR FLOW, NO BLEED IN AIR
60	1760.00	4.4	56	9	182.95	383.75	12/2/94	HVE-1, HVE-2/NONE	AS-1-7 & DMW-5/NONE	INLET AIR FLOW, NO BLEED IN AIR
60	1760.00	3.1	144	1.42	199.54	351.33	12/2/94	HVE-1, HVE-2/NONE	AS-1-7 & DMW-5/NONE	OUTLET AIR FLOW, NO BLEED IN AIR
60	1760.00	4.4	60	9	182.24	382.27	12/7/94	HVE-1, HVE-2 & MW-4/NONE	AS-1-7 & DMW-5/NONE	INLET AIR FLOW, NO BLEED IN AIR
60	1760.00	3.2	140	1.63	199.42	356.74	12/7/94	HVE-1, HVE-2 & MW-4/NONE	AS-1-7 & DMW-5/NONE	OUTLET AIR FLOW, NO BLEED IN AIR
60	1760.00	3.8	49	9.3	182.76	356.27	12/9/94	HVE-1, HVE-2 & MW-4/NONE	AS-1-7 & DMW-5/NONE	INLET AIR FLOW, NO BLEED IN AIR
60	1760.00	3.3	138	1.42	200.54	364.30	12/9/94	HVE-1, HVE-2 & MW-4/NONE	AS-1-7 & DMW-5/NONE	OUTLET AIR FLOW, NO BLEED IN AIR
60	1760.00	3.7	44	9.3	183.67	353.29	12/14/94	HVE-1, HVE-2 & MW-4/NONE	AS-1-7 & DMW-5/NONE	INLET AIR FLOW, NO BLEED IN AIR
60	1760.00	3.1	131	1.42	201.72	355.17	12/14/94	HVE-1, HVE-2 & MW-4/NONE	AS-1-7 & DMW-5/NONE	OUTLET AIR FLOW, NO BLEED IN AIR
60	1760.00	3.6	51	8.2	187.61	355.96	12/23/94	HVE-1, HVE-2 & MW-4/NONE	AS-1-7 & DMW-5/NONE	INLET AIR FLOW, NO BLEED IN AIR
60	1760.00	3.4	129	1.42	202.07	372.59	12/23/94	HVE-1, HVE-2 & MW-4/NONE	AS-1-7 & DMW-5/NONE	OUTLET AIR FLOW, NO BLEED IN AIR
60	1760.00	3.4	39	9	186.04	343.03	1/4/95	HVE-1, HVE-2 & MW-4/NONE	AS-1-7 & DMW-5/NONE	INLET AIR FLOW, NO BLEED IN AIR
60	1760.00	3.3	126	1.63	201.79	366.57	1/4/95	HVE-1, HVE-2 & MW-4/NONE	AS-1-7 & DMW-5/NONE	OUTLET AIR FLOW, NO BLEED IN AIR
60	1760.00	3.1	50	9.2	183.06	322.32	1/20/95	HVE-1, HVE-2 & MW-4/NONE	AS-1-7 & DMW-5/NONE	INLET AIR FLOW, NO BLEED IN AIR
60	1760.00	2.7	116	1.63	203.53	334.44	1/20/95	HVE-1, HVE-2 & MW-4/NONE	AS-1-7 & DMW-5/NONE	OUTLET AIR FLOW, NO BLEED IN AIR
60	1760.00	1	48	4.8	203.45	203.45	2/9/95	HVE-1, HVE-2 & MW-4/NONE	AS-1-7 & DMW-5/NONE	INLET AIR FLOW, NO BLEED IN AIR
60	1760.00	0.6	70	0.8	215.46	166.89	2/9/95	HVE-1, HVE-2 & MW-4/NONE	AS-1-7 & DMW-5/NONE	OUTLET AIR FLOW, NO BLEED IN AIR
60	1760.00	1	48	4.8	203.45	203.45	2/16/95	HVE-1, HVE-2 & MW-4/NONE	AS-1-7 & DMW-5/NONE	INLET AIR FLOW, NO BLEED IN AIR
60	1760.00	0.6	70	0.8	215.46	166.89	2/16/95	HVE-1, HVE-2 & MW-4/NONE	AS-1-7 & DMW-5/NONE	OUTLET AIR FLOW, NO BLEED IN AIR
60	1760.00	1	46	4.8	203.85	203.85	2/24/95	HVE-1, HVE-2 & MW-4/NONE	AS-1-7 & DMW-5/NONE	INLET AIR FLOW, NO BLEED IN AIR
60	1760.00	0.6	70	0.8	215.46	166.89	2/24/95	HVE-1, HVE-2 & MW-4/NONE	AS-1-7 & DMW-5/NONE	OUTLET AIR FLOW, NO BLEED IN AIR
60	1760.00	1	40	10.4	178.99	178.99	3/3/95	HVE-1, HVE-2 & MW-4/NONE	AS-1-7 & DMW-5/NONE	INLET AIR FLOW, NO BLEED IN AIR
60	1760.00	0.7	70	0.8	215.46	180.27	3/3/95	HVE-1, HVE-2 & MW-4/NONE	AS-1-7 & DMW-5/NONE	OUTLET AIR FLOW, NO BLEED IN AIR

TABLE 2

S&ME, INC.
LIQUID LEVELS
DATE: 3/3/95

SITE: UNOCAL–MEBANE #9787–214
JOB# 1354–94–603
RECORDED BY: JAY LANDSY (ESI)

ID #	DTW	DTP	PT	ETW	ETP	ETC	WTE
MW–1	12.15	0.00	0.00	86.39	NA	98.54	**86.39**
MW–2	14.51	0.00	0.00	84.77	NA	99.28	**84.77**
MW–3	15.16	0.00	0.00	84.26	NA	99.42	**84.26**
MW–4	16.65	0.00	0.00	82.05	NA	98.70	**82.05**
MW–6	15.12	0.00	0.00	85.47	NA	100.59	**85.47**
MW–7	16.68	0.00	0.00	81.53	NA	98.21	**81.53**

COMMENTS: Topographic survey of all wells was performed on August 24, 1992

ALL MEASUREMENTS IN FEET
DTW=depth to water from top of casing
DTP=depth to product
ETC=elevation of top of casing (usu. assumed datum of 700 feet from Charlotte, East 1967 Topo Map)
ETP=elevation of top of product
ETW=elevation of top of water
PT=product thickness
WTE=elevation of water table
NA = Not Available
Density of product = 0.70 g/ml (assumed) for gasoline
Bench Mark = northeast most canopy pole facing west

TABLE 3
GROUNDWATER QUALITY DATA

FORMER UNOCAL FACILITY #9787-214
1342 TROLLINGWOOD ROAD
MEBANE, NC

MONITOR WELL	DATE	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	TOTAL BTEX	MTBE	IPE	METHOD 601 COMPONDS	METHOD 625/610 COMPOUNDS
MW-1	1/7/93	BQL	120	BQL	120	240	NA	NA	NA	NA
	1/18/93	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL
	11/10/94	BQL	BQL	BQL	BQL	BQL	BQL	NA	BQL	BQL
	3/12/95	BQL	BQL	BQL	BQL	BQL	1.11	BQL	BQL	BQL
MW-2	1/7/93	810	20,000	17,000	95,000	132,810	NA	NA	NA	NA
	1/18/93	120	65	4.2	160	349.2	BQL	BQL	7.9	28
	11/10/94	BQL	BQL	BQL	BQL	BQL	BQL	NA	BQL	BQL
	3/12/95	BQL	BQL	BQL	BQL	BQL	1.5	BQL	BQL	BQL
MW-3	1/7,11/93	BQL	1300	2100	13,000	16,400	NA	NA	NA	NA
	1/26/93	84	82	5.1	590	761.1	BQL	BQL	8.4	22
	11/10/94	BQL	BQL	18.5	184	203	BQL	NA	13.2	BQL
	3/12/95	BQL	BQL	BQL	1.52	1.52	0.54	1.73	3.38	BQL
MW-4	1/11/93	BQL	1700	4900	31,000	37,600	NA	NA	NA	NA
	1/18/93	26,800	42,000	5200	24,000	98,000	12,000	BQL	6.8	6600
	11/10/94	22,100	40,100	4710	20,500	87,400	15,700	NA	29.3	431.5
	3/12/95	3150	4480	1830	2250	11,700	4370	<1	33.09	2710
MW-6	3/8,17/93	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL
	11/10/94	BQL	BQL	BQL	BQL	BQL	BQL	NA	BQL	BQL
	3/12/95	BQL	1.61	0.754	4.16	6.52	BQL	BQL	BQL	BQL
MW-7	3/8,17/93	BQL	BQL	BQL	BQL	BQL	BQL	BQL	6.5	BQL
	11/10/94	BQL	BQL	BQL	BQL	BQL	BQL	NA	1.4	BQL
	3/12/95								1.25	BQL
15A NCAC 2L STANDARD (IN UG/L)		1	1000	29	530	NA	200	NA	NA	NA

NOTES:

* ALL CONCENTRATIONS IN GROUNDWATER ARE IN UG/L
* ANALYSES PERFORMED=METHODS 602 (BTEX, MTBE AND IPE)
  METHOD 601 (PURGEABLE HALOCARBONS)
  METHOD 625 OR 610 (SEMI-VOLATILES)
* NA = NOT AVAILABLE
* BQL = BELOW QUANTITATION LIMIT
* THE 15A NCAC 2L GROUNDWATER STANDARD FOR COMPOUNDS NOT INCLUDED IN THE STANDARD IS THE METHOD
* DETECTION LIMIT, EXCEPT FOR BTEX AND THE SUM OF METHOD 601 AND 625/610 COMPOUNDS

VOC Emissions Calculation Worksheet

From SVE and AS Remediation

1. **Project Name** Unocal-Mebane (#9787-214)
2. **Project Location** 1342 Trollingwood Rd, Mebane, NC
3. **Project Duration** (24 hrs/day) X (7 days/week) X (20.8 weeks/year) = 3500 hrs/year
   Startup SVE = 8/19/94, AS = 8/25/94
4. **Emission Calculations:**

Sample ID & Date
EFF-1 on 12/14/94

Pollutant	Maximum Concentration (in ppm)/mg/m³	Molecular Weight	Flow Rate (in cfm)	Conversion Factor	Emissions (in lbs/hr)
1. TPH	50.54/144.7	70*	355	1.557×10^{-07}	0.2 or
2. Benzene	0.02/<0.0625	78.1	355	1.557×10^{-07}	8.6E-5 or
3.				1.557×10^{-07}	
4.				1.557×10^{-07}	
5.				1.557×10^{-07}	
6.				1.557×10^{-07}	
7.				1.557×10^{-07}	
8.				1.557×10^{-07}	
9.				1.557×10^{-07}	
10.				1.557×10^{-07}	
				TOTAL	4.8 lbs./day

4.8 lbs./day
2.1E-3 lbs./day

extraction and emission rate, since carbon not in use.

5. **Total VOC Emissions:**

Total VOC (in lbs/hr)	X	Total Hours	=	Emissions (in pounds)
2.33 (Avg.)	X	3500	=	1500

* Estimated at 70 by MDS Laboratory and Flowers Chemical Laboratory

ppm = mg/m³ x 24.45/mol. weight

FLOWERS

CHEMICAL LABORATORIES INCORPORATED

Received From:
S&ME-Greensboro
3718 Old Battleground Rd.
Greensboro,NC 27410

Date Reported : Jan12 1995
Project Number : UNOC 9787-214
PO Number : AFE#335927785
FDHRSDW Number : 83139
FHRS ENVNumber : E83018
FDER COMQAPNum : 86-0008G
A2LA Number : 0312-01
NCDEHNR Number : 296
SCDHEC Number : 96019

For: DRO BGRO Discount
Date Sampled:Dec14 1994 Date Received:Dec19 1994 Lab Number : 31288

REPORT OF ANALYSIS

Parameter	Unit	Method Detection Limit	%ACC	%PRC	31288 EFF1
Benzene	mg/m3	0.0625			<.0625
Toluene	mg/m3	0.0625			<.0625
Ethylbenzene	mg/m3	0.0625			<.0625
Xylene	mg/m3	0.0625			<.0625
Total_BTEX	mg/m3	0.0625			<.0625
Gasoline Range Organ	mg/m3	0.0625			130.
Diesel Range Organic	mg/m3	5.00			14.7

Data Release Authorization

Sample integrity and reliability certified by Lab personnel prior to analysis.
Methods of analysis in accordance with FCL QA and EPA approved methodology.
This Report of Analysis may not be reproduced in part.

Jefferson S. Flowers, Ph.d.
President/Technical Director

Serving Your Analytical and Environmental Needs Since 1957

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P.O. BOX 7668
CHARLOTTE, NORTH CAROLINA 28241-7668
(9751 SOUTHERN PINE BLVD, 28732)
PHONE: (704) 523-4726
FAX: (704) 525-3953

CHAIN OF CUSTODY RECORD
VAPOR CARBON TUBE SAMPLING

PROJECT #: 1354-94-603
PROJECT NAME: Unocal-Mebane (# 9787-214)
PROJECT MANAGER: Stewart Hines
SAMPLER: Gary Sinicax - S&ME - Gobaro
SAMPLING DATE: 12/14/95

SAMPLE NO.	LAB NO.	PUMP NO.	SAMPLE DURATION (min)	PUMP RATE (cc/min)	COMMENTS	ANALYSIS	LAB COMMENTS
EFP1		1	10 min	200	5 liter Carbon tube sample From Vacuum Stack (No carbon control)	BTEX, TPH-GRO TPH - ORO	

COMMENTS

Send results to S. Hines - S&ME, Charlotte
UNOC # 9787-214 (Unocal Mebane)

Signature: Gary Sinicax
Shipper & Ticket #:
Shipping Date:
Laboratory:
S&ME P.O. #:

PUMP CALIBRATION

PUMP NO.	1				
Precal Date	12/14/95				
Time	8:00A				
Flow Rate (cc/min)	200				
Postcal Date	12/14/95				
Time	5:00P				
Flow Rate (cc/min)	200				
Calibration Method	Gilibator (STC)				

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McBane Unocal

C-1086 3/3/95

Well ID.	Depth to H_2O	Gallons Bailed	Remarks
MW-1	12.15	10 Gallons	Sheen on H_2O Good Recharge
MW-2	14.51	10 Gallons	Lite Sheen on H_2O
MW-3	15.16	5 Gallons	No odor or sheen
MW-4	16.65	10 Gallons	Heavy odor + sheen
MW-6	15.12	10 Gallons	Lite sheen on H_2O
MW-7	16.68	10 Gallons	No apparent odor

FLOWERS

CHEMICAL LABORATORIES INCORPORATED

Received From:
ESI/Charlotte
920 Blairhill Rd.#104
Charlotte,NC 28217

Date Reported : Mar15 1995
Project Number : @ESI
PO Number :
FDHRSDW Number : 83139
FHRS ENVNumber : E83018
FDER COMQAPNum : 86-0008G
A2LA Number : 0312-01
NCDEHNR Number : 296
SCDHEC Number : 96019

For: EPA601602 Discount
Date Sampled:Mar 3 1995 Date Received:Mar 7 1995 Lab Numbers: 9081-9086

REPORT OF ANALYSIS

Parameter	Unit	Method Detection Limit	%ACC	%PRC	9081 MW1	9082 MW2	9083 MW3	9084 MW4	9085 MW6
Dilution_Factor		-	-	-	1.00	1.00	1.00	1.00	1.00
1,1,1-trichloroethan	ug/L	1.00	102.	1.33	<1.00	<1.00	<1.00	<1.00	<1.00
1,1,2,2-tetrachloroe	ug/L	1.00	97.2	1.50	<1.00	<1.00	<1.00	<1.00	<1.00
1,1,2-trichloroethan	ug/L	1.00	97.1	1.49	<1.00	<1.00	<1.00	<1.00	<1.00
1,1-dichloroethane	ug/L	1.00	100.	.530	<1.00	<1.00	<1.00	<1.00	<1.00
1,1-dichloroethene	ug/L	1.00	106.	3.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,2-dichloroethane	ug/L	1.00	99.5	.950	<1.00	<1.00	3.38	30.1	<1.00
1,2-dichloropropane	ug/L	1.00	97.9	1.63	<1.00	<1.00	<1.00	<1.00	<1.00
2-chloroethylvinylet	ug/L	1.00			<1.00	<1.00	<1.00	<1.00	<1.00
Bromodichloromethane	ug/L	1.00	96.1	1.24	<1.00	<1.00	<1.00	<1.00	<1.00
Bromoform	ug/L	1.00	97.2	1.89	<1.00	<1.00	<1.00	<1.00	<1.00
cis-1,3-dichloroprop	ug/L	1.00	96.0	2.17	<1.00	<1.00	<1.00	<1.00	<1.00
Carbon tetrachloride	ug/L	1.00	102.	1.13	<1.00	<1.00	<1.00	<1.00	<1.00
Chloroform	ug/L	1.00	99.8	.380	<1.00	<1.00	<1.00	1.91	<1.00
Dibromochloromethane	ug/L	1.00	96.1	1.85	<1.00	<1.00	<1.00	<1.00	<1.00
Methylene chloride	ug/L	1.00	97.5	.210	<1.00	<1.00	<1.00	1.08	<1.00
trans-1,3,-dichlorop	ug/L	1.00	94.1	1.56	<1.00	<1.00	<1.00	<1.00	<1.00
Trichlorofluorometha	ug/L	2.00	106.	4.83	<2.00	<2.00	<2.00	<2.00	<2.00
1,2-dichloroethene	ug/L	1.00	99.7	.980	<1.00	<1.00	<1.00	<1.00	<1.00
Trichloroethene	ug/L	1.00	100.	1.17	<1.00	<1.00	<1.00	<1.00	<1.00
Tetrachloroethene	ug/L	1.00	101.	1.86	<1.00	<1.00	<1.00	<1.00	<1.00
1,2-dibromo-3-chloro	ug/L	1.00	116.	7.58	<1.00	<1.00	<1.00	<1.00	<1.00
Bromomethane	ug/L	5.00			<5.00	<5.00	<5.00	<5.00	<5.00
Chloroethane	ug/L	3.00	105.	1.47	<3.00	<3.00	<3.00	<3.00	<3.00
Chloromethane	ug/L	5.00			<5.00	<5.00	<5.00	<5.00	<5.00
Dichlorodifluorometh	ug/L	2.00			<2.00	<2.00	<2.00	<2.00	<2.00

Data Release Authorization
Sample integrity and reliability certified by Lab personnel prior to analysis.
Methods of analysis in accordance with FCL QA and EPA approved methodology.
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CHEMICAL LABORATORIES INCORPORATED

Received From:
ESI/Charlotte
920 Blairhill Rd.#104
Charlotte,NC 28217

Date Reported : Mar15 1995
Project Number : @ESI
PO Number :
FDHRSDW Number : 83139
FHRS ENVNumber : E83018
FDER COMQAPNum : 86-0008G
A2LA Number : 0312-01
NCDEHNR Number : 296
SCDHEC Number : 96019

For: EPA601602 Discount
Date Sampled:Mar 3 1995 Date Received:Mar 7 1995 Lab Numbers: 9081-9086

REPORT OF ANALYSIS

Parameter	Unit	Method Detection Limit	%ACC	%PRC	9086 MW7
Dilution_Factor		-	-	-	1.00
1,1,1-trichloroethan	ug/L	1.00	102.	1.33	<1.00
1,1,2,2-tetrachloroe	ug/L	1.00	97.2	1.50	<1.00
1,1,2-trichloroethan	ug/L	1.00	97.1	1.49	<1.00
1,1-dichloroethane	ug/L	1.00	100.	.530	<1.00
1,1-dichloroethene	ug/L	1.00	106.	3.00	<1.00
1,2-dichloroethane	ug/L	1.00	99.5	.950	<1.00
1,2-dichloropropane	ug/L	1.00	97.9	1.63	<1.00
2-chloroethylvinylet	ug/L	1.00			<1.00
Bromodichloromethane	ug/L	1.00	96.1	1.24	<1.00
Bromoform	ug/L	1.00	97.2	1.89	<1.00
cis-1,3-dichloroprop	ug/L	1.00	96.0	2.17	<1.00
Carbon tetrachloride	ug/L	1.00	102.	1.13	<1.00
Chloroform	ug/L	1.00	99.8	.380	1.25
Dibromochloromethane	ug/L	1.00	96.1	1.85	<1.00
Methylene chloride	ug/L	1.00	97.5	.210	<1.00
trans-1,3,-dichlorop	ug/L	1.00	94.1	1.56	<1.00
Trichlorofluorometha	ug/L	2.00	106.	4.83	<2.00
1,2-dichloroethene	ug/L	1.00	99.7	.980	<1.00
Trichloroethene	ug/L	1.00	100.	1.17	<1.00
Tetrachloroethene	ug/L	1.00	101.	1.86	<1.00
1,2-dibromo-3-chloro	ug/L	1.00	116.	7.58	<1.00
Bromomethane	ug/L	5.00			<5.00
Chloroethane	ug/L	3.00	105.	1.47	<3.00
Chloromethane	ug/L	5.00			<5.00
Dichlorodifluorometh	ug/L	2.00			<2.00

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NCDEHNR Number : 296
SCDHEC Number : 96019

For: EPA601602 Discount
Date Sampled:Mar 3 1995 Date Received:Mar 7 1995 Lab Numbers: 9081-9086

REPORT OF ANALYSIS

Parameter	Unit	Method Detection Limit	%ACC	%PRC	9081 MW1	9082 MW2	9083 MW3	9084 MW4	9085 MW6
Vinyl chloride	ug/L	0.500			<0.500	<0.500	<0.500	<0.500	<0.500
Hall_Spike	ug/L	0.500	107.	2.94	100.	100.	101.	100.	103.
o-dichlorobenzene	ug/L	0.500	95.5	1.77	<0.500	<0.500	<0.500	<0.500	<0.500
m-dichlorobenzene	ug/L	0.500	96.0	2.17	<0.500	<0.500	<0.500	<0.500	<0.500
Para-dichlorobenzene	ug/L	0.500	95.5	1.53	<0.500	<0.500	<0.500	<0.500	<0.500
Benzene	ug/L	0.500	98.5	1.99	<0.500	<0.500	<0.500	3150	<0.500
Chlorobenzene	ug/L	0.500	96.6	2.61	<0.500	<0.500	<0.500	<0.500	<0.500
Ethylbenzene	ug/L	0.500	95.9	5.75	<0.500	<0.500	<0.500	1830	0.754
Toluene	ug/L	0.500	101.	9.42	<0.500	<0.500	<0.500	4480	1.61
Xylene	ug/L	0.500	103.	7.97	<0.500	<0.500	1.52	2250	4.16
Methyl-tert-butyleth	ug/L	0.500	103.	1.54	1.11	1.50	0.540	4370	<0.500
Total_BTEX	ug/L	0.500	101.	6.88	<0.500	<0.500	1.52	11700	6.52
Isopropylether	ug/L	1.00			<1.00	<1.00	1.73	<1.00	<1.00
PID_Spike	ug/L	0.500	107.	1.14	105.	107.	105.	100.	105.
-	-	-	-	-	-	-	-	-	-

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NCDEHNR Number : 296
SCDHEC Number : 96019

For: EPA601602 Discount
Date Sampled:Mar 3 1995 Date Received:Mar 7 1995 Lab Numbers: 9081-9086

REPORT OF ANALYSIS

Parameter	Unit	Method Detection Limit	%ACC	%PRC	9086 MW7
Vinyl chloride	ug/L	0.500			<0.500
Hall_Spike	ug/L	0.500	107.	2.94	103.
o-dichlorobenzene	ug/L	0.500	95.5	1.77	<0.500
m-dichlorobenzene	ug/L	0.500	96.0	2.17	<0.500
Para-dichlorobenzene	ug/L	0.500	95.5	1.53	<0.500
Benzene	ug/L	0.500	98.5	1.99	<0.500
Chlorobenzene	ug/L	0.500	96.6	2.61	<0.500
Ethylbenzene	ug/L	0.500	95.9	5.75	<0.500
Toluene	ug/L	0.500	101.	9.42	1.04
Xylene	ug/L	0.500	103.	7.97	2.34
Methyl-tert-butyleth	ug/L	0.500	103.	1.54	2.03
Total_BTEX	ug/L	0.500	101.	6.88	3.38
Isopropylether	ug/L	1.00			<1.00
PID_Spike	ug/L	0.500	107.	1.14	107.
-	-	-	-	-	-

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For: EPA601602 Discount
Date Sampled:Mar 3 1995 Date Received:Mar 7 1995 Lab Numbers: 9081-9086

REPORT OF INFORMATION

Parameter	Unit	Limit	Expected	Value	Range	Correlation
				9081		
Hall_Spike	ug/L	153.	93.8	100.		
Methyl-tert-butyleth	ug/L	32400	1470	1.11		
PID_Spike	ug/L	153.	101.	105.		
				9082		
Hall_Spike	ug/L	153.	93.8	100.		
Methyl-tert-butyleth	ug/L	32400	1470	1.50		
PID_Spike	ug/L	153.	101.	107.		
				9083		
1,2-dichloroethane	ug/L	109000	1870	3.38		
Hall_Spike	ug/L	153.	93.8	101.		
Xylene	ug/L	35100	2100	1.52		
Methyl-tert-butyleth	ug/L	32400	1470	0.540		
Total_BTEX	ug/L	44300	4710	1.52		
Isopropylether	ug/L	-	-	1.73		
PID_Spike	ug/L	153.	101.	105.		

The above information is intended to highlight exceptional data as compared to the upper control limits (Limit) established for each of the parameters. Range exceedances are flagged by integer values in the Range column. The Expected values are derived from historical data. Expected is computed as either the mean or computed directly from another parameter using linear regression. All known correlation rule exceedances are listed as enumerated rule numbers in the Correlation column. Correlation pair rules are defined on the last page.

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For: EPA601602 Discount
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REPORT OF INFORMATION

Parameter	Unit	Limit	Expected	Value	Range	Correlation
				9084		
1,2-dichloroethane	ug/L	109000	1870	30.1		
Chloroform	ug/L	79.3	12.7	1.91		
Methylene chloride	ug/L	15400	246.	1.08		
Hall_Spike	ug/L	153.	93.8	100.		
Benzene	ug/L	15000	2120	3150		
Ethylbenzene	ug/L	23700	686.	1830		
Toluene	ug/L	37700	2330	4480		
Xylene	ug/L	35100	4120	2250		202
Methyl-tert-butyleth	ug/L	32400	1470	4370		
Total_BTEX	ug/L	44300	6230	11700		185
PID_Spike	ug/L	153.	101.	100.		
				9085		
Hall_Spike	ug/L	153.	93.8	103.		
Ethylbenzene	ug/L	23700	686.	0.754		
Toluene	ug/L	37700	2330	1.61		
Xylene	ug/L	35100	2100	4.16		
Total_BTEX	ug/L	44300	4710	6.52		
PID_Spike	ug/L	153.	101.	105.		

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For: EPA601602 Discount
Date Sampled:Mar 3 1995 Date Received:Mar 7 1995 Lab Numbers: 9081-9086

REPORT OF INFORMATION

Parameter	Unit	Limit	Expected	Value	Range	Correlation
				9086		
Chloroform	ug/L	79.3	12.7	1.25		
Hall_Spike	ug/L	153.	93.8	103.		
Toluene	ug/L	37700	2330	1.04		
Xylene	ug/L	35100	2100	2.34		
Methyl-tert-butyleth	ug/L	32400	1470	2.03		
Total_BTEX	ug/L	44300	4710	3.38		
PID_Spike	ug/L	153.	101.	107.		

The above information is intended to highlight exceptional data as compared to the upper control limits (Limit) established for each of the parameters. Range exceedances are flagged by integer values in the Range column. The Expected values are derived from historical data. Expected is computed as either the mean or computed directly from another parameter using linear regression. All known correlation rule exceedances are listed as enumerated rule numbers in the Correlation column. Correlation pair rules are defined on the last page.

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REPORT OF INFORMATION

Correlation Pairs Referenced

185	Ethylbenzene	Total_BTEX
202	Total_BTEX	Xylene

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FLOWERS CHEMICAL LABORATORIES

ANALYTICAL RESULTS FORM

HRS Number 83139

Parameter	Symbol	Unit	MW-1 9081	MW-2 9082	MW-3 9083	MW-4 9084	MW-6 9085	MW-7 9086	QA Section Method	MDL	%RSD	%Rec	Analys	Date
Dilution Factor	•	#	1.00	1.00	1.00	1.00	1.00	1.00						
1,1,1-trichloroethane	•	ug/L	<1	<1	<1	<1	<1	<1	EPA601	1			DO	03-07-95
1,1,2,2-tetrachloroethane	•	ug/L	<1	<1	<1	<1	<1	<1	EPA601	1	1.33	102	DO	03-07-95
1,1,2-trichloroethane	•	ug/L	<1	<1	<1	<1	<1	<1	EPA601	1	1.5	97.2	DO	03-07-95
1,1-dichloroethane	•	ug/L	<1	<1	<1	<1	<1	<1	EPA601	1	1.49	97.1	DO	03-07-95
1,1-dichloroethene	•	ug/L	<1	<1	<1	<1	<1	<1	EPA601	1	0.536	100	DO	03-07-95
1,2-dichloroethane	•	ug/L	<1	<1	3.38	30.1	<1	<1	EPA601	1	3	106	DO	03-07-95
1,2-dichloropropane	•	ug/L	<1	<1	<1	<1	<1	<1	EPA601	1	0.956	99.5	DO	03-07-95
2-chloroethylvinylether	•	ug/L	<1	<1	<1	<1	<1	<1	EPA601	1	1.63	97.9	DO	03-07-95
Bromodichloromethane	•	ug/L	<1	<1	<1	<1	<1	<1	EPA601	1			DO	03-07-95
Bromoform	•	ug/L	<1	<1	<1	<1	<1	<1	EPA601	1	1.24	96.1	DO	03-07-95
cis-1,3-dichloropropene	•	ug/L	<1	<1	<1	<1	<1	<1	EPA601	1	1.89	97.2	DO	03-07-95
Carbon tetrachloride	•	ug/L	<1	<1	<1	<1	<1	<1	EPA601	1	2.17	96	DO	03-07-95
Chloroform	•	ug/L	<1	<1	<1	1.91	<1	1.25	EPA601	1	1.13	102	DO	03-07-95
Dibromochloromethane	•	ug/L	<1	<1	<1	<1	<1	<1	EPA601	1	0.383	99.8	DO	03-07-95
Methylene chloride	•	ug/L	<1	<1	<1	1.08	<1	<1	EPA601	1	1.85	96.1	DO	03-07-95
trans-1,3,-dichloropropene	•	ug/L	<1	<1	<1	<1	<1	<1	EPA601	1	0.21	97.5	DO	03-07-95
Trichlorofluoromethane	•	ug/L	<2	<2	<2	<2	<2	<2	EPA601	1	1.56	94.1	DO	03-07-95
1,2-dichloroethene	•	ug/L	<1	<1	<1	<1	<1	<1	EPA601	2	4.83	106	DO	03-07-95
Trichloroethene	•	ug/L	<1	<1	<1	<1	<1	<1	EPA601	1	0.988	99.7	DO	03-07-95
Tetrachloroethene	•	ug/L	<1	<1	<1	<1	<1	<1	EPA601	1	1.17	100	DO	03-07-95
1,2-dibromo-3-chloroprop	•	ug/L	<1	<1	<1	<1	<1	<1	EPA601	1	1.86	101	DO	03-07-95
Bromomethane	•	ug/L	<5	<5	<5	<5	<5	<5	EPA601	1	7.58	116	DO	03-07-95
Chloroethane	•	ug/L	<3	<3	<3	<3	<3	<3	EPA601	5			DO	03-07-95
Chloromethane	•	ug/L	<5	<5	<5	<5	<5	<5	EPA601	3	1.47	105	DO	03-07-95
Dichlorodifluoromethane	•	ug/L	<2	<2	<2	<2	<2	<2	EPA601	5			DO	03-07-95
Vinyl chloride	•	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	EPA601	2			DO	03-07-95
Hall Spike	•	ug/L	100	100	101	100	103	103	EPA601	0.5			DO	03-07-95
o-dichlorobenzene	•	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	EPA601	0.5	2.94	107	DO	03-07-95
m-dichlorobenzene	•	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	EPA602	0.5	1.77	95.5	DO	03-07-95
Para-dichlorobenzene	•	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	EPA602	0.5	2.17	96	DO	03-07-95
Benzene	•	ug/L	<0.5	<0.5	<0.5	3149	<0.5	<0.5	EPA602	0.5	1.53	95.5	DO	03-07-95
Chlorobenzene	•	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	EPA602	0.5	1.99	98.5	DO	03-07-95
Ethylbenzene	•	ug/L	<0.5	<0.5	<0.5	1828	0.754	<0.5	EPA602	0.5	2.61	96.6	DO	03-07-95
Toluene	•	ug/L	<0.5	<0.5	<0.5	4481	1.61	1.04	EPA602	0.5	5.75	95.9	DO	03-07-95
Xylene	•	ug/L	<0.5	<0.5	1.52	2246	4.16	2.34	EPA602	0.5	9.42	101	DO	03-07-95
Methyl-tert-butylether	•	ug/L	1.11	1.50	0.540	4370	<0.5	2.03	EPA602	0.5	7.97	103	DO	03-07-95
Total BTEX	•	ug/L	<0.5	<0.5	1.52	11703	6.52	3.38	EPA602	0.5	1.54	103	DO	03-07-95
Isopropylether	•	ug/L	<1	<1	1.73	<1	<1	<1	EPA602	0.5	6.88	101	DO	03-07-95
PID Spike	•	ug/L	105	107	105	100	105	107	EPA602	1			DO	03-07-95
.	•	.							EPA602	0.5	1.14	107	DO	03-07-95
									.	.				

Date Received: 03-07-95 Typed: 03-15-95 Sent: 03-15-95

Project Number	UNOC C-1086	
PO Number	N/A	
Date Sampled	1	03-03-95 •
Date Analyzed	0	
Compacted	1	
Format	NormRR	
Unit Cost	Exted	
EPA601602	11000	6 •
Discount	-21780	1 •
0.00		

Quality Assurance Report

Prepared for: ESI/Charlotte
Project Number: UNOC C-1086
Lab Numbers: 9081 - 9086

Report date: 15-Mar-95

ACCREDITED

FLOWERS CHEMICAL LABORATORIES

FLOWERS CHEMICAL LABORATORIES, INC.

QA Conformance Summary

Client:	ESI/Charlotte
Project Number:	UNOC C-1086
P.O. Number:	N/A
Date Sampled:	3-Mar-95
Lab Numbers:	9081 - 9086

Sample Handling

Sample handling and holding time criteria were met for all samples.

Surrogate Compound Recoveries:

The recovery limits were met for all samples as shown in section 1. This represents complete success.

Accuracy / Precision:

The recovery limits were met for all compounds in the matrix spike as shown in section 2.
The recovery limits were met for all compounds in the matrix spike duplicate as shown in section 2.
The RSD was met for all compounds as shown in section 2.

Method Blanks:

1 target compound was found in the method blank in excess of the method limit as shown in section 3. This represents a 97.3% success rate.

QCCS Check Sample:

The control limits were met for all compounds as shown in section 4.

FLOWERS CHEMICAL LABORATORIES, INC.

Section 1

Surrogate Compound Recovery

Client: ESI/Charlotte
Project Number: UNOC C-1086
P.O. Number: N/A
Date Sampled: 3-Mar-95
Lab Numbers: 9081 - 9086

Hall_Spike for EPA601
Unit of measure: ug/L

Surrogate Expected: 100
Acceptability Limits: 74.5 - 123

Laboratory Number	Site Description	Surrogate Recovered	Percent Recovered
9081	MW-1	100	100
9082	MW-2	100	100
9083	MW-3	101	101
9084	MW-4	100	100
9085	MW-6	103	103
9086	MW-7	103	103

FLOWERS CHEMICAL LABORATORIES, INC.

Section 1

Surrogate Compound Recovery

Client: ESI/Charlotte
Project Number: UNOC C-1086
P.O. Number: N/A
Date Sampled: 3-Mar-95
Lab Numbers: 9081 - 9086

PID_Spike for EPA602
Unit of measure: ug/L

Surrogate Expected: 100
Acceptability Limits: 82.1 - 122

Laboratory Number	Site Description	Surrogate Recovered	Percent Recovered
9081	MW-1	105	105
9082	MW-2	107	107
9083	MW-3	105	105
9084	MW-4	100	100
9085	MW-6	105	105
9086	MW-7	107	107

FLOWERS CHEMICAL LABORATORIES, INC.

Section 2

Matrix Spike Recovery

Client: ESI/Charlotte
Project Number: UNOC C-1086
P.O. Number: N/A
Date Sampled: 3-Mar-95
Lab Numbers: 9081 - 9086

Analyte	Unit	Analysis Method	Date	Spike Added	Sample Conc.	MS Conc.	MS Rec.	MSD Conc.	MSD Rec.	Acceptable Limits	RSD Rec.	Acceptable Limits
1,1,1-trichloroethane	ug/L	EPA601	03-07-95	40.0	<1	40.6	1	41.4	1	30.4 - 49.0	0.566	0 - 5.47
1,1,2,2-tetrachloroethane	ug/L	EPA601	03-07-95	40.0	<1	38.5	1.0	39.3	1.0	29.3 - 49.1	0.566	0 - 7.31
1,1,2-trichloroethane	ug/L	EPA601	03-07-95	40.0	<1	38.4	1.0	39.2	1.0	30.2 - 47.5	0.566	0 - 6.03
1,1-dichloroethane	ug/L	EPA601	03-07-95	40.0	<1	39.8	1.0	40.1	1	29.6 - 49.9	0.212	0 - 5.74
1,1-dichloroethene	ug/L	EPA601	03-07-95	40.0	<1	41.6	1	43.4	1	27.2 - 55.2	1.27	0 - 8.34
1,2-dichloroethane	ug/L	EPA601	03-07-95	40.0	<1	39.5	1.0	40.1	1	29.5 - 49.1	0.424	0 - 5.88
1,2-dichloropropane	ug/L	EPA601	03-07-95	40.0	<1	38.7	1.0	39.6	1.0	30.9 - 47.3	0.636	0 - 5.48
Bromodichloromethane	ug/L	EPA601	03-07-95	40.0	<1	38.1	1.0	38.8	1.0	29.5 - 47.8	0.495	0 - 5.96
Bromoform	ug/L	EPA601	03-07-95	40.0	<1	38.4	1.0	39.4	1.0	27.6 - 50.0	0.707	0 - 7.66
cis-1,3-dichloropropene	ug/L	EPA601	03-07-95	40.0	<1	37.8	0.9	39.0	1.0	29.8 - 46.5	0.849	0 - 6.17
Carbon tetrachloride	ug/L	EPA601	03-07-95	40.0	<1	40.6	1	41.2	1	30.9 - 48.9	0.424	0 - 5.54
Chloroform	ug/L	EPA601	03-07-95	40.0	<1	39.8	1.0	40.0	1	29.8 - 48.2	0.141	0 - 5.48
Dibromochloromethane	ug/L	EPA601	03-07-95	40.0	<1	38.0	1.0	39.0	1.0	29.7 - 47.4	0.707	0 - 5.63
Methylene chloride	ug/L	EPA601	03-07-95	40.0	<1	39.1	1.0	39.0	1.0	26.9 - 52.4	0.071	0 - 6.57
trans-1,3,-dichloropropene	ug/L	EPA601	03-07-95	40.0	<1	37.2	0.9	38.1	1.0	29.5 - 47.1	0.636	0 - 5.34
Trichlorofluoromethane	ug/L	EPA601	03-07-95	40.0	<2	40.9	1	43.8	1	26.6 - 54.2	2.05	0 - 7.93
1,2-dichloroethene	ug/L	EPA601	03-07-95	40.0	<1	39.6	1.0	40.2	1	29.7 - 51.1	0.424	0 - 6.20
Trichloroethene	ug/L	EPA601	03-07-95	40.0	<1	39.8	1.0	40.4	1	31.3 - 48.1	0.424	0 - 5.85
Tetrachloroethene	ug/L	EPA601	03-07-95	40.0	<1	39.7	1.0	40.7	1	31.3 - 47.5	0.707	0 - 5.30
1,2-dibromo-3-chloropropan	ug/L	EPA601	03-07-95	40.0	<1	44.0	1	49.0	1	26.8 - 53.0	3.54	0 - 8.22
Chloroethane	ug/L	EPA601	03-07-95	40.0	<3	41.5	1	42.3	1	25.9 - 58.1	0.566	0 - 8.19
o-dichlorobenzene	ug/L	EPA602	03-07-95	40.0	<0.5	37.7	0.9	38.7	1.0	26.9 - 50.1	0.707	0 - 4.73
m-dichlorobenzene	ug/L	EPA602	03-07-95	40.0	<0.5	37.8	0.9	39.0	1.0	27.2 - 49.9	0.849	0 - 4.56
Para-dichlorobenzene	ug/L	EPA602	03-07-95	40.0	<0.5	37.8	0.9	38.6	1.0	26.4 - 49.9	0.566	0 - 4.56
Benzene	ug/L	EPA602	03-07-95	40.0	<0.5	38.9	1.0	40.0	1	29.9 - 47.9	0.778	0 - 4.04
Chlorobenzene	ug/L	EPA602	03-07-95	40.0	<0.5	37.9	0.9	39.4	1.0	28.1 - 48.7	1.06	0 - 4.72
Ethylbenzene	ug/L	EPA602	03-07-95	40.0	<0.5	36.8	0.9	39.9	1.0	28.8 - 48.1	2.19	0 - 4.18
Toluene	ug/L	EPA602	03-07-95	40.0	<0.5	37.5	0.9	42.9	1	29.0 - 48.6	3.82	0 - 4.37
Xylene	ug/L	EPA602	03-07-95	120	<0.5	116	1.0	130	1	87.3 - 144	9.90	0 - 11.9
Methyl-tert-butylether	ug/L	EPA602	03-07-95	40.0	<0.5	40.6	1	41.5	1	27.0 - 50.6	0.636	0 - 5.09

FLOWERS CHEMICAL LABORATORIES, INC.

Section 2

Matrix Spike Recovery

Client: ESI/Charlotte
Project Number: UNOC C-1086
P.O. Number: N/A
Date Sampled: 3-Mar-95
Lab Numbers: 9081 - 9086

Analyte	Unit	Analysis Method	Date	Spike Added	Sample Conc.	MS Conc.	MS Rec.	MSD Conc.	MSD Rec.	Acceptable Limits	RSD Rec.	Acceptable Limits
Total_BTEX	ug/L	EPA602	03-07-95	240	<0.5	229	1.0	253	1	178 - 286	17.0	0 - 22.2

FLOWERS CHEMICAL LABORATORIES, INC.

Section 3

Method Blank Report

Client: ESI/Charlotte
Project Number: UNOC C-1086
P.O. Number: N/A
Date Sampled: 3-Mar-95
Lab Numbers: 9081 - 9086

Analyte	Unit	Method	Date	Concentration
1,1,1-trichloroethane	ug/L	EPA601	03-07-95	<1
1,1,2,2-tetrachloroethane	ug/L	EPA601	03-07-95	<1
1,1,2-trichloroethane	ug/L	EPA601	03-07-95	<1
1,1-dichloroethane	ug/L	EPA601	03-07-95	<1
1,1-dichloroethene	ug/L	EPA601	03-07-95	<1
1,2-dichloroethane	ug/L	EPA601	03-07-95	<1
1,2-dichloropropane	ug/L	EPA601	03-07-95	<1
2-chloroethylvinylether	ug/L	EPA601	03-07-95	<1
Bromodichloromethane	ug/L	EPA601	03-07-95	<1
Bromoform	ug/L	EPA601	03-07-95	<1
cis-1,3-dichloropropene	ug/L	EPA601	03-07-95	<1
Carbon tetrachloride	ug/L	EPA601	03-07-95	<1
Chloroform	ug/L	EPA601	03-07-95	<1
Dibromochloromethane	ug/L	EPA601	03-07-95	<1
Methylene chloride	ug/L	EPA601	03-07-95	<1
trans-1,3,-dichloropropene	ug/L	EPA601	03-07-95	<1
Trichlorofluoromethane	ug/L	EPA601	03-07-95	<2
1,2-dichloroethene	ug/L	EPA601	03-07-95	<1
Trichloroethene	ug/L	EPA601	03-07-95	<1
Tetrachloroethene	ug/L	EPA601	03-07-95	<1
1,2-dibromo-3-chloropropane	ug/L	EPA601	03-07-95	<1
Bromomethane	ug/L	EPA601	03-07-95	<5
Chloroethane	ug/L	EPA601	03-07-95	<3
Chloromethane	ug/L	EPA601	03-07-95	<5
Dichlorodifluoromethane	ug/L	EPA601	03-07-95	<2
Vinyl chloride	ug/L	EPA601	03-07-95	<0.5
o-dichlorobenzene	ug/L	EPA602	03-07-95	<0.5
m-dichlorobenzene	ug/L	EPA602	03-07-95	<0.5
Para-dichlorobenzene	ug/L	EPA602	03-07-95	<0.5
Benzene	ug/L	EPA602	03-07-95	<0.5
Chlorobenzene	ug/L	EPA602	03-07-95	<0.5

FLOWERS CHEMICAL LABORATORIES, INC.

Section 3

Method Blank Report

Client: ESI/Charlotte
Project Number: UNOC C-1086
P.O. Number: N/A
Date Sampled: 3-Mar-95
Lab Numbers: 9081 - 9086

Analyte	Unit	Method	Date	Concentration
Ethylbenzene	ug/L	EPA602	03-07-95	<0.5
Toluene	ug/L	EPA602	03-07-95	0.773
Xylene	ug/L	EPA602	03-07-95	1.76
Methyl-tert-butylether	ug/L	EPA602	03-07-95	<0.5
Total_BTEX	ug/L	EPA602	03-07-95	2.53
Isopropylether	ug/L	EPA602	03-07-95	<1

FLOWERS CHEMICAL LABORATORIES, INC.

Section 4

QCCS Sample Recovery

Client: ESI/Charlotte
Project Number: UNOC C-1086
P.O. Number: N/A
Date Sampled: 3-Mar-95
Lab Numbers: 9081 - 9086

Analyte	Unit	Method	Date	QCCS Expected	QCCS Measured	Rec. %	Acceptable Limits
1,1,1-trichloroethane	ug/L	EPA601	03-07-95	40.0	39.4	98.5%	33.8 - 45.2
1,1,2,2-tetrachloroethane	ug/L	EPA601	03-07-95	40.0	41.2	103%	33.9 - 46.1
1,1,2-trichloroethane	ug/L	EPA601	03-07-95	40.0	39.4	98.5%	34.9 - 45.1
1,1-dichloroethane	ug/L	EPA601	03-07-95	40.0	39.0	97.5%	34.2 - 44.9
1,1-dichloroethene	ug/L	EPA601	03-07-95	40.0	39.0	97.5%	28.6 - 51.1
1,2-dichloroethane	ug/L	EPA601	03-07-95	40.0	40.7	102%	34.4 - 44.8
1,2-dichloropropane	ug/L	EPA601	03-07-95	40.0	38.7	96.8%	35.6 - 43.9
Bromodichloromethane	ug/L	EPA601	03-07-95	40.0	39.0	97.5%	34.0 - 45.4
Bromoform	ug/L	EPA601	03-07-95	40.0	40.3	101%	33.8 - 47.0
cis-1,3-dichloropropene	ug/L	EPA601	03-07-95	40.0	38.7	96.8%	35.2 - 44.1
Carbon tetrachloride	ug/L	EPA601	03-07-95	40.0	39.0	97.5%	34.8 - 44.0
Chloroform	ug/L	EPA601	03-07-95	40.0	39.3	98.3%	35.4 - 43.9
Dibromochloromethane	ug/L	EPA601	03-07-95	40.0	38.8	97.0%	34.5 - 45.3
Methylene chloride	ug/L	EPA601	03-07-95	40.0	40.8	102%	32.3 - 47.4
trans-1,3,-dichloropropene	ug/L	EPA601	03-07-95	40.0	38.8	97.0%	34.8 - 44.7
Trichlorofluoromethane	ug/L	EPA601	03-07-95	40.0	39.0	97.5%	25.9 - 51.3
1,2-dichloroethene	ug/L	EPA601	03-07-95	40.0	38.3	95.8%	32.9 - 45.5
Trichloroethene	ug/L	EPA601	03-07-95	40.0	38.9	97.3%	34.2 - 45.5
Tetrachloroethene	ug/L	EPA601	03-07-95	40.0	38.3	95.8%	34.3 - 44.5
1,2-dibromo-3-chloropropane	ug/L	EPA601	03-07-95	40.0	44.5	111%	31.1 - 51.3
Chloroethane	ug/L	EPA601	03-07-95	40.0	38.8	97.0%	32.8 - 47.2
o-dichlorobenzene	ug/L	EPA602	03-07-95	40.0	38.7	96.8%	32.5 - 47.4
m-dichlorobenzene	ug/L	EPA602	03-07-95	40.0	38.2	95.5%	32.6 - 46.8
Para-dichlorobenzene	ug/L	EPA602	03-07-95	40.0	38.5	96.3%	31.2 - 47.5
Benzene	ug/L	EPA602	03-07-95	40.0	37.6	94.0%	35.0 - 44.6
Chlorobenzene	ug/L	EPA602	03-07-95	40.0	38.9	97.3%	31.5 - 48.1
Ethylbenzene	ug/L	EPA602	03-07-95	40.0	37.2	93.0%	34.4 - 45.6
Toluene	ug/L	EPA602	03-07-95	40.0	36.8	92.0%	34.9 - 45.1
Xylene	ug/L	EPA602	03-07-95	120	111	92.5%	98.1 - 141
Methyl-tert-butylether	ug/L	EPA602	03-07-95	40.0	38.7	96.8%	30.9 - 48.3
Total_BTEX	ug/L	EPA602	03-07-95	240	223	92.9%	174 - 301

FLOWERS CHEMICAL LABORATORIES, INC.

Section 4

QCCS Sample Recovery

Client: ESI/Charlotte
Project Number: UNOC C-1086
P.O. Number: N/A
Date Sampled: 3-Mar-95
Lab Numbers: 9081 - 9086

Analyte	Unit	Method	Date	QCCS Expected	QCCS Measured	Rec. %	Acceptable Limits

FLOWERS

CHEMICAL LABORATORIES INCORPORATED

UNOCAL CERT CRRS CONTRACTOR INVOICE CODING FORM

Preparation Date: 03-15-95

Page: 1 of 1

AFE#: Blanket Contract #CRTEB6010A Release/PO #:

Invoice #: 9081 Invoice Date: 3/15/1995 Site #: C-1086

Activity: Laboratory Analysis

Total Invoice Amount: $442.20 Activity Code Total: $442.20

Activity Code:	604	Amount:	$442.20
Activity Code:		Amount:	
Activity Code:		Amount:	
Activity Code:		Amount:	
Activity Code:		Amount:	
Activity Code:		Amount:	
Activity Code:		Amount:	
Activity Code:		Amount:	
Activity Code:		Amount:	
Activity Code:		Amount:	

General Comments: Water analysis was performed

Approved By: Date:

Approved By: Date:

General Accounting Cod 800-609070-920-367-00051-_600 AFE#

Jefferson L. Flowers, Ph.D
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FLOWERS
CHEMICAL LABORATORIES INCORPORATED

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FAX: (407) 260-6110

CHAIN OF CUSTODY RECORD

Client: ESI
Address: 920 Blairhill RD #104 / P.O. Box 12146
Charlotte, NC 28217
Phone: (704) 522-1111

FCL Client No.:
FCL Project Manager: Jim Barrett
FCL Lab Coordinator:
Requested Due Date: STANDARD

P.O. Number: C-1086
Project Name / No.: UNOC Mebane Pipe
Contact: Greg Whitman

Sampled By (PRINT): Jay Lanzy
Sampler Signature:
Date Sampled: 3-3-95

ITEM NO.		SAMPLE DESCRIPTION	TIME	MATRIX	LAB NO.	NO. OF CONTAINERS	PRESERVATIVES: UNPRESERVED 6 vials	H_2SO_4	HNO_3	HCl			ANALYSES REQUEST: 601	602, MTBE, TAE	610							
1	x	MW-1	13:52	H_2O	9081	4	1			3			x	x	x							
2	x	MW-2	14:01	H_2O	82	4	1			3			x	x	x							
3	x	MW-3	14:15	H_2O	83	4	1			3			x	x	x							
4	x	MW-4	14:55	H_2O	84	4	1			3			x	x	x							
5	x	MW-6	14:07	H_2O	85	4	1			3			x	x	x							
6	x	MW-7	14:40	H_2O	9086	4	1			3			x	x	x							

CARRIER	BAILERS	SHIP DATES: OUT / DATE	RETURNED / DATE

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Jay Lanzy	3-6-95	6:00	FCL	3/7	0944

SPECIAL INSTRUCTIONS

610^S will be on separate chain. They were not shipped
JS

RESULTS

FLOWERS

CHEMICAL LABORATORIES INCORPORATED

Received From:
ESI/Charlotte
920 Blairhill Rd.#104
Charlotte,NC 28217

Date Reported : Mar17 1995
Project Number : @ESI
PO Number :
FDHRSDW Number : 83139
FHRS ENVNumber : E83018
FDER COMQAPNum : 86-0008G
A2LA Number : 0312-01
NCDEHNR Number : 296
SCDHEC Number : 96019

For: EPA610 Discount
Date Sampled:Mar12 1995 Date Received:Mar15 1995 Lab Numbers: 9986-9991

REPORT OF ANALYSIS

Parameter	Unit	Method Detection Limit	%ACC	%PRC	9986 MW1	9987 MW2	9988 MW3	9989 MW4	9990 MW6
Acenaphthylene	ug/L	1.00	75.6	16.8	<1.00	<1.00	<1.00	<1.00	<1.00
Acenaphthene	ug/L	1.00			<1.00	<1.00	<1.00	<1.00	<1.00
Anthracene	ug/L	1.00	72.9	12.0	<1.00	<1.00	<1.00	<1.00	<1.00
Benzo(a)anthracene	ug/L	1.00	68.6	12.0	<1.00	<1.00	<1.00	<1.00	<1.00
Benzo(a)pyrene	ug/L	1.00	71.4	10.2	<1.00	<1.00	<1.00	<1.00	<1.00
Benzo(b)fluoranthene	ug/L	1.00			<1.00	<1.00	<1.00	<1.00	<1.00
Benzo(g,h,i)perylene	ug/L	1.00	66.7	12.1	<1.00	<1.00	<1.00	<1.00	<1.00
Benzo(k)fluoranthene	ug/L	1.00	77.7	10.8	<1.00	<1.00	<1.00	<1.00	<1.00
Chrysene	ug/L	1.00	80.0	8.86	<1.00	<1.00	<1.00	<1.00	<1.00
Dibnz(a,h)anthracene	ug/L	1.00			<1.00	<1.00	<1.00	<1.00	<1.00
Fluoranthene	ug/L	1.00	72.3	12.4	<1.00	<1.00	<1.00	<1.00	<1.00
Fluorene	ug/L	1.00	65.9	14.4	<1.00	<1.00	<1.00	<1.00	<1.00
Indn(1,2,3-cd)pyrene	ug/L	1.00	67.0	12.6	<1.00	<1.00	<1.00	<1.00	<1.00
Naphthalene	ug/L	1.00			<1.00	<1.00	<1.00	2090	<1.00
1-methyl-Naphthalene	ug/L	1.00	68.2	13.6	<1.00	<1.00	<1.00	121.	<1.00
2-methyl-Naphthalene	ug/L	1.00			<1.00	<1.00	<1.00	499.	<1.00
Phenanthrene	ug/L	1.00	66.3	11.9	<1.00	<1.00	<1.00	<1.00	<1.00
Pyrene	ug/L	1.00	72.2	8.91	<1.00	<1.00	<1.00	<1.00	<1.00
Intl_QA_Spike(2FBP)	ug/L	1.00			65.4	62.6	61.9	63.4	63.6
Surr_Spike(DBBP)	ug/L	1.00	74.0	7.55	75.0	78.1	73.2	41.3	70.2
PAH_Extraction	-	-			-	-	-	-	-

Data Release Authorization
Sample integrity and reliability certified by Lab personnel prior to analysis.
Methods of analysis in accordance with FCL QA and EPA approved methodology.
This Report of Analysis may not be reproduced in part.

Jefferson S. Flowers, Ph.d.
President/Technical Director

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FLOWERS

CHEMICAL LABORATORIES INCORPORATED

Received From:
ESI/Charlotte
920 Blairhill Rd.#104
Charlotte,NC 28217

Date Reported : Mar17 1995
Project Number : @ESI
PO Number :
FDHRSDW Number : 83139
FHRS ENVNumber : E83018
FDER COMQAPNum : 86-0008G
A2LA Number : 0312-01
NCDEHNR Number : 296
SCDHEC Number : 96019

For: EPA610 Discount
Date Sampled:Mar12 1995 Date Received:Mar15 1995 Lab Numbers: 9986-9991

REPORT OF ANALYSIS

Parameter	Unit	Method Detection Limit	%ACC	%PRC	9991 MW7
Acenaphthylene	ug/L	1.00	75.6	16.8	<1.00
Acenaphthene	ug/L	1.00			<1.00
Anthracene	ug/L	1.00	72.9	12.0	<1.00
Benzo(a)anthracene	ug/L	1.00	68.6	12.0	<1.00
Benzo(a)pyrene	ug/L	1.00	71.4	10.2	<1.00
Benzo(b)fluoranthene	ug/L	1.00			<1.00
Benzo(g,h,i)perylene	ug/L	1.00	66.7	12.1	<1.00
Benzo(k)fluoranthene	ug/L	1.00	77.7	10.8	<1.00
Chrysene	ug/L	1.00	80.0	8.86	<1.00
Dibnz(a,h)anthracene	ug/L	1.00			<1.00
Fluoranthene	ug/L	1.00	72.3	12.4	<1.00
Fluorene	ug/L	1.00	65.9	14.4	<1.00
Indn(1,2,3-cd)pyrene	ug/L	1.00	67.0	12.6	<1.00
Naphthalene	ug/L	1.00			<1.00
1-methyl-Naphthalene	ug/L	1.00	68.2	13.6	<1.00
2-methyl-Naphthalene	ug/L	1.00			<1.00
Phenanthrene	ug/L	1.00	66.3	11.9	<1.00
Pyrene	ug/L	1.00	72.2	8.91	<1.00
Intl_QA_Spike(2FBP)	ug/L	1.00			54.1
Surr_Spike(DBBP)	ug/L	1.00	74.0	7.55	66.9
PAH_Extraction	-	-			-

Data Release Authorization

Sample integrity and reliability certified by Lab personnel prior to analysis.
Methods of analysis in accordance with FCL QA and EPA approved methodology.
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FLOWERS

CHEMICAL LABORATORIES INCORPORATED

Received From:
ESI/Charlotte
920 Blairhill Rd.#104
Charlotte,NC 28217

Date Reported : Mar17 1995
Project Number : @ESI
PO Number :
FDHRS Number : 83139
FDER Number : E83018
NCDEHNR Number : 296
SCDHEC Number : 96019

For: EPA610 Discount
Date Sampled:Mar12 1995 Date Received:Mar15 1995 Lab Numbers: 9986-9991

REPORT OF INFORMATION

Parameter	Unit	Limit	Expected	Value	Range	Correlation
				9986		
Intl_QA_Spike(2FBP)	ug/L	231.	87.1	65.4		
Surr_Spike(DBBP)	ug/L	-	-	75.0		
				9987		
Intl_QA_Spike(2FBP)	ug/L	231.	87.1	62.6		
Surr_Spike(DBBP)	ug/L	-	-	78.1		
				9988		
Intl_QA_Spike(2FBP)	ug/L	231.	87.1	61.9		
Surr_Spike(DBBP)	ug/L	-	-	73.2		
				9989		
Naphthalene	ug/L	1180	118.	2090	29	
1-methyl-Naphthalene	ug/L	28400	2000	121.		
2-methyl-Naphthalene	ug/L	43100	2610	499.		
Intl_QA_Spike(2FBP)	ug/L	231.	87.1	63.4		
Surr_Spike(DBBP)	ug/L	-	-	41.3		
				9990		
Intl_QA_Spike(2FBP)	ug/L	231.	87.1	63.6		
Surr_Spike(DBBP)	ug/L	-	-	70.2		
				9991		
Intl_QA_Spike(2FBP)	ug/L	231.	87.1	54.1		
Surr_Spike(DBBP)	ug/L	-	-	66.9		

The above information is intended to highlight exceptional data as compared to the upper control limits (Limit) established for each of the parameters. Range exceedances are flagged by integer values in the Range column. The Expected values are derived from historical data. Expected is computed as either the mean or computed directly from another parameter using linear regression. All known correlation rule exceedances are listed as enumerated rule numbers in the Correlation column. Correlation pair rules are defined on the last page.

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3047

FLOWERS CHEMICAL LABORATORIES

ANALYTICAL RESULTS FORM HRS Number 83139

Parameter	Symbol	Unit	MW-1 9986	MW-2 9987	MW-3 9988	MW-4 9989	MW-6 9990	MW-7 9991					Method	QA MDL	Section %RSD	%Rec	Analys	Date
Acenaphthylene	*	ug/L	<1	<1	<1	<1	<1	<1					EPA625	1	16.8	75.6	CLS	03-16-95
Acenaphthene	*	ug/L	<1	<1	<1	<1	<1	<1					EPA625	1	17	63.7	CLS	03-16-95
Anthracene	*	ug/L	<1	<1	<1	<1	<1	<1					EPA625	1	12	72.9	CLS	03-16-95
Benzo(a)anthracene	*	ug/L	<1	<1	<1	<1	<1	<1					EPA625	1	12	68.6	CLS	03-16-95
Benzo(a)pyrene	*	ug/L	<1	<1	<1	<1	<1	<1					EPA625	1	10.2	71.4	CLS	03-16-95
Benzo(b)fluoranthene	*	ug/L	<1	<1	<1	<1	<1	<1					EPA625	1	19.7	55	CLS	03-16-95
Benzo(g,h,i)perylene	*	ug/L	<1	<1	<1	<1	<1	<1					EPA625	1	12.1	66.7	CLS	03-16-95
Benzo(k)fluoranthene	*	ug/L	<1	<1	<1	<1	<1	<1					EPA625	1	10.8	77.7	CLS	03-16-95
Chrysene	*	ug/L	<1	<1	<1	<1	<1	<1					EPA625	1	8.86	80	CLS	03-16-95
Dibnz(a,h)anthracene	*	ug/L	<1	<1	<1	<1	<1	<1					EPA625	1	13.9	64.2	CLS	03-16-95
Fluoranthene	*	ug/L	<1	<1	<1	<1	<1	<1					EPA625	1	12.4	72.3	CLS	03-16-95
Fluorene	*	ug/L	<1	<1	<1	<1	<1	<1					EPA625	1	14.4	65.9	CLS	03-16-95
Indn(1,2,3-cd)pyrene	*	ug/L	<1	<1	<1	<1	<1	<1					EPA625	1	12.6	67	CLS	03-16-95
Naphthalene	*	ug/L	<1	<1	<1	2091	<1	<1					EPA625	1	24.9	60.7	CLS	03-16-95
1-Methyl-Naphthalene	*	ug/L	<1	<1	<1	121	<1	<1					EPA625	1	13.6	68.2	CLS	03-16-95
2-Methyl-Naphthalene	*	ug/L	<1	<1	<1	499	<1	<1					EPA625	1	24.6	57.4	CLS	03-16-95
Phenanthrene	*	ug/L	<1	<1	<1	<1	<1	<1					EPA625	1	11.9	66.3	CLS	03-16-95
Pyrene	*	ug/L	<1	<1	<1	<1	<1	<1					EPA625	1	8.91	72.2	CLS	03-16-95
Surr Spike(2FBP)	*	ug/L	65.4	62.6	61.9	63.4	63.6	54.1					EPA625	1	17	61.8	CLS	03-16-95
Surr Spike(DBBP)	*	ug/L	75.0	78.1	73.2	41.3	70.2	66.9					EPA625	1	7.55	74	CLS	03-16-95
PAH Extraction	*	-	-	-	-	-	-	-					-	-			AEE	03-15-95

Date Received: 03-15-95 Typed: 03-17-95 Sent: 03-17-95

Project Number	UNOC C-1086	
PO Number	Mebane	
Date Sampled	1	03-12-95 *
Date Analyzed	0	
Compacted	1	
Format	NormRR	
Unit Cost	Exted	
EPA610	13500	6 *
Discount	-26730	1 *
0.00		

Quality Assurance Report

Prepared for: ESI/Charlotte
Project Number: UNOC C-1086
Lab Numbers: 9986 - 9991

Report date: 17-Mar-95

ACCREDITED

FLOWERS CHEMICAL LABORATORIES

FLOWERS CHEMICAL LABORATORIES, INC.

QA Conformance Summary

Client:	ESI/Charlotte
Project Number:	UNOC C-1086
P.O. Number:	Mebane
Date Sampled:	12-Mar-95
Lab Numbers:	9986 - 9991

Sample Handling

Sample handling and holding time criteria were met for all samples.

Surrogate Compound Recoveries:

The recovery limits were met for all samples as shown in section 1. This represents complete success.

Accuracy / Precision:

The recovery limits were met for all compounds in the matrix spike as shown in section 2.
The recovery limits were exceeded for 4 compounds in the matrix spike duplicate as shown in section 2. This represents a 77.8% success rate.
The RSD was exceeded for 2 compounds as shown in section 2. This represents a 88.9% success rate.

Method Blanks:

No target compounds were found in the method blank in excess of the method limit as shown in section 3.

QCCS Check Sample:

The control limits were exceeded for 1 compound as shown in section 4. This represents a 94.4% success rate.

FLOWERS CHEMICAL LABORATORIES, INC.

Section 1

Surrogate Compound Recovery

Client: ESI/Charlotte
Project Number: UNOC C-1086
P.O. Number: Mebane
Date Sampled: 12-Mar-95
Lab Numbers: 9986 - 9991

Surr_Spike(2FBP) for EPA625
Unit of measure: ug/L

Surrogate Expected: 100
Acceptability Limits: 26.1 - 133

Laboratory Number	Site Description	Surrogate Recovered	Percent Recovered
9986	MW-1	65.4	65.4
9987	MW-2	62.6	62.6
9988	MW-3	61.9	61.9
9989	MW-4	63.4	63.4
9990	MW-6	63.6	63.6
9991	MW-7	54.1	54.1

FLOWERS CHEMICAL LABORATORIES, INC.

Section 1

Surrogate Compound Recovery

Client: ESI/Charlotte
Project Number: UNOC C-1086
P.O. Number: Mebane
Date Sampled: 12-Mar-95
Lab Numbers: 9986 - 9991

Surr_Spike(DBBP) for EPA625
Unit of measure: ug/L

Surrogate Expected: 100
Acceptability Limits: 26.5 - 147

Laboratory Number	Site Description	Surrogate Recovered	Percent Recovered
9986	MW-1	75.0	75.0
9987	MW-2	78.1	78.1
9988	MW-3	73.2	73.2
9989	MW-4	41.3	41.3
9990	MW-6	70.2	70.2
9991	MW-7	66.9	66.9

FLOWERS CHEMICAL LABORATORIES, INC.

Section 2

Matrix Spike Recovery

Client: ESI/Charlotte
Project Number: UNOC C-1086
P.O. Number: Mebane
Date Sampled: 12-Mar-95
Lab Numbers: 9986 - 9991

Analyte	Unit	Analysis Method	Date	Spike Added	Sample Conc.	MS Conc.	MS Rec.	MSD Conc.	MSD Rec.	Acceptable Limits	RSD Rec.	Acceptable Limits
Acenaphthylene	ug/L	EPA625	03-16-95	40.0	<1	33.8	0.8	26.7	0.7	24.5 - 52.1	5.02	0 - 5.57
Acenaphthene	ug/L	EPA625	03-16-95	40.0	<1	28.5	0.7	22.4	0.6	23.8 - 52.9	4.31	0 - 5.32
Anthracene	ug/L	EPA625	03-16-95	40.0	<1	31.6	0.8	26.7	0.7	24.2 - 52.7	3.46	0 - 6.83
Benzo(a)anthracene	ug/L	EPA625	03-16-95	40.0	<1	29.8	0.7	25.1	0.6	22.4 - 53.8	3.32	0 - 7.63
Benzo(a)pyrene	ug/L	EPA625	03-16-95	40.0	<1	30.6	0.8	26.5	0.7	20.9 - 55.2	2.90	0 - 9.65
Benzo(b)fluoranthene	ug/L	EPA625	03-16-95	40.0	<1	25.0	0.6	18.9	0.5	21.2 - 55.2	4.31	0 - 7.68
Benzo(g,h,i)perylene	ug/L	EPA625	03-16-95	40.0	<1	29.0	0.7	24.4	0.6	22.2 - 54.9	3.25	0 - 9.40
Benzo(k)fluoranthene	ug/L	EPA625	03-16-95	40.0	<1	33.5	0.8	28.7	0.7	21.6 - 54.8	3.39	0 - 7.44
Chrysene	ug/L	EPA625	03-16-95	40.0	<1	34.0	0.9	30.0	0.8	24.3 - 52.6	2.83	0 - 9.04
Dibnz(a,h)anthracene	ug/L	EPA625	03-16-95	40.0	<1	28.2	0.7	23.1	0.6	20.4 - 55.9	3.61	0 - 9.26
Fluoranthene	ug/L	EPA625	03-16-95	40.0	<1	31.4	0.8	26.4	0.7	25.2 - 51.8	3.54	0 - 5.60
Fluorene	ug/L	EPA625	03-16-95	40.0	<1	29.0	0.7	23.7	0.6	23.5 - 52.8	3.75	0 - 5.35
Indn(1,2,3-cd)pyrene	ug/L	EPA625	03-16-95	40.0	<1	29.2	0.7	24.4	0.6	22.4 - 54.8	3.39	0 - 9.30
Naphthalene	ug/L	EPA625	03-16-95	40.0	<1	28.5	0.7	20.0	0.5	22.8 - 54.3	6.01	0 - 5.21
1-Methyl-Naphthalene	ug/L	EPA625	03-16-95	40.0	<1	29.9	0.7	24.7	0.6	24.3 - 54.0	3.68	0 - 5.63
2-Methyl-Naphthalene	ug/L	EPA625	03-16-95	40.0	<1	26.9	0.7	19.0	0.5	23.5 - 53.5	5.59	0 - 5.44
Phenanthrene	ug/L	EPA625	03-16-95	40.0	<1	28.8	0.7	24.3	0.6	24.0 - 52.8	3.18	0 - 6.17
Pyrene	ug/L	EPA625	03-16-95	40.0	<1	30.7	0.8	27.1	0.7	25.0 - 52.1	2.55	0 - 5.96

FLOWERS CHEMICAL LABORATORIES, INC.

Section 3

Method Blank Report

Client: ESI/Charlotte
Project Number: UNOC C-1086
P.O. Number: Mebane
Date Sampled: 12-Mar-95
Lab Numbers: 9986 - 9991

Analyte	Unit	Method	Date	Concentration
Acenaphthylene	ug/L	EPA625	03-16-95	<1
Acenaphthene	ug/L	EPA625	03-16-95	<1
Anthracene	ug/L	EPA625	03-16-95	<1
Benzo(a)anthracene	ug/L	EPA625	03-16-95	<1
Benzo(a)pyrene	ug/L	EPA625	03-16-95	<1
Benzo(b)fluoranthene	ug/L	EPA625	03-16-95	<1
Benzo(g,h,i)perylene	ug/L	EPA625	03-16-95	<1
Benzo(k)fluoranthene	ug/L	EPA625	03-16-95	<1
Chrysene	ug/L	EPA625	03-16-95	<1
Dibnz(a,h)anthracene	ug/L	EPA625	03-16-95	<1
Fluoranthene	ug/L	EPA625	03-16-95	<1
Fluorene	ug/L	EPA625	03-16-95	<1
Indn(1,2,3-cd)pyrene	ug/L	EPA625	03-16-95	<1
Naphthalene	ug/L	EPA625	03-16-95	<1
1-Methyl-Naphthalene	ug/L	EPA625	03-16-95	<1
2-Methyl-Naphthalene	ug/L	EPA625	03-16-95	<1
Phenanthrene	ug/L	EPA625	03-16-95	<1
Pyrene	ug/L	EPA625	03-16-95	<1

FLOWERS CHEMICAL LABORATORIES, INC.

Section 4

QCCS Sample Recovery

Client: ESI/Charlotte
Project Number: UNOC C-1086
P.O. Number: Mebane
Date Sampled: 12-Mar-95
Lab Numbers: 9986 - 9991

Analyte	Unit	Method	Date	QCCS Expected	QCCS Measured	Rec. %	Acceptable Limits
Acenaphthylene	ug/L	EPA625	03-16-95	40.0	33.3	83.3%	25.9 - 51.3
Acenaphthene	ug/L	EPA625	03-16-95	40.0	28.4	71.0%	25.5 - 51.6
Anthracene	ug/L	EPA625	03-16-95	40.0	31.2	78.0%	25.7 - 51.9
Benzo(a)anthracene	ug/L	EPA625	03-16-95	40.0	31.0	77.5%	23.4 - 53.4
Benzo(a)pyrene	ug/L	EPA625	03-16-95	40.0	31.9	79.8%	20.8 - 56.0
Benzo(b)fluoranthene	ug/L	EPA625	03-16-95	40.0	29.4	73.5%	21.7 - 55.1
Benzo(g,h,i)perylene	ug/L	EPA625	03-16-95	40.0	31.5	78.8%	20.2 - 56.7
Benzo(k)fluoranthene	ug/L	EPA625	03-16-95	40.0	30.7	76.8%	22.7 - 54.1
Chrysene	ug/L	EPA625	03-16-95	40.0	33.0	82.5%	24.9 - 52.8
Dibnz(a,h)anthracene	ug/L	EPA625	03-16-95	40.0	31.2	78.0%	19.5 - 58.1
Fluoranthene	ug/L	EPA625	03-16-95	40.0	32.4	81.0%	26.1 - 51.6
Fluorene	ug/L	EPA625	03-16-95	40.0	28.7	71.8%	26.0 - 51.2
Indn(1,2,3-cd)pyrene	ug/L	EPA625	03-16-95	40.0	31.3	78.3%	20.1 - 57.5
Naphthalene	ug/L	EPA625	03-16-95	40.0	25.8	64.5%	28.1 - 50.1
1-Methyl-Naphthalene	ug/L	EPA625	03-16-95	40.0	30.5	76.3%	24.8 - 53.6
2-Methyl-Naphthalene	ug/L	EPA625	03-16-95	40.0	24.6	61.5%	24.0 - 52.8
Phenanthrene	ug/L	EPA625	03-16-95	40.0	29.0	72.5%	25.8 - 51.9
Pyrene	ug/L	EPA625	03-16-95	40.0	30.1	75.3%	25.1 - 52.4

FLOWERS

CHEMICAL LABORATORIES INCORPORATED

UNOCAL CERT CRRS
CONTRACTOR INVOICE CODING FORM

Preparation Date: 03-17-95

Page: 1 of 1

AFE#: Blanket Contract #CRTEB6010A Release/PO #:

Invoice #: 9986 Invoice Date: 3/17/1995 Site #: C-1086

Activity: Laboratory Analysis

Total Invoice Amount: $542.70 Activity Code Total: $542.70

Activity Code:	611	Amount:	$542.70
Activity Code:		Amount:	
Activity Code:		Amount:	
Activity Code:		Amount:	
Activity Code:		Amount:	
Activity Code:		Amount:	
Activity Code:		Amount:	
Activity Code:		Amount:	
Activity Code:		Amount:	
Activity Code:		Amount:	

General Comments: Water analysis was performed

Approved By: Date:

Approved By: Date:

General Accounting Cod 800-609070-920-367-00051-_600 AFE#

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CHEMICAL LABORATORIES INCORPORATED

CHAIN OF CUSTODY RECORD

ESI
920 Blairhill RD #104 / P.O. Box 12146
Charlotte, NC 28217
(407) 522-1111

FCL Client No.
FCL Project Manager: Jim Barrett
FCL Lab Coordinator
Requested Due Date: STANDARD TAT

P.O. Number: C-1086
Project Name / No.: UNOC McBane — P.1
Contact: Greg Whitman

J By (PRINT): Jay Lanzy
r Signature
Date Sampled: 3/12/95

	SAMPLE DESCRIPTION	TIME	MATRIX	LAB NO.	NO. OF CONTAINERS	UNPRESERVED	H_2SO_4	HNO_3	HCl			ANALYSES REQUEST 610								
X	MW-1	16:45	H_2O	9986	1	1						X								
X	MW-2	16:55	H_2O	87	1	1						X								
X	MW-3	17:05	H_2O	88	1	1						X								
X	MW-4	17:15	H_2O	89	1	1						X								
X	MW-6	17:00	H_2O	90	1	1						X								
X	MW-7	17:20	H_2O	9991	1	1						X								

CARRIER	BAILERS	SHIP DATES OUT / DATE	SHIP DATES RETURNED / DATE

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Jay Lanzy	3/13/95	11:05	FCL	3/15	1025

CIAL INSTRUCTIONS

SHIP WITH SAMPLES/TO BE RETURNED WITH RESULTS

Unocal Corporation
376 South Valencia Avenue
Brea, California 92621
Telephone (714) 528-7201

UNOCAL

March 21, 1995 ENV 95-169

Mr. Jay Lanzy
Ecological Services, Inc.
920 Blairhill Drive, Suite 104
Charlotte, NC 28217

PROJECT 95-009

Dear Mr. Lanzy:

Attached are the results of the microbial enumeration analysis that you requested on 6 groundwater samples from UNOCAL's Mebane Site. The number of gasoline degrading microorganisms present in the groundwater samples was determined by the plate count method. This microbial enumeration procedure measures only the viable microorganisms; those cells that are capable of growth on the plating medium used. The viable microorganisms will form colonies on the plating medium. The colonies are counted, and the results are reported as colony-forming units (CFU) per milliliter of groundwater.

If you have any questions regarding the results of the analysis, please feel free to call me at (714) 577-2794.

Sincerely,

Bob W Pease

Bob W. Pease
Staff Biologist

RWP/cs
Attachments

xc: M. H. Ghandehari
B. J. Kelly
H. N. Phan
S. M. Hines - S&ME, Inc.

UNOCAL ENVIRONMENTAL TECHNOLOGY

LABORATORY REPORT

Client:	Ecological Services, Inc.	**Report Date:**	3/21/95
Client Address:	920 Blairhill Drive, Suite 104 Charlotte, NC 28217	**Unocal Ref. No.**	95-009
Project Manager:	Mr. Jay Lanzy	**Date Sampled:**	03/03/95
Project Name:	UNOCAL - Mebane Site	**Date Received:**	03/07/95
Job Number:	C-1086	**Date Analyzed:**	03/14/95
		Physical State:	Aqueous
		Number of Samples:	6

ANALYSIS REQUESTED:

1. Gasoline Degrader Plate Counts

UNOCAL ENVIRONMENTAL TECHNOLOGY

LABORATORY REPORT

Client:	Ecological Services, Inc.	**Report Date:**	03/21/1995
Client Address:	920 Blairhill Drive, Suite 104 Charlotte, NC 28217	**Unocal Ref. No.**	95-009
Project Manager:	Mr. Jay Lanzy	**Date Sampled:**	03/03/95
Project Name:	UNOCAL - Mebane Site	**Date Received:**	03/07/95
Job Number:	C-1086	**Date Analyzed:**	03/14/95
		Physical State:	Aqueous
		Number of Samples:	6

Gasoline Degrader Plate Counts

RESULTS

Sample ID	(CFU/ml)
MW-1	1.3×10^5
MW-2	1.8×10^4
MW-3	6.6×10^3
MW-4	1.8×10^5
MW-6	2.0×10^4
MW-7	$< 2.0 \times 10^2$

Fullerton Environmental Laboratory
1611 E. Orangethorpe Ave.
Fullerton, CA 92831
Phone (714) 447-6868 FAX (714) 447-6800

Chain-Of-Custody Record

Client: ECOLOGICAL SERVICES INC
Date: 3-3-95
Project Name: UNOCAL · C-1086 - MEBANE
Client Project #: C-1086
Project Address:
Turn Around Requested: ☐ Immediate Attention ☐ Rush 24-48 Hours ☐ Rush 72-96 Hours ☒ Normal ☐ Mobile Lab
Project Contact: JAY LANZY
FEL Project #:
Page of
Lab Use Only: Sample Condition as Received: Chilled ☐ yes ☐ no; Sealed ☐ yes ☐ no

Analysis Requested

Sample ID	Sample Location	Date	Time	Laboratory Sample Number	Sample Matrix: Soil (S), Sludge (SL), Aqueous (A)		Heterotrophic Plate Counts	Gasoline Degrader Plate Counts							Number of Containers	Containers/Comments
MW-1	UNOCAL MEBANE NC	3-3-95	13:50				X									
MW-2	UNOCAL MEBANE NC	3-3-95	14:01				X									
MW-3	UNOCAL MEBANE NC	3-3-95	14:15				X									
MW-4	UNOCAL MEBANE NC	3-3-95	14:35				X									
MW-6	UNOCAL MEBANE SIR	3-3-95	14:04				X									
MW-7	UNOCAL MEBANE SIR	3-3-95	14:40				X									

Total Number of Containers: 6

Relinquished by (signature)	Date	Received by (signature)	Date
Company: EST	Time: 6:00	Company	Time
Relinquished by (signature)	Date	Received by Laboratory (signature)	Date
Company	Time	Company	Time

Additional Comments:

03/22/95 THU 08:30 FAX 714 871 6991 UNOCAL