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LOG NO: E93-01-457

Received: 22 JAN 93

Mailed: FEB - 5 1993

Mr. Chris Whipple
Clement Associates
1800 Harrison, PO Box 23218
Oakland California 94623

Project: BECKROOFING

REPORT OF ANALYTICAL RESULTS

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LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED		
01-457-1	MW-2	22 JAN 93		
01-457-2	MW-1	22 JAN 93		
01-457-3	MW-3	22 JAN 93		
PARAMETER		01-457-1	01-457-2	01-457-3
Organic Lead, mg/L		<0.5	<0.5	<0.5
TPH-Volatile/BTEX				
Date Analyzed		01.30.93	01.30.93	01.30.93
Dilution Factor, Times		1	1	20
Benzene, ug/L		4.3	<0.5	2000
Ethylbenzene, ug/L		<0.5	<0.5	280
Toluene, ug/L		<0.5	<0.5	32
Total Xylene Isomers, ug/L		<0.5	<0.5	980
C6 to C14 (as gasoline), ug/L		<50	<50	13000
Approximate Character, .		NO PATTERN	NO PATTERN	GASOLINE

Edward Wilson
Edward Wilson, Laboratory Director



BATCH QC REPORT: Definitions and Terms



Accuracy	The ability of a procedure to determine the "true" concentration of an analyte
Precision	The reproducibility of a procedure demonstrated by the agreement between analyses performed on either duplicates of the same sample or a pair of duplicate spikes
Batch	A group of twenty samples or less, of similar matrix type, prepped together or analyzed together if no sample preparation is required, under the same conditions and with the same reagents. The batch must include a method blank, LCS and matrix QC.
Laboratory Control Standard (LCS)	A blank that is spiked with a known amount of analyte and subjected to the same procedures as the samples. The LCS indicates the accuracy of the analytical method. It also serves to double-check the calibration because it is prepared from a different source than the standard used to calibrate the instrument.
Matrix QC	Quality control tests performed on actual client samples. The matrix spike is a client's sample spiked with known compounds and subjected to the same procedures as the samples. For most analyses, the laboratory performs matrix spikes in duplicate (duplicate spikes).
Method Blank	A sample that contains no analyte. For water analysis, organic-free or deionized water is used. For solids analysis, analyte-free solvent is used. The method blank serves to measure contamination associated with laboratory storage, preparation or instrumentation.
Batch Number	Numeric designation for a batch of samples and the associated QC. The batch number sequence is unique for each determination.
LC Result	Laboratory result of an LCS analysis
LT Result	Expected result, or true value, of the LCS analysis
Percent Recovery	The percentage of analyte recovered. For LCS, the percent recovery is: $LC/LT \times 100$
LC1, LC2 Result	Result of analyzing two separately prepared LCSs, with LC1 indicating one LCS and LC2 indicating the second LCS; used to determine precision.
R1, R2 Result	Result of analyzing replicate aliquots of a sample, with R1 indicating the first analysis of the sample and R2 its corresponding duplicate; used to determine precision.
S1, S2 Result	Result of the analysis of replicate spiked aliquots, with S1 indicating one spike of the sample and S2 the second spike; used to determine precision and accuracy.
Relative Percent Difference (RPD)	Calculated using one of the following: $\frac{(R1 - R2) \times 100}{(R1 + R2) \div 2} \quad \frac{(S1 - S2) \times 100}{(S1 + S2) \div 2} \quad \frac{(LC1 - LC2) \times 100}{(LC1 + LC2) \div 2}$
S1, S2 Recovery	The percentage of analyte recovered. The percent recovery calculation is: S1 Recovery: $\frac{(S1 - R1) \times 100}{(True - R1)}$ S2 Recovery: $\frac{(S2 - R1) \times 100}{(True - R1)}$
True value	The theoretical, or expected, result of a spike sample analysis.
Blank Result	Laboratory result of analysis of the method blank.
RDL (Reporting Detection Limit)	BCA-assigned limit based on, but not the same as, method detection limits (MDLs) determined using EPA guidelines. Sample RDLs may differ from the blank RDL if the samples were diluted.

BC Analytical

: ORDER PLACED FOR CLIENT: Clement Associates 9301457 :
: BC ANALYTICAL : EMVL LAB : 09:28:49 05 FEB 1993 - P. 1 :
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SAMPLES.....	SAMPLE DESCRIPTION..	DETERM.....	DATE....	METHOD.....	EQUIP.	BATCH	ID.NO
			ANALYZED				
9301457*1	MW-2	PB,ORG	02.02.93	LUFT	514-02	931	7036
		TPHG.5030.BTEX	01.30.93	5030/8015	516-19	93011	7833
9301457*2	MW-1	PB,ORG	02.02.93	LUFT	514-02	931	7036
		TPHG.5030.BTEX	01.30.93	5030/8015	516-19	93011	7833
9301457*3	MW-3	PB,ORG	02.02.93	LUFT	514-02	931	7036
		TPHG.5030.BTEX	01.30.93	5030/8015	516-19	93011	7833

Notes: Equipment = BC Analytical identification number for a particular piece of analytical equipment.

ID.NO = BC Analytical employee identification number of analyst.

B C Analytical

BC ANALYTICAL

BATCH QC REPORT
ORDER: E9301457

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LABORATORY CONTROL STANDARDS

PARAMETER	DATE ANALYZED	BATCH NUMBER	LC RESULT	LT RESULT	UNIT	PERCENT RECOVERY
Organic Lead	02.02.93	931	1.82	2.00	mg/L	91
TPH-Volatile/BTEX						
Benzene	01.29.93	93011	18.2	20.0	ug/L	91
Ethylbenzene	01.29.93	93011	20.5	20.0	ug/L	103
Toluene	01.29.93	93011	21.3	20.0	ug/L	107
Total Xylene Isomers	01.29.93	93011	64.0	60.0	ug/L	107
C6 to C14 (as gasoline)	01.29.93	93011	268	222	ug/L	121

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MATRIX QC PRECISION (DUPLICATE SPIKES)

PARAMETER	DATE ANALYZED	BATCH NUMBER	S1 RESULT	S2 RESULT	UNIT	RELATIVE %DIFF
Organic Lead	02.02.93	931	1.45	1.60	mg/L	10
TPH-Volatile/BTEX						
Benzene	01.29.93	93011	19.0	17.9	ug/L	6
Ethylbenzene	01.29.93	93011	20.9	20.0	ug/L	4
Toluene	01.29.93	93011	22.5	21.1	ug/L	6
Total Xylene Isomers	01.29.93	93011	66.6	63.4	ug/L	5
C6 to C14 (as gasoline)	01.29.93	93011	261	263	ug/L	1

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MATRIX QC ACCURACY (SPIKES)

PARAMETER	DATE ANALYZED	BATCH NUMBER	SBAR RESULT	TRUE RESULT	RBAR RESULT	UNIT	PERCENT RECOVERY
Organic Lead	02.02.93	931	1.525	2.00	<0.5	mg/L	76
TPH-Volatile/BTEX							
Benzene	01.29.93	93011	18.45	20.0	<0.5	ug/L	92
Ethylbenzene	01.29.93	93011	20.45	20.0	<0.5	ug/L	102
Toluene	01.29.93	93011	21.8	20.0	<0.5	ug/L	109
Total Xylene Isomers	01.29.93	93011	65	60.0	<0.5	ug/L	108
C6 to C14 (as gasoline)	01.29.93	93011	262	222	<50	ug/L	118

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METHOD BLANKS AND REPORTING DETECTION LIMIT (RDL)

PARAMETER	DATE ANALYZED	BATCH NUMBER	BLANK RESULT	RDL	UNIT	METHOD
Organic Lead	02.02.93	931	0	0.5	mg/L	LUFT
TPH-Volatile/BTEX						
Date Analyzed	01.29.93	93011	1.29.93	NA	Date	5030/8015
Benzene	01.29.93	93011	0	0.5	ug/L	5030/8015
Ethylbenzene	01.29.93	93011	0.10	0.5	ug/L	5030/8015
Toluene	01.29.93	93011	0.24	0.5	ug/L	5030/8015
Total Xylene Isomers	01.29.93	93011	0.35	0.5	ug/L	5030/8015
C6 to C14 (as gasoline)	01.29.93	93011	12	50	ug/L	5030/8015

CHAIN OF CUSTODY RECORD

BCA Log Number 9301457

Client name <u>Clement</u>				Project or PO#		<div style="text-align: center;"> <p>Analyses required</p> <p><i>TPH AS GAS + BTEX</i></p> <p><i>ORG. LEAD</i></p> <p>Hazardous sample Special handling required</p> </div>							
Address				Phone #									
City, State, Zip			Report attention										
Lab Sample number	Date sampled	Time sampled	Type* See key below	Sampled by <u>S. POLSTON</u>	Number of containers	Remarks							
<u>1</u>	<u>1/22/93</u>	<u>1240</u>	<u>GW</u>	<u>MW-2</u>	<u>4</u>	<u>X</u>	<u>X</u>						
<u>2</u>	<u>↓</u>	<u>1305</u>	<u>↓</u>	<u>MW-1</u>	<u>4</u>	<u>X</u>	<u>X</u>						
<u>3</u>	<u>↓</u>	<u>1323</u>	<u>↓</u>	<u>MW-3</u>	<u>4</u>	<u>X</u>	<u>X</u>						

Signature	Print Name	Company	Date	Time
<u>[Signature]</u>	<u>Scott Polston</u>	<u>BCA</u>	<u>1/22/93</u>	<u>1427</u>
Relinquished by				
Received by				
Relinquished by				
Received by				
Relinquished by				
Received by Laboratory	<u>G. Goyena</u>	<u>BCA</u>	<u>1/22/93</u>	<u>1430</u>

BC ANALYTICAL
 1255 Powell Street, Emeryville, CA 94608 (510) 428-2300
 801 Western Avenue, Glendale, CA 91201 (818) 247-5737
 1200 Gene Autry Way, Anaheim, CA 92805 (714) 978-0113

Note: Samples are discarded 30 days after results are reported unless other arrangements are made.
 Hazardous samples will be returned to client or disposed of at client's expense.

Disposal arrangements: _____

*KEY: WW—Wastewater SU—Surface Water SO—Soil
 SL—Sludge PE—Petroleum OT—Other
 NA—Nonaqueous GW—Groundwater AQ—Aqueous

Well Id.: MW-1

Date: 1/22/93

Pump Type: HANDBAIL
Dedicated / Portable (circle one)

Chain of Custody Doc #: _____

Depth of Casing: 36.83

Casing Diameter: 2.0

Depth to Water: 27.90'

Volume Factor: 1.17

Vol. Water in Casing: 8.93

Gallons / Casing volume: 1.15 gal

Time Pump on: _____

Initial Pump Rate
(Q = gpm): 4.50

Time Pump off: _____

Measured by bucket / grad. cylinder, or
other (Specify): _____

Time to Remove 3 Well Vols: _____

Time	Q	Gal. Removed	pH	T °C	SC	OG	Comments
1257		1.5	7.34	17.4	630		
1259		3.0	7.26	17.0	620		
1302		4.5	7.25	17.2	620		

	Rep. 1	Rep. 2	Rep. 3
Final pH			
Final T °C			
Final SC			

pH meter Ser#: 0223596 Calib: Yes / No
SC meter Ser#: 8904054 Calib: Yes / No
WLI Ser#: 14340

Sample ID: MW-2

Time Collected: 1305

Analysis Requested: TPHAS GAS + BTEX
OR6. LEAD

Size / Preservative: (3) 4ml vial / HCl
(1) 1/2 l plastic / copper

Comments: _____

Well Id.: MW-2

Date: 1/22/93

Pump Type: HANDBAIL
Dedicated / Portable (circle one)

Chain of Custody Doc #: _____

Depth of Casing: 36.83'

Casing Diameter: 2.0"

Depth to Water: 28.0'

Volume Factor: .17

Vol. Water in Casing: 8.83'

Gallons / Casing volume: 1.5

Time Pump on: _____

Initial Pump Rate
(Q = gpm): _____

Time Pump off: _____

Time to Remove 3 Well Vols: _____

Measured by bucket, grad. cylinder, or
other (Specify): _____

Time	Q	Gal. Removed	pH	T °C	SC	OG	Comments
1230	-	1.5	6.21	18.0	840		
1233	-	3.0	6.60	18.0	840		
1237	-	4.5	6.57	17.8	850		

	Rep. 1	Rep. 2	Rep. 3
Final pH			
Final T °C			
Final SC			

pH meter Ser#: 0223596 Calib. Yes/ No
SC meter Ser#: 8904054 Calib. Yes/ No
WLI Ser#: 14340

Sample ID: MW-2 Time Collected: 1240

Analysis Requested: TPH AS GAS + BTEX Size / Preservative: (3) 4ml vial / HCl
ORG. LEAD (1) 1/2 l plastic / wopres

Comments: _____

Well Id.: MW-3

Date: 1/22/93

Pump Type: HANDBAIL
Dedicated / Portable (circle one)

Chain of Custody Doc #: _____

Depth of Casing: 34.58

Casing Diameter: 2.0

Depth to Water: 28.5

Volume Factor: 1.17

Vol. Water in Casing: 6.08

Gallons / Casing volume: 1.0

Time Pump on: _____

Initial Pump Rate
(Q = gpm): _____

Time Pump off: _____

Measured by bucket grad. cylinder, or
other (Specify): _____

Time to Remove 3 Well Vols: _____

Time	Q	Gal. Removed	pH	T °C	SC	OG	Comments
1318		1.0	6.74	18.5	870		
1320		2.0	6.76	18.7	880		
1321		3.0	6.79	18.6	880		

Rep. 1 Rep. 2 Rep. 3

Final pH			
Final T °C			
Final S C			

pH meter Ser#: 0223596 Calib: Yes / No
SC meter Ser#: 8904654 Calib: Yes / No
WLI Ser#: 14340

Sample ID: MW-3

Time Collected: 1323

Analysis Requested: TPHAGBAS + BTEX
OR 6. LEAD

Size / Preservative: (3) 4oz vials / HCL
(1) 1/2 gal plastic / no pres

Comments: _____