THE
WHITMAN
COMPANIES, INC.

Setting the Standard in
Environmental Engineering & Management

SDMS Document
98442

CHARACTERIZATION REPORT

FOR

ROCKAWAY BOROUGH WELL FIELD SITE
OPERABLE UNIT #3
FOR PROPERTY OF
KLOCKNER & KLOCKNER
ROCKAWAY BOROUGH, NEW JERSEY

VOLUME 2
DATA VALIDATION

SUBMITTED TO
USEPA-REGION II
EMERGENCY & REMEDIAL RESPONSE DIVISION
NEW YORK, NEW YORK

SUBMITTED BY
THE WHITMAN COMPANIES, INC.
ON BEHALF OF KLOCKNER & KLOCKNER

IN ACCORDANCE WITH
ADMINISTRATIVE ORDER ON CONSENT
INDEX NO. II-CERCLA-95-0104

JANUARY 2001

301561

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January 25, 2001

Chief, New Jersey Superfund Branch I
Emergency & Remedial Response Division
U.S. Environmental Protection Agency, Region II
290 Broadway, Floor 19
New York, NY 10007

Attn: Brian Quinn, Project Manager

RE: Klockner & Klockner
Rockaway Borough Wellfield Superfund Site
Administrative Order on Consent ("AOC")
Index No. II-CERCLA-95-0104
Whitman Project #95-03-02

Dear Mr. Quinn:

In compliance with Paragraph 31 of the above AOC and Task III Item D of the Statement of Work, enclosed are two (2) copies of Volumes 2 through 17 of the Characterization Report for the above referenced site. Volumes 2 through 17 are associated with laboratory data validation and the laboratory QA/QC data packages. Volume 1 of the Characterization Report consisting of text, tables, figures and attachments was submitted to EPA on January 18, 2001.

The data review indicates that the data is complete and complies with the EPA approved June 1997 Remedial Investigation/Feasibility Study Work Plan – Field Operations Plan.

Please call me if you have any questions or comments.

Very truly yours,

Michael N. Metlitz
Project Manager

MNM/pp
Enclosure
cc: Alexandra Varlay, Esquire, EPA (w/o Attachments)
Dan Klockner, Klockner & Klockner (w/o Attachments)
Nancy Eberhardt, Esquire, Riker Danzig, et. al.
Donna Gaffigan, NJDEP (w/o Attachments)

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CHARACTERIZATION REPORT
VOLUME 2 - DATA VALIDATION REPORT

ROCKAWAY BOROUGH WELL FIELD SITE
OPERABLE UNIT #3
FOR PROPERTY OF KLOCKNER & KLOCKNER
ROCKAWAY BOROUGH, NEW JERSEY

This report summarizes the findings of validation activities performed on twelve (12) analytical data packets (Volumes 3, 4, 6 through 10, and 13 through 17) generated from sampling events conducted from October 6, 1998 through October 9, 2000 at the Rockaway Borough Wellfield Site – Operable Unit #3 at Block 5, Lots 1 and 6, and Block 7, Lots 7 and 8, in the Borough of Rockaway (Klockner Property). A review of the analytical data for soil gas samples (Attachment 4) collected from September 28 through October 1, 1998 is also included. The samples (except soil gas samples) were submitted to STL Envirotech, New Jersey Laboratory Certification #12028 (formerly Envirotech Research, Inc. – NJ Lab cert. # 12543). The soil gas samples were analyzed in a mobile laboratory and fixed laboratory operated by Target Environmental Services, Inc.

Data validation procedures were conducted in accordance with the United States Environmental Protection Agency (EPA) approved June 1997 Remedial Investigation/Feasibility Study (RI/FS) Work Plan and Field Operations Plan (FOP). Volumes 5 and 12 provide the results of grain size analysis and Volume 11 provides the results of analysis for disposal purposes. Data validation was not conducted for the data presented in Volume 5, 11, and 12 based on the type and intended use of the data. (Note: Volume 5 included samples collected from different Job Numbers and a complete copy of the associated chains-of-custody were not provided in the data package. Copies of the two missing chain-of-custody pages have been incorporated into the data package by Whitman.)

The following documents were used for the validation and qualification of the data (where applicable)

USEPA Contract Laboratory Program Statement of Work for Organic Analysis Document # OLM04.2, May 1999.

USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis Document # ILM04.0, February 1994.

SOP HW-2, Revision 11, January 1992: Evaluation of Metals Data for the CLP.

SOP HW-6, Revision 11, June 1996: CLP Organics Data Review and Preliminary Review.

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Note 1: The documents listed are written for CLP contracts but contain similar analytical techniques to the SW-846 methods approved by EPA for this investigation. Therefore, Klockner used the listed documents as guidance for qualifying the data.

Note 2: HW-22, Revision 1, April 1995: Validating Semivolatile Organic Compounds by SW-846 Method 8270B was planned to be used to validate and qualify semivolatile organic data; however, this document was not available in a useable form from the EPA website, or in hard copy supplied by EPA. Therefore, SOP HW-6 was used as guidance in lieu of HW-22 to validate all semivolatile organics data.

All analyses were conducted using methodologies in accordance with the EPA approved June 1997 RI/FS Work Plan-FOP. Data validation summaries are included for each data package. Only validation deficiencies or discrepancies are noted within the data validation review; otherwise, all analytical quality assurance/quality control data and procedures conform to the methodologies and their requirements as identified in the EPA approved June 1997 RI/FS Work Plan-FOP.

The following analyses were performed on soil and aqueous samples submitted within this data validation packet:

Analysis	Matrix	Method Number
Purgeable Halocarbons	Soil	SW-846 8021B
TCL VOA + 10	Soil	SW-846 8260B
TCL BN + 10	Soil	SW-846 8270C
TAL Metals	Soil	SW-846 6010B
TAL Metals (Mercury)	Soil	SW-846 7471A
Cyanide	Soil	CLP SOW Methodology
Purgeable Halocarbons	Water	EPA 601
TCL VOA + 10	Water	EPA 624
TCL BN + 10	Water	EPA 625
TAL Metals	Water	EPA 600 200.7
TAL Metals (Mercury)	Water	EPA 600 245.1

The results of the data validation indicate that the data is complete and complies with the EPA approved June 1997 RI/FS Work Plan-FOP.

SOIL GAS SURVEY DATA REVIEW
KLOCKNER & KLOCKNER

1.0 SOIL GAS SURVEY QA/QC REVIEW

A soil gas survey was conducted on September 28, 29, 30 and October 1, 1998. The soil gas survey was conducted by Target Environmental Services, Inc. of Columbia, Maryland.

The purpose of the soil gas survey was to identify and/or delineate potential source areas of chlorinated volatile organic compound contamination on the Building 12 and 13 Properties. Soil gas samples collected at the North Drum Storage Area included analysis for certain non-chlorinated volatile organic compounds as an initial screening for the potential presence of these compounds. The soil gas survey results were reviewed and used as a guide to identify locations for subsequent soil sample collection and analysis.

The soil gas samples were analyzed by modified EPA Methods 8010 and 8020, as proposed in the EPA approved June 1997 RI/FS Work Plan FOP. The samples were analyzed by Shimadzu Gas Chromatographs (GC) in Target's mobile laboratory. Near the end of sampling, the solenoid in the GC failed. The remaining samples for analysis were transported to Target's laboratory facility in Maryland for analysis. The GC for modified EPA Method 8010 used an electron capture dectector. The GC for modified EPA Method 8020 used a flame ionization detector.

The soil gas survey analytical data package is included as Attachment 4 in Volume 1B of this report.

1.1 Calibration

Both initial and continuing calibrations for EPA methods 8010 and 8020 were conducted on the mobile and fixed location GC's used to analyze the soil gas samples. A review of the calibration data indicated that it is acceptable. There was one continuing calibration percent difference (32%) that was just above the QC range of 30%. This was for 1,1,2 Trichloroethane (1,1,2-TCA) on September 30, 1998. This is not a concern with respect to the acceptability of the data as no samples showed positive results for 1,1,2-TCA in all the data reported.

1.2 Blanks and Duplicates

Three (3) field blanks were collected for each day of soil gas sampling for a total of twelve (12) field blanks. The field blanks were analyzed for the analytical parameters being analyzed from the day's samples. The samples were collected at the start, middle and end of the day's sampling activities. The samples were collected from the soil gas sampling equipment. TCE was detected in samples FB-2, FB-3 and FB-3C. PCE was

detected in samples FB-3B and FB-3C. 1,1-Dicholoroethene was detected in FB-1C and FB-3C. The concentrations detected ranged from 1.41 to 4.48 ug/1.

The field blank results indicate the possibility of minor cross contamination of soil gas samples at relatively low concentrations. A review of the soil gas sample results indicate that this has not adversely impacted the acceptability of the data for the purpose it was collected. This being identying and delineating potential locations of soil contamination.

Six duplicate samples were collected in the field for analysis by modified EPA Method 8010. These samples were collected to evaluate the reproducibility of the results from a sample location. The reproducibility of the results at the sample locations varied. This is likely due to sampling conditions (i.e. pulling vapors from the ground resulting in varying concentrations of contaminants with time) rather than a lack of laboratory precision. This is confirmed by the results of the laboratory duplicate analysis described below.

Fourteen (14) laboratory duplicate samples were analyzed to evaluate the precision of the analytical equipment. In general, contaminant concentrations of the sample and its duplicate had a percent difference of about 4 to 7%. In one location, SGA-36, the percent difference in concentration of cis-1,2-Dichloroethene exceeded 30%. The concentrations of the sample and its duplicate were 1.18 and 1.83 ug/1 respectively. Given the practical quantitation limit of the analytical method being 1 ug/1, and the results of the other duplicates, this is not considered a concern with respect to the acceptability of the data for the purpose it was collected.

ATTACHMENT 1

CLP Data Assessment

CLP DATA ASSESSMENT

Functional Guidelines for Evaluating Organic Analysis

CASE No.: II-CERCLA-95-0104 SDG No.: All SDGs LABORATORY: Enviro tech Research, Inc. STL Enviro tech

SITE: Klockner + Klockner

DATA ASSESSMENT

The current SOP No. HW-6 (Revision 11), June 1996 for CLP Organics Review and Preliminary Review has been applied.

All data were found to be valid and acceptable except those analytes which have been rejected, "R" (unusable). Due to various QC problems some analytes may have been qualified with a "J" (estimated), "N" (presumptive evidence for the presence of the material), "U" (non-detect), or "JN" (presumptive evidence for the presence of the material at an estimated value) flag. All action is detailed on the attached sheets.

The "R" flag means that the associated value is unusable. In other words, significant data bias is evident and the reported analyte concentration is unreliable.

Reviewer's Signature: _____ Date: 1/25/2001

Verified By: _____ Date: 1/25/2001

CLP DATA ASSESSMENT

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded.

The following action was taken in the samples and analytes shown due to excessive holding time.

See typed validation data assessment sheets for each SDG.

2. SURROGATES:

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below.

See typed validation data assessment sheets for each SDG.

3. MATRIX SPIKE/SPIKE DUPLICATE, MS/MSD:

CLP DATA ASSESSMENT

The MS/MSD data are generated to determine the long term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for additional qualification of data.

See type validation data assessment sheets for each SDG.

4. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. If the concentration of the analyte is less than 5 times the blank contaminant level (10 times for common contaminants), the analytes are qualified as non-detects, "U". The following analytes in the sample shown were qualified with "U" for these reasons:

A) Method blank contamination:

See typed validation data assessment sheets for each SDG.

B) Field or rinse blank contamination:

C) Trip blank contamination:

CLP DATA ASSESSMENT

5. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is (BFB) Bromofluorobenzene and for semi-volatiles Decafluorotriphenylphosphine (DFTPP).

If the mass calibration is in error, all associated data will be classified as unusable "R".

See typed validation data assessment sheets for each SDG.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Response Factor GC/MS:

The response factor measures the instrument's response to specific chemical compounds. The response factor for the Target Compound List (TCL) must be ≥ 0.05 in both initial and continuing calibrations. A value < 0.05 indicates a serious detection and quantitation problem (poor sensitivity). Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound will be rejected "R".

See typed validation data validation assessment sheets for each SDG.

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7. CALIBRATION:

CLP DATA ASSESSMENT

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be < 30% and %D must be < 25%. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria, non-detects data may be qualified "R".

For the PEST/PCB fraction, if %RSD exceeds 20% for all analytes except for the two surrogates (which must not exceed 30% RSD), qualify all associated positive results "J" and non-detects "UJ".

The following analytes in the sample shown were qualified for %RSD and %D:

See typed validation data assessment sheets for each SDG.

8. INTERNAL STANDARDS PERFORMANCE GC/MS:

Internal standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +100%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than ±30 seconds from the associated continuing calibration standard. If the area count is outside the (-50% to +100%) range of the associated standard, all of the positive results for compounds quantitated using that IS are qualified as estimated, "J", and all non-detects as "UJ", or "R" if there is a severe loss of sensitivity.

CLP DATA ASSESSMENT

If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgement to determine either partial or total rejection of the data for that sample fraction.

See typed validation data assessment sheets for each SDG.

9. COMPOUND IDENTIFICATION:

A) Volatile and Semi-Volatile Fractions:

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within ± 0.06 RRT units of the standard compound and have an ion spectra which has a ratio of the primary and secondary m/e intensities within 20% of that in the standard compound. For the tentatively identified compounds (TIC) the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications.

See typed validation data assessment sheets for each SDG

B) Pesticide Fraction:

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic columns and a GC/MS confirmation is required if the concentration exceeds 10ng/ml in the final sample extract.

N/A

10. CONTRACT PROBLEMS NON-COMPLIANCE:

See typed validation data assessment sheets for each SDG.

11. FIELD DOCUMENTATION:

12. OTHER PROBLEMS:

13. This package contains reextractions, reanalyses or dilutions. Upon reviewing the QA results, the following Form 1(s) are identified to be used.

ATTACHMENT 2

Organic Regional Data Assessment Summary

DPO: [ ]ACTION [ ]FYI REGION II

ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE/SAS NO.: _____ LABORATORY: Envirotech Research, Inc; STL Envirotech

SDG NO.: All SDG DATA USER: EPA Region II

SOW: OLM03.2 REVIEW COMPLETION DATE: 1/18/2001

NO. OF SAMPLES: 6 WATER 100 SOIL ____ OTHER

REVIEWER: [ ] ESD [ ] ESAT [X] OTHER, CONTRACTOR __

QC ITEM	VOA	BNA	PES		
HOLDING TIMES	X	O	N/A		
GC-MS PERFORMANCE					
INITIAL CALIBRATIONS					
CONTINUING					
FIELD BLANKS(F =					
LABORATORY BLANKS					
SURROGATES					
MATRIX					
QC SAMPLES(LCS, PVS)					
INTERNAL STANDARDS					
COMPOUND					
COMPOUND					
SYSTEM PERFORMANCE					
OVERALL ASSESSMENT	✓	✓	✓		

O = No problems or minor problems that do not affect data usability.
X = No more than about 5% of the data points are qualified as either estimated or unusable.
M = More than about 5% of the data points are qualified as either estimated or unusable.
Z = More than about 5% of the data points are qualified as unusable.

301575

DPO ACTION ITEMS: _____

ATTACHMENT 3

Data Rejection Summary

AREAS OF CONCERN:

DATA REJECTION SUMMARY

Type of Review: CLP data assessment Date: 1/18/2001 Case No.:

Site Name: Klockner + Klockner Lab Name: Envirotech Research, Inc; ETI Envirotech

Reviewer's Initials: GP Number of Samples: 112

Analytes Rejected Due to Exceeding Review Criteria For:

No. of Compounds/No. of Fractions (Samples)

	Surrogates	Holding Time	Calibration	Contamination	ID	Internal Standards	Other	Total # of Samples	Total # Rejected/Total # in All Samples
VOA (33)	0	0	8	0	0	0	0	106	8 / 3212 = 0.25 %
ACID (14)	N/A	→						→	/ = N/A %
B/N (50)	0	→					→	6	0 / 1200 = 0 %
PEST (21)	N/A	→						→	/ = N/A %
PCB (7)	N/A	→						→	/ = N/A %

NOTE: ASTERISK (*) INDICATES ADDITIONAL EXCEEDANCES OF REVIEW CRITERIA.

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Analytes Estimated Due to Exceeding Review Criteria For:

No. of Compounds/No. of Fractions (Samples)

	Surrogates	Holding Time	Calibration	Contamination	ID	Internal Standards	Other	Total # of Samples	Total # Estimated/Total # in All Samples
VOA(33)	0	0	88	0	0	0	0	91	88/2754 = 3.2 %
ACID(14)	N/A	→	→	→	→	→	→	→	/ = N/A %
B/N(50)	0	→	→	→	→	→	→	4	0/200 = 0 %
PEST(21)	N/A	→	→	→	→	→	→	→	/ = N/A %
PCB(7)	N/A	→	→	→	→	→	→	→	/ = N/A %

NOTE: ASTERISK (*) INDICATES ADDITIONAL EXCEEDANCES OF REVIEW CRITERIA.

Attachment 4

CLP Inorganic Data Assessment

Case# II-CERCLA-95-0104 Site Klockner + Klockner Matrix: Soil 21

SDG# All SDGs Lab Envirotech Research, Inc; STL Envirotech Water 5

Contractor The Whitman Companies, Inc. Reviewer Glenn Pullam Other

A.2.1 **Validation Flags-** The following flags have been applied in red by the data validator and must be considered by the data user.

J- This flag indicates the result qualified as **estimated**

Red- Line- A red-line drawn through a sample result indicates **unusable** value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

Fully Usable Data- The results that do not carry "J" or "red-line" are fully usable.

Contractual Qualifiers- The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW ILM01.0.

A.2.2 The data assessment is given below and on the attached sheets.

See typed validation data assessment sheets for each SDG.

A.2.3 Contract-Problem/Non-Compliance

MMB/ESAT Rviewer: _____ Date: _____
Signature

Contractor Reviewer: _____ Date: 1/25/2001
Signature

Verified by: _____ Date: 1/29/01

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste
Site Contract Laboratory Data Package

CASE NO. II- CERCLA-95-0104

The hardcopied (laboratory name) Envirotech Research, Inc; STL Envirotech Inorganic data package received at Region II has been reviewed and the quality assurance and performance data summarized. The data reviewed included:

SMO Sample No.: All SDGs

Conc. & Matrix:

Contract No.(_____) requires that specific analytical work be done and that associated reports be provided by the contractor to the Regions, EMSL-LV, and SMO. The general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

Items of non-compliance with the above contract are described below.

Comments: See typed validation data assessment sheets for each SDG.

GP
Reviewer's Initial

1/25/2001
Date

301583

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.6: CLP Data Assessment Checklist

Inorganic Analysis

Date: Jan. 1992
Number: HW-2
Revision: 11

INORGANIC REGIONAL DATA ASSESSMENT

Region 2

CASE NO. II-CERCLA-95-0104

SITE Klockner + Klockner

LABORATORY Envirotech Research, Inc; STL Envirotech

NO. OF SAMPLES/ MATRIX 21 soil; 5 water

SDG# All SDGs

REVIEWER (IF NOT ESD) The Whitman Companies

SOW#

REVIEWER'S NAME Glenn Pullman

DPO: ACTION FYI

COMPLETION DATE 1/18/2001

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	CYANIDE
1.	HOLDING TIMES	O	N/A	O	O
2.	CALIBRATIONS				
3.	BLANKS				
4.	ICS				
5.	LCS				
6.	DUPLICATE ANALYSIS				
7.	MATRIX SPIKE				
8.	MSA				
9.	SERIAL DILUTION				
10.	SAMPLE VERIFICATION				
11.	OTHER QC				
12.	OVERALL ASSESSMENT				

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:

AREAS OF CONCERN:

NOTABLE PERFORMANCE:

DATA VALIDATION REPORT
KLOCKNER & KLOCKNER – JOB # H941

This report summarizes the findings of validation activities performed for the following sample matrices and analyses:

Three (3) soil samples - TCL VOA+10

Eleven (11) soil samples - Purgeable Halocarbons

Four (4) soil samples – TCL BN + 10

Six (6) soil samples – TAL Metals

One (1) aqueous field blank – TCL BN + 10, TAL Metals

One (1) aqueous trip blank – TCL VOA + 10

All samples were collected on October 6, 1998 and submitted to Envirotech Research, Inc. (currently STL Envirotech) on October 7, 1998 for analysis. Only validation deficiencies or discrepancies are noted below; otherwise, all analytical quality assurance/quality control data and procedures conform to SW-846 methodologies and requirements identified in the EPA approved June 1997 Quality Assurance Project Plan (QAPP).

1.0 GENERAL INFORMATION

1.1 Data Completeness and Deliverables

A Contract Compliance Screening checklist was not included with this data package since this data was analyzed by non-CLP methodologies.

1.2 Cover Letter SDG Narrative

Record of cooler temperatures were not included in the narrative or noted on the chain of custody. The chain does indicate the samples were packaged in ice. The laboratory manager for STL Envirotech was contacted and indicated that all cooler temperatures are recorded and kept on file. STL Envirotech indicate cooler temperatures in excess of 10 degrees Celsius in the Non-Conformance Summary. The Non-Conformance Summary for this data package does not indicate cooler temperatures were exceeded.

1.3 Data Validation Checklist

The assembled order of the data package in reference to the Sample Data Summary Package and the Sample Data package is as follows: Sample Data Summary; General Information Section; Sample Data Package.

2.0 VOLATILE ORGANIC ANALYSIS

2.1 Holding Times

All analyses were performed within the 14 day technical holding time specified by SW-846 methodologies identified in the EPA approved QAPP.

2.2 System Monitoring Compound (SMC) Recovery

SMC Recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined two SMC Recoveries were sufficient for this data package; therefore, a "low soil" matrix was not performed.

2.3 Matrix Spikes

Matrix Spikes are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined two Matrix Spike recoveries were sufficient for this data package; therefore, a "low soil" matrix was not performed.

2.4 Blanks

1. Instrument blanks were not performed and are not required under SW-846 methodologies. The method blank is used for SW-846 methodologies to indicate the system is clean and within control limits.

2. Storage blanks were not performed and are not required under SW-846 methodologies. As part of STL Envirotech's in-house quality control program, storage blanks are kept in the facility's refrigerators and analyzed on a weekly basis to monitor possible contamination problems.

3. The CLP identification scheme was not used with this data package since SW-846 methodologies were used. This data package conforms to the specifications outlined in the EPA approved QAPP which follows SW-846 methodologies.

4. There are no field blanks required for soil samples collected using Methanol extraction procedures. The field blanks were collected nonetheless. The field blanks for this sampling event are included in the laboratory data packages identified as Job H950 and I279. A VOA + 10 trip blank was analyzed with this data package.

2.5 Target Compound List Analytes

Form I VOA was not submitted for matrix spike and matrix spike duplicate analysis. Form III is included with this data package which contains all pertinent recovery information for MS/MSD analyses.

2.6 GC/ELCD Continuing Calibration

1. Calibration Date 10/19/98 – Dichlorodifluoromethane and Chloromethane are outside the %D between the initial and continuing RRF of ± 25%; therefore, positive results and non-detects have been qualified as "J" estimated for these analytes.

2. Calibration Date 10/20/98 – Dichlorodifluoromethane, Methylene Chloride and 2-Chloroethyl Vinyl Ether are outside the %D between the initial and continuing RRF of ± 25%; therefore, positive results and non-detects have been qualified as "J" estimated for these analytes.

3.0 BNA ANALYSIS

3.1 Holding Times

All analyses were performed within the 14 day technical holding time specified by SW-846 methodologies identified in the EPA approved QAPP.

3.2 Surrogate Recovery

Surrogate Recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined two Surrogate Recoveries were sufficient for this data package; therefore, a "medium soil" matrix was not performed.

3.3 Matrix Spikes

Matrix Spikes are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined two Matrix Spike recoveries were sufficient for this data package; therefore, a "medium soil" matrix was not performed.

3.4 Blanks

1. The CLP identification scheme was not used with this data package since SW-846 methodologies were used. This data package conforms to the specifications outlined in the EPA approved QAPP which follows SW-846 methodologies.

2. Field blanks were collected and analyzed at a rate of 10% of the total number of samples collected in accordance with the current NJDEP Technical Requirements for Site Remediation (N.J.A.C. 7:26E).

3.5 Target Compound List Analytes

A Gel Permeation Cleanup is not a requirement under SW-846 methodologies identified in the EPA approved QAPP and was, therefore, not performed.

4.0 METALS ANALYSIS

4.1 Raw Data

Percent solids calculations were not included in the data package; however, the data package does include the percent moisture figures of soil samples which can be readily converted to percent solids.

4.2 Form I

A brief description of the soil samples was not included in Form I.

4.3 Form IIB

CRDL Standards were not performed as they are not a requirement for SW-846 methodologies identified in the EPA approved QAPP.

4.4 Spiked Sample Recovery

Spike recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "low soil" matrix recovery were sufficient for this data package; therefore, "medium and high soil" matrices were not performed.

4.5 Form VI

Lab duplicates are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "low soil" matrix recovery was sufficient for this data package; therefore, "medium and high soil" matrices were not performed.

4.6 ICP Serial Dilution

1. Samples 88562, 88564, 88565, and 88566 contained percent difference values between 10% and 100% for Copper and Potassium. Sample results for these analytes were $\geq$ 10xIDLs and were, therefore, marked "J" as estimated concentrations.

2. Samples 88563 and 88567 contained percent difference values between 10% and 100% for Copper. Sample results for this analyte was $\geq$ 10xIDLs and was, therefore, marked "J" as an estimated concentration.

4.7 Forms X, XI, XII

These forms are not included with this data package as they are part of the CLP analytical procedures.

DATA VALIDATION REPORT
KLOCKNER & KLOCKNER – JOB # H9411

This report summarizes the findings of validation activities performed for the following sample matrices and analyses:

Two (2) soil samples – CLP CN

One (1) aqueous field blank – CLP CN

All samples were collected on October 6, 1998 and submitted to Envirotech Research, Inc. (currently STL Envirotech) on October 7, 1998 for analysis. Only validation deficiencies or discrepancies are noted below; otherwise, all analytical quality assurance/quality control data and procedures conform to CLP methodologies and requirements.

1.0 GENERAL INFORMATION

1.1 Data Completeness and Deliverables

A Contract Compliance Screening checklist was not included with this datapackage.

1.2 Cover Letter SDG Narrative

Record of cooler temperatures were not included in the narrative or noted on the chain of custody. The chain does indicate the samples were packaged in ice. The laboratory manager for STL Envirotech was contacted and indicated that all cooler temperatures are recorded and kept on file. STL Envirotech indicate cooler temperatures in excess of 10 degrees Celsius in the Non-Conformance Summary. The Non-Conformance Summary for this data package does not indicate cooler temperatures were exceeded.

1.3 Data Validation Checklist

The assembled order of the data package in reference to the Sample Data Summary Package and the Sample Data package is as follows: Sample Data Summary; General Information Section; Sample Data Package.

2.0 CYANIDE ANALYSIS

2.1 Holding Times

The 14 day distillation holding time was met for the samples within this data package.

2.2 Matrix Spikes

Spike recoveries are performed at levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "low soil" matrix recovery was sufficient for this data package; therefore, "medium and high soil" matrices were not performed.

2.3 Form VI

Lab duplicates are performed at levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "low soil" matrix recovery was sufficient for this data package; therefore, "medium and high soil" matrices were not performed.

2.4 Forms X, XI, XII

These forms are not included with this data package as they are not applicable to CLP CN analysis procedures.

DATA VALIDATION REPORT
KLOCKNER & KLOCKNER – JOB # H950

This report summarizes the findings of validation activities performed for the following sample matrices and analyses:

Four (4) soil samples - TCL VOA+10

Thirteen (13) soil samples - Purgeable Halocarbons

One (1) soil sample – TCL BN + 10

Three (3) soil samples – TAL Metals

One (1) aqueous field blank – TCL VOA +10

One (1) methanol trip blank – TCL VOA +10

All samples were collected on October 7, 1998 and submitted to Envirotech Research, Inc. (currently STL Envirotech) on October 7, 1998 for analysis. Only validation deficiencies or discrepancies are noted below; otherwise, all analytical quality assurance/quality control data and procedures conform to SW-846 methodologies and requirements identified in the EPA approved June 1997 Quality Assurance Project Plan (QAPP).

1.0 GENERAL INFORMATION

1.1 Data Completeness and Deliverables

A Contract Compliance Screening checklist was not included with this data package since this data was analyzed by non-CLP methodologies.

1.2 Cover Letter SDG Narrative

Record of cooler temperatures were not included in the narrative or noted on the chain of custody. The chain does indicate the samples were packaged in ice. The laboratory manager for STL Envirotech was contacted and indicated that all cooler temperatures are recorded and kept on file. STL Envirotech indicate cooler temperatures in excess of 10 degrees Celsius in the Non-Conformance Summary. The Non-Conformance Summary for this data package does not indicate cooler temperatures were exceeded.

1.3 Data Validation Checklist

The assembled order of the data package in reference to the Sample Data Summary Package and the Sample Data package is as follows: Sample Data Summary; General Information Section; Sample Data Package.

2.0 VOLATILE ORGANIC ANALYSIS

2.1 Holding Times

All analyses were performed within the 14 day technical holding time specified by SW-846 methodologies identified in the EPA approved QAPP.

2.2 System Monitoring Compound (SMC) Recovery

SMC Recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had analyzed a "high soil" standard in lieu of a "medium soil" standard.

2.3 Matrix Spikes

SMC Recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had analyzed a "high soil" standard in lieu of a "medium soil" standard.

2.4 Blanks

1. Instrument blanks were not performed and are not required under SW-846 methodologies. The method blank is used for SW-846 methodologies to indicate the system is clean and within control limits.

2. Storage blanks were not performed and are not required under SW-846 methodologies. As part of STL Envirotech's in-house quality control program, storage blanks are kept in the facility's refrigerators and analyzed on a weekly basis to monitor possible contamination problems.

3. The CLP identification scheme was not used with this data package since SW-846 methodologies were used. This data package conforms to the specifications outlined in the EPA approved QAPP which follows SW-846 methodologies.

4. There are no field blanks required for soil samples collected using Methanol extraction procedures. Nonetheless, a field blank was collected. A Methanol trip blank was analyzed with this data package.

2.5 Target Compound List Analytes

Form I VOA was not submitted for matrix spike and matrix spike duplicate analysis. Form III is included with this data package which contains all pertinent recovery information for MS/MSD analyses.

2.6 GC/MS Initial Calibration

Calibration Dates 10/14/98; 10/17/98 – 2-Butanone was outside the RRF criteria of .05: therefore, non-detects have been flagged "R" for unusable for this analyte.

2.7 GC/MS Continuing Calibration

Calibration Dates 10/15/98; 10/19/98; 10/20/98 - Butanone was outside the RRF criteria of .05: therefore, non-detects have been flagged "R" for unusable for this analyte.

10/19/98 – Bromomethane and 2-Chloroethyl Vinyl Ether are outside the %D between the initial and continuing RRF of $\pm$ 25%; therefore, positive results and non-detects have been qualified "J" as estimated for these analytes

10/20/98 – Bromomethane and Acetone are outside the %D between the initial and continuing RRF of $\pm$ 25%; therefore, positive results and non-detects have been qualified as "J" estimated for these analytes.

2.8 GC/ELCD Continuing Calibration

Calibration Dates 10/19/98; 10/20/98; 10/21/98 – Dichlorodifluoromethane, Methylene Chloride and 2-Chloroethyl Vinyl Ether are outside the %D between the initial and continuing RRF of $\pm$ 25%; therefore, positive results and non-detects have been qualified as "J" estimated for these analytes.

2.9 Field Duplicates

1. Analytical results for sample 88667 and sample duplicate 88668 indicates an acceptable 9.4 % RPD exists between the concentration of Trichloroethene for these samples.

2. Analytical results for sample 88681 and sample duplicate 88682 indicates a 126.9 % RPD exists between the concentration of Trichloroethene for these samples.

3. Analytical results for sample 88685 and sample duplicate 88686 indicated not detections were present above the method detection limit for all compounds.

3.0 BNA ANALYSIS

3.1 Holding Times

All analyses were performed within the 14 day technical holding time specified by SW-846 methodologies identified in the EPA approved QAPP.

3.2 Surrogate Recovery

Surrogate Recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined one "low soil" Surrogate Recovery was sufficient for this data package; therefore, "low water" and "medium soil" matrices were not performed.

3.3 Matrix Spikes

Matrix Spikes are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined one "low soil" Matrix Spikes was sufficient for this data package; therefore, "low water" and "medium soil" matrices were not performed.

3.4 Blanks

1. The CLP identification scheme was not used with this data package since SW-846 methodologies were used. This data package conforms to the specifications outlined in the EPA approved QAPP which follows SW-846 methodologies.

2. Field blanks were collected and analyzed at a rate of 10% of the total number of samples collected in accordance with the current NJDEP Technical Requirements for Site Remediation (N.J.A.C. 7:26E). The field blanks for this sampling event are provided in the laboratory data package identified as Job #H941.

3.5 Target Compound List Analytes

1. A Gel Permeation Cleanup is not a requirement under SW-846 methodologies identified in the EPA approved QAPP and was, therefore, not performed.

2. Several relative and standard ion intensities were outside the $\pm$ 20% limit for Benzo(g,h,i)perylene; however, the concentration listed on Form I is qualified as estimated.

3.6 Internal Standards

Sample 88677: IS-6 area was below the 50% lower limit check standard. The sample was reanalyzed confirming matrix interference.

4.0 METALS ANALYSIS

4.1 Raw Data

Percent solids calculations were not included in the data package; however, the data package does include the percent moisture figures of soil samples which can be readily converted to percent solids.

4.2 Form I

A brief description of the soil samples was not included in Form I.

4.3 Form IIB

CRDL Standards were not performed as they are not a requirement for SW-846 methodologies identified in the EPA approved QAPP.

4.4 Spiked Sample Recovery

Spike recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "low soil" matrix recovery were sufficient for this data package; therefore, "medium and high soil" matrices were not performed.

4.5 Form VI

Lab duplicates are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant

concentration anticipated. The laboratory had determined a "low soil" matrix recovery was sufficient for this data package; therefore, "medium and high soil" matrices were not performed.

4.6 ICP Serial Dilution

1. Sample 88666 - contained percent difference values between 10% and 100% for Arsenic, Copper, Lead and Potassium. Sample results for these analytes were $\geq$ 10xIDLs and were, therefore, marked "J" as estimated concentrations. According to the laboratory, STL Envirotech, the serial dilution was conducted due to QA/QC questions concerning elements other than Arsenic. Other QA/QC information for Arsenic indicated the Arsenic data was acceptable. Therefore, the Arsenic results are not qualified.

2. Samples 88667 and 88683 - contained percent difference values between 10% and 100% for Copper, Lead and Potassium. Sample results for these analytes were $\geq$ 10xIDLs and were, therefore, marked "J" as estimated concentrations.

4.7 Forms X, XI, XII

These forms are not included with this data package as they are part of the CLP analytical procedures.

DATA VALIDATION REPORT
KLOCKNER & KLOCKNER – JOB # I051

This report summarizes the findings of validation activities performed for the following sample matrices and analyses:

One (1) product sample - Purgeable Halocarbons

The sample was collected on October 8, 1998 and submitted to Envirotech Research, Inc. (currently STL Envirotech) on October 9, 1998 for analysis. Only validation deficiencies or discrepancies are noted below; otherwise, all analytical quality assurance/quality control data and procedures conform to SW-846 methodologies and requirements identified in the EPA approved June 1997 Quality Assurance Project Plan (QAPP).

1.0 GENERAL INFORMATION

1.1 Data Completeness and Deliverables

A Contract Compliance Screening checklist was not included with this datapackage since this data was analyzed by non-CLP methodologies.

1.2 Cover Letter SDG Narrative

Record of cooler temperatures were not included in the narrative or noted on the chain of custody. The chain does indicate the samples were packaged in ice. The laboratory manager for STL Envirotech was contacted and indicated that all cooler temperatures are recorded and kept on file. STL Envirotech indicate cooler temperatures in excess of 10 degrees Celsius in the Non-Conformance Summary. The Non-Conformance Summary for this data package does not indicate cooler temperatures were exceeded.

1.3 Data Validation Checklist

The assembled order of the data package in reference to the Sample Data Summary Package and the Sample Data package is as follows: Sample Data Summary; General Information Section; Sample Data Package.

2.0 VOLATILE ORGANIC ANALYSIS

2.1 Holding Times

The SW-846 technical holding time of 14 days identified in the EPA approved QAPP has been exceed by approximately two (2) hours based on sample collection time to sample analysis time for sample 89298. The sample was analyzed on the fourteenth day following collection. No positive detections are noted for the product sample; therefore, no results are required to be flagged as estimated.

2.2 System Monitoring Compound (SMC) Recovery

SMC Recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "high soil" SMC Recovery was sufficient for this data package; therefore, "low soil" or "low water" matrices were not performed.

2.3 Matrix Spikes

1. SMC Recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "high soil" SMC Recovery was sufficient for this data package; therefore, "low soil" or "low water" matrices were not performed.

2. All VOA MS/MSD recoveries were outside QC limits since a high dilution of the sample was necessary due to non-halogenated volatile organics within the sample. As a result, the dilution caused the MS amount to fall below the method detection limit.

2.4 Blanks

1. Instrument blanks were not performed and are not required under SW-846 methodologies. The method blank is used for SW-846 methodologies to indicate the system is clean and within control limits.

2. Storage blanks were not performed and are not required under SW-846 methodologies. As part of STL Envirotech's in-house quality control program, storage blanks are kept in the facility's refrigerators and analyzed on a weekly basis to monitor possible contamination problems.

3. The CLP identification scheme was not used with this data package since SW-846 methodologies were used. This data package conforms to the

specifications outlined in the EPA approved QAPP which follows SW-846 methodologies.

4. No field blank was required as the sample was collected of product present in an underground tank. A trip blank for samples collected on October 8, 1998 is included in the laboratory data package identified as I-052.

2.5 GC/MS Instrument Performance Check

BFB Instrument Performance Checks are not a requirement of SW-846 methodologies and were, therefore, not performed.

2.6 Target Compound List Analytes

1. Form I VOA was not submitted for matrix spike and matrix spike duplicate analysis. Form III is included with this data package which contains all pertinent recovery information for MS/MSD analyses.

2. All analyses have been performed using SW-846 Method 8021B. Mass spectra analysis is not a procedure of this methodology.

2.7 Tentatively Identified Compounds

All analyses have been performed using SW-846 Method 8021B. TICs are not generated using this methodology.

2.8 GC Initial Calibration

1. Calibrations were performed at concentrations of 1, 5, 10, 20 and 40ng as per SW-846 methodologies identified in the EPA approved QAPP.

2. Low level soil standards were not performed since they are not a requirement for SW-846 Method 8021B.

2.9 Internal Standard

All analyses have been performed using SW-846 Method 8021B identified in the EPA approved QAPP. Internal Standards are not performed using this methodology.

DATA VALIDATION REPORT
KLOCKNER & KLOCKNER – JOB # I052

This report summarizes the findings of validation activities performed for the following sample matrices and analyses:

Five (5) soil sample - Purgeable Halocarbons

One (1) methanol trip blank - Purgeable Halocarbons

All samples were collected on October 8, 1998 and submitted to Envirotech Research, Inc. (currently STL Envirotech) on October 9, 1998 for analysis. Only validation deficiencies or discrepancies are noted below; otherwise, all analytical quality assurance/quality control data and procedures conform to SW-846 methodologies and requirements identified in the EPA approved June 1997 Quality Assurance Project Plan (QAPP).

1.0 GENERAL INFORMATION

1.1 Data Completeness and Deliverables

A Contract Compliance Screening checklist was not included with this data package since this data was analyzed by non-CLP methodologies.

1.2 Cover Letter SDG Narrative

Record of cooler temperatures were not included in the narrative or noted on the chain of custody. The chain does indicate the samples were packaged in ice. The laboratory manager for STL Envirotech was contacted and indicated that all cooler temperatures are recorded and kept on file. STL Envirotech indicate cooler temperatures in excess of 10 degrees Celsius in the Non-Conformance Summary. The Non-Conformance Summary for this data package does not indicate cooler temperatures were exceeded.

1.3 Data Validation Checklist

The assembled order of the data package in reference to the Sample Data Summary Package and the Sample Data package is as follows: Sample Data Summary; General Information Section; Sample Data Package.

2.0 VOLATILE ORGANIC ANALYSIS

2.1 Holding Times

All analyses were performed within the 14 day technical holding time specified by SW-846 methodologies identified in the EPA approved QAPP.

2.2 System Monitoring Compound (SMC) Recovery

SMC Recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "high soil" SMC Recovery was sufficient for this data package; therefore, "low soil" or "low water" matrices were not performed.

2.3 Matrix Spikes

SMC Recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "high soil" SMC Recovery was sufficient for this data package; therefore, "low soil" or "low water" matrices were not performed.

2.4 Blanks

1. Instrument blanks were not performed and are not required under SW-846 methodologies. The method blank is used for SW-846 methodologies to indicate the system is clean and within control limits.

2. Storage blanks were not performed and are not required under SW-846 methodologies. As part of STL Envirotech's in-house quality control program, storage blanks are kept in the facility's refrigerators and analyzed on a weekly basis to monitor possible contamination problems.

3. The CLP identification scheme was not used with this data package since SW-846 methodologies were used. This data package conforms to the specifications outlined in the EPA approved QAPP which follows SW-846 methodologies.

4. There are no field blanks required for soil samples collected using Methanol extraction procedures. Field blanks were collected nonetheless. The field blanks for this sampling event are included in the laboratory data packages identified as Job #H950 and I279. A Methanol trip blank was analyzed with this data package.

2.5 GC/MS Instrument Performance Check

BFB Instrument Performance Checks are not a requirement of SW-846 methodologies and were, therefore, not performed.

2.6 Target Compound List Analytes

1. Form I VOA was not submitted for matrix spike and matrix spike duplicate analysis. Form III is included with this data package which contains all pertinent recovery information for MS/MSD analyses.

2. All analyses have been performed using SW-846 Method 8021B. Mass spectra analysis is not a procedure of this methodology.

2.7 Tentatively Identified Compounds

All analyses have been performed using SW-846 Method 8021B. TICs are not generated using this methodology.

2.8 GC/MS Initial Calibration

1. Calibrations were performed at concentrations of 1, 5, 10, 20 and 40ng as per SW-846 methodologies identified in the EPA approved QAPP.

2. Low level soil standards were not performed since they are not a requirement for SW-846 Method 8021B.

2.9 GC Continuing Calibration

Calibration Date 10/21/98 – Dichlorodifluoromethane, Methylene Chloride, 2-Chloroethyl Vinyl Ether and 1,1,2,2 - Tetrachloroethane failed %D. The corresponding analytes have been marked "J" as estimated. The RRF values are for SW-846 Method 8021B and are not applicable to CLP RRF continuing calibration limits.

2.10 Internal Standard

All analyses have been performed using SW-846 Method 8021B as identified in the EPA approved QAPP. Internal Standards are not performed using this methodology.

DATA VALIDATION REPORT
KLOCKNER & KLOCKNER – JOB # I053

This report summarizes the findings of validation activities performed for the following sample matrices and analyses:

Three (3) soil samples - Purgeable Halocarbons

One (1) soil sample – TAL Metals

All samples were collected on October 8, 1998 and submitted to Envirotech Research, Inc. (currently STL Envirotech) on October 9, 1998 for analysis. Only validation deficiencies or discrepancies are noted below; otherwise, all analytical quality assurance/quality control data and procedures conform to SW-846 methodologies and requirements identified in the EPA approved June 1997 Quality Assurance Project Plan (QAPP).

1.0 GENERAL INFORMATION

1.1 Data Completeness and Deliverables

A Contract Compliance Screening checklist was not included with this data package since this data was analyzed by non-CLP methodologies.

1.2 Cover Letter SDG Narrative

Record of cooler temperatures were not included in the narrative or noted on the chain of custody. The chain does indicate the samples were packaged in ice. The laboratory manager for STL Envirotech was contacted and indicated that all cooler temperatures are recorded and kept on file. STL Envirotech indicate cooler temperatures in excess of 10 degrees Celsius in the Non-Conformance Summary. The Non-Conformance Summary for this data package does not indicate cooler temperatures were exceeded.

1.3 Data Validation Checklist

The assembled order of the data package in reference to the Sample Data Summary Package and the Sample Data package is as follows: Sample Data Summary; General Information Section; Sample Data Package.

2.0 VOLATILE ORGANIC ANALYSIS

2.1 Holding Times

All analyses were performed within the 14 day technical holding time specified by SW-846 methodologies identified in the EPA approved QAPP.

2.2 System Monitoring Compound (SMC) Recovery

SMC Recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "high soil" SMC Recovery was sufficient for this data package; therefore, "low soil" or "low water" matrices were not performed.

2.3 Matrix Spikes

SMC Recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "high soil" SMC Recovery was sufficient for this data package; therefore, "low soil" or "low water" matrices were not performed.

2.4 Blanks

1. Instrument blanks were not performed and are not required under SW-846 methodologies. The method blank is used for SW-846 methodologies to indicate the system is clean and within control limits.

2. Storage blanks were not performed and are not required under SW-846 methodologies. As part of STL Envirotech's in-house quality control program, storage blanks are kept in the facility's refrigerators and analyzed on a weekly basis to monitor possible contamination problems.

3. The CLP identification scheme was not used with this data package since SW-846 methodologies were used. This data package conforms to the specifications outlined in the EPA approved QAPP which follows SW-846 methodologies.

4. There are no field blanks required for soil samples collected using Methanol extraction procedures. Field blanks were collected nonetheless. The field blanks for this sampling event are included in the laboratory data packages identified as Job #H950 and I279. A trip blank for samples collected on October 8, 1998 is included in the laboratory data package identified as I052.

2.5 GC/MS Instrument Performance Check

BFB Instrument Performance Checks are not a requirement of SW-846 methodologies and were, therefore, not performed.

2.6 Target Compound List Analytes

1. Form I VOA was not submitted for matrix spike and matrix spike duplicate analysis. Form III is included with this data package which contains all pertinent recovery information for MS/MSD analyses.

2. All analyses have been performed using SW-846 Method 8021B. Mass spectra analysis is not a procedure of this methodology.

2.7 Tentatively Identified Compounds

All analyses have been performed using SW-846 Method 8021B. TICs are not generated using this methodology.

2.8 GC Initial Calibration

1. Calibrations were performed at concentrations of 1, 5, 10, 20 and 40ng as per SW-846 methodologies identified in the EPA approved QAPP.

2. Low level soil standards were not performed since they are not a requirement for SW-846 Method 8021B.

2.9 GC Continuing Calibration

Calibration Date 10/21/98 – Dichlorodifluoromethane, Methylene Chloride, 2-Chloroethyl Vinyl Ether and 1,1,2,2 - Tetrachloroethane failed %D. The corresponding analytes have been marked "J" as estimated. The RRF values are for SW-846 Method 8021B and are not applicable to CLP RRF continuing calibration limits.

2.10 Internal Standard

All analyses have been performed using SW-846 Method 8021B identified in the EPA approved QAPP. Internal Standards are not performed using this methodology.

3.0 METALS ANALYSIS

3.1 Raw Data

Percent solids calculations were not included in the data package; however, the data package does include the percent moisture figures of soil samples which can be readily converted to percent solids.

3.2 Form I

. A brief description of the soil samples was not included in Form I.

3.3 Form IIB

CRDL Standards were not performed as they are not a requirement for SW-846 methodologies identified in the EPA approved QAPP.

3.4 Spiked Sample Recovery

Spike recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "low soil" matrix recovery were sufficient for this data package; therefore, "medium and high soil" matrices were not performed.

3.5 Form VI

Lab duplicates are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "low soil" matrix recovery was sufficient for this data package; therefore, "medium and high soil" matrices were not performed.

3.6 ICP Serial Dilution

Sample 89310 contained %D values above 10% and below 100% for Arsenic, Copper, Lead and Sodium. Sample results for these analytes were marked "J" as estimated concentrations.

3.7 Forms X, XI, XII

These forms are not included with this data package as they are part of the CLP analytical procedures.

DATA VALIDATION REPORT
KLOCKNER & KLOCKNER – JOB # I279

This report summarizes the findings of validation activities performed for the following sample matrices and analyses:

Twelve (12) soil samples - Purgeable Halocarbons

One (1) aqueous field blank - Purgeable Halocarbons

One (1) methanol trip blank – Purgeable Halocarbons

All samples were collected on October 16, 1998 and submitted to Envirotech Research, Inc. (currently STL Envirotech) on October 16, 1998 for analysis. Only validation deficiencies or discrepancies are noted below; otherwise, all analytical quality assurance/quality control data and procedures conform to SW-846 methodologies and requirements identified in the EPA approved June 1997 Quality Assurance Project Plan (QAPP).

1.0 GENERAL INFORMATION

1.1 Data Completeness and Deliverables

A Contract Compliance Screening checklist was not included with this data package since this data was analyzed by non-CLP methodologies.

1.2 Cover Letter SDG Narrative

Record of cooler temperatures were not included in the narrative or noted on the chain of custody. The chain does indicate the samples were packaged in ice. The laboratory manager for STL Envirotech was contacted and indicated that all cooler temperatures are recorded and kept on file. STL Envirotech indicate cooler temperatures in excess of 10 degrees Celsius in the Non-Conformance Summary. The Non-Conformance Summary for this data package does not indicate cooler temperatures were exceeded.

1.3 Data Validation Checklist

The assembled order of the data package in reference to the Sample Data Summary Package and the Sample Data package is as follows: Sample Data Summary; General Information Section; Sample Data Package.

2.0 VOLATILE ORGANIC ANALYSIS

2.1 Holding Times

All analyses were performed within the 14 day technical holding time specified by SW-846 methodologies identified in the EPA approved QAPP.

2.2 System Monitoring Compound (SMC) Recovery

SMC Recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "high soil" SMC Recovery was sufficient for this data package; therefore, "low soil" or "low water" matrices were not performed.

2.3 Matrix Spikes

SMC Recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "high soil" SMC Recovery was sufficient for this data package; therefore, "low soil" or "low water" matrices were not performed.

2.4 Blanks

1. Instrument blanks were not performed and are not required under SW-846 methodologies. The method blank is used for SW-846 methodologies to indicate the system is clean and within control limits.

2. Storage blanks were not performed and are not required under SW-846 methodologies. As part of STL Envirotech's in-house quality control program, storage blanks are kept in the facility's refrigerators and analyzed on a weekly basis to monitor possible contamination problems.

3. The CLP identification scheme was not used with this data package since SW-846 methodologies were used. This data package conforms to the specifications outlined in the EPA approved QAPP which follows SW-846 methodologies.

4. There are no field blanks required for soil samples collected using Methanol extraction procedures. Field blanks were collected nonetheless. A Methanol trip blank was analyzed with this data package.

2.5 GC/MS Instrument Performance Check

BFB Instrument Performance Checks are not a requirement of SW-846 methodologies and were, therefore, not performed.

2.6 Target Compound List Analytes

1. Form I VOA was not submitted for matrix spike and matrix spike duplicate analysis. Form III is included with this data package which contains all pertinent recovery information for MS/MSD analyses.

2. All analyses have been performed using SW-846 Method 8021B. Mass spectra analysis is not a procedure of this methodology.

2.7 Tentatively Identified Compounds

All analyses have been performed using SW-846 Method 8021B. TICs are not generated using this methodology.

2.8 GC Initial Calibration

1. Calibrations were performed at concentrations of 1, 5, 10, 20 and 40ng as per SW-846 methodologies identified in the EPA approved QAPP.

2. Low level soil standards were not performed since they are not a requirement for SW-846 Method 8021B.

2.9 Internal Standard

All analyses have been performed using SW-846 Method 8021B identified in the EPA approved QAPP. Internal Standards are not performed using this methodology.

2.10 Field Duplicates

Analytical results for sample 90821 and sample duplicate 90822 indicates an 84.5 % RPD exists between the concentration of Tetrachloroethene for these samples.

DATA VALIDATION REPORT
KLOCKNER & KLOCKNER – JOB # X303

This report summarizes the findings of validation activities performed for the following sample matrices and analyses:

Sixteen (16) soil samples - Purgeable Halocarbons

Five (5) soil samples – Lead

One (1) aqueous field blank - Purgeable Halocarbons, Lead

One (1) methanol trip blank - Purgeable Halocarbons

All samples were collected on February 8, 2000 and submitted to Envirotech Research, Inc. (currently STL Envirotech) on February 9, 2000 for analysis. Only validation deficiencies or discrepancies are noted below; otherwise, all analytical quality assurance/quality control data and procedures conform to SW-846 methodologies and requirements identified in the EPA approved June 1997 Quality Assurance Project Plan (QAPP).

1.0 GENERAL INFORMATION

1.1 Data Completeness and Deliverables

A Contract Compliance Screening checklist was not included with this data package since this data was analyzed by non-CLP methodologies.

1.2 Cover Letter SDG Narrative

Record of cooler temperatures were not included in the narrative or noted on the chain of custody. The chain does indicate the samples were packaged in ice. The laboratory manager for STL Envirotech was contacted and indicated that all cooler temperatures are recorded and kept on file. STL Envirotech indicate cooler temperatures in excess of 10 degrees Celsius in the Non-Conformance Summary. The Non-Conformance Summary for this data package does not indicate cooler temperatures were exceeded.

1.3 Data Validation Checklist

The assembled order of the data package in reference to the Sample Data Summary Package and the Sample Data package is as follows: Sample Data Summary; General Information Section; Sample Data Package.

2.0 VOLATILE ORGANIC ANALYSIS

2.1 Holding Times

1. All analyses were performed within the 14 day technical holding time specified by SW-846 methodologies identified in the EPA approved QAPP.

2.2 System Monitoring Compound (SMC) Recovery

SMC Recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "high soil" SMC Recovery was sufficient for this data package; therefore, "low soil" and "low water" matrices were not performed.

2.3 Matrix Spikes

Matrix Spikes are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "high soil" Matrix Spikes was sufficient for this data package; therefore, "low soil" and "low water" matrices were not performed.

2.4 Blanks

1. Instrument blanks were not performed and are not required under SW-846 methodologies. The method blank is used for SW-846 methodologies to indicate the system is clean and within control limits.

2. Storage blanks were not performed and are not required under SW-846 methodologies. As part of STL Envirotech's in-house quality control program, storage blanks are kept in the facility's refrigerators and analyzed on a weekly basis to monitor possible contamination problems.

3. The CLP identification scheme was not used with this data package since SW-846 methodologies were used. This data package conforms to the specifications outlined in the EPA approved QAPP which follows SW-846 methodologies.

4. There are no field blanks required for soil samples collected using Methanol extraction procedures. Field blanks were collected nonetheless. A Methanol trip blank was analyzed with this data package.

2.5 GC/MS Instrument Performance Check

BFB Instrument Performance Checks are not a requirement of SW-846 methodologies and were, therefore, not performed.

2.6 Target Compound List Analytes

1. Form I VOA was not submitted for matrix spike and matrix spike duplicate analysis. Form III is included with this data package which contains all pertinent recovery information for MS/MSD analyses.

2. All analyses have been performed using SW-846 Method 8021B. Mass spectra analysis is not a procedure of this methodology.

2.7 Tentatively Identified Compounds

All analyses have been performed using SW-846 Method 8021B. TICs are not generated using this methodology.

2.8 GC Initial Calibration

1. Calibrations were performed at concentrations of 1, 5, 10, 20 and 40ng as per SW-846 methodologies identified in the EPA approved QAPP.

2. Low level soil standards were not performed since they are not a requirement for SW-846 Method 8021B.

2.9 Internal Standard

All analyses have been performed using SW-846 Method 8021B identified in the EPA approved QAPP. Internal Standards are not performed using this methodology.

2.10 Field Duplicates

Analytical results for sample 182802 and sample duplicate 182803 indicate a 200% RPD exists between the concentration of Trichloroethene for these samples.

3.0 METALS ANALYSIS

3.1 Raw Data

Percent solids calculations were not included in the data package; however, the data package does include the percent moisture figures of soil samples which can be readily converted to percent solids.

3.2 Form I

A brief description of the soil samples was not included in Form I.

3.3 Form IIB

CRDL Standards were not performed as they are not a requirement for SW-846 methodologies identified in the EPA approved QAPP.

3.4 Spiked Sample Recover

Spike recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "low soil" matrix recovery were sufficient for this data package; therefore, "medium and high soil" matrices were not performed.

3.5 Form VI

Lab duplicates are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "low soil" matrix recovery was sufficient for this data package; therefore, "medium and high soil" matrices were not performed.

3.6 Field Duplicates

Analytical results for sample 182793 and sample duplicate 182810 indicate a 119% RPD exists between the concentration of Lead for these samples. The reported concentrations in the data package have been marked "B" for estimated.

3.7 ICP Serial Dilution

Lab duplicates are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "low soil" matrix

recovery were sufficient for this data package; therefore, "medium soil" matrix was not performed.

3.8 Forms X, XI, XII

These forms are not included with this data package as they are part of the CLP analytical procedures

301615

DATA VALIDATION REPORT
KLOCKNER & KLOCKNER – JOB # X455

This report summarizes the findings of validation activities performed for the following sample matrices and analyses:

Five (5) soil samples - Purgeable Halocarbons

All samples were collected on February 15, 2000 and submitted to Envirotech Research, Inc. (currently STL Envirotech) on February 16, 2000 for analysis. Only validation deficiencies or discrepancies are noted below; otherwise, all analytical quality assurance/quality control data and procedures conform to SW-846 methodologies and requirements identified in the EPA approved June 1997 Quality Assurance Project Plan (QAPP).

1.0 GENERAL INFORMATION

1.1 Data Completeness and Deliverables

A Contract Compliance Screening checklist was not included with this data package since this data was analyzed by non-CLP methodologies.

1.2 Cover Letter SDG Narrative

Record of cooler temperatures were not included in the narrative or noted on the chain of custody. The chain does indicate the samples were packaged in ice. The laboratory manager for STL Envirotech was contacted and indicated that all cooler temperatures are recorded and kept on file. STL Envirotech indicate cooler temperatures in excess of 10 degrees Celsius in the Non-Conformance Summary. The Non-Conformance Summary for this data package does not indicate cooler temperatures were exceeded.

1.3 Data Validation Checklist

The assembled order of the data package in reference to the Sample Data Summary Package and the Sample Data package is as follows: Sample Data Summary; General Information Section; Sample Data Package.

2.0 VOLATILE ORGANIC ANALYSIS

2.1 Holding Times

All analyses were performed within the 14 day technical holding time specified by SW-846 methodologies identified in the EPA approved QAPP.

2.2 System Monitoring Compound (SMC) Recovery

SMC Recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "high soil" SMC Recovery was sufficient for this data package; therefore, "low soil" or "low water" matrices were not performed.

2.3 Matrix Spikes

SMC Recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "high soil" SMC Recovery was sufficient for this data package; therefore, "low soil" or "low water" matrices were not performed.

2.4 Blanks

1. Instrument blanks were not performed and are not required under SW-846 methodologies. The method blank is used for SW-846 methodologies to indicate the system is clean and within control limits.

2. Storage blanks were not performed and are not required under SW-846 methodologies. As part of STL Envirotech's in-house quality control program, storage blanks are kept in the facility's refrigerators and analyzed on a weekly basis to monitor possible contamination problems.

3. The CLP identification scheme was not used with this data package since SW-846 methodologies were used. This data package conforms to the specifications outlined in the EPA approved QAPP which follows SW-846 methodologies.

4. There are no field blanks required for soil samples collected using Methanol extraction procedures. Field blanks were collected nonetheless. The field blanks for this sampling event are included in the laboratory data package identified as Job #X456. A trip blank for samples collected on February 15, 2000 is included in the laboratory data package identified as X456.

2.5 GC/MS Instrument Performance Check

BFB Instrument Performance Checks are not a requirement of SW-846 methodologies and were, therefore, not performed.

2.6 Target Compound List Analytes

1. Form I VOA was not submitted for matrix spike and matrix spike duplicate analysis. Form III is included with this data package which contains all pertinent recovery information for MS/MSD analyses.

2. All analyses have been performed using SW-846 Method 8021B. Mass spectra analysis is not a procedure of this methodology.

2.7 Tentatively Identified Compounds

All analyses have been performed using SW-846 Method 8021B. TICs are not generated using this methodology.

2.8 GC Initial Calibration

1. Calibrations were performed at concentrations of 1, 5, 10, 20 and 40ng as per SW-846 methodologies identified in the EPA approved QAPP.

2. Low level soil standards were not performed since they are not a requirement for SW-846 Method 8021B.

2.9 Internal Standard

All analyses have been performed using SW-846 Method 8021B identified in the EPA approved QAPP. Internal Standards are not performed using this methodology.

2.10 Field Duplicates

Analytical results for sample 183826 and sample duplicate 183827 indicates a 200 % RPD exists between the concentration of Tetrachloroethene for these samples.

DATA VALIDATION REPORT
KLOCKNER & KLOCKNER – JOB # X456

This report summarizes the findings of validation activities performed for the following sample matrices and analyses:

Nine (9) soil samples - Purgeable Halocarbons

Two (2) soil samples – Lead

One (1) aqueous field blank - Purgeable Halocarbons, Lead

One (1) methanol trip blank - Purgeable Halocarbons

All samples were collected on February 15, 2000 and submitted to Envirotech Research, Inc. (currently STL Envirotech) on February 16, 2000 for analysis. Only validation deficiencies or discrepancies are noted below; otherwise, all analytical quality assurance/quality control data and procedures conform to SW-846 methodologies and requirements identified in the EPA approved June 1997 Quality Assurance Project Plan (QAPP).

1.0 GENERAL INFORMATION

1.1 Data Completeness and Deliverables

A Contract Compliance Screening checklist was not included with this data package since this data was analyzed by non-CLP methodologies.

1.2 Cover Letter SDG Narrative

Record of cooler temperatures were not included in the narrative or noted on the chain of custody. The chain does indicate the samples were packaged in ice. The laboratory manager for STL Envirotech was contacted and indicated that all cooler temperatures are recorded and kept on file. STL Envirotech indicate cooler temperatures in excess of 10 degrees Celsius in the Non-Conformance Summary. The Non-Conformance Summary for this data package does not indicate cooler temperatures were exceeded.

1.3 Data Validation Checklist

The assembled order of the data package in reference to the Sample Data Summary Package and the Sample Data package is as follows: Sample Data Summary; General Information Section; Sample Data Package.

2.0 VOLATILE ORGANIC ANALYSIS

2.1 Holding Times

All analyses were performed within the 14 day technical holding time specified by SW-846 methodologies identified in the EPA approved QAPP.

2.2 System Monitoring Compound (SMC) Recovery

1. SMC Recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "medium water" and a "high soil" SMC Recovery were sufficient for this data package; therefore, a "low soil" matrix was not performed.

2. The percent recovery for sample 183832 was below contract specifications. The sample was reanalyzed confirming matrix interference.

2.3 Matrix Spikes

SMC Recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "high soil" SMC Recovery was sufficient for this data package; therefore, "low soil" or "low water" matrices were not performed.

2.4 Blanks

1. Instrument blanks were not performed and are not required under SW-846 methodologies. The method blank is used for SW-846 methodologies to indicate the system is clean and within control limits.

2. Storage blanks were not performed and are not required under SW-846 methodologies. As part of STL Envirotech's in-house quality control program, storage blanks are kept in the facility's refrigerators and analyzed on a weekly basis to monitor possible contamination problems.

3. The CLP identification scheme was not used with this data package since SW-846 methodologies were used. This data package conforms to the specifications outlined in the EPA approved QAPP which follows SW-846 methodologies.

4. There are no field blanks required for soil samples collected using Methanol extraction procedures. Field blanks were collected

nonetheless. A Methanol trip blank was analyzed with this data package.

2.5 GC/MS Instrument Performance Check

BFB Instrument Performance Checks are not a requirement of SW-846 methodologies and were, therefore, not performed.

2.6 Target Compound List Analytes

1. Form I VOA was not submitted for matrix spike and matrix spike duplicate analysis. Form III is included with this data package which contains all pertinent recovery information for MS/MSD analyses.

2. All analyses have been performed using SW-846 Method 8021B. Mass spectra analysis is not a procedure of this methodology.

2.7 Tentatively Identified Compounds

All analyses have been performed using SW-846 Method 8021B. TICs are not generated using this methodology.

2.8 GC Initial Calibration

1. Calibrations were performed at concentrations of 1, 5, 10, 20 and 40ng as per SW-846 methodologies identified in the EPA approved QAPP.

2. Low level soil standards were not performed since they are not a requirement for SW-846 Method 8021B.

2.9 Internal Standard

All analyses have been performed using SW-846 Method 8021B identified in the EPA approved QAPP. Internal Standards are not performed using this methodology.

2.10 Field Duplicates

Analytical results for sample 183835 and sample duplicate 183836 indicate a 181.9% RPD exists between the concentration of Trichloroethene for these samples.

3.0 METALS ANALYSIS

3.1 Raw Data

Percent solids calculations were not included in the data package; however, the data package does include the percent moisture figures of soil samples which can be readily converted to percent solids.

3.2 Form I

A brief description of the soil samples was not included in Form I.

3.3 Form IIB

CRDL Standards were not performed as they are not a requirement for SW-846 methodologies identified in the EPA approved QAPP.

3.4 Spiked Sample Recovery

Spike recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "low soil" matrix recovery was sufficient for this data package; therefore, "medium and high soil" matrices were not performed.

3.5 Form VI

Lab duplicates are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "low soil" matrix recovery was sufficient for this data package; therefore, "medium and high soil" matrices were not performed.

3.6 ICP Serial Dilution

Lab duplicates are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "low soil" matrix recovery were sufficient for this data package; therefore, "medium soil" matrix was not performed.

3.7 Forms X, XI, XII

These forms are not included with this data package as they are part of the CLP analytical procedures.

DATA VALIDATION REPORT
KLOCKNER & KLOCKNER – JOB # C924

This report summarizes the findings of validation activities performed for the following sample matrices and analyses:

Fourteen (14) soil samples - Purgeable Halocarbons

Two (2) soil samples – Lead

One (1) aqueous field blank - Purgeable Halocarbons, Lead

One (1) methanol trip blank – Purgeable Halocarbons

All samples were collected on August 16, 2000 and submitted to Envirotech Research, Inc. (currently STL Envirotech) on August 17, 2000 for analysis. Only validation deficiencies or discrepancies are noted below; otherwise, all analytical quality assurance/quality control data and procedures conform to SW-846 methodologies and requirements identified in the EPA approved June 1997 Quality Assurance Project Plan (QAPP).

1.0 GENERAL INFORMATION

1.1 Data Completeness and Deliverables

A Contract Compliance Screening checklist was not included with this data package since this data was analyzed by non-CLP methodologies.

1.2 Cover Letter SDG Narrative

Record of cooler temperatures were not included in the narrative or noted on the chain of custody. The chain does indicate the samples were packaged in ice. The laboratory manager for STL Envirotech was contacted and indicated that all cooler temperatures are recorded and kept on file. STL Envirotech indicate cooler temperatures in excess of 10 degrees Celsius in the Non-Conformance Summary. The Non-Conformance Summary for this data package does not indicate cooler temperatures were exceeded.

1.3 Data Validation Checklist

The assembled order of the data package in reference to the Sample Data Summary Package and the Sample Data package is as follows: Sample Data Summary; General Information Section; Sample Data Package.

2.0 VOLATILE ORGANIC ANALYSIS

2.1 Holding Times

1. All analyses were performed within the 14 day technical holding time specified by SW-846 methodologies identified in the EPA approved QAPP.

2.2 System Monitoring Compound (SMC) Recovery

SMC Recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "high soil" SMC Recovery was sufficient for this data package; therefore, "low soil" or "low water" matrices were not performed.

2.3 Matrix Spikes

SMC Recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "high soil" SMC Recovery was sufficient for this data package; therefore, "low soil" or "low water" matrices were not performed.

2.4 Blanks

1. Instrument blanks were not performed and are not required under SW-846 methodologies. The method blank is used for SW-846 methodologies to indicate the system is clean and within control limits.

2. Storage blanks were not performed and are not required under SW-846 methodologies. As part of STL Envirotech's in-house quality control program, storage blanks are kept in the facility's refrigerators and analyzed on a weekly basis to monitor possible contamination problems.

3. The CLP identification scheme was not used with this data package since SW-846 methodologies were used. This data package conforms to the specifications outlined in the EPA approved QAPP which follows SW-846 methodologies.

4. There are no field blanks required for soil samples collected using Methanol extraction procedures. Field blanks were collected nonetheless. A Methanol trip blank was analyzed with this data package.

2.5 GC/MS Instrument Performance Check

BFB Instrument Performance Checks are not a requirement of SW-846 methodologies and were, therefore, not performed.

2.6 Target Compound List Analytes

1. Form I VOA was not submitted for matrix spike and matrix spike duplicate analysis. Form III is included with this data package which contains all pertinent recovery information for MS/MSD analyses.

2. All analyses have been performed using SW-846 Method 8021B. Mass spectra analysis is not a procedure of this methodology.

2.7 Tentatively Identified Compounds

All analyses have been performed using SW-846 Method 8021B. TICs are not generated using this methodology.

2.8 GC Initial Calibration

1. Calibrations were performed at concentrations of 1, 5, 10, 20 and 40ng as per SW-846 methodologies identified in the EPA approved QAPP.

2. Low level soil standards were not performed since they are not a requirement for SW-846 Method 8021B.

2.9 GC Continuing Calibration

The RRF values are for SW-846 Method 8021B and are not applicable to CLP RRF continuing calibration limits.

2.10 Internal Standard

All analyses have been performed using SW-846 Method 8021B identified in the EPA approved QAPP. Internal Standards are not performed using this methodology.

2.11 Field Duplicates

Analytical results for sample 223550 and sample duplicate 223552 indicate a 200% RPD exists between the concentration of Trichloroethene for these samples.

3.0 METALS ANALYSIS

3.1 Raw Data

Percent solids calculations were not included in the data package; however, the data package does include the percent moisture figures of soil samples which can be readily converted to percent solids.

3.2 Form I

A brief description of the soil samples was not included in Form I.

3.3 Form IIB

CRDL Standards were not performed as they are not a requirement for SW-846 methodologies identified in the EPA approved QAPP.

3.4 Spiked Sample Recovery

Spike recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "low soil" matrix recovery were sufficient for this data package; therefore, "medium and high soil" matrices were not performed.

3.5 Form VI

Lab duplicates are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "low soil" matrix recovery was sufficient for this data package; therefore, "medium and high soil" matrices were not performed.

3.6 Field Duplicates

Analytical results for sample 223544 and sample duplicate 223553 indicate a 26.5% RPD exists between the concentration of Lead for these samples.

3.7 Forms X, XI, XII

These forms are not included with this data package as they are part of the CLP analytical procedures.

DATA VALIDATION REPORT
KLOCKNER & KLOCKNER – JOB # E510

This report summarizes the findings of validation activities performed for the following sample matrices and analyses:

Two (2) soil samples - Purgeable Halocarbons

One (1) aqueous field blank - Purgeable Halocarbons

One (1) methanol trip blank - Purgeable Halocarbons

All samples were collected on October 9, 2000 and submitted to Envirotech Research, Inc. (currently STL Envirotech) on October 9, 2000 for analysis. Only validation deficiencies or discrepancies are noted below; otherwise, all analytical quality assurance/quality control data and procedures conform to SW-846 methodologies and requirements identified in the EPA approved June 1997 Quality Assurance Project Plan (QAPP).

1.0 GENERAL INFORMATION

1.1 Data Completeness and Deliverables

A Contract Compliance Screening checklist was not included with this data package since this data was analyzed by non-CLP methodologies.

1.2 Cover Letter SDG Narrative

Record of cooler temperatures were not included in the narrative or noted on the chain of custody. The chain does indicate the samples were packaged in ice. The laboratory manager for STL Envirotech was contacted and indicated that all cooler temperatures are recorded and kept on file. STL Envirotech indicate cooler temperatures in excess of 10 degrees Celsius in the Non-Conformance Summary. The Non-Conformance Summary for this data package does not indicate cooler temperatures were exceeded.

1.3 Data Validation Checklist

The assembled order of the data package in reference to the Sample Data Summary Package and the Sample Data package is as follows: Sample Data Summary; General Information Section; Sample Data Package.

2.0 VOLATILE ORGANIC ANALYSIS

2.1 Holding Times

All analyses were performed within the 14 day technical holding time specified by SW-846 methodologies identified in the EPA approved QAPP.

2.2 System Monitoring Compound (SMC) Recovery

SMC Recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "medium water" and a "high soil" SMC Recoveries were sufficient for this data package; therefore, "low soil" matrix was not performed.

2.3 Matrix Spikes

SMC Recoveries are performed according to SW-846 methodologies and at variable levels determined by the laboratory based on the level of contaminant concentration anticipated. The laboratory had determined a "high soil" SMC Recovery was sufficient for this data package; therefore, "low soil" or "low water" matrices were not performed.

2.4 Blanks

1. Instrument blanks were not performed and are not required under SW-846 methodologies. The method blank is used for SW-846 methodologies to indicate the system is clean and within control limits.

2. Storage blanks were not performed and are not required under SW-846 methodologies. As part of STL Envirotech's in-house quality control program, storage blanks are kept in the facility's refrigerators and analyzed on a weekly basis to monitor possible contamination problems.

3. The CLP identification scheme was not used with this data package since SW-846 methodologies were used. This data package conforms to the specifications outlined in the EPA approved QAPP which follows SW-846 methodologies.

4. There are no field blanks required for soil samples collected using Methanol extraction procedures. Field blanks were collected nonetheless. A Methanol trip blank was analyzed with this data package.

2.5 GC/MS Instrument Performance Check

BFB Instrument Performance Checks are not a requirement of SW-846 methodologies and were, therefore, not performed.

2.6 Target Compound List Analytes

1. Form I VOA was not submitted for matrix spike and matrix spike duplicate analysis. Form III is included with this data package which contains all pertinent recovery information for MS/MSD analyses.

2. All analyses have been performed using SW-846 Method 8021B. Mass spectra analysis is not a procedure of this methodology.

2.7 Tentatively Identified Compounds

All analyses have been performed using SW-846 Method 8021B. TICs are not generated using this methodology.

2.8 GC Initial Calibration

1. Calibrations were performed at concentrations of 1, 5, 10, 20 and 40ng as per SW-846 methodologies identified in the EPA approved QAPP.

2. Low level soil standards were not performed since they are not a requirement for SW-846 Method 8021B.

2.9 GC Continuing Calibration

Continuing calibrations were not performed since all analyses were run within twelve hours of the initial calibration.

2.10 Internal Standard

All analyses have been performed using SW-846 Method 8021B identified in the EPA approved QAPP. Internal Standards are not performed using this methodology.

2.11 Field Duplicates

Analytical results for sample 234144 and sample duplicate 234145 indicate a 50 % RPD exists between the concentration of Trichloroethene for these samples.

YES NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: II-CERCLA-9E-0194 LABORATORY: Envirotech Research, Inc.

SITE NAME: Klockner + Klockner SDG Number(s): H941

1.0 Chain of Custody and Sampling Trip Reports

1.1 Are the Traffic Reports/Chain-of-Custody Records present for all samples? [X] ___ ___

ACTION: If no, contact RSCC or the lab to obtain replacement of missing or illegible copies.

1.2 Is the Sampling Trip Report present for all samples and all fractions? [X] ___ ___

ACTION: If no, contact either RSCC or ask the prime contractor to provide this information.

2.0 Data Completeness and Deliverables

2.1 Have any missing deliverables been received and added to the data package? ___ X

NOTE: The lab is required to submit data for only two analyses, for each fraction. (i.e., the original sample and one dilution, or the most concentrated dilution analyzed and one further dilution.)

ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If lab cannot provide them, note the effect on the review of the package in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary form.

2.2 Was CLASS CCS checklist included with package? [ ] X ___

2.3 Are there any discrepancies between the Traffic Reports/Chain-of-Custody Records, Sampling Report and Sample Tags? ___ [X] ___

301631

	YES	NO	N/A
ACTION: If yes, contact the lab to obtain an explanation or resubmittal of any missing deliverables.			
3.0 Cover Letter SDG Narrative			
3.1 Is the Narrative or Cover Letter Present?	[X]	___	___
3.2 Are case number, SDG number and contract number contained in the SDG Narrative or cover letter (see SOW, Exhibit B, section 2.6.1)?	[X]	___	___
3.3 Does the narrative contain the following information:			
VOA: description of trap and columns used during sample analyses?	[X]	___	___
BNA: description of columns used during sample analyses?	[X]	___	___
Pest: description of columns used during sample analyses?	[ ]	___	X
NOTE: As per section 6.23.3.1 SOW/p. D-11/Pest, Packed columns are not permitted.			
3.4 Does the narrative, VOA and BNA sections, contain a list of all TICs identified as alkanes and their estimated concentrations?	[X]	___	___
3.5 Does the narrative contain a record of all cooler temperatures? If the temperature of a cooler was exceeded, > 10° C, the lab must list by fraction and sample number, all affected samples.	[ ]	X	___
3.6 Does the narrative contain a list of the pH values determined for each water sample submitted for volatile analysis (SOW Exhibit B, section 2.6.1.2)?	[ ]	___	X
3.7 Does the Case Narrative contain the statement, "verbatim", as required in Section B of the SOW?	[ ]	X	___
ACTION: If "No", to any question in this section, contact the lab to obtain all necessary resubmittals. If information is not available,			

301632

YES NO N/A

document in the Data Assessment under Contract Problems/Non-Compliance section.

301633

	YES	NO	N/A
4.0 Data Validation Checklist			
4.1 Check the package for the following discrepancies:			
a. Is the package paginated in ascending order starting from the SDG narrative?	X		
b. Are all forms and copies legible?	X		
c. Is each fraction assembled in the order set forth in the SOW?	X		
d. Is a Sample Data Summary Package submitted immediately preceding the Sample Data Package?		X	
The following checklist is divided into three parts. Part A is for any VOA analyses, Part B is for BNAs and Part C is Pesticide/PCBs.			
Does this package contain:			
VOA Data?	X		
BNA Data?	X		
Pesticide/PCB data?		X	

ACTION: Complete corresponding parts of checklist.

301634

4941

YES NO N/A

PART A: VOA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records, Sampling Report or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? ___ X ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated (J). If a soil sample other than TCLP contains more than 90% water, all data should be qualified as unusable (R).

ACTION: If samples were not iced or the ice was melted upon arrival at the laboratory and the cooler temperature was elevated (> 10° C), then flag all positive results with a "J" and all non-detects "UJ".

ACTION: If both VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

ACTION: The smallest soil size permitted is 0.5g. If any soil sample is smaller than 0.5g, document in the Data Assessment under Contract Problems/Non-Compliance.

2.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? ___ X ___

Technical Holding Times: If unpreserved, aqueous samples, maintained at 4° C for aromatic hydrocarbons analysis must be analyzed within 7 days of collection. If preserved with HCl (pH < 2) and stored at 4° C, then aqueous samples must be analyzed within 14 days of collection. If uncertain about preservation, contact sampler to determine whether or

All samples met 14 day holding times as per SW-846 methods.

301635

YES NO N/A

not samples were preserved. The holding time for soils is 10 days from date of collection.

Below not 14day technical holding time as per SW-846 methods.

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample ID	Sample Matrix	Was Sample Preserved?	Date Sampled	Date Lab Received	Date Analyzed
88554 through 88556	S	MeOH	10-6-98	10-7-98	10-17-98
88558					
88559					10-20-98
88561					10-17-98
88560					10-16-98
88566, 88569					10-17-98
88570					10-20-98

ACTION: If technical holding times are exceeded, flag all positive results as estimated "J" and sample quantitation limits as estimated "UJ", and document in the Data Assessment that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable "R". If holding times are exceeded by more than 28 days, all non detect data are unusable "R".

NOTE: Contractual Holding Times: Analysis of water and soil/sediment samples must be completed within 10 days of Validated Time of Sample Receipt (VTSR). This requirement does not apply to Performance Evaluation (PE) samples.

ACTION: If contractual holding times are exceeded,

301636

YES NO N/A

document in the Data Assessment and on the Organic Regional Data Assessment Summary form.

NOTE: The data reviewer must note in the Data Assessment <u>whether or not</u> **technical and contractual** holding times were met.

88559 >14 days all data "5"
~~88562~~ "
~~88563~~ "
~~88565~~ "
88570 >10 days

301637

	YES	NO	N/A
3.0 System Monitoring Compound (SMC) Recovery (Form II)			
3.1 Are the VOA SMC Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water?	[X]		
b. Low Soil?	[ ]	X	
c. Med Soil?	[X]		
3.2 Are all the VOA samples listed on the appropriate System Monitoring Compound Recovery Summary for each of the following matrices:			
a. Low Water?	[X]		
b. Low Soil?	[ ]		X
c. Med Soil?	[X]		
ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If missing deliverables are unavailable, document the effect in the Data Assessment.			
3.3 Were outliers marked correctly with an asterisk?	[X]		
ACTION: Circle all outliers with red pencil.			
3.4 Was one or more VOA system monitoring compound recovery outside of contract specifications for any sample or method blank?		[X]	
If yes, were samples re-analyzed?	[ ]		X
Were method blanks re-analyzed?	[ ]		X
ACTION: If recoveries are ≥ 10%, but 1 or more compounds fail to meet SOW specifications:			
1. All positive results are qualified as estimated "J".			
2. Flag all non-detects as estimated detection limits "UJ" where recovery is less than the lower acceptance limit.			

301638

YES NO N/A

3. If SMC recoveries are above allowable levels, do not qualify non-detects.

If any system monitoring compound recovery is < 10%:

1. Flag all positive results as estimated "J".

2. Flag all non-detects as unusable "R".

Professional judgement should be used to qualify data that only have method blank SMC recoveries out of specification in both original and re-analyses. Check the internal standard areas.

NOTE: Contractual requirements state that if any SMC fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

NOTE: The laboratory must submit the following data:

1. If SMC recoveries and internal standard responses meet the acceptance criteria in the re-analyzed sample, then the laboratory must submit only the re-analysis.

2. If an SMC recovery and/or internal standard response fails to meet the acceptance criteria upon re-analysis, then submit data from both analyses.

(Refer to section 11.4.3.2, page D-46/VOA of the SOW for more information.)

3.5 Are there any transcription/calculation errors between raw data and Form II? ___ X ___

ACTION: If large errors exist, contact the lab to obtain an explanation or resubmittal of corrected deliverables. Make any necessary corrections and note the effect in the Data Assessment.

301639

	YES	NO	N/A
4.0 Matrix Spikes (Form III)			
4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present?	X		
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water?	X		
b. Low Soil?		X	
c. Med Soil?	X		

ACTION: If any matrix spike data are missing, take the action specified in section 3.2 above.

4.3 How many VOA spike recoveries are outside QC limits?

Water	Soils
0 out of 10	0 out of 10

4.4 How many RPDs for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
0 out of 5	0 out of 5

ACTION: No action is taken based upon MS/MSD data alone. However, using informed professional judgement, the MS/MSD results may be used in conjunction with other QC criteria to determine the need for qualification of the data.

ACTION: Circle all outliers with red pencil.

	YES	NO	N/A
5.0 Blanks (Form IV)			
5.1 Is the Method Blank Summary (Form IV) present?	X		

5.2 Frequency of Analysis: for the analysis of VOA TCL compounds, has a reagent/method blank been

301640

		YES	NO	N/A
	analyzed for each SDG or every 20 samples of similar matrix (low water, low soil or medium soil), whichever is more frequent?	[X]	___	___
5.3	Has a VOA method blank been analyzed at least once every twelve hours for each concentration level and GC/MS system used?	[X]	___	___
5.4	Was a VOA instrument blank analyzed after each sample/dilution which contained a target compound that exceeded the initial calibration range?	[ ]	___	X
5.5	Was a VOA storage blank analyzed at the end of all samples for each SDG in a case?	[ ]	___	X

ACTION: If any method/instrument blank data are missing, contact the lab to obtain any missing deliverables. If method blank data are not available, reject "R" all associated positive data. However, using professional judgement, the data reviewer may substitute field blank or trip blank data for missing method blank data.

If any instrument blank analyzed after a sample with high concentration is missing, contact the lab to obtain any missing deliverables. If the instrument blank was not analyzed or not available, inspect the chromatogram of the sample analyzed immediately after this analysis for possible carryover. Use professional judgement to determine if any contamination occurred and qualify analyte(s) accordingly.

If storage blank data is missing, contact the lab to obtain any missing deliverables. If unavailable, note in the Contract Problems/Non-Compliance section of the Data Assessment.

5.6 The validator should verify that the correct identification scheme for the EPA Blank samples were used. See page B-33, section 3.3.7.3 of the SOW for further information.

	Was the correct identification scheme used for all VOA blanks?	[ ]	X	___

301641

YES NO N/A

ACTION: Contact the lab to obtain missing deliverables, or make the required corrections on the forms. Document in the Data Assessment under Contract Problems/Non-compliance if corrections were made by the validator.

5.7 Chromatography: review the blank raw data-chromatograms (RICs), quant. reports or data system printouts and spectra. Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs? [X] ___ ___

ACTION: Use professional judgement to determine the effect on the data.

5.8 Are all detected hits for target compounds in method, instrument and storage blanks less than the CRQL for that analyte? [X] ___ ___

Exception: Acetone and 2-butanone must be less than 5 times the CRQL, and methylene chloride must be less than 2.5 times its CRQL.

ACTION: If no, an explanation and laboratory's corrective actions must be addressed in the case narrative. If the narrative contains no explanation, then make a note in the Contract Problems/Non-Compliance section of the Data Assessment.

6.0 Contamination

NOTE: "Water blanks", "drill blanks", and "distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

6.1 Do any method/instrument/reagent/storage blanks have positive results (TCL and/or TIC) for VOAs? X ___ ___

NOTE: When applied as directed in the table below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for %moisture when necessary.

YES NO N/A

NOTE: A contaminated instrument blank is not allowable under this SOW. See page D-48/VOA, section 12.1.2.4 for additional information. Document in the Data Assessment under Contract Problems/Non-Compliance if contaminated instrument blank was submitted.

6.2 Do any field/trip/rinse blanks have positive VOA results (TCL and/or TIC)? [ ] X ___

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped and are not required for non-aqueous matrices. Blanks may not be qualified because of contamination in another blank. Field Blanks & Trip Blanks must be qualified for system monitoring compound, instrument performance criteria, spectral or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable "R".

301643

YES NO N/A

For:	Flag sample result with a "U" when:	Report CRQL & qualify "U" when:	No qualification is needed when:
Methylene Chloride Acetone Toluene 2-Butanone	Sample conc. is > CRQL, but ≤ 10× blank value.	Sample conc. is < CRQL and ≤ 10× blank value.	Sample conc. is > CRQL and > 10× blank value.
Other Conta-minants	Sample conc. is > CRQL, but ≤ 5× blank value.	Sample conc. is < CRQL and ≤ 5× blank value.	Sample conc. is > CRQL and > 5× blank value.

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration criteria.

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R".

6.3 Are there field/rinse/equipment blanks associated with every sample? [ ] [✓] ___

ACTION: For low level samples, note in the Data Assessment that there is no associated field/rinse/equipment blank. For samples with high concentrations of suspected blank contaminants, use professional judgement to qualify these values and make a note in the Data Assessment.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V)

7.1 Are the GC/MS Instrument Performance Check Forms (Form V) present for Bromofluorobenzene (BFB)? [X] ___ ___

7.2 Are the enhanced bar graph spectrum and

301644

	YES	NO	N/A
mass/charge (m/z) listing for the BFB provided for each twelve hour shift?	X		
7.3 Has an instrument performance check been analyzed for every analytical sequence on each instrument?	X		

ACTION: List date, time, instrument ID, and sample numbers for which associated GC/MS tuning data are unavailable.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: Notify the lab to obtain missing data, if possible. If the lab cannot provide the missing data, reject, "R", all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundances been normalized to m/z 95 as specified in Exhibit D, page D-56/VOA?	X		

NOTE: All ion abundance ratios must be normalized to m/z 95, the nominal base peak, even though the ion abundance of m/z 174 may be up to 120% that of m/z 95.

ACTION: If mass assignment is in error, qualify all associated data as unusable "R".

7.5 Have the ion abundance criteria been met for each instrument used?	X		

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors

	YES	NO	N/A
between mass lists and Form Vs? (Check at least two values, but if errors are found check more.)		[X]	
7.7 Is the number of significant figures for the reported relative abundances consistent with the number given for each ion in the ion abundance criteria column?	[X]		
ACTION: If large errors exist, take action as specified in section 3.5 above.			
7.8 Are the spectra of the mass calibration compound acceptable?	[X]		
ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.			
8.0 Target Compound List (TCL) Analytes (FORM I VOA)			
8.1 Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate?	[X]		
b. Matrix spikes and matrix spike duplicates?	[ ]	[X]	
c. Blanks?	[X]		
8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (quant. reports) included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[X]		
b. Matrix spikes and matrix spike duplicates (mass spectra not required)?	[X]		
c. Blanks?	[X]		
ACTION: If any data are missing, take action specified in 3.2 above.			

301646

	YES	NO	N/A
8.3 Are the response factors shown in the quant. report?	[X]	___	___
8.4 Is chromatographic performance acceptable with respect to:			
a. Baseline stability?	[X]	___	___
b. Resolution?	[X]	___	___
c. Peak shape?	[X]	___	___
d. Full-scale graph (attenuation)?	[X]	___	___
e. Other: _____?	[ ]	___	___

ACTION: Use professional judgement to determine the acceptability of the data.

8.5 Are the lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[X]	___	___

ACTION: If any mass spectra are missing, take action as specified in 3.2 above. If the lab does not generate its own standard spectra, document in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary.

8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[X]	___	___
8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[X]	___	___
8.8 Do sample and standard relative ion intensities agree within ±20%?	[X]	___	___

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected "R", flagged "N" (presumptive evidence of the presence of the

301647

	YES	NO	N/A
compound) or changed to not detected "U" at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in 8.6, 8.7, and 8.8.			
ACTION: When sample carry-over is suspected, use professional judgement determine if instrument cross-contamination has affected positive compound identifications.			
9.0 Tentatively Identified Compounds (TIC)			
9.1 Are all Tentatively Identified Compound Forms (Form I Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier?	[X]	___	___
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[X]	___	___
b. Blanks?	[ ]	___	___
c. Alkanes listed for each sample?	[X]	___	___
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "JN" qualifier to all chemically named TICs, if missing.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds? (Example: 1,2- dimethylbenzene is xylene, a VOA TCL analyte, and should not be reported as a TIC.)	___	[X]	___
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[X]	___	___

301648

	YES	NO	N/A
9.5 Do TIC and "best match" standard relative ion intensities agree within ±20%?	X		

ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined an incorrect identification was made, change the identification to "unknown," or to some less specific identification as appropriate. (Example: "C3 substituted benzene.")

Also, when a compound is not found in any blank, but is detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable "R". (E.g., Common Lab Contaminants: CO_2 (M/E 44), siloxanes (M/E 73) hexane, aldol condensation products, solvent preservatives, and related by-products - see the National Functional Guidelines for further guidance.)

9.6 Are TICs with responses < 10% of the internal standard (as determined by inspection of the peak areas or height) reported?		X	

ACTION: If yes, cross out questionable TIC(s).

10.0 Compound Quantitation and Reported Detection Limits

10.1 Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standards, quantitation ions, and RRF were used to calculate Form I results.)		X	
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	X		

ACTION: If errors are large, take action as specified in section 3.5 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample). Replace concentrations that exceeded the calibration

301649

	YES	NO	N/A
range in the original analysis by crossing out the "E" and its corresponding value on the original Form I and substituting the data from the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form Is not to be used, including any in the data summary package.			
11.0 Standards Data (GC/MS)			
11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (quant. reports) present for each initial and continuing calibration?	[X]	___	___
ACTION: If any calibration standard data are missing, take action specified in 3.2 above.			
12.0 GC/MS Initial Calibration (Form VI)			
12.1 Are the Initial Calibration Forms (Form VI) present and complete at concentrations of 10, 20, 50, 100, 200ng for separate calibrations of low water/med soils (unheated purge) and low soils (heated purge)?	[X]	___	___
ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.			
12.2 Were all low level soil standards, blanks and samples analyzed by heated purge?	[ ]	___	X
ACTION: If low level soil samples were not heated during purge, qualify positive hits "J" (estimated) and non-detects "R".			
12.3 Are the % relative standard deviation (%RSD) values for VOAs ≤ 30% over the concentration range of the calibration?	[ ]	X	___
NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %RSD, the technical acceptance criteria are the same for all analytes.			
ACTION: Circle all outliers with red pencil.			

301650

#941

YES NO N/A

ACTION: If %RSD is > 30.0%, qualify associated positive results for that analyte "J" (estimated) and non-detects using professional judgement. When %RSD is > 90%, flag all non-detects for that analyte "R" (unusable) and positive hits "J".

NOTE: Analytes previously qualified "U" for blank contamination are still considered as "hits" when qualifying for initial calibration criteria.

12.4 Are any average RRFs < 0.05? X [ ] ___

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ACTION: Circle all outliers with red pencil.

ACTION: If the average RRF is < 0.05, then qualify associated non-detects with an "R" and flag associated positive data as estimated "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %RSD or RRF criteria, provided the %RSD is ≤ 40% and RRF is ≥ 0.010. (See Table 5, page D-59/VOA and analytes marked with a "*" on Form VI for required analytes and contractual criteria.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %RSD or RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and the Organic Regional Data Assessment Summary.

12.5 Are there any transcription/calculation errors in the reporting of average relative response factors (RRF) or %RSD? (Check at least 2 values, but if errors are found, check more.) ___ [X] ___

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

301651

	YES	NO	N/A
13.0 GC/MS Continuing Calibration (Form VII)			
13.1 Are the Continuing Calibration Forms (Form VII) present and complete for separate calibration of low water/med soil and low soil samples?	X	[ ]	___
13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?	X	___	___

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, contact the lab to request an explanation/resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable "R".

ACTION: List below all sample(s) that were not analyzed within twelve hours of the previous continuing calibration.

_____

_____

_____

13.3 Do any volatile compounds have a percent difference (%D) between the initial and continuing RRF which exceeds the ±25% criteria?	X	[ ]	___

NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %D, the technical acceptance criteria are the same for all analytes.

ACTION: Circle all outliers with red pencil.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated. When %D is > 90%, qualify all non-detects for that analyte unusable (R) and positive results estimated (J).

301652

	YES	NO	N/A
13.4 Are any continuing calibration RRFs < 0.05?	X	[ ]	

ACTION: Circle all outliers with red pencil.

ACTION: If the RRF is < 0.05, qualify the associated non-detects as unusable "R" and the associated positive values "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %D and RRF criteria, provided that the %D is ≤ 40% and the RRF is ≥ 0.010. (See Table 5 pg. D-59/VOA or analytes marked with a "*" on Form VI for required analytes.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %D and RRF, criteria document in the Data Assessment under contract Problems/Non-Compliance and on the Organic Regional Data Assessment Summary form.

	YES	NO	N/A
13.5 Are there any transcription/calculation errors in the reporting of RRF or %D between initial and continuing RRFs? (Check at least two values, but if errors are found, check more.)		X	

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance.

14.0 Internal Standard (Form VIII)

	YES	NO	N/A
14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits (-50% to +100%) for each continuing calibration?	X		
If no, was the sample re-analyzed?	[ ]		X

ACTION: 1. Circle all outliers with red pencil.

2. List all the outliers below.

301653

YES NO N/A

Sample #	Internal Std.	Area	Lower/Upper Limit
			/
			/
			/
			/

(Attach additional sheets if necessary, or attach copies of Form VIIIs.)

ACTION: If any sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

ACTION: 1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Do not qualify non-detects when associated IS area counts are > 100%.

3. If the IS area in the sample is below the "lower limit," < 50%, qualify all analytes associated with that IS estimated, "J". If the area counts are extremely low, < 25% of the area in the 12 hour standard, or if performance exhibits a major abrupt drop- off, flag all associated non-detects as unusable, "R", and positive hits estimated, "J".

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [X] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

NOTE: Contractual requirements state that if any internal standard fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not

301654

YES NO N/A

re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

NOTE: See Notes in section 3.4, page 7 for a description of sample data the laboratory must submit.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for VOA analysis? [X] ___ ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

YES NO N/A

PART B: BNA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody records or laboratory SDG Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [X] ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated "J". If a soil sample, other than TCLP, contains more than 90% water, all data should be qualified as unusable "R".

ACTION: If samples were not iced or if the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 10° C), flag all positive results "J" and all non-detects "UJ".

2.0 Holding Times

2.1 Have any BNA technical holding times, determined from date of collection to date of extraction, been exceeded? ___ [X] ___

All analysis within 14 day holding times ok per SOW-846 method

Technical Holding Time: Continuous extraction of water samples for BNA analysis must be started within seven days of the date of collection. Soil/sediment samples must be extracted within 7 days of collection. Extracts must be analyzed within 40 days of the date of extraction.

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample Analyzed	Sample Matrix	Date Sampled	Date Lab Received	Date Extracted	Date Analyzed
88562	Soil	10-6-98	10-7-98	10-15-98	10-20-98
88563	↓	↓	↓	↓	↓
88565	↓	↓	↓	↓	10-21-98
88566	↓	↓	↓	10-14-98	↓

			YES	NO	N/A

ACTION: If technical holding times were exceeded, flag all positive results as estimated (J) and sample quantitation limits as estimated (UJ), and document in the narrative that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon reanalysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on sample results. At a minimum, all results should be qualified "J", but the reviewer may determine that non-detect data are unusable "R". If holding times were exceeded by more than 28 days, all non-detect data must be qualified "R", unusable.

NOTE: Contractual Holding Times: Extraction of water samples must be started within 5 days VTSR. Soil/sediment samples must be extracted within 10 days of VTSR. This requirement does not apply to Performance Evaluation (PE) samples. Water and soil/sediment extracts must be analyzed within 40 days following extraction.

ACTION: If contractual holding times are exceeded, document in the Data Assessment and on the Organic Regional Data Assessment Summary form.

NOTE: The data reviewer must note in the Data Assessment whether or not **technical and contractual** holding times were met.

3.0 Surrogate Recovery (Form II)

3.1 Are BNA Surrogate Recovery Summaries (Form II) present for each of the following matrices:

a. Low Water?	X		
b. Low Soil?	X		
c. Med Soil?		X	

301657

	YES	NO	N/A
3.2 Are all the BNA samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:			
a. Low Water?	[X]	___	___
b. Low Soil?	[X]	___	___
c. Med Soil?	[ ]	___	X

ACTION: Contact the lab for an explanation or resubmittal of any missing deliverables. If missing deliverables are unavailable, document the effect in the Data Assessment.

3.3 Were outliers marked correctly with an asterisk?	[X]	___	___

ACTION: Circle all outliers with red pencil.

3.4 Were two or more base-neutral OR acid surrogate recoveries out of specification for any sample or method blank?	___	[X]	___
If yes, were samples reanalyzed?	[ ]	___	X
Were method blanks reanalyzed?	[ ]	___	X

ACTION: If all BNA surrogate recoveries are ≥ 10%, but two within the base-neutral or acid fraction do not meet SOW specifications, for the affected fraction only (i.e. acid or base-neutral compounds):

1. Flag all positive results as estimated (J).

2. Flag all non-detects as estimated detection limits ("UJ") when recoveries are less than the lower acceptance limit.

3. Do not qualify non-detects if recoveries are greater than the upper acceptance limit.

If any base-neutral or acid surrogate has a recovery of < 10%:

1. Qualify positive results for that fraction

301658

YES NO N/A

as estimated (J).

2. Qualify non-detects for that fraction as unusable (R).

Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and reanalyses. Check the internal standard areas.

NOTE: Contractual requirements state that if any surrogate fails acceptance criteria, the sample must be re-analyzed. If sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

NOTE: The laboratory must submit the following data:

1. If surrogate recoveries and internal standard responses meet the acceptance criteria in the re-analyzed sample, then the laboratory must submit only the re-analysis.

2. If surrogate recoveries and/or internal standard responses fail to meet the acceptance criteria upon re-analysis, then submit data from both analyses.

3.5 Are there any transcription/calculation errors between raw data and Form II? ___ X ___

ACTION: If large errors exist, contact the lab for an explanation or resubmittal of corrected deliverables. Make necessary corrections and note errors in the Data Assessment.

4.0 Matrix Spikes (Form III)

4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present? X ___ ___

4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:

	YES	NO	N/A
a. Low Water?	[X]		
b. Low Soil?	[X]		
c. Med Soil?	[ ]	[X]	

ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.

4.3 How many BNA spike recoveries are outside QC limits?

Water	Soils
0 out of 22	0 out of 22

4.4 How many RPDs for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
6 out of 11	0 out of 11

ACTION: No action is taken based upon MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the matrix spike and matrix spike duplicate results in conjunction with other QC criteria and determine the need for some qualification of the data.

ACTION: Circle all outliers with red pencil.

5.0 Blanks (Form IV)

	YES	NO	N/A
5.1 Is the Method Blank Summary (Form IV) present?	[X]		
5.2 Frequency of Analysis: Has a reagent/method blank analysis been reported per 20 samples of similar matrix, or concentration level, and for each extraction batch?	[X]		
5.3 Has a BNA method blank been analyzed for each GC/MS system used? (See SOW pg. D-54/SVOA, Section 12.1.2.)	[X]		

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	YES	NO	N/A
ACTION: If any method blank data are missing, contact the lab to obtain an explanation/resubmittal. If resubmittals are unavailable, use professional judgement to determine if the associated sample data should be qualified.			
5.4 The validator should verify that the correct identification scheme for the EPA Blank samples were used. See page B-33, sec. 3.3.7.3 of the SOW for further information. Was the correct identification scheme used for all BNA blanks?	[ ]	[X]	___
ACTION: Contact the lab to obtain resubmittals, or make the required corrections on the forms. Document all corrections made by the validator in the Data Assessment under Contract Problems/Non-Compliance.			
5.5 Chromatography: review the blank raw data - chromatograms (RICs), quant. reports or data system printouts and spectra. Is the chromatographic performance (baseline stability) acceptable for each instrument?	[X]	___	___
ACTION: Use professional judgement to determine the effect on the data.			
5.6 Are all detected hits for target compounds less than the CRQL for that analyte in all method blanks? Exception: Phthalate esters must be less than five times (5x) the CRQL.	[X]	___	___
6.0 Contamination			
NOTE: "Water blanks", "drill blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.			
6.1 Do any method/reagent blanks have positive results (TCL and/or TIC)?	[X]	[ ]	___

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YES NO N/A

NOTE: Water: When applied as directed in the table below (page 29), the contaminant concentration in method/instrument/reagent blanks is multiplied by the sample dilution factor, where necessary.

Soil: If the lab has not already done so, the contaminant concentration in soil blanks is multiplied by 33 times the sample dilution factor and corrected for %moisture (fraction of solid) where necessary. 30 grams of sodium sulfate (1 gram for medium level soils) are used to prepare the soil reagent/method blank as instructed on page D-54/SVOA, section 12.1.3. Contact the lab to obtain resubmittals if the soil blanks are not reported in soil units (µg/kg).

6.2 Do any field/rinse blanks have positive BNA results (TCL and/or TIC)? ___ [X] ___

ACTION: Prepare a list of samples associated with each contaminated blank. (Attach a separate sheet.)

NOTE: All field blank results associated to a particular group of samples (may exceed one per case) must be used to qualify sample data. Do not convert field blank results to account for the difference in soil CRQLs. Blanks may not be qualified because of contamination in another blank. Field blanks must be qualified for surrogate, spectral, instrument performance or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If gross contamination exists, all data in the associated samples should be qualified as unusable "R".

For:	Flag sample result with a "U" when:	Report CRQL & qualify "U" when:	No qualification is needed when:
Common Phthalate-Esters	Sample conc. is > CRQL, but ≤ 10× blank value.	Sample conc. is < CRQL and ≤ 10× blank value.	Sample conc. is > CRQL and > 10× blank value.

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			YES	NO	N/A
Other Contaminants	Sample conc. is > CRQL, but ≤ 5x blank value.	Sample conc. is < CRQL and ≤ 5x blank value.	Sample conc. is > CRQL and > 5x blank value.		

NOTE: Analytes qualified "U" for blank contamination are still treated as "hits" when qualifying for calibration criteria.

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.3 Are there field/rinse/equipment blanks associated with every sample? [ ] [X] ___

ACTION: For low level samples, note in the Data Assessment that there is no associated field/rinse/equipment blank. For analytes with high concentration, use professional judgement on qualification of these values and make a note in the Data Assessment.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check

7.1 Are the GC/MS Instrument Performance Check Forms (Form V) present for Decafluorotriphenylphosphine (DFTPP)? [X] ___ ___

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the DFTPP provided for each twelve hour shift? [X] ___ ___

7.3 Has an instrument performance check solution been analyzed for every twelve hours of sample analysis per instrument? [X] ___ ___

ACTION: List date, time, instrument ID, and sample number for which no associated GC/MS tuning data are valid.

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	YES	NO	N/A

SAMPLE NUMBERS	DATE	TIME	INSTRUMENT ID

ACTION: If the lab cannot provide the missing data, reject "R" all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundances been normalized to m/z 198 (see SOW, page D-61/SVOA)? [✓] ___ ___

NOTE: All ion abundance ratios must be normalized to m/z 198, the nominal base peak, even though the ion abundance of m/z 442 may up to 110% that of m/z 198.

ACTION: If mass assignment is in error, flag all associated sample data as unusable "R".

7.5 Have the ion abundance criteria been met for each instrument used? [✓] ___ ___

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors between mass lists and Form Vs? (Check at least two values, but if errors are found check more.) ___ [✓] ___

7.7 Is the number of significant figures for the reported relative abundances consistent with the number given for each ion in the ion abundance criteria column? [✓] ___ ___

ACTION: If large errors exist, take action as specified in section 3.5 above.

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	YES	NO	N/A
7.8 Are the spectra of the mass calibration compound acceptable?	X		

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

8.0 Target Compound List (TCL) Analytes (FORM I SV)

	YES	NO	N/A
8.1 Are the Organic Analysis Data Sheets (Form I SV) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate?	X		
b. Matrix spikes and matrix spike duplicates?	X		
c. Blanks?	X		
8.2 Has GPC cleanup been performed on all soil/ sediment sample extracts?		X	

ACTION: If data suggests that GPC was not performed, use professional judgement. Make note in Contract Problems/Non-Compliance section of the Data Assessment and the Organic Regional Data Assessment Summary.

	YES	NO	N/A
8.3 Are the BNA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (quant. reports) included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	X		
b. Matrix spikes and matrix spike duplicates (mass spectra not required)?	X		
c. Blanks?	X		

ACTION: If any data are missing, take action specified in 3.2 above.

	YES	NO	N/A
8.4 Are the response factors shown in the quant. report?	X		

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	YES	NO	N/A
8.5 Is chromatographic performance acceptable with respect to:			
Baseline stability?	[X]	___	___
Resolution?	[X]	___	___
Peak shape?	[X]	___	___
Full-scale graph (attenuation)?	[X]	___	___
Other:_____?	[ ]	___	___

ACTION: Use professional judgement to determine the acceptability of the data.

8.6 Are lab-generated standard mass spectra of identified BNA compounds present for each sample?	[X]	___	___

ACTION: If any mass spectra are missing, take action specified in 3.2 above. Note under Contract Non-compliance if lab does not generate their own standard spectra. If spectra are missing, reject all positive data.

8.7 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[X]	___	___
8.8 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[X]	___	___
8.9 Do sample and standard relative ion intensities agree within ±20%?	[X]	___	___

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected "R", flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected "U" at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in 8.7, 8.8, and 8.9.

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	YES	NO	N/A
ACTION: When sample carry-over is a possibility, professional judgement should be used to determine if instrument cross-contamination has affected any positive compound identification.			
9.0 Tentatively Identified Compounds (TIC)			
9.1 Are all Tentatively Identified Compound Forms (Form I, Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier?	X		
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	X		
b. Blanks?	X		
c. Alkanes listed for each sample?	X		
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "N" qualifier to all chemically named TICs, if missing.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds? (Example: 1,2-dimethylbenzene is xylene - a VOA TCL - and should not be reported as a TIC.)		X	
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	X		
9.5 Do TIC and "best match" standard relative ion intensities agree within ±20%?	X		
ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined that an incorrect identification was			

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	YES	NO	N/A
made, change the identification to "unknown," or to some less specific identification (example: "C3 substituted benzene") as appropriate. Also, when a compound is not found in any blank, but is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable, "R".		[X]	
9.6 Are any TICs with responses < 10% of the internal standard (as determined by inspection of the peak areas or height) reported?			

ACTION: If yes, cross out questionable TIC(s).

10.0 Compound Quantitation and Reported Detection Limits

	YES	NO	N/A
10.1 Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I result.)		[X]	
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	[X]		

ACTION: If errors are large, take action as specified in section 3.5 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its associated value on the original Form I and substituting the data from the analysis of the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form Is that should not be used, including any in the summary package.

11.0 Standards Data (GC/MS)

11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (quant. reports) present for

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	YES	NO	N/A
initial and continuing calibration?	X		

ACTION: If any calibration standard data are missing, take action specified in 3.2 above.

12.0 GC/MS Initial Calibration (Form VI)

	YES	NO	N/A
12.1 Are the Initial Calibration Forms (Form VI) present and complete for the BNA fraction?	X		

ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.

	YES	NO	N/A
12.2 Are the % relative standard deviation (%RSD) values for BNAs ≤ 30% over the concentration range of the calibration?		X	

ACTION: Circle all outliers with red pencil.

NOTE: Although 21 BNA compounds have a contractual minimum RRF and no maximum %RSD, the technical criteria are the same for all analytes.

NOTE: Eight BNA compounds do not require a 20ng standard. Refer to SOW section 7.2.4.5.1, page D-15/SVOA for a list of required compounds and contractual criteria.

ACTION: If the %RSD is > 30.0%, qualify positive results for that analyte "J" and non-detects using professional judgement. When %RSD is > 90%, flag all non-detect results for that analyte "R" (unusable) and all positive results "J" (estimated).

NOTE: Analytes previously qualified "U" due to blank contamination are still considered as "hits" when qualifying for calibration criteria.

	YES	NO	N/A
12.3 Are any average RRFs < 0.05?		X	

ACTION: Circle all outliers with red pencil.

ACTION: If the average RRF is < 0.05 then:

1. "R" all non-detects.

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YES NO N/A

2. "J" all positive results.

12.4 Are there any transcription/calculation errors in the reporting of RRFs and/or %RSDs? (Check at least two values; if errors are found check more.) ___ X ___

ACTION: Circle errors with red pencil.

ACTION: If errors are large, take action as specified in section 3.5 above.

NOTE: Contract Requirement: The SOW allows up to four of the required analytes to fail contractual %RSD or RRF criteria provided the %RSD is ≤ 40% or RRF is ≥ 0.010. (See Table 5, page D-66/SVOA and analytes marked with a "*" on Form VI for a list of required analytes and contractual criteria.) Technical criteria, however, are the same for all analytes.

ACTION: If more than four analytes fail %RSD or RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and on the Organic Regional Data Assessment Summary form.

13.0 GC/MS Continuing Calibration (Form VII)

13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the BNA fraction? X ___ ___

13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument? X ___ ___

ACTION: List below all sample analyses that were not analyzed within twelve hours of a continuing calibration standard for each instrument used.

_____

_____

_____

ACTION: If any forms are missing, or no continuing calibration standard has been analyzed within

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YES NO N/A

twelve hours of every sample analysis, contact the lab to obtain an explanation/resubmittal. If continuing calibration data are unavailable, flag all associated sample data as unusable "R".

13.3 Does any BNA compound have a percent difference (%D) between the initial and continuing calibration RRFs which exceeds the ±25.0% criteria? X [ ] ___

ACTION: Circle all outliers with red pencil.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated "J". When %D is > 90%, reject all non-detects for that analyte, "R", and qualify positive results "J" (estimated).

13.4 Are any continuing RRFs < 0.05? ___ [X] ___

ACTION: Circle all outliers with red pencil.

ACTION: If the RRF is < 0.05, qualify as unusable (R) associated non-detects and "J" associated positive values.

NOTE: Contract Requirement: The SOW allows up to four of the required analytes to fail contractual %D and RRF criteria, provided that the %D is ≤ 40% and the RRF is ≥ 0.010. (See Table 5 page D-66/SVOA or analytes marked with a "*" on Form VI for a list of the required analytes.) Technical criteria, however, are the same for all analytes.

ACTION: If more than four analytes failed %D and RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and on the Organic Regional Data Summary Form.

13.5 Are there any transcription/calculation errors in the reporting of average relative response factors (RRF) or %difference (%D) between initial and continuing RRFs? (Check at least two values, but if errors are found, check more.) ___ [X] ___

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YES NO N/A

ACTION: Circle errors with red pencil.

ACTION: If errors are large, take action as specified in section 3.5 above.

14.0 Internal Standards (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits (-50% to +100%) for each continuing calibration? [X] ___ ___

If no, was sample re-analyzed? [ ] ___ X

ACTION: 1. Circle all outliers with red pencil.

2. List all the outliers below.

ACTION: If sample was not reanalyzed, document in Data Assessment in Contract Problems/Non-Compliance.

Sample #	Internal Std.	Area	Lower/Upper Limit
			/
			/
			/
			/

(Attach additional sheets if necessary.)
(or attach copies of Form VIIIs)

ACTION: 1. If the internal standard area count is outside the "upper" or "lower" limit, flag with "J" all positive results and non-detects quantitated with this internal standard.

2. Do not qualify non-detects associated with IS area > 100%.

3. If the IS area in the sample is < 50%, qualify all analytes associated with that IS estimated (J). If area counts are extremely low (< 25% of the area in the 12 hour standard), or if

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YES NO N/A

performance exhibits a major abrupt drop-off, flag all associated non-detects as unusable (R) and positive hits estimated (J).

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? X ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

NOTE: Contractual requirements state that if any internal standard fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

NOTE: See Notes in section 3.4, page 24 for a description of sample data the laboratory must submit.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for BNA analysis? X ___ ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

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YES NO N/A

PART C: PESTICIDE/PCB ANALYSIS

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records or SDG Narrative indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data? ___ [ ] ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be qualified as estimated "J". If a soil sample, other than TCLP, contains more than 90% water, all data should be qualified as unusable "R".

ACTION: If samples were not iced, or if the ice was melted upon arrival at the laboratory, and the temperature of the cooler was elevated > 10^0 C, flag all positive results "J" and all non-detects "UJ".

ACTION: Check aqueous extraction log for sample pH, if adjustment was needed, it should have been noted in the SDG Narrative. If more information is needed, contact the lab.

2.0 Holding Times

2.1 Have any PEST/PCB technical holding times, determined from date of collection to date of extraction, been exceeded? ___ [ ] ___

NOTE: Technical Holding Times: Water and soil samples for PEST/PCB analysis must be extracted within 7 days of the date of collection. Extracts must be analyzed within 40 days of the date extraction.

ACTION: If technical holding times are exceeded, flag all positive results as estimated "J" and sample quantitation limits "UJ" and document in the narrative that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or

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Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 3/90

H941

(SOP Revision XI)

PREPARED BY: _____ DATE: _____
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: _____
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE:
Robert Runyon, Chief
Monitoring Management Branch

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Title: Evaluation of Metals Data for the Contract Laboratory Program

Date: Jan. 1992
Number: HW-2
Revision: 11

1.0 Scope

1.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 3/90 .

2.0 **Responsibilities** - Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1. For a **total review**:

2.1.1 Data Assessment - "Total Review-Inorganics" Checklist Appendix (A.1). The reviewer must answer every question on the checklist.

2.1.2 Data Assessment - Data Assessment Narrative (Appendix A.2) The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

2.1.3 Contract Non-Compliance - SMO Report (Appendix A.3) This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Validation Task Monitor, or Technical Project Officer (TPO). Forward 5 copies: one each for internal files, appropriate Regional TPO, Sample Management Office (SMO) and last two addresses of Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract violations should be appended to the end of the Data Assessment Narrative (Sec. A.2.2).

2.1.4 CLP Data Assessment Summary Forms

2.1.4.1 Appendix A.5
Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.

2.1.4.2 Appendix A.6
Data reviewer is also required to fill out Inorganic Regional Data Assessment form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

2.1.5 **Data Review Log:** It is recommended that each data reviewer should maintain a log of the reviews completed to include: a. date of start of case review

b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

2.1.6 **Telephone Record Log** - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

2.1.7 Forwarded Paperwork

2.1.7.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:
a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Record of Communication (copy)
e. CLP Reanalysis Request/Approval Record (original + 3 copies)
f. Appendix A.6 (original).

2.1.7.2 Forward 2 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.6) and Telephone Record Log , if any,: one each for appropriate Regional TPO, and the other one to EPA EMSL office in Las Vegas. The addresses of TPOs and EPA office in Las Vegas are given in Appendix A-4.

2.1.8 **Filed Paperwork** - Upon completion of review, the following are to be filed within MMB files:
a. Two copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.6.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Reanalysis Request/Approval Record (copy)

3.0 **Data Completeness**
Each data package is checked by a Regional Sample Control Coordinator (RSSC) for completeness. A data package is assumed to be complete when all the deliverables required under the contract are present. If a data package is incomplete,the RSSC would call the laboratory for missing document(s). If the laboratory does not Respond within a week, SMO and MMB coordinator of Region II will be notified.

4.0 **Rejection of Data** - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

5.0 **Acceptance Criteria** - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines of October 1, 1989.

6.0 **SMO Contract Compliance Screening (CCS)** - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

7.0 **Request for Reanalysis** - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative.If holding times and sample storage times have not been exceeded, TPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

8.0 **Record of Communication** - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

9.0 **Rounding off numbers** - The data reviewer will follow the standard practice.

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	YES	NO	N/A
A.1.1 **Contract Compliance Screening Report** (CCS) - Present?	[ ]		X
ACTION: If no, contact RSCC.			
A.1.2 **Record of Communication (from RSCC)** - Present?	[ ]		X
ACTION: If no, request from RSCC.			
A.1.3 **Trip Report** - Present and complete?	[ ]		X
ACTION: If no, contact RSCC for trip report.			
A.1.4 **Sample Traffic Report** - Present?	[X]		
Legible?	[X]		
ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5 **Cover Page** - Present?	[X]		
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[X]		
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on Record of Communication?	[ ]		X
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	[X]		
(b) Form I's?	[X]		
ACTION: If no for any of the above, contact RSCC for clarification.			

A.1.6	Form I to IX	Yes	No	N/A
A.1.6.1	Are all the Form I through Form IX labeled with:			
	Laboratory name?	[X]		
	Case/SAS number?	[ ]	X	
	EPA sample No.?	[ ]	X	
	SDG No.?	[X]		
	Contract No.?	[ ]	X	
	Correct units?	[X]		
	Matrix?	[X]		

ACTION: If no for any of the above, note under Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.6.2	Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:			
	(NOTE: Check all forms against raw data.)			
	(a) all analytes analyzed by ICP?	[X]		
	(b) all analytes analyzed by GFAA?	[ ]		X
	(c) all analytes analyzed by AA Flame?	[ ]		X
	(d) Mercury?	[X]		
	(e) Cyanide?	[ ]		X

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

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Title: Evaluation of Metals Data for the Contract Laboratory Program Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

		YES	NO	N/A
A.1.7	**Raw Data**			
A.1.7.1	Digestion Log* for flame AA/ICP (Form XIII) present?	[X]	___	___
	Digestion Log for furnace AA Form XIII present?	[___]	___	X
	Distillation Log for mercury Form XIII present?	[X]	___	___
	Distillation Log for cyanides Form XIII present?	[___]	___	X
	Are pH values (pH<2 for all metals, pH>12 for cyanide) present?	[___]	___	X
	*Weights, dilutions and volumes used to obtain values.			
	Percent solids calculation present for soils/sediments?	[___]	X	___
	Are preparation dates present on sample preparation logs/bench sheets?	[X]	___	___
A.1.7.2	Measurement read out record present? ICP	[X]	___	___
	Flame AA	[___]	___	X
	Furnace AA	[___]	___	X
	Mercury	[X]	___	___
	Cyanides	[___]	___	X
A.1.7.3	Are all raw data to support all sample analyses and QC operations present?	[X]	___	___
	Legible?	[X]	___	___
	Properly Labeled?	[X]	___	___

ACTION: If no for any of the above questions in sections A.1.7.1 through A.1.7.3, write Telephone Record Log and contact laboratory for resubmittals.

		YES	NO	N/A
A.1.8	**Holding Times** - (aqueous and soil samples)			
	(Examine sample traffic reports and digestion/distillation logs.)			
	Mercury analysis (28 days). . . . . exceeded?	___	[X]	___
	Cyanide distillation (14 days). . . . . exceeded?	___	[___]	X
	Other Metals analysis (6 months). . . . exceeded?	___	[X]	___
	NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.			
	ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.			
A.1.8.2	Is pH of aqueous samples for: Metals Analysis >2?	___	[___]	X
	Cyanides Analysis <12?	___	[___]	X
	Action: If yes, flag the associated metals and cyanides data as estimated.			
A.1.9	**Form I (Final Data)**			
A.1.9.1	Are all Form I's present and complete?	[X]	___	___
	ACTION: If no, prepare telephone record log and contact laboratory for submittal.			
A.1.9.2	Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[X]	___	___
	Are soil sample results for each parameter corrected for percent solids?	[X]	___	___
	Are all "less than IDL" values properly coded with "U"?	[___]	X	___

		YES	NO	N/A
	Are the correct concentration qualifiers used with final data?	[X]		

ACTION: If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data.

A.1.9.3	Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	[X]		
	Was a brief physical description of samples given on Form I's?	[ ]	X	
	Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV?		[X]	

ACTION: If no for any of the above, note under Contract-Problem/Non-Compliance of the"Data Assessment Narrative".

A.1.10 Calibration

A.1.10.1	Is record of at least 2 point calibration present for ICP analysis?	[X]		
	Is record of 5 point calibration present for Hg analysis?	[X]		
	Is record of 4 point calibration present for:			
	Flame AA?	[ ]		X
	Furnace AA?	[ ]		X
	Cyanides?	[ ]		X
	Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses?	[ ]		X

ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

		YES	NO	N/A
A.1.10.2	Is correlation coefficient less than 0.995 for:			
	Mercury Analysis?	___	[X]	___
	Cyanide Analysis?	___	[___]	X
	Atomic Absorption Analysis?	___	[___]	X

ACTION: If yes, flag the associated data as estimated.

NOTE: The data validator shall calculate the correlation coefficient using concentrations of the standards and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

A.1.10.3	In the instance where less than 4 standards are measured in absorbance (or peak area, peak height,etc.) mode, are the remaining standards analyzed in concentration mode immediately after calibration within ±10% of the true values?	[X]	___	___

ACTION: If no, flag the associated data as estimated if standards are not within ±10% of true values. Do not flag the data as estimated in linear range indicated by good recovery of standard(s).

A.1.11 **Form II A (Initial and Continuing Calibration Verification)-**

A.1.11.1	Present and complete for every metal and cyanide?	[X]	___	___
	Present and complete for AA and ICP when both are used for the same analyte?	[___]	___	X

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.11.2	Circle on each Form IIA all percent recoveries that are outside the contract windows. Are all calibration standards (initial and continuing) within control limits:			
	Metals- 90-110%R?	[X]	___	___
	Hg - 80-120%R?	[X]	___	___
	Cyanides- 85-115%R?	[___]	___	X

	YES	NO	N/A
ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ) if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits.			
A.1.11.3 Was continuing calibration performed every 10 samples or every 2 hours?	[X]	___	___
Was ICV for cyanides distilled?	[___]	___	X

ACTION: If no for any of the above, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.12 Form II B (CRDL Standards for AA and ICP) -

A.1.12.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?	[___]	___	X
Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[___]	___	X
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	[___]	___	X

ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are:
AA Analysis - **True Value ± CRDL
ICP Analysis - **True Value ± 2CRDL
CN Analysis - **True Value ± 0.5 x True Value.

**True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL. Compute the concentration of the missing mid-range standard from the calibration range.

		YES	NO	N/A
A.1.12.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?	[ ]		X
	ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".			
A.1.12.3	Circle on each Form IIB all the percent recoveries that are outside the acceptance windows.			
	Are CRA and CRI standards within control limits:			
	Metals 80 - 120%R?	[ ]		X
	Is mid-range standard within control limits:			
	Cyanide 80 - 120%R?	[ ]		X
	ACTION: Flag as estimated all sample results within the affected range if the recovery of the standard is between 50-79%; flag only positive data within the affected range if the recovery is between 121-150%; reject all data within the affected range if the recovery is less than 50%; reject only positive data within the affected range if the recovery is greater than 150%. Qualify 50% of the samples on either side of CRI standard outside the control limits.			
	Note: Flag or reject the final results only when sample raw data are within the affected ranges and the CRDL standards are outside the acceptance windows.			
A.1.13	**Form III (Initial and Continuing Calibration Blanks)**			
A.1.13.1	Present and complete?	[X]		
	For both AA and ICP when both are used for the same analyte?	[ ]		X
	Was an initial calibration blank analyzed?	[X]		
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	[X]		

		YES	NO	N/A
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract-Problems/ Non-Compliance section of the "Data Assessment Narrative".			
A.1.13.2	Circle on each Form III all calibration blank values that are above CRDL (or 2 x IDL when IDL > CRDL).			
	Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	[X]	___	___
	Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[X]	___	___
	ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is less than or equal to calibration blank value analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank outside the control limits.			
A.1.14	FORM III (Preparation Blank) - (Note: The preparation blank for mercury is the same as the calibration blank.)			
A.1.14.1	Was one prep. blank analyzed for:			
	each Sample Delivery Group (SDG)?	[X]	___	___
	each batch of digested samples?	[X]	___	___
	each matrix type?	[X]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	X
	ACTION: If no for any of the above, flag as estimated (J) all the associated positive data <10 x IDLs for which prep. blank was not analyzed.			
	NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			

		YES	NO	N/A
A.1.14.2	Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?	___	[X]	___
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep.blank?	___	[___]	X
	ACTION: If yes, reject (red-line) all associated data greater than CRDL concentration but less than ten times the prep. blank value.			
A.1.14.3	Is concentration of prep. blank value (Form III) less than two times IDL, when IDL is greater than CRDL?	[X]	___	___
	ACTION: If no, reject (red-line) all positive sample results when sample raw data are less than 10 times the prep. blank value.			
A.1.14.4	Is concentration of prep. blank below the negative CRDL?	___	[X]	___
	ACTION: If yes, reject (red-line) all associated sample results less than 10xCRDL.			
A.1.15	**Form IV (ICP Interference Check Sample)**			
A.1.15.1	Present and complete?	[X]	___	___
	(**NOTE**: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[X]	___	___
	ACTION: If no, flag as estimated (J) all the samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
A.1.15.2	Circle all values on each Form IV that are more than ± 20% of true or established mean value.			
	Are all Interference Check Sample results inside the control limits (± 20%)?	[X]	___	___
	If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?	[___]	___	X

		YES	NO	N/A
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			
A.1.16	**Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)** - (**Note**: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
A.1.16.1	Present and complete for: each SDG?	[X]	___	___
	each matrix type?	[X]	___	___
	each conc. range (i.e. low, med., high)?	[___]	X	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	X
	ACTION: If no for any of the above, flag as estimated (J) all the positive data less than four times the spiking levels specified in SOW for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.16.2	Was field blank used for spiked sample?	___	[X]	___
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
A.1.16.3	Circle on each Form VA all spike recoveries that are outside control limits (75% to 125%).			
	Are all recoveries within control limits?	[X]	___	___
	If no, is sample concentration greater than or equal to four times spike concentration?	[___]	___	X

	YES	NO	N/A
ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	[___]	___	X
ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".			

A.1.16.4 **Aqueous**

Are any spike recoveries:

(a) less than 30%?	___	[___]	X
(b) between 30-74%?	___	[___]	X
(c) between 126-150%?	___	[___]	X
(d) greater than 150%?	___	[___]	X

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".

A.1.16.5 **Soil/Sediment**

Are any spike recoveries:

(a) less than 10%?	___	[X]	___
(b) between 10-74%?	X	[___]	___
(c) between 126-200%?	X	[___]	___
(d) greater than 200%?	X	[___]	___

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		YES	NO	N/A
	ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".			
A.1.17	**Form VI (Lab Duplicates)**			
A.1.17.1	Present and complete for: each SDG?	[X]	___	___
	each matrix type?	[X]	___	___
	each concentration range (i.e. low, med., high)?	[___]	X	___
	both AA and ICP when both are used for the same analyte?	[___]	___	X
	ACTION: If no for any the above, flag as estimated (J) all the data ≥CRDL* for which duplicate sample was not analyzed.			
	Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.			
	2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on wet weight basis and calculate RPD or Difference for each analyte.			
A.1.17.2	Was field blank used for duplicate analysis?	___	[X]	___
	ACTION: If yes, flag all data ≥CRDL* as estimated (J) for which field blank was used as duplicate.			
A.1.17.3	Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?	[X]	___	___
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[___]	___	X
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative".			

* Substitute IDL for CRDL when IDL > CRDL.

	YES	NO	N/A

NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL.
2. If the result of lab duplicate analyzed by GFAA is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria to metals analyzed by GFAA.

A.1.17.4 Aqueous

Circle on each Form VI all values that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	X
Is any difference** between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	X

ACTION: If yes, flag the associated data as estimated.

A.1.17.5 Soil/Sediment

Circle on each Form VI all values that are:

RPD > 100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) : > 100%?	___	[X]	___
Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) : > 2x*CRDL?	___	[X]	___

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
	ACTION: If yes, flag the associated data as estimated.			
A.1.18	**Field Duplicates**			
A.1.18.1	Were field duplicates analyzed?	[___]	X	___

ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/l on wet weight basis and calculate RPDs or Difference for each analyte.

NOTE: 1. Do not calculate RPD when both values are less than IDL.
2. Flag all associated data only for field duplicate pair.

A.1.18.2 **Aqueous**

Circle all values on self prepared Form VI for field duplicates that are:

RPD > 50%, or
Difference > CRDL*

	YES	NO	N/A
Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	X
Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	X

ACTION: If yes, flag the associated data as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
A.1.18.3	**Soil/Sediment**			
	Circle all values on self prepared Form VI for field duplicates that are:			
	RPD >100%, or			
	Difference > 2 x CRDL*			
	Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) :			
	>100%?	___	[___]	✓
	Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL):			
	>2x *CRDL?	___	[___]	✓
	ACTION: If yes, flag the associated data as estimated.			
A.1.19	Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)			
A.1.19.1	Was one LCS prepared and analyzed for:			
	each SDG?	[✓]	___	___
	each batch samples digested/distilled?	[___]	___	✓
	both AA and ICP when both are used for the same analyte?	[___]	___	✓
	ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all the data for which LCS was not analyzed.			
	NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.			

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

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		YES	NO	N/A
A.1.19.2	**Aqueous LCS**			
	Circle on each Form VII the LCS percent recoveries outside control limits (80 - 120%) except for aqueous Ag and Sb.			
	Is any LCS recovery: less than 50%?	___	[___]	X
	between 50% and 79%?	___	[___]	X
	between 121% and 150%?	___	[___]	X
	greater than 150%?	___	[___]	X

ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.

A.1.19.3 **Solid LCS**

NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J).

2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.

	YES	NO	N/A
Is LCS "Found" value higher than the control limits on Form VII?	___	[X]	___

ACTION: If yes, qualify all associated positive data as estimated.

	YES	NO	N/A
Is LCS "Found" value lower than the Control limits on Form VII?	___	[X]	___

ACTION: If yes, qualify all associated data as estimated.

		YES	NO	N/A
A.1.20	**Form IX (ICP Serial Dilution)** -			
	NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.			
A.1.20.1	Was Serial Dilution analysis performed for:			
	each SDG?	[X]	___	___
	each matrix type?	[X]	___	___
	each concentration range (i.e. low, med.)?	[___]	X	___
	ACTION: If no for any of the above, flag as estimated all the positive data ≥ 10xIDLs or ≥ CRDL when 10xIDL ≤ CRDL for which Serial Dilution Analysis was not performed.			
A.1.20.2	Was field blank(s) used for Serial Dilution Analysis?	___	[X]	___
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J). If 10xIDL ≤ CRDL, flag all data ≥ CRDL.			
A.1.20.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.	[___]	___	X
	ACTION: If no, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.20.4	Circle on each Form IX all percent difference that are outside the control limits for initial concentrations equal to or greater than 10 x IDLs only.			
	Are any % difference values:			
	> 10%?	X	[___]	___
	≥ 100%?	X	[___]	___

		YES	NO	N/A
	ACTION: Flag as estimated (J) all the associated sample data ≥ 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which percent difference is greater than 10% but less than 100%. Reject (red-line) all the associated sample results equal to or greater than 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which PD is greater than or equal to 100%.			
	Note: Flag or reject on Form I's only the sample results whose associated raw data are ≥ 10xIDL (or ≥ CRDL when 10xIDL≤ CRDL)			
A.1.21	**Furnace Atomic Absorbtion (AA) QC Analysis**			
A.1.21.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	[___]	___	✓
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
A.1.21.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	[___]	___	✓
	Was a dilution analyzed for sample with analytical spike recovery less than 40%?	[___]	___	✓
	ACTION: If no for any of the above, flag all the associated data as estimated.			
A.1.21.3	Is *analytical spike recovery outside the control limits (85-115%) for any sample?	___	[___]	✓
	ACTION: If yes, flag as estimated the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject the associated sample results if the recovery is less than 10%; reject positive sample results if the recovery is greater than 200%.			

* Analytical spike is not required on the pre-digestion spiked sample.

		YES	NO	N/A
	NOTE: Reject or flag the data only when the affected sample(s) was not subsequently analyzed by Method of Standard Addition.			
A.1.22	**Form VIII (Method of Standard Addition Results)**			
A.1.22.1	Present?	[___]	X	___
	If no, is any Form I result coded with "S" or a "+"?	___	[___]	X
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			
A.1.22.2	Is coefficient of correlation for MSA less than 0.990 for any sample?	___	[___]	X
	ACTION: If yes, reject (red-line) the affected data.			
A.1.22.3	Was *MSA required for any sample but not performed?	___	[___]	X
	Is coefficient of correlation for MSA less than 0.995?	___	[___]	X
	Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?	___	[___]	X
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
A.1.22.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23?	[___]	___	X
	ACTION: If no, note exception under Contract Problem/ Non-Compliance section of the "Data Assessment Narrative", and prepare a separate list.			

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* MSA is not required on LCS and prep. blank.

		YES	NO	N/A
A.1.23	Dissolved/Total or Inorganic/Total Analytes -			
A.1.23.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s).	___	[X]	___
	Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[X]	___
	NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration. 2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents. 3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.			
A.1.23.2	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	X
A.1.23.3	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[___]	X
	ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.			
A.1.24	Form I (Field Blank) -			
	(Note: Designate "Field Blank" as such on Form I.)			
A.1.24.1	Circle all field blank values on Form I that are greater than CRDL, (or 2 x IDL when IDL > CRDL).			
	Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[X]	___	___

	YES	NO	N/A
If no, was field blank value already rejected due to other QC criteria?	[___]	___	X

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value. Reject on Form I's the soil sample results that when converted to ug/L on wet basis are less than or equal to five times the field blank value in ug/L.

A.1.25 **Form X, XI, XII (Verification of Instrumental Parameters).**

A.1.25.1 Is verification report present for:

Instrument Detection Limits (quarterly)?	[___]	X	___
ICP Interelement Correction Factors (annually)?	[___]	X	___
ICP Linear Ranges (quarterly)?	[___]	X	___

ACTION: If no, contact TPO of the lab.

A.1.25.2 **Form X (Instrument Detection Limits)** - (Note: IDL is not required for Cyanide.)

A.1.25.2.1 Are IDLs present for: all the analytes?	[___]	___	X
all the instruments used?	[___]	___	X
For both AA and ICP when both are used for the same analyte?	[___]	___	X

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.25.2.2 Is IDL greater than CRDL for any analyte?	___	[___]	X
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.	[___]	___	X

	YES	NO	N/A
Action : If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			
A.1.25.3 **Form XI (Linear Ranges)**			
A.1.25.3.1 Was any sample result higher than high linear range of ICP.	___	[___]	X
Was any sample result higher than the highest calibration standard for non-ICP parameters?	___	[___]	X
If yes for any of the above, was the sample diluted to obtain the result on Form I?	[___]	___	X
ACTION: If no, flag the result reported on Form I as estimated(J).			
A.1.26 **Percent Solids of Sediments**			
A.1.26.1 Are percent solids in sediment(s): < 50%?	___	[X]	___
< 10%?	___	[X]	___

ACTION: If yes, qualify as estimated all the results of a sample that has per cent solids between 10%-50% (i.e. moisture content between 50%-90%). Reject all the results of a sample that has per cent solids less than 10% (i.e. moisture content greater than 90%).

NOTE: Reject or flag(J) only the sample results that were not previously rejected or flaged due to other QC criteria.

Case# _____ Site _____ Matrix: Soil _____

SDG# _____ Lab _____ Water_____

Contractor _____ Reviewer _____ Other_____

A.2.1 Validation Flags- The following flags have been applied in red by the data validator and must be considered by the data user.

J- This flag indicates the result qualified as **estimated**

Red- Line- A red-line drawn through a sample result indicates **unusable** value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

Fully Usable Data- The results that do not carry "J" or "red-line" are fully usable.

Contractual Qualifiers- The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW ILM01.0.

A.2.2 The data assessment is given below and on the attached sheets.

_____

_____

_____

_____

_____

_____

_____

_____

A.2.2 (continuation)

A.2.2 (continuation)

A.2.3 Contract-Problem/Non-Compliance

MMB/ESAT Rviewer: _____ Date: _____
Signature

Contractor Reviewer: _____ Date: _____
Signature

Verified by: _____ Date: _____

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste
Site Contract Laboratory Data Package

CASE NO._____

The hardcopied (laboratory name)_____
Inorganic data package received at Region II has been reviewed and the quality assurance and performance data summarized. The data reviewed included:
SMO Sample No.:_____

Conc. & Matrix:_____

Contract No.(_____) requires that specific analytical work be done and that associated reports be provided by the contractor to the Regions, EMSL-LV, and SMO. The general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

Items of non-compliance with the above contract are described below.

Comments:_____

_____

_____

_____

_____

_____

_____

_____

_____

_____ _____
Reviewer's Initial Date

INORGANIC REGIONAL DATA ASSESSMENT

Region_____

CASE NO._____ SITE_____

LABORATORY_____ NO. OF SAMPLES/ MATRIX_____

SDG#_____ REVIEWER (IF NOT ESD)_____

SOW#_____ REVIEWER'S NAME_____

DPO: ACTION_____ FYI_____ COMPLETION DATE_____

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	CYANIDE
1.	HOLDING TIMES				
2.	CALIBRATIONS				
3.	BLANKS				
4.	ICS				
5.	LCS				
6.	DUPLICATE ANALYSIS				
7.	MATRIX SPIKE				
8.	MSA				
9.	SERIAL DILUTION				
10.	SAMPLE VERIFICATION				
11.	OTHER QC				
12.	OVERALL ASSESSMENT				

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:_____

AREAS OF CONCERN:_____

NOTABLE PERFORMANCE:_____

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 3/90

H9411

CASE #: II-CERCLA-95-0104

(SOP Revision XI)

PREPARED BY: _____ DATE: _____

Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: _____

Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE:

Robert Runyon, Chief
Monitoring Management Branch

Title: Evaluation of Metals Data for the Contract Laboratory Program

Date: Jan. 1992
Number: HW-2
Revision: 11

1.0 Scope

1.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 3/90 .

2.0 **Responsibilities** - Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1. For a **total review**:

2.1.1 Data Assessment - "Total Review-Inorganics" Checklist Appendix (A.1).
The reviewer must answer every question on the checklist.

2.1.2 Data Assessment - Data Assessment Narrative (Appendix A.2)
The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

2.1.3 Contract Non-Compliance - SMO Report (Appendix A.3)
This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Validation Task Monitor, or Technical Project Officer (TPO). Forward 5 copies: one each for internal files, appropriate Regional TPO, Sample Management Office (SMO) and last two addresses of Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract violations should be appended to the end of the Data Assessment Narrative (Sec. A.2.2).

2.1.4 CLP Data Assessment Summary Forms

2.1.4.1 Appendix A.5
Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.

2.1.4.2 Appendix A.6
Data reviewer is also required to fill out Inorganic Regional Data Assessment form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

2.1.5 **Data Review Log**: It is recommended that each data reviewer should maintain a log of the reviews completed to include: a. date of start of case review

b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

2.1.6 **Telephone Record Log** - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

2.1.7 Forwarded Paperwork

2.1.7.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:
a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Record of Communication (copy)
e. CLP Reanalysis Request/Approval Record (original + 3 copies)
f. Appendix A.6 (original).

2.1.7.2 Forward 2 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.6) and Telephone Record Log , if any,: one each for appropriate Regional TPO, and the other one to EPA EMSL office in Las Vegas. The addresses of TPOs and EPA office in Las Vegas are given in Appendix A-4.

2.1.8 **Filed Paperwork** - Upon completion of review, the following are to be filed within MMB files:
a. Two copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.6.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Reanalysis Request/Approval Record (copy)

3.0 **Data Completeness**
Each data package is checked by a Regional Sample Control Coordinator (RSSC) for completeness. A data package is assumed to be complete when all the deliverables required under the contract are present. If a data package is incomplete,the RSSC would call the laboratory for missing document(s). If the laboratory does not Respond within a week, SMO and MMB coordinator of Region II will be notified.

4.0 **Rejection of Data** - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

5.0 **Acceptance Criteria** - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines of October 1, 1989.

6.0 **SMO Contract Compliance Screening (CCS)** - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

7.0 **Request for Reanalysis** - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative.If holding times and sample storage times have not been exceeded, TPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

8.0 **Record of Communication** - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

9.0 **Rounding off numbers** - The data reviewer will follow the standard practice.

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	YES	NO	N/A
A.1.1 **Contract Compliance Screening Report** (CCS) - Present?	[ ]		X
ACTION: If no, contact RSCC.			
A.1.2 **Record of Communication (from RSCC)** - Present?	[ ]		X
ACTION: If no, request from RSCC.			
A.1.3 **Trip Report** - Present and complete?	[ ]		X
ACTION: If no, contact RSCC for trip report.			
A.1.4 **Sample Traffic Report** - Present?	[X]		
Legible?	[X]		
ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5 **Cover Page** - Present?	[X]		
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[X]		
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on Record of Communication?	[ ]		X
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	[X]		
(b) Form I's?	[X]		
ACTION: If no for any of the above, contact RSCC for clarification.			

A.1.6	Form I to IX	Yes	No	N/A
A.1.6.1	Are all the Form I through Form IX labeled with:			
	Laboratory name?	[X]		
	Case/SAS number?	[ ]	X	
	EPA sample No.?	[X]		
	SDG No.?	[X]		
	Contract No.?	[ ]	X	
	Correct units?	[X]		
	Matrix?	[X]		

ACTION: If no for any of the above, note under Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.6.2	Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:			
	(NOTE: Check all forms against raw data.)			
	(a) all analytes analyzed by ICP?	[ ]		X
	(b) all analytes analyzed by GFAA?	[ ]		X
	(c) all analytes analyzed by AA Flame?	[ ]		X
	(d) Mercury?	[ ]		X
	(e) Cyanide?	[X]		

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

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Title: Evaluation of Metals Data for the Contract Laboratory Program Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

		YES	NO	N/A
A.1.7	**Raw Data**			
A.1.7.1	Digestion Log* for flame AA/ICP (Form XIII) present?	[___]	___	X
	Digestion Log for furnace AA Form XIII present?	[___]	___	X
	Distillation Log for mercury Form XIII present?	[___]	___	X
	Distillation Log for cyanides Form XIII present?	[X]	___	___
	Are pH values (pH<2 for all metals, pH>12 for cyanide) present?	[___]	___	X
	*Weights, dilutions and volumes used to obtain values.			
	Percent solids calculation present for soils/sediments?	[___]	X	___
	Are preparation dates present on sample preparation logs/bench sheets?	[X]	___	___
A.1.7.2	Measurement read out record present? ICP	[___]	___	X
	Flame AA	[___]	___	X
	Furnace AA	[___]	___	X
	Mercury	[___]	___	X
	Cyanides	[X]	___	___
A.1.7.3	Are all raw data to support all sample analyses and QC operations present?	[X]	___	___
	Legible?	[X]	___	___
	Properly Labeled?	[X]	___	___

ACTION: If no for any of the above questions in sections A.1.7.1 through A.1.7.3, write Telephone Record Log and contact laboratory for resubmittals.

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Compliance (Total Review)

		YES	NO	N/A
A.1.8	**Holding Times** - (aqueous and soil samples)			
	(Examine sample traffic reports and digestion/distillation logs.)			
	Mercury analysis (28 days). . . . . exceeded?	___	[___]	[X]
	Cyanide distillation (14 days). . . . . exceeded?	___	[X]	___
	Other Metals analysis (6 months). . . . exceeded?	___	[___]	[X]
	NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.			
	ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.			
A.1.8.2	Is pH of aqueous samples for:			
	Metals Analysis >2?	___	[___]	[X]
	Cyanides Analysis <12?	___	[X]	___
	Action: If yes, flag the associated metals and cyanides data as estimated.			
A.1.9	**Form I (Final Data)**			
A.1.9.1	Are all Form I's present and complete?	[X]	___	___
	ACTION: If no, prepare telephone record log and contact laboratory for submittal.			
A.1.9.2	Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[X]	___	___
	Are soil sample results for each parameter corrected for percent solids?	[X]	___	___
	Are all "less than IDL" values properly coded with "U"?	[X]	___	___

		YES	NO	N/A
	Are the correct concentration qualifiers used with final data?	[X]	___	___
	ACTION: If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data.			
A.1.9.3	Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	[X]	___	___
	Was a brief physical description of samples given on Form I's?	[___]	X	___
	Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV?	___	[X]	___
	ACTION: If no for any of the above, note under Contract-Problem/Non-Compliance of the"Data Assessment Narrative".			
A.1.10	Calibration			
A.1.10.1	Is record of at least 2 point calibration present for ICP analysis?	[___]	___	X
	Is record of 5 point calibration present for Hg analysis?	[___]	___	X
	Is record of 4 point calibration present for:			
	Flame AA?	[___]	___	X
	Furnace AA?	[___]	___	X
	Cyanides?	[X]	___	___
	Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses?	[X]	___	___

ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

	YES	NO	N/A
A.1.10.2 Is correlation coefficient less than 0.995 for:			
Mercury Analysis?	___	[___]	X
Cyanide Analysis?	___	[X]	___
Atomic Absorption Analysis?	___	[___]	X

ACTION: If yes, flag the associated data as estimated.

NOTE: The data validator shall calculate the correlation coefficient using concentrations of the standards and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

A.1.10.3 In the instance where less than 4 standards are measured in absorbance (or peak area, peak height,etc.) mode, are the remaining standards analyzed in concentration mode immediately after calibration within ±10% of the true values?	[X]	___	___

ACTION: If no, flag the associated data as estimated if standards are not within ±10% of true values. Do not flag the data as estimated in linear range indicated by good recovery of standard(s).

A.1.11 **Form II A (Initial and Continuing Calibration Verification)-**

A.1.11.1 Present and complete for every metal and cyanide?	[X]	___	___
Present and complete for AA and ICP when both are used for the same analyte?	[___]	___	X

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.11.2 Circle on each Form IIA all percent recoveries that are outside the contract windows. Are all calibration standards (initial and continuing) within control limits:			
Metals- 90-110%R?	[___]	___	X
Hg - 80-120%R?	[___]	___	X
Cyanides- 85-115%R?	[X]	___	___

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	YES	NO	N/A
ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ) if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits.			
A.1.11.3 Was continuing calibration performed every 10 samples or every 2 hours?	[X]	___	___
Was ICV for cyanides distilled?	[X]	___	___
ACTION: If no for any of the above, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.12 Form II B (CRDL Standards for AA and ICP) -			
A.1.12.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?	[___]	___	X
Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[___]	___	X
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	[___]	___	X
ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are: AA Analysis - **True Value ± CRDL; ICP Analysis - **True Value ± 2CRDL; CN Analysis - **True Value ± 0.5 x True Value.			

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**True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL. Compute the concentration of the missing mid-range standard from the calibration range.

		YES	NO	N/A
A.1.12.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?	[ ]		X
	ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".			
A.1.12.3	Circle on each Form IIB all the percent recoveries that are outside the acceptance windows.			
	Are CRA and CRI standards within control limits:			
	Metals 80 - 120%R?	[ ]		X
	Is mid-range standard within control limits:			
	Cyanide 80 - 120%R?	[ ]		X
	ACTION: Flag as estimated all sample results within the affected range if the recovery of the standard is between 50-79%; flag only positive data within the affected range if the recovery is between 121-150%; reject all data within the affected range if the recovery is less than 50%; reject only positive data within the affected range if the recovery is greater than 150%. Qualify 50% of the samples on either side of CRI standard outside the control limits.			
	Note: Flag or reject the final results only when sample raw data are within the affected ranges and the CRDL standards are outside the acceptance windows.			
A.1.13	**Form III (Initial and Continuing Calibration Blanks)**			
A.1.13.1	Present and complete?	[X]		
	For both AA and ICP when both are used for the same analyte?	[ ]		X
	Was an initial calibration blank analyzed?	[X]		
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	[X]		

		YES	NO	N/A
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract-Problems/ Non-Compliance section of the "Data Assessment Narrative".			
A.1.13.2	Circle on each Form III all calibration blank values that are above CRDL (or 2 x IDL when IDL > CRDL).			
	Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	[X]	___	___
	Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[X]	___	___
	ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is less than or equal to calibration blank value analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank outside the control limits.			
A.1.14	**FORM III (Preparation Blank)** - (**Note**: The preparation blank for mercury is the same as the calibration blank.)			
A.1.14.1	Was one prep. blank analyzed for:			
	each Sample Delivery Group (SDG)?	[X]	___	___
	each batch of digested samples?	[X]	___	___
	each matrix type?	[X]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	X
	ACTION: If no for any of the above, flag as estimated (J) all the associated positive data <10 x IDLs for which prep. blank was not analyzed.			
	NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			

		YES	NO	N/A
A.1.14.2	Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?	___	[X]	___
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep.blank?	___	[X]	___
	ACTION: If yes, reject (red-line) all associated data greater than CRDL concentration but less than ten times the prep. blank value.			
A.1.14.3	Is concentration of prep. blank value (Form III) less than two times IDL, when IDL is greater than CRDL?	[X]	___	___
	ACTION: If no, reject (red-line) all positive sample results when sample raw data are less than 10 times the prep. blank value.			
A.1.14.4	Is concentration of prep. blank below the negative CRDL?	___	[X]	___
	ACTION: If yes, reject (red-line) all associated sample results less than 10xCRDL.			
A.1.15	**Form IV (ICP Interference Check Sample)**			
A.1.15.1	Present and complete?	[___]	___	X
	(**NOTE**: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[___]	___	X
	ACTION: If no, flag as estimated (J) all the samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
A.1.15.2	Circle all values on each Form IV that are more than ± 20% of true or established mean value.			
	Are all Interference Check Sample results inside the control limits (± 20%)?	[___]	___	X
	If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?	[___]	___	X

		YES	NO	N/A
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			
A.1.16	**Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)** - (**Note**: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
A.1.16.1	Present and complete for: each SDG?	[X]	___	___
	each matrix type?	[X]	___	___
	each conc. range (i.e. low, med., high)?	[X]	___	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	X
	ACTION: If no for any of the above, flag as estimated (J) all the positive data less than four times the spiking levels specified in SOW for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.16.2	Was field blank used for spiked sample?	___	[X]	___
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
A.1.16.3	Circle on each Form VA all spike recoveries that are outside control limits (75% to 125%).			
	Are all recoveries within control limits?	[X]	___	___
	If no, is sample concentration greater than or equal to four times spike concentration?	[___]	___	X

	YES	NO	N/A
ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	[___]	___	X
ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".			

A.1.16.4 **Aqueous**

Are any spike recoveries:

(a) less than 30%?	___	[___]	X
(b) between 30-74%?	___	[___]	X
(c) between 126-150%?	___	[___]	X
(d) greater than 150%?	___	[___]	X

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".

A.1.16.5 **Soil/Sediment**

Are any spike recoveries:

(a) less than 10%?	___	[X]	___
(b) between 10-74%?	___	[X]	___
(c) between 126-200%?	___	[X]	___
(d) greater than 200%?	___	[X]	___

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		YES	NO	N/A
	ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".			
A.1.17	**Form VI (Lab Duplicates)**			
A.1.17.1	Present and complete for: each SDG?	[X]	___	___
	each matrix type?	[X]	___	___
	each concentration range (i.e. low, med., high)?	[X]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	X
	ACTION: If no for any the above, flag as estimated (J) all the data ≥CRDL* for which duplicate sample was not analyzed.			
	Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.			
	2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on wet weight basis and calculate RPD or Difference for each analyte.			
A.1.17.2	Was field blank used for duplicate analysis?	___	[X]	___
	ACTION: If yes, flag all data ≥CRDL* as estimated (J) for which field blank was used as duplicate.			
A.1.17.3	Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?	[X]	___	___
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[___]	___	X
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative".			

* Substitute IDL for CRDL when IDL > CRDL.

	YES	NO	N/A

NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL.
2. If the result of lab duplicate analyzed by GFAA is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria to metals analyzed by GFAA.

A.1.17.4 **Aqueous**

Circle on each Form VI all values that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	N/A
Is any difference** between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	N/A

ACTION: If yes, flag the associated data as estimated.

A.1.17.5 **Soil/Sediment**

Circle on each Form VI all values that are:

RPD > 100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) : > 100%?	___	[N/A]	___
Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) : > 2x*CRDL?	___	[N/A]	___

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
	ACTION: If yes, flag the associated data as estimated.			
A.1.18	**Field Duplicates**			
A.1.18.1	Were field duplicates analyzed?	[X]	___	___

ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/l on wet weight basis and calculate RPDs or Difference for each analyte.

NOTE: 1. Do not calculate RPD when both values are less than IDL.
2. Flag all associated data only for field duplicate pair.

A.1.18.2 Aqueous

Circle all values on self prepared Form VI for field duplicates that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	X
Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	X

ACTION: If yes, flag the associated data as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
A.1.18.3	**Soil/Sediment**			
	Circle all values on self prepared Form VI for field duplicates that are:			
	RPD >100%, or			
	Difference > 2 x CRDL*			
	Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) :			
	>100%?	___	[X]	___
	Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL):			
	>2x *CRDL?	___	[X]	___
	ACTION: If yes, flag the associated data as estimated.			
A.1.19	**Form VII (Laboratory Control Sample)** (Note: LCS - not required for aqueous Hg and cyanide analyses.)			
A.1.19.1	Was one LCS prepared and analyzed for:			
	each SDG?	[X]	___	___
	each batch samples digested/distilled?	[X]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	X
	ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all the data for which LCS was not analyzed.			
	NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.			

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

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USEPA - CLP

6-IN
DUPLICATES

EPA SAMPLE NO.

Lab Name: Envirotech Research Contract: _____

Lab Code: H9411 Case No.: _____ NRAS No.: _____ SDG No.: _____

Matrix (soil/water): Soil Level (low/med): low

% Solids for Sample: 92.4 % Solids for Duplicate: 85.2

Concentration Units (ug/L or mg/kg dry weight): _____

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead								
Magnesium								
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								
Cyanide		0.54	U	0.59	U	8.85		C

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		YES	NO	N/A
A.1.19.2	**Aqueous LCS**			
	Circle on each Form VII the LCS percent recoveries outside control limits (80 - 120%) except for aqueous Ag and Sb.			
	Is any LCS recovery: less than 50%?	___	[___]	X
	between 50% and 79%?	___	[___]	X
	between 121% and 150%?	___	[___]	X
	greater than 150%?	___	[___]	X

ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.

A.1.19.3 **Solid LCS**

NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J).
2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.

Is LCS "Found" value higher than the control limits on Form VII?	___	[X]	___

ACTION: If yes, qualify all associated positive data as estimated.

Is LCS "Found" value lower than the Control limits on Form VII?	___	[X]	___

ACTION: If yes, qualify all associated data as estimated.

		YES	NO	N/A
A.1.20	**Form IX (ICP Serial Dilution)** -			
	NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.			
A.1.20.1	Was Serial Dilution analysis performed for:			
	each SDG?	[___]	___	X
	each matrix type?	[___]	___	X
	each concentration range (i.e. low, med.)?	[___]	___	X
	ACTION: If no for any of the above, flag as estimated all the positive data ≥ 10xIDLs or ≥ CRDL when 10xIDL ≤ CRDL for which Serial Dilution Analysis was not performed.			
A.1.20.2	Was field blank(s) used for Serial Dilution Analysis?	___	[___]	X
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J). If 10xIDL ≤ CRDL, flag all data ≥ CRDL.			
A.1.20.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.	[___]	___	X
	ACTION: If no, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.20.4	Circle on each Form IX all percent difference that are outside the control limits for initial concentrations equal to or greater than 10 x IDLs only.			
	Are any % difference values:			
	> 10%?	___	[___]	X
	≥ 100%?	___	[___]	X

		YES	NO	N/A
	ACTION: Flag as estimated (J) all the associated sample data ≥ 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which percent difference is greater than 10% but less than 100%. Reject (red-line) all the associated sample results equal to or greater than 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which PD is greater than or equal to 100%.			
	Note: Flag or reject on Form I's only the sample results whose associated raw data are ≥ 10xIDL (or ≥ CRDL when 10xIDL≤ CRDL)			
A.1.21	**Furnace Atomic Absorbtion (AA) QC Analysis**			
A.1.21.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	[___]	___	X
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
A.1.21.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	[___]	___	X
	Was a dilution analyzed for sample with analytical spike recovery less than 40%?	[___]	___	X
	ACTION: If no for any of the above, flag all the associated data as estimated.			
A.1.21.3	Is *analytical spike recovery outside the control limits (85-115%) for any sample?	___	[___]	X
	ACTION: If yes, flag as estimated the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject the associated sample results if the recovery is less than 10%; reject positive sample results if the recovery is greater than 200%.			

* Analytical spike is not required on the pre-digestion spiked sample.

		YES	NO	N/A
	NOTE: Reject or flag the data only when the affected sample(s) was not subsequently analyzed by Method of Standard Addition.			
A.1.22	**Form VIII (Method of Standard Addition Results)**			
A.1.22.1	Present?	[___]	X	___
	If no, is any Form I result coded with "S" or a "+"?	___	[___]	X
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			
A.1.22.2	Is coefficient of correlation for MSA less than 0.990 for any sample?	___	[___]	X
	ACTION: If yes, reject (red-line) the affected data.			
A.1.22.3	Was *MSA required for any sample but not performed?	___	[___]	X
	Is coefficient of correlation for MSA less than 0.995?	___	[___]	X
	Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?	___	[___]	X
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
A.1.22.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23?	[___]	___	X
	ACTION: If no, note exception under Contract Problem/ Non-Compliance section of the "Data Assessment Narrative", and prepare a separate list.			

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* MSA is not required on LCS and prep. blank.

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		YES	NO	N/A
A.1.23	**Dissolved/Total or Inorganic/Total Analytes** -			
A.1.23.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s).	___	[X]	___
	Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[___]	X
	NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration. 2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents. 3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.			
A.1.23.2	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	X
A.1.23.3	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[___]	X
	ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.			
A.1.24	**Form I (Field Blank)** -			
	(Note: Designate "Field Blank" as such on Form I.)			
A.1.24.1	Circle all field blank values on Form I that are greater than CRDL, (or 2 x IDL when IDL > CRDL).	___		
	Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[X]	___	___

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	YES	NO	N/A
If no, was field blank value already rejected due to other QC criteria?	[___]	___	X

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value. Reject on Form I's the soil sample results that when converted to ug/L on wet basis are less than or equal to five times the field blank value in ug/L.

A.1.25 **Form X, XI, XII (Verification of Instrumental Parameters).**

A.1.25.1 Is verification report present for:

Instrument Detection Limits (quarterly)?	[___]	___	X
ICP Interelement Correction Factors (annually)?	[___]	___	X
ICP Linear Ranges (quarterly)?	[___]	___	X

ACTION: If no, contact TPO of the lab.

A.1.25.2 **Form X (Instrument Detection Limits)** - (Note: IDL is not required for Cyanide.)

A.1.25.2.1 Are IDLs present for: all the analytes?	[___]	___	X
all the instruments used?	[___]	___	X
For both AA and ICP when both are used for the same analyte?	[___]	___	X

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.25.2.2 Is IDL greater than CRDL for any analyte?	___	[___]	X
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.	[___]	___	X

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	YES	NO	N/A
Action : If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			
A.1.25.3 **Form XI (Linear Ranges)**			
A.1.25.3.1 Was any sample result higher than high linear range of ICP.	___	[___]	Y
Was any sample result higher than the highest calibration standard for non-ICP parameters?	___	[___]	Y
If yes for any of the above, was the sample diluted to obtain the result on Form I?	[___]	___	Y
ACTION: If no, flag the result reported on Form I as estimated(J).			
A.1.26 **Percent Solids of Sediments**			
A.1.26.1 Are percent solids in sediment(s): < 50%?	___	[N]	___
< 10%?	___	[N]	___
ACTION: If yes, qualify as estimated all the results of a sample that has per cent solids between 10%-50% (i.e. moisture content between 50%-90%). Reject all the results of a sample that has per cent solids less than 10% (i.e. moisture content greater than 90%).			
NOTE: Reject or flag(J) only the sample results that were not previously rejected or flaged due to other QC criteria.			

Case# _____ **Site** _____ **Matrix: Soil** _____

SDG# _____ **Lab** _____ **Water** _____

Contractor _____ **Reviewer** _____ **Other** _____

A.2.1 **Validation Flags-** The following flags have been applied in red by the data validator and must be considered by the data user.

J- This flag indicates the result qualified as **estimated**

Red- Line- A red-line drawn through a sample result indicates **unusable** value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

Fully Usable Data- The results that do not carry "J" or "red-line" are fully usable.

Contractual Qualifiers- The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW ILM01.0.

A.2.2 The data assessment is given below and on the attached sheets.

_____

_____

_____

_____

_____

_____

_____

_____

A.2.2 (continuation)

A.2.2 (continuation)

A.2.3 Contract-Problem/Non-Compliance

MMB/ESAT Rviewer: _____ Date: _____
Signature

Contractor Reviewer: _____ Date: _____
Signature

Verified by: _____ Date: _____

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste
Site Contract Laboratory Data Package

CASE NO._____

The hardcopied (laboratory name)_____
Inorganic data package received at Region II has been reviewed and the quality assurance and performance data summarized. The data reviewed included:
SMO Sample No.:_____

Conc. & Matrix:_____

Contract No.(_____) requires that specific analytical work be done and that associated reports be provided by the contractor to the Regions, EMSL-LV, and SMO. The general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

Items of non-compliance with the above contract are described below.

Comments:_____

_____

_____

_____

_____

_____

_____

_____

_____

_____ Reviewer's Initial

_____ Date

H9411

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Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.6: CLP Data Assessment Checklist

Inorganic Analysis

Date: Jan. 1992
Number: HW-2
Revision: 11

INORGANIC REGIONAL DATA ASSESSMENT

Region_____

CASE NO._____

SITE_____

LABORATORY_____

NO. OF SAMPLES/ MATRIX_____

SDG#_____

REVIEWER (IF NOT ESD)_____

SOW#_____

REVIEWER'S NAME_____

DPO: ACTION_____ FYI_____

COMPLETION DATE_____

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	CYANIDE
1.	HOLDING TIMES				
2.	CALIBRATIONS				
3.	BLANKS				
4.	ICS				
5.	LCS				
6.	DUPLICATE ANALYSIS				
7.	MATRIX SPIKE				
8.	MSA				
9.	SERIAL DILUTION				
10.	SAMPLE VERIFICATION				
11.	OTHER QC				
12.	OVERALL ASSESSMENT				

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:_____

AREAS OF CONCERN:_____

NOTABLE PERFORMANCE:_____

YES NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: 1 - CERCLA-95-0104 LABORATORY: Envirotech Research, Inc.

SITE NAME: Klockner + Klockner SDG Number(s): H950

1.0 Chain of Custody and Sampling Trip Reports

1.1 Are the Traffic Reports/Chain-of-Custody Records present for all samples? [X] ___ ___

ACTION: If no, contact RSCC or the lab to obtain replacement of missing or illegible copies.

1.2 Is the Sampling Trip Report present for all samples and all fractions? [X] ___ ___

ACTION: If no, contact either RSCC or ask the prime contractor to provide this information.

2.0 Data Completeness and Deliverables

2.1 Have any missing deliverables been received and added to the data package? ___ X

NOTE: The lab is required to submit data for only two analyses, for each fraction. (i.e., the original sample and one dilution, or the most concentrated dilution analyzed and one further dilution.)

ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If lab cannot provide them, note the effect on the review of the package in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary form.

2.2 Was CLASS CCS checklist included with package? [ ] X ___

2.3 Are there any discrepancies between the Traffic Reports/Chain-of-Custody Records, Sampling Report and Sample Tags? ___ [X] ___

301748

	YES	NO	N/A
ACTION: If yes, contact the lab to obtain an explanation or resubmittal of any missing deliverables.			
3.0 Cover Letter SDG Narrative			
3.1 Is the Narrative or Cover Letter Present?	X		
3.2 Are case number, SDG number and contract number contained in the SDG Narrative or cover letter (see SOW, Exhibit B, section 2.6.1)?	X		
3.3 Does the narrative contain the following information:			
VOA: description of trap and columns used during sample analyses?	X		
BNA: description of columns used during sample analyses?			X
Pest: description of columns used during sample analyses?			X
NOTE: As per section 6.23.3.1 SOW/p. D-11/Pest, Packed columns are not permitted.			
3.4 Does the narrative, VOA and BNA sections, contain a list of all TICs identified as alkanes and their estimated concentrations?	X		
3.5 Does the narrative contain a record of all cooler temperatures? If the temperature of a cooler was exceeded, > 10° C, the lab must list by fraction and sample number, all affected samples.		X	
3.6 Does the narrative contain a list of the pH values determined for each water sample submitted for volatile analysis (SOW Exhibit B, section 2.6.1.2)?			X
3.7 Does the Case Narrative contain the statement, "verbatim", as required in Section B of the SOW?		X	
ACTION: If "No", to any question in this section, contact the lab to obtain all necessary resubmittals. If information is not available,			

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document in the Data Assessment under Contract Problems/Non-Compliance section.

	YES	NO	N/A
4.0 Data Validation Checklist			
4.1 Check the package for the following discrepancies:			
a. Is the package paginated in ascending order starting from the SDG narrative?	[X]	___	___
b. Are all forms and copies legible?	[X]	___	___
c. Is each fraction assembled in the order set forth in the SOW?	[X]	___	___
d. Is a Sample Data Summary Package submitted immediately preceding the Sample Data Package?	[ ]	X	___

The following checklist is divided into three parts. Part A is for any VOA analyses, Part B is for BNAs and Part C is Pesticide/PCBs.

Does this package contain:

VOA Data?	X	___
BNA Data?	X	___
Pesticide/PCB data?	___	X

ACTION: Complete corresponding parts of checklist.

301751

4990

YES NO N/A

PART A: VOA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records, Sampling Report or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? — N/A —

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated (J). If a soil sample other than TCLP contains more than 90% water, all data should be qualified as unusable (R).

ACTION: If samples were not iced or the ice was melted upon arrival at the laboratory and the cooler temperature was elevated (> 10° C), then flag all positive results with a "J" and all non-detects "UJ".

ACTION: If both VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

ACTION: The smallest soil size permitted is 0.5g. If any soil sample is smaller than 0.5g, document in the Data Assessment under Contract Problems/Non-Compliance.

2.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? — N/A —

All technical holding times met as per SOW-8416

Technical Holding Times: If unpreserved, aqueous samples, maintained at 4° C for aromatic hydrocarbons analysis must be analyzed within 7 days of collection. If preserved with HCl (pH < 2) and stored at 4° C, then aqueous samples must be analyzed within 14 days of collection. If uncertain about preservation, contact sampler to determine whether or

301752

YES NO N/A

not samples were preserved. The holding time for soils is 10 days from date of collection.

All technical holding times met as per SOW 8/96

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample ID	Sample Matrix	Was Sample Preserved?	Date Sampled	Date Lab Received	Date Analyzed
88664	S	MeOH	10-7-98	10-7-98	10-19-98
88665, 88666					10-20-98
88667					10-21-98
88668, 88669					10-19-98
88671, 88672					✓
88674	↓	↓	↓	↓	10-20-98

ACTION: If technical holding times are exceeded, flag all positive results as estimated "J" and sample quantitation limits as estimated "UJ", and document in the Data Assessment that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable "R". If holding times are exceeded by more than 28 days, all non detect data are unusable "R".

NOTE: Contractual Holding Times: Analysis of water and soil/sediment samples must be completed within 10 days of Validated Time of Sample Receipt (VTSR). This requirement does not apply to Performance Evaluation (PE) samples.

ACTION: If contractual holding times are exceeded, 301753

YES NO N/A

document in the Data Assessment and on the Organic Regional Data Assessment Summary form.

NOTE: The data reviewer must note in the Data Assessment whether or not **technical and contractual** holding times were met.

301754

	YES	NO	N/A
3.0 System Monitoring Compound (SMC) Recovery (Form II)			
3.1 Are the VOA SMC Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water?	[X]	___	___
b. Low Soil?	[X]	___	___
c. Med Soil? N/A	[X]	___	___
3.2 Are all the VOA samples listed on the appropriate System Monitoring Compound Recovery Summary for each of the following matrices:			
a. Low Water?	[X]	___	___
b. Low Soil?	[X]	___	___
c. Med Soil?	[X]	___	___

ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If missing deliverables are unavailable, document the effect in the Data Assessment.

3.3 Were outliers marked correctly with an asterisk?	[X]	___	___

ACTION: Circle all outliers with red pencil.

3.4 Was one or more VOA system monitoring compound recovery outside of contract specifications for any sample or method blank?	___	[X]	___
If yes, were samples re-analyzed?	[ ]	___	X
Were method blanks re-analyzed?	[ ]	___	X

ACTION: If recoveries are ≥ 10%, but 1 or more compounds fail to meet SOW specifications:

1. All positive results are qualified as estimated "J".

2. Flag all non-detects as estimated detection limits "UJ" where recovery is less than the lower acceptance limit.

301755

YES NO N/A

document in the Data Assessment and on the Organic Regional Data Assessment Summary form.

NOTE: The data reviewer must note in the Data Assessment whether or not **technical and contractual** holding times were met.

301756

	YES	NO	N/A
3.0 System Monitoring Compound (SMC) Recovery (Form II)			
3.1 Are the VOA SMC Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water?	[X]	___	___
b. Low Soil?	[X]	___	___
c. Med Soil? N/A	[X]	___	___
3.2 Are all the VOA samples listed on the appropriate System Monitoring Compound Recovery Summary for each of the following matrices:			
a. Low Water?	[X]	___	___
b. Low Soil?	[X]	___	___
c. Med Soil?	[X]	___	___

ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If missing deliverables are unavailable, document the effect in the Data Assessment.

3.3 Were outliers marked correctly with an asterisk?	[X]	___	___

ACTION: Circle all outliers with red pencil.

3.4 Was one or more VOA system monitoring compound recovery outside of contract specifications for any sample or method blank?	___	[X]	___
If yes, were samples re-analyzed?	[ ]	___	X
Were method blanks re-analyzed?	[ ]	___	X

ACTION: If recoveries are ≥ 10%, but 1 or more compounds fail to meet SOW specifications:

1. All positive results are qualified as estimated "J".

2. Flag all non-detects as estimated detection limits "UJ" where recovery is less than the lower acceptance limit.

301757

YES NO N/A

3. If SMC recoveries are above allowable levels, do not qualify non-detects.

If any system monitoring compound recovery is < 10%:

1. Flag all positive results as estimated "J".

2. Flag all non-detects as unusable "R".

Professional judgement should be used to qualify data that only have method blank SMC recoveries out of specification in both original and re-analyses. Check the internal standard areas.

NOTE: Contractual requirements state that if any SMC fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

NOTE: The laboratory must submit the following data:

1. If SMC recoveries and internal standard responses meet the acceptance criteria in the re-analyzed sample, then the laboratory must submit only the re-analysis.

2. If an SMC recovery and/or internal standard response fails to meet the acceptance criteria upon re-analysis, then submit data from both analyses.

(Refer to section 11.4.3.2, page D-46/VOA of the SOW for more information.)

3.5 Are there any transcription/calculation errors between raw data and Form II? — X —

ACTION: If large errors exist, contact the lab to obtain an explanation or resubmittal of corrected deliverables. Make any necessary corrections and note the effect in the Data Assessment.

301758

	YES	NO	N/A
4.0 Matrix Spikes (Form III)			
4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present?	[X]	___	___
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water?	[X]	___	___
b. Low Soil?	[X]	___	___
c. Med Soil?	[X]	___	___

ACTION: If any matrix spike data are missing, take the action specified in section 3.2 above.

4.3 How many VOA spike recoveries are outside QC limits?

Water	Soils
0 out of 10	0 out of 10

4.4 How many RPDs for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
0 out of 5	0 out of 5

ACTION: No action is taken based upon MS/MSD data alone. However, using informed professional judgement, the MS/MSD results may be used in conjunction with other QC criteria to determine the need for qualification of the data.

ACTION: Circle all outliers with red pencil.

	YES	NO	N/A
5.0 Blanks (Form IV)			
5.1 Is the Method Blank Summary (Form IV) present?	[X]	___	___

5.2 Frequency of Analysis: for the analysis of VOA TCL compounds, has a reagent/method blank been

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		YES	NO	N/A
	analyzed for each SDG or every 20 samples of similar matrix (low water, low soil or medium soil), whichever is more frequent?	[X]		
5.3	Has a VOA method blank been analyzed at least once every twelve hours for each concentration level and GC/MS system used?	[X]		
5.4	Was a VOA instrument blank analyzed after each sample/dilution which contained a target compound that exceeded the initial calibration range?	[ ]		X
5.5	Was a VOA storage blank analyzed at the end of all samples for each SDG in a case?	[ ]	X	

ACTION: If any method/instrument blank data are missing, contact the lab to obtain any missing deliverables. If method blank data are not available, reject "R" all associated positive data. However, using professional judgement, the data reviewer may substitute field blank or trip blank data for missing method blank data.

If any instrument blank analyzed after a sample with high concentration is missing, contact the lab to obtain any missing deliverables. If the instrument blank was not analyzed or not available, inspect the chromatogram of the sample analyzed immediately after this analysis for possible carryover. Use professional judgement to determine if any contamination occurred and qualify analyte(s) accordingly.

If storage blank data is missing, contact the lab to obtain any missing deliverables. If unavailable, note in the Contract Problems/Non-Compliance section of the Data Assessment.

5.6 The validator should verify that the correct identification scheme for the EPA Blank samples were used. See page B-33, section 3.3.7.3 of the SOW for further information.

	Was the correct identification scheme used for all VOA blanks?	[ ]	X	

YES NO N/A

ACTION: Contact the lab to obtain missing deliverables, or make the required corrections on the forms. Document in the Data Assessment under Contract Problems/Non-compliance if corrections were made by the validator.

5.7 Chromatography: review the blank raw data-chromatograms (RICs), quant. reports or data system printouts and spectra. Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs? X ___ ___

ACTION: Use professional judgement to determine the effect on the data.

5.8 Are all detected hits for target compounds in method, instrument and storage blanks less than the CRQL for that analyte? X ___ ___

Exception: Acetone and 2-butanone must be less than 5 times the CRQL, and methylene chloride must be less than 2.5 times its CRQL.

ACTION: If no, an explanation and laboratory's corrective actions must be addressed in the case narrative. If the narrative contains no explanation, then make a note in the Contract Problems/Non-Compliance section of the Data Assessment.

6.0 Contamination

NOTE: "Water blanks", "drill blanks", and "distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

6.1 Do any method/instrument/reagent/storage blanks have positive results (TCL and/or TIC) for VOAs? ___ X ___

NOTE: When applied as directed in the table below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for %moisture when necessary.

301761

YES NO N/A

NOTE: A contaminated instrument blank is not allowable under this SOW. See page D-48/VOA, section 12.1.2.4 for additional information. Document in the Data Assessment under Contract Problems/Non-Compliance if contaminated instrument blank was submitted.

6.2 Do any field/trip/rinse blanks have positive VOA results (TCL and/or TIC)? [ ] [X] ___

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped and are not required for non-aqueous matrices. Blanks may not be qualified because of contamination in another blank. Field Blanks & Trip Blanks must be qualified for system monitoring compound, instrument performance criteria, spectral or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable "R".

301762

YES NO N/A

For:	Flag sample result with a "U" when:	Report CRQL & qualify "U" when:	No qualification is needed when:
Methylene Chloride Acetone Toluene 2-Butanone	Sample conc. is > CRQL, but ≤ 10× blank value.	Sample conc. is < CRQL and ≤ 10× blank value.	Sample conc. is > CRQL and > 10× blank value.
Other Conta-minants	Sample conc. is > CRQL, but ≤ 5× blank value.	Sample conc. is < CRQL and ≤ 5× blank value.	Sample conc. is > CRQL and > 5× blank value.

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration criteria.

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R".

6.3 Are there field/rinse/equipment blanks associated with every sample? [ ] X ___

ACTION: For low level samples, note in the Data Assessment that there is no associated field/rinse/equipment blank. For samples with high concentrations of suspected blank contaminants, use professional judgement to qualify these values and make a note in the Data Assessment.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V)

7.1 Are the GC/MS Instrument Performance Check Forms (Form V) present for Bromofluorobenzene (BFB)? N ___ ___

7.2 Are the enhanced bar graph spectrum and

301763

	YES	NO	N/A
mass/charge (m/z) listing for the BFB provided for each twelve hour shift?	[X]	___	___
7.3 Has an instrument performance check been analyzed for every analytical sequence on each instrument?	[X]	___	___

ACTION: List date, time, instrument ID, and sample numbers for which associated GC/MS tuning data are unavailable.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: Notify the lab to obtain missing data, if possible. If the lab cannot provide the missing data, reject, "R", all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundances been normalized to m/z 95 as specified in Exhibit D, page D-56/VOA?	[X]	___	___

NOTE: All ion abundance ratios must be normalized to m/z 95, the nominal base peak, even though the ion abundance of m/z 174 may be up to 120% that of m/z 95.

ACTION: If mass assignment is in error, qualify all associated data as unusable "R".

7.5 Have the ion abundance criteria been met for each instrument used?	[X]	___	___

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors

301764

	YES	NO	N/A
between mass lists and Form Vs? (Check at least two values, but if errors are found check more.)		[X]	
7.7 Is the number of significant figures for the reported relative abundances consistent with the number given for each ion in the ion abundance criteria column?	[X]		
ACTION: If large errors exist, take action as specified in section 3.5 above.			
7.8 Are the spectra of the mass calibration compound acceptable?	[X]		
ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.			
8.0 Target Compound List (TCL) Analytes (FORM I VOA)			
8.1 Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate?	[X]		
b. Matrix spikes and matrix spike duplicates?	[X]		
c. Blanks?	[X]		
8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (quant. reports) included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[X]		
b. Matrix spikes and matrix spike duplicates (mass spectra not required)?	[X]		
c. Blanks?	[X]		
ACTION: If any data are missing, take action specified in 3.2 above.			

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	YES	NO	N/A
8.3 Are the response factors shown in the quant. report?	[X]	___	___
8.4 Is chromatographic performance acceptable with respect to:			
a. Baseline stability?	[X]	___	___
b. Resolution?	[X]	___	___
c. Peak shape?	[X]	___	___
d. Full-scale graph (attenuation)?	[X]	___	___
e. Other: _____?	[ ]	___	___

ACTION: Use professional judgement to determine the acceptability of the data.

8.5 Are the lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[X]	___	___

ACTION: If any mass spectra are missing, take action as specified in 3.2 above. If the lab does not generate its own standard spectra, document in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary.

8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[X]	___	___
8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[X]	___	___
8.8 Do sample and standard relative ion intensities agree within ±20%?	[X]	___	___

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected "R", flagged "N" (presumptive evidence of the presence of the

301766

	YES	NO	N/A
compound) or changed to not detected "U" at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in 8.6, 8.7, and 8.8.			
ACTION: When sample carry-over is suspected, use professional judgement determine if instrument cross-contamination has affected positive compound identifications.			
9.0 Tentatively Identified Compounds (TIC)			
9.1 Are all Tentatively Identified Compound Forms (Form I Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier?	[✓]	___	___
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[ ]	___	[✓]
b. Blanks?	[ ]	___	[✓]
c. Alkanes listed for each sample?	[ ]	___	[✓]
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "JN" qualifier to all chemically named TICs, if missing.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds? (Example: 1,2- dimethylbenzene is xylene, a VOA TCL analyte, and should not be reported as a TIC.)	___	[✓]	___
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[ ]	___	[✓]

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	YES	NO	N/A
9.5 Do TIC and "best match" standard relative ion intensities agree within ±20%?	[ ]	___	☒

ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined an incorrect identification was made, change the identification to "unknown," or to some less specific identification as appropriate. (Example: "C3 substituted benzene.")

Also, when a compound is not found in any blank, but is detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable "R". (E.g., Common Lab Contaminants: CO_2 (M/E 44), siloxanes (M/E 73) hexane, aldol condensation products, solvent preservatives, and related by-products - see the National Functional Guidelines for further guidance.)

	YES	NO	N/A
9.6 Are TICs with responses < 10% of the internal standard (as determined by inspection of the peak areas or height) reported?	___	[ ]	☒

ACTION: If yes, cross out questionable TIC(s).

10.0 Compound Quantitation and Reported Detection Limits

	YES	NO	N/A
10.1 Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standards, quantitation ions, and RRF were used to calculate Form I results.)	___	☒	___
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	☒	___	___

ACTION: If errors are large, take action as specified in section 3.5 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample). Replace concentrations that exceeded the calibration

301768

	YES	NO	N/A
range in the original analysis by crossing out the "E" and its corresponding value on the original Form I and substituting the data from the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form Is not to be used, including any in the data summary package.			
11.0 Standards Data (GC/MS)			
11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (quant. reports) present for each initial and continuing calibration?	X		
ACTION: If any calibration standard data are missing, take action specified in 3.2 above.			
12.0 GC/MS Initial Calibration (Form VI)			
12.1 Are the Initial Calibration Forms (Form VI) present and complete at concentrations of 10, 20, 50, 100, 200ng for separate calibrations of low water/med soils (unheated purge) and low soils (heated purge)?	X		
ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.			
12.2 Were all low level soil standards, blanks and samples analyzed by heated purge?			X
ACTION: If low level soil samples were not heated during purge, qualify positive hits "J" (estimated) and non-detects "R".			
12.3 Are the % relative standard deviation (%RSD) values for VOAs ≤ 30% over the concentration range of the calibration?		X	
NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %RSD, the technical acceptance criteria are the same for all analytes.			
ACTION: Circle all outliers with red pencil.			

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YES NO N/A

ACTION: If %RSD is > 30.0%, qualify associated positive results for that analyte "J" (estimated) and non-detects using professional judgement. When %RSD is > 90%, flag all non-detects for that analyte "R" (unusable) and positive hits "J".

NOTE: Analytes previously qualified "U" for blank contamination are still considered as "hits" when qualifying for initial calibration criteria. ___ [X] ___

12.4 Are any average RRFs < 0.05?

ACTION: Circle all outliers with red pencil.

ACTION: If the average RRF is < 0.05, then qualify associated non-detects with an "R" and flag associated positive data as estimated "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %RSD or RRF criteria, provided the %RSD is ≤ 40% and RRF is ≥ 0.010. (See Table 5, page D-59/VOA and analytes marked with a "*" on Form VI for required analytes and contractual criteria.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %RSD or RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and the Organic Regional Data Assessment Summary.

12.5 Are there any transcription/calculation errors in the reporting of average relative response factors (RRF) or %RSD? (Check at least 2 values, but if errors are found, check more.) ___ [X] ___

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

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YES NO N/A

13.0 GC/MS Continuing Calibration (Form VII)

13.1 Are the Continuing Calibration Forms (Form VII) present and complete for separate calibration of low water/med soil and low soil samples? ___ X ___

13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument? X ___ ___

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, contact the lab to request an explanation/resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable "R".

ACTION: List below all sample(s) that were not analyzed within twelve hours of the previous continuing calibration.

_____

_____

_____

13.3 Do any volatile compounds have a percent difference (%D) between the initial and continuing RRF which exceeds the ±25% criteria? X ___

NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %D, the technical acceptance criteria are the same for all analytes.

ACTION: Circle all outliers with red pencil.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated. When %D is > 90%, qualify all non-detects for that analyte unusable (R) and positive results estimated (J).

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	YES	NO	N/A
13.4 Are any continuing calibration RRFs < 0.05?	X	[ ]	

ACTION: Circle all outliers with red pencil.

ACTION: If the RRF is < 0.05, qualify the associated non-detects as unusable "R" and the associated positive values "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %D and RRF criteria, provided that the %D is ≤ 40% and the RRF is ≥ 0.010. (See Table 5 pg. D-59/VOA or analytes marked with a "*" on Form VI for required analytes.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %D and RRF, criteria document in the Data Assessment under contract Problems/Non-Compliance and on the Organic Regional Data Assessment Summary form.

	YES	NO	N/A
13.5 Are there any transcription/calculation errors in the reporting of RRF or %D between initial and continuing RRFs? (Check at least two values, but if errors are found, check more.)		[ ]	

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance.

14.0 Internal Standard (Form VIII)

	YES	NO	N/A
14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits (-50% to +100%) for each continuing calibration?	X		
If no, was the sample re-analyzed?	[ ]		X

ACTION: 1. Circle all outliers with red pencil.

2. List all the outliers below.

301772

YES NO N/A

Sample #	Internal Std.	Area	Lower/Upper Limit
			/
			/
			/
			/

(Attach additional sheets if necessary, or attach copies of Form VIIIs.)

ACTION: If any sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

ACTION: 1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Do not qualify non-detects when associated IS area counts are > 100%.

3. If the IS area in the sample is below the "lower limit," < 50%, qualify all analytes associated with that IS estimated, "J". If the area counts are extremely low, < 25% of the area in the 12 hour standard, or if performance exhibits a major abrupt drop- off, flag all associated non-detects as unusable, "R", and positive hits estimated, "J".

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

NOTE: Contractual requirements state that if any internal standard fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not

YES NO N/A

re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

NOTE: See Notes in section 3.4, page 7 for a description of sample data the laboratory must submit.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for VOA analysis? [X] ___ ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

301774

YES NO N/A

PART B: BNA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody records or laboratory SDG Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? X [ ] ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated "J". If a soil sample, other than TCLP, contains more than 90% water, all data should be qualified as unusable "R".

ACTION: If samples were not iced or if the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 10° C), flag all positive results "J" and all non-detects "UJ".

2.0 Holding Times

2.1 Have any BNA technical holding times, determined from date of collection to date of extraction, been exceeded? ___ [X] ___

Technical Holding Time: Continuous extraction of water samples for BNA analysis must be started within seven days of the date of collection. Soil/sediment samples must be extracted within 7 days of collection. Extracts must be analyzed within 40 days of the date of extraction.

All technical holding times met as per SOW

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample Analyzed	Sample Matrix	Date Sampled	Date Lab Received	Date Extracted	Date Analyzed
88677	Soil	10-7-98	10-7-98	10-15-98	10-21-98

301775

	YES	NO	N/A

ACTION: If technical holding times were exceeded, flag all positive results as estimated (J) and sample quantitation limits as estimated (UJ), and document in the narrative that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon reanalysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on sample results. At a minimum, all results should be qualified "J", but the reviewer may determine that non-detect data are unusable "R". If holding times were exceeded by more than 28 days, all non-detect data must be qualified "R", unusable.

NOTE: Contractual Holding Times: Extraction of water samples must be started within 5 days VTSR. Soil/sediment samples must be extracted within 10 days of VTSR. This requirement does not apply to Performance Evaluation (PE) samples. Water and soil/sediment extracts must be analyzed within 40 days following extraction.

ACTION: If contractual holding times are exceeded, document in the Data Assessment and on the Organic Regional Data Assessment Summary form.

NOTE: The data reviewer must note in the Data Assessment whether or not **technical and contractual** holding times were met.

3.0 Surrogate Recovery (Form II)

3.1 Are BNA Surrogate Recovery Summaries (Form II) present for each of the following matrices:

a. Low Water?	[ ]	X	___
b. Low Soil?	[X]	___	___
c. Med Soil?	[ ]	X	___

301776

	YES	NO	N/A
3.2 Are all the BNA samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:			
a. Low Water?	[ ]		X
b. Low Soil?	[X]		
c. Med Soil?	[ ]		X

ACTION: Contact the lab for an explanation or resubmittal of any missing deliverables. If missing deliverables are unavailable, document the effect in the Data Assessment.

3.3 Were outliers marked correctly with an asterisk?	[X]		

ACTION: Circle all outliers with red pencil.

3.4 Were two or more base-neutral OR acid surrogate recoveries out of specification for any sample or method blank?		[X]	
If yes, were samples reanalyzed?	[ ]		X
Were method blanks reanalyzed?	[ ]		X

ACTION: If all BNA surrogate recoveries are ≥ 10%, but two within the base-neutral or acid fraction do not meet SOW specifications, for the affected fraction only (i.e. acid or base-neutral compounds):

1. Flag all positive results as estimated (J).

2. Flag all non-detects as estimated detection limits ("UJ") when recoveries are less than the lower acceptance limit.

3. Do not qualify non-detects if recoveries are greater than the upper acceptance limit.

If any base-neutral or acid surrogate has a recovery of < 10%:

1. Qualify positive results for that fraction

301777

YES NO N/A

as estimated (J).

2. Qualify non-detects for that fraction as unusable (R).

Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and reanalyses. Check the internal standard areas.

NOTE: Contractual requirements state that if any surrogate fails acceptance criteria, the sample must be re-analyzed. If sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

NOTE: The laboratory must submit the following data:

1. If surrogate recoveries and internal standard responses meet the acceptance criteria in the re-analyzed sample, then the laboratory must submit only the re-analysis.

2. If surrogate recoveries and/or internal standard responses fail to meet the acceptance criteria upon re-analysis, then submit data from both analyses.

3.5 Are there any transcription/calculation errors between raw data and Form II? ___ X ___

ACTION: If large errors exist, contact the lab for an explanation or resubmittal of corrected deliverables. Make necessary corrections and note errors in the Data Assessment.

4.0 Matrix Spikes (Form III)

4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present? X ___ ___

4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:

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	YES	NO	N/A
a. Low Water?	[ ]	X	
b. Low Soil?	X		
c. Med Soil?	[ ]	X	

ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.

4.3 How many BNA spike recoveries are outside QC limits?

Water	Soils
NA out of 22	0 out of 22

4.4 How many RPDs for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
NA out of 11	0 out of 11

ACTION: No action is taken based upon MS/MSD data alone. However, using informed professional judgement, the data reviewer may use the matrix spike and matrix spike duplicate results in conjunction with other QC criteria and determine the need for some qualification of the data.

ACTION: Circle all outliers with red pencil.

5.0 Blanks (Form IV)

	YES	NO	N/A
5.1 Is the Method Blank Summary (Form IV) present?	X		
5.2 Frequency of Analysis: Has a reagent/method blank analysis been reported per 20 samples of similar matrix, or concentration level, and for each extraction batch?	X		
5.3 Has a BNA method blank been analyzed for each GC/MS system used? (See SOW pg. D-54/SVOA, Section 12.1.2.)	X		

301779

	YES	NO	N/A
ACTION: If any method blank data are missing, contact the lab to obtain an explanation/resubmittal. If resubmittals are unavailable, use professional judgement to determine if the associated sample data should be qualified.			
5.4 The validator should verify that the correct identification scheme for the EPA Blank samples were used. See page B-33, sec. 3.3.7.3 of the SOW for further information.			
Was the correct identification scheme used for all BNA blanks?	[ ]	[X]	___
ACTION: Contact the lab to obtain resubmittals, or make the required corrections on the forms. Document all corrections made by the validator in the Data Assessment under Contract Problems/Non-Compliance.			
5.5 Chromatography: review the blank raw data - chromatograms (RICs), quant. reports or data system printouts and spectra. Is the chromatographic performance (baseline stability) acceptable for each instrument?	[X]	___	___
ACTION: Use professional judgement to determine the effect on the data.			
5.6 Are all detected hits for target compounds less than the CRQL for that analyte in all method blanks?	[X]	___	___
Exception: Phthalate esters must be less than five times (5x) the CRQL.			
6.0 Contamination			
NOTE: "Water blanks", "drill blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.			
6.1 Do any method/reagent blanks have positive results (TCL and/or TIC)?	___	[X]	___

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YES NO N/A

NOTE: Water: When applied as directed in the table below (page 29), the contaminant concentration in method/instrument/reagent blanks is multiplied by the sample dilution factor, where necessary.

Soil: If the lab has not already done so, the contaminant concentration in soil blanks is multiplied by 33 times the sample dilution factor and corrected for %moisture (fraction of solid) where necessary. 30 grams of sodium sulfate (1 gram for medium level soils) are used to prepare the soil reagent/method blank as instructed on page D-54/SVOA, section 12.1.3. Contact the lab to obtain resubmittals if the soil blanks are not reported in soil units (µg/kg).

6.2 Do any field/rinse blanks have positive BNA results (TCL and/or TIC)? ___ [ ] / Not

ACTION: Prepare a list of samples associated with each contaminated blank. (Attach a separate sheet.)

NOTE: All field blank results associated to a particular group of samples (may exceed one per case) must be used to qualify sample data. Do not convert field blank results to account for the difference in soil CRQLs. Blanks may not be qualified because of contamination in another blank. Field blanks must be qualified for surrogate, spectral, instrument performance or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If gross contamination exists, all data in the associated samples should be qualified as unusable "R".

For:	Flag sample result with a "U" when:	Report CRQL & qualify "U" when:	No qualification is needed when:
Common Phthalate-Esters	Sample conc. is > CRQL, but ≤ 10× blank value.	Sample conc. is < CRQL and ≤ 10× blank value.	Sample conc. is > CRQL and > 10× blank value.

			YES	NO	N/A
Other Conta-minants	Sample conc. is > CRQL, but ≤ 5x blank value.	Sample conc. is < CRQL and ≤ 5x blank value.	Sample conc. is > CRQL and > 5x blank value.		

NOTE: Analytes qualified "U" for blank contamination are still treated as "hits" when qualifying for calibration criteria.

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.3 Are there field/rinse/equipment blanks associated with every sample? [ ] [X] ___

ACTION: For low level samples, note in the Data Assessment that there is no associated field/rinse/equipment blank. For analytes with high concentration, use professional judgement on qualification of these values and make a note in the Data Assessment.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check

7.1 Are the GC/MS Instrument Performance Check Forms (Form V) present for Decafluorotriphenylphosphine (DFTPP)? [X] ___ ___

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the DFTPP provided for each twelve hour shift? [X] ___ ___

7.3 Has an instrument performance check solution been analyzed for every twelve hours of sample analysis per instrument? [X] ___ ___

ACTION: List date, time, instrument ID, and sample number for which no associated GC/MS tuning data are valid.

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SAMPLE NUMBERS	DATE	TIME	INSTRUMENT ID

ACTION: If the lab cannot provide the missing data, reject "R" all data generated outside an acceptable twelve hour calibration interval.

		YES	NO	N/A
7.4	Have the ion abundances been normalized to m/z 198 (see SOW, page D-61/SVOA)?	X		

NOTE: All ion abundance ratios must be normalized to m/z 198, the nominal base peak, even though the ion abundance of m/z 442 may up to 110% that of m/z 198.

ACTION: If mass assignment is in error, flag all associated sample data as unusable "R".

7.5	Have the ion abundance criteria been met for each instrument used?	X		

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6	Are there any transcription/calculation errors between mass lists and Form Vs? (Check at least two values, but if errors are found check more.)		X	
7.7	Is the number of significant figures for the reported relative abundances consistent with the number given for each ion in the ion abundance criteria column?	X		

ACTION: If large errors exist, take action as specified in section 3.5 above.

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	YES	NO	N/A
7.8 Are the spectra of the mass calibration compound acceptable?	[X]		

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

8.0 Target Compound List (TCL) Analytes (FORM I SV)

	YES	NO	N/A
8.1 Are the Organic Analysis Data Sheets (Form I SV) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate?	[X]		
b. Matrix spikes and matrix spike duplicates?	[ ]	X	
c. Blanks?	[X]		
8.2 Has GPC cleanup been performed on all soil/ sediment sample extracts?	[ ]	X	

ACTION: If data suggests that GPC was not performed, use professional judgement. Make note in Contract Problems/Non-Compliance section of the Data Assessment and the Organic Regional Data Assessment Summary.

	YES	NO	N/A
8.3 Are the BNA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (quant. reports) included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[X]		
b. Matrix spikes and matrix spike duplicates (mass spectra not required)?	[X]		
c. Blanks?	[X]		

ACTION: If any data are missing, take action specified in 3.2 above.

	YES	NO	N/A
8.4 Are the response factors shown in the quant. report?	[X]		

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	YES	NO	N/A
8.5 Is chromatographic performance acceptable with respect to:			
Baseline stability?	[X]	___	___
Resolution?	[X]	___	___
Peak shape?	[X]	___	___
Full-scale graph (attenuation)?	[X]	___	___
Other:_____?	[ ]	___	___

ACTION: Use professional judgement to determine the acceptability of the data.

8.6 Are lab-generated standard mass spectra of identified BNA compounds present for each sample?	[X]	___	___

ACTION: If any mass spectra are missing, take action specified in 3.2 above. Note under Contract Non-compliance if lab does not generate their own standard spectra. If spectra are missing, reject all positive data.

8.7 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[X]	___	___
8.8 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[X]	___	___
8.9 Do sample and standard relative ion intensities agree within ±20%?	[ ]	X	___

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected "R", flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected "U" at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in 8.7, 8.8, and 8.9.

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	YES	NO	N/A
ACTION: When sample carry-over is a possibility, professional judgement should be used to determine if instrument cross-contamination has affected any positive compound identification.			
9.0 Tentatively Identified Compounds (TIC)			
9.1 Are all Tentatively Identified Compound Forms (Form I, Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier?	X		
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	X		
b. Blanks?	X		
c. Alkanes listed for each sample?	X		
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "N" qualifier to all chemically named TICs, if missing.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds? (Example: 1,2-dimethylbenzene is xylene - a VOA TCL - and should not be reported as a TIC.)		X	
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	X		
9.5 Do TIC and "best match" standard relative ion intensities agree within ±20%?	X		
ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined that an incorrect identification was			

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	YES	NO	N/A
made, change the identification to "unknown," or to some less specific identification (example: "C3 substituted benzene") as appropriate. Also, when a compound is not found in any blank, but is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable, "R".		☒	
9.6 Are any TICs with responses < 10% of the internal standard (as determined by inspection of the peak areas or height) reported?			

ACTION: If yes, cross out questionable TIC(s).

10.0 Compound Quantitation and Reported Detection Limits

	YES	NO	N/A
10.1 Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I result.)		☑	
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	☑		

ACTION: If errors are large, take action as specified in section 3.5 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its associated value on the original Form I and substituting the data from the analysis of the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form Is that should not be used, including any in the summary package.

11.0 Standards Data (GC/MS)

11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (quant. reports) present for

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	YES	NO	N/A
initial and continuing calibration?	X		

ACTION: If any calibration standard data are missing, take action specified in 3.2 above.

12.0 GC/MS Initial Calibration (Form VI)

	YES	NO	N/A
12.1 Are the Initial Calibration Forms (Form VI) present and complete for the BNA fraction?	X		

ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.

	YES	NO	N/A
12.2 Are the % relative standard deviation (%RSD) values for BNAs ≤ 30% over the concentration range of the calibration?	X		

ACTION: Circle all outliers with red pencil.

NOTE: Although 21 BNA compounds have a contractual minimum RRF and no maximum %RSD, the technical criteria are the same for all analytes.

NOTE: Eight BNA compounds do not require a 20ng standard. Refer to SOW section 7.2.4.5.1, page D-15/SVOA for a list of required compounds and contractual criteria.

ACTION: If the %RSD is > 30.0%, qualify positive results for that analyte "J" and non-detects using professional judgement. When %RSD is > 90%, flag all non-detect results for that analyte "R" (unusable) and all positive results "J" (estimated).

NOTE: Analytes previously qualified "U" due to blank contamination are still considered as "hits" when qualifying for calibration criteria.

	YES	NO	N/A
12.3 Are any average RRFs < 0.05?		X	

ACTION: Circle all outliers with red pencil.

ACTION: If the average RRF is < 0.05 then:

1. "R" all non-detects.

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YES NO N/A

2. "J" all positive results.

12.4 Are there any transcription/calculation errors in the reporting of RRFs and/or %RSDs? (Check at least two values; if errors are found check more.) ___ ✓ ___

ACTION: Circle errors with red pencil.

ACTION: If errors are large, take action as specified in section 3.5 above.

NOTE: Contract Requirement: The SOW allows up to four of the required analytes to fail contractual %RSD or RRF criteria provided the %RSD is ≤ 40% or RRF is ≥ 0.010. (See Table 5, page D-66/SVOA and analytes marked with a "*" on Form VI for a list of required analytes and contractual criteria.) Technical criteria, however, are the same for all analytes.

ACTION: If more than four analytes fail %RSD or RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and on the Organic Regional Data Assessment Summary form.

13.0 GC/MS Continuing Calibration (Form VII)

13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the BNA fraction? ✓ ___ ___

13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument? ✓ ___ ___

ACTION: List below all sample analyses that were not analyzed within twelve hours of a continuing calibration standard for each instrument used.

_____

_____

_____

ACTION: If any forms are missing, or no continuing calibration standard has been analyzed within

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YES NO N/A

ACTION: Circle errors with red pencil.

ACTION: If errors are large, take action as specified in section 3.5 above.

14.0 Internal Standards (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits (-50% to +100%) for each continuing calibration? [ ] [X] ___

If no, was sample re-analyzed? [X] ___ ___

ACTION: 1. Circle all outliers with red pencil.

2. List all the outliers below.

ACTION: If sample was not reanalyzed, document in Data Assessment in Contract Problems/Non-Compliance.

Sample #	Internal Std.	Area	Lower/Upper Limit
886-77	1148739	559798	574370 / 2297478
886-77R1	1148739	450449	574370 / 2297478
			/
			/

(Attach additional sheets if necessary.)
(or attach copies of Form VIIIs)

ACTION: 1. If the internal standard area count is outside the "upper" or "lower" limit, flag with "J" all positive results and non-detects quantitated with this internal standard.

2. Do not qualify non-detects associated with IS area > 100%.

3. If the IS area in the sample is < 50%, qualify all analytes associated with that IS estimated (J). If area counts are extremely low (< 25% of the area in the 12 hour standard), or if

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YES NO N/A

twelve hours of every sample analysis, contact the lab to obtain an explanation/resubmittal. If continuing calibration data are unavailable, flag all associated sample data as unusable "R".

13.3 Does any BNA compound have a percent difference (%D) between the initial and continuing calibration RRFs which exceeds the ±25.0% criteria? ☑ ☐ ___

ACTION: Circle all outliers with red pencil.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated "J". When %D is > 90%, reject all non-detects for that analyte, "R", and qualify positive results "J" (estimated).

13.4 Are any continuing RRFs < 0.05? ___ ☒ ___

ACTION: Circle all outliers with red pencil.

ACTION: If the RRF is < 0.05, qualify as unusable (R) associated non-detects and "J" associated positive values.

NOTE: Contract Requirement: The SOW allows up to four of the required analytes to fail contractual %D and RRF criteria, provided that the %D is ≤ 40% and the RRF is ≥ 0.010. (See Table 5 page D-66/SVOA or analytes marked with a "*" on Form VI for a list of the required analytes.) Technical criteria, however, are the same for all analytes.

ACTION: If more than four analytes failed %D and RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and on the Organic Regional Data Summary Form.

13.5 Are there any transcription/calculation errors in the reporting of average relative response factors (RRF) or %difference (%D) between initial and continuing RRFs? (Check at least two values, but if errors are found, check more.) ___ ☒ ___

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YES NO N/A

performance exhibits a major abrupt drop-off, flag all associated non-detects as unusable (R) and positive hits estimated (J).

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [X] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

NOTE: Contractual requirements state that if any internal standard fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

NOTE: See Notes in section 3.4, page 24 for a description of sample data the laboratory must submit.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for BNA analysis? [ ] [X] ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

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YES NO N/A

PART C: PESTICIDE/PCB ANALYSIS

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records or SDG Narrative indicate any problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data? ___ [ ] ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be qualified as estimated "J". If a soil sample, other than TCLP, contains more than 90% water, all data should be qualified as unusable "R".

ACTION: If samples were not iced, or if the ice was melted upon arrival at the laboratory, and the temperature of the cooler was elevated > 10^0 C, flag all positive results "J" and all non-detects "UJ".

ACTION: Check aqueous extraction log for sample pH, if adjustment was needed, it should have been noted in the SDG Narrative. If more information is needed, contact the lab.

2.0 Holding Times

2.1 Have any PEST/PCB technical holding times, determined from date of collection to date of extraction, been exceeded? ___ [ ] ___

NOTE: Technical Holding Times: Water and soil samples for PEST/PCB analysis must be extracted within 7 days of the date of collection. Extracts must be analyzed within 40 days of the date extraction.

ACTION: If technical holding times are exceeded, flag all positive results as estimated "J" and sample quantitation limits "UJ" and document in the narrative that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or

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Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 3/90

H950

(SOP Revision XI)

PREPARED BY: _____ DATE: _____
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: _____
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE:
Robert Runyon, Chief
Monitoring Management Branch

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1.0 Scope

1.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 3/90 .

2.0 Responsibilities - Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1. For a total review:

2.1.1 Data Assessment - "Total Review-Inorganics" Checklist Appendix (A.1). The reviewer must answer every question on the checklist.

2.1.2 Data Assessment - Data Assessment Narrative (Appendix A.2) The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

2.1.3 Contract Non-Compliance - SMO Report (Appendix A.3) This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Validation Task Monitor, or Technical Project Officer (TPO). Forward 5 copies: one each for internal files, appropriate Regional TPO, Sample Management Office (SMO) and last two addresses of Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract violations should be appended to the end of the Data Assessment Narrative (Sec. A.2.2).

2.1.4 CLP Data Assessment Summary Forms

2.1.4.1 Appendix A.5
Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.

2.1.4.2 Appendix A.6
Data reviewer is also required to fill out Inorganic Regional Data Assessment form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

2.1.5 **Data Review Log**: It is recommended that each data reviewer should maintain a log of the reviews completed to include: a. date of start of case review

b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

2.1.6 **Telephone Record Log** - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

2.1.7 Forwarded Paperwork

2.1.7.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:
a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Record of Communication (copy)
e. CLP Reanalysis Request/Approval Record (original + 3 copies)
f. Appendix A.6 (original).

2.1.7.2 Forward 2 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.6) and Telephone Record Log , if any,: one each for appropriate Regional TPO, and the other one to EPA EMSL office in Las Vegas. The addresses of TPOs and EPA office in Las Vegas are given in Appendix A-4.

2.1.8 **Filed Paperwork** - Upon completion of review, the following are to be filed within MMB files:
a. Two copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.6.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Reanalysis Request/Approval Record (copy)

3.0 **Data Completeness**
Each data package is checked by a Regional Sample Control Coordinator (RSSC) for completeness. A data package is assumed to be complete when all the deliverables required under the contract are present. If a data package is incomplete,the RSSC would call the laboratory for missing document(s). If the laboratory does not Respond within a week, SMO and MMB coordinator of Region II will be notified.

4.0 **Rejection of Data** - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

5.0 **Acceptance Criteria** - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines of October 1, 1989.

6.0 **SMO Contract Compliance Screening (CCS)** - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

7.0 **Request for Reanalysis** - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative.If holding times and sample storage times have not been exceeded, TPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

8.0 **Record of Communication** - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

9.0 **Rounding off numbers** - The data reviewer will follow the standard practice.

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Title: Evaluation of Metals Data for the Contract Laboratory Program Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

	YES	NO	N/A
A.1.1 Contract Compliance Screening Report (CCS) - Present?	[ ]		X
ACTION: If no, contact RSCC.			
A.1.2 Record of Communication (from RSCC) - Present?	[ ]		X
ACTION: If no, request from RSCC.			
A.1.3 Trip Report - Present and complete?	[ ]		X
ACTION: If no, contact RSCC for trip report.			
A.1.4 Sample Traffic Report - Present?	[X]		
Legible?	[X]		
ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5 Cover Page - Present?	[X]		
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[X]		
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on Record of Communication?	[ ]		X
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	[X]		
(b) Form I's?	[X]		
ACTION: If no for any of the above, contact RSCC for clarification.			

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A.1.6	Form I to IX	Yes	No	N/A
A.1.6.1	Are all the Form I through Form IX labeled with:			
	Laboratory name?	[X]		
	Case/SAS number?	[ ]	X	
	EPA sample No.?	[ ]	X	
	SDG No.?	[X]		
	Contract No.?	[ ]	X	
	Correct units?	[X]		
	Matrix?	[X]		

ACTION: If no for any of the above, note under Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.6.2	Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:			
	(NOTE: Check all forms against raw data.)			
	(a) all analytes analyzed by ICP?	[X]		
	(b) all analytes analyzed by GFAA?	[ ]		X
	(c) all analytes analyzed by AA Flame?	[ ]		X
	(d) Mercury?	[X]		
	(e) Cyanide?	[ ]		X

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

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Title: Evaluation of Metals Data for the Contract Laboratory Program Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

		YES	NO	N/A
A.1.7	**Raw Data**			
A.1.7.1	Digestion Log* for flame AA/ICP (Form XIII) present?	[X]	___	___
	Digestion Log for furnace AA Form XIII present?	[___]	___	X
	Distillation Log for mercury Form XIII present?	[X]	___	___
	Distillation Log for cyanides Form XIII present?	[___]	___	X
	Are pH values (pH<2 for all metals, pH>12 for cyanide) present?	[___]	___	X
	*Weights, dilutions and volumes used to obtain values.			
	Percent solids calculation present for soils/sediments?	[___]	X	___
	Are preparation dates present on sample preparation logs/bench sheets?	[X]	___	___
A.1.7.2	Measurement read out record present? ICP	[X]	___	___
	Flame AA	[___]	___	X
	Furnace AA	[___]	___	X
	Mercury	[X]	___	___
	Cyanides	[___]	___	X
A.1.7.3	Are all raw data to support all sample analyses and QC operations present?	[X]	___	___
	Legible?	[X]	___	___
	Properly Labeled?	[X]	___	___

ACTION: If no for any of the above questions in sections A.1.7.1 through A.1.7.3, write Telephone Record Log and contact laboratory for resubmittals.

		YES	NO	N/A
A.1.8	**Holding Times** - (aqueous and soil samples)			
	(Examine sample traffic reports and digestion/distillation logs.)			
	Mercury analysis (28 days). . . . . exceeded?	___	[X]	___
	Cyanide distillation (14 days). . . . . exceeded?	___	[___]	X
	Other Metals analysis (6 months). . . . exceeded?	___	[X]	___
	NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.			
	ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.			
A.1.8.2	Is pH of aqueous samples for: Metals Analysis >2?	___	[___]	X
	Cyanides Analysis <12?	___	[___]	X
	Action: If yes, flag the associated metals and cyanides data as estimated.			
A.1.9	**Form I (Final Data)**			
A.1.9.1	Are all Form I's present and complete?	[X]	___	___
	ACTION: If no, prepare telephone record log and contact laboratory for submittal.			
A.1.9.2	Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[X]	___	___
	Are soil sample results for each parameter corrected for percent solids?	[X]	___	___
	Are all "less than IDL" values properly coded with "U"?	[X]	___	___

H950

		YES	NO	N/A
	Are the correct concentration qualifiers used with final data?	[X]	___	___
	ACTION: If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data.			
A.1.9.3	Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	[X]	___	___
	Was a brief physical description of samples given on Form I's?	[___]	X	___
	Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV?	___	[X]	___
	ACTION: If no for any of the above, note under Contract-Problem/Non-Compliance of the"Data Assessment Narrative".			
A.1.10	**Calibration**			
A.1.10.1	Is record of at least 2 point calibration present for ICP analysis?	[X]	___	___
	Is record of 5 point calibration present for Hg analysis?	[X]	___	___
	Is record of 4 point calibration present for:			
	Flame AA?	[___]	___	X
	Furnace AA?	[___]	___	X
	Cyanides?	[___]	___	X
	Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses?	[___]	___	X

ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

		YES	NO	N/A
A.1.10.2	Is correlation coefficient less than 0.995 for:			
	Mercury Analysis?	___	[X]	___
	Cyanide Analysis?	___	[___]	X
	Atomic Absorption Analysis?	___	[___]	X

ACTION: If yes, flag the associated data as estimated.

NOTE: The data validator shall calculate the correlation coefficient using concentrations of the standards and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

A.1.10.3	In the instance where less than 4 standards are measured in absorbance (or peak area, peak height,etc.) mode, are the remaining standards analyzed in concentration mode immediately after calibration within ±10% of the true values?	[X]	___	___

ACTION: If no, flag the associated data as estimated if standards are not within ±10% of true values. Do not flag the data as estimated in linear range indicated by good recovery of standard(s).

A.1.11 **Form II A (Initial and Continuing Calibration Verification)-**

A.1.11.1	Present and complete for every metal and cyanide?	[X]	___	___
	Present and complete for AA and ICP when both are used for the same analyte?	[___]	___	X

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.11.2	Circle on each Form IIA all percent recoveries that are outside the contract windows. Are all calibration standards (initial and continuing) within control limits:			
	Metals- 90-110%R?	[X]	___	___
	Hg - 80-120%R?	[X]	___	___
	Cyanides- 85-115%R?	[___]	___	X

H550

	YES	NO	N/A
ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ) if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits.			
A.1.11.3 Was continuing calibration performed every 10 samples or every 2 hours?	[X]	___	___
Was ICV for cyanides distilled?	[___]	___	X

ACTION: If no for any of the above, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.12 Form II B (CRDL Standards for AA and ICP) -

A.1.12.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?	[___]	___	X
Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[___]	___	X
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	[___]	___	X

ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are:
AA Analysis - **True Value ± CRDL
ICP Analysis - **True Value ± 2CRDL
CN Analysis - **True Value ± 0.5 x True Value.

301804

**True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL. Compute the concentration of the missing mid-range standard from the calibration range.

		YES	NO	N/A
A.1.12.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?	[___]	___	X
	ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".			
A.1.12.3	Circle on each Form IIB all the percent recoveries that are outside the acceptance windows.			
	Are CRA and CRI standards within control limits:			
	Metals 80 - 120%R?	[___]	___	X
	Is mid-range standard within control limits:			
	Cyanide 80 - 120%R?	[___]	___	X
	ACTION: Flag as estimated all sample results within the affected range if the recovery of the standard is between 50-79%; flag only positive data within the affected range if the recovery is between 121-150%; reject all data within the affected range if the recovery is less than 50%; reject only positive data within the affected range if the recovery is greater than 150%. Qualify 50% of the samples on either side of CRI standard outside the control limits.			
	Note: Flag or reject the final results only when sample raw data are within the affected ranges and the CRDL standards are outside the acceptance windows.			
A.1.13	**Form III (Initial and Continuing Calibration Blanks)**			
A.1.13.1	Present and complete?	[X]	___	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	X
	Was an initial calibration blank analyzed?	[X]	___	___
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	[X]	___	___

H956

		YES	NO	N/A
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract-Problems/ Non-Compliance section of the "Data Assessment Narrative".			
A.1.13.2	Circle on each Form III all calibration blank values that are above CRDL (or 2 x IDL when IDL > CRDL).			
	Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	[X]	___	___
	Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[X]	___	___
	ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is less than or equal to calibration blank value analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank outside the control limits.			
A.1.14	FORM III (Preparation Blank) - (Note: The preparation blank for mercury is the same as the calibration blank.)			
A.1.14.1	Was one prep. blank analyzed for:			
	each Sample Delivery Group (SDG)?	[X]	___	___
	each batch of digested samples?	[X]	___	___
	each matrix type?	[X]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	X
	ACTION: If no for any of the above, flag as estimated (J) all the associated positive data <10 x IDLs for which prep. blank was not analyzed.			
	NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			

301806

		YES	NO	N/A
A.1.14.2	Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?	___	[X]	___
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep.blank?	___	[___]	X
	ACTION: If yes, reject (red-line) all associated data greater than CRDL concentration but less than ten times the prep. blank value.			
A.1.14.3	Is concentration of prep. blank value (Form III) less than two times IDL, when IDL is greater than CRDL?	[X]	___	___
	ACTION: If no, reject (red-line) all positive sample results when sample raw data are less than 10 times the prep. blank value.			
A.1.14.4	Is concentration of prep. blank below the negative CRDL?	___	[X]	___
	ACTION: If yes, reject (red-line) all associated sample results less than 10xCRDL.			
A.1.15	Form IV (ICP Interference Check Sample)			
A.1.15.1	Present and complete?	[X]	___	___
	(**NOTE**: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[X]	___	___
	ACTION: If no, flag as estimated (J) all the samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
A.1.15.2	Circle all values on each Form IV that are more than ± 20% of true or established mean value.			
	Are all Interference Check Sample results inside the control limits (± 20%)?	[X]	___	___
	If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?	[___]	___	X

		YES	NO	N/A
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			
A.1.16	**Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)** - (**Note**: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
A.1.16.1	Present and complete for: each SDG?	[X]	___	___
	each matrix type?	[X]	___	___
	each conc. range (i.e. low, med., high)?	[X]	___	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	X
	ACTION: If no for any of the above, flag as estimated (J) all the positive data less than four times the spiking levels specified in SOW for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.16.2	Was field blank used for spiked sample?	___	[X]	___
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
A.1.16.3	Circle on each Form VA all spike recoveries that are outside control limits (75% to 125%).			
	Are all recoveries within control limits?	[X]	___	___
	If no, is sample concentration greater than or equal to four times spike concentration?	[___]	___	X

	YES	NO	N/A
ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	[___]	___	✓
ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".			

A.1.16.4 **Aqueous**

Are any spike recoveries:

(a) less than 30%?	___	[___]	✓
(b) between 30-74%?	___	[___]	✓
(c) between 126-150%?	___	[___]	✓
(d) greater than 150%?	___	[___]	✓

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".

A.1.16.5 **Soil/Sediment**

Are any spike recoveries:

(a) less than 10%?	___	[✓]	___
(b) between 10-74%?	___	[✓]	___
(c) between 126-200%?	___	[✓]	___
(d) greater than 200%?	___	[✓]	___

		YES	NO	N/A
	ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".			
A.1.17	**Form VI (Lab Duplicates)**			
A.1.17.1	Present and complete for: each SDG?	[X]	___	___
	each matrix type?	[X]	___	___
	each concentration range (i.e. low, med., high)?	[X]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	N
	ACTION: If no for any the above, flag as estimated (J) all the data ≥CRDL* for which duplicate sample was not analyzed.			
	Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.			
	2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on wet weight basis and calculate RPD or Difference for each analyte.			
A.1.17.2	Was field blank used for duplicate analysis?	___	[N]	___
	ACTION: If yes, flag all data ≥CRDL* as estimated (J) for which field blank was used as duplicate.			
A.1.17.3	Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?	[X]	___	___
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[___]	___	N
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative".			

* Substitute IDL for CRDL when IDL > CRDL.

	YES	NO	N/A

NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL.
2. If the result of lab duplicate analyzed by GFAA is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria to metals analyzed by GFAA.

A.1.17.4 **Aqueous**

Circle on each Form VI all values that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	X
Is any difference** between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	X

ACTION: If yes, flag the associated data as estimated.

A.1.17.5 **Soil/Sediment**

Circle on each Form VI all values that are:

RPD > 100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) : > 100%?	___	[X]	___
Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) : > 2x*CRDL?	___	[X]	___

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

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		YES	NO	N/A
	ACTION: If yes, flag the associated data as estimated.			
A.1.18	**Field Duplicates**			
A.1.18.1	Were field duplicates analyzed?	[___]	X	___
	ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/l on wet weight basis and calculate RPDs or Difference for each analyte.			
	NOTE: 1. Do not calculate RPD when both values are less than IDL. 2. Flag all associated data only for field duplicate pair.			
A.1.18.2	Aqueous			
	Circle all values on self prepared Form VI for field duplicates that are: RPD > 50%, or Difference > CRDL*			
	Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	X
	Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	X
	ACTION: If yes, flag the associated data as estimated.			

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* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
A.1.18.3	Soil/Sediment			
	Circle all values on self prepared Form VI for field duplicates that are:			
	RPD >100%, or			
	Difference > 2 x CRDL*			
	Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) : >100%?	___	[___]	X
	Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL): >2x *CRDL?	___	[___]	X
	ACTION: If yes, flag the associated data as estimated.			
A.1.19	Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)			
A.1.19.1	Was one LCS prepared and analyzed for:			
	each SDG?	[X]	___	___
	each batch samples digested/distilled?	[X]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	X
	ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all the data for which LCS was not analyzed.			
	NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.			

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

H950

		YES	NO	N/A
A.1.19.2	**Aqueous LCS**			
	Circle on each Form VII the LCS percent recoveries outside control limits (80 - 120%) except for aqueous Ag and Sb.			
	Is any LCS recovery: less than 50%?	___	[___]	✓
	between 50% and 79%?	___	[___]	✓
	between 121% and 150%?	___	[___]	✓
	greater than 150%?	___	[___]	✓

ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.

A.1.19.3 **Solid LCS**

NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J).

2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.

Is LCS "Found" value higher than the control limits on Form VII?	___	[✓]	___

ACTION: If yes, qualify all associated positive data as estimated.

Is LCS "Found" value lower than the Control limits on Form VII?	___	[✓]	___

ACTION: If yes, qualify all associated data as estimated.

		YES	NO	N/A
A.1.20	**Form IX (ICP Serial Dilution)** -			
	NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.			
A.1.20.1	Was Serial Dilution analysis performed for:			
	each SDG?	[X]	___	___
	each matrix type?	[X]	___	___
	each concentration range (i.e. low, med.)?	[X]	___	___
	ACTION: If no for any of the above, flag as estimated all the positive data ≥ 10xIDLs or ≥ CRDL when 10xIDL ≤ CRDL for which Serial Dilution Analysis was not performed.			
A.1.20.2	Was field blank(s) used for Serial Dilution Analysis?	___	[X]	___
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J). If 10xIDL ≤ CRDL, flag all data ≥ CRDL.			
A.1.20.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.	[___]	___	X
	ACTION: If no, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.20.4	Circle on each Form IX all percent difference that are outside the control limits for initial concentrations equal to or greater than 10 x IDLs only.			
	Are any % difference values:			
	> 10%?	X	[___]	___
	≥ 100%?	X	[___]	___

		YES	NO	N/A
	ACTION: Flag as estimated (J) all the associated sample data ≥ 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which percent difference is greater than 10% but less than 100%. Reject (red-line) all the associated sample results equal to or greater than 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which PD is greater than or equal to 100%.			
	Note: Flag or reject on Form I's only the sample results whose associated raw data are ≥ 10xIDL (or ≥ CRDL when 10xIDL≤ CRDL)			
A.1.21	**Furnace Atomic Absorbtion (AA) QC Analysis**			
A.1.21.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	[___]	___	X
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
A.1.21.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	[___]	___	X
	Was a dilution analyzed for sample with analytical spike recovery less than 40%?	[___]	___	X
	ACTION: If no for any of the above, flag all the associated data as estimated.			
A.1.21.3	Is *analytical spike recovery outside the control limits (85-115%) for any sample?	___	[___]	X
	ACTION: If yes, flag as estimated the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject the associated sample results if the recovery is less than 10%; reject positive sample results if the recovery is greater than 200%.			

* Analytical spike is not required on the pre-digestion spiked sample.

		YES	NO	N/A
	NOTE: Reject or flag the data only when the affected sample(s) was not subsequently analyzed by Method of Standard Addition.			
A.1.22	**Form VIII (Method of Standard Addition Results)**			
A.1.22.1	Present?	[___]	X	___
	If no, is any Form I result coded with "S" or a "+"?	___	[___]	X
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			
A.1.22.2	Is coefficient of correlation for MSA less than 0.990 for any sample?	___	[___]	X
	ACTION: If yes, reject (red-line) the affected data.			
A.1.22.3	Was *MSA required for any sample but not performed?	___	[X]	___
	Is coefficient of correlation for MSA less than 0.995?	___	[___]	X
	Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?	___	[___]	X
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
A.1.22.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23?	[___]	___	X
	ACTION: If no, note exception under Contract Problem/ Non-Compliance section of the "Data Assessment Narrative", and prepare a separate list.			

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* MSA is not required on LCS and prep. blank.

		YES	NO	N/A
A.1.23	Dissolved/Total or Inorganic/Total Analytes -			
A.1.23.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s).	___	[✓]	___
	Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[✓]	___
	NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration. 2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents. 3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.			
A.1.23.2	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	✓
A.1.23.3	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[___]	✓
	ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.			
A.1.24	Form I (Field Blank) -			
	(Note: Designate "Field Blank" as such on Form I.)			
A.1.24.1	Circle all field blank values on Form I that are greater than CRDL, (or 2 x IDL when IDL > CRDL).			
	Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[___]	___	✓

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	YES	NO	N/A
If no, was field blank value already rejected due to other QC criteria?	[___]	___	✓

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value. Reject on Form I's the soil sample results that when converted to ug/L on wet basis are less than or equal to five times the field blank value in ug/L.

A.1.25 **Form X, XI, XII (Verification of Instrumental Parameters).**

A.1.25.1 Is verification report present for:

Instrument Detection Limits (quarterly)?	[___]	___	✓
ICP Interelement Correction Factors (annually)?	[___]	___	✓
ICP Linear Ranges (quarterly)?	[___]	___	✓

ACTION: If no, contact TPO of the lab.

A.1.25.2 **Form X (Instrument Detection Limits)** - (Note: IDL is not required for Cyanide.)

A.1.25.2.1 Are IDLs present for: all the analytes?	[___]	___	✓
all the instruments used?	[___]	___	✓
For both AA and ICP when both are used for the same analyte?	[___]	___	✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.25.2.2 Is IDL greater than CRDL for any analyte?	___	[___]	✓
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.	[___]	___	✓

	YES	NO	N/A
Action : If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			
A.1.25.3 **Form XI (Linear Ranges)**			
A.1.25.3.1 Was any sample result higher than high linear range of ICP.	___	[___]	X
Was any sample result higher than the highest calibration standard for non-ICP parameters?	___	[___]	X
If yes for any of the above, was the sample diluted to obtain the result on Form I?	[___]	___	X
ACTION: If no, flag the result reported on Form I as estimated(J).			
A.1.26 **Percent Solids of Sediments**			
A.1.26.1 Are percent solids in sediment(s): < 50%?	___	[X]	___
< 10%?	___	[X]	___

ACTION: If yes, qualify as estimated all the results of a sample that has per cent solids between 10%-50% (i.e. moisture content between 50%-90%). Reject all the results of a sample that has per cent solids less than 10% (i.e. moisture content greater than 90%).

NOTE: Reject or flag(J) only the sample results that were not previously rejected or flaged due to other QC criteria.

Case# _____ Site _____ Matrix: Soil _____

SDG# _____ Lab _____ Water_____

Contractor _____ Reviewer _____ Other_____

A.2.1 Validation Flags- The following flags have been applied in red by the data validator and must be considered by the data user.

J- This flag indicates the result qualified as **estimated**

Red- Line- A red-line drawn through a sample result indicates **unusable** value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

Fully Usable Data- The results that do not carry "J" or "red-line" are fully usable.

Contractual Qualifiers- The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW ILM01.0.

A.2.2 The data assessment is given below and on the attached sheets.

_____

_____

_____

_____

_____

_____

_____

_____

A.2.2 (continuation)

A.2.2 (continuation)

A.2.3 Contract-Problem/Non-Compliance

MMB/ESAT Rviewer: _____ Date: _____
Signature

Contractor Reviewer: _____ Date: _____
Signature

Verified by: _____ Date: _____

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste
Site Contract Laboratory Data Package

CASE NO._____

The hardcopied (laboratory name)_____
Inorganic data package received at Region II has been reviewed and the quality assurance and performance data summarized. The data reviewed included:
SMO Sample No.:_____

Conc. & Matrix:_____

Contract No.(_____) requires that specific analytical work be done and that associated reports be provided by the contractor to the Regions, EMSL-LV, and SMO. The general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

Items of non-compliance with the above contract are described below.

Comments:_____

_____

_____

_____

_____

_____

_____

_____

_____

_____ Reviewer's Initial

_____ Date

H950

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.6: CLP Data Assessment Checklist

Inorganic Analysis

Date: Jan. 1992
Number: HW-2
Revision: 11

INORGANIC REGIONAL DATA ASSESSMENT

Region_____

CASE NO._____

SITE_____

LABORATORY_____

NO. OF SAMPLES/ MATRIX_____

SDG#_____

REVIEWER (IF NOT ESD)_____

SOW#_____

REVIEWER'S NAME_____

DPO: ACTION_____ FYI_____

COMPLETION DATE_____

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	CYANIDE
1.	HOLDING TIMES				
2.	CALIBRATIONS				
3.	BLANKS				
4.	ICS				
5.	LCS				
6.	DUPLICATE ANALYSIS				
7.	MATRIX SPIKE				
8.	MSA				
9.	SERIAL DILUTION				
10.	SAMPLE VERIFICATION				
11.	OTHER QC				
12.	OVERALL ASSESSMENT				

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:_____

AREAS OF CONCERN:_____

NOTABLE PERFORMANCE:_____

YES NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: II-CERCLA-02-0001 LABORATORY: Envirotech Research, Inc.

SITE NAME: Klockner + Klockner SDG Number(s): I051

1.0 Chain of Custody and Sampling Trip Reports

1.1 Are the Traffic Reports/Chain-of-Custody Records present for all samples? [X] ___ ___

ACTION: If no, contact RSCC or the lab to obtain replacement of missing or illegible copies.

1.2 Is the Sampling Trip Report present for all samples and all fractions? [X] ___ ___

ACTION: If no, contact either RSCC or ask the prime contractor to provide this information.

2.0 Data Completeness and Deliverables

2.1 Have any missing deliverables been received and added to the data package? ___ [X]

NOTE: The lab is required to submit data for only two analyses, for each fraction. (i.e., the original sample and one dilution, or the most concentrated dilution analyzed and one further dilution.)

ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If lab cannot provide them, note the effect on the review of the package in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary form.

2.2 Was CLASS CCS checklist included with package? [ ] [X] ___

2.3 Are there any discrepancies between the Traffic Reports/Chain-of-Custody Records, Sampling Report and Sample Tags? ___ [X] ___

301830

	YES	NO	N/A
ACTION: If yes, contact the lab to obtain an explanation or resubmittal of any missing deliverables.			
3.0 Cover Letter SDG Narrative			
3.1 Is the Narrative or Cover Letter Present?	X		
3.2 Are case number, SDG number and contract number contained in the SDG Narrative or cover letter (see SOW, Exhibit B, section 2.6.1)?	X		
3.3 Does the narrative contain the following information:			
VOA: description of trap and columns used during sample analyses?	X		
BNA: description of columns used during sample analyses?	[ ]		X
Pest: description of columns used during sample analyses?	[ ]		X
NOTE: As per section 6.23.3.1 SOW/p. D-11/Pest, Packed columns are not permitted.			
3.4 Does the narrative, VOA and BNA sections, contain a list of all TICs identified as alkanes and their estimated concentrations?	[ ]	X	
3.5 Does the narrative contain a record of all cooler temperatures? If the temperature of a cooler was exceeded, > 10° C, the lab must list by fraction and sample number, all affected samples.	[ ]	X	
3.6 Does the narrative contain a list of the pH values determined for each water sample submitted for volatile analysis (SOW Exhibit B, section 2.6.1.2)?	[ ]	X	
3.7 Does the Case Narrative contain the statement, "verbatim", as required in Section B of the SOW?	[ ]	X	
ACTION: If "No", to any question in this section, contact the lab to obtain all necessary resubmittals. If information is not available,			

301831

document in the Data Assessment under Contract Problems/Non-Compliance section.

301832

	YES	NO	N/A
4.0 Data Validation Checklist			
4.1 Check the package for the following discrepancies:			
a. Is the package paginated in ascending order starting from the SDG narrative?	[X]	___	___
b. Are all forms and copies legible?	[X]	___	___
c. Is each fraction assembled in the order set forth in the SOW?	[X]	___	___
d. Is a Sample Data Summary Package submitted immediately preceding the Sample Data Package?	[ ]	X	___
The following checklist is divided into three parts. Part A is for any VOA analyses, Part B is for BNAs and Part C is Pesticide/PCBs.			
Does this package contain:			
VOA Data?	X	___	
BNA Data?	___	X	
Pesticide/PCB data?	___	X	

ACTION: Complete corresponding parts of checklist.

301833

YES NO N/A

PART A: VOA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records, Sampling Report or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? ___ X ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated (J). If a soil sample other than TCLP contains more than 90% water, all data should be qualified as unusable (R).

ACTION: If samples were not iced or the ice was melted upon arrival at the laboratory and the cooler temperature was elevated (> 10° C), then flag all positive results with a "J" and all non-detects "UJ".

ACTION: If both VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

ACTION: The smallest soil size permitted is 0.5g. If any soil sample is smaller than 0.5g, document in the Data Assessment under Contract Problems/Non-Compliance.

2.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? X ___

Technical Holding Times: If unpreserved, aqueous samples, maintained at 4° C for aromatic hydrocarbons analysis must be analyzed within 7 days of collection. If preserved with HCl (pH < 2) and stored at 4° C, then aqueous samples must be analyzed within 14 days of collection. If uncertain about preservation, contact sampler to determine whether or

SW-846 Holding time of 14 days exceeded by [illegible] based on time of sample collection ok based on days [illegible]

YES NO N/A

not samples were preserved. The holding time for soils is 10 days from date of collection.

14 day technical holding time exceeded by 1 hour 47 minutes based on time of sample collection

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample ID	Sample Matrix	Was Sample Preserved?	Date Sampled	Date Lab Received	Date Analyzed
89298	Soil	MeOH	10-8-98(1320)	10-9-98	10-22-98(1507)

[illegible] based on days from sample collection

ACTION: If technical holding times are exceeded, flag all positive results as estimated "J" and sample quantitation limits as estimated "UJ", and document in the Data Assessment that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable "R". If holding times are exceeded by more than 28 days, all non detect data are unusable "R".

NOTE: Contractual Holding Times: Analysis of water and soil/sediment samples must be completed within 10 days of Validated Time of Sample Receipt (VTSR). This requirement does not apply to Performance Evaluation (PE) samples.

ACTION: If contractual holding times are exceeded,

301835

J 054

YES NO N/A

document in the Data Assessment and on the Organic Regional Data Assessment Summary form.

NOTE: The data reviewer must note in the Data Assessment whether or not **technical and contractual** holding times were met.

301836

	YES	NO	N/A
3.0 System Monitoring Compound (SMC) Recovery (Form II)			
3.1 Are the VOA SMC Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water?	[ ]	X	
b. Low Soil?	[ ]	X	
c. Med Soil? High	[X]		
3.2 Are all the VOA samples listed on the appropriate System Monitoring Compound Recovery Summary for each of the following matrices:			
a. Low Water?	[ ]		X
b. Low Soil?	[ ]		X
c. Med Soil?	[X]		
ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If missing deliverables are unavailable, document the effect in the Data Assessment.			
3.3 Were outliers marked correctly with an asterisk?	[X]		
ACTION: Circle all outliers with red pencil.			
3.4 Was one or more VOA system monitoring compound recovery outside of contract specifications for any sample or method blank?		[X]	
If yes, were samples re-analyzed?	[ ]		X
Were method blanks re-analyzed?	[ ]		X

ACTION: If recoveries are ≥ 10%, but 1 or more compounds fail to meet SOW specifications:

1. All positive results are qualified as estimated "J".

2. Flag all non-detects as estimated detection limits "UJ" where recovery is less than the lower acceptance limit.

301837

YES NO N/A

3. If SMC recoveries are above allowable levels, do not qualify non-detects.

If any system monitoring compound recovery is < 10%:

1. Flag all positive results as estimated "J".

2. Flag all non-detects as unusable "R".

Professional judgement should be used to qualify data that only have method blank SMC recoveries out of specification in both original and re-analyses. Check the internal standard areas.

NOTE: Contractual requirements state that if any SMC fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

NOTE: The laboratory must submit the following data:

1. If SMC recoveries and internal standard responses meet the acceptance criteria in the re-analyzed sample, then the laboratory must submit only the re-analysis.

2. If an SMC recovery and/or internal standard response fails to meet the acceptance criteria upon re-analysis, then submit data from both analyses.

(Refer to section 11.4.3.2, page D-46/VOA of the SOW for more information.)

3.5 Are there any transcription/calculation errors between raw data and Form II? — N/A —

ACTION: If large errors exist, contact the lab to obtain an explanation or resubmittal of corrected deliverables. Make any necessary corrections and note the effect in the Data Assessment.

301838

	YES	NO	N/A
4.0 Matrix Spikes (Form III)			
4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present?	X		
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water?		X	
b. Low Soil?		X	
c. Med Soil? High	X		

ACTION: If any matrix spike data are missing, take the action specified in section 3.2 above.

4.3 How many VOA spike recoveries are outside QC limits?

Water	Soils
NA out of 10	All out of 10

4.4 How many RPDs for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
NA out of 5	All out of 5

P32 High dilution on sample / matrix spike amount diluted below MDL.

ACTION: No action is taken based upon MS/MSD data alone. However, using informed professional judgement, the MS/MSD results may be used in conjunction with other QC criteria to determine the need for qualification of the data.

ACTION: Circle all outliers with red pencil.

5.0 Blanks (Form IV)

	YES	NO	N/A
5.1 Is the Method Blank Summary (Form IV) present?	X		

5.2 Frequency of Analysis: for the analysis of VOA TCL compounds, has a reagent/method blank been

		YES	NO	N/A
	analyzed for each SDG or every 20 samples of similar matrix (low water, low soil or medium soil), whichever is more frequent?	[X]		
5.3	Has a VOA method blank been analyzed at least once every twelve hours for each concentration level and GC/MS system used?	[X]		
5.4	Was a VOA instrument blank analyzed after each sample/dilution which contained a target compound that exceeded the initial calibration range?	[ ]		X
5.5	Was a VOA storage blank analyzed at the end of all samples for each SDG in a case?	[ ]	X	

ACTION: If any method/instrument blank data are missing, contact the lab to obtain any missing deliverables. If method blank data are not available, reject "R" all associated positive data. However, using professional judgement, the data reviewer may substitute field blank or trip blank data for missing method blank data.

If any instrument blank analyzed after a sample with high concentration is missing, contact the lab to obtain any missing deliverables. If the instrument blank was not analyzed or not available, inspect the chromatogram of the sample analyzed immediately after this analysis for possible carryover. Use professional judgement to determine if any contamination occurred and qualify analyte(s) accordingly.

If storage blank data is missing, contact the lab to obtain any missing deliverables. If unavailable, note in the Contract Problems/Non-Compliance section of the Data Assessment.

5.6 The validator should verify that the correct identification scheme for the EPA Blank samples were used. See page B-33, section 3.3.7.3 of the SOW for further information.

	Was the correct identification scheme used for all VOA blanks?	[ ]	X	

301840

YES NO N/A

ACTION: Contact the lab to obtain missing deliverables, or make the required corrections on the forms. Document in the Data Assessment under Contract Problems/Non-compliance if corrections were made by the validator.

5.7 Chromatography: review the blank raw data-chromatograms (RICs), quant. reports or data system printouts and spectra. Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs? N/A ___ ___

ACTION: Use professional judgement to determine the effect on the data.

5.8 Are all detected hits for target compounds in method, instrument and storage blanks less than the CRQL for that analyte? N/A ___ ___

Exception: Acetone and 2-butanone must be less than 5 times the CRQL, and methylene chloride must be less than 2.5 times its CRQL.

ACTION: If no, an explanation and laboratory's corrective actions must be addressed in the case narrative. If the narrative contains no explanation, then make a note in the Contract Problems/Non-Compliance section of the Data Assessment.

6.0 Contamination

NOTE: "Water blanks", "drill blanks", and "distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

6.1 Do any method/instrument/reagent/storage blanks have positive results (TCL and/or TIC) for VOAs? ___ X ___

NOTE: When applied as directed in the table below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for %moisture when necessary.

301841

YES NO N/A

NOTE: A contaminated instrument blank is not allowable under this SOW. See page D-48/VOA, section 12.1.2.4 for additional information. Document in the Data Assessment under Contract Problems/Non-Compliance if contaminated instrument blank was submitted.

6.2 Do any field/trip/rinse blanks have positive VOA results (TCL and/or TIC)? [ ] ___ X

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped and are not required for non-aqueous matrices. Blanks may not be qualified because of contamination in another blank. Field Blanks & Trip Blanks must be qualified for system monitoring compound, instrument performance criteria, spectral or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable "R".

301842

YES NO N/A

For:	Flag sample result with a "U" when:	Report CRQL & qualify "U" when:	No qualification is needed when:
Methylene Chloride Acetone Toluene 2-Butanone	Sample conc. is > CRQL, but ≤ 10× blank value.	Sample conc. is < CRQL and ≤ 10× blank value.	Sample conc. is > CRQL and > 10× blank value.
Other Conta-minants	Sample conc. is > CRQL, but ≤ 5× blank value.	Sample conc. is < CRQL and ≤ 5× blank value.	Sample conc. is > CRQL and > 5× blank value.

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration criteria.

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R".

6.3 Are there field/rinse/equipment blanks associated with every sample? [ ] ___ ✓

ACTION: For low level samples, note in the Data Assessment that there is no associated field/rinse/equipment blank. For samples with high concentrations of suspected blank contaminants, use professional judgement to qualify these values and make a note in the Data Assessment.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V)

7.1 Are the GC/MS Instrument Performance Check Forms (Form V) present for Bromofluorobenzene (BFB)? [ ] ___ N

7.2 Are the enhanced bar graph spectrum and 301843

	YES	NO	N/A
mass/charge (m/z) listing for the BFB provided for each twelve hour shift?	[ ]	___	X
7.3 Has an instrument performance check been analyzed for every analytical sequence on each instrument?	[ ]	___	X

ACTION: List date, time, instrument ID, and sample numbers for which associated GC/MS tuning data are unavailable.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: Notify the lab to obtain missing data, if possible. If the lab cannot provide the missing data, reject, "R", all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundances been normalized to m/z 95 as specified in Exhibit D, page D-56/VOA?	[ ]	___	X

NOTE: All ion abundance ratios must be normalized to m/z 95, the nominal base peak, even though the ion abundance of m/z 174 may be up to 120% that of m/z 95.

ACTION: If mass assignment is in error, qualify all associated data as unusable "R".

7.5 Have the ion abundance criteria been met for each instrument used?	[ ]	___	X

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors

301844

	YES	NO	N/A
between mass lists and Form Vs? (Check at least two values, but if errors are found check more.)	___	[ ]	X
7.7 Is the number of significant figures for the reported relative abundances consistent with the number given for each ion in the ion abundance criteria column?	[ ]	___	X
ACTION: If large errors exist, take action as specified in section 3.5 above.			
7.8 Are the spectra of the mass calibration compound acceptable?	[ ]	___	X
ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.			
8.0 Target Compound List (TCL) Analytes (FORM I VOA)			
8.1 Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate?	[X]	___	___
b. Matrix spikes and matrix spike duplicates?	[ ]	X	___
c. Blanks?	[X]	___	___
8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (quant. reports) included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[X]	___	___
b. Matrix spikes and matrix spike duplicates (mass spectra not required)?	X	___	___
c. Blanks?	[X]	___	___
ACTION: If any data are missing, take action specified in 3.2 above.			

301845

	YES	NO	N/A
8.3 Are the response factors shown in the quant. report?	[X]	___	___
8.4 Is chromatographic performance acceptable with respect to:			
a. Baseline stability?	[X]	___	___
b. Resolution?	[X]	___	___
c. Peak shape?	[X]	___	___
d. Full-scale graph (attenuation)?	[X]	___	___
e. Other: _____?	[ ]	___	___

ACTION: Use professional judgement to determine the acceptability of the data.

8.5 Are the lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[ ]	___	X

ACTION: If any mass spectra are missing, take action as specified in 3.2 above. If the lab does not generate its own standard spectra, document in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary.

8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[X]	___	___
8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[ ]	___	X
8.8 Do sample and standard relative ion intensities agree within ±20%?	[ ]	___	X

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected "R", flagged "N" (presumptive evidence of the presence of the

301846

	YES	NO	N/A
compound) or changed to not detected "U" at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in 8.6, 8.7, and 8.8.			
ACTION: When sample carry-over is suspected, use professional judgement determine if instrument cross-contamination has affected positive compound identifications.			
9.0 Tentatively Identified Compounds (TIC)			
9.1 Are all Tentatively Identified Compound Forms (Form I Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier?	[ ]	___	X
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[ ]	___	X
b. Blanks?	[ ]	___	X
c. Alkanes listed for each sample?	[ ]	___	X
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "JN" qualifier to all chemically named TICs, if missing.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds? (Example: 1,2- dimethylbenzene is xylene, a VOA TCL analyte, and should not be reported as a TIC.)	___	[ ]	X
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[ ]	___	X

301847

	YES	NO	N/A
9.5 Do TIC and "best match" standard relative ion intensities agree within ±20%?	[ ]		X

ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined an incorrect identification was made, change the identification to "unknown," or to some less specific identification as appropriate. (Example: "C3 substituted benzene.")

Also, when a compound is not found in any blank, but is detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable "R". (E.g., Common Lab Contaminants: CO_2 (M/E 44), siloxanes (M/E 73) hexane, aldol condensation products, solvent preservatives, and related by-products - see the National Functional Guidelines for further guidance.)

	YES	NO	N/A
9.6 Are TICs with responses < 10% of the internal standard (as determined by inspection of the peak areas or height) reported?		[ ]	X

ACTION: If yes, cross out questionable TIC(s).

10.0 Compound Quantitation and Reported Detection Limits

	YES	NO	N/A
10.1 Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standards, quantitation ions, and RRF were used to calculate Form I results.)		X	
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	X		

ACTION: If errors are large, take action as specified in section 3.5 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample). Replace concentrations that exceeded the calibration

301848

	YES	NO	N/A
range in the original analysis by crossing out the "E" and its corresponding value on the original Form I and substituting the data from the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form Is not to be used, including any in the data summary package.			
11.0 Standards Data (GC/MS)			
11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (quant. reports) present for each initial and continuing calibration?	X		
ACTION: If any calibration standard data are missing, take action specified in 3.2 above.			
12.0 GC/MS Initial Calibration (Form VI)			
12.1 Are the Initial Calibration Forms (Form VI) present and complete at concentrations of 10, 20, 50, 100, 200ng for separate calibrations of low water/med soils (unheated purge) and low soils (heated purge)?	X		
ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.			
12.2 Were all low level soil standards, blanks and samples analyzed by heated purge?			X
ACTION: If low level soil samples were not heated during purge, qualify positive hits "J" (estimated) and non-detects "R".			
12.3 Are the % relative standard deviation (%RSD) values for VOAs ≤ 30% over the concentration range of the calibration?	X		
NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %RSD, the technical acceptance criteria are the same for all analytes.			
ACTION: Circle all outliers with red pencil.			

301849

YES NO N/A

ACTION: If %RSD is > 30.0%, qualify associated positive results for that analyte "J" (estimated) and non-detects using professional judgement. When %RSD is > 90%, flag all non-detects for that analyte "R" (unusable) and positive hits "J".

NOTE: Analytes previously qualified "U" for blank contamination are still considered as "hits" when qualifying for initial calibration criteria. ___ [X] ___

12.4 Are any average RRFs < 0.05?

ACTION: Circle all outliers with red pencil.

ACTION: If the average RRF is < 0.05, then qualify associated non-detects with an "R" and flag associated positive data as estimated "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %RSD or RRF criteria, provided the %RSD is ≤ 40% and RRF is ≥ 0.010. (See Table 5, page D-59/VOA and analytes marked with a "*" on Form VI for required analytes and contractual criteria.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %RSD or RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and the Organic Regional Data Assessment Summary.

12.5 Are there any transcription/calculation errors in the reporting of average relative response factors (RRF) or %RSD? (Check at least 2 values, but if errors are found, check more.) ___ [X] ___

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

301850

	YES	NO	N/A
13.0 GC/MS Continuing Calibration (Form VII)			
13.1 Are the Continuing Calibration Forms (Form VII) present and complete for separate calibration of low water/med soil and low soil samples?	X	[ ]	
13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?	X		

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, contact the lab to request an explanation/resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable "R".

ACTION: List below all sample(s) that were not analyzed within twelve hours of the previous continuing calibration.

	YES	NO	N/A
13.3 Do any volatile compounds have a percent difference (%D) between the initial and continuing RRF which exceeds the ±25% criteria?		X	

NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %D, the technical acceptance criteria are the same for all analytes.

ACTION: Circle all outliers with red pencil.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated. When %D is > 90%, qualify all non-detects for that analyte unusable (R) and positive results estimated (J).

301851

	YES	NO	N/A
13.4 Are any continuing calibration RRFs < 0.05?	___	[X]	___

ACTION: Circle all outliers with red pencil.

ACTION: If the RRF is < 0.05, qualify the associated non-detects as unusable "R" and the associated positive values "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %D and RRF criteria, provided that the %D is ≤ 40% and the RRF is ≥ 0.010. (See Table 5 pg. D-59/VOA or analytes marked with a "*" on Form VI for required analytes.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %D and RRF, criteria document in the Data Assessment under contract Problems/Non-Compliance and on the Organic Regional Data Assessment Summary form.

	YES	NO	N/A
13.5 Are there any transcription/calculation errors in the reporting of RRF or %D between initial and continuing RRFs? (Check at least two values, but if errors are found, check more.)	___	[X]	___

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance.

14.0 Internal Standard (Form VIII)

	YES	NO	N/A
14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits (-50% to +100%) for each continuing calibration?	[ ]	X	___
If no, was the sample re-analyzed?	[ ]	___	X

ACTION: 1. Circle all outliers with red pencil.

2. List all the outliers below.

301852

YES NO N/A

Sample #	Internal Std.	Area	Lower/Upper Limit
			/
			/
			/
			/

(Attach additional sheets if necessary, or attach copies of Form VIIIs.)

ACTION: If any sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

ACTION: 1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Do not qualify non-detects when associated IS area counts are > 100%.

3. If the IS area in the sample is below the "lower limit," < 50%, qualify all analytes associated with that IS estimated, "J". If the area counts are extremely low, < 25% of the area in the 12 hour standard, or if performance exhibits a major abrupt drop- off, flag all associated non-detects as unusable, "R", and positive hits estimated, "J".

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [ ] ___ N/A

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

NOTE: Contractual requirements state that if any internal standard fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not

301853

YES NO N/A

re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

NOTE: See Notes in section 3.4, page 7 for a description of sample data the laboratory must submit.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for VOA analysis? [ ] [X] [ ]

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

301854

YES NO N/A

PART B: BNA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody records or laboratory SDG Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [ ] ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated "J". If a soil sample, other than TCLP, contains more than 90% water, all data should be qualified as unusable "R".

ACTION: If samples were not iced or if the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 10° C), flag all positive results "J" and all non-detects "UJ".

2.0 Holding Times

2.1 Have any BNA technical holding times, determined from date of collection to date of extraction, been exceeded? ___ [ ] ___

Technical Holding Time: Continuous extraction of water samples for BNA analysis must be started within seven days of the date of collection. Soil/sediment samples must be extracted within 7 days of collection. Extracts must be analyzed within 40 days of the date of extraction.

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample Analyzed	Sample Matrix	Date Sampled	Date Lab Received	Date Extracted	Date Analyzed

301855

301856

YES NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: II - CERCLA-97-0104 LABORATORY: Environmental Research, Inc.

SITE NAME: Kodiak + Kodiak SDG Number(s): I052

1.0 Chain of Custody and Sampling Trip Reports

1.1 Are the Traffic Reports/Chain-of-Custody Records present for all samples? [X] ___ ___

ACTION: If no, contact RSCC or the lab to obtain replacement of missing or illegible copies.

1.2 Is the Sampling Trip Report present for all samples and all fractions? [X] ___ ___

ACTION: If no, contact either RSCC or ask the prime contractor to provide this information.

2.0 Data Completeness and Deliverables

2.1 Have any missing deliverables been received and added to the data package? ___ X

NOTE: The lab is required to submit data for only two analyses, for each fraction. (i.e., the original sample and one dilution, or the most concentrated dilution analyzed and one further dilution.)

ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If lab cannot provide them, note the effect on the review of the package in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary form.

2.2 Was CLASS CCS checklist included with package? [ ] X ___

2.3 Are there any discrepancies between the Traffic Reports/Chain-of-Custody Records, Sampling Report and Sample Tags? ___ [X] ___

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	YES	NO	N/A
ACTION: If yes, contact the lab to obtain an explanation or resubmittal of any missing deliverables.			
3.0 Cover Letter SDG Narrative			
3.1 Is the Narrative or Cover Letter Present?	[X]	___	___
3.2 Are case number, SDG number and contract number contained in the SDG Narrative or cover letter (see SOW, Exhibit B, section 2.6.1)?	[X]	___	___
3.3 Does the narrative contain the following information:			
VOA: description of trap and columns used during sample analyses?	[X]	___	___
BNA: description of columns used during sample analyses?	[ ]	___	X
Pest: description of columns used during sample analyses?	[ ]	___	X
NOTE: As per section 6.23.3.1 SOW/p. D-11/Pest, Packed columns are not permitted.			
3.4 Does the narrative, VOA and BNA sections, contain a list of all TICs identified as alkanes and their estimated concentrations?	[ ]	X	___
3.5 Does the narrative contain a record of all cooler temperatures? If the temperature of a cooler was exceeded, > 10° C, the lab must list by fraction and sample number, all affected samples.	[ ]	X	___
3.6 Does the narrative contain a list of the pH values determined for each water sample submitted for volatile analysis (SOW Exhibit B, section 2.6.1.2)?	[ ]	___	X
3.7 Does the Case Narrative contain the statement, "verbatim", as required in Section B of the SOW?	[ ]	X	___

ACTION: If "No", to any question in this section, contact the lab to obtain all necessary resubmittals. If information is not available,

document in the Data Assessment under Contract Problems/Non-Compliance section.

301859

	YES	NO	N/A
4.0 Data Validation Checklist			
4.1 Check the package for the following discrepancies:			
a. Is the package paginated in ascending order starting from the SDG narrative?	[X]	___	___
b. Are all forms and copies legible?	[X]	___	___
c. Is each fraction assembled in the order set forth in the SOW?	[X]	___	___
d. Is a Sample Data Summary Package submitted immediately preceding the Sample Data Package?	[ ]	X	___
The following checklist is divided into three parts. Part A is for any VOA analyses, Part B is for BNAs and Part C is Pesticide/PCBs.			
Does this package contain:			
VOA Data?	X	___	
BNA Data?	___	X	
Pesticide/PCB data?	___	X	

ACTION: Complete corresponding parts of checklist.

301860

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YES NO N/A

PART A: VOA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records, Sampling Report or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? — X1 —

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated (J). If a soil sample other than TCLP contains more than 90% water, all data should be qualified as unusable (R).

ACTION: If samples were not iced or the ice was melted upon arrival at the laboratory and the cooler temperature was elevated (> 10° C), then flag all positive results with a "J" and all non-detects "UJ".

ACTION: If both VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

ACTION: The smallest soil size permitted is 0.5g. If any soil sample is smaller than 0.5g, document in the Data Assessment under Contract Problems/Non-Compliance.

2.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? — X1 —

All holding times met as per SOW. 8/16 14 day

Technical Holding Times: If unpreserved, aqueous samples, maintained at 4° C for aromatic hydrocarbons analysis must be analyzed within 7 days of collection. If preserved with HCl (pH < 2) and stored at 4° C, then aqueous samples must be analyzed within 14 days of collection. If uncertain about preservation, contact sampler to determine whether or

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YES NO N/A

not samples were preserved. The holding time for soils is 10 days from date of collection.

14 day technical holding time not met as per SOW

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample ID	Sample Matrix	Was Sample Preserved?	Date Sampled	Date Lab Received	Date Analyzed
89299	MeOH	MeOH	10-8-98	10-9-98	10-20-98
89300	soil	Ice/MeOH			10-21-98
89304					10-20-98
89305					

ACTION: If technical holding times are exceeded, flag all positive results as estimated "J" and sample quantitation limits as estimated "UJ", and document in the Data Assessment that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable "R". If holding times are exceeded by more than 28 days, all non detect data are unusable "R".

NOTE: Contractual Holding Times: Analysis of water and soil/sediment samples must be completed within 10 days of Validated Time of Sample Receipt (VTSR). This requirement does not apply to Performance Evaluation (PE) samples.

ACTION: If contractual holding times are exceeded,

301862

YES NO N/A

document in the Data Assessment and on the Organic Regional Data Assessment Summary form.

NOTE: The data reviewer must note in the Data Assessment whether or not **technical and contractual** holding times were met.

301863

	YES	NO	N/A
3.0 System Monitoring Compound (SMC) Recovery (Form II)			
3.1 Are the VOA SMC Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water?	[ ]	X	
b. Low Soil?	[ ]	X	
c. Med Soil?	[X]		
3.2 Are all the VOA samples listed on the appropriate System Monitoring Compound Recovery Summary for each of the following matrices:			
a. Low Water?	[ ]		X
b. Low Soil?	[ ]		X
c. Med Soil?	[X]		

ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If missing deliverables are unavailable, document the effect in the Data Assessment.

3.3 Were outliers marked correctly with an asterisk?	[X]		

ACTION: Circle all outliers with red pencil.

3.4 Was one or more VOA system monitoring compound recovery outside of contract specifications for any sample or method blank?		[X]	
If yes, were samples re-analyzed?	[ ]		X
Were method blanks re-analyzed?	[ ]		X

ACTION: If recoveries are > 10%, but 1 or more compounds fail to meet SOW specifications:

1. All positive results are qualified as estimated "J".

2. Flag all non-detects as estimated detection limits "UJ" where recovery is less than the lower acceptance limit.

YES NO N/A

3. If SMC recoveries are above allowable levels, do not qualify non-detects.

If any system monitoring compound recovery is < 10%:

1. Flag all positive results as estimated "J".

2. Flag all non-detects as unusable "R".

Professional judgement should be used to qualify data that only have method blank SMC recoveries out of specification in both original and re-analyses. Check the internal standard areas.

NOTE: Contractual requirements state that if any SMC fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

NOTE: The laboratory must submit the following data:

1. If SMC recoveries and internal standard responses meet the acceptance criteria in the re-analyzed sample, then the laboratory must submit only the re-analysis.

2. If an SMC recovery and/or internal standard response fails to meet the acceptance criteria upon re-analysis, then submit data from both analyses.

(Refer to section 11.4.3.2, page D-46/VOA of the SOW for more information.)

3.5 Are there any transcription/calculation errors between raw data and Form II? — X1 —

ACTION: If large errors exist, contact the lab to obtain an explanation or resubmittal of corrected deliverables. Make any necessary corrections and note the effect in the Data Assessment.

301865

	YES	NO	N/A
4.0 Matrix Spikes (Form III)			
4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present?	[X]	___	___
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water?	[ ]	X	___
b. Low Soil?	[ ]	X	___
c. Med Soil?	[X]	___	___

ACTION: If any matrix spike data are missing, take the action specified in section 3.2 above.

4.3 How many VOA spike recoveries are outside QC limits?

Water	Soils
NA out of 10	0 out of 10

4.4 How many RPDs for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
NA out of 5	0 out of 5

ACTION: No action is taken based upon MS/MSD data alone. However, using informed professional judgement, the MS/MSD results may be used in conjunction with other QC criteria to determine the need for qualification of the data.

ACTION: Circle all outliers with red pencil.

5.0 Blanks (Form IV)

	YES	NO	N/A
5.1 Is the Method Blank Summary (Form IV) present?	[X]	___	___

5.2 Frequency of Analysis: for the analysis of VOA TCL compounds, has a reagent/method blank been

		YES	NO	N/A
	analyzed for each SDG or every 20 samples of similar matrix (low water, low soil or medium soil), whichever is more frequent?	[X]		
5.3	Has a VOA method blank been analyzed at least once every twelve hours for each concentration level and GC/MS system used?	[X]		
5.4	Was a VOA instrument blank analyzed after each sample/dilution which contained a target compound that exceeded the initial calibration range?	[ ]		X
5.5	Was a VOA storage blank analyzed at the end of all samples for each SDG in a case?	[ ]	X	

ACTION: If any method/instrument blank data are missing, contact the lab to obtain any missing deliverables. If method blank data are not available, reject "R" all associated positive data. However, using professional judgement, the data reviewer may substitute field blank or trip blank data for missing method blank data.

If any instrument blank analyzed after a sample with high concentration is missing, contact the lab to obtain any missing deliverables. If the instrument blank was not analyzed or not available, inspect the chromatogram of the sample analyzed immediately after this analysis for possible carryover. Use professional judgement to determine if any contamination occurred and qualify analyte(s) accordingly.

If storage blank data is missing, contact the lab to obtain any missing deliverables. If unavailable, note in the Contract Problems/Non-Compliance section of the Data Assessment.

5.6 The validator should verify that the correct identification scheme for the EPA Blank samples were used. See page B-33, section 3.3.7.3 of the SOW for further information.

	Was the correct identification scheme used for all VOA blanks?	[ ]	X	

301867

	YES	NO	N/A
ACTION: Contact the lab to obtain missing deliverables, or make the required corrections on the forms. Document in the Data Assessment under Contract Problems/Non-compliance if corrections were made by the validator.			
5.7 Chromatography: review the blank raw data-chromatograms (RICs), quant. reports or data system printouts and spectra. Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs?	X		
ACTION: Use professional judgement to determine the effect on the data.			
5.8 Are all detected hits for target compounds in method, instrument and storage blanks less than the CRQL for that analyte?	X		
Exception: Acetone and 2-butanone must be less than 5 times the CRQL, and methylene chloride must be less than 2.5 times its CRQL.			
ACTION: If no, an explanation and laboratory's corrective actions must be addressed in the case narrative. If the narrative contains no explanation, then make a note in the Contract Problems/Non-Compliance section of the Data Assessment.			
6.0 Contamination			
NOTE: "Water blanks", "drill blanks", and "distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.			
6.1 Do any method/instrument/reagent/storage blanks have positive results (TCL and/or TIC) for VOAs?		X	
NOTE: When applied as directed in the table below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for %moisture when necessary.			

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YES NO N/A

NOTE: A contaminated instrument blank is not allowable under this SOW. See page D-48/VOA, section 12.1.2.4 for additional information. Document in the Data Assessment under Contract Problems/Non-Compliance if contaminated instrument blank was submitted.

6.2 Do any field/trip/rinse blanks have positive VOA results (TCL and/or TIC)? [ ] [X] [ ]

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped and are not required for non-aqueous matrices. Blanks may not be qualified because of contamination in another blank. Field Blanks & Trip Blanks must be qualified for system monitoring compound, instrument performance criteria, spectral or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable "R".

301869

YES NO N/A

For:	Flag sample result with a "U" when:	Report CRQL & qualify "U" when:	No qualification is needed when:
Methylene Chloride Acetone Toluene 2-Butanone	Sample conc. is > CRQL, but ≤ 10× blank value.	Sample conc. is < CRQL and ≤ 10× blank value.	Sample conc. is > CRQL and > 10× blank value.
Other Conta-minants	Sample conc. is > CRQL, but ≤ 5× blank value.	Sample conc. is < CRQL and ≤ 5× blank value.	Sample conc. is > CRQL and > 5× blank value.

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration criteria.

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R".

6.3 Are there field/rinse/equipment blanks associated with every sample? [ ] [X] ___

ACTION: For low level samples, note in the Data Assessment that there is no associated field/rinse/equipment blank. For samples with high concentrations of suspected blank contaminants, use professional judgement to qualify these values and make a note in the Data Assessment.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V)

7.1 Are the GC/MS Instrument Performance Check Forms (Form V) present for Bromofluorobenzene (BFB)? [ ] ___ [X]

No perf. checks per [illegible]

7.2 Are the enhanced bar graph spectrum and

	YES	NO	N/A
mass/charge (m/z) listing for the BFB provided for each twelve hour shift?	[ ]	___	✓
7.3 Has an instrument performance check been analyzed for every analytical sequence on each instrument?	[ ]	___	✓

ACTION: List date, time, instrument ID, and sample numbers for which associated GC/MS tuning data are unavailable.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: Notify the lab to obtain missing data, if possible. If the lab cannot provide the missing data, reject, "R", all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundances been normalized to m/z 95 as specified in Exhibit D, page D-56/VOA?	[ ]	___	✓

NOTE: All ion abundance ratios must be normalized to m/z 95, the nominal base peak, even though the ion abundance of m/z 174 may be up to 120% that of m/z 95.

ACTION: If mass assignment is in error, qualify all associated data as unusable "R".

7.5 Have the ion abundance criteria been met for each instrument used?	[ ]	___	✓

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors

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	YES	NO	N/A
between mass lists and Form Vs? (Check at least two values, but if errors are found check more.)	___	[ ]	X
7.7 Is the number of significant figures for the reported relative abundances consistent with the number given for each ion in the ion abundance criteria column?	[ ]	___	X
ACTION: If large errors exist, take action as specified in section 3.5 above.			
7.8 Are the spectra of the mass calibration compound acceptable?	[ ]	___	X
ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.			
8.0 Target Compound List (TCL) Analytes (FORM I VOA)			
8.1 Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate?	[X]	___	___
b. Matrix spikes and matrix spike duplicates?	[ ]	✓	___
c. Blanks?	[X]	___	___
8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (quant. reports) included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[X]	___	___
b. Matrix spikes and matrix spike duplicates (mass spectra not required)?	[X]	___	___
c. Blanks?	[X]	___	___
ACTION: If any data are missing, take action specified in 3.2 above.			

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	YES	NO	N/A
8.3 Are the response factors shown in the quant. report?	[X]	___	___
8.4 Is chromatographic performance acceptable with respect to:			
a. Baseline stability?	[X]	___	___
b. Resolution?	[X]	___	___
c. Peak shape?	[X]	___	___
d. Full-scale graph (attenuation)?	[X]	___	___
e. Other: _____?	[ ]	___	___

ACTION: Use professional judgement to determine the acceptability of the data.

8.5 Are the lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[ ]	___	X

ACTION: If any mass spectra are missing, take action as specified in 3.2 above. If the lab does not generate its own standard spectra, document in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary.

8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[X]	___	___
8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[ ]	___	X
8.8 Do sample and standard relative ion intensities agree within ±20%?	[ ]	___	X

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected "R", flagged "N" (presumptive evidence of the presence of the

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	YES	NO	N/A
compound) or changed to not detected "U" at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in 8.6, 8.7, and 8.8.			
ACTION: When sample carry-over is suspected, use professional judgement determine if instrument cross-contamination has affected positive compound identifications.			
9.0 Tentatively Identified Compounds (TIC)			
9.1 Are all Tentatively Identified Compound Forms (Form I Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier?	[ ]	___	X
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[ ]	___	X
b. Blanks?	[ ]	___	X
c. Alkanes listed for each sample?	[ ]	___	X
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "JN" qualifier to all chemically named TICs, if missing.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds? (Example: 1,2- dimethylbenzene is xylene, a VOA TCL analyte, and should not be reported as a TIC.)	___	[ ]	X
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[ ]	___	X

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	YES	NO	N/A
9.5 Do TIC and "best match" standard relative ion intensities agree within ±20%?	[ ]		✓

ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined an incorrect identification was made, change the identification to "unknown," or to some less specific identification as appropriate. (Example: "C3 substituted benzene.")

Also, when a compound is not found in any blank, but is detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable "R". (E.g., Common Lab Contaminants: CO_2 (M/E 44), siloxanes (M/E 73) hexane, aldol condensation products, solvent preservatives, and related by-products - see the National Functional Guidelines for further guidance.)

	YES	NO	N/A
9.6 Are TICs with responses < 10% of the internal standard (as determined by inspection of the peak areas or height) reported?		[ ]	✓

ACTION: If yes, cross out questionable TIC(s).

10.0 Compound Quantitation and Reported Detection Limits

	YES	NO	N/A
10.1 Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standards, quantitation ions, and RRF were used to calculate Form I results.)		[✓]	
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	[✓]		

ACTION: If errors are large, take action as specified in section 3.5 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample). Replace concentrations that exceeded the calibration

301875

	YES	NO	N/A
range in the original analysis by crossing out the "E" and its corresponding value on the original Form I and substituting the data from the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form Is not to be used, including any in the data summary package.			
11.0 Standards Data (GC/MS)			
11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (quant. reports) present for each initial and continuing calibration?	[X]	___	___
ACTION: If any calibration standard data are missing, take action specified in 3.2 above.			
12.0 GC/MS Initial Calibration (Form VI)			
12.1 Are the Initial Calibration Forms (Form VI) present and complete at concentrations of 10, 20, 50, 100, 200ng for separate calibrations of low water/med soils (unheated purge) and low soils (heated purge)?	[X]	___	___
ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.			
12.2 Were all low level soil standards, blanks and samples analyzed by heated purge?	[ ]	___	X
ACTION: If low level soil samples were not heated during purge, qualify positive hits "J" (estimated) and non-detects "R".			
12.3 Are the % relative standard deviation (%RSD) values for VOAs ≤ 30% over the concentration range of the calibration?	[X]	___	___
NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %RSD, the technical acceptance criteria are the same for all analytes.			
ACTION: Circle all outliers with red pencil.			

301876

YES NO N/A

ACTION: If %RSD is > 30.0%, qualify associated positive results for that analyte "J" (estimated) and non-detects using professional judgement. When %RSD is > 90%, flag all non-detects for that analyte "R" (unusable) and positive hits "J".

NOTE: Analytes previously qualified "U" for blank contamination are still considered as "hits" when qualifying for initial calibration criteria. ___ [X] ___

12.4 Are any average RRFs < 0.05?

ACTION: Circle all outliers with red pencil.

ACTION: If the average RRF is < 0.05, then qualify associated non-detects with an "R" and flag associated positive data as estimated "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %RSD or RRF criteria, provided the %RSD is ≤ 40% and RRF is ≥ 0.010. (See Table 5, page D-59/VOA and analytes marked with a "*" on Form VI for required analytes and contractual criteria.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %RSD or RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and the Organic Regional Data Assessment Summary.

12.5 Are there any transcription/calculation errors in the reporting of average relative response factors (RRF) or %RSD? (Check at least 2 values, but if errors are found, check more.) ___ [X] ___

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

301877

	YES	NO	N/A
13.0 GC/MS Continuing Calibration (Form VII)			
13.1 Are the Continuing Calibration Forms (Form VII) present and complete for separate calibration of low water/med soil and low soil samples?	X	[ ]	___
13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?	[X]	___	___

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, contact the lab to request an explanation/resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable "R".

ACTION: List below all sample(s) that were not analyzed within twelve hours of the previous continuing calibration.

_____

_____

_____

13.3 Do any volatile compounds have a percent difference (%D) between the initial and continuing RRF which exceeds the ±25% criteria?	X	[ ]	___

NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %D, the technical acceptance criteria are the same for all analytes.

ACTION: Circle all outliers with red pencil.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated. When %D is > 90%, qualify all non-detects for that analyte unusable (R) and positive results estimated (J).

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	YES	NO	N/A
13.4 Are any continuing calibration RRFs < 0.05?	___	[ ]	X

ACTION: Circle all outliers with red pencil.

ACTION: If the RRF is < 0.05, qualify the associated non-detects as unusable "R" and the associated positive values "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %D and RRF criteria, provided that the %D is ≤ 40% and the RRF is ≥ 0.010. (See Table 5 pg. D-59/VOA or analytes marked with a "*" on Form VI for required analytes.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %D and RRF, criteria document in the Data Assessment under contract Problems/Non-Compliance and on the Organic Regional Data Assessment Summary form.

13.5 Are there any transcription/calculation errors in the reporting of RRF or %D between initial and continuing RRFs? (Check at least two values, but if errors are found, check more.)	___	[X]	___

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance.

14.0 Internal Standard (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits (-50% to +100%) for each continuing calibration?	[ ]	X	___
If no, was the sample re-analyzed?	[ ]	___	X

ACTION: 1. Circle all outliers with red pencil.

2. List all the outliers below.

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YES NO N/A

Sample #	Internal Std.	Area	Lower/Upper Limit
			/
			/
			/
			/

(Attach additional sheets if necessary, or attach copies of Form VIIIs.)

ACTION: If any sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

ACTION: 1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Do not qualify non-detects when associated IS area counts are > 100%.

3. If the IS area in the sample is below the "lower limit," < 50%, qualify all analytes associated with that IS estimated, "J". If the area counts are extremely low, < 25% of the area in the 12 hour standard, or if performance exhibits a major abrupt drop- off, flag all associated non-detects as unusable, "R", and positive hits estimated, "J".

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [ ] ___ N/A

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

NOTE: Contractual requirements state that if any internal standard fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not

YES NO N/A

re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

NOTE: See Notes in section 3.4, page 7 for a description of sample data the laboratory must submit.

15.0 **Field Duplicates**

15.1 Were any field duplicates submitted for VOA analysis? [ ] X ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

301881

YES NO N/A

PART B: BNA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody records or laboratory SDG Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [ ] ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated "J". If a soil sample, other than TCLP, contains more than 90% water, all data should be qualified as unusable "R".

ACTION: If samples were not iced or if the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 10° C), flag all positive results "J" and all non-detects "UJ".

2.0 Holding Times

2.1 Have any BNA technical holding times, determined from date of collection to date of extraction, been exceeded? ___ [ ] ___

Technical Holding Time: Continuous extraction of water samples for BNA analysis must be started within seven days of the date of collection. Soil/sediment samples must be extracted within 7 days of collection. Extracts must be analyzed within 40 days of the date of extraction.

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample Analyzed	Sample Matrix	Date Sampled	Date Lab Received	Date Extracted	Date Analyzed

301883

	YES	NO	N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: I-CER CLA-95-0104 LABORATORY: Envirotech Research Inc.

SITE NAME: Kaufman + Kaufman SDG Number(s): I053

1.0 Chain of Custody and Sampling Trip Reports

1.1	Are the Traffic Reports/Chain-of-Custody Records present for all samples?	[X]		
	ACTION: If no, contact RSCC or the lab to obtain replacement of missing or illegible copies.			
1.2	Is the Sampling Trip Report present for all samples and all fractions?	[X]		
	ACTION: If no, contact either RSCC or ask the prime contractor to provide this information.			

2.0 Data Completeness and Deliverables

2.1	Have any missing deliverables been received and added to the data package?		X	
	NOTE: The lab is required to submit data for only two analyses, for each fraction. (i.e., the original sample and one dilution, or the most concentrated dilution analyzed and one further dilution.)			
	ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If lab cannot provide them, note the effect on the review of the package in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary form.			
2.2	Was CLASS CCS checklist included with package?	[ ]	X	
2.3	Are there any discrepancies between the Traffic Reports/Chain-of-Custody Records, Sampling Report and Sample Tags?		[X]	

301884

	YES	NO	N/A
ACTION: If yes, contact the lab to obtain an explanation or resubmittal of any missing deliverables.			
3.0 Cover Letter SDG Narrative			
3.1 Is the Narrative or Cover Letter Present?	[X]	___	___
3.2 Are case number, SDG number and contract number contained in the SDG Narrative or cover letter (see SOW, Exhibit B, section 2.6.1)?	[X]	___	___
3.3 Does the narrative contain the following information:			
VOA: description of trap and columns used during sample analyses?	[X]	___	___
BNA: description of columns used during sample analyses?	[ ]	___	X
Pest: description of columns used during sample analyses?	[ ]	___	X
NOTE: As per section 6.23.3.1 SOW/p. D-11/Pest, Packed columns are not permitted.			
3.4 Does the narrative, VOA and BNA sections, contain a list of all TICs identified as alkanes and their estimated concentrations?	[ ]	X	___
3.5 Does the narrative contain a record of all cooler temperatures? If the temperature of a cooler was exceeded, > 10° C, the lab must list by fraction and sample number, all affected samples.	[ ]	X	___
3.6 Does the narrative contain a list of the pH values determined for each water sample submitted for volatile analysis (SOW Exhibit B, section 2.6.1.2)?	[ ]	___	X
3.7 Does the Case Narrative contain the statement, "verbatim", as required in Section B of the SOW?	[ ]	X	___

ACTION: If "No", to any question in this section, contact the lab to obtain all necessary resubmittals. If information is not available,

301885

YES NO N/A

document in the Data Assessment under Contract Problems/Non-Compliance section.

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	YES	NO	N/A
4.0 Data Validation Checklist			
4.1 Check the package for the following discrepancies:			
a. Is the package paginated in ascending order starting from the SDG narrative?	[X]	___	___
b. Are all forms and copies legible?	[X]	___	___
c. Is each fraction assembled in the order set forth in the SOW?	[X]	___	___
d. Is a Sample Data Summary Package submitted immediately preceding the Sample Data Package?	[ ]	X	___

The following checklist is divided into three parts. Part A is for any VOA analyses, Part B is for BNAs and Part C is Pesticide/PCBs.

Does this package contain:

VOA Data?	X	___	
BNA Data?	___	X	
Pesticide/PCB data?	___	X	

ACTION: Complete corresponding parts of checklist.

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YES NO N/A

PART A: VOA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records, Sampling Report or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? ___ X ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated (J). If a soil sample other than TCLP contains more than 90% water, all data should be qualified as unusable (R).

ACTION: If samples were not iced or the ice was melted upon arrival at the laboratory and the cooler temperature was elevated (> 10° C), then flag all positive results with a "J" and all non-detects "UJ".

ACTION: If both VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

ACTION: The smallest soil size permitted is 0.5g. If any soil sample is smaller than 0.5g, document in the Data Assessment under Contract Problems/Non-Compliance.

2.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? ___ X ___

All 14day technical holding times met as per SW-846

Technical Holding Times: If unpreserved, aqueous samples, maintained at 4° C for aromatic hydrocarbons analysis must be analyzed within 7 days of collection. If preserved with HCl (pH < 2) and stored at 4° C, then aqueous samples must be analyzed within 14 days of collection. If uncertain about preservation, contact sampler to determine whether or

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YES NO N/A

not samples were preserved. The holding time for soils is 10 days from date of collection.

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample ID	Sample Matrix	Was Sample Preserved?	Date Sampled	Date Lab Received	Date Analyzed
89308	S	MeOH	10-8-98	10-9-98	10-22-98
89309	↓	↓	↓	↓	10-21-98
89310	↓	↓	↓	↓	↓

All 14day technical holding times met as per SOW OLM03.2

ACTION: If technical holding times are exceeded, flag all positive results as estimated "J" and sample quantitation limits as estimated "UJ", and document in the Data Assessment that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable "R". If holding times are exceeded by more than 28 days, all non detect data are unusable "R".

NOTE: Contractual Holding Times: Analysis of water and soil/sediment samples must be completed within 10 days of Validated Time of Sample Receipt (VTSR). This requirement does not apply to Performance Evaluation (PE) samples.

ACTION: If contractual holding times are exceeded,

YES NO N/A

document in the Data Assessment and on the Organic Regional Data Assessment Summary form.

NOTE: The data reviewer must note in the Data Assessment whether or not **technical and contractual** holding times were met.

301890

	YES	NO	N/A
3.0 System Monitoring Compound (SMC) Recovery (Form II)			
3.1 Are the VOA SMC Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water?	[ ]	X	___
b. Low Soil?	[ ]	X	___
c. Med Soil? High per 8021	[X]	___	___
3.2 Are all the VOA samples listed on the appropriate System Monitoring Compound Recovery Summary for each of the following matrices:			
a. Low Water?	[ ]	___	X
b. Low Soil?	[ ]	___	X
c. Med Soil? High per 8021	[X]	___	___

ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If missing deliverables are unavailable, document the effect in the Data Assessment.

3.3 Were outliers marked correctly with an asterisk?	[X]	___	___

ACTION: Circle all outliers with red pencil.

3.4 Was one or more VOA system monitoring compound recovery outside of contract specifications for any sample or method blank?	___	[X]	___
If yes, were samples re-analyzed?	[ ]	___	X
Were method blanks re-analyzed?	[ ]	___	X

ACTION: If recoveries are ≥ 10%, but 1 or more compounds fail to meet SOW specifications:

1. All positive results are qualified as estimated "J".

2. Flag all non-detects as estimated detection limits "UJ" where recovery is less than the lower acceptance limit.

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YES NO N/A

3. If SMC recoveries are above allowable levels, do not qualify non-detects.

If any system monitoring compound recovery is < 10%:

1. Flag all positive results as estimated "J".

2. Flag all non-detects as unusable "R".

Professional judgement should be used to qualify data that only have method blank SMC recoveries out of specification in both original and re-analyses. Check the internal standard areas.

NOTE: Contractual requirements state that if any SMC fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

NOTE: The laboratory must submit the following data:

1. If SMC recoveries and internal standard responses meet the acceptance criteria in the re-analyzed sample, then the laboratory must submit only the re-analysis.

2. If an SMC recovery and/or internal standard response fails to meet the acceptance criteria upon re-analysis, then submit data from both analyses.

(Refer to section 11.4.3.2, page D-46/VOA of the SOW for more information.)

3.5 Are there any transcription/calculation errors between raw data and Form II? ___ [X] ___

ACTION: If large errors exist, contact the lab to obtain an explanation or resubmittal of corrected deliverables. Make any necessary corrections and note the effect in the Data Assessment.

301892

	YES	NO	N/A
4.0 Matrix Spikes (Form III)			
4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present?	[X]	___	___
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water?	[ ]	X	___
b. Low Soil?	[ ]	X	___
c. Med Soil? High per [illegible]	[X]	___	___

ACTION: If any matrix spike data are missing, take the action specified in section 3.2 above.

4.3 How many VOA spike recoveries are outside QC limits?

Water	Soils
NA out of 10	0 out of 10

4.4 How many RPDs for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
NA out of 5	0 out of 5

ACTION: No action is taken based upon MS/MSD data alone. However, using informed professional judgement, the MS/MSD results may be used in conjunction with other QC criteria to determine the need for qualification of the data.

ACTION: Circle all outliers with red pencil.

	YES	NO	N/A
5.0 Blanks (Form IV)			
5.1 Is the Method Blank Summary (Form IV) present?	[X]	___	___

5.2 Frequency of Analysis: for the analysis of VOA TCL compounds, has a reagent/method blank been

		YES	NO	N/A
	analyzed for each SDG or every 20 samples of similar matrix (low water, low soil or medium soil), whichever is more frequent?	[X]		
5.3	Has a VOA method blank been analyzed at least once every twelve hours for each concentration level and GC/MS system used?	[X]		
5.4	Was a VOA instrument blank analyzed after each sample/dilution which contained a target compound that exceeded the initial calibration range?	[ ]		X
5.5	Was a VOA storage blank analyzed at the end of all samples for each SDG in a case?	[ ]	X	

No SB per 8021

ACTION: If any method/instrument blank data are missing, contact the lab to obtain any missing deliverables. If method blank data are not available, reject "R" all associated positive data. However, using professional judgement, the data reviewer may substitute field blank or trip blank data for missing method blank data.

If any instrument blank analyzed after a sample with high concentration is missing, contact the lab to obtain any missing deliverables. If the instrument blank was not analyzed or not available, inspect the chromatogram of the sample analyzed immediately after this analysis for possible carryover. Use professional judgement to determine if any contamination occurred and qualify analyte(s) accordingly.

If storage blank data is missing, contact the lab to obtain any missing deliverables. If unavailable, note in the Contract Problems/Non-Compliance section of the Data Assessment.

5.6 The validator should verify that the correct identification scheme for the EPA Blank samples were used. See page B-33, section 3.3.7.3 of the SOW for further information.

	Was the correct identification scheme used for all VOA blanks?	[ ]	X	

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YES NO N/A

ACTION: Contact the lab to obtain missing deliverables, or make the required corrections on the forms. Document in the Data Assessment under Contract Problems/Non-compliance if corrections were made by the validator.

5.7 Chromatography: review the blank raw data-chromatograms (RICs), quant. reports or data system printouts and spectra. Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs? X ___ ___

ACTION: Use professional judgement to determine the effect on the data.

5.8 Are all detected hits for target compounds in method, instrument and storage blanks less than the CRQL for that analyte? X ___ ___

Exception: Acetone and 2-butanone must be less than 5 times the CRQL, and methylene chloride must be less than 2.5 times its CRQL.

ACTION: If no, an explanation and laboratory's corrective actions must be addressed in the case narrative. If the narrative contains no explanation, then make a note in the Contract Problems/Non-Compliance section of the Data Assessment.

6.0 Contamination

NOTE: "Water blanks", "drill blanks", and "distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

6.1 Do any method/instrument/reagent/storage blanks have positive results (TCL and/or TIC) for VOAs? ___ X ___

NOTE: When applied as directed in the table below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for %moisture when necessary.

301895

YES NO N/A

NOTE: A contaminated instrument blank is not allowable under this SOW. See page D-48/VOA, section 12.1.2.4 for additional information. Document in the Data Assessment under Contract Problems/Non-Compliance if contaminated instrument blank was submitted.

6.2 Do any field/trip/rinse blanks have positive VOA results (TCL and/or TIC)? [ ] ___ [X]

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped and are not required for non-aqueous matrices. Blanks may not be qualified because of contamination in another blank. Field Blanks & Trip Blanks must be qualified for system monitoring compound, instrument performance criteria, spectral or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable "R".

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YES NO N/A

For:	Flag sample result with a "U" when:	Report CRQL & qualify "U" when:	No qualification is needed when:
Methylene Chloride Acetone Toluene 2-Butanone	Sample conc. is > CRQL, but ≤ 10× blank value.	Sample conc. is < CRQL and ≤ 10× blank value.	Sample conc. is > CRQL and > 10× blank value.
Other Conta-minants	Sample conc. is > CRQL, but ≤ 5× blank value.	Sample conc. is < CRQL and ≤ 5× blank value.	Sample conc. is > CRQL and > 5× blank value.

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration criteria.

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R".

6.3 Are there field/rinse/equipment blanks associated with every sample? [ ] ___ X

ACTION: For low level samples, note in the Data Assessment that there is no associated field/rinse/equipment blank. For samples with high concentrations of suspected blank contaminants, use professional judgement to qualify these values and make a note in the Data Assessment.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V)

7.1 Are the GC/MS Instrument Performance Check Forms (Form V) present for Bromofluorobenzene (BFB)? [ ] X ___

No MS per SOW

7.2 Are the enhanced bar graph spectrum and

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	YES	NO	N/A
mass/charge (m/z) listing for the BFB provided for each twelve hour shift?	[ ]	___	X
7.3 Has an instrument performance check been analyzed for every analytical sequence on each instrument?	[ ]	___	X

ACTION: List date, time, instrument ID, and sample numbers for which associated GC/MS tuning data are unavailable.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: Notify the lab to obtain missing data, if possible. If the lab cannot provide the missing data, reject, "R", all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundances been normalized to m/z 95 as specified in Exhibit D, page D-56/VOA?	[ ]	___	X

NOTE: All ion abundance ratios must be normalized to m/z 95, the nominal base peak, even though the ion abundance of m/z 174 may be up to 120% that of m/z 95.

ACTION: If mass assignment is in error, qualify all associated data as unusable "R".

7.5 Have the ion abundance criteria been met for each instrument used?	[ ]	___	X

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors

	YES	NO	N/A
between mass lists and Form Vs? (Check at least two values, but if errors are found check more.)	___	[ ]	X
7.7 Is the number of significant figures for the reported relative abundances consistent with the number given for each ion in the ion abundance criteria column?	[ ]	___	X

ACTION: If large errors exist, take action as specified in section 3.5 above.

7.8 Are the spectra of the mass calibration compound acceptable?	[ ]	___	X

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

8.0 Target Compound List (TCL) Analytes (FORM I VOA)

8.1 Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate?	[X]	___	___
b. Matrix spikes and matrix spike duplicates?	[ ]	X	___
c. Blanks?	[X]	___	___
8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (quant. reports) included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[X]	___	___
b. Matrix spikes and matrix spike duplicates (mass spectra not required)?	[X]	___	___
c. Blanks?	[X]	___	___

ACTION: If any data are missing, take action specified in 3.2 above.

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		YES	NO	N/A
8.3	Are the response factors shown in the quant. report?	[X]	___	___
8.4	Is chromatographic performance acceptable with respect to:			
	a. Baseline stability?	[X]	___	___
	b. Resolution?	[X]	___	___
	c. Peak shape?	[X]	___	___
	d. Full-scale graph (attenuation)?	[X]	___	___
	e. Other: _____?	[ ]	___	___

ACTION: Use professional judgement to determine the acceptability of the data.

8.5	Are the lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[ ]	___	X No MS per SOW

ACTION: If any mass spectra are missing, take action as specified in 3.2 above. If the lab does not generate its own standard spectra, document in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary.

8.6	Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[X]	___	___
8.7	Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[ ]	___	X
8.8	Do sample and standard relative ion intensities agree within ±20%?	[ ]	___	X No MS per SOW

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected "R", flagged "N" (presumptive evidence of the presence of the

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	YES	NO	N/A
compound) or changed to not detected "U" at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in 8.6, 8.7, and 8.8.			
ACTION: When sample carry-over is suspected, use professional judgement determine if instrument cross-contamination has affected positive compound identifications.			
9.0 Tentatively Identified Compounds (TIC)			
9.1 Are all Tentatively Identified Compound Forms (Form I Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier?	[ ]	___	X
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[ ]	___	X
b. Blanks?	[ ]	___	X
c. Alkanes listed for each sample?	[ ]	___	X
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "JN" qualifier to all chemically named TICs, if missing.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds? (Example: 1,2- dimethylbenzene is xylene, a VOA TCL analyte, and should not be reported as a TIC.)	___	[ ]	X
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[ ]	___	X

301901

	YES	NO	N/A
9.5 Do TIC and "best match" standard relative ion intensities agree within ±20%?	[ ]	___	X

ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined an incorrect identification was made, change the identification to "unknown," or to some less specific identification as appropriate. (Example: "C3 substituted benzene.")

Also, when a compound is not found in any blank, but is detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable "R". (E.g., Common Lab Contaminants: CO_2 (M/E 44), siloxanes (M/E 73) hexane, aldol condensation products, solvent preservatives, and related by-products - see the National Functional Guidelines for further guidance.)

9.6 Are TICs with responses < 10% of the internal standard (as determined by inspection of the peak areas or height) reported?	___	[ ]	X

ACTION: If yes, cross out questionable TIC(s).

10.0 Compound Quantitation and Reported Detection Limits

10.1 Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standards, quantitation ions, and RRF were used to calculate Form I results.)	___	X	___
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	X	___	___

ACTION: If errors are large, take action as specified in section 3.5 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample). Replace concentrations that exceeded the calibration

301902

	YES	NO	N/A
range in the original analysis by crossing out the "E" and its corresponding value on the original Form I and substituting the data from the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form Is not to be used, including any in the data summary package.			
11.0 Standards Data (GC/MS)			
11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (quant. reports) present for each initial and continuing calibration?	X		
ACTION: If any calibration standard data are missing, take action specified in 3.2 above.			
12.0 GC/MS Initial Calibration (Form VI)			
12.1 Are the Initial Calibration Forms (Form VI) present and complete at concentrations of 10, 20, 50, 100, 200ng for separate calibrations of low water/med soils (unheated purge) and low soils (heated purge)?	X		
ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.			
12.2 Were all low level soil standards, blanks and samples analyzed by heated purge?			X No [illegible]
ACTION: If low level soil samples were not heated during purge, qualify positive hits "J" (estimated) and non-detects "R".			
12.3 Are the % relative standard deviation (%RSD) values for VOAs ≤ 30% over the concentration range of the calibration?	X		
NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %RSD, the technical acceptance criteria are the same for all analytes.			
ACTION: Circle all outliers with red pencil.			

301903

YES NO N/A

ACTION: If %RSD is > 30.0%, qualify associated positive results for that analyte "J" (estimated) and non-detects using professional judgement. When %RSD is > 90%, flag all non-detects for that analyte "R" (unusable) and positive hits "J".

NOTE: Analytes previously qualified "U" for blank contamination are still considered as "hits" when qualifying for initial calibration criteria. ___ [X] ___

12.4 Are any average RRFs < 0.05?
< 500,000

ACTION: Circle all outliers with red pencil.

ACTION: If the average RRF is < 0.05, then qualify associated non-detects with an "R" and flag associated positive data as estimated "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %RSD or RRF criteria, provided the %RSD is ≤ 40% and RRF is ≥ 0.010. (See Table 5, page D-59/VOA and analytes marked with a "*" on Form VI for required analytes and contractual criteria.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %RSD or RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and the Organic Regional Data Assessment Summary.

12.5 Are there any transcription/calculation errors in the reporting of average relative response factors (RRF) or %RSD? (Check at least 2 values, but if errors are found, check more.) ___ [X] ___

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

301904

	YES	NO	N/A
13.0 GC/MS Continuing Calibration (Form VII)			
13.1 Are the Continuing Calibration Forms (Form VII) present and complete for separate calibration of low water/med soil and low soil samples?	X	[ ]	___
13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?	X	___	___

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, contact the lab to request an explanation/resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable "R".

ACTION: List below all sample(s) that were not analyzed within twelve hours of the previous continuing calibration.

_____

_____

_____

13.3 Do any volatile compounds have a percent difference (%D) between the initial and continuing RRF which exceeds the ±25% criteria?	X	[ ]	___

NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %D, the technical acceptance criteria are the same for all analytes.

ACTION: Circle all outliers with red pencil.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated. When %D is > 90%, qualify all non-detects for that analyte unusable (R) and positive results estimated (J).

301905

	YES	NO	N/A
13.4 Are any continuing calibration RRFs < 0.05?	___	X	___

ACTION: Circle all outliers with red pencil.

ACTION: If the RRF is < 0.05, qualify the associated non-detects as unusable "R" and the associated positive values "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %D and RRF criteria, provided that the %D is ≤ 40% and the RRF is ≥ 0.010. (See Table 5 pg. D-59/VOA or analytes marked with a "*" on Form VI for required analytes.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %D and RRF, criteria document in the Data Assessment under contract Problems/Non-Compliance and on the Organic Regional Data Assessment Summary form.

13.5 Are there any transcription/calculation errors in the reporting of RRF or %D between initial and continuing RRFs? (Check at least two values, but if errors are found, check more.)	___	X	___

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance.

14.0 Internal Standard (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits (-50% to +100%) for each continuing calibration?	[ ]	X	___
If no, was the sample re-analyzed?	[ ]	___	X

ACTION: 1. Circle all outliers with red pencil.

2. List all the outliers below.

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YES NO N/A

Sample #	Internal Std.	Area	Lower/Upper Limit
			/
			/
			/
			/

(Attach additional sheets if necessary, or attach copies of Form VIIIs.)

ACTION: If any sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

ACTION: 1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Do not qualify non-detects when associated IS area counts are > 100%.

3. If the IS area in the sample is below the "lower limit," < 50%, qualify all analytes associated with that IS estimated, "J". If the area counts are extremely low, < 25% of the area in the 12 hour standard, or if performance exhibits a major abrupt drop- off, flag all associated non-detects as unusable, "R", and positive hits estimated, "J".

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [ ] ___ X

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

NOTE: Contractual requirements state that if any internal standard fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not

301907

YES NO N/A

re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

NOTE: See Notes in section 3.4, page 7 for a description of sample data the laboratory must submit.

15.0 **Field Duplicates**

15.1 Were any field duplicates submitted for VOA analysis? [ ] [X] ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

301908

YES NO N/A

PART B: BNA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody records or laboratory SDG Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [ ] ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated "J". If a soil sample, other than TCLP, contains more than 90% water, all data should be qualified as unusable "R".

ACTION: If samples were not iced or if the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 10° C), flag all positive results "J" and all non-detects "UJ".

2.0 Holding Times

2.1 Have any BNA technical holding times, determined from date of collection to date of extraction, been exceeded? ___ [ ] ___

Technical Holding Time: Continuous extraction of water samples for BNA analysis must be started within seven days of the date of collection. Soil/sediment samples must be extracted within 7 days of collection. Extracts must be analyzed within 40 days of the date of extraction.

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample Analyzed	Sample Matrix	Date Sampled	Date Lab Received	Date Extracted	Date Analyzed

301909

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 3/90

I053

(SOP Revision XI)

PREPARED BY: _____ DATE: _____

Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: _____

Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE:

Robert Runyon, Chief
Monitoring Management Branch

301910

Title: Evaluation of Metals Data for the Contract Laboratory Program

Date: Jan. 1992
Number: HW-2
Revision: 11

1.0 Scope

1.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 3/90 .

2.0 **Responsibilities** - Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1. For a **total review:**

2.1.1 **Data Assessment - "Total Review-Inorganics" Checklist Appendix (A.1).**
The reviewer must answer every question on the checklist.

2.1.2 **Data Assessment - Data Assessment Narrative (Appendix A.2)**
The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

2.1.3 **Contract Non-Compliance - SMO Report (Appendix A.3)**
This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Validation Task Monitor, or Technical Project Officer (TPO). Forward 5 copies: one each for internal files, appropriate Regional TPO, Sample Management Office (SMO) and last two addresses of Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract violations should be appended to the end of the Data Assessment Narrative (Sec. A.2.2).

2.1.4 **CLP Data Assessment Summary Forms**

2.1.4.1 Appendix A.5
Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.

2.1.4.2 Appendix A.6
Data reviewer is also required to fill out Inorganic Regional Data Assessment form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

2.1.5 **Data Review Log:** It is recommended that each data reviewer should maintain a log of the reviews completed to include: a. date of start of case review

b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

2.1.6 **Telephone Record Log** - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

2.1.7 **Forwarded Paperwork**

2.1.7.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:
a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Record of Communication (copy)
e. CLP Reanalysis Request/Approval Record (original + 3 copies)
f. Appendix A.6 (original).

2.1.7.2 Forward 2 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.6) and Telephone Record Log , if any,: one each for appropriate Regional TPO, and the other one to EPA EMSL office in Las Vegas. The addresses of TPOs and EPA office in Las Vegas are given in Appendix A-4.

2.1.8 **Filed Paperwork** - Upon completion of review, the following are to be filed within MMB files:
a. Two copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.6.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Reanalysis Request/Approval Record (copy)

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3.0 **Data Completeness**
Each data package is checked by a Regional Sample Control Coordinator (RSSC) for completeness. A data package is assumed to be complete when all the deliverables required under the contract are present. If a data package is incomplete,the RSSC would call the laboratory for missing document(s). If the laboratory does not Respond within a week, SMO and MMB coordinator of Region II will be notified.

4.0 **Rejection of Data** - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

5.0 **Acceptance Criteria** - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines of October 1, 1989.

6.0 **SMO Contract Compliance Screening (CCS)** - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

7.0 **Request for Reanalysis** - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative.If holding times and sample storage times have not been exceeded, TPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

8.0 **Record of Communication** - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

9.0 **Rounding off numbers** - The data reviewer will follow the standard practice.

	YES	NO	N/A
A.1.1 **Contract Compliance Screening Report** (CCS) - Present?	[ ]		X
ACTION: If no, contact RSCC.			
A.1.2 **Record of Communication (from RSCC)** - Present?	[ ]		X
ACTION: If no, request from RSCC.			
A.1.3 **Trip Report** - Present and complete?	[ ]		X
ACTION: If no, contact RSCC for trip report.			
A.1.4 **Sample Traffic Report** - Present?	[X]		
Legible?	[X]		
ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5 **Cover Page** - Present?	[X]		
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[X]		
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on Record of Communication?	[ ]		X
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	[X]		
(b) Form I's?	[X]		
ACTION: If no for any of the above, contact RSCC for clarification.			

A.1.6	Form I to IX	Yes	No	N/A
A.1.6.1	Are all the Form I through Form IX labeled with:			
	Laboratory name?	[X]		
	Case/SAS number?	[ ]	X	
	EPA sample No.?	[ ]	X	
	SDG No.?	[X]		
	Contract No.?	[ ]	X	
	Correct units?	[X]		
	Matrix?	[X]		

ACTION: If no for any of the above, note under Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.6.2	Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:			
	(NOTE: Check all forms against raw data.)			
	(a) all analytes analyzed by ICP?	[X]		
	(b) all analytes analyzed by GFAA?	[ ]		X
	(c) all analytes analyzed by AA Flame?	[ ]		X
	(d) Mercury?	[X]		
	(e) Cyanide?	[ ]		X

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

Title: Evaluation of Metals Data for the Contract Laboratory Program Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

		YES	NO	N/A
A.1.7	**Raw Data**			
A.1.7.1	Digestion Log* for flame AA/ICP (Form XIII) present?	[X]	___	___
	Digestion Log for furnace AA Form XIII present?	[___]	___	X
	Distillation Log for mercury Form XIII present?	[X]	___	___
	Distillation Log for cyanides Form XIII present?	[___]	___	X
	Are pH values (pH<2 for all metals, pH>12 for cyanide) present?	[___]	___	X
	*Weights, dilutions and volumes used to obtain values.			
	Percent solids calculation present for soils/sediments?	[___]	X	___
	Are preparation dates present on sample preparation logs/bench sheets?	[X]	___	___
A.1.7.2	Measurement read out record present? ICP	[X]	___	___
	Flame AA	[___]	___	X
	Furnace AA	[___]	___	X
	Mercury	[X]	___	___
	Cyanides	[___]	___	X
A.1.7.3	Are all raw data to support all sample analyses and QC operations present?	[X]	___	___
	Legible?	[X]	___	___
	Properly Labeled?	[X]	___	___

ACTION: If no for any of the above questions in sections A.1.7.1 through A.1.7.3, write Telephone Record Log and contact laboratory for resubmittals.

		YES	NO	N/A
A.1.8	**Holding Times** - (aqueous and soil samples)			
	(Examine sample traffic reports and digestion/distillation logs.)			
	Mercury analysis (28 days). . . . . exceeded?	___	[X]	___
	Cyanide distillation (14 days). . . . . exceeded?	___	[___]	X
	Other Metals analysis (6 months). . . . exceeded?	___	[X]	___
	NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.			
	ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.			
A.1.8.2	Is pH of aqueous samples for:			
	Metals Analysis >2?	___	[___]	X
	Cyanides Analysis <12?	___	[___]	X
	Action: If yes, flag the associated metals and cyanides data as estimated.			
A.1.9	**Form I (Final Data)**			
A.1.9.1	Are all Form I's present and complete?	[X]	___	___
	ACTION: If no, prepare telephone record log and contact laboratory for submittal.			
A.1.9.2	Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[X]	___	___
	Are soil sample results for each parameter corrected for percent solids?	[X]	___	___
	Are all "less than IDL" values properly coded with "U"?	[X]	___	___

		YES	NO	N/A
A.1.10.2	Is correlation coefficient less than 0.995 for:			
	Mercury Analysis?	___	[X]	___
	Cyanide Analysis?	___	[___]	X
	Atomic Absorption Analysis?	___	[___]	X

ACTION: If yes, flag the associated data as estimated.

NOTE: The data validator shall calculate the correlation coefficient using concentrations of the standards and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

A.1.10.3	In the instance where less than 4 standards are measured in absorbance (or peak area, peak height,etc.) mode, are the remaining standards analyzed in concentration mode immediately after calibration within ±10% of the true values?	[X]	___	___

ACTION: If no, flag the associated data as estimated if standards are not within ±10% of true values. Do not flag the data as estimated in linear range indicated by good recovery of standard(s).

A.1.11 **Form II A (Initial and Continuing Calibration Verification)-**

A.1.11.1	Present and complete for every metal and cyanide?	[X]	___	___
	Present and complete for AA and ICP when both are used for the same analyte?	[___]	___	X

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.11.2	Circle on each Form IIA all percent recoveries that are outside the contract windows. Are all calibration standards (initial and continuing) within control limits:			
	Metals- 90-110%R?	[X]	___	___
	Hg - 80-120%R?	[X]	___	___
	Cyanides- 85-115%R?	[___]	___	X

		YES	NO	N/A
	Are the correct concentration qualifiers used with final data?	[X]	___	___

ACTION: If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data.

A.1.9.3	Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	[X]	___	___
	Was a brief physical description of samples given on Form I's?	[___]	X	___
	Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV?	___	[X]	___

ACTION: If no for any of the above, note under Contract-Problem/Non-Compliance of the"Data Assessment Narrative".

A.1.10 Calibration

A.1.10.1	Is record of at least 2 point calibration present for ICP analysis?	[X]	___	___
	Is record of 5 point calibration present for Hg analysis?	[X]	___	___
	Is record of 4 point calibration present for:			
	Flame AA?	[___]	___	X
	Furnace AA?	[___]	___	X
	Cyanides?	[___]	___	X
	Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses?	[___]	___	X

ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

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	YES	NO	N/A
ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ) if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits.			
A.1.11.3 Was continuing calibration performed every 10 samples or every 2 hours?	[X]	___	___
Was ICV for cyanides distilled?	[___]	___	N/A
ACTION: If no for any of the above, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.12 **Form II B (CRDL Standards for AA and ICP)** -			
A.1.12.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?	[___]	___	X
Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[___]	___	N/A
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	[___]	___	X
ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are: AA Analysis - **True Value ± CRDL; ICP Analysis - **True Value ± 2CRDL; CN Analysis - **True Value ± 0.5 x True Value.			

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**True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL. Compute the concentration of the missing mid-range standard from the calibration range.

		YES	NO	N/A
A.1.12.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?	[___]	___	X

ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".

A.1.12.3 Circle on each Form IIB all the percent recoveries that are outside the acceptance windows.

Are CRA and CRI standards within control limits:

Metals	80 - 120%R?	[___]	___	X

Is mid-range standard within control limits:

Cyanide	80 - 120%R?	[___]	___	X

ACTION: Flag as estimated all sample results within the affected range if the recovery of the standard is between 50-79%; flag only positive data within the affected range if the recovery is between 121-150%; reject all data within the affected range if the recovery is less than 50%; reject only positive data within the affected range if the recovery is greater than 150%. Qualify 50% of the samples on either side of CRI standard outside the control limits.

Note: Flag or reject the final results only when sample raw data are within the affected ranges and the CRDL standards are outside the acceptance windows.

A.1.13 **Form III (Initial and Continuing Calibration Blanks)**

A.1.13.1	Present and complete?	[X]	___	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	X
	Was an initial calibration blank analyzed?	[X]	___	___
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	[X]	___	___

		YES	NO	N/A
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract-Problems/ Non-Compliance section of the "Data Assessment Narrative".			
A.1.13.2	Circle on each Form III all calibration blank values that are above CRDL (or 2 x IDL when IDL > CRDL).			
	Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	[X]	___	___
	Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[X]	___	___
	ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is less than or equal to calibration blank value analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank outside the control limits.			
A.1.14	**FORM III (Preparation Blank)** - (**Note**: The preparation blank for mercury is the same as the calibration blank.)			
A.1.14.1	Was one prep. blank analyzed for:			
	each Sample Delivery Group (SDG)?	[X]	___	___
	each batch of digested samples?	[X]	___	___
	each matrix type?	[X]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	X
	ACTION: If no for any of the above, flag as estimated (J) all the associated positive data <10 x IDLs for which prep. blank was not analyzed.			
	NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			

		YES	NO	N/A
A.1.14.2	Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?	___	[X]	___
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep.blank?	___	[___]	X
	ACTION: If yes, reject (red-line) all associated data greater than CRDL concentration but less than ten times the prep. blank value.			
A.1.14.3	Is concentration of prep. blank value (Form III) less than two times IDL, when IDL is greater than CRDL?	[X]	___	___
	ACTION: If no, reject (red-line) all positive sample results when sample raw data are less than 10 times the prep. blank value.			
A.1.14.4	Is concentration of prep. blank below the negative CRDL?	___	[X]	___
	ACTION: If yes, reject (red-line) all associated sample results less than 10xCRDL.			
A.1.15	**Form IV (ICP Interference Check Sample)**			
A.1.15.1	Present and complete?	[X]	___	___
	(**NOTE**: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[X]	___	___
	ACTION: If no, flag as estimated (J) all the samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
A.1.15.2	Circle all values on each Form IV that are more than ± 20% of true or established mean value.			
	Are all Interference Check Sample results inside the control limits (± 20%)?	[___]	X	___
	If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?	[X]	___	___

		YES	NO	N/A
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			
A.1.16	**Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)** - (**Note**: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
A.1.16.1	Present and complete for: each SDG?	[X]	___	___
	each matrix type?	[X]	___	___
	each conc. range (i.e. low, med., high)?	[___]	X	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	X
	ACTION: If no for any of the above, flag as estimated (J) all the positive data less than four times the spiking levels specified in SOW for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.16.2	Was field blank used for spiked sample?	___	[X]	___
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
A.1.16.3	Circle on each Form VA all spike recoveries that are outside control limits (75% to 125%).			
	Are all recoveries within control limits?	[X]	___	___
	If no, is sample concentration greater than or equal to four times spike concentration?	[___]	___	X

	YES	NO	N/A
ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	[___]	___	X
ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".			
A.1.16.4 **Aqueous**			
Are any spike recoveries:			
(a) less than 30%?	___	[___]	X
(b) between 30-74%?	___	[___]	X
(c) between 126-150%?	___	[___]	X
(d) greater than 150%?	___	[___]	X
ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".			
A.1.16.5 **Soil/Sediment**			
Are any spike recoveries:			
(a) less than 10%?	___	[X]	___
(b) between 10-74%?	___	[X]	___
(c) between 126-200%?	___	[X]	___
(d) greater than 200%?	___	[X]	___

		YES	NO	N/A
	ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".			
A.1.17	**Form VI (Lab Duplicates)**			
A.1.17.1	Present and complete for: each SDG?	[Y]	___	___
	each matrix type?	[N]	___	___
	each concentration range (i.e. low, med., high)?	[N]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	X
	ACTION: If no for any the above, flag as estimated (J) all the data ≥CRDL* for which duplicate sample was not analyzed.			
	Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated. 2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on wet weight basis and calculate RPD or Difference for each analyte.			
A.1.17.2	Was field blank used for duplicate analysis?	___	[X]	___
	ACTION: If yes, flag all data ≥CRDL* as estimated (J) for which field blank was used as duplicate.			
A.1.17.3	Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?	[X]	___	___
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[___]	___	✓
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative".			

* Substitute IDL for CRDL when IDL > CRDL.

	YES	NO	N/A

NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL.
2. If the result of lab duplicate analyzed by GFAA is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria to metals analyzed by GFAA.

A.1.17.4 **Aqueous**

Circle on each Form VI all values that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	X
Is any difference** between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	X

ACTION: If yes, flag the associated data as estimated.

A.1.17.5 **Soil/Sediment**

Circle on each Form VI all values that are:

RPD > 100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) : > 100%?	___	[X]	___
Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) : > 2x*CRDL?	___	[X]	___

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
	ACTION: If yes, flag the associated data as estimated.			
A.1.18	**Field Duplicates**			
A.1.18.1	Were field duplicates analyzed?	[___]	X	___

ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/l on wet weight basis and calculate RPDs or Difference for each analyte.

NOTE: 1. Do not calculate RPD when both values are less than IDL.
2. Flag all associated data only for field duplicate pair.

A.1.18.2 **Aqueous**

Circle all values on self prepared Form VI for field duplicates that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	X
Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	X

ACTION: If yes, flag the associated data as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
A.1.18.3	**Soil/Sediment**			
	Circle all values on self prepared Form VI for field duplicates that are:			
	RPD >100%, or			
	Difference > 2 x CRDL*			
	Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) : >100%?	___	[___]	X
	Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL): >2x *CRDL?	___	[___]	X
	ACTION: If yes, flag the associated data as estimated.			
A.1.19	**Form VII (Laboratory Control Sample)** (Note: LCS - not required for aqueous Hg and cyanide analyses.)			
A.1.19.1	Was one LCS prepared and analyzed for:			
	each SDG?	[X]	___	___
	each batch samples digested/distilled?	[X]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	X

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all the data for which LCS was not analyzed.

NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
A.1.20	**Form IX (ICP Serial Dilution)** -			
	NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.			
A.1.20.1	Was Serial Dilution analysis performed for:			
	each SDG?	[X]	___	___
	each matrix type?	[X]	___	___
	each concentration range (i.e. low, med.)?	[X]	___	___
	ACTION: If no for any of the above, flag as estimated all the positive data ≥ 10xIDLs or ≥ CRDL when 10xIDL ≤ CRDL for which Serial Dilution Analysis was not performed.			
A.1.20.2	Was field blank(s) used for Serial Dilution Analysis?	___	[X]	___
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J). If 10xIDL ≤ CRDL, flag all data ≥ CRDL.			
A.1.20.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.	[___]	___	X
	ACTION: If no, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.20.4	Circle on each Form IX all percent difference that are outside the control limits for initial concentrations equal to or greater than 10 x IDLs only.			
	Are any % difference values:			
	> 10%?	X	[___]	___
	≥ 100%?	X	[___]	___

		YES	NO	N/A
A.1.19.2	**Aqueous LCS**			
	Circle on each Form VII the LCS percent recoveries outside control limits (80 - 120%) except for aqueous Ag and Sb.			
	Is any LCS recovery: less than 50%?	___	[___]	X
	between 50% and 79%?	___	[___]	X
	between 121% and 150%?	___	[___]	X
	greater than 150%?	___	[___]	X

ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.

A.1.19.3 **Solid LCS**

NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J).

2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.

Is LCS "Found" value higher than the control limits on Form VII?	___	[X]	___

ACTION: If yes, qualify all associated positive data as estimated.

Is LCS "Found" value lower than the Control limits on Form VII?	___	[X]	___

ACTION: If yes, qualify all associated data as estimated.

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		YES	NO	N/A
	ACTION: Flag as estimated (J) all the associated sample data ≥ 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which percent difference is greater than 10% but less than 100%. Reject (red-line) all the associated sample results equal to or greater than 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which PD is greater than or equal to 100%.			
	Note: Flag or reject on Form I's only the sample results whose associated raw data are ≥ 10xIDL (or ≥ CRDL when 10xIDL≤ CRDL)			
A.1.21	**Furnace Atomic Absorbtion (AA) QC Analysis**			
A.1.21.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	[___]	___	X
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
A.1.21.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	[___]	___	X
	Was a dilution analyzed for sample with analytical spike recovery less than 40%?	[___]	___	X
	ACTION: If no for any of the above, flag all the associated data as estimated.			
A.1.21.3	Is *analytical spike recovery outside the control limits (85-115%) for any sample?	___	[___]	X
	ACTION: If yes, flag as estimated the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject the associated sample results if the recovery is less than 10%; reject positive sample results if the recovery is greater than 200%.			

* Analytical spike is not required on the pre-digestion spiked sample.

		YES	NO	N/A
	NOTE: Reject or flag the data only when the affected sample(s) was not subsequently analyzed by Method of Standard Addition.			
A.1.22	**Form VIII (Method of Standard Addition Results)**			
A.1.22.1	Present?	[___]	[X]	___
	If no, is any Form I result coded with "S" or a "+"?	___	[N]	___
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			
A.1.22.2	Is coefficient of correlation for MSA less than 0.990 for any sample?	___	[___]	X
	ACTION: If yes, reject (red-line) the affected data.			
A.1.22.3	Was *MSA required for any sample but not performed?	___	[X]	___
	Is coefficient of correlation for MSA less than 0.995?	___	[___]	X
	Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?	___	[___]	X
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
A.1.22.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23?	[___]	___	X
	ACTION: If no, note exception under Contract Problem/ Non-Compliance section of the "Data Assessment Narrative", and prepare a separate list.			

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* MSA is not required on LCS and prep. blank.

	YES	NO	N/A
If no, was field blank value already rejected due to other QC criteria?	[___]	___	N

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value. Reject on Form I's the soil sample results that when converted to ug/L on wet basis are less than or equal to five times the field blank value in ug/L.

A.1.25 **Form X, XI, XII (Verification of Instrumental Parameters).**

A.1.25.1 Is verification report present for:

Instrument Detection Limits (quarterly)?	[___]	___	N
ICP Interelement Correction Factors (annually)?	[___]	___	X
ICP Linear Ranges (quarterly)?	[___]	___	X

ACTION: If no, contact TPO of the lab.

A.1.25.2 **Form X (Instrument Detection Limits)** - (Note: IDL is not required for Cyanide.)

A.1.25.2.1 Are IDLs present for: all the analytes?	[___]	___	X
all the instruments used?	[___]	___	X
For both AA and ICP when both are used for the same analyte?	[___]	___	X

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.25.2.2 Is IDL greater than CRDL for any analyte?	___	[___]	X
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.	[___]	___	X

		YES	NO	N/A
A.1.23	**Dissolved/Total or Inorganic/Total Analytes** -			
A.1.23.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s).	___	[X]	___
	Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[X]	___
	NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration. 2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents. 3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.			
A.1.23.2	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	X
A.1.23.3	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[___]	X
	ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.			
A.1.24	**Form I (Field Blank)** -			
	(**Note**: Designate "Field Blank" as such on Form I.)			
A.1.24.1	Circle all field blank values on Form I that are greater than CRDL, (or 2 x IDL when IDL > CRDL).			
	Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[___]	___	X

	YES	NO	N/A
Action : If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			
A.1.25.3 **Form XI (Linear Ranges)**			
A.1.25.3.1 Was any sample result higher than high linear range of ICP.	___	[___]	X
Was any sample result higher than the highest calibration standard for non-ICP parameters?	___	[___]	X
If yes for any of the above, was the sample diluted to obtain the result on Form I?	[___]	___	X
ACTION: If no, flag the result reported on Form I as estimated(J).			
A.1.26 **Percent Solids of Sediments**			
A.1.26.1 Are percent solids in sediment(s): < 50%?	___	[X]	___
< 10%?	___	[X]	___
ACTION: If yes, qualify as estimated all the results of a sample that has per cent solids between 10%-50% (i.e. moisture content between 50%-90%). Reject all the results of a sample that has per cent solids less than 10% (i.e. moisture content greater than 90%).			
NOTE: Reject or flag(J) only the sample results that were not previously rejected or flaged due to other QC criteria.			

Case# _____ Site _____ Matrix: Soil _____

SDG# _____ **Lab** _____ Water_____

Contractor _____ **Reviewer** _____ Other_____

A.2.1 **Validation Flags-** The following flags have been applied in red by the data validator and must be considered by the data user.

J- This flag indicates the result qualified as **estimated**

Red- Line- A red-line drawn through a sample result indicates **unusable** value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

Fully Usable Data- The results that do not carry "J" or "red-line" are fully usable.

Contractual Qualifiers- The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW ILM01.0.

A.2.2 The data assessment is given below and on the attached sheets.

_____

_____

_____

_____

_____

_____

_____

_____

A.2.2 (continuation)

A.2.2 (continuation)

A.2.3 Contract-Problem/Non-Compliance

MMB/ESAT Rviewer: _____ Date: _____
Signature

Contractor Reviewer: _____ Date: _____
Signature

Verified by: _____ Date: _____

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste
Site Contract Laboratory Data Package

CASE NO._____

The hardcopied (laboratory name)_____
Inorganic data package received at Region II has been reviewed and the quality assurance and performance data summarized. The data reviewed included:
SMO Sample No.:_____

Conc. & Matrix:_____

Contract No.(_____) requires that specific analytical work be done and that associated reports be provided by the contractor to the Regions, EMSL-LV, and SMO. The general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

Items of non-compliance with the above contract are described below.

Comments:_____

_____

_____

_____

_____

_____

_____

_____

_____

_____ _____
Reviewer's Initial Date

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.6: CLP Data Assessment Checklist

Inorganic Analysis

Date: Jan. 1992
Number: HW-2
Revision: 11

INORGANIC REGIONAL DATA ASSESSMENT

Region_____

CASE NO._____

SITE_____

LABORATORY_____

NO. OF SAMPLES/ MATRIX_____

SDG#_____

REVIEWER (IF NOT ESD)_____

SOW#_____

REVIEWER'S NAME_____

DPO: ACTION_____ FYI_____

COMPLETION DATE_____

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	CYANIDE
1.	HOLDING TIMES				
2.	CALIBRATIONS				
3.	BLANKS				
4.	ICS				
5.	LCS				
6.	DUPLICATE ANALYSIS				
7.	MATRIX SPIKE				
8.	MSA				
9.	SERIAL DILUTION				
10.	SAMPLE VERIFICATION				
11.	OTHER QC				
12.	OVERALL ASSESSMENT				

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:_____

AREAS OF CONCERN:_____

NOTABLE PERFORMANCE:_____

YES NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: II-CERCLA-02-0104 LABORATORY: Envirotech Research Inc.

SITE NAME: Klockner + Klockner SDG Number(s): I279

1.0 Chain of Custody and Sampling Trip Reports

1.1 Are the Traffic Reports/Chain-of-Custody Records present for all samples? [X] ___ ___

ACTION: If no, contact RSCC or the lab to obtain replacement of missing or illegible copies.

1.2 Is the Sampling Trip Report present for all samples and all fractions? [X] ___ ___

ACTION: If no, contact either RSCC or ask the prime contractor to provide this information.

2.0 Data Completeness and Deliverables

2.1 Have any missing deliverables been received and added to the data package? ___ X

NOTE: The lab is required to submit data for only two analyses, for each fraction. (i.e., the original sample and one dilution, or the most concentrated dilution analyzed and one further dilution.)

ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If lab cannot provide them, note the effect on the review of the package in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary form.

2.2 Was CLASS CCS checklist included with package? [ ] X ___

2.3 Are there any discrepancies between the Traffic Reports/Chain-of-Custody Records, Sampling Report and Sample Tags? ___ [X] ___

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	YES	NO	N/A
ACTION: If yes, contact the lab to obtain an explanation or resubmittal of any missing deliverables.			
3.0 Cover Letter SDG Narrative			
3.1 Is the Narrative or Cover Letter Present?	[X]	___	___
3.2 Are case number, SDG number and contract number contained in the SDG Narrative or cover letter (see SOW, Exhibit B, section 2.6.1)?	[X]	___	___
3.3 Does the narrative contain the following information:			
VOA: description of trap and columns used during sample analyses?	[X]	___	___
BNA: description of columns used during sample analyses?	[ ]	___	X
Pest: description of columns used during sample analyses?	[ ]	___	X
NOTE: As per section 6.23.3.1 SOW/p. D-11/Pest, Packed columns are not permitted.			
3.4 Does the narrative, VOA and BNA sections, contain a list of all TICs identified as alkanes and their estimated concentrations?	[ ]	X	___
3.5 Does the narrative contain a record of all cooler temperatures? If the temperature of a cooler was exceeded, > 10° C, the lab must list by fraction and sample number, all affected samples.	[ ]	X	___
3.6 Does the narrative contain a list of the pH values determined for each water sample submitted for volatile analysis (SOW Exhibit B, section 2.6.1.2)?	[ ]	X	___
3.7 Does the Case Narrative contain the statement, "verbatim", as required in Section B of the SOW?	[ ]	X	___
ACTION: If "No", to any question in this section, contact the lab to obtain all necessary resubmittals. If information is not available,			

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YES NO N/A

document in the Data Assessment under Contract Problems/Non-Compliance section.

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	YES	NO	N/A
4.0 Data Validation Checklist			
4.1 Check the package for the following discrepancies:			
a. Is the package paginated in ascending order starting from the SDG narrative?	X		
b. Are all forms and copies legible?	X		
c. Is each fraction assembled in the order set forth in the SOW?	X		
d. Is a Sample Data Summary Package submitted immediately preceding the Sample Data Package?		X	

The following checklist is divided into three parts. Part A is for any VOA analyses, Part B is for BNAs and Part C is Pesticide/PCBs.

Does this package contain:

VOA Data?	X	
BNA Data?		X
Pesticide/PCB data?		X

ACTION: Complete corresponding parts of checklist.

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YES NO N/A

PART A: VOA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records, Sampling Report or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? ___ X ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated (J). If a soil sample other than TCLP contains more than 90% water, all data should be qualified as unusable (R).

ACTION: If samples were not iced or the ice was melted upon arrival at the laboratory and the cooler temperature was elevated (> 10° C), then flag all positive results with a "J" and all non-detects "UJ".

ACTION: If both VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

ACTION: The smallest soil size permitted is 0.5g. If any soil sample is smaller than 0.5g, document in the Data Assessment under Contract Problems/Non-Compliance.

2.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? ___ X ___

Technical Holding Times: If unpreserved, aqueous samples, maintained at 4° C for aromatic hydrocarbons analysis must be analyzed within 7 days of collection. If preserved with HCl (pH < 2) and stored at 4° C, then aqueous samples must be analyzed within 14 days of collection. If uncertain about preservation, contact sampler to determine whether or

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YES NO N/A

not samples were preserved. The holding time for soils is 10 days from date of collection.

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample ID	Sample Matrix	Was Sample Preserved?	Date Sampled	Date Lab Received	Date Analyzed

ACTION: If technical holding times are exceeded, flag all positive results as estimated "J" and sample quantitation limits as estimated "UJ", and document in the Data Assessment that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable "R". If holding times are exceeded by more than 28 days, all non detect data are unusable "R".

NOTE: Contractual Holding Times: Analysis of water and soil/sediment samples must be completed within 10 days of Validated Time of Sample Receipt (VTSR). This requirement does not apply to Performance Evaluation (PE) samples.

ACTION: If contractual holding times are exceeded,

YES NO N/A

document in the Data Assessment and on the Organic Regional Data Assessment Summary form.

NOTE: The data reviewer must note in the Data Assessment whether or not **technical and contractual** holding times were met.

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	YES	NO	N/A
3.0 System Monitoring Compound (SMC) Recovery (Form II)			
3.1 Are the VOA SMC Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water?	[ ]	X	___
b. Low Soil?	[ ]	X	___
c. Med Soil? High per 8021	[X]	___	___
3.2 Are all the VOA samples listed on the appropriate System Monitoring Compound Recovery Summary for each of the following matrices:			
a. Low Water?	[ ]	___	X
b. Low Soil?	[ ]	___	X
c. Med Soil? High per 8021	[X]	___	___
ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If missing deliverables are unavailable, document the effect in the Data Assessment.			
3.3 Were outliers marked correctly with an asterisk?	[X]	___	___
ACTION: Circle all outliers with red pencil.			
3.4 Was one or more VOA system monitoring compound recovery outside of contract specifications for any sample or method blank?	___	[X]	___
If yes, were samples re-analyzed?	[ ]	___	X
Were method blanks re-analyzed?	[ ]	___	X

ACTION: If recoveries are ≥ 10%, but 1 or more compounds fail to meet SOW specifications:

1. All positive results are qualified as estimated "J".

2. Flag all non-detects as estimated detection limits "UJ" where recovery is less than the lower acceptance limit.

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YES NO N/A

3. If SMC recoveries are above allowable levels, do not qualify non-detects.

If any system monitoring compound recovery is < 10%:

1. Flag all positive results as estimated "J".

2. Flag all non-detects as unusable "R".

Professional judgement should be used to qualify data that only have method blank SMC recoveries out of specification in both original and re-analyses. Check the internal standard areas.

NOTE: Contractual requirements state that if any SMC fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

NOTE: The laboratory must submit the following data:

1. If SMC recoveries and internal standard responses meet the acceptance criteria in the re-analyzed sample, then the laboratory must submit only the re-analysis.

2. If an SMC recovery and/or internal standard response fails to meet the acceptance criteria upon re-analysis, then submit data from both analyses.

(Refer to section 11.4.3.2, page D-46/VOA of the SOW for more information.)

3.5 Are there any transcription/calculation errors between raw data and Form II? ___ X ___

ACTION: If large errors exist, contact the lab to obtain an explanation or resubmittal of corrected deliverables. Make any necessary corrections and note the effect in the Data Assessment.

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	YES	NO	N/A
4.0 Matrix Spikes (Form III)			
4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present?	[X]	___	___
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water?	[ ]	X	___
b. Low Soil?	[ ]	X	___
c. Med Soil? High per 8021	[X]	___	___

ACTION: If any matrix spike data are missing, take the action specified in section 3.2 above.

4.3 How many VOA spike recoveries are outside QC limits?

Water	Soils
Nt out of 10	0 out of 10

4.4 How many RPDs for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
Nt out of 5	0 out of 5

ACTION: No action is taken based upon MS/MSD data alone. However, using informed professional judgement, the MS/MSD results may be used in conjunction with other QC criteria to determine the need for qualification of the data.

ACTION: Circle all outliers with red pencil.

5.0 Blanks (Form IV)

	YES	NO	N/A
5.1 Is the Method Blank Summary (Form IV) present?	[X]	___	___

5.2 Frequency of Analysis: for the analysis of VOA TCL compounds, has a reagent/method blank been

		YES	NO	N/A
	analyzed for each SDG or every 20 samples of similar matrix (low water, low soil or medium soil), whichever is more frequent?	X		
5.3	Has a VOA method blank been analyzed at least once every twelve hours for each concentration level and GC/MS system used?	X		
5.4	Was a VOA instrument blank analyzed after each sample/dilution which contained a target compound that exceeded the initial calibration range?			X
5.5	Was a VOA storage blank analyzed at the end of all samples for each SDG in a case?		X	

ACTION: If any method/instrument blank data are missing, contact the lab to obtain any missing deliverables. If method blank data are not available, reject "R" all associated positive data. However, using professional judgement, the data reviewer may substitute field blank or trip blank data for missing method blank data.

If any instrument blank analyzed after a sample with high concentration is missing, contact the lab to obtain any missing deliverables. If the instrument blank was not analyzed or not available, inspect the chromatogram of the sample analyzed immediately after this analysis for possible carryover. Use professional judgement to determine if any contamination occurred and qualify analyte(s) accordingly.

If storage blank data is missing, contact the lab to obtain any missing deliverables. If unavailable, note in the Contract Problems/Non-Compliance section of the Data Assessment.

5.6 The validator should verify that the correct identification scheme for the EPA Blank samples were used. See page B-33, section 3.3.7.3 of the SOW for further information.

		YES	NO	N/A
	Was the correct identification scheme used for all VOA blanks?		X	

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	YES	NO	N/A
ACTION: Contact the lab to obtain missing deliverables, or make the required corrections on the forms. Document in the Data Assessment under Contract Problems/Non-compliance if corrections were made by the validator.			
5.7 Chromatography: review the blank raw data-chromatograms (RICs), quant. reports or data system printouts and spectra. Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs?	X		
ACTION: Use professional judgement to determine the effect on the data.			
5.8 Are all detected hits for target compounds in method, instrument and storage blanks less than the CRQL for that analyte?	X		
Exception: Acetone and 2-butanone must be less than 5 times the CRQL, and methylene chloride must be less than 2.5 times its CRQL.			
ACTION: If no, an explanation and laboratory's corrective actions must be addressed in the case narrative. If the narrative contains no explanation, then make a note in the Contract Problems/Non-Compliance section of the Data Assessment.			
6.0 Contamination			
NOTE: "Water blanks", "drill blanks", and "distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.			
6.1 Do any method/instrument/reagent/storage blanks have positive results (TCL and/or TIC) for VOAs? NOTE: When applied as directed in the table below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for %moisture when necessary.		X	

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YES NO N/A

NOTE: A contaminated instrument blank is not allowable under this SOW. See page D-48/VOA, section 12.1.2.4 for additional information. Document in the Data Assessment under Contract Problems/Non-Compliance if contaminated instrument blank was submitted.

6.2 Do any field/trip/rinse blanks have positive VOA results (TCL and/or TIC)? [ ] X ___

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped and are not required for non-aqueous matrices. Blanks may not be qualified because of contamination in another blank. Field Blanks & Trip Blanks must be qualified for system monitoring compound, instrument performance criteria, spectral or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable "R".

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YES NO N/A

For:	Flag sample result with a "U" when:	Report CRQL & qualify "U" when:	No qualification is needed when:
Methylene Chloride Acetone Toluene 2-Butanone	Sample conc. is > CRQL, but ≤ 10× blank value.	Sample conc. is < CRQL and ≤ 10× blank value.	Sample conc. is > CRQL and > 10× blank value.
Other Conta-minants	Sample conc. is > CRQL, but ≤ 5× blank value.	Sample conc. is < CRQL and ≤ 5× blank value.	Sample conc. is > CRQL and > 5× blank value.

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration criteria.

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R".

6.3 Are there field/rinse/equipment blanks associated with every sample? [ ] X ___

ACTION: For low level samples, note in the Data Assessment that there is no associated field/rinse/equipment blank. For samples with high concentrations of suspected blank contaminants, use professional judgement to qualify these values and make a note in the Data Assessment.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V)

7.1 Are the GC/MS Instrument Performance Check Forms (Form V) present for Bromofluorobenzene (BFB)? [ ] ___ X

7.2 Are the enhanced bar graph spectrum and 301959

	YES	NO	N/A
mass/charge (m/z) listing for the BFB provided for each twelve hour shift?	[ ]	___	X
7.3 Has an instrument performance check been analyzed for every analytical sequence on each instrument?	[ ]	___	X

ACTION: List date, time, instrument ID, and sample numbers for which associated GC/MS tuning data are unavailable.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: Notify the lab to obtain missing data, if possible. If the lab cannot provide the missing data, reject, "R", all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundances been normalized to m/z 95 as specified in Exhibit D, page D-56/VOA?	[ ]	___	X

NOTE: All ion abundance ratios must be normalized to m/z 95, the nominal base peak, even though the ion abundance of m/z 174 may be up to 120% that of m/z 95.

ACTION: If mass assignment is in error, qualify all associated data as unusable "R".

7.5 Have the ion abundance criteria been met for each instrument used?	[ ]	___	X

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors

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	YES	NO	N/A
between mass lists and Form Vs? (Check at least two values, but if errors are found check more.)	___	[ ]	X
7.7 Is the number of significant figures for the reported relative abundances consistent with the number given for each ion in the ion abundance criteria column?	[ ]	___	X
ACTION: If large errors exist, take action as specified in section 3.5 above.			
7.8 Are the spectra of the mass calibration compound acceptable?	[ ]	___	X
ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.			
8.0 Target Compound List (TCL) Analytes (FORM I VOA)			
8.1 Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate?	[X]	___	___
b. Matrix spikes and matrix spike duplicates?	[ ]	X	___
c. Blanks?	[X]	___	___
8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (quant. reports) included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[X]	___	___
b. Matrix spikes and matrix spike duplicates (mass spectra not required)?	[X]	___	___
c. Blanks?	[X]	___	___
ACTION: If any data are missing, take action specified in 3.2 above.			

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	YES	NO	N/A
8.3 Are the response factors shown in the quant. report?	[X]		
8.4 Is chromatographic performance acceptable with respect to:			
a. Baseline stability?	[X]		
b. Resolution?	[X]		
c. Peak shape?	[X]		
d. Full-scale graph (attenuation)?	[X]		
e. Other: _____?	[ ]		

ACTION: Use professional judgement to determine the acceptability of the data.

	YES	NO	N/A
8.5 Are the lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[ ]		X

ACTION: If any mass spectra are missing, take action as specified in 3.2 above. If the lab does not generate its own standard spectra, document in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary.

	YES	NO	N/A
8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[X]		
8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[ ]		X
8.8 Do sample and standard relative ion intensities agree within ±20%?	[ ]		X

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected "R", flagged "N" (presumptive evidence of the presence of the

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	YES	NO	N/A
compound) or changed to not detected "U" at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in 8.6, 8.7, and 8.8.			
ACTION: When sample carry-over is suspected, use professional judgement determine if instrument cross-contamination has affected positive compound identifications.			
9.0 Tentatively Identified Compounds (TIC)			
9.1 Are all Tentatively Identified Compound Forms (Form I Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier?	[ ]	___	X
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[ ]	___	X
b. Blanks?	[ ]	___	X
c. Alkanes listed for each sample?	[ ]	___	X
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "JN" qualifier to all chemically named TICs, if missing.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds? (Example: 1,2- dimethylbenzene is xylene, a VOA TCL analyte, and should not be reported as a TIC.)	___	[ ]	X
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[ ]	___	X

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	YES	NO	N/A
9.5 Do TIC and "best match" standard relative ion intensities agree within ±20%?	[ ]		X

ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined an incorrect identification was made, change the identification to "unknown," or to some less specific identification as appropriate. (Example: "C3 substituted benzene.")

Also, when a compound is not found in any blank, but is detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable "R". (E.g., Common Lab Contaminants: CO_2 (M/E 44), siloxanes (M/E 73) hexane, aldol condensation products, solvent preservatives, and related by-products - see the National Functional Guidelines for further guidance.)

9.6 Are TICs with responses < 10% of the internal standard (as determined by inspection of the peak areas or height) reported?		[ ]	X

ACTION: If yes, cross out questionable TIC(s).

10.0 Compound Quantitation and Reported Detection Limits

10.1 Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standards, quantitation ions, and RRF were used to calculate Form I results.)		X	
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	X		

ACTION: If errors are large, take action as specified in section 3.5 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample). Replace concentrations that exceeded the calibration

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	YES	NO	N/A
range in the original analysis by crossing out the "E" and its corresponding value on the original Form I and substituting the data from the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form Is not to be used, including any in the data summary package.			
11.0 Standards Data (GC/MS)			
11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (quant. reports) present for each initial and continuing calibration?	[X]	___	___
ACTION: If any calibration standard data are missing, take action specified in 3.2 above.			
12.0 GC/MS Initial Calibration (Form VI)			
12.1 Are the Initial Calibration Forms (Form VI) present and complete at concentrations of 10, 20, 50, 100, 200ng for separate calibrations of low water/med soils (unheated purge) and low soils (heated purge)?	[X]	___	___
ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.			
12.2 Were all low level soil standards, blanks and samples analyzed by heated purge?	[ ]	___	[X]
ACTION: If low level soil samples were not heated during purge, qualify positive hits "J" (estimated) and non-detects "R".			
12.3 Are the % relative standard deviation (%RSD) values for VOAs ≤ 30% over the concentration range of the calibration?	[X]	___	___
NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %RSD, the technical acceptance criteria are the same for all analytes.			
ACTION: Circle all outliers with red pencil.			

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YES NO N/A

ACTION: If %RSD is > 30.0%, qualify associated positive results for that analyte "J" (estimated) and non-detects using professional judgement. When %RSD is > 90%, flag all non-detects for that analyte "R" (unusable) and positive hits "J".

NOTE: Analytes previously qualified "U" for blank contamination are still considered as "hits" when qualifying for initial calibration criteria. ___ X ___

12.4 Are any average RRFs < 0.05?

<[illegible]

ACTION: Circle all outliers with red pencil.

ACTION: If the average RRF is < 0.05, then qualify associated non-detects with an "R" and flag associated positive data as estimated "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %RSD or RRF criteria, provided the %RSD is ≤ 40% and RRF is ≥ 0.010. (See Table 5, page D-59/VOA and analytes marked with a "*" on Form VI for required analytes and contractual criteria.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %RSD or RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and the Organic Regional Data Assessment Summary.

12.5 Are there any transcription/calculation errors in the reporting of average relative response factors (RRF) or %RSD? (Check at least 2 values, but if errors are found, check more.) ___ X ___

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

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	YES	NO	N/A

13.0 GC/MS Continuing Calibration (Form VII)

13.1 Are the Continuing Calibration Forms (Form VII) present and complete for separate calibration of low water/med soil and low soil samples?	X	[ ]	___
13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?	X	___	___

2.4.CD 10/21 2310 10/22 0810

CCCD 10/22 0907 10/23 0847 10/24 0202

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, contact the lab to request an explanation/resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable "R".

ACTION: List below all sample(s) that were not analyzed within twelve hours of the previous continuing calibration.

___

___

___

13.3 Do any volatile compounds have a percent difference (%D) between the initial and continuing RRF which exceeds the ±25% criteria?	X	[ ]	___

NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %D, the technical acceptance criteria are the same for all analytes.

ACTION: Circle all outliers with red pencil.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated. When %D is > 90%, qualify all non-detects for that analyte unusable (R) and positive results estimated (J).

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	YES	NO	N/A
13.4 Are any continuing calibration RRFs < 0.05?	___	[X]	___

ACTION: Circle all outliers with red pencil.

ACTION: If the RRF is < 0.05, qualify the associated non-detects as unusable "R" and the associated positive values "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %D and RRF criteria, provided that the %D is ≤ 40% and the RRF is ≥ 0.010. (See Table 5 pg. D-59/VOA or analytes marked with a "*" on Form VI for required analytes.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %D and RRF, criteria document in the Data Assessment under contract Problems/Non-Compliance and on the Organic Regional Data Assessment Summary form.

	YES	NO	N/A
13.5 Are there any transcription/calculation errors in the reporting of RRF or %D between initial and continuing RRFs? (Check at least two values, but if errors are found, check more.)	___	[X]	___

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance.

14.0 Internal Standard (Form VIII)

	YES	NO	N/A
14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits (-50% to +100%) for each continuing calibration?	[ ]	___	[X]
If no, was the sample re-analyzed?	[ ]	___	[X]

ACTION: 1. Circle all outliers with red pencil.

2. List all the outliers below.

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YES NO N/A

Sample #	Internal Std.	Area	Lower/Upper Limit
			/
			/
			/
			/

(Attach additional sheets if necessary, or attach copies of Form VIIIs.)

ACTION: If any sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

ACTION: 1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Do not qualify non-detects when associated IS area counts are > 100%.

3. If the IS area in the sample is below the "lower limit," < 50%, qualify all analytes associated with that IS estimated, "J". If the area counts are extremely low, < 25% of the area in the 12 hour standard, or if performance exhibits a major abrupt drop- off, flag all associated non-detects as unusable, "R", and positive hits estimated, "J".

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [ ] ___ X

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

NOTE: Contractual requirements state that if any internal standard fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not

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YES NO N/A

re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

NOTE: See Notes in section 3.4, page 7 for a description of sample data the laboratory must submit.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for VOA analysis? ☒ ___ ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

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YES NO N/A

PART B: BNA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody records or laboratory SDG Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [ ] ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated "J". If a soil sample, other than TCLP, contains more than 90% water, all data should be qualified as unusable "R".

ACTION: If samples were not iced or if the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 10° C), flag all positive results "J" and all non-detects "UJ".

2.0 Holding Times

2.1 Have any BNA technical holding times, determined from date of collection to date of extraction, been exceeded? ___ [ ] ___

Technical Holding Time: Continuous extraction of water samples for BNA analysis must be started within seven days of the date of collection. Soil/sediment samples must be extracted within 7 days of collection. Extracts must be analyzed within 40 days of the date of extraction.

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample Analyzed	Sample Matrix	Date Sampled	Date Lab Received	Date Extracted	Date Analyzed

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	YES	NO	N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: II - CERCLA-95-0104 LABORATORY: STL Envirotech

SITE NAME: Klockner + Klockner SDG Number(s): X 303

1.0 Chain of Custody and Sampling Trip Reports

	YES	NO	N/A
1.1 Are the Traffic Reports/Chain-of-Custody Records present for all samples?	[X]		
ACTION: If no, contact RSCC or the lab to obtain replacement of missing or illegible copies.			
1.2 Is the Sampling Trip Report present for all samples and all fractions?	[X]		
ACTION: If no, contact either RSCC or ask the prime contractor to provide this information.			

2.0 Data Completeness and Deliverables

	YES	NO	N/A
2.1 Have any missing deliverables been received and added to the data package?		✓	
NOTE: The lab is required to submit data for only two analyses, for each fraction. (i.e., the original sample and one dilution, or the most concentrated dilution analyzed and one further dilution.)			
ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If lab cannot provide them, note the effect on the review of the package in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary form.			
2.2 Was CLASS CCS checklist included with package?	[ ]	X	
2.3 Are there any discrepancies between the Traffic Reports/Chain-of-Custody Records, Sampling Report and Sample Tags?		[X]	

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	YES	NO	N/A
ACTION: If yes, contact the lab to obtain an explanation or resubmittal of any missing deliverables.			
3.0 Cover Letter SDG Narrative			
3.1 Is the Narrative or Cover Letter Present?	[X]		
3.2 Are case number, SDG number and contract number contained in the SDG Narrative or cover letter (see SOW, Exhibit B, section 2.6.1)?	[X]		
3.3 Does the narrative contain the following information:			
VOA: description of trap and columns used during sample analyses?	[X]		
BNA: description of columns used during sample analyses?	[ ]		X
Pest: description of columns used during sample analyses?	[ ]		X
NOTE: As per section 6.23.3.1 SOW/p. D-11/Pest, Packed columns are not permitted.			
3.4 Does the narrative, VOA and BNA sections, contain a list of all TICs identified as alkanes and their estimated concentrations?	[ ]	X	
3.5 Does the narrative contain a record of all cooler temperatures? If the temperature of a cooler was exceeded, > 10° C, the lab must list by fraction and sample number, all affected samples.	[ ]	X	
3.6 Does the narrative contain a list of the pH values determined for each water sample submitted for volatile analysis (SOW Exhibit B, section 2.6.1.2)?	[ ]	X	
3.7 Does the Case Narrative contain the statement, "verbatim", as required in Section B of the SOW?	[ ]	X	
ACTION: If "No", to any question in this section, contact the lab to obtain all necessary resubmittals. If information is not available,			

301974

x 302

YES NO N/A

document in the Data Assessment under Contract Problems/Non-Compliance section.

301975

	YES	NO	N/A
4.0 Data Validation Checklist			
4.1 Check the package for the following discrepancies:			
a. Is the package paginated in ascending order starting from the SDG narrative?	[✓]	___	___
b. Are all forms and copies legible?	[✓]	___	___
c. Is each fraction assembled in the order set forth in the SOW?	[✓]	___	___
d. Is a Sample Data Summary Package submitted immediately preceding the Sample Data Package?	[ ]	X	___
The following checklist is divided into three parts. Part A is for any VOA analyses, Part B is for BNAs and Part C is Pesticide/PCBs.			
Does this package contain:			
VOA Data?	✓	___	
BNA Data?	___	✓	
Pesticide/PCB data?	___	X	

ACTION: Complete corresponding parts of checklist.

301976

x 307

YES NO N/A

PART A: VOA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records, Sampling Report or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? ___ X ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated (J). If a soil sample other than TCLP contains more than 90% water, all data should be qualified as unusable (R).

ACTION: If samples were not iced or the ice was melted upon arrival at the laboratory and the cooler temperature was elevated (> 10° C), then flag all positive results with a "J" and all non-detects "UJ".

ACTION: If both VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

ACTION: The smallest soil size permitted is 0.5g. If any soil sample is smaller than 0.5g, document in the Data Assessment under Contract Problems/Non-Compliance.

2.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? ___ X ___

Technical Holding Times: If unpreserved, aqueous samples, maintained at 4° C for aromatic hydrocarbons analysis must be analyzed within 7 days of collection. If preserved with HCl (pH < 2) and stored at 4° C, then aqueous samples must be analyzed within 14 days of collection. If uncertain about preservation, contact sampler to determine whether or

301977

YES NO N/A

not samples were preserved. The holding time for soils is 10 days from date of collection.

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample ID	Sample Matrix	Was Sample Preserved?	Date Sampled	Date Lab Received	Date Analyzed

ACTION: If technical holding times are exceeded, flag all positive results as estimated "J" and sample quantitation limits as estimated "UJ", and document in the Data Assessment that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable "R". If holding times are exceeded by more than 28 days, all non detect data are unusable "R".

NOTE: Contractual Holding Times: Analysis of water and soil/sediment samples must be completed within 10 days of Validated Time of Sample Receipt (VTSR). This requirement does not apply to Performance Evaluation (PE) samples.

ACTION: If contractual holding times are exceeded,

301978

YES NO N/A

document in the Data Assessment and on the Organic Regional Data Assessment Summary form.

NOTE: The data reviewer must note in the Data Assessment whether or not **technical and contractual** holding times were met.

301979

	YES	NO	N/A
3.0 System Monitoring Compound (SMC) Recovery (Form II)			
3.1 Are the VOA SMC Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water?	[ ]	X	
b. Low Soil?	[ ]	X	
c. Med Soil?	[X]		
3.2 Are all the VOA samples listed on the appropriate System Monitoring Compound Recovery Summary for each of the following matrices:			
a. Low Water?	[ ]		X
b. Low Soil?	[ ]		X
c. Med Soil?	[X]		
ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If missing deliverables are unavailable, document the effect in the Data Assessment.			
3.3 Were outliers marked correctly with an asterisk?	[X]		
ACTION: Circle all outliers with red pencil.			
3.4 Was one or more VOA system monitoring compound recovery outside of contract specifications for any sample or method blank?			
		[X]	
If yes, were samples re-analyzed?	[ ]		X
Were method blanks re-analyzed?	[ ]		X

ACTION: If recoveries are ≥ 10%, but 1 or more compounds fail to meet SOW specifications:

1. All positive results are qualified as estimated "J".

2. Flag all non-detects as estimated detection limits "UJ" where recovery is less than the lower acceptance limit.

301980

X303

YES NO N/A

3. If SMC recoveries are above allowable levels, do not qualify non-detects.

If any system monitoring compound recovery is < 10%:

1. Flag all positive results as estimated "J".

2. Flag all non-detects as unusable "R".

Professional judgement should be used to qualify data that only have method blank SMC recoveries out of specification in both original and re-analyses. Check the internal standard areas.

NOTE: Contractual requirements state that if any SMC fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

NOTE: The laboratory must submit the following data:

1. If SMC recoveries and internal standard responses meet the acceptance criteria in the re-analyzed sample, then the laboratory must submit only the re-analysis.

2. If an SMC recovery and/or internal standard response fails to meet the acceptance criteria upon re-analysis, then submit data from both analyses.

(Refer to section 11.4.3.2, page D-46/VOA of the SOW for more information.)

3.5 Are there any transcription/calculation errors between raw data and Form II? ___ X ___

ACTION: If large errors exist, contact the lab to obtain an explanation or resubmittal of corrected deliverables. Make any necessary corrections and note the effect in the Data Assessment.

301981

	YES	NO	N/A
4.0 Matrix Spikes (Form III)			
4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present?	☒		
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water?	☐	✓	
b. Low Soil?	☐	✓	
c. Med Soil?	☒		

ACTION: If any matrix spike data are missing, take the action specified in section 3.2 above.

4.3 How many VOA spike recoveries are outside QC limits?

Water	Soils
NA out of 10	0 out of 10

4.4 How many RPDs for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
NA out of 5	0 out of 5

ACTION: No action is taken based upon MS/MSD data alone. However, using informed professional judgement, the MS/MSD results may be used in conjunction with other QC criteria to determine the need for qualification of the data.

ACTION: Circle all outliers with red pencil.

	YES	NO	N/A
5.0 Blanks (Form IV)			
5.1 Is the Method Blank Summary (Form IV) present?	☒		

5.2 Frequency of Analysis: for the analysis of VOA TCL compounds, has a reagent/method blank been

301982

		YES	NO	N/A
	analyzed for each SDG or every 20 samples of similar matrix (low water, low soil or medium soil), whichever is more frequent?	[X]		
5.3	Has a VOA method blank been analyzed at least once every twelve hours for each concentration level and GC/MS system used?	[X]		
5.4	Was a VOA instrument blank analyzed after each sample/dilution which contained a target compound that exceeded the initial calibration range?	[ ]		X
5.5	Was a VOA storage blank analyzed at the end of all samples for each SDG in a case?	[ ]	X No storage blank	

ACTION: If any method/instrument blank data are missing, contact the lab to obtain any missing deliverables. If method blank data are not available, reject "R" all associated positive data. However, using professional judgement, the data reviewer may substitute field blank or trip blank data for missing method blank data.

If any instrument blank analyzed after a sample with high concentration is missing, contact the lab to obtain any missing deliverables. If the instrument blank was not analyzed or not available, inspect the chromatogram of the sample analyzed immediately after this analysis for possible carryover. Use professional judgement to determine if any contamination occurred and qualify analyte(s) accordingly.

If storage blank data is missing, contact the lab to obtain any missing deliverables. If unavailable, note in the Contract Problems/Non-Compliance section of the Data Assessment.

5.6 The validator should verify that the correct identification scheme for the EPA Blank samples were used. See page B-33, section 3.3.7.3 of the SOW for further information.

	Was the correct identification scheme used for all VOA blanks?	[ ]	X	

301983

	YES	NO	N/A
ACTION: Contact the lab to obtain missing deliverables, or make the required corrections on the forms. Document in the Data Assessment under Contract Problems/Non-compliance if corrections were made by the validator.			
5.7 Chromatography: review the blank raw data-chromatograms (RICs), quant. reports or data system printouts and spectra. Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs?	X		
ACTION: Use professional judgement to determine the effect on the data.			
5.8 Are all detected hits for target compounds in method, instrument and storage blanks less than the CRQL for that analyte?	X		
Exception: Acetone and 2-butanone must be less than 5 times the CRQL, and methylene chloride must be less than 2.5 times its CRQL.			
ACTION: If no, an explanation and laboratory's corrective actions must be addressed in the case narrative. If the narrative contains no explanation, then make a note in the Contract Problems/Non-Compliance section of the Data Assessment.			

6.0 Contamination

NOTE: "Water blanks", "drill blanks", and "distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

	YES	NO	N/A
6.1 Do any method/instrument/reagent/storage blanks have positive results (TCL and/or TIC) for VOAs?		X	

NOTE: When applied as directed in the table below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for %moisture when necessary.

301984

X303

	YES	NO	N/A
NOTE: A contaminated instrument blank is not allowable under this SOW. See page D-48/VOA, section 12.1.2.4 for additional information. Document in the Data Assessment under Contract Problems/Non-Compliance if contaminated instrument blank was submitted.			
6.2 Do any field/trip/rinse blanks have positive VOA results (TCL and/or TIC)?	[ ]	X	

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped and are not required for non-aqueous matrices. Blanks may not be qualified because of contamination in another blank. Field Blanks & Trip Blanks must be qualified for system monitoring compound, instrument performance criteria, spectral or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable "R".

301985

YES NO N/A

For:	Flag sample result with a "U" when:	Report CRQL & qualify "U" when:	No qualification is needed when:
Methylene Chloride Acetone Toluene 2-Butanone	Sample conc. is > CRQL, but ≤ 10× blank value.	Sample conc. is < CRQL and ≤ 10× blank value.	Sample conc. is > CRQL and > 10× blank value.
Other Conta-minants	Sample conc. is > CRQL, but ≤ 5× blank value.	Sample conc. is < CRQL and ≤ 5× blank value.	Sample conc. is > CRQL and > 5× blank value.

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration criteria.

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R".

6.3 Are there field/rinse/equipment blanks associated with every sample? [ ] X ___

ACTION: For low level samples, note in the Data Assessment that there is no associated field/rinse/equipment blank. For samples with high concentrations of suspected blank contaminants, use professional judgement to qualify these values and make a note in the Data Assessment.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V)

7.1 Are the GC/MS Instrument Performance Check Forms (Form V) present for Bromofluorobenzene (BFB)? [ ] ___ X

7.2 Are the enhanced bar graph spectrum and

301986

X363

	YES	NO	N/A
mass/charge (m/z) listing for the BFB provided for each twelve hour shift?	[ ]	___	X
7.3 Has an instrument performance check been analyzed for every analytical sequence on each instrument?	[ ]	___	X

ACTION: List date, time, instrument ID, and sample numbers for which associated GC/MS tuning data are unavailable.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: Notify the lab to obtain missing data, if possible. If the lab cannot provide the missing data, reject, "R", all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundances been normalized to m/z 95 as specified in Exhibit D, page D-56/VOA?	[ ]	___	X

NOTE: All ion abundance ratios must be normalized to m/z 95, the nominal base peak, even though the ion abundance of m/z 174 may be up to 120% that of m/z 95.

ACTION: If mass assignment is in error, qualify all associated data as unusable "R".

7.5 Have the ion abundance criteria been met for each instrument used?	[ ]	___	X

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors

301987

	YES	NO	N/A
between mass lists and Form Vs? (Check at least two values, but if errors are found check more.)	___	[ ]	X
7.7 Is the number of significant figures for the reported relative abundances consistent with the number given for each ion in the ion abundance criteria column?	[ ]	___	X
ACTION: If large errors exist, take action as specified in section 3.5 above.			
7.8 Are the spectra of the mass calibration compound acceptable?	[ ]	___	X
ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.			
8.0 Target Compound List (TCL) Analytes (FORM I VOA)			
8.1 Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate?	[X]	___	___
b. Matrix spikes and matrix spike duplicates?	[ ]	X	___
c. Blanks?	[X]	___	___
8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (quant. reports) included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[X]	___	___
b. Matrix spikes and matrix spike duplicates (mass spectra not required)?	[X]	___	___
c. Blanks?	[X]	___	___
ACTION: If any data are missing, take action specified in 3.2 above.			

301988

	YES	NO	N/A
8.3 Are the response factors shown in the quant. report?	[X]	___	___
8.4 Is chromatographic performance acceptable with respect to:			
a. Baseline stability?	[X]	___	___
b. Resolution?	[X]	___	___
c. Peak shape?	[X]	___	___
d. Full-scale graph (attenuation)?	[X]	___	___
e. Other: _____?	[ ]	___	___

ACTION: Use professional judgement to determine the acceptability of the data.

8.5 Are the lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[ ]	___	Y

ACTION: If any mass spectra are missing, take action as specified in 3.2 above. If the lab does not generate its own standard spectra, document in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary.

8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[X]	___	___
8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[ ]	___	X
8.8 Do sample and standard relative ion intensities agree within ±20%?	[ ]	___	X

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected "R", flagged "N" (presumptive evidence of the presence of the

301989

	YES	NO	N/A
compound) or changed to not detected "U" at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in 8.6, 8.7, and 8.8.			
ACTION: When sample carry-over is suspected, use professional judgement determine if instrument cross-contamination has affected positive compound identifications.			
9.0 Tentatively Identified Compounds (TIC)			
9.1 Are all Tentatively Identified Compound Forms (Form I Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier?	[ ]	___	X
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[ ]	___	___
b. Blanks?	[ ]	___	___
c. Alkanes listed for each sample?	[ ]	___	___
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "JN" qualifier to all chemically named TICs, if missing.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds? (Example: 1,2- dimethylbenzene is xylene, a VOA TCL analyte, and should not be reported as a TIC.)	___	[ ]	X
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[ ]	___	X

301990

	YES	NO	N/A
9.5 Do TIC and "best match" standard relative ion intensities agree within ±20%?	[ ]		X

ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined an incorrect identification was made, change the identification to "unknown," or to some less specific identification as appropriate. (Example: "C3 substituted benzene.")

Also, when a compound is not found in any blank, but is detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable "R". (E.g., Common Lab Contaminants: CO_2 (M/E 44), siloxanes (M/E 73) hexane, aldol condensation products, solvent preservatives, and related by-products - see the National Functional Guidelines for further guidance.)

	YES	NO	N/A
9.6 Are TICs with responses < 10% of the internal standard (as determined by inspection of the peak areas or height) reported?		[ ]	X

ACTION: If yes, cross out questionable TIC(s).

10.0 Compound Quantitation and Reported Detection Limits

	YES	NO	N/A
10.1 Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standards, quantitation ions, and RRF were used to calculate Form I results.)		X	
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	X		

ACTION: If errors are large, take action as specified in section 3.5 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample). Replace concentrations that exceeded the calibration

301991

	YES	NO	N/A
range in the original analysis by crossing out the "E" and its corresponding value on the original Form I and substituting the data from the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form Is not to be used, including any in the data summary package.			
11.0 Standards Data (GC/MS)			
11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (quant. reports) present for each initial and continuing calibration?	[X]	___	___
ACTION: If any calibration standard data are missing, take action specified in 3.2 above.			
12.0 GC/MS Initial Calibration (Form VI)			
12.1 Are the Initial Calibration Forms (Form VI) present and complete at concentrations of 10, 20, 50, 100, 200ng for separate calibrations of low water/med soils (unheated purge) and low soils (heated purge)?	[X]	___	___
ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.			
12.2 Were all low level soil standards, blanks and samples analyzed by heated purge?	[ ]	___	[X]
ACTION: If low level soil samples were not heated during purge, qualify positive hits "J" (estimated) and non-detects "R".			
12.3 Are the % relative standard deviation (%RSD) values for VOAs ≤ 30% over the concentration range of the calibration?	[X]	___	___
NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %RSD, the technical acceptance criteria are the same for all analytes.			
ACTION: Circle all outliers with red pencil.			

301992

	YES	NO	N/A
ACTION: If %RSD is > 30.0%, qualify associated positive results for that analyte "J" (estimated) and non-detects using professional judgement. When %RSD is > 90%, flag all non-detects for that analyte "R" (unusable) and positive hits "J".			
NOTE: Analytes previously qualified "U" for blank contamination are still considered as "hits" when qualifying for initial calibration criteria.		X	
12.4 Are any average RRFs < 0.05?			
ACTION: Circle all outliers with red pencil.			
ACTION: If the average RRF is < 0.05, then qualify associated non-detects with an "R" and flag associated positive data as estimated "J".			
NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %RSD or RRF criteria, provided the %RSD is ≤ 40% and RRF is ≥ 0.010. (See Table 5, page D-59/VOA and analytes marked with a "*" on Form VI for required analytes and contractual criteria.) Technical criteria, however, are the same for all analytes.			
ACTION: If more than two analytes failed %RSD or RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and the Organic Regional Data Assessment Summary.			
12.5 Are there any transcription/calculation errors in the reporting of average relative response factors (RRF) or %RSD? (Check at least 2 values, but if errors are found, check more.)		X	
ACTION: Circle errors with red pencil.			
ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.			

301993

	YES	NO	N/A

13.0 GC/MS Continuing Calibration (Form VII)

13.1 Are the Continuing Calibration Forms (Form VII) present and complete for separate calibration of low water/med soil and low soil samples? X [ ] ___

13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument? X ___ ___

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, contact the lab to request an explanation/resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable "R".

ACTION: List below all sample(s) that were not analyzed within twelve hours of the previous continuing calibration.

_____

_____

_____

13.3 Do any volatile compounds have a percent difference (%D) between the initial and continuing RRF which exceeds the ±25% criteria? X [ ] ___

NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %D, the technical acceptance criteria are the same for all analytes.

ACTION: Circle all outliers with red pencil.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated. When %D is > 90%, qualify all non-detects for that analyte unusable (R) and positive results estimated (J).

301994

	YES	NO	N/A
13.4 Are any continuing calibration RRFs < 0.05?	___	[✓]	___

ACTION: Circle all outliers with red pencil.

ACTION: If the RRF is < 0.05, qualify the associated non-detects as unusable "R" and the associated positive values "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %D and RRF criteria, provided that the %D is ≤ 40% and the RRF is ≥ 0.010. (See Table 5 pg. D-59/VOA or analytes marked with a "*" on Form VI for required analytes.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %D and RRF, criteria document in the Data Assessment under contract Problems/Non-Compliance and on the Organic Regional Data Assessment Summary form.

	YES	NO	N/A
13.5 Are there any transcription/calculation errors in the reporting of RRF or %D between initial and continuing RRFs? (Check at least two values, but if errors are found, check more.)	___	[✓]	___

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance.

14.0 Internal Standard (Form VIII)

	YES	NO	N/A
14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits (-50% to +100%) for each continuing calibration?	[ ]	[X]	___
If no, was the sample re-analyzed?	[ ]	___	[X]

ACTION: 1. Circle all outliers with red pencil.

2. List all the outliers below.

301995

YES NO N/A

Sample #	Internal Std.	Area	Lower/Upper Limit
			/
			/
			/
			/

(Attach additional sheets if necessary, or attach copies of Form VIIIs.)

ACTION: If any sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

ACTION: 1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Do not qualify non-detects when associated IS area counts are > 100%.

3. If the IS area in the sample is below the "lower limit," < 50%, qualify all analytes associated with that IS estimated, "J". If the area counts are extremely low, < 25% of the area in the 12 hour standard, or if performance exhibits a major abrupt drop- off, flag all associated non-detects as unusable, "R", and positive hits estimated, "J".

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [ ] ___ Y

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

NOTE: Contractual requirements state that if any internal standard fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not

301996

YES NO N/A

re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

NOTE: See Notes in section 3.4, page 7 for a description of sample data the laboratory must submit.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for VOA analysis? [X] ___ ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

301997

YES NO N/A

PART B: BNA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody records or laboratory SDG Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [ ] ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated "J". If a soil sample, other than TCLP, contains more than 90% water, all data should be qualified as unusable "R".

ACTION: If samples were not iced or if the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 10° C), flag all positive results "J" and all non-detects "UJ".

2.0 Holding Times

2.1 Have any BNA technical holding times, determined from date of collection to date of extraction, been exceeded? ___ [ ] ___

Technical Holding Time: Continuous extraction of water samples for BNA analysis must be started within seven days of the date of collection. Soil/sediment samples must be extracted within 7 days of collection. Extracts must be analyzed within 40 days of the date of extraction.

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample Analyzed	Sample Matrix	Date Sampled	Date Lab Received	Date Extracted	Date Analyzed

301998

1303

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 3/90

X0303

(SOP Revision XI)

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Title: Evaluation of Metals Data for the Contract Laboratory Program

Date: Jan. 1992
Number: HW-2
Revision: 11

1.0 Scope

1.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 3/90 .

2.0 **Responsibilities** - Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1. For a **total review**:

2.1.1 **Data Assessment** - **"Total Review-Inorganics" Checklist Appendix (A.1).**
The reviewer must answer every question on the checklist.

2.1.2 Data Assessment - Data Assessment Narrative (Appendix A.2)
The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

2.1.3 Contract Non-Compliance - SMO Report (Appendix A.3)
This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Validation Task Monitor, or Technical Project Officer (TPO). Forward 5 copies: one each for internal files, appropriate Regional TPO, Sample Management Office (SMO) and last two addresses of Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract violations should be appended to the end of the Data Assessment Narrative (Sec. A.2.2).

2.1.4 CLP Data Assessment Summary Forms

2.1.4.1 Appendix A.5
Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.

2.1.4.2 Appendix A.6
Data reviewer is also required to fill out Inorganic Regional Data Assessment form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

2.1.5 **Data Review Log:** It is recommended that each data reviewer should maintain a log of the reviews completed to include: a. date of start of case review

b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

2.1.6 **Telephone Record Log** - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

2.1.7 Forwarded Paperwork

2.1.7.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:
a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Record of Communication (copy)
e. CLP Reanalysis Request/Approval Record (original + 3 copies)
f. Appendix A.6 (original).

2.1.7.2 Forward 2 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.6) and Telephone Record Log , if any,: one each for appropriate Regional TPO, and the other one to EPA EMSL office in Las Vegas. The addresses of TPOs and EPA office in Las Vegas are given in Appendix A-4.

2.1.8 **Filed Paperwork** - Upon completion of review, the following are to be filed within MMB files:
a. Two copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.6.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Reanalysis Request/Approval Record (copy)

3.0 **Data Completeness**
Each data package is checked by a Regional Sample Control Coordinator (RSSC) for completeness. A data package is assumed to be complete when all the deliverables required under the contract are present. If a data package is incomplete,the RSSC would call the laboratory for missing document(s). If the laboratory does not Respond within a week, SMO and MMB coordinator of Region II will be notified.

4.0 **Rejection of Data** - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

5.0 **Acceptance Criteria** - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines of October 1, 1989.

6.0 **SMO Contract Compliance Screening (CCS)** - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

7.0 **Request for Reanalysis** - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative.If holding times and sample storage times have not been exceeded, TPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

8.0 **Record of Communication** - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

9.0 **Rounding off numbers** - The data reviewer will follow the standard practice.

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	YES	NO	N/A
A.1.1 **Contract Compliance Screening Report** (CCS) - Present?	[ ]		X
ACTION: If no, contact RSCC.			
A.1.2 **Record of Communication (from RSCC)** - Present?	[ ]		X
ACTION: If no, request from RSCC.			
A.1.3 **Trip Report** - Present and complete?	[ ]		X
ACTION: If no, contact RSCC for trip report.			
A.1.4 **Sample Traffic Report** - Present?	[X]		
Legible?	[X]		
ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5 **Cover Page** - Present?	[X]		
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[X]		
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on Record of Communication?	[ ]		X
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	[X]		
(b) Form I's?	[X]		
ACTION: If no for any of the above, contact RSCC for clarification.			

		Yes	No	N/A
A.1.6	**Form I to IX**			
A.1.6.1	Are all the Form I through Form IX labeled with:			
	Laboratory name?	[✓]	___	___
	Case/SAS number?	[___]	✓	___
	EPA sample No.?	[___]	✓	___
	SDG No.?	[✓]	___	___
	Contract No.?	[___]	✓	___
	Correct units?	[✓]	___	___
	Matrix?	[✓]	___	___

ACTION: If no for any of the above, note under Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.6.2 Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:

(NOTE: Check all forms against raw data.)

(a) all analytes analyzed by ICP?	[✓]	___	___
(b) all analytes analyzed by GFAA?	[___]	___	✓
(c) all analytes analyzed by AA Flame?	[___]	___	✓
(d) Mercury?	[___]	___	✓
(e) Cyanide?	[___]	___	✓

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

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Title: Evaluation of Metals Data for the Contract Laboratory Program Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
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		YES	NO	N/A
A.1.7	**Raw Data**			
A.1.7.1	Digestion Log* for flame AA/ICP (Form XIII) present?	[✓]	___	___
	Digestion Log for furnace AA Form XIII present?	[___]	___	✓
	Distillation Log for mercury Form XIII present?	[___]	___	✓
	Distillation Log for cyanides Form XIII present?	[___]	___	✓
	Are pH values (pH<2 for all metals, pH>12 for cyanide) present?	[___]	___	✓
	*Weights, dilutions and volumes used to obtain values.			
	Percent solids calculation present for soils/sediments?	[___]	✓	___
	Are preparation dates present on sample preparation logs/bench sheets?	[✓]	___	___
A.1.7.2	Measurement read out record present? ICP	[✓]	___	___
	Flame AA	[___]	___	✓
	Furnace AA	[___]	___	✓
	Mercury	[___]	___	✓
	Cyanides	[___]	___	✓
A.1.7.3	Are all raw data to support all sample analyses and QC operations present?	[✓]	___	___
	Legible?	[✓]	___	___
	Properly Labeled?	[✓]	___	___

ACTION: If no for any of the above questions in sections A.1.7.1 through A.1.7.3, write Telephone Record Log and contact laboratory for resubmittals.

Compliance (Total Review)

		YES	NO	N/A
A.1.8	**Holding Times** - (aqueous and soil samples)			
	(Examine sample traffic reports and digestion/distillation logs.)			
	Mercury analysis (28 days). . . . . exceeded?	___	[___]	X
	Cyanide distillation (14 days). . . . . exceeded?	___	[___]	X
	Other Metals analysis (6 months). . . . exceeded?	___	[X]	___
	NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.			
	ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.			
A.1.8.2	Is pH of aqueous samples for: Metals Analysis >2?	___	[___]	X
	Cyanides Analysis <12?	___	[___]	X
	Action: If yes, flag the associated metals and cyanides data as estimated.			
A.1.9	**Form I (Final Data)**			
A.1.9.1	Are all Form I's present and complete?	[X]	___	___
	ACTION: If no, prepare telephone record log and contact laboratory for submittal.			
A.1.9.2	Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[X]	___	___
	Are soil sample results for each parameter corrected for percent solids?	[X]	___	___
	Are all "less than IDL" values properly coded with "U"?	[X]	___	___

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		YES	NO	N/A
	Are the correct concentration qualifiers used with final data?	[X]		
	ACTION: If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data.			
A.1.9.3	Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	[X]		
	Was a brief physical description of samples given on Form I's?	[ ]	X	
	Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV?		[X]	
	ACTION: If no for any of the above, note under Contract-Problem/Non-Compliance of the"Data Assessment Narrative".			
A.1.10	Calibration			
A.1.10.1	Is record of at least 2 point calibration present for ICP analysis?	[X]		
	Is record of 5 point calibration present for Hg analysis?	[ ]		X
	Is record of 4 point calibration present for:			
	Flame AA?	[ ]		X
	Furnace AA?	[ ]		X
	Cyanides?	[ ]		X
	Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses?	[ ]		X

ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

	YES	NO	N/A
A.1.10.2 Is correlation coefficient less than 0.995 for:			
Mercury Analysis?	___	[___]	X
Cyanide Analysis?	___	[___]	X
Atomic Absorption Analysis?	___	[___]	X

ACTION: If yes, flag the associated data as estimated.

NOTE: The data validator shall calculate the correlation coefficient using concentrations of the standards and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

A.1.10.3 In the instance where less than 4 standards are measured in absorbance (or peak area, peak height,etc.) mode, are the remaining standards analyzed in concentration mode immediately after calibration within ±10% of the true values?	[X]	___	___

ACTION: If no, flag the associated data as estimated if standards are not within ±10% of true values. Do not flag the data as estimated in linear range indicated by good recovery of standard(s).

A.1.11 **Form II A (Initial and Continuing Calibration Verification)-**

A.1.11.1 Present and complete for every metal and cyanide?	[X]	___	___
Present and complete for AA and ICP when both are used for the same analyte?	[___]	___	X

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.11.2 Circle on each Form IIA all percent recoveries that are outside the contract windows. Are all calibration standards (initial and continuing) within control limits:			
Metals- 90-110%R?	[X]	___	___
Hg - 80-120%R?	[___]	___	X
Cyanides- 85-115%R?	[___]	___	X

	YES	NO	N/A
ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ) if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits.			
A.1.11.3 Was continuing calibration performed every 10 samples or every 2 hours?	[✓]	___	___
Was ICV for cyanides distilled?	[___]	___	✓

ACTION: If no for any of the above, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.12 Form II B (CRDL Standards for AA and ICP) -

	YES	NO	N/A
A.1.12.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?	[___]	___	✓
Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[___]	___	✓
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	[___]	___	✓

ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are:
AA Analysis - **True Value ± CRDL
ICP Analysis - **True Value ± 2CRDL
CN Analysis - **True Value ± 0.5 x True Value.

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**True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL. Compute the concentration of the missing mid-range standard from the calibration range.

		YES	NO	N/A
A.1.12.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?	[___]	___	X
	ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".			
A.1.12.3	Circle on each Form IIB all the percent recoveries that are outside the acceptance windows.			
	Are CRA and CRI standards within control limits:			
	Metals 80 - 120%R?	[___]	___	X
	Is mid-range standard within control limits:			
	Cyanide 80 - 120%R?	[___]	___	X
	ACTION: Flag as estimated all sample results within the affected range if the recovery of the standard is between 50-79%; flag only positive data within the affected range if the recovery is between 121-150%; reject all data within the affected range if the recovery is less than 50%; reject only positive data within the affected range if the recovery is greater than 150%. Qualify 50% of the samples on either side of CRI standard outside the control limits.			
	Note: Flag or reject the final results only when sample raw data are within the affected ranges and the CRDL standards are outside the acceptance windows.			
A.1.13	**Form III (Initial and Continuing Calibration Blanks)**			
A.1.13.1	Present and complete?	[X]	___	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	X
	Was an initial calibration blank analyzed?	[X]	___	___
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	[X]	___	___

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		YES	NO	N/A
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract-Problems/ Non-Compliance section of the "Data Assessment Narrative".			
A.1.13.2	Circle on each Form III all calibration blank values that are above CRDL (or 2 x IDL when IDL > CRDL).			
	Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	[ ]	___	___
	Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[ ]	___	___
	ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is less than or equal to calibration blank value analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank outside the control limits.			
A.1.14	FORM III (Preparation Blank) - (Note: The preparation blank for mercury is the same as the calibration blank.)			
A.1.14.1	Was one prep. blank analyzed for:			
	each Sample Delivery Group (SDG)?	[ ]	___	___
	each batch of digested samples?	[ ]	___	___
	each matrix type?	[ ]	___	___
	both AA and ICP when both are used for the same analyte?	[ ]	___	___
	ACTION: If no for any of the above, flag as estimated (J) all the associated positive data <10 x IDLs for which prep. blank was not analyzed.			
	NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			

		YES	NO	N/A
A.1.14.2	Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?	___	[X]	___
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep.blank?	___	[___]	X
	ACTION: If yes, reject (red-line) all associated data greater than CRDL concentration but less than ten times the prep. blank value.			
A.1.14.3	Is concentration of prep. blank value (Form III) less than two times IDL, when IDL is greater than CRDL?	[X]	___	___
	ACTION: If no, reject (red-line) all positive sample results when sample raw data are less than 10 times the prep. blank value.			
A.1.14.4	Is concentration of prep. blank below the negative CRDL?	___	[X]	___
	ACTION: If yes, reject (red-line) all associated sample results less than 10xCRDL.			
A.1.15	Form IV (ICP Interference Check Sample)			
A.1.15.1	Present and complete?	[X]	___	___
	(**NOTE**: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[X]	___	___
	ACTION: If no, flag as estimated (J) all the samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
A.1.15.2	Circle all values on each Form IV that are more than ± 20% of true or established mean value.			
	Are all Interference Check Sample results inside the control limits (± 20%)?	[___]	X	___
	If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?	[___]	___	X

		YES	NO	N/A
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			
A.1.16	**Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)** - (**Note**: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
A.1.16.1	Present and complete for: each SDG?	[X]	___	___
	each matrix type?	[X]	___	___
	each conc. range (i.e. low, med., high)?	[X]	___	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	X
	ACTION: If no for any of the above, flag as estimated (J) all the positive data less than four times the spiking levels specified in SOW for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.16.2	Was field blank used for spiked sample?	___	[X]	___
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
A.1.16.3	Circle on each Form VA all spike recoveries that are outside control limits (75% to 125%).			
	Are all recoveries within control limits?	[X]	___	___
	If no, is sample concentration greater than or equal to four times spike concentration?	[___]	___	X

	YES	NO	N/A
ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	[X]	___	___

ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".

A.1.16.4 **Aqueous**

Are any spike recoveries:

(a) less than 30%?	___	[___]	X
(b) between 30-74%?	___	[___]	X
(c) between 126-150%?	___	[___]	X
(d) greater than 150%?	___	[___]	X

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".

A.1.16.5 **Soil/Sediment**

Are any spike recoveries:

(a) less than 10%?	___	[X]	___
(b) between 10-74%?	___	[X]	___
(c) between 126-200%?	___	[X]	___
(d) greater than 200%?	___	[X]	___

		YES	NO	N/A
	ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".			
A.1.17	**Form VI (Lab Duplicates)**			
A.1.17.1	Present and complete for: each SDG?	[X]	___	___
	each matrix type?	[X]	___	___
	each concentration range (i.e. low, med., high)?	[X]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	X
	ACTION: If no for any the above, flag as estimated (J) all the data ≥CRDL* for which duplicate sample was not analyzed.			
	Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.			
	2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on wet weight basis and calculate RPD or Difference for each analyte.			
A.1.17.2	Was field blank used for duplicate analysis?	___	[X]	___
	ACTION: If yes, flag all data ≥CRDL* as estimated (J) for which field blank was used as duplicate.			
A.1.17.3	Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?	[X]	___	___
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[___]	___	X
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative".			

* Substitute IDL for CRDL when IDL > CRDL.

	YES	NO	N/A

NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL.
2. If the result of lab duplicate analyzed by GFAA is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria to metals analyzed by GFAA.

A.1.17.4 **Aqueous**

Circle on each Form VI all values that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	N
Is any difference** between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	N

ACTION: If yes, flag the associated data as estimated.

A.1.17.5 **Soil/Sediment**

Circle on each Form VI all values that are:

RPD > 100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) : > 100%?	___	[N]	___
Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) : > 2x*CRDL?	___	[N]	___

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

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6-IN
DUPLICATES

EPA SAMPLE NO.

Lab Name: STL Envirotech Contract: _____

Lab Code: X303 Case No.: _____ NRAS No.: _____ SDG No.: _____

Matrix (soil/water): Soil Level (low/med): _____

% Solids for Sample: 96 % Solids for Duplicate: 96.3

Concentration Units (ug/L or mg/kg dry weight): mg/kg

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead		8.8		34.6		119	*	P
Magnesium								
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								
Cyanide								

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		YES	NO	N/A
	ACTION: If yes, flag the associated data as estimated.			
A.1.18	**Field Duplicates**			
A.1.18.1	Were field duplicates analyzed?	[X]	___	___

ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/l on wet weight basis and calculate RPDs or Difference for each analyte.

NOTE: 1. Do not calculate RPD when both values are less than IDL.
2. Flag all associated data only for field duplicate pair.

A.1.18.2 Aqueous

Circle all values on self prepared Form VI for field duplicates that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	X
Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	X

ACTION: If yes, flag the associated data as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A
A.1.18.3 **Soil/Sediment**			
Circle all values on self prepared Form VI for field duplicates that are:			
RPD >100%, or			
Difference > 2 x CRDL*			
Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) : >100%?	X	[ ]	
Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL): >2x *CRDL?	X	[ ]	
ACTION: If yes, flag the associated data as estimated.			
A.1.19 Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)			
A.1.19.1 Was one LCS prepared and analyzed for:			
each SDG?	[X]		
each batch samples digested/distilled?	[X]		
both AA and ICP when both are used for the same analyte?	[ ]		X

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all the data for which LCS was not analyzed.

NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
A.1.19.2	**Aqueous LCS**			
	Circle on each Form VII the LCS percent recoveries outside control limits (80 - 120%) except for aqueous Ag and Sb.			
	Is any LCS recovery: less than 50%?	___	[___]	X
	between 50% and 79%?	___	[___]	X
	between 121% and 150%?	___	[___]	X
	greater than 150%?	___	[___]	X
	ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.			
A.1.19.3	**Solid LCS**			
	NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J). 2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.			
	Is LCS "Found" value higher than the control limits on Form VII?	___	[X]	___
	ACTION: If yes, qualify all associated positive data as estimated.			
	Is LCS "Found" value lower than the Control limits on Form VII?	___	[X]	___
	ACTION: If yes, qualify all associated data as estimated.			

		YES	NO	N/A
A.1.20	**Form IX (ICP Serial Dilution)** -			
	NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.			
A.1.20.1	Was Serial Dilution analysis performed for:			
	each SDG?	[X]	___	___
	each matrix type?	[Y]	___	___
	each concentration range (i.e. low, med.)?	[X]	___	___
	ACTION: If no for any of the above, flag as estimated all the positive data ≥ 10xIDLs or ≥ CRDL when 10xIDL ≤ CRDL for which Serial Dilution Analysis was not performed.			
A.1.20.2	Was field blank(s) used for Serial Dilution Analysis?	___	[X]	___
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J). If 10xIDL ≤ CRDL, flag all data ≥ CRDL.			
A.1.20.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.	[___]	X	___
	ACTION: If no, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.20.4	Circle on each Form IX all percent difference that are outside the control limits for initial concentrations equal to or greater than 10 x IDLs only.			
	Are any % difference values:			
	> 10%?	X	[___]	___
	≥ 100%?	___	[X]	___

		YES	NO	N/A
	ACTION: Flag as estimated (J) all the associated sample data ≥ 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which percent difference is greater than 10% but less than 100%. Reject (red-line) all the associated sample results equal to or greater than 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which PD is greater than or equal to 100%.			
	Note: Flag or reject on Form I's only the sample results whose associated raw data are ≥ 10xIDL (or ≥ CRDL when 10xIDL≤ CRDL)			
A.1.21	**Furnace Atomic Absorbtion (AA) QC Analysis**			
A.1.21.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	[___]	___	X
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
A.1.21.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	[___]	___	X
	Was a dilution analyzed for sample with analytical spike recovery less than 40%?	[___]	___	X
	ACTION: If no for any of the above, flag all the associated data as estimated.			
A.1.21.3	Is *analytical spike recovery outside the control limits (85-115%) for any sample?	___	[___]	X
	ACTION: If yes, flag as estimated the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject the associated sample results if the recovery is less than 10%; reject positive sample results if the recovery is greater than 200%.			

* Analytical spike is not required on the pre-digestion spiked sample.

		YES	NO	N/A
	NOTE: Reject or flag the data only when the affected sample(s) was not subsequently analyzed by Method of Standard Addition.			
A.1.22	**Form VIII (Method of Standard Addition Results)**			
A.1.22.1	Present?	[___]	X	___
	If no, is any Form I result coded with "S" or a "+"?	___	[___]	X
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			
A.1.22.2	Is coefficient of correlation for MSA less than 0.990 for any sample?	___	[___]	X
	ACTION: If yes, reject (red-line) the affected data.			
A.1.22.3	Was *MSA required for any sample but not performed?	___	[___]	X
	Is coefficient of correlation for MSA less than 0.995?	___	[___]	X
	Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?	___	[___]	X
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
A.1.22.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23?	[___]	___	X
	ACTION: If no, note exception under Contract Problem/ Non-Compliance section of the "Data Assessment Narrative", and prepare a separate list.			

* MSA is not required on LCS and prep. blank.

		YES	NO	N/A
A.1.23	Dissolved/Total or Inorganic/Total Analytes -			
A.1.23.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s).	___	[X]	___
	Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[___]	X
	NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration. 2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents. 3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.			
A.1.23.2	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	X
A.1.23.3	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[___]	X
	ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.			
A.1.24	Form I (Field Blank) -			
	(Note: Designate "Field Blank" as such on Form I.)			
A.1.24.1	Circle all field blank values on Form I that are greater than CRDL, (or 2 x IDL when IDL > CRDL).			
	Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[X]	___	___

	YES	NO	N/A
If no, was field blank value already rejected due to other QC criteria?	[___]	___	X

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value. Reject on Form I's the soil sample results that when converted to ug/L on wet basis are less than or equal to five times the field blank value in ug/L.

A.1.25 **Form X, XI, XII (Verification of Instrumental Parameters).**

A.1.25.1 Is verification report present for:

	YES	NO	N/A
Instrument Detection Limits (quarterly)?	[___]	___	X
ICP Interelement Correction Factors (annually)?	[___]	___	X
ICP Linear Ranges (quarterly)?	[___]	___	X

ACTION: If no, contact TPO of the lab.

A.1.25.2 **Form X (Instrument Detection Limits)** - (Note: IDL is not required for Cyanide.)

	YES	NO	N/A
A.1.25.2.1 Are IDLs present for: all the analytes?	[___]	___	X
all the instruments used?	[___]	___	X
For both AA and ICP when both are used for the same analyte?	[___]	___	X

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

	YES	NO	N/A
A.1.25.2.2 Is IDL greater than CRDL for any analyte?	___	[___]	X
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.	[___]	___	X

	YES	NO	N/A
Action : If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			
A.1.25.3 **Form XI (Linear Ranges)**			
A.1.25.3.1 Was any sample result higher than high linear range of ICP.	___	[___]	X
Was any sample result higher than the highest calibration standard for non-ICP parameters?	___	[___]	X
If yes for any of the above, was the sample diluted to obtain the result on Form I?	[___]	___	X
ACTION: If no, flag the result reported on Form I as estimated(J).			
A.1.26 **Percent Solids of Sediments**			
A.1.26.1 Are percent solids in sediment(s): < 50%?	___	[X]	___
< 10%?	___	[X]	___

ACTION: If yes, qualify as estimated all the results of a sample that has per cent solids between 10%-50% (i.e. moisture content between 50%-90%). Reject all the results of a sample that has per cent solids less than 10% (i.e. moisture content greater than 90%).

NOTE: Reject or flag(J) only the sample results that were not previously rejected or flaged due to other QC criteria.

Case#	_____	**Site**	_____	**Matrix:**	**Soil** _____
SDG#	_____	**Lab**	_____		**Water** _____
Contractor	_____	**Reviewer**	_____		**Other** _____

A.2.1 **Validation Flags-** The following flags have been applied in red by the data validator and must be considered by the data user.

J- This flag indicates the result qualified as **estimated**

Red- Line- A red-line drawn through a sample result indicates **unusable** value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

Fully Usable Data- The results that do not carry "J" or "red-line" are fully usable.

Contractual Qualifiers- The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW ILM01.0.

A.2.2 The data assessment is given below and on the attached sheets.

_____

_____

_____

_____

_____

_____

_____

_____

A.2.2 (continuation)

A.2.2 (continuation)

A.2.3 Contract-Problem/Non-Compliance

MMB/ESAT Rviewer: _____ Date: _____
Signature

Contractor Reviewer: _____ Date: _____
Signature

Verified by: _____ Date: _____

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste
Site Contract Laboratory Data Package

CASE NO. _____

The hardcopied (laboratory name) _____
Inorganic data package received at Region II has been reviewed and the quality assurance and performance data summarized. The data reviewed included:
SMO Sample No.: _____

Conc. & Matrix: _____

Contract No. (_____) requires that specific analytical work be done and that associated reports be provided by the contractor to the Regions, EMSL-LV, and SMO. The general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

Items of non-compliance with the above contract are described below.

Comments: _____

_____ Reviewer's Initial

_____ Date

Y303

INORGANIC REGIONAL DATA ASSESSMENT

Region_____

CASE NO._____ SITE_____

LABORATORY_____ NO. OF SAMPLES/ MATRIX_____

SDG#_____ REVIEWER (IF NOT ESD)_____

SOW#_____ REVIEWER'S NAME_____

DPO: ACTION_____ FYI_____ COMPLETION DATE_____

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	CYANIDE
1.	HOLDING TIMES				
2.	CALIBRATIONS				
3.	BLANKS				
4.	ICS				
5.	LCS				
6.	DUPLICATE ANALYSIS				
7.	MATRIX SPIKE				
8.	MSA				
9.	SERIAL DILUTION				
10.	SAMPLE VERIFICATION				
11.	OTHER QC				
12.	OVERALL ASSESSMENT				

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:_____

AREAS OF CONCERN:_____

NOTABLE PERFORMANCE:_____

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	YES	NO	N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: I-CERCLA-96-0104 LABORATORY: STL Envirotech

SITE NAME: Klockner + Klockner SDG Number(s): X455

1.0 Chain of Custody and Sampling Trip Reports

1.1	Are the Traffic Reports/Chain-of-Custody Records present for all samples?	X		
	ACTION: If no, contact RSCC or the lab to obtain replacement of missing or illegible copies.			
1.2	Is the Sampling Trip Report present for all samples and all fractions?	X		
	ACTION: If no, contact either RSCC or ask the prime contractor to provide this information.			

2.0 Data Completeness and Deliverables

2.1	Have any missing deliverables been received and added to the data package?		X	
	NOTE: The lab is required to submit data for only two analyses, for each fraction. (i.e., the original sample and one dilution, or the most concentrated dilution analyzed and one further dilution.)			
	ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If lab cannot provide them, note the effect on the review of the package in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary form.			
2.2	Was CLASS CCS checklist included with package?		X	
2.3	Are there any discrepancies between the Traffic Reports/Chain-of-Custody Records, Sampling Report and Sample Tags?		X	

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	YES	NO	N/A
ACTION: If yes, contact the lab to obtain an explanaticn or resubmittal of any missing deliverables.			
3.0 Cover Letter SDG Narrative			
3.1 Is the Narrative or Cover Letter Present?	[X]		
3.2 Are case number, SDG number and contract number contained in the SDG Narrative or cover letter (see SOW, Exhibit B, section 2.6.1)?	[X]		
3.3 Does the narrative contain the following information:			
VOA: description of trap and columns used during sample analyses?	[X]		
BNA: description of columns used during sample analyses?	[ ]		X
Pest: description of columns used during sample analyses?	[ ]		X
NOTE: As per section 6.23.3.1 SOW/p. D-11/Pest, Packed columns are not permitted.			
3.4 Does the narrative, VOA and BNA sections, contain a list of all TICs identified as alkanes and their estimated concentrations?	[ ]	X	
3.5 Does the narrative contain a record of all cooler temperatures? If the temperature of a cooler was exceeded, > 10° C, the lab must list by fraction and sample number, all affected samples.	[ ]	X	
3.6 Does the narrative contain a list of the pH values determined for each water sample submitted for volatile analysis (SOW Exhibit B, section 2.6.1.2)?	[ ]		X
3.7 Does the Case Narrative contain the statement, "verbatim", as required in Section B of the SOW?	[ ]	X	

ACTION: If "No", to any question in this section, contact the lab to obtain all necessary resubmittals. If information is not available,

302037

YES NO N/A

document in the Data Assessment under Contract Problems/Non-Compliance section.

302038

	YES	NO	N/A
4.0 Data Validation Checklist			
4.1 Check the package for the following discrepancies:			
a. Is the package paginated in ascending order starting from the SDG narrative?	X		
b. Are all forms and copies legible?	X		
c. Is each fraction assembled in the order set forth in the SOW?	X		
d. Is a Sample Data Summary Package submitted immediately preceding the Sample Data Package?		X	
The following checklist is divided into three parts. Part A is for any VOA analyses, Part B is for BNAs and Part C is Pesticide/PCBs.			
Does this package contain:			
VOA Data?	X		
BNA Data?		X	
Pesticide/PCB data?		X	

ACTION: Complete corresponding parts of checklist.

302039

YES NO N/A

PART A: VOA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records, Sampling Report or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? ___ X ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated (J). If a soil sample other than TCLP contains more than 90% water, all data should be qualified as unusable (R).

ACTION: If samples were not iced or the ice was melted upon arrival at the laboratory and the cooler temperature was elevated (> 10° C), then flag all positive results with a "J" and all non-detects "UJ".

ACTION: If both VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

ACTION: The smallest soil size permitted is 0.5g. If any soil sample is smaller than 0.5g, document in the Data Assessment under Contract Problems/Non-Compliance.

2.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? ___ X ___

Technical Holding Times: If unpreserved, aqueous samples, maintained at 4° C for aromatic hydrocarbons analysis must be analyzed within 7 days of collection. If preserved with HCl (pH < 2) and stored at 4° C, then aqueous samples must be analyzed within 14 days of collection. If uncertain about preservation, contact sampler to determine whether or

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YES NO N/A

not samples were preserved. The holding time for soils is 10 days from date of collection.

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample ID	Sample Matrix	Was Sample Preserved?	Date Sampled	Date Lab Received	Date Analyzed

ACTION: If technical holding times are exceeded, flag all positive results as estimated "J" and sample quantitation limits as estimated "UJ", and document in the Data Assessment that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable "R". If holding times are exceeded by more than 28 days, all non detect data are unusable "R".

NOTE: Contractual Holding Times: Analysis of water and soil/sediment samples must be completed within 10 days of Validated Time of Sample Receipt (VTSR). This requirement does not apply to Performance Evaluation (PE) samples.

ACTION: If contractual holding times are exceeded,

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	YES	NO	N/A
3.0 System Monitoring Compound (SMC) Recovery (Form II)			
3.1 Are the VOA SMC Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water?	[ ]	X	
b. Low Soil?	[ ]	X	
c. Med Soil?	[X]		
3.2 Are all the VOA samples listed on the appropriate System Monitoring Compound Recovery Summary for each of the following matrices:			
a. Low Water?	[ ]		X
b. Low Soil?	[ ]		X
c. Med Soil?	[X]		
ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If missing deliverables are unavailable, document the effect in the Data Assessment.			
3.3 Were outliers marked correctly with an asterisk?	[X]		
ACTION: Circle all outliers with red pencil.			
3.4 Was one or more VOA system monitoring compound recovery outside of contract specifications for any sample or method blank?			
		[X]	
If yes, were samples re-analyzed?	[ ]		X
Were method blanks re-analyzed?	[ ]		X
ACTION: If recoveries are ≥ 10%, but 1 or more compounds fail to meet SOW specifications:			
1. All positive results are qualified as estimated "J".			
2. Flag all non-detects as estimated detection limits "UJ" where recovery is less than the lower acceptance limit.			

302042

YES NO N/A

document in the Data Assessment and on the Organic Regional Data Assessment Summary form.

NOTE: The data reviewer must note in the Data Assessment whether or not **technical and contractual** holding times were met.

302043

YES NO N/A

3. If SMC recoveries are above allowable levels, do not qualify non-detects.

If any system monitoring compound recovery is < 10%:

1. Flag all positive results as estimated "J".

2. Flag all non-detects as unusable "R".

Professional judgement should be used to qualify data that only have method blank SMC recoveries out of specification in both original and re-analyses. Check the internal standard areas.

NOTE: Contractual requirements state that if any SMC fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

NOTE: The laboratory must submit the following data:

1. If SMC recoveries and internal standard responses meet the acceptance criteria in the re-analyzed sample, then the laboratory must submit only the re-analysis.

2. If an SMC recovery and/or internal standard response fails to meet the acceptance criteria upon re-analysis, then submit data from both analyses.

(Refer to section 11.4.3.2, page D-46/VOA of the SOW for more information.)

3.5 Are there any transcription/calculation errors between raw data and Form II? — X —

ACTION: If large errors exist, contact the lab to obtain an explanation or resubmittal of corrected deliverables. Make any necessary corrections and note the effect in the Data Assessment.

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	YES	NO	N/A
4.0 Matrix Spikes (Form III)			
4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present?	X		
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water?	[ ]	X	
b. Low Soil?	[ ]	X	
c. Med Soil?	X		

ACTION: If any matrix spike data are missing, take the action specified in section 3.2 above.

4.3 How many VOA spike recoveries are outside QC limits?

Water	Soils
NA out of 10	0 out of 10

4.4 How many RPDs for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
NA out of 5	0 out of 5

ACTION: No action is taken based upon MS/MSD data alone. However, using informed professional judgement, the MS/MSD results may be used in conjunction with other QC criteria to determine the need for qualification of the data.

ACTION: Circle all outliers with red pencil.

	YES	NO	N/A
5.0 Blanks (Form IV)			
5.1 Is the Method Blank Summary (Form IV) present?	X		

5.2 Frequency of Analysis: for the analysis of VOA TCL compounds, has a reagent/method blank been

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		YES	NO	N/A
	analyzed for each SDG or every 20 samples of similar matrix (low water, low soil or medium soil), whichever is more frequent?	X		
5.3	Has a VOA method blank been analyzed at least once every twelve hours for each concentration level and GC/MS system used?	X		
5.4	Was a VOA instrument blank analyzed after each sample/dilution which contained a target compound that exceeded the initial calibration range?	[ ]		X
5.5	Was a VOA storage blank analyzed at the end of all samples for each SDG in a case?	[ ]	X	

ACTION: If any method/instrument blank data are missing, contact the lab to obtain any missing deliverables. If method blank data are not available, reject "R" all associated positive data. However, using professional judgement, the data reviewer may substitute field blank or trip blank data for missing method blank data.

If any instrument blank analyzed after a sample with high concentration is missing, contact the lab to obtain any missing deliverables. If the instrument blank was not analyzed or not available, inspect the chromatogram of the sample analyzed immediately after this analysis for possible carryover. Use professional judgement to determine if any contamination occurred and qualify analyte(s) accordingly. *

If storage blank data is missing, contact the lab to obtain any missing deliverables. If unavailable, note in the Contract Problems/Non-Compliance section of the Data Assessment. *

5.6 The validator should verify that the correct identification scheme for the EPA Blank samples were used. See page B-33, section 3.3.7.3 of the SOW for further information.

	Was the correct identification scheme used for all VOA blanks?	[ ]	X	

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YES NO N/A

ACTION: Contact the lab to obtain missing deliverables, or make the required corrections on the forms. Document in the Data Assessment under Contract Problems/Non-compliance if corrections were made by the validator.

5.7 Chromatography: review the blank raw data-chromatograms (RICs), quant. reports or data system printouts and spectra. Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs? [X] ___ ___

ACTION: Use professional judgement to determine the effect on the data.

5.8 Are all detected hits for target compounds in method, instrument and storage blanks less than the CRQL for that analyte? [X] ___ ___

Exception: Acetone and 2-butanone must be less than 5 times the CRQL, and methylene chloride must be less than 2.5 times its CRQL.

ACTION: If no, an explanation and laboratory's corrective actions must be addressed in the case narrative. If the narrative contains no explanation, then make a note in the Contract Problems/Non-Compliance section of the Data Assessment.

6.0 Contamination

NOTE: "Water blanks", "drill blanks", and "distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

6.1 Do any method/instrument/reagent/storage blanks have positive results (TCL and/or TIC) for VOAs? ___ X ___

NOTE: When applied as directed in the table below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for %moisture when necessary.

302047

YES NO N/A

NOTE: A contaminated instrument blank is not allowable under this SOW. See page D-48/VOA, section 12.1.2.4 for additional information. Document in the Data Assessment under Contract Problems/Non-Compliance if contaminated instrument blank was submitted.

6.2 Do any field/trip/rinse blanks have positive VOA results (TCL and/or TIC)? [ ] X ___

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.) with X456 data package

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped and are not required for non-aqueous matrices. Blanks may not be qualified because of contamination in another blank. Field Blanks & Trip Blanks must be qualified for system monitoring compound, instrument performance criteria, spectral or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable "R".

302048

YES NO N/A

For:	Flag sample result with a "U" when:	Report CRQL & qualify "U" when:	No qualification is needed when:
Methylene Chloride Acetone Toluene 2-Butanone	Sample conc. is > CRQL, but ≤ 10× blank value.	Sample conc. is < CRQL and ≤ 10× blank value.	Sample conc. is > CRQL and > 10× blank value.
Other Conta-minants	Sample conc. is > CRQL, but ≤ 5× blank value.	Sample conc. is < CRQL and ≤ 5× blank value.	Sample conc. is > CRQL and > 5× blank value.

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration criteria.

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R".

6.3 Are there field/rinse/equipment blanks associated with every sample? [ ] X ___

ACTION: For low level samples, note in the Data Assessment that there is no associated field/rinse/equipment blank. For samples with high concentrations of suspected blank contaminants, use professional judgement to qualify these values and make a note in the Data Assessment.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V)

7.1 Are the GC/MS Instrument Performance Check Forms (Form V) present for Bromofluorobenzene (BFB)? [ ] ___ N

7.2 Are the enhanced bar graph spectrum and 302049

	YES	NO	N/A
mass/charge (m/z) listing for the BFB provided for each twelve hour shift?	[ ]	___	X
7.3 Has an instrument performance check been analyzed for every analytical sequence on each instrument?	[ ]	___	X

ACTION: List date, time, instrument ID, and sample numbers for which associated GC/MS tuning data are unavailable.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: Notify the lab to obtain missing data, if possible. If the lab cannot provide the missing data, reject, "R", all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundances been normalized to m/z 95 as specified in Exhibit D, page D-56/VOA?	[ ]	___	X

NOTE: All ion abundance ratios must be normalized to m/z 95, the nominal base peak, even though the ion abundance of m/z 174 may be up to 120% that of m/z 95.

ACTION: If mass assignment is in error, qualify all associated data as unusable "R".

7.5 Have the ion abundance criteria been met for each instrument used?	[ ]	___	X

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors

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	YES	NO	N/A
between mass lists and Form Vs? (Check at least two values, but if errors are found check more.)	___	[ ]	X
7.7 Is the number of significant figures for the reported relative abundances consistent with the number given for each ion in the ion abundance criteria column?	[ ]	___	X

ACTION: If large errors exist, take action as specified in section 3.5 above.

7.8 Are the spectra of the mass calibration compound acceptable?	[ ]	___	X

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

8.0 Target Compound List (TCL) Analytes (FORM I VOA)

8.1 Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate?	[X]	___	___
b. Matrix spikes and matrix spike duplicates?	[ ]	X	___
c. Blanks?	[X]	___	___
8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (quant. reports) included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[X]	___	___
b. Matrix spikes and matrix spike duplicates (mass spectra not required)?	[X]	___	___
c. Blanks?	[X]	___	___

ACTION: If any data are missing, take action specified in 3.2 above.

302051

	YES	NO	N/A
8.3 Are the response factors shown in the quant. report?	[X]	___	___
8.4 Is chromatographic performance acceptable with respect to:			
a. Baseline stability?	[X]	___	___
b. Resolution?	[X]	___	___
c. Peak shape?	[X]	___	___
d. Full-scale graph (attenuation)?	[X]	___	___
e. Other: _____?	[ ]	___	___

ACTION: Use professional judgement to determine the acceptability of the data.

8.5 Are the lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[ ]	___	[X]

ACTION: If any mass spectra are missing, take action as specified in 3.2 above. If the lab does not generate its own standard spectra, document in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary.

8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[X]	___	___
8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[ ]	___	[X]
8.8 Do sample and standard relative ion intensities agree within ±20%?	[ ]	___	[X]

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected "R", flagged "N" (presumptive evidence of the presence of the

302052

	YES	NO	N/A
compound) or changed to not detected "U" at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in 8.6, 8.7, and 8.8.			
ACTION: When sample carry-over is suspected, use professional judgement determine if instrument cross-contamination has affected positive compound identifications.			
9.0 Tentatively Identified Compounds (TIC)			
9.1 Are all Tentatively Identified Compound Forms (Form I Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier?	[ ]	___	X No TICs Analysis
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[ ]	___	X
b. Blanks?	[ ]	___	X
c. Alkanes listed for each sample?	[ ]	___	X
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "JN" qualifier to all chemically named TICs, if missing.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds? (Example: 1,2- dimethylbenzene is xylene, a VOA TCL analyte, and should not be reported as a TIC.)	___	[ ]	X
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[ ]	___	X

302053

	YES	NO	N/A
9.5 Do TIC and "best match" standard relative ion intensities agree within ±20%?	[ ]	___	X

ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined an incorrect identification was made, change the identification to "unknown," or to some less specific identification as appropriate. (Example: "C3 substituted benzene.")

Also, when a compound is not found in any blank, but is detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable "R". (E.g., Common Lab Contaminants: CO_2 (M/E 44), siloxanes (M/E 73) hexane, aldol condensation products, solvent preservatives, and related by-products - see the National Functional Guidelines for further guidance.)

	YES	NO	N/A
9.6 Are TICs with responses < 10% of the internal standard (as determined by inspection of the peak areas or height) reported?	___	[ ]	X

ACTION: If yes, cross out questionable TIC(s).

10.0 Compound Quantitation and Reported Detection Limits

	YES	NO	N/A
10.1 Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standards, quantitation ions, and RRF were used to calculate Form I results.)	___	X	___
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	X	___	___

ACTION: If errors are large, take action as specified in section 3.5 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample). Replace concentrations that exceeded the calibration

302054

	YES	NO	N/A
range in the original analysis by crossing out the "E" and its corresponding value on the original Form I and substituting the data from the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form Is not to be used, including any in the data summary package.			
11.0 Standards Data (GC/MS)			
11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (quant. reports) present for each initial and continuing calibration?	[X]	___	___
ACTION: If any calibration standard data are missing, take action specified in 3.2 above.			
12.0 GC/MS Initial Calibration (Form VI)			
12.1 Are the Initial Calibration Forms (Form VI) present and complete at concentrations of 10, 20, 50, 100, 200ng for separate calibrations of low water/med soils (unheated purge) and low soils (heated purge)?	[X]	___	___
ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.			
12.2 Were all low level soil standards, blanks and samples analyzed by heated purge?	[ ]	___	X
ACTION: If low level soil samples were not heated during purge, qualify positive hits "J" (estimated) and non-detects "R".			
12.3 Are the % relative standard deviation (%RSD) values for VOAs ≤ 30% over the concentration range of the calibration?	[X]	___	___
NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %RSD, the technical acceptance criteria are the same for all analytes.			
ACTION: Circle all outliers with red pencil.			

302055

YES NO N/A

ACTION: If %RSD is > 30.0%, qualify associated positive results for that analyte "J" (estimated) and non-detects using professional judgement. When %RSD is > 90%, flag all non-detects for that analyte "R" (unusable) and positive hits "J".

NOTE: Analytes previously qualified "U" for blank contamination are still considered as "hits" when qualifying for initial calibration criteria. ___ ~~[X]~~ ___

12.4 Are any average RRFs < 0.05?

ACTION: Circle all outliers with red pencil.

ACTION: If the average RRF is < 0.05, then qualify associated non-detects with an "R" and flag associated positive data as estimated "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %RSD or RRF criteria, provided the %RSD is ≤ 40% and RRF is ≥ 0.010. (See Table 5, page D-59/VOA and analytes marked with a "*" on Form VI for required analytes and contractual criteria.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %RSD or RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and the Organic Regional Data Assessment Summary.

12.5 Are there any transcription/calculation errors in the reporting of average relative response factors (RRF) or %RSD? (Check at least 2 values, but if errors are found, check more.) ___ ~~[X]~~ ___

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

302056

	YES	NO	N/A
13.0 GC/MS Continuing Calibration (Form VII)			
13.1 Are the Continuing Calibration Forms (Form VII) present and complete for separate calibration of low water/med soil and low soil samples?	X	[ ]	
13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?	X		

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, contact the lab to request an explanation/resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable "R".

ACTION: List below all sample(s) that were not analyzed within twelve hours of the previous continuing calibration.

_____

_____

_____

	YES	NO	N/A
13.3 Do any volatile compounds have a percent difference (%D) between the initial and continuing RRF which exceeds the ±25% criteria?		X	

NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %D, the technical acceptance criteria are the same for all analytes.

ACTION: Circle all outliers with red pencil.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated. When %D is > 90%, qualify all non-detects for that analyte unusable (R) and positive results estimated (J).

302057

	YES	NO	N/A
13.4 Are any continuing calibration RRFs < 0.05?	___	X	___

ACTION: Circle all outliers with red pencil.

ACTION: If the RRF is < 0.05, qualify the associated non-detects as unusable "R" and the associated positive values "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %D and RRF criteria, provided that the %D is ≤ 40% and the RRF is ≥ 0.010. (See Table 5 pg. D-59/VOA or analytes marked with a "*" on Form VI for required analytes.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %D and RRF, criteria document in the Data Assessment under contract Problems/Non-Compliance and on the Organic Regional Data Assessment Summary form.

	YES	NO	N/A
13.5 Are there any transcription/calculation errors in the reporting of RRF or %D between initial and continuing RRFs? (Check at least two values, but if errors are found, check more.)	___	X	___

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance.

14.0 Internal Standard (Form VIII)

	YES	NO	N/A
14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits (-50% to +100%) for each continuing calibration?	[ ]	___	X
If no, was the sample re-analyzed?	[ ]	___	X

No [illegible]

ACTION: 1. Circle all outliers with red pencil.

2. List all the outliers below.

302058

YES NO N/A

Sample #	Internal Std.	Area	Lower/Upper Limit
			/
			/
			/
			/

(Attach additional sheets if necessary, or attach copies of Form VIIIs.)

ACTION: If any sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

ACTION: 1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Do not qualify non-detects when associated IS area counts are > 100%.

3. If the IS area in the sample is below the "lower limit," < 50%, qualify all analytes associated with that IS estimated, "J". If the area counts are extremely low, < 25% of the area in the 12 hour standard, or if performance exhibits a major abrupt drop- off, flag all associated non-detects as unusable, "R", and positive hits estimated, "J".

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? ☐ — ☒

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

NOTE: Contractual requirements state that if any internal standard fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not

302059

YES NO N/A

re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

NOTE: See Notes in section 3.4, page 7 for a description of sample data the laboratory must submit.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for VOA analysis? N ___ ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

302060

YES NO N/A

PART B: BNA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody records or laboratory SDG Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [ ] ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated "J". If a soil sample, other than TCLP, contains more than 90% water, all data should be qualified as unusable "R".

ACTION: If samples were not iced or if the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 10° C), flag all positive results "J" and all non-detects "UJ".

2.0 Holding Times

2.1 Have any BNA technical holding times, determined from date of collection to date of extraction, been exceeded? ___ [ ] ___

Technical Holding Time: Continuous extraction of water samples for BNA analysis must be started within seven days of the date of collection. Soil/sediment samples must be extracted within 7 days of collection. Extracts must be analyzed within 40 days of the date of extraction.

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample Analyzed	Sample Matrix	Date Sampled	Date Lab Received	Date Extracted	Date Analyzed

302061

302062

YES NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: II - CERCLA - 95-0104 LABORATORY: STL Environtech

SITE NAME: Klockner + Klockner SDG Number(s): X456

1.0 Chain of Custody and Sampling Trip Reports

1.1 Are the Traffic Reports/Chain-of-Custody Records present for all samples? [X] ___ ___

ACTION: If no, contact RSCC or the lab to obtain replacement of missing or illegible copies.

1.2 Is the Sampling Trip Report present for all samples and all fractions? [X] ___ ___

ACTION: If no, contact either RSCC or ask the prime contractor to provide this information.

2.0 Data Completeness and Deliverables

2.1 Have any missing deliverables been received and added to the data package? ___ X

NOTE: The lab is required to submit data for only two analyses, for each fraction. (i.e., the original sample and one dilution, or the most concentrated dilution analyzed and one further dilution.)

ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If lab cannot provide them, note the effect on the review of the package in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary form.

2.2 Was CLASS CCS checklist included with package? [ ] X ___

2.3 Are there any discrepancies between the Traffic Reports/Chain-of-Custody Records, Sampling Report and Sample Tags? ___ [X] ___

302063

	YES	NO	N/A
ACTION: If yes, contact the lab to obtain an explanation or resubmittal of any missing deliverables.			
3.0 Cover Letter SDG Narrative			
3.1 Is the Narrative or Cover Letter Present?	[X]	___	___
3.2 Are case number, SDG number and contract number contained in the SDG Narrative or cover letter (see SOW, Exhibit B, section 2.6.1)?	[X]	___	___
3.3 Does the narrative contain the following information:			
VOA: description of trap and columns used during sample analyses?	[X]	___	___
BNA: description of columns used during sample analyses?	[ ]	___	N/A
Pest: description of columns used during sample analyses?	[ ]	___	N/A
NOTE: As per section 6.23.3.1 SOW/p. D-11/Pest, Packed columns are not permitted.			
3.4 Does the narrative, VOA and BNA sections, contain a list of all TICs identified as alkanes and their estimated concentrations?	[ ]	X	___
3.5 Does the narrative contain a record of all cooler temperatures? If the temperature of a cooler was exceeded, > 10° C, the lab must list by fraction and sample number, all affected samples.	[ ]	X	___
3.6 Does the narrative contain a list of the pH values determined for each water sample submitted for volatile analysis (SOW Exhibit B, section 2.6.1.2)?	[ ]	X	___
3.7 Does the Case Narrative contain the statement, "verbatim", as required in Section B of the SOW?	[ ]	X	___
ACTION: If "No", to any question in this section, contact the lab to obtain all necessary resubmittals. If information is not available,			

302064

X456

YES NO N/A

document in the Data Assessment under Contract Problems/Non-Compliance section.

302065

	YES	NO	N/A
4.0 Data Validation Checklist			
4.1 Check the package for the following discrepancies:			
a. Is the package paginated in ascending order starting from the SDG narrative?	X		
b. Are all forms and copies legible?	X		
c. Is each fraction assembled in the order set forth in the SOW?	X		
d. Is a Sample Data Summary Package submitted immediately preceding the Sample Data Package?		X	
The following checklist is divided into three parts. Part A is for any VOA analyses, Part B is for BNAs and Part C is Pesticide/PCBs.			
Does this package contain:			
VOA Data?	X		
BNA Data?		X	
Pesticide/PCB data?		X	

ACTION: Complete corresponding parts of checklist.

302066

Y456

YES NO N/A

PART A: VOA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records, Sampling Report or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? ___ N/A ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated (J). If a soil sample other than TCLP contains more than 90% water, all data should be qualified as unusable (R).

ACTION: If samples were not iced or the ice was melted upon arrival at the laboratory and the cooler temperature was elevated (> 10° C), then flag all positive results with a "J" and all non-detects "UJ".

ACTION: If both VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

ACTION: The smallest soil size permitted is 0.5g. If any soil sample is smaller than 0.5g, document in the Data Assessment under Contract Problems/Non-Compliance.

2.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? ___ N/A ___

All technical holding times met as per 4W-516

Technical Holding Times: If unpreserved, aqueous samples, maintained at 4° C for aromatic hydrocarbons analysis must be analyzed within 7 days of collection. If preserved with HCl (pH < 2) and stored at 4° C, then aqueous samples must be analyzed within 14 days of collection. If uncertain about preservation, contact sampler to determine whether or

302067

YES NO N/A

not samples were preserved. The holding time for soils is 10 days from date of collection.

All technical 14day holding times met as per SOW-8/96

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample ID	Sample Matrix	Was Sample Preserved?	Date Sampled	Date Lab Received	Date Analyzed
183831	S	MeOH	2-15-00	2-16-00	2-28-00
183833 through 183838	↓	↓	↓	↓	↓
183840	↓	↓	↓	↓	↓
183843	MeOH Trip Blank	↓	↓	↓	2-29-00

ACTION: If technical holding times are exceeded, flag all positive results as estimated "J" and sample quantitation limits as estimated "UJ", and document in the Data Assessment that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable "R". If holding times are exceeded by more than 28 days, all non detect data are unusable "R".

NOTE: Contractual Holding Times: Analysis of water and soil/sediment samples must be completed within 10 days of Validated Time of Sample Receipt (VTSR). This requirement does not apply to Performance Evaluation (PE) samples.

ACTION: If contractual holding times are exceeded,

YES NO N/A

document in the Data Assessment and on the Organic Regional Data Assessment Summary form.

NOTE: The data reviewer must note in the Data Assessment whether or not **technical and contractual** holding times were met.

302069

	YES	NO	N/A
3.0 System Monitoring Compound (SMC) Recovery (Form II)			
3.1 Are the VOA SMC Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water? medium	[X]		
b. Low Soil?	[ ]	X	
c. Med Soil? High	[X]		
3.2 Are all the VOA samples listed on the appropriate System Monitoring Compound Recovery Summary for each of the following matrices:			
a. Low Water? med	[X]		
b. Low Soil?	[ ]		X
c. Med Soil? med	[X]		
ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If missing deliverables are unavailable, document the effect in the Data Assessment.			
3.3 Were outliers marked correctly with an asterisk?	[X]		
ACTION: Circle all outliers with red pencil.			
3.4 Was one or more VOA system monitoring compound recovery outside of contract specifications for any sample or method blank?	X	[ ]	
If yes, were samples re-analyzed?	[X]		
Were method blanks re-analyzed?	[X]		

ACTION: If recoveries are ≥ 10%, but 1 or more compounds fail to meet SOW specifications:

1. All positive results are qualified as estimated "J".

2. Flag all non-detects as estimated detection limits "UJ" where recovery is less than the lower acceptance limit.

302070

YES NO N/A

3. If SMC recoveries are above allowable levels, do not qualify non-detects.

If any system monitoring compound recovery is < 10%:

1. Flag all positive results as estimated "J".

2. Flag all non-detects as unusable "R".

Professional judgement should be used to qualify data that only have method blank SMC recoveries out of specification in both original and re-analyses. Check the internal standard areas.

NOTE: Contractual requirements state that if any SMC fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

NOTE: The laboratory must submit the following data:

1. If SMC recoveries and internal standard responses meet the acceptance criteria in the re-analyzed sample, then the laboratory must submit only the re-analysis.

2. If an SMC recovery and/or internal standard response fails to meet the acceptance criteria upon re-analysis, then submit data from both analyses.

(Refer to section 11.4.3.2, page D-46/VOA of the SOW for more information.)

3.5 Are there any transcription/calculation errors between raw data and Form II? — X —

ACTION: If large errors exist, contact the lab to obtain an explanation or resubmittal of corrected deliverables. Make any necessary corrections and note the effect in the Data Assessment.

302071

	YES	NO	N/A
4.0 Matrix Spikes (Form III)			
4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present?	[X]	___	___
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water?	[ ]	X	___
b. Low Soil?	[ ]	X	___
c. Med Soil?	[X]	___	___

ACTION: If any matrix spike data are missing, take the action specified in section 3.2 above.

4.3 How many VOA spike recoveries are outside QC limits?

Water	Soils
NA out of 10	0 out of 10

4.4 How many RPDs for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
NA out of 5	0 out of 5

ACTION: No action is taken based upon MS/MSD data alone. However, using informed professional judgement, the MS/MSD results may be used in conjunction with other QC criteria to determine the need for qualification of the data.

ACTION: Circle all outliers with red pencil.

	YES	NO	N/A
5.0 Blanks (Form IV)			
5.1 Is the Method Blank Summary (Form IV) present?	[X]	___	___

5.2 Frequency of Analysis: for the analysis of VOA TCL compounds, has a reagent/method blank been

302072

		YES	NO	N/A
	analyzed for each SDG or every 20 samples of similar matrix (low water, low soil or medium soil), whichever is more frequent?	X		
5.3	Has a VOA method blank been analyzed at least once every twelve hours for each concentration level and GC/MS system used?	X		
5.4	Was a VOA instrument blank analyzed after each sample/dilution which contained a target compound that exceeded the initial calibration range?			X
5.5	Was a VOA storage blank analyzed at the end of all samples for each SDG in a case?		X	

No storage blank for this SDG

ACTION: If any method/instrument blank data are missing, contact the lab to obtain any missing deliverables. If method blank data are not available, reject "R" all associated positive data. However, using professional judgement, the data reviewer may substitute field blank or trip blank data for missing method blank data.

If any instrument blank analyzed after a sample with high concentration is missing, contact the lab to obtain any missing deliverables. If the instrument blank was not analyzed or not available, inspect the chromatogram of the sample analyzed immediately after this analysis for possible carryover. Use professional judgement to determine if any contamination occurred and qualify analyte(s) accordingly.

If storage blank data is missing, contact the lab to obtain any missing deliverables. If unavailable, note in the Contract Problems/Non-Compliance section of the Data Assessment.

5.6 The validator should verify that the correct identification scheme for the EPA Blank samples were used. See page B-33, section 3.3.7.3 of the SOW for further information.

	Was the correct identification scheme used for all VOA blanks?		X	

302073

	YES	NO	N/A
ACTION: Contact the lab to obtain missing deliverables, or make the required corrections on the forms. Document in the Data Assessment under Contract Problems/Non-compliance if corrections were made by the validator.			
5.7 Chromatography: review the blank raw data-chromatograms (RICs), quant. reports or data system printouts and spectra. Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs?	[X]		
ACTION: Use professional judgement to determine the effect on the data.			
5.8 Are all detected hits for target compounds in method, instrument and storage blanks less than the CRQL for that analyte?	[X]		
Exception: Acetone and 2-butanone must be less than 5 times the CRQL, and methylene chloride must be less than 2.5 times its CRQL.			
ACTION: If no, an explanation and laboratory's corrective actions must be addressed in the case narrative. If the narrative contains no explanation, then make a note in the Contract Problems/Non-Compliance section of the Data Assessment.			

6.0 Contamination

NOTE: "Water blanks", "drill blanks", and "distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

	YES	NO	N/A
6.1 Do any method/instrument/reagent/storage blanks have positive results (TCL and/or TIC) for VOAs?		X	
NOTE: When applied as directed in the table below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for %moisture when necessary.			

302074

YES NO N/A

NOTE: A contaminated instrument blank is not allowable under this SOW. See page D-48/VOA, section 12.1.2.4 for additional information. Document in the Data Assessment under Contract Problems/Non-Compliance if contaminated instrument blank was submitted.

6.2 Do any field/trip/rinse blanks have positive VOA results (TCL and/or TIC)? ___ X ___

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped and are not required for non-aqueous matrices. Blanks may not be qualified because of contamination in another blank. Field Blanks & Trip Blanks must be qualified for system monitoring compound, instrument performance criteria, spectral or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable "R".

302075

YES NO N/A

For:	Flag sample result with a "U" when:	Report CRQL & qualify "U" when:	No qualification is needed when:
Methylene Chloride Acetone Toluene 2-Butanone	Sample conc. is > CRQL, but ≤ 10× blank value.	Sample conc. is < CRQL and ≤ 10× blank value.	Sample conc. is > CRQL and > 10× blank value.
Other Conta-minants	Sample conc. is > CRQL, but ≤ 5× blank value.	Sample conc. is < CRQL and ≤ 5× blank value.	Sample conc. is > CRQL and > 5× blank value.

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration criteria.

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R".

6.3 Are there field/rinse/equipment blanks associated with every sample? [ ] X ___

No [illegible] equip

ACTION: For low level samples, note in the Data Assessment that there is no associated field/rinse/equipment blank. For samples with high concentrations of suspected blank contaminants, use professional judgement to qualify these values and make a note in the Data Assessment.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V)

7.1 Are the GC/MS Instrument Performance Check Forms (Form V) present for Bromofluorobenzene (BFB)? [ ] ___ X

Not w/ SW846

7.2 Are the enhanced bar graph spectrum and

302076

	YES	NO	N/A
mass/charge (m/z) listing for the BFB provided for each twelve hour shift?	[ ]	___	X
7.3 Has an instrument performance check been analyzed for every analytical sequence on each instrument?	[ ]	___	X

ACTION: List date, time, instrument ID, and sample numbers for which associated GC/MS tuning data are unavailable.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: Notify the lab to obtain missing data, if possible. If the lab cannot provide the missing data, reject, "R", all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundances been normalized to m/z 95 as specified in Exhibit D, page D-56/VOA?	[ ]	___	X

NOTE: All ion abundance ratios must be normalized to m/z 95, the nominal base peak, even though the ion abundance of m/z 174 may be up to 120% that of m/z 95.

ACTION: If mass assignment is in error, qualify all associated data as unusable "R".

7.5 Have the ion abundance criteria been met for each instrument used?	[ ]	___	X

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors

302077

	YES	NO	N/A
between mass lists and Form Vs? (Check at least two values, but if errors are found check more.)	___	[ ]	X
7.7 Is the number of significant figures for the reported relative abundances consistent with the number given for each ion in the ion abundance criteria column?	[ ]	___	X

ACTION: If large errors exist, take action as specified in section 3.5 above.

7.8 Are the spectra of the mass calibration compound acceptable?	[ ]	___	X

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

8.0 Target Compound List (TCL) Analytes (FORM I VOA)

8.1 Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate?	[X]	___	___
b. Matrix spikes and matrix spike duplicates?	[ ]	X	___
c. Blanks?	[X]	___	___
8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (quant. reports) included in the sample package for each of the following: ← No MS 1/8/96			
a. Samples and/or fractions as appropriate?	[X]	___	___
b. Matrix spikes and matrix spike duplicates (mass spectra not required)?	[X]	___	___
c. Blanks?	[X]	___	___

ACTION: If any data are missing, take action specified in 3.2 above.

302078

X456

		YES	NO	N/A
8.3	Are the response factors shown in the quant. report?	[X]	___	___
8.4	Is chromatographic performance acceptable with respect to:			
	a. Baseline stability?	[X]	___	___
	b. Resolution?	[X]	___	___
	c. Peak shape?	[X]	___	___
	d. Full-scale graph (attenuation)?	[X]	___	___
	e. Other: _____?	[ ]	___	___

ACTION: Use professional judgement to determine the acceptability of the data.

8.5	Are the lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[ ]	___	[X]

ACTION: If any mass spectra are missing, take action as specified in 3.2 above. If the lab does not generate its own standard spectra, document in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary.

8.6	Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[X]	___	___
8.7	Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[ ]	___	[X]
8.8	Do sample and standard relative ion intensities agree within ±20%?	[ ]	___	[X]

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected "R", flagged "N" (presumptive evidence of the presence of the

302079

	YES	NO	N/A
compound) or changed to not detected "U" at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in 8.6, 8.7, and 8.8.			
ACTION: When sample carry-over is suspected, use professional judgement determine if instrument cross-contamination has affected positive compound identifications.			
9.0 Tentatively Identified Compounds (TIC)			
9.1 Are all Tentatively Identified Compound Forms (Form I Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier?	[ ]	___	X
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[ ]	___	___
b. Blanks?	[ ]	___	___
c. Alkanes listed for each sample?	[ ]	___	___
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "JN" qualifier to all chemically named TICs, if missing.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds? (Example: 1,2- dimethylbenzene is xylene, a VOA TCL analyte, and should not be reported as a TIC.)	___	[ ]	X
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[ ]	___	X

302080

	YES	NO	N/A
9.5 Do TIC and "best match" standard relative ion intensities agree within ±20%?	[ ]		X

ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined an incorrect identification was made, change the identification to "unknown," or to some less specific identification as appropriate. (Example: "C3 substituted benzene.")

Also, when a compound is not found in any blank, but is detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable "R". (E.g., Common Lab Contaminants: CO_2 (M/E 44), siloxanes (M/E 73) hexane, aldol condensation products, solvent preservatives, and related by-products - see the National Functional Guidelines for further guidance.)

	YES	NO	N/A
9.6 Are TICs with responses < 10% of the internal standard (as determined by inspection of the peak areas or height) reported?		[ ]	X

ACTION: If yes, cross out questionable TIC(s).

10.0 Compound Quantitation and Reported Detection Limits

	YES	NO	N/A
10.1 Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standards, quantitation ions, and RRF were used to calculate Form I results.)		[X]	
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	[X]		

ACTION: If errors are large, take action as specified in section 3.5 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample). Replace concentrations that exceeded the calibration

302081

	YES	NO	N/A
range in the original analysis by crossing out the "E" and its corresponding value on the original Form I and substituting the data from the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form Is not to be used, including any in the data summary package.			
11.0 Standards Data (GC/MS)			
11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (quant. reports) present for each initial and continuing calibration?	[X]	___	___
ACTION: If any calibration standard data are missing, take action specified in 3.2 above.			
12.0 GC/MS Initial Calibration (Form VI)			
12.1 Are the Initial Calibration Forms (Form VI) present and complete at concentrations of 10, 20, 50, 100, 200ng for separate calibrations of low water/med soils (unheated purge) and low soils (heated purge)?	[X]	___	___
ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.			
12.2 Were all low level soil standards, blanks and samples analyzed by heated purge?	[ ]	___	[X]
ACTION: If low level soil samples were not heated during purge, qualify positive hits "J" (estimated) and non-detects "R".			
12.3 Are the % relative standard deviation (%RSD) values for VOAs ≤ 30% over the concentration range of the calibration?	[X]	___	___
NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %RSD, the technical acceptance criteria are the same for all analytes.			
ACTION: Circle all outliers with red pencil.			

302082

YES NO N/A

ACTION: If %RSD is > 30.0%, qualify associated positive results for that analyte "J" (estimated) and non-detects using professional judgement. When %RSD is > 90%, flag all non-detects for that analyte "R" (unusable) and positive hits "J".

NOTE: Analytes previously qualified "U" for blank contamination are still considered as "hits" when qualifying for initial calibration criteria. ___ [X] ___

12.4 Are any average RRFs < 0.05?
< 500,000

ACTION: Circle all outliers with red pencil.

ACTION: If the average RRF is < 0.05, then qualify associated non-detects with an "R" and flag associated positive data as estimated "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %RSD or RRF criteria, provided the %RSD is ≤ 40% and RRF is ≥ 0.010. (See Table 5, page D-59/VOA and analytes marked with a "*" on Form VI for required analytes and contractual criteria.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %RSD or RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and the Organic Regional Data Assessment Summary.

12.5 Are there any transcription/calculation errors in the reporting of average relative response factors (RRF) or %RSD? (Check at least 2 values, but if errors are found, check more.) ___ [X] ___

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

302083

	YES	NO	N/A
13.0 GC/MS Continuing Calibration (Form VII)			
13.1 Are the Continuing Calibration Forms (Form VII) present and complete for separate calibration of low water/med soil and low soil samples?	X	[ ]	
13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?	X		

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, contact the lab to request an explanation/resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable "R".

ACTION: List below all sample(s) that were not analyzed within twelve hours of the previous continuing calibration.

_____

_____

_____

	YES	NO	N/A
13.3 Do any volatile compounds have a percent difference (%D) between the initial and continuing RRF which exceeds the ±25% criteria?		X	

NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %D, the technical acceptance criteria are the same for all analytes.

ACTION: Circle all outliers with red pencil.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated. When %D is > 90%, qualify all non-detects for that analyte unusable (R) and positive results estimated (J).

302084

Y456

YES NO N/A

Sample #	Internal Std.	Area	Lower/Upper Limit
			/
			/
			/
			/

(Attach additional sheets if necessary, or attach copies of Form VIIIs.)

ACTION: If any sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

ACTION: 1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Do not qualify non-detects when associated IS area counts are > 100%.

3. If the IS area in the sample is below the "lower limit," < 50%, qualify all analytes associated with that IS estimated, "J". If the area counts are extremely low, < 25% of the area in the 12 hour standard, or if performance exhibits a major abrupt drop- off, flag all associated non-detects as unusable, "R", and positive hits estimated, "J".

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [ ] ___ [X]

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

NOTE: Contractual requirements state that if any internal standard fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not

302085

	YES	NO	N/A
13.4 Are any continuing calibration RRFs < 0.05?	___	X	___

ACTION: Circle all outliers with red pencil.

ACTION: If the RRF is < 0.05, qualify the associated non-detects as unusable "R" and the associated positive values "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %D and RRF criteria, provided that the %D is ≤ 40% and the RRF is ≥ 0.010. (See Table 5 pg. D-59/VOA or analytes marked with a "*" on Form VI for required analytes.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %D and RRF, criteria document in the Data Assessment under contract Problems/Non-Compliance and on the Organic Regional Data Assessment Summary form.

	YES	NO	N/A
13.5 Are there any transcription/calculation errors in the reporting of RRF or %D between initial and continuing RRFs? (Check at least two values, but if errors are found, check more.)	___	X	___

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance.

14.0 Internal Standard (Form VIII)

	YES	NO	N/A
14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits (-50% to +100%) for each continuing calibration?	[ ]	___	X
If no, was the sample re-analyzed?	[ ]	___	X

ACTION: 1. Circle all outliers with red pencil.

2. List all the outliers below.

302086

YES NO N/A

re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

NOTE: See Notes in section 3.4, page 7 for a description of sample data the laboratory must submit.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for VOA analysis? N/A ___ ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

302087

YES NO N/A

PART B: BNA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody records or laboratory SDG Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [ ] ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated "J". If a soil sample, other than TCLP, contains more than 90% water, all data should be qualified as unusable "R".

ACTION: If samples were not iced or if the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 10° C), flag all positive results "J" and all non-detects "UJ".

2.0 Holding Times

2.1 Have any BNA technical holding times, determined from date of collection to date of extraction, been exceeded? ___ [ ] ___

Technical Holding Time: Continuous extraction of water samples for BNA analysis must be started within seven days of the date of collection. Soil/sediment samples must be extracted within 7 days of collection. Extracts must be analyzed within 40 days of the date of extraction.

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample Analyzed	Sample Matrix	Date Sampled	Date Lab Received	Date Extracted	Date Analyzed

302088

7456

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 3/90

XI/56

(SOP Revision XI)

PREPARED BY: _____ DATE: _____

Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: _____

Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE:

Robert Runyon, Chief
Monitoring Management Branch

302089

Title: Evaluation of Metals Data for the Contract Laboratory Program

Date: Jan. 1992
Number: HW-2
Revision: 11

1.0 Scope

1.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 3/90 .

2.0 **Responsibilities** - Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1. For a **total review**:

2.1.1 Data Assessment - "Total Review-Inorganics" Checklist Appendix (A.1).
The reviewer must answer every question on the checklist.

2.1.2 Data Assessment - Data Assessment Narrative (Appendix A.2)
The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

2.1.3 Contract Non-Compliance - SMO Report (Appendix A.3)
This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Validation Task Monitor, or Technical Project Officer (TPO). Forward 5 copies: one each for internal files, appropriate Regional TPO, Sample Management Office (SMO) and last two addresses of Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract violations should be appended to the end of the Data Assessment Narrative (Sec. A.2.2).

2.1.4 CLP Data Assessment Summary Forms

2.1.4.1 Appendix A.5
Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.

2.1.4.2 Appendix A.6
Data reviewer is also required to fill out Inorganic Regional Data Assessment form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

2.1.5 **Data Review Log:** It is recommended that each data reviewer should maintain a log of the reviews completed to include: a. date of start of case review

b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

2.1.6 **Telephone Record Log** - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

2.1.7 Forwarded Paperwork

2.1.7.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:
a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Record of Communication (copy)
e. CLP Reanalysis Request/Approval Record (original + 3 copies)
f. Appendix A.6 (original).

2.1.7.2 Forward 2 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.6) and Telephone Record Log , if any,: one each for appropriate Regional TPO, and the other one to EPA EMSL office in Las Vegas. The addresses of TPOs and EPA office in Las Vegas are given in Appendix A-4.

2.1.8 **Filed Paperwork** - Upon completion of review, the following are to be filed within MMB files:
a. Two copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.6.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Reanalysis Request/Approval Record (copy)

3.0 **Data Completeness**
Each data package is checked by a Regional Sample Control Coordinator (RSSC) for completeness. A data package is assumed to be complete when all the deliverables required under the contract are present. If a data package is incomplete,the RSSC would call the laboratory for missing document(s). If the laboratory does not Respond within a week, SMO and MMB coordinator of Region II will be notified.

4.0 **Rejection of Data** - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

5.0 **Acceptance Criteria** - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines of October 1, 1989.

6.0 **SMO Contract Compliance Screening (CCS)** - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

7.0 **Request for Reanalysis** - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative.If holding times and sample storage times have not been exceeded, TPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

8.0 **Record of Communication** - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

9.0 **Rounding off numbers** - The data reviewer will follow the standard practice.

X456

Title: Evaluation of Metals Data for the Contract Laboratory Program Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

	YES	NO	N/A
A.1.1 Contract Compliance Screening Report (CCS) - Present?	[ ]		X
ACTION: If no, contact RSCC.			
A.1.2 Record of Communication (from RSCC) - Present?	[ ]		X
ACTION: If no, request from RSCC.			
A.1.3 Trip Report - Present and complete?	[ ]		X
ACTION: If no, contact RSCC for trip report.			
A.1.4 Sample Traffic Report - Present?	[X]		
Legible?	[X]		
ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5 Cover Page - Present?	[X]		
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[X]		
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on Record of Communication?	[ ]		X
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	[X]		
(b) Form I's?	[X]		
ACTION: If no for any of the above, contact RSCC for clarification.			

A.1.6	Form I to IX	Yes	No	N/A
A.1.6.1	Are all the Form I through Form IX labeled with:			
	Laboratory name?	[X]	___	___
	Case/SAS number?	[___]	X	___
	EPA sample No.?	[___]	X	___
	SDG No.?	[X]	___	___
	Contract No.?	[___]	X	___
	Correct units?	[X]	___	___
	Matrix?	[X]	___	___

ACTION: If no for any of the above, note under Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.6.2	Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:			
	(NOTE: Check all forms against raw data.)			
	(a) all analytes analyzed by ICP?	[X]	___	___
	(b) all analytes analyzed by GFAA?	[___]	___	X
	(c) all analytes analyzed by AA Flame?	[___]	___	X
	(d) Mercury?	[___]	___	X
	(e) Cyanide?	[___]	___	X

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

		YES	NO	N/A
A.1.7	Raw Data			
A.1.7.1	Digestion Log* for flame AA/ICP (Form XIII) present?	[X]		
	Digestion Log for furnace AA Form XIII present?	[ ]		X
	Distillation Log for mercury Form XIII present?	[ ]		X
	Distillation Log for cyanides Form XIII present?	[ ]		X
	Are pH values (pH<2 for all metals, pH>12 for cyanide) present?	[ ]		X
	*Weights, dilutions and volumes used to obtain values.			
	Percent solids calculation present for soils/sediments?	[ ]	X	
	Are preparation dates present on sample preparation logs/bench sheets?	[X]		
A.1.7.2	Measurement read out record present? ICP	[X]		
	Flame AA	[ ]		X
	Furnace AA	[ ]		X
	Mercury	[ ]		X
	Cyanides	[ ]		X
A.1.7.3	Are all raw data to support all sample analyses and QC operations present?	[X]		
	Legible?	[X]		
	Properly Labeled?	[X]		

ACTION: If no for any of the above questions in sections A.1.7.1 through A.1.7.3, write Telephone Record Log and contact laboratory for resubmittals.

		YES	NO	N/A
A.1.8	**Holding Times** - (aqueous and soil samples)			
	(Examine sample traffic reports and digestion/distillation logs.)			
	Mercury analysis (28 days). . . . . exceeded?	___	[___]	[X]
	Cyanide distillation (14 days). . . . . exceeded?	___	[___]	[X]
	Other Metals analysis (6 months). . . . exceeded?	___	[X]	___
	NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.			
	ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.			
A.1.8.2	Is pH of aqueous samples for: Metals Analysis >2?	___	[___]	[X]
	Cyanides Analysis <12?	___	[___]	[X]
	Action: If yes, flag the associated metals and cyanides data as estimated.			
A.1.9	**Form I (Final Data)**			
A.1.9.1	Are all Form I's present and complete?	[X]	___	___
	ACTION: If no, prepare telephone record log and contact laboratory for submittal.			
A.1.9.2	Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[X]	___	___
	Are soil sample results for each parameter corrected for percent solids?	[X]	___	___
	Are all "less than IDL" values properly coded with "U"?	[X]	___	___

		YES	NO	N/A
	Are the correct concentration qualifiers used with final data?	[X]	___	___
	ACTION: If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data.			
A.1.9.3	Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	[X]	___	___
	Was a brief physical description of samples given on Form I's?	[___]	X	___
	Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV?	___	[X]	___
	ACTION: If no for any of the above, note under Contract-Problem/Non-Compliance of the"Data Assessment Narrative".			
A.1.10	Calibration			
A.1.10.1	Is record of at least 2 point calibration present for ICP analysis?	[X]	___	___
	Is record of 5 point calibration present for Hg analysis?	[___]	___	X
	Is record of 4 point calibration present for:			
	Flame AA?	[___]	___	X
	Furnace AA?	[___]	___	X
	Cyanides?	[___]	___	X
	Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses?	[___]	___	X

ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

	YES	NO	N/A
A.1.10.2 Is correlation coefficient less than 0.995 for:			
Mercury Analysis?	___	[___]	X
Cyanide Analysis?	___	[___]	X
Atomic Absorption Analysis?	___	[___]	X

ACTION: If yes, flag the associated data as estimated.

NOTE: The data validator shall calculate the correlation coefficient using concentrations of the standards and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

A.1.10.3 In the instance where less than 4 standards are measured in absorbance (or peak area, peak height,etc.) mode, are the remaining standards analyzed in concentration mode immediately after calibration within ±10% of the true values?	[X]	___	___

ACTION: If no, flag the associated data as estimated if standards are not within ±10% of true values. Do not flag the data as estimated in linear range indicated by good recovery of standard(s).

A.1.11 **Form II A (Initial and Continuing Calibration Verification)-**

A.1.11.1 Present and complete for every metal and cyanide?	[X]	___	___
Present and complete for AA and ICP when both are used for the same analyte?	[___]	___	X

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.11.2 Circle on each Form IIA all percent recoveries that are outside the contract windows. Are all calibration standards (initial and continuing) within control limits:			
Metals- 90-110%R?	[X]	___	___
Hg - 80-120%R?	[X]	___	___
Cyanides- 85-115%R?	[___]	___	X

	YES	NO	N/A
ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ) if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits.			
A.1.11.3 Was continuing calibration performed every 10 samples or every 2 hours?	[X]	___	___
Was ICV for cyanides distilled?	[___]	___	X

ACTION: If no for any of the above, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.12 Form II B (CRDL Standards for AA and ICP) -

A.1.12.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?	[___]	___	X
Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[___]	___	X
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	[___]	___	X

ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are:
AA Analysis - **True Value ± CRDL
ICP Analysis - **True Value ± 2CRDL
CN Analysis - **True Value ± 0.5 x True Value.

**True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL. Compute the concentration of the missing mid-range standard from the calibration range.

		YES	NO	N/A
A.1.12.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?	[___]	___	✓
	ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".			
A.1.12.3	Circle on each Form IIB all the percent recoveries that are outside the acceptance windows.			
	Are CRA and CRI standards within control limits:			
	Metals 80 - 120%R?	[___]	___	✓
	Is mid-range standard within control limits:			
	Cyanide 80 - 120%R?	[___]	___	✓
	ACTION: Flag as estimated all sample results within the affected range if the recovery of the standard is between 50-79%; flag only positive data within the affected range if the recovery is between 121-150%; reject all data within the affected range if the recovery is less than 50%; reject only positive data within the affected range if the recovery is greater than 150%. Qualify 50% of the samples on either side of CRI standard outside the control limits.			
	Note: Flag or reject the final results only when sample raw data are within the affected ranges and the CRDL standards are outside the acceptance windows.			
A.1.13	**Form III (Initial and Continuing Calibration Blanks)**			
A.1.13.1	Present and complete?	[✓]	___	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	✓
	Was an initial calibration blank analyzed?	[✓]	___	___
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	[✓]	___	___

		YES	NO	N/A
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract-Problems/ Non-Compliance section of the "Data Assessment Narrative".			
A.1.13.2	Circle on each Form III all calibration blank values that are above CRDL (or 2 x IDL when IDL > CRDL).			
	Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	[X]	___	___
	Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[X]	___	___
	ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is less than or equal to calibration blank value analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank outside the control limits.			
A.1.14	FORM III (Preparation Blank) - (Note: The preparation blank for mercury is the same as the calibration blank.)			
A.1.14.1	Was one prep. blank analyzed for:			
	each Sample Delivery Group (SDG)?	[X]	___	___
	each batch of digested samples?	[X]	___	___
	each matrix type?	[X]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	X
	ACTION: If no for any of the above, flag as estimated (J) all the associated positive data <10 x IDLs for which prep. blank was not analyzed.			
	NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			

		YES	NO	N/A
A.1.14.2	Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?	___	[X]	___
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep.blank?	___	[___]	X
	ACTION: If yes, reject (red-line) all associated data greater than CRDL concentration but less than ten times the prep. blank value.			
A.1.14.3	Is concentration of prep. blank value (Form III) less than two times IDL, when IDL is greater than CRDL?	[X]	___	___
	ACTION: If no, reject (red-line) all positive sample results when sample raw data are less than 10 times the prep. blank value.			
A.1.14.4	Is concentration of prep. blank below the negative CRDL?	___	[X]	___
	ACTION: If yes, reject (red-line) all associated sample results less than 10xCRDL.			
A.1.15	**Form IV (ICP Interference Check Sample)**			
A.1.15.1	Present and complete?	[X]	___	___
	(**NOTE**: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[X]	___	___
	ACTION: If no, flag as estimated (J) all the samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
A.1.15.2	Circle all values on each Form IV that are more than ± 20% of true or established mean value.			
	Are all Interference Check Sample results inside the control limits (± 20%)?	[X]	___	___
	If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?	[___]	___	X

	YES	NO	N/A
ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	[___]	___	X
ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".			
A.1.16.4 **Aqueous**			
Are any spike recoveries:			
(a) less than 30%?	___	[___]	X
(b) between 30-74%?	___	[___]	X
(c) between 126-150%?	___	[___]	X
(d) greater than 150%?	___	[___]	X
ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".			
A.1.16.5 **Soil/Sediment**			
Are any spike recoveries:			
(a) less than 10%?	___	[X]	___
(b) between 10-74%?	___	[X]	___
(c) between 126-200%?	___	[X]	___
(d) greater than 200%?	___	[X]	___

		YES	NO	N/A
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			
A.1.16	**Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)-** (**Note**: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
A.1.16.1	Present and complete for: each SDG?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each conc. range (i.e. low, med., high)?	[✓]	___	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	✓
	ACTION: If no for any of the above, flag as estimated (J) all the positive data less than four times the spiking levels specified in SOW for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.16.2	Was field blank used for spiked sample?	___	[✓]	___
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
A.1.16.3	Circle on each Form VA all spike recoveries that are outside control limits (75% to 125%).			
	Are all recoveries within control limits?	[✓]	___	___
	If no, is sample concentration greater than or equal to four times spike concentration?	[___]	___	✓

		YES	NO	N/A
	ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".			
A.1.17	**Form VI (Lab Duplicates)**			
A.1.17.1	Present and complete for: each SDG?	[X]	___	___
	each matrix type?	[X]	___	___
	each concentration range (i.e. low, med., high)?	[X]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	X
	ACTION: If no for any the above, flag as estimated (J) all the data ≥CRDL* for which duplicate sample was not analyzed.			
	Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.			
	2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on wet weight basis and calculate RPD or Difference for each analyte.			
A.1.17.2	Was field blank used for duplicate analysis?	___	[X]	___
	ACTION: If yes, flag all data ≥CRDL* as estimated (J) for which field blank was used as duplicate.			
A.1.17.3	Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?	[X]	___	___
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[___]	___	X
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative".			

* Substitute IDL for CRDL when IDL > CRDL.

	YES	NO	N/A

NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL.
2. If the result of lab duplicate analyzed by GFAA is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria to metals analyzed by GFAA.

A.1.17.4 Aqueous

Circle on each Form VI all values that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	N/A
Is any difference** between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	N/A

ACTION: If yes, flag the associated data as estimated.

A.1.17.5 Soil/Sediment

Circle on each Form VI all values that are:

RPD > 100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) : > 100%?	___	[N/A]	___
Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) : > 2x*CRDL?	___	[N/A]	___

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
	ACTION: If yes, flag the associated data as estimated.			
A.1.18	**Field Duplicates**			
A.1.18.1	Were field duplicates analyzed?	[___]	X	___

ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/l on wet weight basis and calculate RPDs or Difference for each analyte.

NOTE: 1. Do not calculate RPD when both values are less than IDL.
2. Flag all associated data only for field duplicate pair.

A.1.18.2 **Aqueous**

Circle all values on self prepared Form VI for field duplicates that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	X
Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	X

ACTION: If yes, flag the associated data as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
A.1.18.3	Soil/Sediment			
	Circle all values on self prepared Form VI for field duplicates that are:			
	RPD >100%, or			
	Difference > 2 x CRDL*			
	Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) : >100%?	___	[___]	✓
	Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL): >2x *CRDL?	___	[___]	✓
	ACTION: If yes, flag the associated data as estimated.			
A.1.19	Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)			
A.1.19.1	Was one LCS prepared and analyzed for:			
	each SDG?	[✓]	___	___
	each batch samples digested/distilled?	[✓]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	✓
	ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all the data for which LCS was not analyzed.			
	NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.			

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
A.1.19.2	**Aqueous LCS**			
	Circle on each Form VII the LCS percent recoveries outside control limits (80 - 120%) except for aqueous Ag and Sb.			
	Is any LCS recovery: less than 50%?	___	[___]	✓
	between 50% and 79%?	___	[___]	✓
	between 121% and 150%?	___	[___]	✓
	greater than 150%?	___	[___]	✓

ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.

A.1.19.3 **Solid LCS**

NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J).

2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.

Is LCS "Found" value higher than the control limits on Form VII? ___ [✓] ___

ACTION: If yes, qualify all associated positive data as estimated.

Is LCS "Found" value lower than the Control limits on Form VII? ___ [✓] ___

ACTION: If yes, qualify all associated data as estimated.

		YES	NO	N/A
A.1.20	**Form IX (ICP Serial Dilution)** -			
	NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.			
A.1.20.1	Was Serial Dilution analysis performed for: each SDG?	[X]	___	___
	each matrix type?	[X]	___	___
	each concentration range (i.e. low, med.)?	[X]	___	___
	ACTION: If no for any of the above, flag as estimated all the positive data ≥ 10xIDLs or ≥ CRDL when 10xIDL ≤ CRDL for which Serial Dilution Analysis was not performed.			
A.1.20.2	Was field blank(s) used for Serial Dilution Analysis?	___	[X]	___
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J). If 10xIDL ≤ CRDL, flag all data ≥ CRDL.			
A.1.20.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.	[___]	___	X
	ACTION: If no, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.20.4	Circle on each Form IX all percent difference that are outside the control limits for initial concentrations equal to or greater than 10 x IDLs only.			
	Are any % difference values:			
	> 10%?	___	[X]	___
	≥ 100%?	___	[X]	___

		YES	NO	N/A

ACTION: Flag as estimated (J) all the associated sample data ≥ 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which percent difference is greater than 10% but less than 100%. Reject (red-line) all the associated sample results equal to or greater than 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which PD is greater than or equal to 100%.

Note: Flag or reject on Form I's only the sample results whose associated raw data are ≥ 10xIDL (or ≥ CRDL when 10xIDL≤ CRDL)

A.1.21 **Furnace Atomic Absorbtion (AA) QC Analysis**

A.1.21.1 Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA? [___] ___ b

ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.

A.1.21.2 Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL? [___] ___ b

Was a dilution analyzed for sample with analytical spike recovery less than 40%? [___] ___ b

ACTION: If no for any of the above, flag all the associated data as estimated.

A.1.21.3 Is *analytical spike recovery outside the control limits (85-115%) for any sample? ___ [___] b

ACTION: If yes, flag as estimated the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject the associated sample results if the recovery is less than 10%; reject positive sample results if the recovery is greater than 200%.

* Analytical spike is not required on the pre-digestion spiked sample.

		YES	NO	N/A
	NOTE: Reject or flag the data only when the affected sample(s) was not subsequently analyzed by Method of Standard Addition.			
A.1.22	**Form VIII (Method of Standard Addition Results)**			
A.1.22.1	Present?	[___]	___	X
	If no, is any Form I result coded with "S" or a "+"?	___	[___]	X
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			
A.1.22.2	Is coefficient of correlation for MSA less than 0.990 for any sample?	___	[___]	X
	ACTION: If yes, reject (red-line) the affected data.			
A.1.22.3	Was *MSA required for any sample but not performed?	___	[X]	___
	Is coefficient of correlation for MSA less than 0.995?	___	[___]	___
	Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?	___	[___]	X
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
A.1.22.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23?	[___]	___	X
	ACTION: If no, note exception under Contract Problem/ Non-Compliance section of the "Data Assessment Narrative", and prepare a separate list.			

* MSA is not required on LCS and prep. blank.

		YES	NO	N/A
A.1.23	Dissolved/Total or Inorganic/Total Analytes -			
A.1.23.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s).	___	[___]	X
	Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[___]	X
	NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration. 2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents. 3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.			
A.1.23.2	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	X
A.1.23.3	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[___]	X
	ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.			
A.1.24	Form I (Field Blank) -			
	(Note: Designate "Field Blank" as such on Form I.)			
A.1.24.1	Circle all field blank values on Form I that are greater than CRDL, (or 2 x IDL when IDL > CRDL).			
	Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[___]	___	X

	YES	NO	N/A
If no, was field blank value already rejected due to other QC criteria?	[___]	___	✓

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value. Reject on Form I's the soil sample results that when converted to ug/L on wet basis are less than or equal to five times the field blank value in ug/L.

A.1.25 **Form X, XI, XII (Verification of Instrumental Parameters).**

A.1.25.1 Is verification report present for:

Instrument Detection Limits (quarterly)?	[___]	___	✓
ICP Interelement Correction Factors (annually)?	[___]	___	✓
ICP Linear Ranges (quarterly)?	[___]	___	✓

ACTION: If no, contact TPO of the lab.

A.1.25.2 **Form X (Instrument Detection Limits)** - (Note: IDL is not required for Cyanide.)

A.1.25.2.1 Are IDLs present for: all the analytes?	[___]	___	✓
all the instruments used?	[___]	___	✓
For both AA and ICP when both are used for the same analyte?	[___]	___	✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.25.2.2 Is IDL greater than CRDL for any analyte?	___	[___]	✓
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.	[___]	___	✓

X456

	YES	NO	N/A
Action : If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			
A.1.25.3 **Form XI (Linear Ranges)**			
A.1.25.3.1 Was any sample result higher than high linear range of ICP.	___	[___]	X
Was any sample result higher than the highest calibration standard for non-ICP parameters?	___	[___]	X
If yes for any of the above, was the sample diluted to obtain the result on Form I?	[___]	___	X
ACTION: If no, flag the result reported on Form I as estimated(J).			
A.1.26 **Percent Solids of Sediments**			
A.1.26.1 Are percent solids in sediment(s): < 50%?	___	[X]	___
< 10%?	___	[X]	___

ACTION: If yes, qualify as estimated all the results of a sample that has per cent solids between 10%-50% (i.e. moisture content between 50%-90%). Reject all the results of a sample that has per cent solids less than 10% (i.e. moisture content greater than 90%).

NOTE: Reject or flag(J) only the sample results that were not previously rejected or flaged due to other QC criteria.

Case# _____ **Site** _____ **Matrix: Soil** _____

SDG# _____ **Lab** _____ **Water** _____

Contractor _____ **Reviewer** _____ **Other** _____

A.2.1 **Validation Flags-** The following flags have been applied in red by the data validator and must be considered by the data user.

J- This flag indicates the result qualified as **estimated**

Red- Line- A red-line drawn through a sample result indicates **unusable** value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

Fully Usable Data- The results that do not carry "J" or "red-line" are fully usable.

Contractual Qualifiers- The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW ILM01.0.

A.2.2 The data assessment is given below and on the attached sheets.

_____

_____

_____

_____

_____

_____

_____

_____

A.2.2 (continuation)

A.2.2 (continuation)

X456

302119

A.2.3 Contract-Problem/Non-Compliance

MMB/ESAT Rviewer: _____ Date: _____
Signature

Contractor Reviewer: _____ Date: _____
Signature

Verified by: _____ Date: _____

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste
Site Contract Laboratory Data Package

CASE NO._____

The hardcopied (laboratory name)_____
Inorganic data package received at Region II has been reviewed and the quality assurance and performance data summarized. The data reviewed included:
SMO Sample No.:_____

Conc. & Matrix:_____

Contract No.(_____) requires that specific analytical work be done and that associated reports be provided by the contractor to the Regions, EMSL-LV, and SMO. The general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

Items of non-compliance with the above contract are described below.

Comments:_____

_____

_____

_____

_____

_____

_____

_____

_____

_____ Reviewer's Initial

_____ Date

X456

INORGANIC REGIONAL DATA ASSESSMENT

Region_____

CASE NO._____ SITE_____

LABORATORY_____ NO. OF SAMPLES/ MATRIX_____

SDG#_____ REVIEWER (IF NOT ESD)_____

SOW#_____ REVIEWER'S NAME_____

DPO: ACTION_____ FYI_____ COMPLETION DATE_____

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	CYANIDE
1.	HOLDING TIMES				
2.	CALIBRATIONS				
3.	BLANKS				
4.	ICS				
5.	LCS				
6.	DUPLICATE ANALYSIS				
7.	MATRIX SPIKE				
8.	MSA				
9.	SERIAL DILUTION				
10.	SAMPLE VERIFICATION				
11.	OTHER QC				
12.	OVERALL ASSESSMENT				

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:_____

AREAS OF CONCERN:_____

NOTABLE PERFORMANCE:_____

302124

YES NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: 2-CERCLA-95-0104 LABORATORY: STL Environmental

SITE NAME: Klockner+Klockner SDG Number(s): C924

1.0 Chain of Custody and Sampling Trip Reports

1.1 Are the Traffic Reports/Chain-of-Custody Records present for all samples? [X] ___ ___

ACTION: If no, contact RSCC or the lab to obtain replacement of missing or illegible copies.

1.2 Is the Sampling Trip Report present for all samples and all fractions? [X] ___ ___

ACTION: If no, contact either RSCC or ask the prime contractor to provide this information.

2.0 Data Completeness and Deliverables

2.1 Have any missing deliverables been received and added to the data package? ___ X

NOTE: The lab is required to submit data for only two analyses, for each fraction. (i.e., the original sample and one dilution, or the most concentrated dilution analyzed and one further dilution.)

ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If lab cannot provide them, note the effect on the review of the package in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary form.

2.2 Was CLASS CCS checklist included with package? [ ] X ___

2.3 Are there any discrepancies between the Traffic Reports/Chain-of-Custody Records, Sampling Report and Sample Tags? ___ [X] ___

302125

	YES	NO	N/A
ACTION: If yes, contact the lab to obtain an explanation or resubmittal of any missing deliverables.			
3.0 Cover Letter SDG Narrative			
3.1 Is the Narrative or Cover Letter Present?	[X]		
3.2 Are case number, SDG number and contract number contained in the SDG Narrative or cover letter (see SOW, Exhibit B, section 2.6.1)?	[X]		
3.3 Does the narrative contain the following information:			
VOA: description of trap and columns used during sample analyses?	[X]		
BNA: description of columns used during sample analyses?	[ ]		X
Pest: description of columns used during sample analyses?	[ ]		X
NOTE: As per section 6.23.3.1 SOW/p. D-11/Pest, Packed columns are not permitted.			
3.4 Does the narrative, VOA and BNA sections, contain a list of all TICs identified as alkanes and their estimated concentrations?	[ ]	X	
3.5 Does the narrative contain a record of all cooler temperatures? If the temperature of a cooler was exceeded, > 10° C, the lab must list by fraction and sample number, all affected samples.	[ ]	X	
3.6 Does the narrative contain a list of the pH values determined for each water sample submitted for volatile analysis (SOW Exhibit B, section 2.6.1.2)?	[ ]	X	
3.7 Does the Case Narrative contain the statement, "verbatim", as required in Section B of the SOW?	[ ]	X	

ACTION: If "No", to any question in this section, contact the lab to obtain all necessary resubmittals. If information is not available,

302126

YES NO N/A

document in the Data Assessment under Contract Problems/Non-Compliance section.

302127

	YES	NO	N/A
4.0 Data Validation Checklist			
4.1 Check the package for the following discrepancies:			
a. Is the package paginated in ascending order starting from the SDG narrative?	[X]	___	___
b. Are all forms and copies legible?	[X]	___	___
c. Is each fraction assembled in the order set forth in the SOW?	[X]	___	___
d. Is a Sample Data Summary Package submitted immediately preceding the Sample Data Package?	[ ]	X	___

The following checklist is divided into three parts. Part A is for any VOA analyses, Part B is for BNAs and Part C is Pesticide/PCBs.

Does this package contain:

VOA Data?	X	___
BNA Data?	___	X
Pesticide/PCB data?	___	X

ACTION: Complete corresponding parts of checklist.

302128

YES NO N/A

PART A: VOA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records, Sampling Report or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? ___ [X] ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated (J). If a soil sample other than TCLP contains more than 90% water, all data should be qualified as unusable (R).

ACTION: If samples were not iced or the ice was melted upon arrival at the laboratory and the cooler temperature was elevated (> 10° C), then flag all positive results with a "J" and all non-detects "UJ".

ACTION: If both VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

ACTION: The smallest soil size permitted is 0.5g. If any soil sample is smaller than 0.5g, document in the Data Assessment under Contract Problems/Non-Compliance.

2.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? ___ [X] ___

All technical (14 day) holding times met as per SOW-8416

Technical Holding Times: If unpreserved, aqueous samples, maintained at 4° C for aromatic hydrocarbons analysis must be analyzed within 7 days of collection. If preserved with HCl (pH < 2) and stored at 4° C, then aqueous samples must be analyzed within 14 days of collection. If uncertain about preservation, contact sampler to determine whether or

302129

YES NO N/A

not samples were preserved. The holding time for soils is 10 days from date of collection.

All technical holding times met per guidelines

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample ID	Sample Matrix	Was Sample Preserved?	Date Sampled	Date Lab Received	Date Analyzed
223543	S	MeOH	8-16-00	8-17-00	8-28-00
223550 through 223552	↓	↓	↓	↓	↓
223554 through 223560	↓	↓	↓	↓	↓
223561	MeOH Trip Blank	↓	8-15-00	↓	↓

ACTION: If technical holding times are exceeded, flag all positive results as estimated "J" and sample quantitation limits as estimated "UJ", and document in the Data Assessment that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable "R". If holding times are exceeded by more than 28 days, all non detect data are unusable "R".

NOTE: Contractual Holding Times: Analysis of water and soil/sediment samples must be completed within 10 days of Validated Time of Sample Receipt (VTSR). This requirement does not apply to Performance Evaluation (PE) samples.

ACTION: If contractual holding times are exceeded, 302130

YES NO N/A

document in the Data Assessment and on the Organic Regional Data Assessment Summary form.

NOTE: The data reviewer must note in the Data Assessment whether or not **technical and contractual** holding times were met.

302131

	YES	NO	N/A
3.0 System Monitoring Compound (SMC) Recovery (Form II)			
3.1 Are the VOA SMC Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water?	[ ]	X	
b. Low Soil?	[ ]	X	
c. Med Soil?	[X]		
3.2 Are all the VOA samples listed on the appropriate System Monitoring Compound Recovery Summary for each of the following matrices:			
a. Low Water?	[ ]		X
b. Low Soil?	[ ]		X
c. Med Soil?	[X]		

ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If missing deliverables are unavailable, document the effect in the Data Assessment.

3.3 Were outliers marked correctly with an asterisk?	[X]		

ACTION: Circle all outliers with red pencil.

3.4 Was one or more VOA system monitoring compound recovery outside of contract specifications for any sample or method blank?		[X]	
If yes, were samples re-analyzed?	[ ]		X
Were method blanks re-analyzed?	[ ]		X

ACTION: If recoveries are ≥ 10%, but 1 or more compounds fail to meet SOW specifications:

1. All positive results are qualified as estimated "J".

2. Flag all non-detects as estimated detection limits "UJ" where recovery is less than the lower acceptance limit.

302132

YES NO N/A

3. If SMC recoveries are above allowable levels, do not qualify non-detects.

If any system monitoring compound recovery is < 10%:

1. Flag all positive results as estimated "J".

2. Flag all non-detects as unusable "R".

Professional judgement should be used to qualify data that only have method blank SMC recoveries out of specification in both original and re-analyses. Check the internal standard areas.

NOTE: Contractual requirements state that if any SMC fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

NOTE: The laboratory must submit the following data:

1. If SMC recoveries and internal standard responses meet the acceptance criteria in the re-analyzed sample, then the laboratory must submit only the re-analysis.

2. If an SMC recovery and/or internal standard response fails to meet the acceptance criteria upon re-analysis, then submit data from both analyses.

(Refer to section 11.4.3.2, page D-46/VOA of the SOW for more information.)

3.5 Are there any transcription/calculation errors between raw data and Form II? ___ [Y] ___

ACTION: If large errors exist, contact the lab to obtain an explanation or resubmittal of corrected deliverables. Make any necessary corrections and note the effect in the Data Assessment.

302133

	YES	NO	N/A
4.0 Matrix Spikes (Form III)			
4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present?	[X]	___	___
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water?	[ ]	X	___
b. Low Soil?	[ ]	X	___
c. Med Soil? ok	[X]	___	___

As per meth. 3500

ACTION: If any matrix spike data are missing, take the action specified in section 3.2 above.

4.3 How many VOA spike recoveries are outside QC limits?

Water	Soils
___ out of 10	0 out of 10

4.4 How many RPDs for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
___ out of 5	0 out of 5

ACTION: No action is taken based upon MS/MSD data alone. However, using informed professional judgement, the MS/MSD results may be used in conjunction with other QC criteria to determine the need for qualification of the data.

ACTION: Circle all outliers with red pencil.

	YES	NO	N/A
5.0 Blanks (Form IV)			
5.1 Is the Method Blank Summary (Form IV) present?	[X]	___	___

5.2 Frequency of Analysis: for the analysis of VOA TCL compounds, has a reagent/method blank been

302134

		YES	NO	N/A
	analyzed for each SDG or every 20 samples of similar matrix (low water, low soil or medium soil), whichever is more frequent?	[X]		
5.3	Has a VOA method blank been analyzed at least once every twelve hours for each concentration level and GC/MS system used?	[X]		
5.4	Was a VOA instrument blank analyzed after each sample/dilution which contained a target compound that exceeded the initial calibration range?	[ ]		X
5.5	Was a VOA storage blank analyzed at the end of all samples for each SDG in a case?	[ ]	X	

ACTION: If any method/instrument blank data are missing, contact the lab to obtain any missing deliverables. If method blank data are not available, reject "R" all associated positive data. However, using professional judgement, the data reviewer may substitute field blank or trip blank data for missing method blank data.

If any instrument blank analyzed after a sample with high concentration is missing, contact the lab to obtain any missing deliverables. If the instrument blank was not analyzed or not available, inspect the chromatogram of the sample analyzed immediately after this analysis for possible carryover. Use professional judgement to determine if any contamination occurred and qualify analyte(s) accordingly.

If storage blank data is missing, contact the lab to obtain any missing deliverables. If unavailable, note in the Contract Problems/Non-Compliance section of the Data Assessment.

5.6 The validator should verify that the correct identification scheme for the EPA Blank samples were used. See page B-33, section 3.3.7.3 of the SOW for further information.

		YES	NO	N/A
	Was the correct identification scheme used for all VOA blanks?	[ ]	X	

302135

	YES	NO	N/A
ACTION: Contact the lab to obtain missing deliverables, or make the required corrections on the forms. Document in the Data Assessment under Contract Problems/Non-compliance if corrections were made by the validator.			
5.7 Chromatography: review the blank raw data-chromatograms (RICs), quant. reports or data system printouts and spectra. Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs?	[X]	___	___
ACTION: Use professional judgement to determine the effect on the data.			
5.8 Are all detected hits for target compounds in method, instrument and storage blanks less than the CRQL for that analyte?	[X]	___	___
Exception: Acetone and 2-butanone must be less than 5 times the CRQL, and methylene chloride must be less than 2.5 times its CRQL.			
ACTION: If no, an explanation and laboratory's corrective actions must be addressed in the case narrative. If the narrative contains no explanation, then make a note in the Contract Problems/Non-Compliance section of the Data Assessment.			

6.0 Contamination

NOTE: "Water blanks", "drill blanks", and "distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

	YES	NO	N/A
6.1 Do any method/instrument/reagent/storage blanks have positive results (TCL and/or TIC) for VOAs?	___	[X]	___
NOTE: When applied as directed in the table below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for %moisture when necessary.			

302136

	YES	NO	N/A
NOTE: A contaminated instrument blank is not allowable under this SOW. See page D-48/VOA, section 12.1.2.4 for additional information. Document in the Data Assessment under Contract Problems/Non-Compliance if contaminated instrument blank was submitted.			
6.2 Do any field/trip/rinse blanks have positive VOA results (TCL and/or TIC)?	[ ]	X	___

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped and are not required for non-aqueous matrices. Blanks may not be qualified because of contamination in another blank. Field Blanks & Trip Blanks must be qualified for system monitoring compound, instrument performance criteria, spectral or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable "R".

302137

YES NO N/A

For:	Flag sample result with a "U" when:	Report CRQL & qualify "U" when:	No qualification is needed when:
Methylene Chloride Acetone Toluene 2-Butanone	Sample conc. is > CRQL, but ≤ 10× blank value.	Sample conc. is < CRQL and ≤ 10× blank value.	Sample conc. is > CRQL and > 10× blank value.
Other Conta-minants	Sample conc. is > CRQL, but ≤ 5× blank value.	Sample conc. is < CRQL and ≤ 5× blank value.	Sample conc. is > CRQL and > 5× blank value.

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration criteria.

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R".

6.3 Are there field/rinse/equipment blanks associated with every sample? [ ] X ___

ACTION: For low level samples, note in the Data Assessment that there is no associated field/rinse/equipment blank. For samples with high concentrations of suspected blank contaminants, use professional judgement to qualify these values and make a note in the Data Assessment.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V)

7.1 Are the GC/MS Instrument Performance Check Forms (Form V) present for Bromofluorobenzene (BFB)? [ ] ___ X

7.2 Are the enhanced bar graph spectrum and

	YES	NO	N/A
mass/charge (m/z) listing for the BFB provided for each twelve hour shift?	[ ]	___	___
7.3 Has an instrument performance check been analyzed for every analytical sequence on each instrument?	[ ]	___	___

ACTION: List date, time, instrument ID, and sample numbers for which associated GC/MS tuning data are unavailable.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

ACTION: Notify the lab to obtain missing data, if possible. If the lab cannot provide the missing data, reject, "R", all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundances been normalized to m/z 95 as specified in Exhibit D, page D-56/VOA?	[ ]	___	___

NOTE: All ion abundance ratios must be normalized to m/z 95, the nominal base peak, even though the ion abundance of m/z 174 may be up to 120% that of m/z 95.

ACTION: If mass assignment is in error, qualify all associated data as unusable "R".

7.5 Have the ion abundance criteria been met for each instrument used?	[ ]	___	___

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors

302139

	YES	NO	N/A
between mass lists and Form Vs? (Check at least two values, but if errors are found check more.)	___	[ ]	X
7.7 Is the number of significant figures for the reported relative abundances consistent with the number given for each ion in the ion abundance criteria column?	[ ]	___	X
ACTION: If large errors exist, take action as specified in section 3.5 above.			
7.8 Are the spectra of the mass calibration compound acceptable?	[ ]	___	X
ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.			
8.0 Target Compound List (TCL) Analytes (FORM I VOA)			
8.1 Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate?	[X]	___	___
b. Matrix spikes and matrix spike duplicates?	[ ]	X	___
c. Blanks?	[X]	___	___
8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (quant. reports) included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[X]	___	___
b. Matrix spikes and matrix spike duplicates (mass spectra not required)?	[X]	___	___
c. Blanks?	[X]	___	___
ACTION: If any data are missing, take action specified in 3.2 above.			

302140

	YES	NO	N/A
8.3 Are the response factors shown in the quant. report?	[X]	___	___
8.4 Is chromatographic performance acceptable with respect to:			
a. Baseline stability?	[✓]	___	___
b. Resolution?	[✓]	___	___
c. Peak shape?	[✓]	___	___
d. Full-scale graph (attenuation)?	[✓]	___	___
e. Other: _____?	[ ]	___	___

ACTION: Use professional judgement to determine the acceptability of the data.

8.5 Are the lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[ ]	___	X

ACTION: If any mass spectra are missing, take action as specified in 3.2 above. If the lab does not generate its own standard spectra, document in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary.

8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[ ]	X	___
8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[ ]	___	X
8.8 Do sample and standard relative ion intensities agree within ±20%?	[ ]	___	X

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected "R", flagged "N" (presumptive evidence of the presence of the

302141

	YES	NO	N/A
compound) or changed to not detected "U" at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in 8.6, 8.7, and 8.8.			
ACTION: When sample carry-over is suspected, use professional judgement determine if instrument cross-contamination has affected positive compound identifications.			
9.0 Tentatively Identified Compounds (TIC)			
9.1 Are all Tentatively Identified Compound Forms (Form I Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier?	[ ]	___	X
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[ ]	___	✓
b. Blanks?	[ ]	___	✓
c. Alkanes listed for each sample?	[ ]	___	✓
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "JN" qualifier to all chemically named TICs, if missing.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds? (Example: 1,2- dimethylbenzene is xylene, a VOA TCL analyte, and should not be reported as a TIC.)	___	[ ]	✓
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[ ]	___	✓

302142

	YES	NO	N/A
9.5 Do TIC and "best match" standard relative ion intensities agree within ±20%?	[ ]		X

ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined an incorrect identification was made, change the identification to "unknown," or to some less specific identification as appropriate. (Example: "C3 substituted benzene.")

Also, when a compound is not found in any blank, but is detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable "R". (E.g., Common Lab Contaminants: CO_2 (M/E 44), siloxanes (M/E 73) hexane, aldol condensation products, solvent preservatives, and related by-products - see the National Functional Guidelines for further guidance.)

9.6 Are TICs with responses < 10% of the internal standard (as determined by inspection of the peak areas or height) reported?		[ ]	

ACTION: If yes, cross out questionable TIC(s).

10.0 Compound Quantitation and Reported Detection Limits

10.1 Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standards, quantitation ions, and RRF were used to calculate Form I results.)		X	
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	X		

ACTION: If errors are large, take action as specified in section 3.5 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample). Replace concentrations that exceeded the calibration

302143

	YES	NO	N/A
range in the original analysis by crossing out the "E" and its corresponding value on the original Form I and substituting the data from the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form Is not to be used, including any in the data summary package.			
11.0 Standards Data (GC/MS)			
11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (quant. reports) present for each initial and continuing calibration?	[X]	___	___
ACTION: If any calibration standard data are missing, take action specified in 3.2 above.			
12.0 GC/MS Initial Calibration (Form VI)			
12.1 Are the Initial Calibration Forms (Form VI) present and complete at concentrations of 10, 20, 50, 100, 200ng for separate calibrations of low water/med soils (unheated purge) and low soils (heated purge)?	[X]	___	___
ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.			
12.2 Were all low level soil standards, blanks and samples analyzed by heated purge?	[ ]	___	X
ACTION: If low level soil samples were not heated during purge, qualify positive hits "J" (estimated) and non-detects "R".			
12.3 Are the % relative standard deviation (%RSD) values for VOAs ≤ 30% over the concentration range of the calibration?	[X]	___	___
NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %RSD, the technical acceptance criteria are the same for all analytes.			
ACTION: Circle all outliers with red pencil.			

302144

YES NO N/A

ACTION: If %RSD is > 30.0%, qualify associated positive results for that analyte "J" (estimated) and non-detects using professional judgement. When %RSD is > 90%, flag all non-detects for that analyte "R" (unusable) and positive hits "J".

NOTE: Analytes previously qualified "U" for blank contamination are still considered as "hits" when qualifying for initial calibration criteria. ___ X ___

12.4 Are any average RRFs < 0.05?

ACTION: Circle all outliers with red pencil.

ACTION: If the average RRF is < 0.05, then qualify associated non-detects with an "R" and flag associated positive data as estimated "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %RSD or RRF criteria, provided the %RSD is ≤ 40% and RRF is ≥ 0.010. (See Table 5, page D-59/VOA and analytes marked with a "*" on Form VI for required analytes and contractual criteria.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %RSD or RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and the Organic Regional Data Assessment Summary.

12.5 Are there any transcription/calculation errors in the reporting of average relative response factors (RRF) or %RSD? (Check at least 2 values, but if errors are found, check more.) ___ X ___

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

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	YES	NO	N/A
13.0 GC/MS Continuing Calibration (Form VII)			
13.1 Are the Continuing Calibration Forms (Form VII) present and complete for separate calibration of low water/med soil and low soil samples?	X	[ ]	
13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?	X		

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, contact the lab to request an explanation/resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable "R".

ACTION: List below all sample(s) that were not analyzed within twelve hours of the previous continuing calibration.

_____

_____

_____

	YES	NO	N/A
13.3 Do any volatile compounds have a percent difference (%D) between the initial and continuing RRF which exceeds the ±25% criteria?	X	[ ]	

NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %D, the technical acceptance criteria are the same for all analytes.

ACTION: Circle all outliers with red pencil.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated. When %D is > 90%, qualify all non-detects for that analyte unusable (R) and positive results estimated (J).

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	YES	NO	N/A
13.4 Are any continuing calibration RRFs < 0.05?	___	[X]	___

ACTION: Circle all outliers with red pencil.

ACTION: If the RRF is < 0.05, qualify the associated non-detects as unusable "R" and the associated positive values "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %D and RRF criteria, provided that the %D is ≤ 40% and the RRF is ≥ 0.010. (See Table 5 pg. D-59/VOA or analytes marked with a "*" on Form VI for required analytes.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %D and RRF, criteria document in the Data Assessment under contract Problems/Non-Compliance and on the Organic Regional Data Assessment Summary form.

	YES	NO	N/A
13.5 Are there any transcription/calculation errors in the reporting of RRF or %D between initial and continuing RRFs? (Check at least two values, but if errors are found, check more.)	___	[✓]	___

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance.

14.0 Internal Standard (Form VIII)

	YES	NO	N/A
14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits (-50% to +100%) for each continuing calibration?	[ ]	___	___
If no, was the sample re-analyzed?	[ ]	___	___

ACTION: 1. Circle all outliers with red pencil.

2. List all the outliers below.

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YES NO N/A

Sample #	Internal Std.	Area	Lower/Upper Limit
			/
			/
			/
			/

(Attach additional sheets if necessary, or attach copies of Form VIIIs.)

ACTION: If any sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

ACTION: 1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Do not qualify non-detects when associated IS area counts are > 100%.

3. If the IS area in the sample is below the "lower limit," < 50%, qualify all analytes associated with that IS estimated, "J". If the area counts are extremely low, < 25% of the area in the 12 hour standard, or if performance exhibits a major abrupt drop- off, flag all associated non-detects as unusable, "R", and positive hits estimated, "J".

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [ ] ___ X

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

NOTE: Contractual requirements state that if any internal standard fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not

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YES NO N/A

re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

NOTE: See Notes in section 3.4, page 7 for a description of sample data the laboratory must submit.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for VOA analysis? [X] ___ ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

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YES NO N/A

PART B: BNA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody records or laboratory SDG Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [ ] ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated "J". If a soil sample, other than TCLP, contains more than 90% water, all data should be qualified as unusable "R".

ACTION: If samples were not iced or if the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 10° C), flag all positive results "J" and all non-detects "UJ".

2.0 Holding Times

2.1 Have any BNA technical holding times, determined from date of collection to date of extraction, been exceeded? ___ [ ] ___

Technical Holding Time: Continuous extraction of water samples for BNA analysis must be started within seven days of the date of collection. Soil/sediment samples must be extracted within 7 days of collection. Extracts must be analyzed within 40 days of the date of extraction.

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample Analyzed	Sample Matrix	Date Sampled	Date Lab Received	Date Extracted	Date Analyzed

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C 924

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 3/90

C924

(SOP Revision XI)

PREPARED BY: _____ DATE: _____

Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: _____

Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE:

Robert Runyon, Chief
Monitoring Management Branch

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Title: Evaluation of Metals Data for the Contract Laboratory Program

Date: Jan. 1992
Number: HW-2
Revision: 11

1.0 Scope

1.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 3/90 .

2.0 **Responsibilities** - Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1. For a **total review:**

2.1.1 **Data Assessment** - **"Total Review-Inorganics" Checklist Appendix (A.1).**
The reviewer must answer every question on the checklist.

2.1.2 **Data Assessment** - **Data Assessment Narrative (Appendix A.2)**
The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

2.1.3 **Contract Non-Compliance** - **SMO Report (Appendix A.3)**
This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Validation Task Monitor, or Technical Project Officer (TPO). Forward 5 copies: one each for internal files, appropriate Regional TPO, Sample Management Office (SMO) and last two addresses of Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract violations should be appended to the end of the Data Assessment Narrative (Sec. A.2.2).

2.1.4 **CLP Data Assessment Summary Forms**

2.1.4.1 Appendix A.5
Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.

2.1.4.2 Appendix A.6
Data reviewer is also required to fill out Inorganic Regional Data Assessment form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

2.1.5 Data Review Log: It is recommended that each data reviewer should maintain a log of the reviews completed to include: a. date of start of case review

b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

2.1.6 Telephone Record Log - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

2.1.7 Forwarded Paperwork

2.1.7.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:
a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Record of Communication (copy)
e. CLP Reanalysis Request/Approval Record (original + 3 copies)
f. Appendix A.6 (original).

2.1.7.2 Forward 2 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.6) and Telephone Record Log , if any,: one each for appropriate Regional TPO, and the other one to EPA EMSL office in Las Vegas. The addresses of TPOs and EPA office in Las Vegas are given in Appendix A-4.

2.1.8 Filed Paperwork - Upon completion of review, the following are to be filed within MMB files:
a. Two copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.6.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Reanalysis Request/Approval Record (copy)

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3.0 **Data Completeness**
Each data package is checked by a Regional Sample Control Coordinator (RSSC) for completeness. A data package is assumed to be complete when all the deliverables required under the contract are present. If a data package is incomplete,the RSSC would call the laboratory for missing document(s). If the laboratory does not Respond within a week, SMO and MMB coordinator of Region II will be notified.

4.0 **Rejection of Data** - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

5.0 **Acceptance Criteria** - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines of October 1, 1989.

6.0 **SMO Contract Compliance Screening (CCS)** - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

7.0 **Request for Reanalysis** - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative.If holding times and sample storage times have not been exceeded, TPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

8.0 **Record of Communication** - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

9.0 **Rounding off numbers** - The data reviewer will follow the standard practice.

	YES	NO	N/A
A.1.1 Contract Compliance Screening Report (CCS) - Present?	[ ]		X
ACTION: If no, contact RSCC.			
A.1.2 Record of Communication (from RSCC) - Present?	[ ]		X
ACTION: If no, request from RSCC.			
A.1.3 Trip Report - Present and complete?	[ ]		X
ACTION: If no, contact RSCC for trip report.			
A.1.4 Sample Traffic Report - Present?	[X]		
Legible?	[X]		
ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5 Cover Page - Present?	[X]		
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[X]		
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on Record of Communication?	[ ]		X
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	[X]		
(b) Form I's?	[X]		
ACTION: If no for any of the above, contact RSCC for clarification.			

A.1.6	Form I to IX	Yes	No	N/A
A.1.6.1	Are all the Form I through Form IX labeled with:			
	Laboratory name?	[X]		
	Case/SAS number?	[ ]	X	
	EPA sample No.?	[ ]	X	
	SDG No.?	[X]		
	Contract No.?	[ ]	X	
	Correct units?	[X]		
	Matrix?	[X]		

ACTION: If no for any of the above, note under Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.6.2	Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:			
	(NOTE: Check all forms against raw data.)			
	(a) all analytes analyzed by ICP?	[X]		
	(b) all analytes analyzed by GFAA?	[ ]		X
	(c) all analytes analyzed by AA Flame?	[ ]		X
	(d) Mercury?	[ ]		X
	(e) Cyanide?	[ ]		X

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

Title: Evaluation of Metals Data for the Contract Laboratory Program Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

		YES	NO	N/A
A.1.7	**Raw Data**			
A.1.7.1	Digestion Log* for flame AA/ICP (Form XIII) present?	[X]	___	___
	Digestion Log for furnace AA Form XIII present?	[___]	___	X
	Distillation Log for mercury Form XIII present?	[___]	___	X
	Distillation Log for cyanides Form XIII present?	[___]	___	X
	Are pH values (pH<2 for all metals, pH>12 for cyanide) present?	[___]	___	X
	*Weights, dilutions and volumes used to obtain values.			
	Percent solids calculation present for soils/sediments?	[___]	X	___
	Are preparation dates present on sample preparation logs/bench sheets?	[X]	___	___
A.1.7.2	Measurement read out record present? ICP	[X]	___	___
	Flame AA	[___]	___	X
	Furnace AA	[___]	___	X
	Mercury	[___]	___	X
	Cyanides	[___]	___	X
A.1.7.3	Are all raw data to support all sample analyses and QC operations present?	[X]	___	___
	Legible?	[X]	___	___
	Properly Labeled?	[X]	___	___

ACTION: If no for any of the above questions in sections A.1.7.1 through A.1.7.3, write Telephone Record Log and contact laboratory for resubmittals.

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		YES	NO	N/A
A.1.8	**Holding Times** - (aqueous and soil samples)			
	(Examine sample traffic reports and digestion/distillation logs.)			
	Mercury analysis (28 days). . . . . exceeded?	___	[___]	X
	Cyanide distillation (14 days). . . . . exceeded?	___	[___]	X
	Other Metals analysis (6 months). . . . exceeded?	___	[X]	___
	NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.			
	ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.			
A.1.8.2	Is pH of aqueous samples for: Metals Analysis >2?	___	[___]	X
	Cyanides Analysis <12?	___	[___]	X
	Action: If yes, flag the associated metals and cyanides data as estimated.			
A.1.9	**Form I (Final Data)**			
A.1.9.1	Are all Form I's present and complete?	[X]	___	___
	ACTION: If no, prepare telephone record log and contact laboratory for submittal.			
A.1.9.2	Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[X]	___	___
	Are soil sample results for each parameter corrected for percent solids?	[X]	___	___
	Are all "less than IDL" values properly coded with "U"?	[X]	___	___

		YES	NO	N/A
	Are the correct concentration qualifiers used with final data?	[X]		
	ACTION: If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data.			
A.1.9.3	Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	[X]		
	Was a brief physical description of samples given on Form I's?	[ ]	X	
	Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV?		[X]	
	ACTION: If no for any of the above, note under Contract-Problem/Non-Compliance of the"Data Assessment Narrative".			
A.1.10	Calibration			
A.1.10.1	Is record of at least 2 point calibration present for ICP analysis?	[X]		
	Is record of 5 point calibration present for Hg analysis?	[ ]		X
	Is record of 4 point calibration present for:			
	Flame AA?	[ ]		X
	Furnace AA?	[ ]		X
	Cyanides?	[ ]		X
	Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses?	[ ]		X

ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

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	YES	NO	N/A
A.1.10.2 Is correlation coefficient less than 0.995 for:			
Mercury Analysis?	___	[___]	X
Cyanide Analysis?	___	[___]	X
Atomic Absorption Analysis?	___	[___]	X

ACTION: If yes, flag the associated data as estimated.

NOTE: The data validator shall calculate the correlation coefficient using concentrations of the standards and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

A.1.10.3 In the instance where less than 4 standards are measured in absorbance (or peak area, peak height,etc.) mode, are the remaining standards analyzed in concentration mode immediately after calibration within ±10% of the true values?	[X]	___	___

ACTION: If no, flag the associated data as estimated if standards are not within ±10% of true values. Do not flag the data as estimated in linear range indicated by good recovery of standard(s).

A.1.11 **Form II A (Initial and Continuing Calibration Verification)-**

A.1.11.1 Present and complete for every metal and cyanide?	[X]	___	___
Present and complete for AA and ICP when both are used for the same analyte?	[___]	___	X

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.11.2 Circle on each Form IIA all percent recoveries that are outside the contract windows. Are all calibration standards (initial and continuing) within control limits:			
Metals- 90-110%R?	[X]	___	___
Hg - 80-120%R?	[___]	___	X
Cyanides- 85-115%R?	[___]	___	X

	YES	NO	N/A
ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ) if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits.			
A.1.11.3 Was continuing calibration performed every 10 samples or every 2 hours?	[X]	___	___
Was ICV for cyanides distilled?	[___]	___	X
ACTION: If no for any of the above, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.12 Form II B (CRDL Standards for AA and ICP) -			
A.1.12.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?	[___]	___	X
Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[___]	___	X
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	[___]	___	X
ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are: AA Analysis - **True Value ± CRDL; ICP Analysis - **True Value ± 2CRDL; CN Analysis - **True Value ± 0.5 x True Value.			

**True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL. Compute the concentration of the missing mid-range standard from the calibration range.

		YES	NO	N/A
A.1.12.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?	[___]	___	X
	ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".			
A.1.12.3	Circle on each Form IIB all the percent recoveries that are outside the acceptance windows.			
	Are CRA and CRI standards within control limits:			
	Metals 80 - 120%R?	[___]	___	X
	Is mid-range standard within control limits:			
	Cyanide 80 - 120%R?	[___]	___	X
	ACTION: Flag as estimated all sample results within the affected range if the recovery of the standard is between 50-79%; flag only positive data within the affected range if the recovery is between 121-150%; reject all data within the affected range if the recovery is less than 50%; reject only positive data within the affected range if the recovery is greater than 150%. Qualify 50% of the samples on either side of CRI standard outside the control limits.			
	Note: Flag or reject the final results only when sample raw data are within the affected ranges and the CRDL standards are outside the acceptance windows.			
A.1.13	**Form III (Initial and Continuing Calibration Blanks)**			
A.1.13.1	Present and complete?	[X]	___	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	X
	Was an initial calibration blank analyzed?	[X]	___	___
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	[X]	___	___

		YES	NO	N/A
A.1.14.2	Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?	___	[X]	___
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep.blank?	___	[___]	X
	ACTION: If yes, reject (red-line) all associated data greater than CRDL concentration but less than ten times the prep. blank value.			
A.1.14.3	Is concentration of prep. blank value (Form III) less than two times IDL, when IDL is greater than CRDL?	[X]	___	___
	ACTION: If no, reject (red-line) all positive sample results when sample raw data are less than 10 times the prep. blank value.			
A.1.14.4	Is concentration of prep. blank below the negative CRDL?	___	[X]	___
	ACTION: If yes, reject (red-line) all associated sample results less than 10xCRDL.			
A.1.15	**Form IV (ICP Interference Check Sample)**			
A.1.15.1	Present and complete?	[X]	___	___
	(NOTE: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[X]	___	___
	ACTION: If no, flag as estimated (J) all the samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
A.1.15.2	Circle all values on each Form IV that are more than ± 20% of true or established mean value.			
	Are all Interference Check Sample results inside the control limits (± 20%)?	[X]	___	___
	If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?	[___]	___	X

		YES	NO	N/A
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract-Problems/ Non-Compliance section of the "Data Assessment Narrative".			
A.1.13.2	Circle on each Form III all calibration blank values that are above CRDL (or 2 x IDL when IDL > CRDL).			
	Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	[X]	___	___
	Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[X]	___	___
	ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is less than or equal to calibration blank value analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank outside the control limits.			
A.1.14	**FORM III (Preparation Blank)** - (**Note**: The preparation blank for mercury is the same as the calibration blank.)			
A.1.14.1	Was one prep. blank analyzed for:			
	each Sample Delivery Group (SDG)?	[X]	___	___
	each batch of digested samples?	[X]	___	___
	each matrix type?	[X]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	X
	ACTION: If no for any of the above, flag as estimated (J) all the associated positive data <10 x IDLs for which prep. blank was not analyzed.			
	NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			

		YES	NO	N/A
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			
A.1.16	**Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)** - (**Note**: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
A.1.16.1	Present and complete for: each SDG?	[X]	___	___
	each matrix type?	[X]	___	___
	each conc. range (i.e. low, med., high)?	[X]	___	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	X
	ACTION: If no for any of the above, flag as estimated (J) all the positive data less than four times the spiking levels specified in SOW for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.16.2	Was field blank used for spiked sample?	___	[X]	___
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
A.1.16.3	Circle on each Form VA all spike recoveries that are outside control limits (75% to 125%).			
	Are all recoveries within control limits?	[X]	___	___
	If no, is sample concentration greater than or equal to four times spike concentration?	[___]	___	X

	YES	NO	N/A
ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	[X]	___	___
ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".			

A.1.16.4 **Aqueous**

Are any spike recoveries:

(a) less than 30%?	___	[___]	X
(b) between 30-74%?	___	[___]	X
(c) between 126-150%?	___	[___]	X
(d) greater than 150%?	___	[___]	X

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".

A.1.16.5 **Soil/Sediment**

Are any spike recoveries:

(a) less than 10%?	___	[X]	___
(b) between 10-74%?	___	[X]	___
(c) between 126-200%?	___	[X]	___
(d) greater than 200%?	___	[X]	___

		YES	NO	N/A
	ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".			
A.1.17	**Form VI (Lab Duplicates)**			
A.1.17.1	Present and complete for: each SDG?	[X]	___	___
	each matrix type?	[X]	___	___
	each concentration range (i.e. low, med., high)?	[X]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	X
	ACTION: If no for any the above, flag as estimated (J) all the data ≥CRDL* for which duplicate sample was not analyzed.			
	Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.			
	2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on wet weight basis and calculate RPD or Difference for each analyte.			
A.1.17.2	Was field blank used for duplicate analysis?	___	[X]	___
	ACTION: If yes, flag all data ≥CRDL* as estimated (J) for which field blank was used as duplicate.			
A.1.17.3	Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?	[X]	___	___
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[___]	___	X
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative".			

* Substitute IDL for CRDL when IDL > CRDL.

	YES	NO	N/A

NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL.
2. If the result of lab duplicate analyzed by GFAA is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria to metals analyzed by GFAA.

A.1.17.4 **Aqueous**

Circle on each Form VI all values that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	N/A
Is any difference** between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	N/A

ACTION: If yes, flag the associated data as estimated.

A.1.17.5 **Soil/Sediment**

Circle on each Form VI all values that are:

RPD > 100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) : > 100%?	___	[X]	___
Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) : > 2x*CRDL?	___	[X]	___

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
	ACTION: If yes, flag the associated data as estimated.			
A.1.18	**Field Duplicates**			
A.1.18.1	Were field duplicates analyzed?	[X]	___	___

ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/l on wet weight basis and calculate RPDs or Difference for each analyte.

NOTE: 1. Do not calculate RPD when both values are less than IDL.
2. Flag all associated data only for field duplicate pair.

A.1.18.2 Aqueous

Circle all values on self prepared Form VI for field duplicates that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	X
Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	X

ACTION: If yes, flag the associated data as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
A.1.18.3	**Soil/Sediment**			
	Circle all values on self prepared Form VI for field duplicates that are:			
	RPD >100%, or			
	Difference > 2 x CRDL*			
	Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) : >100%?	___	[X]	___
	Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL): >2x *CRDL?	___	[X]	___
	ACTION: If yes, flag the associated data as estimated.			
A.1.19	Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)			
A.1.19.1	Was one LCS prepared and analyzed for:			
	each SDG?	[X]	___	___
	each batch samples digested/distilled?	[X]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	X
	ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all the data for which LCS was not analyzed.			
	NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.			

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* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

C9C4

USEPA - CLP

6-IN
DUPLICATES

EPA SAMPLE NO.

Lab Name: STL Environtal Contract: _____

Lab Code: _____ Case No.: _____ NRAS No.: _____ SDG No.: _____

Matrix (soil/water): Soil Level (low/med): _____

% Solids for Sample: 83.4 % Solids for Duplicate: 83.6

Concentration Units (ug/L or mg/kg dry weight): mg/kg

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum								
Antimony								
Arsenic								
Barium								
Beryllium								
Cadmium								
Calcium								
Chromium								
Cobalt								
Copper								
Iron								
Lead		145		111		26.5	*	P
Magnesium								
Manganese								
Mercury								
Nickel								
Potassium								
Selenium								
Silver								
Sodium								
Thallium								
Vanadium								
Zinc								
Cyanide								

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		YES	NO	N/A
A.1.19.2	**Aqueous LCS**			
	Circle on each Form VII the LCS percent recoveries outside control limits (80 - 120%) except for aqueous Ag and Sb.			
	Is any LCS recovery: less than 50%?	___	[___]	X
	between 50% and 79%?	___	[___]	X
	between 121% and 150%?	___	[___]	X
	greater than 150%?	___	[___]	X
	ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.			
A.1.19.3	**Solid LCS**			
	NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J). 2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.			
	Is LCS "Found" value higher than the control limits on Form VII?	___	[X]	___
	ACTION: If yes, qualify all associated positive data as estimated.			
	Is LCS "Found" value lower than the Control limits on Form VII?	___	[X]	___
	ACTION: If yes, qualify all associated data as estimated.			

		YES	NO	N/A
A.1.20	**Form IX (ICP Serial Dilution)** -			
	NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.			
A.1.20.1	Was Serial Dilution analysis performed for:			
	each SDG?	[X]	___	___
	each matrix type?	[X]	___	___
	each concentration range (i.e. low, med.)?	[X]	___	___
	ACTION: If no for any of the above, flag as estimated all the positive data ≥ 10xIDLs or ≥ CRDL when 10xIDL ≤ CRDL for which Serial Dilution Analysis was not performed.			
A.1.20.2	Was field blank(s) used for Serial Dilution Analysis?	___	[X]	___
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J). If 10xIDL ≤ CRDL, flag all data ≥ CRDL.			
A.1.20.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.	[___]	___	X
	ACTION: If no, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.20.4	Circle on each Form IX all percent difference that are outside the control limits for initial concentrations equal to or greater than 10 x IDLs only.			
	Are any % difference values:			
	> 10%?	___	[X]	___
	≥ 100%?	___	[X]	___

		YES	NO	N/A
	ACTION: Flag as estimated (J) all the associated sample data ≥ 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which percent difference is greater than 10% but less than 100%. Reject (red-line) all the associated sample results equal to or greater than 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which PD is greater than or equal to 100%.			
	Note: Flag or reject on Form I's only the sample results whose associated raw data are ≥ 10xIDL (or ≥ CRDL when 10xIDL≤ CRDL)			
A.1.21	**Furnace Atomic Absorbtion (AA) QC Analysis**			
A.1.21.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	[___]	___	X
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
A.1.21.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	[___]	___	X
	Was a dilution analyzed for sample with analytical spike recovery less than 40%?	[___]	___	X
	ACTION: If no for any of the above, flag all the associated data as estimated.			
A.1.21.3	Is *analytical spike recovery outside the control limits (85-115%) for any sample?	___	[___]	X
	ACTION: If yes, flag as estimated the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject the associated sample results if the recovery is less than 10%; reject positive sample results if the recovery is greater than 200%.			

* Analytical spike is not required on the pre-digestion spiked sample.

		YES	NO	N/A
	NOTE: Reject or flag the data only when the affected sample(s) was not subsequently analyzed by Method of Standard Addition.			
A.1.22	**Form VIII (Method of Standard Addition Results)**			
A.1.22.1	Present?	[___]	X	___
	If no, is any Form I result coded with "S" or a "+"?	___	[___]	X
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			
A.1.22.2	Is coefficient of correlation for MSA less than 0.990 for any sample?	___	[___]	X
	ACTION: If yes, reject (red-line) the affected data.			
A.1.22.3	Was *MSA required for any sample but not performed?	___	[___]	X
	Is coefficient of correlation for MSA less than 0.995?	___	[___]	X
	Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?	___	[___]	X
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
A.1.22.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23?	[___]	___	X
	ACTION: If no, note exception under Contract Problem/ Non-Compliance section of the "Data Assessment Narrative", and prepare a separate list.			

* MSA is not required on LCS and prep. blank.

		YES	NO	N/A
A.1.23	**Dissolved/Total or Inorganic/Total Analytes** -			
A.1.23.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s).	___	[X]	___
	Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[___]	X
	NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration. 2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents. 3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.			
A.1.23.2	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	X
A.1.23.3	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[___]	X
	ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.			
A.1.24	**Form I (Field Blank)** -			
	(Note: Designate "Field Blank" as such on Form I.)			
A.1.24.1	Circle all field blank values on Form I that are greater than CRDL, (or 2 x IDL when IDL > CRDL).			
	Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[X]	___	___

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	YES	NO	N/A
If no, was field blank value already rejected due to other QC criteria?	[___]	___	X

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value. Reject on Form I's the soil sample results that when converted to ug/L on wet basis are less than or equal to five times the field blank value in ug/L.

A.1.25 **Form X, XI, XII (Verification of Instrumental Parameters).**

A.1.25.1 Is verification report present for:

Instrument Detection Limits (quarterly)?	[___]	___	X
ICP Interelement Correction Factors (annually)?	[___]	___	X
ICP Linear Ranges (quarterly)?	[___]	___	X

ACTION: If no, contact TPO of the lab.

A.1.25.2 **Form X (Instrument Detection Limits)** - (Note: IDL is not required for Cyanide.)

A.1.25.2.1 Are IDLs present for: all the analytes?	[___]	___	X
all the instruments used?	[___]	___	X
For both AA and ICP when both are used for the same analyte?	[___]	___	X

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.25.2.2 Is IDL greater than CRDL for any analyte?	___	[___]	X
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.	[___]	___	X

	YES	NO	N/A
Action : If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			
A.1.25.3 **Form XI (Linear Ranges)**			
A.1.25.3.1 Was any sample result higher than high linear range of ICP.	___	[___]	X
Was any sample result higher than the highest calibration standard for non-ICP parameters?	___	[___]	X
If yes for any of the above, was the sample diluted to obtain the result on Form I?	[___]	___	X
ACTION: If no, flag the result reported on Form I as estimated(J).			
A.1.26 **Percent Solids of Sediments**			
A.1.26.1 Are percent solids in sediment(s): < 50%?	___	[X]	___
< 10%?	___	[X]	___

ACTION: If yes, qualify as estimated all the results of a sample that has per cent solids between 10%-50% (i.e. moisture content between 50%-90%). Reject all the results of a sample that has per cent solids less than 10% (i.e. moisture content greater than 90%).

NOTE: Reject or flag(J) only the sample results that were not previously rejected or flaged due to other QC criteria.

Case# _____ Site _____ Matrix: Soil _____

SDG# _____ Lab _____ Water_____

Contractor _____ Reviewer _____ Other_____

A.2.1 **Validation Flags-** The following flags have been applied in red by the data validator and must be considered by the data user.

J- This flag indicates the result qualified as **estimated**

Red- Line- A red-line drawn through a sample result indicates **unusable** value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

Fully Usable Data- The results that do not carry "J" or "red-line" are fully usable.

Contractual Qualifiers- The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW ILM01.0.

A.2.2 The data assessment is given below and on the attached sheets.

_____

_____

_____

_____

_____

_____

_____

_____

A.2.2 (continuation)

A.2.2 (continuation)

A.2.3 Contract-Problem/Non-Compliance

MMB/ESAT Rviewer: _____ Date: _____
Signature

Contractor Reviewer: _____ Date: _____
Signature

Verified by: _____ Date: _____

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste
Site Contract Laboratory Data Package

CASE NO._____

The hardcopied (laboratory name)_____
Inorganic data package received at Region II has been reviewed and the quality assurance and performance data summarized. The data reviewed included:
SMO Sample No.:_____

Conc. & Matrix:_____

Contract No.(_____) requires that specific analytical work be done and that associated reports be provided by the contractor to the Regions, EMSL-LV, and SMO. The general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

Items of non-compliance with the above contract are described below.

Comments:_____

_____ Reviewer's Initial

_____ Date

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.6: CLP Data Assessment Checklist

Inorganic Analysis

Date: Jan. 1992
Number: HW-2
Revision: 11

INORGANIC REGIONAL DATA ASSESSMENT

Region_____

CASE NO._____ SITE_____

LABORATORY_____ NO. OF SAMPLES/ MATRIX_____

SDG#_____ REVIEWER (IF NOT ESD)_____

SOW#_____ REVIEWER'S NAME_____

DPO: ACTION_____ FYI_____ COMPLETION DATE_____

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	CYANIDE
1.	HOLDING TIMES				
2.	CALIBRATIONS				
3.	BLANKS				
4.	ICS				
5.	LCS				
6.	DUPLICATE ANALYSIS				
7.	MATRIX SPIKE				
8.	MSA				
9.	SERIAL DILUTION				
10.	SAMPLE VERIFICATION				
11.	OTHER QC				
12.	OVERALL ASSESSMENT				

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:_____

AREAS OF CONCERN:_____

NOTABLE PERFORMANCE:_____

	YES	NO	N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: II - CERCLA - 95-0104 LABORATORY: STL Envirotech

SITE NAME: Klockner + Klockner SDG Number(s): E510

1.0 Chain of Custody and Sampling Trip Reports

1.1 Are the Traffic Reports/Chain-of-Custody Records present for all samples?	X		
ACTION: If no, contact RSCC or the lab to obtain replacement of missing or illegible copies.			
1.2 Is the Sampling Trip Report present for all samples and all fractions?	X		
ACTION: If no, contact either RSCC or ask the prime contractor to provide this information.			

2.0 Data Completeness and Deliverables

2.1 Have any missing deliverables been received and added to the data package?		X	
NOTE: The lab is required to submit data for only two analyses, for each fraction. (i.e., the original sample and one dilution, or the most concentrated dilution analyzed and one further dilution.)			
ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If lab cannot provide them, note the effect on the review of the package in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary form.			
2.2 Was CLASS CCS checklist included with package?		X	
2.3 Are there any discrepancies between the Traffic Reports/Chain-of-Custody Records, Sampling Report and Sample Tags?		X	

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	YES	NO	N/A
ACTION: If yes, contact the lab to obtain an explanation or resubmittal of any missing deliverables.			
3.0 Cover Letter SDG Narrative			
3.1 Is the Narrative or Cover Letter Present?	X		
3.2 Are case number, SDG number and contract number contained in the SDG Narrative or cover letter (see SOW, Exhibit B, section 2.6.1)?	X		
3.3 Does the narrative contain the following information:			
VOA: description of trap and columns used during sample analyses?	X		
BNA: description of columns used during sample analyses?			X
Pest: description of columns used during sample analyses?			X
NOTE: As per section 6.23.3.1 SOW/p. D-11/Pest, Packed columns are not permitted.			
3.4 Does the narrative, VOA and BNA sections, contain a list of all TICs identified as alkanes and their estimated concentrations?		X	
3.5 Does the narrative contain a record of all cooler temperatures? If the temperature of a cooler was exceeded, > 10° C, the lab must list by fraction and sample number, all affected samples.		X	
3.6 Does the narrative contain a list of the pH values determined for each water sample submitted for volatile analysis (SOW Exhibit B, section 2.6.1.2)?		X	
3.7 Does the Case Narrative contain the statement, "verbatim", as required in Section B of the SOW?		X	

ACTION: If "No", to any question in this section, contact the lab to obtain all necessary resubmittals. If information is not available,

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document in the Data Assessment under Contract Problems/Non-Compliance section.

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	YES	NO	N/A
4.0 Data Validation Checklist			
4.1 Check the package for the following discrepancies:			
a. Is the package paginated in ascending order starting from the SDG narrative?	[X]	___	___
b. Are all forms and copies legible?	[X]	___	___
c. Is each fraction assembled in the order set forth in the SOW?	[X]	___	___
d. Is a Sample Data Summary Package submitted immediately preceding the Sample Data Package?	[ ]	X	___
The following checklist is divided into three parts. Part A is for any VOA analyses, Part B is for BNAs and Part C is Pesticide/PCBs.			
Does this package contain:			
VOA Data?	X	___	
BNA Data?	___	X	
Pesticide/PCB data?	___	X	

ACTION: Complete corresponding parts of checklist.

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YES NO N/A

PART A: VOA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records, Sampling Report or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? ___ N/A ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated (J). If a soil sample other than TCLP contains more than 90% water, all data should be qualified as unusable (R).

ACTION: If samples were not iced or the ice was melted upon arrival at the laboratory and the cooler temperature was elevated (> 10° C), then flag all positive results with a "J" and all non-detects "UJ".

ACTION: If both VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

ACTION: The smallest soil size permitted is 0.5g. If any soil sample is smaller than 0.5g, document in the Data Assessment under Contract Problems/Non-Compliance.

2.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? ___ N/A ___

Technical Holding Times: If unpreserved, aqueous samples, maintained at 4° C for aromatic hydrocarbons analysis must be analyzed within 7 days of collection. If preserved with HCl (pH < 2) and stored at 4° C, then aqueous samples must be analyzed within 14 days of collection. If uncertain about preservation, contact sampler to determine whether or

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YES NO N/A

not samples were preserved. The holding time for soils is 10 days from date of collection.

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample ID	Sample Matrix	Was Sample Preserved?	Date Sampled	Date Lab Received	Date Analyzed

ACTION: If technical holding times are exceeded, flag all positive results as estimated "J" and sample quantitation limits as estimated "UJ", and document in the Data Assessment that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable "R". If holding times are exceeded by more than 28 days, all non detect data are unusable "R".

NOTE: Contractual Holding Times: Analysis of water and soil/sediment samples must be completed within 10 days of Validated Time of Sample Receipt (VTSR). This requirement does not apply to Performance Evaluation (PE) samples.

ACTION: If contractual holding times are exceeded,

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YES NO N/A

document in the Data Assessment and on the Organic Regional Data Assessment Summary form.

NOTE: The data reviewer must note in the Data Assessment whether or not **technical and contractual** holding times were met.

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	YES	NO	N/A
3.0 System Monitoring Compound (SMC) Recovery (Form II)			
3.1 Are the VOA SMC Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water? Medium	[X]		
b. Low Soil?	[ ]	X	
c. Med Soil? High	[X]		
3.2 Are all the VOA samples listed on the appropriate System Monitoring Compound Recovery Summary for each of the following matrices:			
a. Low Water?	[X]		
b. Low Soil?	[ ]		X
c. Med Soil?	[X]		
ACTION: Contact the lab to obtain an explanation or resubmittal of any missing deliverables. If missing deliverables are unavailable, document the effect in the Data Assessment.			
3.3 Were outliers marked correctly with an asterisk?	[X]		
ACTION: Circle all outliers with red pencil.			
3.4 Was one or more VOA system monitoring compound recovery outside of contract specifications for any sample or method blank?			
		[X]	
If yes, were samples re-analyzed?	[ ]		X
Were method blanks re-analyzed?	[ ]		X
ACTION: If recoveries are ≥ 10%, but 1 or more compounds fail to meet SOW specifications:			
1. All positive results are qualified as estimated "J".			
2. Flag all non-detects as estimated detection limits "UJ" where recovery is less than the lower acceptance limit.			

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YES NO N/A

3. If SMC recoveries are above allowable levels, do not qualify non-detects.

If any system monitoring compound recovery is < 10%:

1. Flag all positive results as estimated "J".

2. Flag all non-detects as unusable "R".

Professional judgement should be used to qualify data that only have method blank SMC recoveries out of specification in both original and re-analyses. Check the internal standard areas.

NOTE: Contractual requirements state that if any SMC fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

NOTE: The laboratory must submit the following data:

1. If SMC recoveries and internal standard responses meet the acceptance criteria in the re-analyzed sample, then the laboratory must submit only the re-analysis.

2. If an SMC recovery and/or internal standard response fails to meet the acceptance criteria upon re-analysis, then submit data from both analyses.

(Refer to section 11.4.3.2, page D-46/VOA of the SOW for more information.)

3.5 Are there any transcription/calculation errors between raw data and Form II? — X —

ACTION: If large errors exist, contact the lab to obtain an explanation or resubmittal of corrected deliverables. Make any necessary corrections and note the effect in the Data Assessment.

302196

	YES	NO	N/A
4.0 Matrix Spikes (Form III)			
4.1 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form (Form III) present?	[X]		
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water?	[ ]	X	
b. Low Soil?	[ ]	X	
c. Med Soil? High	[X]		

ACTION: If any matrix spike data are missing, take the action specified in section 3.2 above.

4.3 How many VOA spike recoveries are outside QC limits?

Water	Soils
NA out of 10	0 out of 10

4.4 How many RPDs for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
NA out of 5	0 out of 5

ACTION: No action is taken based upon MS/MSD data alone. However, using informed professional judgement, the MS/MSD results may be used in conjunction with other QC criteria to determine the need for qualification of the data.

ACTION: Circle all outliers with red pencil.

	YES	NO	N/A
5.0 Blanks (Form IV)			
5.1 Is the Method Blank Summary (Form IV) present?	NA		

5.2 Frequency of Analysis: for the analysis of VOA TCL compounds, has a reagent/method blank been

302197

		YES	NO	N/A
	analyzed for each SDG or every 20 samples of similar matrix (low water, low soil or medium soil), whichever is more frequent?	X		
5.3	Has a VOA method blank been analyzed at least once every twelve hours for each concentration level and GC/MS system used?	X		
5.4	Was a VOA instrument blank analyzed after each sample/dilution which contained a target compound that exceeded the initial calibration range?			X
5.5	Was a VOA storage blank analyzed at the end of all samples for each SDG in a case?		X	

ACTION: If any method/instrument blank data are missing, contact the lab to obtain any missing deliverables. If method blank data are not available, reject "R" all associated positive data. However, using professional judgement, the data reviewer may substitute field blank or trip blank data for missing method blank data.

If any instrument blank analyzed after a sample with high concentration is missing, contact the lab to obtain any missing deliverables. If the instrument blank was not analyzed or not available, inspect the chromatogram of the sample analyzed immediately after this analysis for possible carryover. Use professional judgement to determine if any contamination occurred and qualify analyte(s) accordingly.

If storage blank data is missing, contact the lab to obtain any missing deliverables. If unavailable, note in the Contract Problems/Non-Compliance section of the Data Assessment.

5.6 The validator should verify that the correct identification scheme for the EPA Blank samples were used. See page B-33, section 3.3.7.3 of the SOW for further information.

	Was the correct identification scheme used for all VOA blanks?		X	

302198

YES NO N/A

ACTION: Contact the lab to obtain missing deliverables, or make the required corrections on the forms. Document in the Data Assessment under Contract Problems/Non-compliance if corrections were made by the validator.

5.7 Chromatography: review the blank raw data-chromatograms (RICs), quant. reports or data system printouts and spectra. Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs? X — —

ACTION: Use professional judgement to determine the effect on the data.

5.8 Are all detected hits for target compounds in method, instrument and storage blanks less than the CRQL for that analyte? X — —

Exception: Acetone and 2-butanone must be less than 5 times the CRQL, and methylene chloride must be less than 2.5 times its CRQL.

ACTION: If no, an explanation and laboratory's corrective actions must be addressed in the case narrative. If the narrative contains no explanation, then make a note in the Contract Problems/Non-Compliance section of the Data Assessment.

6.0 Contamination

NOTE: "Water blanks", "drill blanks", and "distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

6.1 Do any method/instrument/reagent/storage blanks have positive results (TCL and/or TIC) for VOAs? — X —

NOTE: When applied as directed in the table below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for %moisture when necessary.

302199

YES NO N/A

NOTE: A contaminated instrument blank is not allowable under this SOW. See page D-48/VOA, section 12.1.2.4 for additional information. Document in the Data Assessment under Contract Problems/Non-Compliance if contaminated instrument blank was submitted.

6.2 Do any field/trip/rinse blanks have positive VOA results (TCL and/or TIC)? [ ] [X] ___

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped and are not required for non-aqueous matrices. Blanks may not be qualified because of contamination in another blank. Field Blanks & Trip Blanks must be qualified for system monitoring compound, instrument performance criteria, spectral or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated data should be qualified as unusable "R".

302200

YES NO N/A

For:	Flag sample result with a "U" when:	Report CRQL & qualify "U" when:	No qualification is needed when:
Methylene Chloride Acetone Toluene 2-Butanone	Sample conc. is > CRQL, but ≤ 10× blank value.	Sample conc. is < CRQL and ≤ 10× blank value.	Sample conc. is > CRQL and > 10× blank value.
Other Conta-minants	Sample conc. is > CRQL, but ≤ 5× blank value.	Sample conc. is < CRQL and ≤ 5× blank value.	Sample conc. is > CRQL and > 5× blank value.

NOTE: Analytes qualified "U" for blank contamination are still considered as "hits" when qualifying for calibration criteria.

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R".

6.3 Are there field/rinse/equipment blanks associated with every sample? [ ] X ___

ACTION: For low level samples, note in the Data Assessment that there is no associated field/rinse/equipment blank. For samples with high concentrations of suspected blank contaminants, use professional judgement to qualify these values and make a note in the Data Assessment.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V)

7.1 Are the GC/MS Instrument Performance Check Forms (Form V) present for Bromofluorobenzene (BFB)? [ ] ___ X

7.2 Are the enhanced bar graph spectrum and

302201

	YES	NO	N/A
mass/charge (m/z) listing for the BFB provided for each twelve hour shift?	[ ]	___	X
7.3 Has an instrument performance check been analyzed for every analytical sequence on each instrument?	[ ]	___	X

ACTION: List date, time, instrument ID, and sample numbers for which associated GC/MS tuning data are unavailable.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: Notify the lab to obtain missing data, if possible. If the lab cannot provide the missing data, reject, "R", all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundances been normalized to m/z 95 as specified in Exhibit D, page D-56/VOA?	[ ]	___	X

NOTE: All ion abundance ratios must be normalized to m/z 95, the nominal base peak, even though the ion abundance of m/z 174 may be up to 120% that of m/z 95.

ACTION: If mass assignment is in error, qualify all associated data as unusable "R".

7.5 Have the ion abundance criteria been met for each instrument used?	[ ]	___	X

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors

302202

	YES	NO	N/A
between mass lists and Form Vs? (Check at least two values, but if errors are found check more.)		[ ]	✓
7.7 Is the number of significant figures for the reported relative abundances consistent with the number given for each ion in the ion abundance criteria column?	[ ]		✓
ACTION: If large errors exist, take action as specified in section 3.5 above.			
7.8 Are the spectra of the mass calibration compound acceptable?	[ ]		✓
ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.			
8.0 Target Compound List (TCL) Analytes (FORM I VOA)			
8.1 Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate?	[✓]		
b. Matrix spikes and matrix spike duplicates?	[ ]	✓	
c. Blanks?	[✓]		
8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (quant. reports) included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[✓]		
b. Matrix spikes and matrix spike duplicates (mass spectra not required)?	[✓]		
c. Blanks?	[✓]		
ACTION: If any data are missing, take action specified in 3.2 above.			

302203

		YES	NO	N/A
8.3	Are the response factors shown in the quant. report?	[X]	___	___
8.4	Is chromatographic performance acceptable with respect to:			
	a. Baseline stability?	[X]	___	___
	b. Resolution?	[X]	___	___
	c. Peak shape?	[X]	___	___
	d. Full-scale graph (attenuation)?	[X]	___	___
	e. Other: _____?	[ ]	___	___

ACTION: Use professional judgement to determine the acceptability of the data.

8.5	Are the lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[ ]	___	[X]

ACTION: If any mass spectra are missing, take action as specified in 3.2 above. If the lab does not generate its own standard spectra, document in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary.

8.6	Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[X]	___	___
8.7	Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[ ]	___	[X]
8.8	Do sample and standard relative ion intensities agree within ±20%?	[ ]	___	[X]

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected "R", flagged "N" (presumptive evidence of the presence of the

302204

	YES	NO	N/A
compound) or changed to not detected "U" at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in 8.6, 8.7, and 8.8.			
ACTION: When sample carry-over is suspected, use professional judgement determine if instrument cross-contamination has affected positive compound identifications.			
9.0 Tentatively Identified Compounds (TIC)			
9.1 Are all Tentatively Identified Compound Forms (Form I Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier?	[ ]	___	X
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[ ]	___	X
b. Blanks?	[ ]	___	X
c. Alkanes listed for each sample?	[ ]	___	X
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "JN" qualifier to all chemically named TICs, if missing.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds? (Example: 1,2- dimethylbenzene is xylene, a VOA TCL analyte, and should not be reported as a TIC.)	___	[ ]	X
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[ ]	___	X

302205

E 510

	YES	NO	N/A
9.5 Do TIC and "best match" standard relative ion intensities agree within ±20%?	[ ]		X

ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined an incorrect identification was made, change the identification to "unknown," or to some less specific identification as appropriate. (Example: "C3 substituted benzene.")

Also, when a compound is not found in any blank, but is detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable "R". (E.g., Common Lab Contaminants: CO_2 (M/E 44), siloxanes (M/E 73) hexane, aldol condensation products, solvent preservatives, and related by-products - see the National Functional Guidelines for further guidance.)

	YES	NO	N/A
9.6 Are TICs with responses < 10% of the internal standard (as determined by inspection of the peak areas or height) reported?		[ ]	X

ACTION: If yes, cross out questionable TIC(s).

10.0 Compound Quantitation and Reported Detection Limits

	YES	NO	N/A
10.1 Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standards, quantitation ions, and RRF were used to calculate Form I results.)		X	
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	X		

ACTION: If errors are large, take action as specified in section 3.5 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample). Replace concentrations that exceeded the calibration

302206

YES NO N/A

range in the original analysis by crossing out the "E" and its corresponding value on the original Form I and substituting the data from the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form Is not to be used, including any in the data summary package.

11.0 Standards Data (GC/MS)

11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (quant. reports) present for each initial and continuing calibration? [✓] ___ ___

ACTION: If any calibration standard data are missing, take action specified in 3.2 above.

12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI) present and complete at concentrations of 10, 20, 50, 100, 200ng for separate calibrations of low water/med soils (unheated purge) and low soils (heated purge)? [✓] ___ ___

ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.

12.2 Were all low level soil standards, blanks and samples analyzed by heated purge? [ ] ___ [✓]

ACTION: If low level soil samples were not heated during purge, qualify positive hits "J" (estimated) and non-detects "R".

12.3 Are the % relative standard deviation (%RSD) values for VOAs ≤ 30% over the concentration range of the calibration? [✓] ___ ___

NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %RSD, the technical acceptance criteria are the same for all analytes.

ACTION: Circle all outliers with red pencil.

302207

YES NO N/A

ACTION: If %RSD is > 30.0%, qualify associated positive results for that analyte "J" (estimated) and non-detects using professional judgement. When %RSD is > 90%, flag all non-detects for that analyte "R" (unusable) and positive hits "J".

NOTE: Analytes previously qualified "U" for blank contamination are still considered as "hits" when qualifying for initial calibration criteria. ___ X ___

12.4 Are any average RRFs < 0.05?

ACTION: Circle all outliers with red pencil.

ACTION: If the average RRF is < 0.05, then qualify associated non-detects with an "R" and flag associated positive data as estimated "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %RSD or RRF criteria, provided the %RSD is ≤ 40% and RRF is ≥ 0.010. (See Table 5, page D-59/VOA and analytes marked with a "*" on Form VI for required analytes and contractual criteria.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %RSD or RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and the Organic Regional Data Assessment Summary.

12.5 Are there any transcription/calculation errors in the reporting of average relative response factors (RRF) or %RSD? (Check at least 2 values, but if errors are found, check more.) ___ X ___

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

302208

	YES	NO	N/A
13.0 GC/MS Continuing Calibration (Form VII)			
13.1 Are the Continuing Calibration Forms (Form VII) present and complete for separate calibration of low water/med soil and low soil samples? samples analyzed within initial Cal. timeframe	___	[X]	___
13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?	[ ]	___	X

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, contact the lab to request an explanation/resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable "R".

ACTION: List below all sample(s) that were not analyzed within twelve hours of the previous continuing calibration.

_____

_____

_____

13.3 Do any volatile compounds have a percent difference (%D) between the initial and continuing RRF which exceeds the ±25% criteria?	___	[ ]	X

NOTE: Although 11 VOA compounds have a contractual minimum RRF and no maximum %D, the technical acceptance criteria are the same for all analytes.

ACTION: Circle all outliers with red pencil.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated. When %D is > 90%, qualify all non-detects for that analyte unusable (R) and positive results estimated (J).

302209

	YES	NO	N/A
13.4 Are any continuing calibration RRFs < 0.05?	___	[ ]	X

ACTION: Circle all outliers with red pencil.

ACTION: If the RRF is < 0.05, qualify the associated non-detects as unusable "R" and the associated positive values "J".

NOTE: Contract Requirement: The SOW allows up to two of the required analytes to fail contractual %D and RRF criteria, provided that the %D is ≤ 40% and the RRF is ≥ 0.010. (See Table 5 pg. D-59/VOA or analytes marked with a "*" on Form VI for required analytes.) Technical criteria, however, are the same for all analytes.

ACTION: If more than two analytes failed %D and RRF, criteria document in the Data Assessment under contract Problems/Non-Compliance and on the Organic Regional Data Assessment Summary form.

13.5 Are there any transcription/calculation errors in the reporting of RRF or %D between initial and continuing RRFs? (Check at least two values, but if errors are found, check more.)	___	[ ]	X

ACTION: Circle errors with red pencil.

ACTION: If errors are large, contact the lab to obtain an explanation/resubmittal, document in the Data Assessment under Contract Problems/Non-Compliance.

14.0 Internal Standard (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits (-50% to +100%) for each continuing calibration?	[ ]	X	___
If no, was the sample re-analyzed?	[ ]	___	X

ACTION: 1. Circle all outliers with red pencil.

2. List all the outliers below.

302210

YES NO N/A

Sample #	Internal Std.	Area	Lower/Upper Limit
			/
			/
			/
			/

(Attach additional sheets if necessary, or attach copies of Form VIIIs.)

ACTION: If any sample was not re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

ACTION: 1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Do not qualify non-detects when associated IS area counts are > 100%.

3. If the IS area in the sample is below the "lower limit," < 50%, qualify all analytes associated with that IS estimated, "J". If the area counts are extremely low, < 25% of the area in the 12 hour standard, or if performance exhibits a major abrupt drop- off, flag all associated non-detects as unusable, "R", and positive hits estimated, "J".

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [ ] ___ X

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

NOTE: Contractual requirements state that if any internal standard fails the acceptance criteria, the sample must be re-analyzed. If the affected sample was not

302211

YES NO N/A

re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

NOTE: See Notes in section 3.4, page 7 for a description of sample data the laboratory must submit.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for VOA analysis? N/A ___ ___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

302212

YES NO N/A

PART B: BNA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody records or laboratory SDG Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [ ] ___

ACTION: If any sample analyzed as a soil, other than TCLP, contains 50% - 90% water, all data should be flagged as estimated "J". If a soil sample, other than TCLP, contains more than 90% water, all data should be qualified as unusable "R".

ACTION: If samples were not iced or if the ice was melted upon arrival at the laboratory and the temperature of the cooler was elevated (> 10° C), flag all positive results "J" and all non-detects "UJ".

2.0 Holding Times

2.1 Have any BNA technical holding times, determined from date of collection to date of extraction, been exceeded? ___ [ ] ___

Technical Holding Time: Continuous extraction of water samples for BNA analysis must be started within seven days of the date of collection. Soil/sediment samples must be extracted within 7 days of collection. Extracts must be analyzed within 40 days of the date of extraction.

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample Analyzed	Sample Matrix	Date Sampled	Date Lab Received	Date Extracted	Date Analyzed

302213