

6000 S CORPORATION

42080 OSGOOD ROAD

FREMONT, CALIFORNIA 94539

(510) 657-7633

FAX: (510) 657-8010

ALCO
HAZMAT
94 FEB 10 PM 2:15

February 2, 1994

Mr. Steve Inn
Alameda County Water District
PO Box 5110
Fremont, CA 94537

RE: Quarterly Monitoring Report - 4th Quarter 1993

6000 S Corporation
6000 Stevenson Blvd.
Fremont, CA 94538

Dear Mr. Inn:

In accordance with Section 13267(b) of the California Water Code, 6000 S Corporation is hereby reporting on actions taken during the period of July 1, 1993 thru September 30, 1993 regarding environmental issues at the 6000 Stevenson Blvd. site.

As reported in our Quarterly Reports for 1992 and 1993, three environmental concerns remained on the site, which included:

- o Foundry Sand
- o Contaminated Soil (California Oil Recyclers)
- o Installation of additional Ground Water Monitoring Wells

Issue One - Foundry Sand

All of the Foundry Sand has been removed from the site by the generator, American Brass & Iron. The material was removed under the authority of the Honorable William Dunbar, Judge of the Superior Court, in Alameda County Superior Court Action No. H151806-5, dated February 28, 1992, and identified as Interlocutory Judgement And Order For Abatement Of Private Nuisance.

Additional soils and sands have been tested and have been submitted directly to the Alameda Co. Health Dept. and Alameda County Water District (attention Ms. Duerig). I am advised by Mr. Robertson, Hazard Specialist for American Brass & Iron, that they are awaiting final acceptance of these tests.

6000 S Corporation is in receipt of a letter authored by Mr. Inn, to Mr. Robinson of American Brass and Iron, and to Dale Sobek of 6000 S Corporation. The original purpose for this extensive testing was to satisfy the agencies that the foundry sands that have been removed did not contaminate the site soils with metal contaminants. The test results proved that and has been confirmed by Alameda County Water District, so further reports will not discuss this issue. (A copy of the January 26, 1994 letter is attached to this report for reference).

Issue Two - Contaminated Soil

As indicated in our July 15, 1993 report, 6000 S Corporation did proceed to test stockpiled soil stored on site. A final report prepared by Clark and Witham Inc. was submitted to:

Mike Halliwell, A.C.W.D.
Ms. Julie Belomy, City of Fremont
Eddie So, C.R.W.Q.C.B.

Bechtel Corporation, under contract with the E.P.A., has been on site to perform testing in September 1993. Results were received January 17, 1994. A complete copy of the Bechtel Report is enclosed as Attachment 2. We would welcome comments from the Agency on this report.

On December 17, 1993, the Agency submitted a status report to 6000 S Corporation. 6000 S Corporation has referred this status report to our test agency director, Mr. Craig Hertz, Vice President, All Environmental, Inc., along with the Bechtel Test results. The comments and recommendations from All Environmental will be included in our next quarterly report.

**Issue Three - Installation of Ground Water
Monitoring Well**

The following tests have been conducted at the 6000 Stevenson Site in 1993:

APRIL 1993 - A new monitoring well M5 was installed, inspected and accepted by the Agency. Testing of the water was done at that time and tests were submitted by Clark & Witham.

SEPTEMBER 1993 - Bechtel, under direction of the U.S. Environmental Protection Agency, did extensive soils and monitoring well testing. The results are presented in Attachment 2 previously referred to in this report.

DECEMBER 1993 - 6000 S Corporation employed All Environmental Inc. to do quarterly monitoring well water tests for the fourth quarter of 1993 and for four quarters of 1994.

The first tests by All Environmental were run the first week in January 1994. Their test results will be submitted with the next quarterly report.

6000 S Corporation is continuing to aerate the stockpiled soils and plan to retest this in early summer following termination of the rains and first growth of new vegetation. If possible, disposal of this soil could best and most safely be used in a controlled area on site as a "protected fill", a mixed compacted fill, or as a contaminated-free fill under a new building or road bed that may be installed.

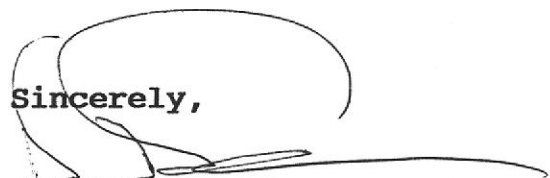
Mr. Steve Inn
Alameda County Water District

February 2, 1994
Page 4

Monitoring well testing will continue through 1994 until the testing contract with All Environmental is fulfilled. At the end of 1994, we will have eight (8) quarters of testing. Test results at this point will become statistically significant and hopefully a final determination can be made to conclude the environmental issue at 6000 Stevenson Blvd.

If there are any questions concerning this report, or if further information is required on any matters reviewed, please contact me at (510) 657-7633.

Sincerely,



Dale W. Sobek
President

DWS:s
Enclosure (2)

cc: Ms. J. Belomy, C.O.F.
Mr. R. Hiett, R.W.Q.C.B.
Mr. S. Seery, A.C.D.E.W.
Mr. Larry E. Lulofs, Esq.
Mr. Rob Wilson, City of Fremont



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RONALD PINO
Treasurer
MARVELL L. HERREN
District Secretary

January 26, 1994

Dale Sobek
6000S Corporation
42080 Osgood Road, No. 5
Fremont, California 94539

Dave Robinson
Environmental Engineering Manager
American Brass & Iron Foundry
7825 San Leandro Street
Oakland, California 94621

INVESTIGATION OF RESIDUAL FOUNDRY SAND METALS AT 6000 S CORPORATION,
6000 STEVENSON BOULEVARD, FREMONT

Alameda County Water District (ACWD) thanks American Brass & Iron Foundry for the December 10, 1993 *Letter Report on Shallow Soil Sampling at 6000 Stevenson Boulevard, Fremont, California*, prepared by Clark & Witham. This report documents recent investigation of lead and other metals within a limited area in which foundry sands were stockpiled. Based on the results of the investigation, we concur that lead and other analyzed metals, which may have been constituents of the foundry sands, do not appear to be present in native soil at levels requiring further investigation and/or cleanup.

Please be advised that this finding is limited to the specific issue of metals at the location of the former foundry sand stockpile which was identified in Clark & Witham's report. Other issues indicated in previous ACWD and Regional Water Quality Control Board (RWQCB) correspondence to 6000 S Corporation still need to be addressed. If conditions change or a water quality threat associated with the former foundry sand stockpile is discovered at the site, additional investigation and/or cleanup could be required.

If you have any questions regarding this matter, please contact Mike Halliwell at 510-659-1970, Extension 412.


STEVEN D. INN
Groundwater Resources Supervisor

SDI:MH:cs
cc: Eddy So, Regional Water Quality Control Board
Julie Belomy, City of Fremont

ATTACHMENT 1

Bechtel

50 Beale Street
San Francisco, CA 94105-1895
Mailing address: P.O. Box 193965
San Francisco, CA 94119-3965

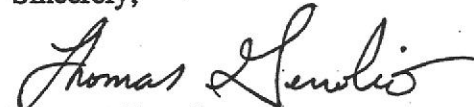
January 14, 1994

Dale Sobek
6000 S Corporation
42080 Osgood Road # 5
Fremont, CA 94539

Dear Mr. Sobek:

Enclosed are copies of the analytical data resulting from the U.S. EPA investigation at the Sobex, Inc. site in Fremont, California. Please feel free to review the document. Thank you for your cooperation during the investigation.

Sincerely,



Thomas Genolio
Site Leader



Bechtel Environmental, Inc.

DATE: 9-23-93 FAX TRANSMISSION

To	Name: Mr. Dale Sobex		
	Organization: 6000 S. Corp		
	Mail Stop:		
	FAX No.:	Area Code 510	Number 657-8010
	Verification No.:	Area Code	Number

From	Name: Michael E. Bellot		
	 U.S. Environmental Protection Region 9, Field Operations, HWMD, SFund 75 Hawthorne Street San Francisco, California 94105		
	Division / Branch (mail stop): H-8-1		
	Phone No.:	Area Code 415	Number 744-2405
	Fax No.:	Area Code 415	Number 744-1916

Pages (including cover) 3

Subject Sampling

Note
Here is a map of the sampling locations and a table of the sampling program. Call me if you have questions.
Thanks
Michael E. Bellot

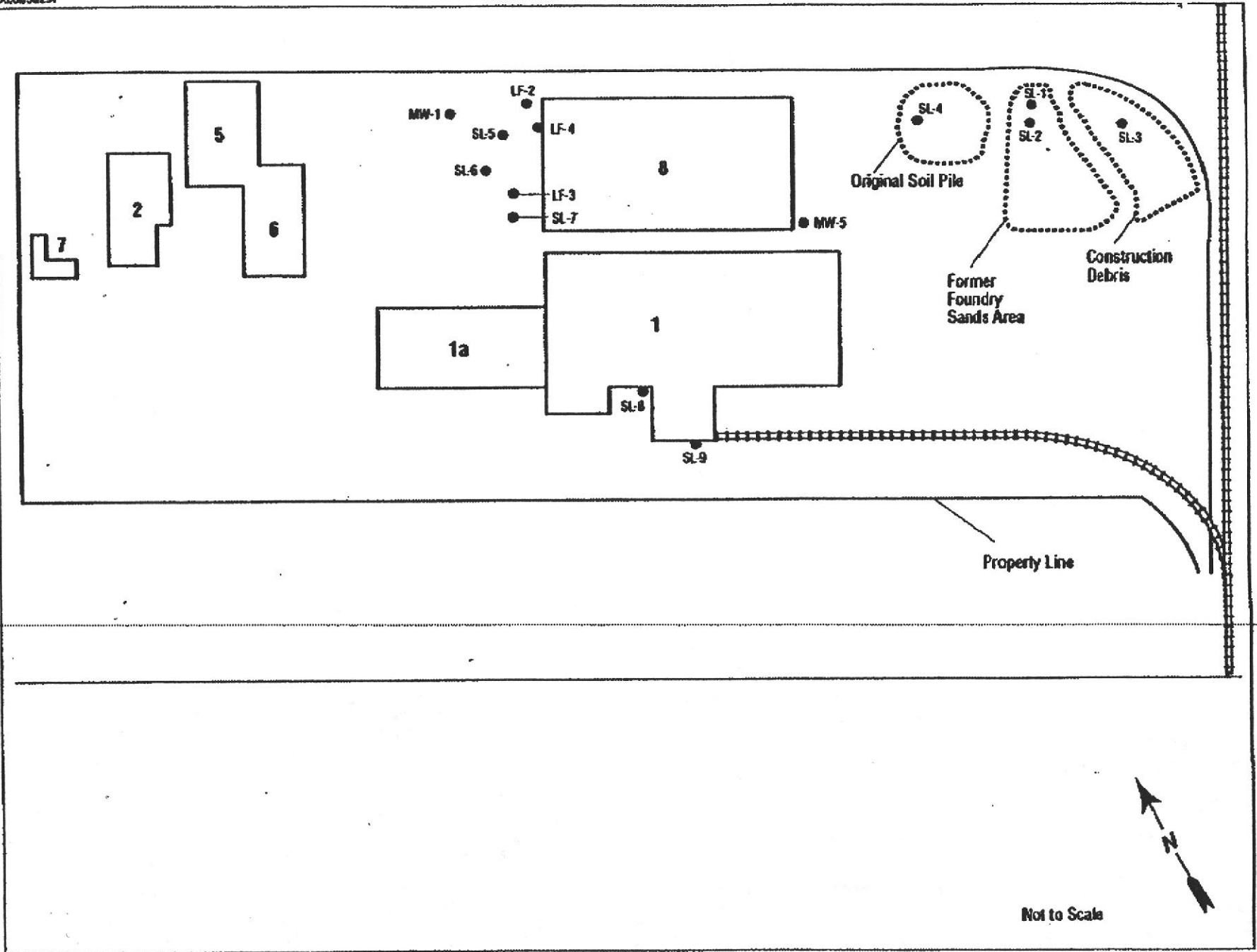


Figure 3-1 Sampling Locations

Table 3-1
SUMMARY OF SAMPLING AND ANALYSIS PROGRAM
SOILS

Potential Source of Contamination	Sample Location	Sample Depth (ft)	Number of Samples	Analytical Parameters
Former Foundry Sands Area	SL-1, SL-2	0-0.5	2	RAS Metals
Construction Debris	SL-3	2	1	RAS Metals RAS PCBs
Soil Pile	SL-4	2	1	RAS Metals
Buildings 3 and 4 Area	SL-5, SL-6, SL-7	6, 8	6	RAS Metals RAS Volatile Organic Compounds RAS PCBs
	SL-10 (Dup)	6	1	
	SL-11 (Dup)	6	1	
Area South of Building 1	SL-8, SL-9	2	2	RAS Metals RAS PCBs
Background Areas	BS-1	0-0.5, 2, 6, 8	4	RAS Metals RAS Volatile Organic Compounds RAS PCBs





ICF TECHNOLOGY INCORPORATED

MEMORANDUM

TO: Michael Bellot
Site Assessment Manager
Site Evaluation and Grants Section, H-8-1

THROUGH: Richard Bauer *RMB*
Environmental Scientist
Quality Assurance Management Section (QAMS), P-3-2

FROM: Margie D. Weiner *MSW*
Senior Data Review Oversight Chemist
Environmental Services Assistance Team (ESAT)

DATE: November 17, 1993

SUBJECT: Review of Analytical Data

Attached are comments resulting from ESAT Region IX review of the following analytical data:

SITE:	Sobex
EPA SSI NO.:	5U
CERCLIS ID NO.:	CAD982399784
CASE/SAS NO.:	20813 Memo #04
SDG NO.:	YP091
LABORATORY:	Analytical Resources, Inc. (ARI)
ANALYSIS:	RAS Pesticides/PCBs
SAMPLE NO.:	1 Water Sample (YP091)
COLLECTION DATE:	September 27, 1993
REVIEWER:	Margaret L. May ESAT/ICF Technology, Inc.

If there are any questions, please contact Margie D. Weiner (ESAT/ICF) at (415) 882-3061, or Richard Bauer (QAMS/EPA) at (415) 744-1499.

Attachment

cc: Bruce Woods, TPO USEPA Region X

TPO: FYI Attention Action

SAMPLING ISSUES: Yes No

Data Validation Report

Case No.: 20813 Memo #04
Site: Sobex
Laboratory: Analytical Resources, Inc. (ARI)
Reviewer: Margaret L. May, ESAT/ICF Technology, Inc.
Date: November 17, 1993

I. Case Summary

SAMPLE INFORMATION:

PEST Sample Number: YP091
Concentration and Matrix: Low Level Water
Analysis: RAS Pesticides/PCBs
SOW: 3/90
Collection Date: September 27, 1993
Sample Receipt Date: September 28, 1993
Extraction Date: September 30, 1993
Analysis Date: October 11, 1993

FIELD QC:

Trip Blanks (TB): None
Field Blanks (FB): None
Equipment Blanks (EB): YP091
Background Samples (BG): None
Field Duplicates (D1): None

METHOD BLANK AND ASSOCIATED SAMPLES:

PBLK1W: YP091, SB and SBD (*See Additional Comments)

TABLES:

1A: Analytical Results with Qualifications
1B: Data Qualifiers

TPO ACTION:

METHOD NON-COMPLIANCE: None.

SAMPLING ISSUES: None.

OTHER: None.

TPO ATTENTION:

METHOD NON-COMPLIANCE: None.

SAMPLING ISSUES: None.

OTHER: None.

ADDITIONAL COMMENTS:

*Since sample YP091 is an equipment blank, it would not be appropriate to perform matrix spike/matrix spike duplicate analysis on this sample. In any case, sufficient volume was not sent to the laboratory. The laboratory performed a blank spike and a blank spike duplicate in order to demonstrate precision and accuracy. Also, a matrix spike and a matrix spike duplicate, YP088MS and YP088MSD, are included for the water samples in Case 20813 Memo #03, SDG YP068.

All method requirements specified in the EPA Contract Laboratory Organics Statement of Work, OLM01.1 - OLM01.9, have been met.

This report was prepared according to the EPA draft document, "National Functional Guidelines for Organic Data Review," December, 1990 (6/91 Revision).

II. Validation Summary

	PEST	
	Acceptable/Comment	
HOLDING TIMES	[YES]	[]
GC PERFORMANCE	[YES]	[]
CALIBRATIONS	[YES]	[]
FIELD QC	[YES]	[]
LABORATORY BLANKS	[YES]	[]
SURROGATES	[YES]	[]
SPIKE/DUPLICATES	[YES]	[]
INTERNAL STANDARDS	[N/A]	[]
COMPOUND IDENTIFICATION	[YES]	[]
COMPOUND QUANTITATION	[YES]	[]
SYSTEM PERFORMANCE	[YES]	[]

N/A - Not Applicable

III. Overall Assessment of Data

All method requirements specified in the EPA Contract Laboratory Organic Statement of Work, OLM01.1 - OLM01.9, have been met.

ANALYTICAL RESULTS

Page 1 of 1

TABLE 1A

Case No.: 20813 Memo #04

Site: Sobex

Lab.: Analytical Resources, Inc. (ARI)

Reviewer: Margaret L. May, ESAT/ICF Technology, Inc.

Date: November 17, 1993

Analysis Type: Low Level Water Sample
for RAS Pesticides/PCBs

Concentration in ug/L

Station Location Sample I.D. Date of Collection	MW-12 YPO91 EB 09/27/93			PBLK1W Method Blank			CRQL											
Pesticide/PCB Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
alpha-BHC	0.05 U			0.05 U			0.05											
beta-BHC	0.05 U			0.05 U			0.05											
delta-BHC	0.05 U			0.05 U			0.05											
gamma-BHC (Lindane)	0.05 U			0.05 U			0.05											
Heptachlor	0.05 U			0.05 U			0.05											
Aldrin	0.05 U			0.05 U			0.05											
Heptachlor epoxide	0.05 U			0.05 U			0.05											
Endosulfan I	0.05 U			0.05 U			0.1											
Dieldrin	0.1 U			0.1 U			0.1											
4,4'-DDE	0.1 U			0.1 U			0.1											
Endrin	0.1 U			0.1 U			0.1											
Endosulfan II	0.1 U			0.1 U			0.1											
4,4'-DDD	0.1 U			0.1 U			0.1											
Endosulfan sulfate	0.1 U			0.1 U			0.1											
4,4'-DDT	0.1 U			0.1 U			0.1											
Methoxychlor	0.5 U			0.5 U			0.5											
Endrin ketone	0.1 U			0.1 U			0.1											
Endrin aldehyde	0.1 U			0.1 U			0.1											
alpha-Chlordane	0.05 U			0.05 U			0.05											
gamma-Chlordane	0.05 U			0.05 U			0.05											
Toxaphene	5 U			5 U			5											
Aroclor-1016	1 U			1 U			1											
Aroclor-1221	2 U			2 U			2											
Aroclor-1232	1 U			1 U			1											
Aroclor-1242	1 U			1 U			1											
Aroclor-1248	1 U			1 U			1											
Aroclor-1254	1 U			1 U			1											
Aroclor-1260	1 U			1 U			1											

Val-Validity Refer to Data Qualifiers in Table 1B

Com-Comments Refer to the Corresponding Section in the Narrative for each letter.

CRQL-Contract Required Quantitation Limits

NA-Not Analyzed

D1, D2, etc.-Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Travel Blank

BG-Background Sample

TABLE 1B
DATA QUALIFIERS

The definitions of the following qualifiers are prepared according to the EPA draft document, "National Functional Guidelines for Organic Data Review," December, 1990 (6/91 Revision).

NO QUALIFIERS indicate that the data are acceptable both qualitatively and quantitatively.

- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- L Indicates results which fall below the Contract Required Quantitation Limit. Results are estimated and are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."
- NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

TPO: FYI Attention Action

Region IX

ORGANIC REGIONAL DATA ASSESSMENT

Case No. 20813 Memo #04 LABORATORY ARI

SDG NO. YP091 SITE NAME Sobex

SOW 3/90 REVIEW COMPLETION DATE November 17, 1993

REVIEWER ESD ESAT REVIEWER'S NAME Margaret L. May

NO. OF SAMPLES	<u>1</u>	WATER	SOIL			
			VOA	BNA	PEST	OTHER
1. HOLDING TIMES	_____	_____	_____	_____	<u>0</u>	_____
2. GC PERFORMANCE	_____	_____	_____	_____	<u>0</u>	_____
3. INITIAL CALIBRATIONS	_____	_____	_____	_____	<u>0</u>	_____
4. CONTINUING CALIBRATIONS	_____	_____	_____	_____	<u>0</u>	_____
5. FIELD QC	_____	_____	_____	_____	<u>0</u>	_____
6. LABORATORY BLANKS	_____	_____	_____	_____	<u>0</u>	_____
7. SURROGATES	_____	_____	_____	_____	<u>0</u>	_____
8. SPIKE/DUPLICATES	_____	_____	_____	_____	<u>0</u>	_____
9. REGIONAL QC	_____	_____	_____	_____	<u>N/A</u>	_____
10. INTERNAL STANDARDS	_____	_____	_____	_____	<u>N/A</u>	_____
11. COMPOUND IDENTIFICATION	_____	_____	_____	_____	<u>0</u>	_____
12. COMPOUND QUANTITATION	_____	_____	_____	_____	<u>0</u>	_____
13. SYSTEM PERFORMANCE	_____	_____	_____	_____	<u>0</u>	_____
14. OVERALL ASSESSMENT	_____	_____	_____	_____	<u>0</u>	_____

O = No problems or minor problems that affect data quality.

X = No more than about 5% of the data points have limitations on data quality.
Samples are either qualified as estimates or rejected.

M = More than about 5% of the data points are qualified as estimates.

Z = More than about 5% of the data points have been rejected.

N/A = Not Applicable

TPO ACTION: None.

TPO ATTENTION: None.

AREAS OF CONCERN: None.



ICF TECHNOLOGY INCORPORATED

MEMORANDUM

TO: Mike Bellot
Site Assessment Manager
Site Evaluation & Grants Section, H-8-1

THROUGH: Richard Bauer *R/B*
Environmental Scientist
Quality Assurance Management Section (QAMS), P-3-2

FROM: Margie D. Weiner *M/W*
Senior Data Review Oversight Chemist
Environmental Services Assistance Team (ESAT)

DATE: November 16, 1993

SUBJECT: Review of Analytical Data

Attached are comments resulting from ESAT Region IX review of the following analytical data:

SITE: Sobex
EPA SSI NO.: 5U
CERCLIS I.D. NO.: CAD982399784
CASE/SAS NO.: 20813 Memo #02
SDG NO.: MYM454

LABORATORY: Southwest Labs of Oklahoma (SWOK)
ANALYSIS: Ras Total Metals

SAMPLE NO.: 17 Soil Samples (See Case Summary)

COLLECTION DATE: September 21 through 24, 1993

REVIEWER: Karen Pettit, ESAT/ICF

If there are any questions, please contact Margie D. Weiner (ESAT/ICF) at (415) 882-3061, or Richard Bauer (QAMS/EPA) at (415) 744-1499.

Attachment

cc: Ray Flores, TPO USEPA Region VI
Steve Remaley, USEPA Region IX

TPO: []FYI [X]Attention [X]Action

SAMPLING ISSUES: [X]Yes []No

Data Validation Report

Case No.: 20813 Memo #02
 Site: Sobex
 Laboratory: Southwest Labs of Oklahoma (SWOK)
 Reviewer: Karen Pettit, ESAT/ICF
 Date: November 16, 1993

I. Case Summary

SAMPLE INFORMATION: SAMPLE #: MYM454 through MYM457 and MYM462 through MYM474

COLLECTION DATE: September 21, 23, and 24, 1993
 SAMPLE RECEIPT DATE: September 23 and 25, 1993

CONCENTRATION & MATRIX: 17 Low Concentration Soil Samples

FIELD QC: Field Blanks (FB): None
 Equipment Blanks (EB): MYM458* and MYM476* (* See Additional Comments)
 Background Samples (BG): None
 Duplicates (D1): MYM462 and MYM463
 (D2): MYM467 and MYM468

LABORATORY QC: Matrix Spike: MYM464
 Duplicates: MYM464
 ICP Serial Dilution: MYM464

ANALYSIS: Ras Total Metals

<u>Analyte</u>	<u>Sample Preparation and Digestion Date</u>	<u>Analysis Date</u>
ICP Metals	September 29, 1993	September 30 through October 5, 1993
Mercury	September 29, 1993	September 29, 1993
Percent Solids	Not Applicable	September 29, 1993

TPO ACTION:

METHOD NON-COMPLIANCE: A contract required detection limit (CRDL) standard was not analyzed during the analysis of the samples for mercury. Therefore, the linearity near the CRDL for mercury could not be verified. The effect on the quality of the data is unknown. However, the laboratory did use a standard at the CRDL in the calibration of the instrument.

SAMPLING ISSUES: None.

OTHER: None.

TPO ATTENTION:

METHOD NON-COMPLIANCE: None.

SAMPLING ISSUES: The reported results of 0.27 $\mu\text{g/L}$ (0.14 mg/Kg) in equipment blank sample MYM458 and 0.23 $\mu\text{g/L}$ (0.12 mg/Kg) in equipment blank MYM476 for mercury exceeds the contract required detection limit (CRDL) of 0.20 $\mu\text{g/L}$ (0.10 mg/Kg).

OTHER: There was no case narrative to explain the analytical conditions for arsenic, lead, selenium, and thallium. The laboratory, when contacted, verified that a Thermo Jarrel Ash ICAP61E Trace Analyzer was used to determine the above analytes.

Although the Statement of Work (SOW) specifies that an Interference Check Sample (ICS) be run and reported by the laboratory for each instrument operated, the interferences (aluminum, calcium, iron, and magnesium) were not reported for the ICP Interference Check Samples (ICS) run on the Trace Analyzer. When the laboratory was questioned about this practice, the validator was told that the laboratory only reports the analytes of interest on Form IV. They assumed that the ICS interferences run on the Trace Analyzer were not analytes of interest since those results from the Trace Analyzer were not reported on Form I.

ADDITIONAL COMMENTS:

Analytical results for equipment blank samples MYM458 and MYM476 can be found in the validation report for Case 20813 Memo #01.

The laboratory analyzed all of the samples for arsenic, lead, selenium, and thallium by Thermo Jarrell Ash ICAP61E Trace Analyzer according to Method 200.7 in the EPA Contract Laboratory Program (CLP) Inorganic Statement Of Work (SOW). The instrument detection limits (IDLs) for arsenic, lead, selenium, and thallium were at or below the RAS contract required detection limits (CRDL) specified for these analytes in the SOW.

In the analysis of the laboratory control sample (LCS), the true value of potassium in the LCS was 50.0 mg/Kg, while the method detection limit (MDL) and CRDL were 159 mg/Kg and 1000 mg/Kg, respectively. Since the true value for potassium in the LCS was less than the MDL, the result obtained for potassium was reported as non-detected.

According to the SOW, the spike sample analysis is designed to provide information about the effect of the sample matrix on the digestion and measurement methodology. The SOW further specifies that samples be spiked at concentrations appropriate to the analytical method used. There have been no spike concentration levels established for the ICAP61E Trace Analyzer. Consequently, the laboratory spiked the QC sample to be analyzed for arsenic, lead, selenium, and thallium at ICP/AA levels. This practice is within the contractual specifications. However, since the IDLs and CRDLs for arsenic, lead, selenium, and thallium as well as the expected analyte concentrations in the samples are low, it is more appropriate to use the lower concentration GFAA

spike levels which are consistent with the expected analyte concentration.

The analytical results with qualifications are listed in Table 1A. The definitions of the data qualifiers used in Table 1A are listed in Table 1B. This report was prepared in accordance with the EPA Contract Laboratory Program Inorganic Statement of Work (ILMO2.0), and the EPA Draft Document "Laboratory Data Validation Functional Guidelines For Evaluating Inorganic Analyses," October, 1989.

II. Validation Summary

The data were evaluated based on the following parameters:

<u>Parameter</u>	<u>Acceptable</u>	<u>Comment</u>
1. Data Completeness	No	D
2. Sample Preservation and Holding Times	Yes	
3. Calibration	Yes	
a. Initial Calibration Verification		
b. Continuing Calibration Verification		
c. Calibration Blank		
4. Blanks	No	B
a. Laboratory Preparation Blank		
b. Field Blank		
c. Equipment Blank		
5. ICP Interference Check Sample Analysis	Yes	
6. Laboratory Control Sample Analysis	Yes	
7. Spiked Sample Analysis	No	C
8. Laboratory Duplicate Sample Analysis	Yes	
9. Field Duplicate Sample Analysis	No	E
10. GFAA QC Analysis	N/A	
a. Duplicate Injections		
b. Analytical Spikes		
c. Method of Standard Addition		
11. ICP Serial Dilution Analysis	Yes	
12. Sample Quantitation	Yes	A
13. Sample Result Verification	Yes	

N/A - Not Applicable

III. Validity and Comments

- A. The following results are estimated and are flagged "J" in Table 1A.
- All results above the method detection limit but below the contract required detection limit (denoted with an "L" qualifier)

Results above the method detection limit (MDL) but below the contract required detection limit (CRDL) are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.

- B. The following results are estimated because of equipment blank contamination. The results are flagged "J" in Table 1A.

- Mercury in samples MYM454 and MYM455

An equipment blank is reagent water that has been collected as a sample using decontaminated sampling equipment. The intent of an equipment blank is to monitor for contamination introduced by the sampling activity, although any laboratory introduced contamination will also be present.

The reported result of 0.27 $\mu\text{g/L}$ (0.14 mg/Kg) for mercury in equipment blank sample MYM458 exceeds the CRDL of 0.20 $\mu\text{g/L}$ (0.10 mg/Kg). Detected results are considered estimated unless the concentration in the sample exceeds ten times the amount in the associated equipment blank. The results reported for mercury in the samples listed above are considered uncertain due to equipment blank contamination. In addition, the reported result of 0.23 $\mu\text{g/L}$ (0.12 mg/Kg) for mercury in equipment blank MYM476 exceeds the CRDL of 0.20 $\mu\text{g/L}$ (0.10 mg/Kg). However, all of the associated sample results were less than the IDL and were not estimated. Analytical results for equipment blank samples MYM458 and MYM476 can be found in the validation report for Case 20813 Memo #01.

- C. The following results are estimated because of matrix spike recovery results outside method QC limits. The results are flagged "J" in Table 1A.

- Antimony, cadmium, chromium, and vanadium in all of the samples

The matrix spike sample analysis provides information about the effect of the sample matrix on the digestion and measurement methodology. The matrix spike recovery results for antimony, cadmium, chromium, and vanadium in QC sample MYM464 did not meet the 75-125% criteria for accuracy. The percent recovery and possible percent bias for each analyte is presented below and is based on an ideal recovery of 100%.

<u>Analyte</u>	<u>MYM464</u> <u>% Recovery</u>	<u>MYM464</u> <u>% Bias</u>
Antimony	17.3	-82.7
Cadmium	72.9	-27.1
Chromium	49.5	-50.5
Vanadium	73.8	-26.2

Results above the MDL are considered quantitatively uncertain. The results reported for antimony, cadmium, chromium, and vanadium in all of the samples may be biased low, and where non-detected, false negatives may exist.

According to the SOW (ILM02.0), when the pre-digestion spike recovery results for ICP analytes (except silver) fall outside the control limits of 75-125%, a post-digestion spike must be performed for those elements that do not meet the specified criteria. Post-

digestion spike recovery results of 68.1% for antimony, 76.9% for cadmium, 84.7% for chromium, and 75.1% for vanadium were obtained in QC sample MYM464. Since the post-digestion spike recovery for cadmium, chromium, and vanadium was acceptable, the low pre-digestion spike recovery results obtained for cadmium (72.9%), chromium (49.5%), and vanadium (73.8%) may indicate poor laboratory technique, sample nonhomogeneity, or matrix effects which may interfere with accurate analysis, depressing the analytical result. Since both the post and pre-digestion spikes for antimony did not meet the QC criteria, matrix effects may be present in the sample digestate which may depress the analyte signal during analysis.

- D. A CRDL standard was not analyzed during the analysis of the samples for mercury. Therefore, the linearity near the CRDL for mercury could not be verified. The effect on the quality of the data is unknown. According to the SOW (ILM02.0), in order to verify linearity near the CRDL, the laboratory must analyze an AA standard at the CRDL or the IDL, whichever is greater, at the beginning of each sample analysis run, but not before the initial calibration verification (ICV). However, the laboratory did use a standard at the CRDL in the calibration of the instrument.
- E. Relative percent differences (RPDs) of 88.4 for arsenic, 43.1 for copper, 46.8 for iron, and 39.5 for nickel were obtained in the analysis of field duplicate pair samples MYM467 and MYM468. The analysis of field duplicate samples is a measure of both field and analytical precision. The results are expected to vary more than laboratory duplicates (35 RPD or $\pm 2 \times \text{CRDL}$ criteria for precision) since sampling variability is included in the measurement. The imprecision in the results of the analysis of the field duplicate pair may be due to the sample matrix, sample nonhomogeneity, poor sampling or laboratory technique, or method defects. The effect on the quality of the data is not known.

ANALYTICAL RESULTS

Page 1 of 3

TABLE 1A

Case No.: 20813 Memo #02

Site: Sobex

Lab.: Southwest Labs of Oklahoma, Inc. (SWOK)

Reviewer: Karen Pettit, ESAT/ICF Technology, Inc.

Date: November 16, 1993

Analysis Type: Low Concentration Soil Samples
for RAS Total Metals

Concentration in mg/Kg

Station Location Sample I.D. Date of Collection	SL-1 MYM454 09/21/93			SL-2 MYM455 09/21/93			SL-3 MYM456 09/21/93			SL-4 MYM457 09/21/93			SL-5.1 MYM462 D1 09/23/93			SL-10 MYM463 D1 09/23/93			SL-5.2 MYM464 09/23/93		
Parameter	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Aluminum	23300			22400			21100			18100			24100			22300			19700		
Antimony	22.4	J	C	21.0	J	C	23.8	J	C	45.7	J	C	24.7	J	C	25.2	J	C	19.5	J	C
Arsenic	7.1			4.8			5.4			5.4			7.6			7.3			6.9		
Barium	354			303			301			178			220			220			182		
Beryllium	1.4			1.4			0.69 L	J	A	0.52 L	J	A	0.76 L	J	A	0.71 L	J	A	0.62 L	J	A
Cadmium	2.7	J	C	3.4	J	C	0.43 U	J	C	7.8	J	C	0.46 U	J	C	0.45 U	J	C	0.44 U	J	C
Calcium	81700			85300			25300			8670			6130			5300			5400		
Chromium	64.9	J	C	57.1	J	C	84.2	J	C	98.4	J	C	89.2	J	C	88.6	J	C	82.7	J	C
Cobalt	8.3 L	J	A	4.5 L	J	A	14.1			10.7 L	J	A	13.4			13.8			13.1		
Copper	81.6			80.6			51.6			46.0			33.8			33.2			29.3		
Iron	21600			20200			27400			28700			28600			28300			25500		
Lead	822			1110			200			6560			9.0			8.2			6.9		
Magnesium	19600			18600			13300			9420			15100			15200			14300		
Manganese	3490			3090			661			479			473			463			491		
Mercury	0.24	J	BD	0.27	J	BD	0.11 U		D	0.11 U		D	0.11 U		D	0.11 U		D	0.11 U		D
Nickel	34.3			22.9			77.5			66.6			104			105			100		
Potassium	1880			1940			2350			2070			2680			2360			2520		
Selenium	1.1			1.5			0.94 L	J	A	1.7			0.91 U			0.91 U			0.88 U		
Silver	1.0 L	J	A	1.5 L	J	A	0.67 L	J	A	0.67 U			0.68 U			0.68 U			0.66 U		
Sodium	1650			1730			1740			1040 L	J	A	1050 L	J	A	1030 L	J	A	591 L	J	A
Thallium	1.4 U			1.4 U			1.5 U			1.6 U			1.6 U			1.6 U			1.5 U		
Vanadium	40.8	J	C	24.9	J	C	59.2	J	C	51.1	J	C	57.0	J	C	54.4	J	C	50.3	J	C
Zinc	679			731			532			48600			63.1			58.4			53.5		
Percent Solids	99.4 %			99.4 %			92.5 %			89.2 %			87.6 %			88.2 %			91.1 %		

N/A-Not Applicable

Val-Validity Refer to Data Qualifiers in Table 1B

Com.-Comments Refer to the Corresponding Section in the Narrative for each letter.

IDL-Instrument Detection Limit for Waters, MDL-Method Detection Limit for Soils.

D1, D2, etc.-Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Travel Blank, BG-Background

CRDL-Contract Required Detection Limit

ANALYTICAL RESULTS

Page 2 of 3

TABLE 1A

Case No.: 20813 Memo #02

Site: Sobex

Lab.: Southwest Labs of Oklahoma, Inc. (SWOK)

Reviewer: Karen Pettit, ESAT/ICF Technology, Inc.

Date: November 16, 1993

Analysis Type: Low Concentration Soil Samples
for RAS Total Metals

Concentration in mg/Kg

Station Location Sample I.D. Date of Collection	SL-6.1 MYM465 09/23/93			SL-6.2 MYM466 09/23/93			SL-12 MYM467 D2 09/24/93			SL-13 MYM468 D2 09/24/93			SL-8 MYM469 09/23/93			SL-9 MYM470 09/23/93			BS-1.1 MYM471 09/23/93					
	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com			
Aluminum	25800			18600			18600			21900			22700			17400			20000					
Antimony	25.1	J	C	21.6	J	C	24.3	J	C	34.7	J	C	23.9	J	C	23.5	J	C	24.9	J	C			
Arsenic	6.4			6.9			3.6		E	9.3		E	5.9			5.0			4.9					
Barium	244			145			191			243			281			274			257					
Beryllium	0.77	L	J	A	0.48	L	J	A	0.69	L	J	A	0.71	L	J	A	0.56	L	J	A	0.60	L	J	A
Cadmium	0.46	U	J	C	0.50	U	J	C	0.85	L	J	AC	1.6	J	C	0.49	U	J	C	0.49	U	J	C	
Calcium	11100			4670			14300			11600			4920			5220			3410					
Chromium	95.9	J	C	89.6	J	C	80.7	J	C	110	J	C	83.4	J	C	71.9	J	C	78.2	J	C			
Cobalt	13.8			11.8	L	J	A	11.3				14.4			21.1			15.1			14.5			
Copper	33.7			29.1			38.0		E	58.9		E	31.0			32.8			27.5					
Iron	29600			26900			22900		E	36900		E	26900			25300			26300					
Lead	9.6			6.4			403			345			8.0			13.0			9.3					
Magnesium	16400			14700			10700			13000			10400			11900			10600					
Manganese	479			501			682			611			566			507			523					
Mercury	0.11	U		D	0.12	U		D	0.11	U		D	0.12	U		D	0.12	U		D	0.12	U		D
Nickel	108			101			62.0		E	92.5		E	94.0			89.4			89.2					
Potassium	2940			2090			2030			2480			1970			1760			1900					
Selenium	0.92	U			1.0	U			0.89	U			1.7			0.98	U			1.0	L	J	A	
Silver	0.69	U			0.75	U			0.67	U			0.74	L	J	A			0.74	U			0.72	U
Sodium	2030			791	L	J	A	1720			1940		843	L	J	A	1020	L	J	A	2450			
Thallium	1.6	U			1.7	U			1.6	U			1.7	U			1.7	U			1.7	U		
Vanadium	60.9	J	C	48.6	J	C	48.1	J	C	61.3	J	C	57.8	J	C	45.4	J	C	48.7	J	C			
Zinc	65.8			53.0			1420			1820			47.7			60.0			50.3					
Percent Solids	87.4 %			80.0 %			89.5 %			89.3 %			81.4 %			81.3 %			83.7 %					

N/A-Not Applicable

Val-Validity Refer to Data Qualifiers in Table 1B

Com.-Comments Refer to the Corresponding Section in the Narrative for each letter.

IDL-Instrument Detection Limit for Waters, MDL-Method Detection Limit for Soils.

D1, D2, etc.-Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Travel Blank, BG-Background

CRDL-Contract Required Detection Limit

ANALYTICAL RESULTS
TABLE 1A

Case No.: 20813 Memo #02
 Site: Sobex
 Lab.: Southwest Labs of Oklahoma, Inc. (SWOK)
 Reviewer: Karen Pettit, ESAT/ICF Technology, Inc.
 Date: November 16, 1993

Analysis Type: Low Concentration Soil Samples
 for RAS Total Metals

Concentration in mg/Kg

Station Location Sample I.D. Date of Collection	BS-1.2 MYM472 09/23/93			BS-1.3 MYM473 09/23/93			BS-1.4 MYM474 09/23/93			Lab Blank			MDL			CRDL		
	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Aluminum	24400			17600			14200			6.2 U			6.2			40.0		
Antimony	30.9	J	C	23.7	J	C	24.4	J	C	3.8 U			3.8			12.0		
Arsenic	8.3			7.3			6.3			0.60 U			0.60			2.0		
Barium	310			179			150			1.2 U			1.2			40.0		
Beryllium	0.74	L	J	A	0.53	L	J	A	0.55	L	J	A	0.20			1.0		
Cadmium	0.46	U	J	C	0.46	U	J	C	0.46	U	J	C	0.40			1.0		
Calcium	12500			8340			8350			40.0 U			40.0			1000		
Chromium	93.6	J	C	74.9	J	C	64.7	J	C	0.80 U			0.80			2.0		
Cobalt	14.8			13.3			12.5			1.0 U			1.0			10.0		
Copper	35.0			33.1			31.8			1.8	L	J	A	0.60		5.0		
Iron	30300			26800			25600			1.6 U			1.6			20.0		
Lead	9.1			8.1			8.1			0.60 U			0.60			0.60		
Magnesium	20100			14300			13100			22.8 U			22.8			1000		
Manganese	463			457			401			0.40 U			0.40			3.0		
Mercury	0.12	U		D	0.11	U		D	0.12	U		D	0.10			0.10		
Nickel	104			100			92.7			4.2 U			4.2			8.0		
Potassium	2560			1890			1470			159 U			159			1000		
Selenium	0.92	U			0.91	U			0.92	U			0.80			1.0		
Silver	0.69	U			0.69	U			0.69	U			0.60			2.0		
Sodium	2660			630	L	J	A	437	L	J	A	36.6	U			1000		
Thallium	1.6	U			1.6	U			1.6	U			1.4			2.0		
Vanadium	58.6	J	C	43.8	J	C	36.5	J	C	1.2 U			1.2			10.0		
Zinc	57.9			56.1			55.3			1.4 U			1.4			4.0		
Percent Solids	86.7 %			87.5 %			86.9 %			N/A			N/A			N/A		

N/A-Not Applicable

Val-Validity Refer to Data Qualifiers in Table 1B

Com.-Comments Refer to the Corresponding Section in the Narrative for each letter.

IDL-Instrument Detection Limit for Waters, MDL-Method Detection Limit for Soils.

D1, D2, etc.-Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Travel Blank, BG-Background

CRDL-Contract Required Detection Limit

TABLE 1B

DATA QUALIFIER DEFINITIONS FOR INORGANIC DATA REVIEW

The definitions of the following qualifiers are prepared in accordance with the EPA draft document, "Laboratory Data Validation Functional Guidelines For Evaluating Inorganic Analyses," October, 1989.

NO QUALIFIER indicates that the data are acceptable both qualitatively and quantitatively.

- U The analyte was analyzed for but was not detected above the level of the reported value. The reported value is the Instrument Detection Limit (IDL) for waters and the Method Detection Limit (MDL) for soils for all the analytes except Cyanide (CN) and Mercury (Hg). For CN and Hg, the reported value is the Contract Required Detection Limit (CRDL).
- L The analyte was analyzed for but results fell between the IDL for waters or the MDL for soils and the CRDL. Results are estimated and are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.
- J The analyte was analyzed for and was positively identified, but the reported numerical value may not be consistent with the amount actually present in the environmental sample.
- R The analyte was analyzed for, but the presence or absence of the analyte has not been verified. Resampling and reanalysis are necessary to confirm or deny the presence of the analyte.
- UJ A combination of the "U" and the "J" qualifier. The analyte was analyzed for but was not detected above the reported value. The reported value may not accurately or precisely represent the sample IDL or MDL.

TPO: []FYI [X]Attention [X]Action

Region IX

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 20813 Memo #02 LABORATORY SWOK

SDG NO. MYM454 SITE NAME Sobex

SOW NO. ILM02.0 REVIEW COMPLETION DATE November 16, 1993

REVIEWER [] ESD [X] ESAT REVIEWER'S NAME Karen Pettit

NO. OF SAMPLES _____ WATER 17 SOIL _____ OTHER _____

	ICP	GFAA	Hg	Cyanide
1. PRESERVATION AND HOLDING TIMES	<u>0</u>	_____	<u>0</u>	_____
2. CALIBRATION	<u>0</u>	_____	<u>0</u>	_____
3. BLANKS	<u>0</u>	_____	<u>M</u>	_____
4. ICP INTERFERENCE CHECK SAMPLE (ICS)	<u>0</u>	_____	_____	_____
5. LABORATORY CONTROL SAMPLE (LCS)	<u>0</u>	_____	<u>0</u>	_____
6. DUPLICATE ANALYSIS	<u>0</u>	_____	<u>0</u>	_____
7. MATRIX SPIKE ANALYSIS	<u>M</u>	_____	<u>0</u>	_____
8. METHOD OF STANDARD ADDITION (MSA)	_____	_____	_____	_____
9. ICP SERIAL DILUTION	<u>0</u>	_____	_____	_____
10. SAMPLE QUANTITATION	<u>0</u>	_____	<u>0</u>	_____
11. SAMPLE VERIFICATION	<u>0</u>	_____	<u>0</u>	_____
12. GFAA ANALYTICAL SPIKE	_____	_____	_____	_____
13. OVERALL ASSESSMENT	<u>M</u>	_____	<u>M</u>	_____

0 - No problems or minor problems that affect data quality.
X - No more than about 5% of the data points have limitations on data quality. Data points are either qualified as estimates or rejected.
M - More than about 5% of the data points are qualified as estimates.
Z - More than about 5% of the data points have been rejected.
N/A - Not Applicable.

TPO: []FYI [X]Attention [X]Action

Region IX

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 20813 Memo #02 LABORATORY SWOK
SDG NO. MYM454 SITE NAME Sobex
SOW NO. ILM02.0 REVIEW COMPLETION DATE November 16, 1993
REVIEWER [] ESD [X] ESAT REVIEWER'S NAME Karen Pettit
NO. OF SAMPLES _____ WATER 17 SOIL _____ OTHER _____

TPO ACTION: A contract required detection limit (CRDL) standard was not analyzed during the analysis of the samples for mercury. Therefore, the linearity near the CRDL for mercury could not be verified. The effect on the quality of the data is unknown. However, the laboratory did use a standard at the CRDL in the calibration of the instrument.

TPO ATTENTION: There was no case narrative to explain the analytical conditions for arsenic, lead, selenium, and thallium. The laboratory, when contacted, verified that a Thermo Jarrel Ash ICAP61E Trace Analyzer was used to determine the above analytes.

The reported results of 0.27 $\mu\text{g/L}$ (0.14 mg/Kg) in equipment blank sample MYM458 and 0.23 $\mu\text{g/L}$ (0.12 mg/Kg) in equipment blank MYM476 for mercury exceeds the CRDL of 0.20 $\mu\text{g/L}$ (0.10 mg/Kg).

Although the Statement of Work (SOW) specifies that an Interference Check Sample (ICS) be run and reported for each instrument operated, the interferents (aluminum, calcium, iron, and magnesium) were not reported by the laboratory for the ICP Interference Check Samples (ICS) run on the Trace Analyzer. When the laboratory was questioned about this practice, the validator was told that the laboratory only reports the analytes of interest on Form IV. They assumed that the ICS interferents run on the Trace Analyzer were not analytes of interest since those results from the Trace Analyzer were not reported on Form I.

AREAS OF CONCERN: According to the SOW, the spike sample analysis is designed to provide information about the effect of the sample matrix on the digestion and measurement methodology. The SOW further specifies that samples be spiked at concentrations appropriate to the analytical method used. There have been no spike concentration levels established for the ICAP61E Trace Analyzer. Consequently, the laboratory spiked the QC sample to be analyzed for arsenic, lead, selenium, and thallium at ICP/AA levels. This practice is within the contractual specifications. However, since the MDLs and CRDLs for arsenic, lead, selenium, and thallium as well as the expected analyte concentrations in the samples are low, it is more appropriate to use the lower concentration GFAA spike levels which are consistent with the expected analyte concentration.

In Reference to Case No(s) .:

20813 Memo #01 and Memo #02

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM

Telephone Record Log

Date of Call: November 3 and 4, 1993
Laboratory Name: SWOK
Lab Contact: Jason Ruckman
Region: IX
Regional Contact: Karen Pettit
Call Initiated By: Laboratory X Region

In reference to data for the following sample number(s):
SDG MYM458 and SDG MYM454

Summary of Questions/Issues Discussed:

1. There was no case narrative to explain the analytical conditions for arsenic, lead, selenium, and thallium. Please verify the type of ICP instrument used to analyze arsenic, lead, selenium and thallium.
2. Why were the interferences not reported for the Interference Check Samples (ICS) run on the Trace Analyzer?

Summary of Resolution:

1. A Thermo Jarrel Ash ICAP61E Trace Analyzer was used.
2. The laboratory only reports the analytes of interest on Form IV. They assumed that the ICS interferences run on the Trace Analyzer were not analytes of interest since those results from the Trace Analyzer were not reported on Form I.

Karen Pettit
Signature

11/15/93
Date

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy



ICF TECHNOLOGY INCORPORATED

MEMORANDUM

TO: Michael Bellot
Site Assessment Manager
Site Evaluation and Grants Section, H-8-1

THROUGH: Richard Bauer *RB*
Environmental Scientist
Quality Assurance Management Section (QAMS), P-3-2

FROM: Margie D. Weiner *MSW*
Senior Data Review Oversight Chemist
Environmental Services Assistance Team (ESAT)

DATE: November 17, 1993

SUBJECT: Review of Analytical Data

Attached are comments resulting from ESAT Region IX review of the following analytical data:

SITE:	Sobex
EPA SSI NO.:	5U
CERCLIS ID NO.:	CAD982399784
CASE/SAS NO.:	20813 Memo #03
SDG NO.:	YP068
LABORATORY:	Analytical Resources, Inc. (ARI)
ANALYSIS:	RAS Volatiles and RAS Pesticides/PCBs
SAMPLE NO.:	11 Soil and 9 Water Samples (see Case Summary)
COLLECTION DATE:	September 21, 23, 24, and 27, 1993
REVIEWER:	Adriane G.L. Scheele and Margaret L. May ESAT/ICF Technology, Inc.

If there are any questions, please contact Margie D. Weiner (ESAT/ICF) at (415) 882-3061, or Richard Bauer (QAMS/EPA) at (415) 744-1499.

Attachment

cc: Bruce Woods, TPO USEPA Region X
Steve Remaley, USEPA Region IX

TPO: []FYI [X]Attention []Action

SAMPLING ISSUES: [X]Yes []No

Data Validation Report

Case No.: 20813 Memo #03
 Site: Sobex
 Laboratory: Analytical Resources, Inc. (ARI)
 Reviewer: Adriane G.L. Scheele and Margaret L. May,
 ESAT/ICF Technology, Inc.
 Date: November 17, 1993

I. Case Summary

SAMPLE INFORMATION:

VOA Sample Numbers: Soil: YP073, YP074, YP075, YP076, YP077,
 YP083, and YP084
 Water: YP086
 PEST Sample Numbers: Soil: YP068, YP073 through YP077, and YP080
 through YP084
 Water: YP069 through YP072 and YP086 through
 YP090
 Concentration and Matrix: Low Level Soil and Water
 Analysis: RAS Volatiles and RAS Pesticides/PCBs
 SOW: 3/90
 Collection Date: September 21, 23, 24, and 27, 1993
 Sample Receipt Date: September 22, 24, 25, and 28, 1993
 Extraction Date: September 24 and 28 and October 3, 1993
 Analysis Date: September 27 and 30 and
 October 8, 9, 12, and 13, 1993

FIELD QC:

Trip Blanks (TB): None
 Field Blanks (FB): None
 Equipment Blanks (EB): YP069, YP086, and YP089
 Background Samples (BG): None
 Field Duplicates (D1): YP070 and YP071
 (D2): YP073 and YP074

METHOD BLANKS AND ASSOCIATED SAMPLES:

VBLK1: YP073, YP074, YP075, YP075MS, YP075MSD,
 YP076, YP077, YP083, and YP084
 VBLK2: YP086, YP086MS, and YP086MSD
 PBLK1W: YP069 and YP072
 PBLK2W: YP070, YP071, YP086, YP087, YP088, YP088MS,
 YP088MSD, YP089, and YP090
 PBLK1S: YP068, YP073, YP074, YP075, YP075MS,
 YP075MSD, YP076, YP077, and YP080 through
 YP084

TABLES:

1A: Analytical Results with Qualifications
 1B: Data Qualifiers

MS - Matrix Spike; MSD - Matrix Spike Duplicate

ESAT-QA-9A-9308/20813M03.RPT

TPO ACTION:

METHOD NON-COMPLIANCE: None.

SAMPLING ISSUES: None.

OTHER: None.

TPO ATTENTION:

METHOD NON-COMPLIANCE: Sample YP068 was received at the laboratory on September 22, 1993 and extracted 11 days later on October 3, 1993. The extraction exceeded the 10 day contractual holding time by 1 day.

SAMPLING ISSUES: Although the bottles were labelled correctly, the sampler misidentified sample YP087 as YP078 on the Organic Traffic Report/Chain of Custody.

OTHER: The quantitation limits for two volatile target analytes were qualified as estimated due to calibration problems.

ADDITIONAL COMMENTS:

In the volatiles analyses, no Tentatively Identified Compounds (TICs) were detected in any of the samples analyzed.

This report was prepared according to the EPA draft document, "National Functional Guidelines for Organic Data Review," December, 1990 (6/91 Revision).

II. Validation Summary

	VOA		PEST	
	Acceptable/Comment	Acceptable/Comment	Acceptable/Comment	Acceptable/Comment
HOLDING TIMES	[YES]	[]	[YES]	[]
GC/MS TUNE/GC PERFORMANCE	[YES]	[]	[YES]	[]
CALIBRATIONS	[NO]	[B]	[YES]	[]
FIELD QC	[YES]	[]	[YES]	[]
LABORATORY BLANKS	[YES]	[]	[YES]	[]
SURROGATES	[YES]	[]	[YES]	[]
MATRIX SPIKE/DUPLICATES	[YES]	[]	[YES]	[]
INTERNAL STANDARDS	[YES]	[]	[N/A]	[]
COMPOUND IDENTIFICATION	[YES]	[]	[YES]	[]
COMPOUND QUANTITATION	[YES]	[]	[YES]	[A,C]
SYSTEM PERFORMANCE	[YES]	[]	[YES]	[]

N/A - Not Applicable

III. Validity and Comments

A. The following results are estimated and flagged "J" in Table 1A:

- All results below the Contract Required Quantitation Limits (denoted with an "L" qualifier)

Results below the Contract Required Quantitation Limits (CRQL) are considered to be qualitatively acceptable, but quantitatively unreliable, due to the uncertainty in analytical precision near the limit of detection.

B. Due to large percent Differences (%Ds) in the volatile Continuing Calibrations, the quantitation limits for the following analytes are estimated (J) (see Table 1A):

- Chloromethane in samples YP073 through YP077, YP083 and YP084 and method blank VBLK1
- Acetone in sample YP086 and method blank VBLK2

The Continuing Calibration checks the instrument performance daily and produces the Relative Response Factors for each target analyte that are used for quantitation.

Percent Differences of 52.1 and 40.9 were observed for chloromethane and acetone, respectively, in the Continuing Calibrations performed September 27 and 30, 1993. These values exceed the $\leq \pm 25\%$ QC advisory validation criterion.

C. Sample YP068 has slightly raised quantitation limits for aldrin and 4,4'-DDE due to interferences from Aroclor-1254 that preclude confident quantitation at lower limits. (See Table 1A.)

ANALYTICAL RESULTS
TABLE 1A

Case No.: 20813 Memo #03

Site: Sobex

Analysis Type: Low Level Soil Samples
for RAS Volatiles

Lab.: Analytical Resources, Inc. (ARI)

Reviewer: Adriane G.L. Scheele, ESAT/ICF Technology, Inc.

Date: November 17, 1993

Concentration in ug/Kg

Station Location Sample I.D. Date of Collection	SL-5.1 YP073 D2 09/23/93			SL-10 YP074 D2 09/23/93			SL-5.2 YP075 09/23/93			SL-6.1 YP076 09/23/93			SL-6.2 YP077 09/23/93		
	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Chloromethane	11 U	J	B	11 U	J	B	11 U	J	B	11 U	J	B	11 U	J	B
Bromomethane	11 U			11 U			11 U			11 U			11 U		
Vinyl chloride	11 U			11 U			11 U			11 U			11 U		
Chloroethane	11 U			11 U			11 U			11 U			11 U		
Methylene chloride	11 U			11 U			11 U			11 U			11 U		
Acetone	11 U			11 U			11 U			11 U			11 U		
Carbon disulfide	11 U			11 U			11 U			11 U			11 U		
1,1-Dichloroethene	11 U			11 U			11 U			11 U			11 U		
1,1-Dichloroethane	11 U			11 U			11 U			11 U			11 U		
1,2-Dichloroethene (total)	11 U			11 U			11 U			11 U			11 U		
Chloroform	11 U			11 U			11 U			11 U			11 U		
1,2-Dichloroethane	11 U			11 U			11 U			11 U			11 U		
2-Butanone	11 U			11 U			11 U			11 U			11 U		
1,1,1-Trichloroethane	11 U			11 U			11 U			11 U			11 U		
Carbon tetrachloride	11 U			11 U			11 U			11 U			11 U		
Bromodichloromethane	11 U			11 U			11 U			11 U			11 U		
1,2-Dichloropropane	11 U			11 U			11 U			11 U			11 U		
cis-1,3-Dichloropropene	11 U			11 U			11 U			11 U			11 U		
Trichloroethene	11 U			11 U			11 U			11 U			11 U		
Dibromochloromethane	11 U			11 U			11 U			11 U			11 U		
1,1,2-Trichloroethane	11 U			11 U			11 U			11 U			11 U		
Benzene	11 U			11 U			11 U			11 U			11 U		
trans-1,3-Dichloropropene	11 U			11 U			11 U			11 U			11 U		
Bromoform	11 U			11 U			11 U			11 U			11 U		
4-Methyl-2-pentanone	11 U			11 U			11 U			11 U			11 U		
2-Hexanone	11 U			11 U			11 U			11 U			11 U		
Tetrachloroethene	11 U			11 U			11 U			11 U			11 U		
1,1,2,2-Tetrachloroethane	11 U			11 U			11 U			11 U			11 U		
Toluene	14			19			35			74			53		
Chlorobenzene	11 U			11 U			11 U			11 U			11 U		
Ethylbenzene	11 U			11 U			11 U			11 U			11 U		
Styrene	11 U			11 U			11 U			11 U			11 U		
Xylene (total)	11 U			11 U			11 U			11 U			11 U		
Percent Solids	88 %			88 %			89 %			88 %			93 %		

Val-Validity Refer to Data Qualifiers in Table 1B

Com-Comments Refer to the Corresponding Section in the Narrative for each letter.

D1, D2, etc.-Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Travel Blank

CRQL-Contract Required Quantitation Limits

N/A-Not Applicable

BG-Background Sample

TABLE 1A

Case No.: 20813 Memo #03

Site: Sobex

Lab.: Analytical Resources, Inc. (ARI)

Reviewer: Adriane G.L. Scheele, ESAT/ICF Technology, Inc.

Date: November 17, 1993

Analysis Type: Low Level Soil Samples
for RAS Volatiles

Concentration in ug/Kg

Station Location	BS-1.3			BS-1.4			Method Blank			CRQL					
	Sample I.D.			Sample I.D.			VBLK1								
Date of Collection	09/23/93			09/23/93											
Volatile Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Chloromethane	11 U	J	B	11 U	J	B	10 U	J	B	10					
Bromomethane	11 U			11 U			10 U			10					
Vinyl chloride	11 U			11 U			10 U			10					
Chloroethane	11 U			11 U			10 U			10					
Methylene chloride	11 U			11 U			10 U			10					
Acetone	11 U			11 U			10 U			10					
Carbon disulfide	11 U			11 U			10 U			10					
1,1-Dichloroethene	11 U			11 U			10 U			10					
1,1-Dichloroethane	11 U			11 U			10 U			10					
1,2-Dichloroethene (total)	11 U			11 U			10 U			10					
Chloroform	11 U			11 U			10 U			10					
1,2-Dichloroethane	11 U			11 U			10 U			10					
2-Butanone	11 U			11 U			10 U			10					
1,1,1-Trichloroethane	11 U			11 U			10 U			10					
Carbon tetrachloride	11 U			11 U			10 U			10					
Bromodichloromethane	11 U			11 U			10 U			10					
1,2-Dichloropropane	11 U			11 U			10 U			10					
cis-1,3-Dichloropropene	11 U			11 U			10 U			10					
Trichloroethene	11 U			11 U			10 U			10					
Dibromochloromethane	11 U			11 U			10 U			10					
1,1,2-Trichloroethane	11 U			11 U			10 U			10					
Benzene	11 U			11 U			10 U			10					
trans-1,3-Dichloropropene	11 U			11 U			10 U			10					
Bromoform	11 U			11 U			10 U			10					
4-Methyl-2-pentanone	11 U			11 U			10 U			10					
2-Hexanone	11 U			11 U			10 U			10					
Tetrachloroethene	11 U			11 U			10 U			10					
1,1,2,2-Tetrachloroethane	11 U			11 U			10 U			10					
Toluene	110			90			10 U			10					
Chlorobenzene	11 U			11 U			10 U			10					
Ethylbenzene	11 U			11 U			10 U			10					
Styrene	11 U			11 U			10 U			10					
Xylene (total)	11 U			11 U			10 U			10					
Percent Solids	87 %			86 %			N/A			N/A					

Val-Validity Refer to Data Qualifiers in Table 1B

Com-Comments Refer to the Corresponding Section in the Narrative for each letter.

D1, D2, etc.-Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Travel Blank

CRQL-Contract Required Quantitation Limits

N/A-Not Applicable

BG-Background Sample

TABLE 1A

Case No.: 20813 Memo #03

Site: Sobex

Analysis Type: Low Level Water Sample

Lab.: Analytical Resources, Inc. (ARI)

for RAS Volatiles

Reviewer: Adriane G.L. Scheele, ESAT/ICF Technology, Inc.

Date: November 17, 1993

Concentration in ug/L

Station Location Sample I.D. Date of Collection	MW-8 YP086 EB 09/23/93			Method Blank VBLK2			CRQL								
	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Chloromethane	10 U			10 U			10								
Bromomethane	10 U			10 U			10								
Vinyl chloride	10 U			10 U			10								
Chloroethane	10 U			10 U			10								
Methylene chloride	10 U			10 U			10								
Acetone	10 U	J	B	10 U	J	B	10								
Carbon disulfide	10 U			10 U			10								
1,1-Dichloroethene	10 U			10 U			10								
1,1-Dichloroethane	10 U			10 U			10								
1,2-Dichloroethene (total)	10 U			10 U			10								
Chloroform	10 U			10 U			10								
1,2-Dichloroethane	10 U			10 U			10								
2-Butanone	10 U			10 U			10								
1,1,1-Trichloroethane	10 U			10 U			10								
Carbon tetrachloride	10 U			10 U			10								
Bromodichloromethane	10 U			10 U			10								
1,2-Dichloropropane	10 U			10 U			10								
cis-1,3-Dichloropropene	10 U			10 U			10								
Trichloroethene	10 U			10 U			10								
Dibromochloromethane	10 U			10 U			10								
1,1,2-Trichloroethane	10 U			10 U			10								
Benzene	10 U			10 U			10								
trans-1,3-Dichloropropene	10 U			10 U			10								
Bromoform	10 U			10 U			10								
4-Methyl-2-pentanone	10 U			10 U			10								
2-Hexanone	10 U			10 U			10								
Tetrachloroethene	10 U			10 U			10								
1,1,2,2-Tetrachloroethane	10 U			10 U			10								
Toluene	10 U			10 U			10								
Chlorobenzene	10 U			10 U			10								
Ethylbenzene	10 U			10 U			10								
Styrene	10 U			10 U			10								
Xylene (total)	10 U			10 U			10								

Val-Validity Refer to Data Qualifiers in Table 1B

Com-Comments Refer to the Corresponding Section in the Narrative for each letter.

D1, D2, etc.-Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Travel Blank

CRQL-Contract Required Quantitation Limits

N/A-Not Applicable

BG-Background Sample

ANALYTICAL RESULTS

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TABLE 1A

Case No.: 20813 Memo #03

Site: Sobex

Lab.: Analytical Resources, Inc. (ARI)

Reviewer: Margaret L. May, ESAT/ICF Technology, Inc.

Date: November 17, 1993

Analysis Type: Low Level Soil Samples
for RAS Pesticides/PCBs

Concentration in ug/Kg

Station Location Sample I.D. Date of Collection	SL-3 YP068 09/21/93			SL-5.1 YP073 D2 09/23/93			SL-10 YP074 D2 09/23/93			SL-5.2 YP075 09/23/93			SL-6.1 YP076 09/23/93			SL-6.2 YP077 09/23/93			SL-8 YP080 09/23/93		
	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
alpha-BHC	2 U			2 U			2 U			2 U			2 U			2 U			2 U		
beta-BHC	2 U			2 U			2 U			2 U			2 U			2 U			2 U		
delta-BHC	2 U			2 U			2 U			2 U			2 U			2 U			2 U		
gamma-BHC (Lindane)	2 U			2 U			2 U			2 U			2 U			2 U			2 U		
Heptachlor	2 U			2 U			2 U			2 U			2 U			2 U			2 U		
Aldrin	3 U		C	2 U			2 U			2 U			2 U			2 U			2 U		
Heptachlor epoxide	2 U			2 U			2 U			2 U			2 U			2 U			2 U		
Endosulfan I	2 U			2 U			2 U			2 U			2 U			2 U			2 U		
Dieldrin	3 U			3 U			3 U			4 U			4 U			3 U			4 U		
4,4'-DDE	4 U		C	3 U			3 U			4 U			4 U			3 U			4 U		
Endrin	3 U			3 U			3 U			4 U			4 U			3 U			4 U		
Endosulfan II	3 U			3 U			3 U			4 U			4 U			3 U			4 U		
4,4'-DDD	3 U			3 U			3 U			4 U			4 U			3 U			4 U		
Endosulfan sulfate	3 U			3 U			3 U			4 U			4 U			3 U			4 U		
4,4'-DDT	3 U			3 U			3 U			4 U			4 U			3 U			4 U		
Methoxychlor	15 U			17 U			16 U			18 U			18 U			17 U			18 U		
Endrin ketone	3 U			3 U			3 U			4 U			4 U			3 U			4 U		
Endrin aldehyde	3 U			3 U			3 U			4 U			4 U			3 U			4 U		
alpha-Chlordane	2 U			2 U			2 U			2 U			2 U			2 U			2 U		
gamma-Chlordane	2 U			2 U			2 U			2 U			2 U			2 U			2 U		
Toxaphene	150 U			170 U			160 U			180 U			180 U			170 U			180 U		
Aroclor-1016	30 U			33 U			31 U			35 U			36 U			33 U			35 U		
Aroclor-1221	60 U			66 U			64 U			71 U			73 U			67 U			71 U		
Aroclor-1232	30 U			33 U			31 U			35 U			36 U			33 U			35 U		
Aroclor-1242	30 U			33 U			31 U			35 U			36 U			33 U			35 U		
Aroclor-1248	30 U			33 U			31 U			35 U			36 U			33 U			35 U		
Aroclor-1254	100			33 U			31 U			35 U			12 L	J	A	33 U			35 U		
Aroclor-1260	25 L	J	A	33 U			31 U			35 U			36 U			33 U			35 U		
Percent Solids	92 %			89 %			89 %			91 %			88 %			94 %			81 %		

Val-Validity Refer to Data Qualifiers in Table 1B

Com-Comments Refer to the Corresponding Section in the Narrative for each letter.

CRQL-Contract Required Quantitation Limits

N/A-Not Applicable

D1, D2, etc.-Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Travel Blank

BG-Background Sample

ANALYTICAL RESULTS

TABLE 1A

Case No.: 20813 Memo #03

Site: Sobex

Lab.: Analytical Resources, Inc. (ARI)

Reviewer: Margaret L. May, ESAT/ICF Technology, Inc.

Date: November 17, 1993

Analysis Type: Low Level Soil Samples
for RAS Pesticides/PCBs

Concentration in ug/Kg

Station Location Sample I.D. Date of Collection	SL-9 YP081 09/23/93			BS-1.2 YP082 09/23/93			BS-1.3 YP083 09/23/93			BS-1.4 YP084 09/23/93			Method Blank PBLK1S			CRQL		
	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Pesticide/PCB Compound																		
alpha-BHC	2 U			2 U			2 U			2 U			2 U			2		
beta-BHC	2 U			2 U			2 U			2 U			2 U			2		
delta-BHC	2 U			2 U			2 U			2 U			2 U			2		
gamma-BHC (Lindane)	2 U			2 U			2 U			2 U			2 U			2		
Heptachlor	2 U			2 U			2 U			2 U			2 U			2		
Aldrin	2 U			2 U			2 U			2 U			2 U			2		
Heptachlor epoxide	2 U			2 U			2 U			2 U			2 U			2		
Endosulfan I	2 U			2 U			2 U			2 U			2 U			2		
Dieldrin	3 U			3 U			3 U			3 U			3 U			3		
4,4'-DDE	12			3 U			3 U			3 U			3 U			3		
Endrin	3 U			3 U			3 U			3 U			3 U			3		
Endosulfan II	3 U			3 U			3 U			3 U			3 U			3		
4,4'-DDD	10			3 U			3 U			3 U			3 U			3		
Endosulfan sulfate	3 U			3 U			3 U			3 U			3 U			3		
4,4'-DDT	3 U			3 U			3 U			3 U			3 U			3		
Methoxychlor	17 U			15 U			15 U			17 U			17 U			17		
Endrin ketone	3 U			3 U			3 U			3 U			3 U			3		
Endrin aldehyde	3 U			3 U			3 U			3 U			3 U			3		
alpha-Chlordane	2 U			2 U			2 U			2 U			2 U			2		
gamma-Chlordane	2 U			2 U			2 U			2 U			2 U			2		
Toxaphene	170 U			150 U			150 U			170 U			170 U			170		
Aroclor-1016	34 U			30 U			30 U			34 U			33 U			33		
Aroclor-1221	69 U			61 U			60 U			69 U			67 U			67		
Aroclor-1232	34 U			30 U			30 U			34 U			33 U			33		
Aroclor-1242	34 U			30 U			30 U			34 U			33 U			33		
Aroclor-1248	34 U			30 U			30 U			34 U			33 U			33		
Aroclor-1254	34 U			30 U			30 U			34 U			33 U			33		
Aroclor-1260	34 U			30 U			30 U			34 U			33 U			33		
Percent Solids	77 %			87 %			87 %			87 %			N/A			N/A		

Val-Validity Refer to Data Qualifiers in Table 1B

Com-Comments Refer to the Corresponding Section in the Narrative for each letter.

CRQL-Contract Required Quantitation Limits

N/A-Not Applicable

D1, D2, etc.-Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Travel Blank

BG-Background Sample

ANALYTICAL RESULTS

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TABLE 1A

Case No.: 20813 Memo #03

Site: Sobex

Lab.: Analytical Resources, Inc. (ARI)

Reviewer: Margaret L. May, ESAT/ICF Technology, Inc.

Date: November 17, 1993

Analysis Type: Low Level Water Samples
for RAS Pesticides/PCBs

Concentration in ug/L

Station Location	SL-2			LF-3			MW-6			LF-4			MW-8			MW-1			LF-2		
Sample I.D.	YP069 EB			YP070 D1			YP071 D1			YP072			YP086 EB			YP087			YP088		
Date of Collection	09/21/93			09/24/93			09/24/93			09/21/93			09/23/93			09/24/93			09/27/93		
Pesticide/PCB Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
alpha-BHC	0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U		
beta-BHC	0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U		
delta-BHC	0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U		
gamma-BHC (Lindane)	0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U		
Heptachlor	0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U		
Aldrin	0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U		
Heptachlor epoxide	0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U		
Endosulfan I	0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U		
Dieldrin	0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U		
4,4'-DDE	0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U		
Endrin	0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U		
Endosulfan II	0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U		
4,4'-DDD	0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U		
Endosulfan sulfate	0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U		
4,4'-DDT	0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U		
Methoxychlor	0.5 U			0.5 U			0.5 U			0.5 U			0.5 U			0.5 U			0.5 U		
Endrin ketone	0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U		
Endrin aldehyde	0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U			0.1 U		
alpha-Chlordane	0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U		
gamma-Chlordane	0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U			0.05 U		
Toxaphene	5 U			5 U			5 U			5 U			5 U			5 U			5 U		
Aroclor-1016	1 U			1 U			1 U			1 U			1 U			1 U			1 U		
Aroclor-1221	2 U			2 U			2 U			2 U			2 U			2 U			2 U		
Aroclor-1232	1 U			1 U			1 U			1 U			1 U			1 U			1 U		
Aroclor-1242	1 U			1 U			1 U			1 U			1 U			1 U			1 U		
Aroclor-1248	1 U			1 U			1 U			1 U			1 U			1 U			1 U		
Aroclor-1254	1 U			1 U			1 U			1 U			1 U			1 U			1 U		
Aroclor-1260	1 U			1 U			1 U			1 U			1 U			1 U			1 U		

Val-Validity Refer to Data Qualifiers in Table 1B

Com-Comments Refer to the Corresponding Section in the Narrative for each letter.

CRQL-Contract Required Quantitation Limits

N/A-Not Applicable

D1, D2, etc.-Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Travel Blank

BG-Background Sample

ANALYTICAL RESULTS

Page 7 of 7

TABLE 1A

Case No.: 20813 Memo #03

Site: Sobex

Lab.: Analytical Resources, Inc. (ARI)

Reviewer: Margaret L. May, ESAT/ICF Technology, Inc.

Date: November 17, 1993

Analysis Type: Low Level Water Samples
for RAS Pesticides/PCBs

Concentration in ug/L

Station Location Sample I.D. Date of Collection	MW-11 YP089 EB 09/24/93			MW-5 YP090 09/27/93			Method Blank PBLK1W			Method Blank PBLK2W			CRQL									
	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	
alpha-BHC	0.05 U			0.05 U			0.05 U			0.05 U			0.05									
beta-BHC	0.05 U			0.05 U			0.05 U			0.05 U			0.05									
delta-BHC	0.05 U			0.05 U			0.05 U			0.05 U			0.05									
gamma-BHC (Lindane)	0.05 U			0.05 U			0.05 U			0.05 U			0.05									
Heptachlor	0.05 U			0.05 U			0.05 U			0.05 U			0.05									
Aldrin	0.05 U			0.05 U			0.05 U			0.05 U			0.05									
Heptachlor epoxide	0.05 U			0.05 U			0.05 U			0.05 U			0.05									
Endosulfan I	0.05 U			0.05 U			0.05 U			0.05 U			0.05									
Dieldrin	0.1 U			0.1 U			0.1 U			0.1 U			0.1									
4,4'-DDE	0.1 U			0.1 U			0.1 U			0.1 U			0.1									
Endrin	0.1 U			0.1 U			0.1 U			0.1 U			0.1									
Endosulfan II	0.1 U			0.1 U			0.1 U			0.1 U			0.1									
4,4'-DDD	0.1 U			0.1 U			0.1 U			0.1 U			0.1									
Endosulfan sulfate	0.1 U			0.1 U			0.1 U			0.1 U			0.1									
4,4'-DDT	0.1 U			0.1 U			0.1 U			0.1 U			0.1									
Methoxychlor	0.5 U			0.5 U			0.5 U			0.5 U			0.5									
Endrin ketone	0.1 U			0.1 U			0.1 U			0.1 U			0.1									
Endrin aldehyde	0.1 U			0.1 U			0.1 U			0.1 U			0.1									
alpha-Chlordane	0.05 U			0.05 U			0.05 U			0.05 U			0.05									
gamma-Chlordane	0.05 U			0.05 U			0.05 U			0.05 U			0.05									
Toxaphene	5 U			5 U			5 U			5 U			5									
Aroclor-1016	1 U			1 U			1 U			1 U			1									
Aroclor-1221	2 U			2 U			2 U			2 U			2									
Aroclor-1232	1 U			1 U			1 U			1 U			1									
Aroclor-1242	1 U			1 U			1 U			1 U			1									
Aroclor-1248	1 U			1 U			1 U			1 U			1									
Aroclor-1254	1 U			1 U			1 U			1 U			1									
Aroclor-1260	1 U			1 U			1 U			1 U			1									

Val-Validity Refer to Data Qualifiers in Table 1B

Com-Comments Refer to the Corresponding Section in the Narrative for each letter.

CRQL-Contract Required Quantitation Limits

N/A-Not Applicable

D1, D2, etc.-Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Travel Blank

BG-Background Sample

TABLE 1B
DATA QUALIFIERS

The definitions of the following qualifiers are prepared according to the EPA draft document, "National Functional Guidelines for Organic Data Review," December, 1990 (6/91 Revision).

NO QUALIFIERS indicate that the data are acceptable both qualitatively and quantitatively.

- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- L Indicates results which fall below the Contract Required Quantitation Limit. Results are estimated and are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."
- NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

TPO: []FYI [X]Attention []Action

Region IX

ORGANIC REGIONAL DATA ASSESSMENT

Case No. 20813 Memo #03 LABORATORY ARI

SDG NO. YP068 SITE NAME Sobex

SOW 3/90 REVIEW COMPLETION DATE November 17, 1993

REVIEWER [] ESD [X] ESAT REVIEWERS' NAMES Adriane G.L. Scheele
and Margaret L. May

	NO. OF SAMPLES	<u>9</u>	WATER	<u>11</u>	SOIL	OTHER			
						VOA	BNA	PEST	OTHER
1. HOLDING TIMES					<u>0</u>	<u> </u>	<u>0</u>	<u> </u>	
2. GC-MS TUNE/GC PERFORMANCE					<u>0</u>	<u> </u>	<u>0</u>	<u> </u>	
3. INITIAL CALIBRATIONS					<u>0</u>	<u> </u>	<u>0</u>	<u> </u>	
4. CONTINUING CALIBRATIONS					<u>X</u>	<u> </u>	<u>0</u>	<u> </u>	
5. FIELD QC					<u>0</u>	<u> </u>	<u>0</u>	<u> </u>	
6. LABORATORY BLANKS					<u>0</u>	<u> </u>	<u>0</u>	<u> </u>	
7. SURROGATES					<u>0</u>	<u> </u>	<u>0</u>	<u> </u>	
8. MATRIX SPIKE/DUPLICATES					<u>0</u>	<u> </u>	<u>0</u>	<u> </u>	
9. REGIONAL QC					<u>N/A</u>	<u> </u>	<u>N/A</u>	<u> </u>	
10. INTERNAL STANDARDS					<u>0</u>	<u> </u>	<u>N/A</u>	<u> </u>	
11. COMPOUND IDENTIFICATION					<u>0</u>	<u> </u>	<u>0</u>	<u> </u>	
12. COMPOUND QUANTITATION					<u>0</u>	<u> </u>	<u>0</u>	<u> </u>	
13. SYSTEM PERFORMANCE					<u>0</u>	<u> </u>	<u>0</u>	<u> </u>	
14. OVERALL ASSESSMENT					<u>X</u>	<u> </u>	<u>0</u>	<u> </u>	

0 - No problems or minor problems that affect data quality.
 X - No more than about 5% of the data points have limitations on data quality.
 Data points are either qualified as estimates or rejected.
 M - More than about 5% of the data points are qualified as estimates.
 Z - More than about 5% of the data points have been rejected.
 N/A - Not Applicable

TPO: []FYI [X]Attention []Action

Region IX

ORGANIC REGIONAL DATA ASSESSMENT

Case No. 20813 Memo #03 LABORATORY ARI
SDG NO. YP068 SITE NAME Sobex
SOW 3/90 REVIEW COMPLETION DATE November 17, 1993
REVIEWER [] ESD [X] ESAT REVIEWERS' NAMES Adriane G.L. Scheele
and Margaret L. May
NO. OF SAMPLES 9 WATER 11 SOIL _____ OTHER _____

TPO ACTION: None.

TPO ATTENTION: (1) Sample YP068 was received at the laboratory on September 22, 1993 and extracted 11 days later on October 3, 1993. The extraction exceeded the 10 day contractual holding time by 1 day. (2) Although the bottles were labelled correctly, the sampler misidentified sample YP087 as YP078 on the Organic Traffic Report/Chain of Custody. (3) The quantitation limits for two volatile target analytes were qualified as estimated due to calibration problems.

AREAS OF CONCERN: None.



ICF TECHNOLOGY INCORPORATED

MEMORANDUM

TO: Mike Bellot
Site Assessment Manager
Site Evaluation & Grants Section, H-8-1

THROUGH: Richard Bauer *RJB*
Environmental Scientist
Quality Assurance Management Section (QAMS), P-3-2

FROM: Margie D. Weiner *MW*
Senior Data Review Oversight Chemist
Environmental Services Assistance Team (ESAT)

DATE: November 8, 1993

SUBJECT: Review of Analytical Data

Attached are comments resulting from ESAT Region IX review of the following analytical data:

SITE:	Sobex
EPA SSI NO.:	5U
CERCLIS I.D. NO.:	CAD982399784
CASE/SAS NO.:	20813 Memo #01
SDG NO.:	MYM458
LABORATORY:	Southwest Labs of Oklahoma (SWOK)
ANALYSIS:	RAS Total Metals
SAMPLE NO.:	16 Water Samples (See Case Summary)
COLLECTION DATE:	September 21 through 27, 1993
REVIEWER:	Karen Pettit, ESAT/ICF

If there are any questions, please contact Margie D. Weiner (ESAT/ICF) at (415) 882-3061, or Richard Bauer (QAMS/EPA) at (415) 744-1499.

Attachment

cc: Ray Flores, TPO USEPA Region VI
Steve Remaley, USEPA Region IX

TPO: []FYI [X]Attention [X]Action

SAMPLING ISSUES: [X]Yes []No

Data Validation Report

Case No.: 20813 Memo #01
 Site: Sobex
 Laboratory: Southwest Labs of Oklahoma (SWOK)
 Reviewer: Karen Pettit, ESAT/ICF
 Date: November 8, 1993

I. Case Summary

SAMPLE INFORMATION: SAMPLE #: MYM458 through MYM461 and MYM476 through MYM487

COLLECTION DATE: September 21 through 27, 1993
 SAMPLE RECEIPT DATE: September 23 through 28, 1993

CONCENTRATION & MATRIX: 13 Low Concentration Groundwater and 3 Low Concentration Rinsate Samples

FIELD QC: Field Blanks (FB): None
 Equipment Blanks (EB): MYM458*, MYM476*, and MYM482 (See Additional Comments)
 Background Samples (BG): None
 Duplicates (D1): MYM459 and MYM460
 (D2): MYM483 and MYM484

LABORATORY QC: Matrix Spike: MYM481
 Duplicates: MYM480
 ICP Serial Dilution: MYM480

ANALYSIS: RAS Total Metals

<u>Analyte</u>	<u>Sample Preparation and Digestion Date</u>	<u>Analysis Date</u>
ICP Metals	October 2, 1993	October 4 and 5, 1993
Mercury	October 5, 1993	October 5, 1993

TPO ACTION:

METHOD NON-COMPLIANCE: A contract required detection limit (CRDL) standard was not analyzed during the analysis of the samples for mercury. Therefore, the linearity near the CRDL for mercury could not be verified. The effect on the quality of the data is unknown. However, the laboratory did use a standard at the CRDL in the calibration of the instrument.

SAMPLING ISSUES: None.

OTHER: The results for silver in all of the samples are rejected because of matrix spike recovery results outside method QC limits. The results reported for silver in all of the samples were below the

instrument detection limit (IDL) and are considered unacceptable as less than 30% of the matrix spike was recovered.

TPO ATTENTION:

METHOD NON-COMPLIANCE: None.

SAMPLING ISSUES: An equipment blank is reagent water that has been collected as a sample using decontaminated sampling equipment. The purpose of an equipment blank is to monitor for contamination introduced by the sampling activity. The reported result of 0.27 $\mu\text{g/L}$ for mercury in equipment blank sample MYM458 and 0.23 $\mu\text{g/L}$ for mercury in equipment blank sample MYM476 exceeds the contract required detection limit (CRDL) of 0.20 $\mu\text{g/L}$. Samples associated with equipment blanks MYM458 and MYM476 in Case 20813 Memo #02 may be affected.

OTHER: There was no case narrative to explain the analytical conditions for arsenic, lead, selenium, and thallium. The laboratory, when contacted, verified that a Thermo Jarrel Ash ICAP61E Trace Analyzer was used.

Although the Statement of Work (SOW) specifies that an Interference Check Sample (ICS) be run and reported for each instrument operated, the interferences were not reported for the Interference Check Samples (ICS) run on the Trace Analyzer. When the laboratory was questioned about this practice, the validator was told that the laboratory only reports the analytes of interest on Form IV. They assumed that the ICS interferences run on the Trace Analyzer were not analytes of interest since those results from the Trace Analyzer were not reported on Form I.

ADDITIONAL COMMENTS:

For analytical results associated with equipment blank samples MYM458 and MYM476 see the validation report for Case 20813 Memo #02.

The sampler designated two samples for lab QC, MYM480 and MYM481. The laboratory performed the matrix spike on MYM481 and the laboratory duplicate and the ICP serial dilution on the other designated sample, MYM480.

The laboratory analyzed all of the samples for arsenic, lead, selenium, and thallium by Thermo Jarrell Ash ICAP61E Trace Analyzer according to Method 200.7 in the EPA Contract Laboratory Program (CLP) Inorganic Statement Of Work (SOW). The instrument detection limits (IDL) for arsenic, lead, selenium, and thallium were at or below the RAS contract required detection limits (CRDL) specified for these analytes in the Statement of Work (SOW).

According to the SOW, the spike sample analysis is designed to provide information about the effect of the sample matrix on the digestion and measurement methodology. The SOW further specifies that samples be spiked at concentrations appropriate to the analytical method used. There have been no spike concentration levels established for the ICAP61E Trace Analyzer. Consequently, the laboratory spiked the QC

sample to be analyzed for arsenic, lead, selenium, and thallium at ICP/AA levels. This practice is within the contractual specifications. However, since the IDLs and CRDLs for arsenic, lead, selenium, and thallium as well as the expected analyte concentrations in the water samples are low, it is more appropriate to use the lower concentration GFAA spike levels which are consistent with the expected analyte concentration.

The analytical results with qualifications are listed in Table 1A. The definitions of the data qualifiers used in Table 1A are listed in Table 1B. This report was prepared in accordance with the EPA Contract Laboratory Program Inorganic Statement of Work (ILMO2.1), and the EPA Draft Document "Laboratory Data Validation Functional Guidelines For Evaluating Inorganic Analyses," October, 1989.

II. Validation Summary

The data were evaluated based on the following parameters:

<u>Parameter</u>	<u>Acceptable</u>	<u>Comment</u>
1. Data Completeness	No	C
2. Sample Preservation and Holding Times	Yes	
3. Calibration	Yes	
a. Initial Calibration Verification		
b. Continuing Calibration Verification		
c. Calibration Blank		
4. Blanks	Yes	
a. Laboratory Preparation Blank		
b. Field Blank		
c. Equipment Blank		
5. ICP Interference Check Sample Analysis	Yes	
6. Laboratory Control Sample Analysis	Yes	
7. Spiked Sample Analysis	No	A
8. Laboratory Duplicate Sample Analysis	Yes	
9. Field Duplicate Sample Analysis	No	D
10. GFAA QC Analysis	N/A	
a. Duplicate Injections		
b. Analytical Spikes		
c. Method of Standard Addition		
11. ICP Serial Dilution Analysis	Yes	
12. Sample Quantitation	Yes	B
13. Sample Result Verification	Yes	

N/A - Not Applicable

III. Validity and Comments

- A. The following results are rejected because of matrix spike recovery results outside method QC limits. The results are flagged "R" in Table 1A.

- Silver in all of the samples

Matrix spike sample analysis provides information about the effect of the sample matrix on sample preparation and measurement. The matrix spike recovery result for silver in QC sample MYM481 did not meet the 75-125% criteria for accuracy. The percent recovery and possible percent bias for silver is presented below and is based on an ideal recovery of 100%.

<u>Analyte</u>	MYM481 <u>% Recovery</u>	MYM481 <u>% Bias</u>
Silver	28.5	-71.5

The results reported for silver in all of the samples were below the instrument detection limit (IDL) and are considered unacceptable as less than 30% of the matrix spike was recovered. The low matrix spike recovery indicates an analytical deficiency and false negatives may exist.

- B. The following results are estimated and are flagged "J" in Table 1A.

- All results above the instrument detection limit but below the contract required detection limit (denoted with an "L" qualifier)

Results above the instrument detection limit (IDL) but below the contract required detection limit (CRDL) are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.

- C. A contract required detection limit (CRDL) standard was not analyzed during the analysis of the samples for mercury. Therefore, the linearity near the CRDL for mercury could not be verified. The effect on the quality of the data is unknown. According to the SOW (ILMO2.1), in order to verify linearity near the CRDL, the laboratory must analyze an AA standard at the CRDL or the IDL, whichever is greater, at the beginning of each sample analysis run, but not before the initial calibration verification (ICV). However, the laboratory did use a standard at the CRDL in the calibration of the instrument.

- D. In the analysis of the field duplicate pairs, the following relative percent differences (RPDs) were obtained for the analytes listed below.

<u>Analyte</u>	MYM459 D1	MYM483 D2
	MYM460 D1	MYM484 D2
	<u>RPD</u>	<u>RPD</u>
Iron	107	---
Lead	200	200
Thallium	200	---

The analysis of field duplicate samples is a measure of both field and analytical precision. The results are expected to vary more than laboratory duplicates (± 20 RPD or \pm CRDL criteria for precision) since sampling variability is included in the measurement. The imprecision in the results of the analysis of the field duplicate pair may be due to the sample matrix, high levels of solids in the sample, poor sampling or laboratory technique, or method defects. The effect on the quality of the data is not known.

Lead was present in sample MYM460 at a concentration of 3.7 $\mu\text{g/L}$ and in sample MYM484 at 4.6 $\mu\text{g/L}$, while in the duplicate analysis, lead was not detected at the IDL of 3.0 $\mu\text{g/L}$. Thallium was present in sample MYM459 at a concentration of 10.2 $\mu\text{g/L}$, while in the duplicate analysis, thallium was not detected at the IDL of 7.0 $\mu\text{g/L}$.

ANALYTICAL RESULTS

Page 1 of 3

TABLE 1A

Case No.: 20813 Memo #01

Site: Sobex

Lab.: Southwest Labs of Oklahoma (SWOK)

Reviewer: Karen Pettit, ESAT/ICF Technology, Inc.

Date: November 8, 1993

Analysis Type: Low Concentration Water Samples
for RAS Total Metals

Concentration in ug/L

Station Location	SL-2 MYM458 EB			LF-3 MYM459 D1			MW-6 MYM460 D1			LF-4 MYM461			MW-8 MYM476 EB			LF-4F MYM477			MW-1 MYM478		
Sample I.D.																					
Date of Collection	09/21/93			09/24/93			09/24/93			09/24/93			09/23/93			09/24/93			09/24/93		
Parameter	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Aluminum	57.3 L J	B		46.6 L J	B		35.0 U			5240			69.6 L J	B		35.0 U			35.0 U		
Antimony	19.0 U			19.0 U			19.0 U			19.0 U			19.0 U			19.0 U			19.0 U		
Arsenic	3.0 U			302			286			11.6			3.0 U			3.0 U			3.8 L J	B	
Barium	6.0 U			376			338			392			6.0 U			83.1 L J	B		246		
Beryllium	1.0 U			1.0 U			1.0 U			1.0 U			1.0 U			1.0 U			1.0 U		
Cadmium	2.0 U			2.0 U			2.0 U			2.0 U			2.0 U			2.0 U			2.0 U		
Calcium	220 L J	B		115000			121000			130000			191 L J	B		103000			94800		
Chromium	3.0 U			3.0 U			3.0 U			15.5			3.0 U			3.0 U			3.3 L J	B	
Cobalt	5.0 U			5.0 U			5.0 U			29.3 L J	B		5.0 U			5.0 U			5.0 U		
Copper	2.0 U			2.0 U			2.0 U			52.4			2.0 U			2.0 U			2.0 U		
Iron	13.4 L J	B		3320	D		1010	D		9610			15.8 L J	B		39.1 L J	B		72.1 L J	B	
Lead	3.0 U			3.0 U	D		3.7	D		19.0			3.0 U			3.0 U			3.0 U		
Magnesium	94.0 U			72000			76100			65500			94.0 U			59400			78300		
Manganese	1.0 U			7520			7520			2610			2.3 L J	B		506			127		
Mercury	0.27	C		0.20 U	C		0.20 U	C		0.20 U	C		0.23	C		0.20 U	C		0.30	C	
Nickel	11.0 U			22.2 L J	B		11.0 U			67.8			11.0 U			12.3 L J	B		11.0 U		
Potassium	427 U			1590 L J	B		1550 L J	B		2210 L J	B		427 U			1660 L J	B		1890 L J	B	
Selenium	4.0 U			4.0 U			4.0 U			7.3			4.0 U			5.2			4.0 U		
Silver	2.0 U R	A		2.0 U R	A		2.0 U R	A		2.0 U R	A		2.0 U R	A		2.0 U R	A		2.0 U R	A	
Sodium	687 L J	B		153000			144000			112000			764 L J	B		115000			146000		
Thallium	7.0 U			10.2	D		7.0 U	D		7.2 L J	B		7.0 U			7.0 U			7.0 U		
Vanadium	3.0 U			4.6 L J	B		4.9 L J	B		33.5 L J	B		3.0 U			3.0 U			3.0 U		
Zinc	6.1 L J	B		8.2 L J	B		9.2 L J	B		52.5			3.0 U			3.0 U			3.0 U		

Val-Validity Refer to Data Qualifiers in Table 1B

Com.-Comments Refer to the Corresponding Section in the Narrative for each letter.

IDL-Instrument Detection Limit for Waters, MDL-Method Detection Limit for Soils.

D1, D2, etc.-Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Travel Blank, BG-Background

CRDL-Contract Required Detection Limit

ANALYTICAL RESULTS

Page 2 of 3

TABLE 1A

Case No.: 20813 Memo #01
 Site: Sobex
 Lab.: Southwest Labs of Oklahoma (SWOK)
 Reviewer: Karen Pettit, ESAT/ICF Technology, Inc.
 Date: November 8, 1993

Analysis Type: Low Concentration Water Samples
 for RAS Total Metals

Concentration in ug/L

Station Location Sample I.D. Date of Collection	MW-1F MYM479 09/24/93			LF-2 MYM480 09/27/93			LF-2F MYM481 09/27/93			MW-11 MYM482 EB 09/24/93			LF-3F MYM483 D2 09/24/93			MW-6F MYM484 D2 09/24/93			MW-5 MYM485 09/27/93		
	Parameter	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val
Aluminum	35.0 U			38.6 L J B			45.3 L J B			77.4 L J B			35.0 U			58.6 L J B			3320		
Antimony	19.0 U			19.0 U			19.0 U			19.0 U			19.0 U			19.0 U			19.0 U		
Arsenic	4.0 L J B			3.0 U			3.0 U			3.0 U			330			392			3.7 L J B		
Barium	251			80.4 L J B			75.7 L J B			6.0 U			363			365			105 L J B		
Beryllium	1.0 U			1.0 U			1.0 U			1.0 U			1.0 U			1.0 U			1.0 U		
Cadmium	2.0 U			2.0 U			2.0 U			2.0 U			2.0 U			2.0 U			2.0 U		
Calcium	97200			85000			78900			273 L J B			113000			115000			68200		
Chromium	3.2 L J B			3.0 U			3.0 U			3.0 U			3.0 U			3.0 U			29.3		
Cobalt	5.0 U			5.0 U			5.0 U			5.0 U			5.0 U			5.0 U			5.0 U		
Copper	2.0 U			2.0 U			2.0 U			2.0 U			2.0 U			2.0 U			2.0 U		
Iron	36.1 L J B			137			38.6 L J B			8.5 L J B			3680			4250			4920		
Lead	3.0 U			3.0 U			3.0 U			3.0 U		D	3.0 U		D	4.6		D	8.2		
Magnesium	79300			49800			46200			94.0 U			71000			72400			45500		
Manganese	87.9			773			683			1.0 U			7670			8450			396		
Mercury	0.29		C	0.20 U		C	0.20 U		C	0.20 U		C	0.20 U		C	0.20 U		C	0.20 U		C
Nickel	11.0 U			11.0 U			11.0 U			11.0 U			19.3 L J B			20.1 L J B			31.7 L J B		
Potassium	1720 L J B			1790 L J B			1760 L J B			427 U			1350 L J B			1020 L J B			2280 L J B		
Selenium	4.0 U			4.0 U			4.0 U			4.0 U			4.0 U			4.0 U			9.7		
Silver	2.0 U R A			2.0 U R A			2.0 U R A			2.0 U R A			2.0 U R A			2.0 U R A			2.0 U R A		
Sodium	145000			132000			129000			954 L J B			150000			140000			81100		
Thallium	7.0 U			7.0 U			7.0 U			7.0 U			7.0 U			7.1 L J B			7.0 U		
Vanadium	3.9 L J B			3.0 U			3.3 L J B			3.0 U			3.0 U			3.0 U			13.2 L J B		
Zinc	3.0 U			3.0 U			3.0 U			3.4 L J B			3.0 U			8.3 L J B			20.7		

Val-Validity Refer to Data Qualifiers in Table 1B

Com.-Comments Refer to the Corresponding Section in the Narrative for each letter.

IDL-Instrument Detection Limit for Waters, MDL-Method Detection Limit for Soils.

D1, D2, etc.-Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Travel Blank, BG-Background

CRDL-Contract Required Detection Limit

ANALYTICAL RESULTS

Page 3 of 3

TABLE 1A

Case No.: 20813 Memo #01

Site: Sobex

Lab.: Southwest Labs of Oklahoma (SWOK)

Reviewer: Karen Pettit, ESAT/ICF Technology, Inc.

Date: November 8, 1993

Analysis Type: Low Concentration Water Samples
for RAS Total Metals

Concentration in ug/L

Station Location Sample I.D. Date of Collection	MW-5F MYM486 09/27/93			MW-12 MYM487 09/27/93			Lab Blank			IDL			CRDL								
	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Aluminum	73.8 L J		B	108 L J		B	35.0 U			35.0			200								
Antimony	19.0 U			19.0 U			19.0 U			19.0			60.0								
Arsenic	3.0 U			3.0 U			3.0 U			3.0			10.0								
Barium	41.9 L J		B	6.0 U			6.0 U			6.0			200								
Beryllium	1.0 U			1.0 U			1.0 U			1.0			5.0								
Cadmium	2.0 U			2.0 U			2.0 U			2.0			5.0								
Calcium	50400			351 L J		B	154 U			154			5000								
Chromium	16.2			3.0 U			3.0 U			3.0			10.0								
Cobalt	5.0 U			5.0 U			5.0 U			5.0			50.0								
Copper	2.0 U			2.0 U			2.0 U			2.0			25.0								
Iron	51.0 L J		B	15.8 L J		B	5.0 U			5.0			100								
Lead	3.0 U			3.0 U			3.0 U			3.0			3.0								
Magnesium	39700			94.0 U			94.0 U			94.0			5000								
Manganese	82.1			2.0 L J		B	1.0 U			1.0			15.0								
Mercury	0.34		C	0.20 U		C	0.20 U			0.20			0.20								
Nickel	11.0 U			11.0 U			11.0 U			11.0			40.0								
Potassium	2090 L J		B	427 U			427 U			427			5000								
Selenium	8.2			4.0 U			4.0 U			4.0			5.0								
Silver	2.0 U R		A	2.0 U R		A	2.0 U			2.0			10.0								
Sodium	75500			1240 L J		B	216 U			216			5000								
Thallium	7.0 U			7.0 U			7.0 U			7.0			10.0								
Vanadium	3.0 U			3.0 U			3.0 U			3.0			50.0								
Zinc	3.0 U			3.0 U			3.0 U			3.0			20.0								

Val-Validity Refer to Data Qualifiers in Table 1B

Com.-Comments Refer to the Corresponding Section in the Narrative for each letter.

IDL-Instrument Detection Limit for Waters, MDL-Method Detection Limit for Soils.

D1, D2, etc.-Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Travel Blank, BG-Background

CRDL-Contract Required Detection Limit

TABLE 1B

DATA QUALIFIER DEFINITIONS FOR INORGANIC DATA REVIEW

The definitions of the following qualifiers are prepared in accordance with the EPA draft document, "Laboratory Data Validation Functional Guidelines For Evaluating Inorganic Analyses," October, 1989.

NO QUALIFIER indicates that the data are acceptable both qualitatively and quantitatively.

- U The analyte was analyzed for but was not detected above the level of the reported value. The reported value is the Instrument Detection Limit (IDL) for waters and the Method Detection Limit (MDL) for soils for all the analytes except Cyanide (CN) and Mercury (Hg). For CN and Hg, the reported value is the Contract Required Detection Limit (CRDL).
- L The analyte was analyzed for but results fell between the IDL for waters or the MDL for soils and the CRDL. Results are estimated and are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of detection.
- J The analyte was analyzed for and was positively identified, but the reported numerical value may not be consistent with the amount actually present in the environmental sample.
- R The analyte was analyzed for, but the presence or absence of the analyte has not been verified. Resampling and reanalysis are necessary to confirm or deny the presence of the analyte.
- UJ A combination of the "U" and the "J" qualifier. The analyte was analyzed for but was not detected above the reported value. The reported value may not accurately or precisely represent the sample IDL or MDL.

TPO: []FYI [X]Attention [X]Action

Region IX

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 20813 Memo #01 LABORATORY SWOK

SDG NO. MYM458 SITE NAME Sobex

SOW NO. ILM02.1 REVIEW COMPLETION DATE November 8, 1993

REVIEWER [] ESD [X] ESAT REVIEWER'S NAME Karen Pettit

NO. OF SAMPLES 16 WATER SOIL OTHER

	ICP	GFAA	Hg	Cyanide
1. PRESERVATION AND HOLDING TIMES	<u>0</u>	<u> </u>	<u>0</u>	<u> </u>
2. CALIBRATION	<u>0</u>	<u> </u>	<u>0</u>	<u> </u>
3. BLANKS	<u>0</u>	<u> </u>	<u>0</u>	<u> </u>
4. ICP INTERFERENCE CHECK SAMPLE (ICS)	<u>0</u>	<u> </u>	<u> </u>	<u> </u>
5. LABORATORY CONTROL SAMPLE (LCS)	<u>0</u>	<u> </u>	<u>0</u>	<u> </u>
6. DUPLICATE ANALYSIS	<u>0</u>	<u> </u>	<u>0</u>	<u> </u>
7. MATRIX SPIKE ANALYSIS	<u>Z</u>	<u> </u>	<u>0</u>	<u> </u>
8. METHOD OF STANDARD ADDITION (MSA)	<u> </u>	<u> </u>	<u> </u>	<u> </u>
9. ICP SERIAL DILUTION	<u>0</u>	<u> </u>	<u> </u>	<u> </u>
10. SAMPLE QUANTITATION	<u>0</u>	<u> </u>	<u>0</u>	<u> </u>
11. SAMPLE VERIFICATION	<u>0</u>	<u> </u>	<u>0</u>	<u> </u>
12. GFAA ANALYTICAL SPIKE	<u> </u>	<u> </u>	<u> </u>	<u> </u>
13. OVERALL ASSESSMENT	<u>Z</u>	<u> </u>	<u>0</u>	<u> </u>

0 - No problems or minor problems that affect data quality.
X - No more than about 5% of the data points have limitations on data quality. Data points are either qualified as estimates or rejected.
M - More than about 5% of the data points are qualified as estimates.
Z - More than about 5% of the data points have been rejected.
N/A - Not Applicable.

TPO: []FYI [X]Attention [X]Action

Region IX

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 20813 Memo #01 LABORATORY SWOK
SDG NO. MYM458 SITE NAME Sobex
SOW NO. ILMO2.1 REVIEW COMPLETION DATE November 8, 1993
REVIEWER [] ESD [X] ESAT REVIEWER'S NAME Karen Pettit
NO. OF SAMPLES 16 WATER _____ SOIL _____ OTHER _____

TPO ACTION: A contract required detection limit (CRDL) standard was not analyzed during the analysis of the samples for mercury. Therefore, the linearity near the CRDL for mercury could not be verified. The effect on the quality of the data is unknown. However, the laboratory did use a standard at the CRDL in the calibration of the instrument.

The results for silver in all of the samples are rejected because of matrix spike recovery results outside method QC limits. The results reported for silver in all of the samples were below the instrument detection limit (IDL) and are considered unacceptable as less than 30% of the matrix spike was recovered.

TPO ATTENTION: An equipment blank is reagent water that has been collected as a sample using decontaminated sampling equipment. The purpose of an equipment blank is to monitor for contamination introduced by the sampling activity. The reported result of 0.27 $\mu\text{g/L}$ for mercury in equipment blank sample MYM458 and 0.23 $\mu\text{g/L}$ for mercury in equipment blank sample MYM476 exceeds the contract required detection limit (CRDL) of 0.20 $\mu\text{g/L}$. The samples associated with MYM458 and MYM476 in Case 20813 Memo #02 may be affected.

There was no case narrative to explain the analytical conditions for arsenic, lead, selenium, and thallium. The laboratory, when contacted, verified that a Thermo Jarrel Ash ICAP61E Trace Analyzer was used.

Although the Statement of Work (SOW) specifies that an Interference Check Sample (ICS) be run and reported for each instrument operated, the interferences were not reported for the Interference Check Samples (ICS) run on the Trace Analyzer. When the laboratory was questioned about this practice, the validator was told that the laboratory only reports the results for the analytes of interest on Form IV. They assumed that the ICS interferences run on the Trace Analyzer were not analytes of interest since those results from the Trace Analyzer were not reported on Form I.

AREAS OF CONCERN: An initial CRI standard recovery of 108.8% and a high final CRI standard recovery of 152.8% for lead were reported for the analyses in this SDG. While there are no criteria established for CRDL standard recoveries, high recoveries may indicate high bias for sample results near the CRDL.

TPO: []FYI [X]Attention [X]Action

Region IX

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 20813 Memo #01 LABORATORY SWOK
SDG NO. MYM458 SITE NAME Sobex
SOW NO. ILM02.1 REVIEW COMPLETION DATE November 8, 1993
REVIEWER [] ESD [X] ESAT REVIEWER'S NAME Karen Pettit
NO. OF SAMPLES 16 WATER SOIL OTHER

AREAS OF CONCERN: (cont.) According to the Inorganic Statement of Work (SOW), an Interference Check Sample (ICS) is run for each ICP instrument used. The check sample is run to verify interelement and background correction factors for each element analyzed. An ICS analysis consists of consecutively analyzing an interferent solution (A) and a solution (AB) containing interferences plus analytes for all wavelengths to be analyzed. The results for lead were reported on Form IV for the October 5, 1993 analytical run, but no results for the interferences were reported from that run.

According to the SOW, the spike sample analysis is designed to provide information about the effect of the sample matrix on the digestion and measurement methodology. The SOW further specifies that samples be spiked at concentrations appropriate to the analytical method used. There have been no spike concentration levels established for the ICAP61E Trace Analyzer. Consequently, the laboratory spiked the QC sample to be analyzed for arsenic, lead, selenium, and thallium at ICP/AA levels. This practice is within the contractual specifications. However, since the IDLs and CRDLs for arsenic, lead, selenium, and thallium as well as the expected analyte concentrations in the water samples are low, it is more appropriate to use the lower concentration GFAA spike levels which are consistent with the expected analyte content.

In Reference to Case No(s) .:

20813 Memo #01

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM

Telephone Record Log

Date of Call: November 3 and 4, 1993
Laboratory Name: SWOK
Lab Contact: Jason Ruckman
Region: IX
Regional Contact: Karen Pettit
Call Initiated By: Laboratory X Region

In reference to data for the following sample number(s):
MYM458 through MYM461 and MYM476 through MYM487

Summary of Questions/Issues Discussed:

1. There was no case narrative to explain the analytical conditions for arsenic, lead, selenium, and thallium. Please verify the type of ICP instrument used to analyze arsenic, lead, selenium and thallium.
2. Why were the interferents not reported for the Interference Check Samples (ICS) run on the Trace Analyzer?

Summary of Resolution:

1. A Thermo Jarrel Ash ICAP61E Trace Analyzer was used.
2. The laboratory only reports the analytes of interest on Form IV. They assumed that the ICS interferents run on the Trace Analyzer were not analytes of interest since those results from the Trace Analyzer were not reported on Form I.

Karen L Pettit
Signature

11/8/93
Date

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