CAMBRIA

Fax

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From:	Pete McKereghan
Phone:	(510) 420-3325
Pages:	5
Date:	January 27, 2000
Re:	**Former Shell-branded Service Station** 2101 Park Boulevard, Oakland, CA

Hard Copy to Follow? **Yes** ☐ **No** ☑

Dear Barney:

Attached are output sheets from the GSI RBCA Spreadsheet program that Cambria used to calculate the 95% UCL soil concentration as part of our RBCA analysis for the Former Shell-branded Service Station located at 2101 Park Boulevard, Oakland, CA.

As you can see on the printout of Screen 7.3, the 95% UCL value was based on an assumed lognormal distribution of data. Additional information regarding the GSI spreadsheet UCL calculation is presented in the excerpt from their help file.

I hope this information is useful. Please contact me if you have any additional questions regarding Cambria's RBCA for this site.

Sincerely,

Pete McKereghan

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RBCA SITE ASSESSMENT

Tier 2 Worksheet 5.5

Site Name: Former Shell Station — Completed By: EG
Site Location: 2120 Park Boulevard, Oakland, CA — Date Completed: 1/7/1999

TIER 2 SUBSURFACE SOIL CONCENTRATION DATA SUMMARY

CONSTITUENTS DETECTED		Analytical Method			Detected Concentrations		
CAS No.	Name	Typical Detection Limit (mg/kg)	No. of Samples	No. of Detects	Maximum Conc. (mg/kg)	Mean Conc. (mg/kg)	UCL on Mean Conc. (mg/kg)
71-43-2	Benzene		12	12	7.8E-01	1.4E-02	6.3E-02
100-41-4	Ethylbenzene		12	12	1.0E+01	4.2E-02	3.8E-01
1634-04-4	Methyl t-Butyl Ether		12	0	0.0E+00	#DIV/0!	#DIV/0!
108-88-3	Toluene		12	12	5.7E+00	2.2E-02	1.4E-01
1330-20-7	Xylene (mixed isomers)		12	12	5.6E+01	8.6E-02	1.1E+00

Serial: G-273-IBX-894 — Software: GSI RBCA Spreadsheet
Version: 1.0.1

.014 +
.049 B
.063

SCREEN 7.3
SUBSURFACE SOILS
CONCENTRATION
CALCULATOR

UCL Percentile
95%

Analytical Data (Up to 50 Data Points)

	1	2	3	4	5	6	7	8	9	10	11
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Sample Name	S-B	S-C	S-D	S-F	S-G	S-H	S-I	S-J	S-L	S1-5	S2-5
Date Sampled	05/16/95	05/16/95	05/16/95	05/16/95	05/16/95	05/16/95	05/16/95	05/16/95	06/15/95	06/15/95	06/15/95
log $\bar{x}$	-2.509	-5.412	-8.315	-11.218	-14.121	-14.498	-14.629	-14.736	-17.639	-20.242	-21.463
	0.0031	0.00125	0.00125	0.00125	0.00125	0.42	0.74	0.78	0.00125	0.0025	0.06
	0.00125	0.00125	0.00125	0.00125	0.00125	10	4.5	5.1	0.00125	0.0025	2.1
	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	0.00125	0.00125	0.00125	0.00125	0.00125	0.66	5.7	0.88	0.00125	0.0025	2.4
	0.00125	0.00125	0.00125	0.0076	0.00125	56	26	29	0.00125	0.0025	3.5

Calculated Distribution of Data	Default Detection Limit (mg/kg)
Lognormal	0.005
Lognormal	0.005
#DIV/0!	0
Lognormal	0.005
Lognormal	0.005

$= (.014 \pm 1.96 \frac{s.d.}{\sqrt{12}})$

From Groundwater Services, Inc. (GSI) ASTM RBCA Spreadsheet System Help

SCREEN 7: Representative COC Concentrations in Source Media

Representative concentrations for each COC in each source zone medium (i.e., surface soils, subsurface soils, or groundwater) must be provided to facilitate calculation of baseline risk values or constituent reduction factors (CRFs). If you wish to calculate SSTL values only, with no accompanying CRF or baseline risk calculation, the constituent concentrations for all media on the Screen 7 table may be left blank. If either of these accompanying calculations are desired, site-specific COC concentration data must be provided.

For each source medium, appropriate concentration values should be entered directly on the table provided on Screen 7. If a particular source medium is not present at the site, leave the value column blank for that medium. The "Note" column is provided for use with the statistical calculators (see Screens 7.1-7.3 below) and displays a descriptor for maximum (max), mean (mean), or upper confidence limit (UCL) values as appropriate.

If desired, you may access a statistical calculation tool to help in selection of representative concentrations by clicking the "Calculate" button on Screen 7. Use of the statistical calculators (Screens 7.1 - 7.3) is described below. User judgment is required for selection among standard statistical measures (maximum, mean, or upper confidence limit concentrations), as appropriate to each data set and exposure pathway (see Volume 1, Section 3.0, Table 6 of the manual). (As discussed in Volume 1, Section 3.0, Task B, of the manual, care must be taken to include only source zone data in calculation of representative source concentrations. Averaging-in non-source-zone sampling data may tend to under-estimate the actual source concentration and, subsequently, underpredict potential exposure and risk at the POE.)

SCREENS 7.1-7.3: Representative COC Concentration Calculators

By selecting "Calculate" on Screen 7, you may calculate mean, maximum, or upper confidence limit (UCL) values for data sets of up to 50 analytical measurements for each source medium. Following selection of the source medium (surface soil, subsurface soil, or groundwater), test results must be entered for each COC at each sampling point. Data entry columns for 50 samples are provided on the right side of the table. After entering concentration values in the table, select the "Calculate" button to compute the maximum concentration, the mean concentration, and the upper confidence limit (UCL) on the mean concentration for each COC.

The choice of confidence limits used to compute UCL values is made by entering the appropriate value in the space provided (generally this is 90% or 95%). In this program, statistical parameters are calculated on the basis of those samples whose measured concentrations exceed the analytical detection limit. The software identifies the sample set as a normal or lognormal distribution based on the coefficient of variance and determines statistical parameters based on non-transformed or transformed data as appropriate. The calculated values will be displayed in the spaces provided on the left hand portion of the table.

Upon completion of the calculations on Screens 7.1 - 7.3, you may transfer the calculated values onto the input data table on Screen 7 by clicking "Paste Calculated Values." The software will then ask which values to paste: the maximum, mean, or UCL. Selecting "Return" returns to Screen 7 without pasting the calculated values. A minimum of 5 to 10 detected values for each COC are recommended for accurate calculation of a mean or UCL value; otherwise, the maximum detected value can be used as the representative concentration for the constituent.