SDMS Document
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FINAL REMEDIAL INVESTIGATION REPORT

Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

VOLUME III
APPENDIX H

Prepared By:

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Warren, NJ 07059

Prepared For:

Berlex Laboratories, Inc.
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Richmond, CA 94804

and

Pharmacia & Upjohn
7171 Portage Road
Kalamazoo, MI 49001

February 2000

McLaren/Hart, Inc.

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APPENDIX H

QA/QC SUMMARY PACKAGES AND CHECKLISTS

SDG No. 97129

TOC, Metals, and Inorganic Checklist

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4R7 event

QA/QC Review of Alkalinity
Data for Pace Analytical SDG# 97129

October 30, 1997

Holding Times: Samples were analyzed within holding times.

Initial and Continuing Calibration Verification: Data not applicable.

Blanks: The method blank reported alkalinity as not detected.

Spike Sample Recovery: Data not applicable.

Duplicates: Data not provided in this SDG.

Laboratory Control Sample: Alkalinity (102%) had a percent recovery within control limits (80-120%) for the soil LCS.

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QA/QC Review of Total Organic Carbon (TOC)
Data for Pace Analytical SDG# 97129

October 30, 1997

Holding Times: Samples were analyzed within holding times.

Initial and Continuing Calibration Verification: All percent recoveries were within control limits (85-115%).

Blanks: The method blank reported TOC as not detected.

Spike Sample Recovery: TOC (83%) had a percent recovery within control limits (75-125%) for the spike sample.

Duplicates: TOC (4%) had a relative percent difference below the allowable maximum (20%) for the duplicate sample.

Laboratory Control Sample: TOC (106%) had a percent recovery within control limits (80-120%) for the soil LCS.

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SDG: 97129

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

based on

SOW. 3/90

(SOP Revision XI)

EPARED BY: _____ DATE: 1-30-92
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

PROVED BY: _____ DATE: 1-30-92
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

PROVED BY: _____ DATE: 1/30/92
Robert Runyon, Chief
Monitoring Management Branch

Evaluation of Metals Data for the Contract Laboratory Program

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

Scope

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

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

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

. For a total review:

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

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 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).

.4 CLP Data Assessment Summary Forms

.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 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.

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

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).

1.7 Forwarded Paperwork

..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).

..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.

..8 Filed Paperwork - Upon completion of review, the following are to be filed within M:B 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)

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.

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.

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.

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.

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".

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.

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

	YES	NO	N/A
1 Contract Compliance Screening Report (CCS) - Present?	[ ]		X
ACTION: If no, contact RSCC.			
2 Record of Communication (from RSCC) - Present?	[ ]		X
ACTION: If no, request from RSCC.			
3 Trip Report - Present and complete?	[ ]		X
ACTION: If no, contact RSCC for trip report.			
mple Traffic Report - Present?	[ ]		X
Legible?	[ ]		X
ACTION: If no, request from Regional Sample Control Center (RSCC).			
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.			

.6 Form I to IX	Yes	No	N/A
.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".

.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]	X	___
(b) all analytes analyzed by GFAA?	[___]	___	X
(c) all analytes analyzed by AA Flame?	[___]	___	X
(d) Mercury?	[X]	X	___
(e) Cyanide?	[X]	X	___

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

e: 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
.7	Raw Data			
.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 p[illegible]ation dates present on sample preparation logs sheets?	[X]	___	___
.7.2	Measurement read out record present? ICP	[X]	___	___
	Flame AA	[___]	___	X
	Furnace AA	[___]	___	X
	Mercury	[X]	___	___
	Cyanides	[X]	___	___
.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.

Compliance (Total Review)

	YES	NO	N/A
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.

.2	Is pH of aqueous samples for:			
	Metals Analysis >2?	___	[___]	___
	Cyanides Analysis <12?	___	[___]	___

Action: If yes, flag the associated metals and cyanides data as estimated.

Form I (Final Data)

.1	Are all Form I's present and complete?	[X]	___	___

ACTION: If no, prepare telephone record log and contact laboratory for submittal.

.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.			
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".			
1.10	Calibration			
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
1.10.2	Is correlation coefficient less than 0.995 for:			
	Mercury Analysis?	___	[X]	___
	Cyanide Analysis?	___	[X]	___
	Atomic Absorption Analysis?	___	[___]	___

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.).

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).

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

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.

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.

.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".

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

.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? [X] ___ ___
(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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rue value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL.
pute the concentration of the missing mid-range standard from the calibration range.

		YES	NO	N/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".			
.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?	[___]	___	___
	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.			
.1.13	Form III (Initial and Continuing Calibration Blanks)			
.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".			
.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.			
.14	FORM III (Preparation Blank) - (Note: The preparation blank for mercury is the same as the calibration blank.)			
.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
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.			
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.			
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.			
1.15	Form IV (ICP Interference Check Sample)			
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.			
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").			
.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.)			
.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).			
.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.			
.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	___

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	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".			

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".

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".			
1.17	Form VI (Lab Duplicates)			
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.			
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.			
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.

.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? ___ [___] ___

Is any difference** between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL? ___ [___] ___

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

.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.			
.18	Field Duplicates			
.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.

.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

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.

1.19 Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)

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
.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.			
.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
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.			
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.			
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.			
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".			
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)			
..21	Furnace Atomic Absorbtion (AA) QC Analysis	No AA work was performed.		
..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.			
..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.			
..21.3	Is *analytical spike recovery outside the control limits (85-115%) for any sample?	___	[___]	___
	ACTION: If yes, flag 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%.			

nalytical 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.			
.22	Form VIII (Method of Standard Addition Results)			
.22.1	Present?	[___]	___	___
	If no, is any Form I result coded with "S" or a "+"?	___	[___]	___
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			
.22.2	Is coefficient of correlation for MSA less than 0.990 for any sample?	___	[___]	___
	ACTION: If yes, reject (red-line) the affected data.			
.22.3	Was *MSA required for any sample but not performed?	___	[___]	___
	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?	___	[___]	___
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
.22.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23?	[___]	___	___
	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
1.23	Dissolved/Total or Inorganic/Total Analytes - N/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.			
1.23.2	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	___
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.			
1.24	Form I (Field Blank) - No field blanks collected			
	(Note: Designate "Field Blank" as such on Form I.)			
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?	[___]	___	___

	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.

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

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.

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

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.

1.25.3 Form XI (Linear Ranges)

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 [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).

1.26 Percent Solids of Sediments

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.

tle: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.2: Data Assessment Narrative

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

se# _____ Site Island Chemical Matrix: Soil X

G# 97129 Lab Pace Water _____

ntractor _____ Reviewer DCA Other _____

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.

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

See the QA/QC Review of TAL Inorganic Data for Pace Analytical SDG: 97129

304297

A.2 (continuation)

A.2.2 (continuation)

2.3 Contract-Problem/Non-Compliance

MEB/ESAT Rviewer: _____ Date: _____
Signature

ntractor Reviewer: Donald C. Sanzi Date: 10/30/97
Signature

Verified by: _____ Date: _____

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste
Site Contract Laboratory Data Package

CASE NO._____

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

nc. & Matrix:_____

ntract No.(_____) requires that specific analytical work be done and associated reports be provided by the contractor to the Regions, EMSL-LV, and SMO. The l 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

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

ments:_____

_____ Reviewer's Initial

_____ Date

[illegible]/MAILING LIST FOR DATA REVIEWERS

1. USEPA Region I (ESD)
60 Westview Street
Lexington, MA 02173
Dat Staro
(617) 861-6312
CT, ME, MA, NH, RI, VT
CAA, Resource Analysts, York, ESI, Skinner, DPA

2. USEPA Region II (ESD)
Woodbridge Avenue
Edison, New Jersey 08837

(201) 321-6676
NJ, NY, PR, VI
Century, Chemtech, US Test, Marco, ETC, Gadson, EMS, Galson, ICM

3. USEPA Region III (CRL)
839 Bestgate Road
Annapolis, MD 21401
Chuck Sands
(301) 266-9180
DE, MD, PA, VA, WV, DC
Centec, Mitkem, STC, MACK, VERSAR, ITAS, Weston, MESS, EA Engineering Subject Tech., Key PA

4. USEPA Region IV (ESD)
Analytical Support Branch
College Station Road
Athens, GA 30613
Tom Bennett, Jr.
(404) 546-3112
AL, FL, GA, KY, MS, NC, SC, TN
Compuchem, EPS, ESI, PESA, Triangle Labs

5. USEPA Region V (ESD)
536 South Clark Street
Tenth Floor, CRL
Chicago, IL 60605
Pat Churilla
312-353-5027
IL, IN, MI, MN, OH, WI
NEI, DAC/EPC

6. USEPA Region VI (ESD)
Monterey Park Plaza, Bldg. C
6608 Hornwood Drive
Houston, TX 77074
David Stockton
(713) 953-3425
AR, LA, NM, TX, OK
ANALEN, RADIAN, SPECS, ECS, Glocher Research, Inc., SPL Inc., S-CL, Allied, Key TX, ECRA

7. USEPA Region VII Laboratory
25 Funston Road
Kansas City, KS 66115
Debra Merry
(913) 236-2811
IA, KS, NE, MO
Wilson, Kansas City Scientific Enterprises, Eagle Picher

8. USEPA Region VIII Laboratory
BOX 25366
Denver Federal Center
Lakewood, CO 80225
Eva Hoffman
(303) 236-7371
CO, ND, SD, UT, WY, MT
ACCU, CSASI, RMAL, Data Chem, Centec

9. USEPA Region IX (ESD)
QA Management Section
215 Fremont Street
San Francisco, CA 94105
Kent Kistinger
(415) 974-0924
AZ, CA, HI, NV, American Samoa, Guam Trust Territories of Pacific Islands, Wake Island
ALS, CAL Weston, S-Cubed, IT-CA, Vegas

10. USEPA Region X Laboratory
P.O. BOX 549
Manchester, WA 98353
Gerald Rush
(206) 442-0370
AK, ID, OR, WA
Lakes Testing Labs, Century Testing Labs (For VOA Only), Weyerhauser Co. Columbia Testing, Silver Valley

11. Carla Dempsey - (OS-230)
USEPA
401 "M" Street, S.W.
Washington, DC 20460
FTS 382-5746

12. Edward Kantor
USEPA
EMSL-LV
944 E. Harmon Avenue
BOX 93478
Las Vegas, NV 89119

13. Sample Management Office
Viar and Company
P.O. BOX 818

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.6: CLP Data Assessment Summary Form (Inorganics)

Date: Oct. 1989
Number: HW-2
Revision: 9

CLP DATA ASSESSMENT SUMMARY FORM (INORGANICS)

Type of Review: CLP Date: 10-30-97 Case #:

Site: Island Chemical Lab Name: Pace Analytical

Reviewer's Initials: DCA Number of Samples: 23

Analytes Rejected Due to Exceeding Review Criteria:*

	Holding Times	Calibration	Prep Blank	Field Blank	Inter-ferences	Spike Recovery	Duplicates Lab	Duplicates Field	Detection Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejectio
ICP	0	0	0	X	0	0	0	X	0	0	0	X	506	0
Flame AA														
Furnace AA														
Mercury	0	0	0	X	⊗	0	0	X	0	0	X	X	23	0
Total CN	0	0	0	X	⊗	0	0	X	0	0	X	X	23	0
Other														

Analytes Flagged as Estimated (J) Due to Exceeding Criteria For:*

ICP	0	0	0	X	34	23	0	X	0	0	97	X	506	164
Flame AA														
Furnace AA														
Mercury	0	0	0	X	X	8	0	X	0	0	X	X	23	9
Total	0	0	0	X	X	0	0	X	0	0	X	X	23	0
Other														

Note:
Asterisk (*) Indicates additional exceedances of review criteria.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.7: CLP Data Assessment Checklist
Inorganic Analysis

Date: Oct. 1989
Number: HW-2
Revision: 9

INORGANIC REGIONAL DATA ASSESSMENT Region 2

CASE NO. _____ SITE Island Chemical

LABORATORY Pace Analytical NO. OF SAMPLES/ MATRIX 23/Soil

SDG# 97129 REVIEWER (IF NOT ESD) _____

SOW# ILM02.0 REVIEWER'S NAME Don Anne

DPO: ACTION _____ FYI X COMPLETION DATE 10/30/97

DATA ASSESSMENT SUMMARY

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

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: _____

QA/QC Review of TAL Inorganic
Data for Pace Analytical SDG: 97129

October 30, 1997

Holding Times: Samples were analyzed within EPA Region II CLP holding times.

Initial and Continuing Calibration Verification: All percent recoveries were within control limits (90-110% for all metals except Hg, 80-120% for Hg, 85-115% for CN), except for arsenic (112.8%) in the initial calibration. No samples were associated with this calibration.

CRDL Standard for AA and ICP: Arsenic (79.4% and 79.2%), selenium (64.4% and 75.5%), and thallium (72.8%) had percent recoveries outside Region II control limits (80-120%). Results for these metals in associated samples within effected ranges should be considered estimates (J).

Blanks: Initial and continuing calibration, and preparation blanks had analyte levels less than the CRDLs as required by Region II.

ICP Interference Check Sample: Arsenic (79.5% and 78.9%), cobalt (79.4% and 79.3%), and selenium (54.2% and 61.2%) had percent recoveries outside control limits (80-120%). Results for these metals should be considered estimates (J) in associated samples.

Spike Sample Recovery: Antimony (42.7%), mercury (131.6%), and silver (72.5%) had percent recoveries outside control limits (75-125%) for spike sample RG0003S. Antimony (43.1%), manganese (142.4%), mercury (129.9%), and silver (73.0%) had percent recoveries outside control limits (75-125%) for spike sample RG0011S. Results for antimony, manganese, mercury, and silver should be considered estimates (J) in associated samples.

Duplicates: All applicable relative percent differences were less than the allowable maximum (35%) for duplicate samples RG0003D and RG0011D as required by Region II.

Laboratory Control Sample: All recoveries were within control limits for the soil LCSs.

Standard Addition Results: No results were quantitated by MSA in this LP.

ICP Serial Dilution: Cobalt (14.9%), copper (22.1%), lead (16.7%), nickel (20.6%), potassium (21.7%), and zinc (19.2%) had %Ds above the allowable maximum (10%) for serial dilution sample RG0003L. Copper (24.6%), lead (16.4%), potassium (23.4%), and zinc (21.3%) had %Ds above the allowable maximum (10%) for serial dilution sample RG0011L. Results for cobalt, copper, lead, nickel, potassium, and zinc should be considered estimates (J) in associated samples.

Instrument Detection Limits: All IDLs were at or below the CRDLs as required.

G:\STAFF\DANNE\Island\97129.INO.wpd

Cyanide

Date: 9/25/97

x range	y range
1	0.0795
0.5	0.0463
0.1	0.0105
0.05	0.0056
0.01	0.0006
0	0

Slope: 0.080366
Intercept: 0.001515
Cor. Coef.: 0.996835

Mercury

Date: 9/25/97

x range	y range
0	1106
0.2	3393
0.5	8107
1	18493
5	76069
10	164994

Slope: 16238.81
Intercept: 162.3062
Cor. Coef.: 0.999069

QA/QC Review of Semivolatiles Data
for Pace Analytical SDG: 97129

October 29, 1997

Holding Times: All sample RG0003 was extracted outside Region II holding times. Results for sample RG0003 should be considered estimates (J).

GC/MS Tuning and Mass Calibration: All DFTPP tuning criteria were within control limits.

Initial Calibration: All compounds with contract criteria for RRFs and %RSDs met those requirements.

All target compounds had average RRFs above the allowable minimum (0.050) and %RSDs below the allowable maximum (30%) as required.

Continuing Calibration: All compounds with contract criteria for RRF50s met those requirements. Pyridine (28.9%) had a %D above the contractual maximum (25%) on 10-07-97 (1007J01). Pyridine (32.7%) had a %D above the contractual maximum (25%) on 10-08-97 (1008H04). 2-Methylnapthalene(31.3%) had a %D above the contractual maximum (25%) on 10-13-97 (1013J04). No action is taken on two or fewer compounds per calibration outside contract limits as long as %Ds are below 40% and RRF50s are above 0.010.

All target compounds had RRF50s above the allowable minimum (0.050) as required. Pyridine (28.9%) had a %D above the allowable maximum (25%) on 10-07-97 (1007J01). Pyridine (32.7%), 2,2'-oxybis(1-chloropropane) (35.1%), hexachlorocyclopentadiene (37.2%), and 2-nitroaniline(25.8%) had %Ds above the allowable maximum (25%) on 10-08-97 (1008H04). 2-Methylnapthalene (31.3%) and 2,2'-oxybis(1-chloropropane) (26.4%) had %Ds above the allowable maximum (25%) on 10-13-97 (1013J04). Results for these compounds should be considered estimates (J) in associated samples.

Blanks: Method blanks reported all target compounds as not detected.

Internal Standard Area Summary: All internal standard areas and retention times were within control limits for environmental samples.

Surrogate Recovery: Sample RG004D had 1 of 4 acid extractable surrogate recoveries outside control limits but not less than 10%. No action is taken on one surrogate per fraction outside control limits as long as no recovery is less than 10%.

Matrix Spike/Matrix Spike Duplicate: MS/MSD samples RE0003 and RG0011 had all relative percent differences and percent recoveries within control limits.

Compound ID: Checked compounds were within GC/MS quantitation and qualitation limits. All positive hit compounds had the primary and secondary ions in their mass spectra as outlined in the SOW.

Conc. of Internal Standard: 40 ID: J Date: 10/2/97

RRF							
	1002J13 Sample 1	1002J09 Sample 2	1002J10 Sample 3	1002J11 Sample 4	1002J12 Sample 5	Average	% RSD
Conc. of Compound	20	50	80	120	160		
1,4-Dichlorobenzene-d4	187641	171654	161679	174935	176840		
Phenol	129872	298576	457470	713618	887320	1.361	4.6%
RRF	1.384	1.392	1.415	1.360	1.254		
Naphthalene-d8	690684	630679	613144	641248	626980		
Naphthalene	304252	683694	1099163	1680330	2069686	0.869	3.1%
RRF	0.881	0.867	0.896	0.873	0.825		
Acenaphthene-d10	342609	315328	316455	320344	318578		
Acenaphthylene	302723	695803	1172934	1703599	2178756	1.774	2.9%
RRF	1.767	1.765	1.853	1.773	1.710		
Phenanthrene-d10	629821	600611	598024	551560	556997		
Phenanthrene	298771	696903	1127785	1593636	1959586	0.933	3.4%
RRF	0.949	0.928	0.943	0.963	0.880		
Chrysene-d12	522698	488331	500105	456936	441688		
Pyrene	333964	770298	1277698	1767302	2264727	1.278	0.8%
RRF	1.278	1.262	1.277	1.289	1.282		
Perylene-d12	578926	565479	599934	556907	536144		
Benzo(g,h,i)perylene	232130	604949	1000773	1398912	1723822	0.827	2.8%
RRF	0.802	0.856	0.834	0.837	0.804		

Continuing Calibrations										
	1007J01		1008J02		1013J04					
	Sample	%D	Sample	%D	Sample	%D	Sample	%D	Sample	%D
Conc. of Compound	50		50		50					
1,4-Dichlorobenzene-d4	140691		154924		129458					
Phenol	253103	5.8%	282547	7.2%	257043	16.7%		#DIV/0!		#DIV/0!
RRF	1.439		1.459		1.588		#DIV/0!		#DIV/0!	
Naphthalene-d8	511329		576289		502190					
Naphthalene	571759	3.0%	611754	2.2%	552863	1.4%		#DIV/0!		#DIV/0!
RRF	0.895		0.849		0.881		#DIV/0!		#DIV/0!	
Acenaphthene-d10	254900		273488		229820					
Acenaphthylene	570434	0.9%	597751	1.4%	511521	0.4%		#DIV/0!		#DIV/0!
RRF	1.790		1.749		1.781		#DIV/0!		#DIV/0!	
Phenanthrene-d10	473744		514459		388716					
Phenanthrene	568026	2.9%	604803	0.9%	491858	8.6%		#DIV/0!		#DIV/0!
RRF	0.959		0.940		1.012		#DIV/0!		#DIV/0!	
Chrysene-d12	394913		400625		353288					
Pyrene	601020	4.7%	643567	0.6%	515082	8.7%		#DIV/0!		#DIV/0!
RRF	1.218		1.285		1.166		#DIV/0!		#DIV/0!	
Perylene-d12	486430		480061		413591					
Benzo(g,h,i)perylene	526535	4.8%	538747	8.6%	458894	7.4%		#DIV/0!		#DIV/0!
RRF	0.866		0.898		0.888		#DIV/0!		#DIV/0!	

Conc. of Internal Standard: 40 ID: H Date: 5/27/97

RRF							
	527H13 Sample 1	527H09 Sample 2	527H10 Sample 3	527H11 Sample 4	527H12 Sample 5	Average	% RSD
Conc. of Compound	20	50	80	120	160		
1,4-Dichlorobenzene-d4	252355	223158	247832	246894	226612		
Phenol	177261	404273	730966	1027763	1231303	1.415	3.3%
RRF	1.405	1.449	1.475	1.388	1.358		
Naphthalene-d8	825312	758498	841422	806095	738525		
Naphthalene	387228	900829	1570428	2172435	2693690	0.926	2.3%
RRF	0.938	0.950	0.933	0.898	0.912		
Acenaphthene-d10	376171	374566	387891	350044	343896		
Acenaphthylene	336874	769684	1305348	1922535	2221879	1.713	5.5%
RRF	1.791	1.644	1.683	1.831	1.615		
Phenanthrene-d10	713509	650158	661404	660962	591271		
Phenanthrene	313295	704473	1190186	1689423	2007993	0.869	2.4%
RRF	0.878	0.867	0.900	0.852	0.849		
Chrysene-d12	566635	561160	596557	550925	511221		
Pyrene	332485	849134	1444729	1905575	2408100	1.185	2.1%
RRF	1.174	1.211	1.211	1.153	1.178		
Perylene-d12	628054	608823	626306	601143	562629		
Benzo(g,h,i)perylene	252879	640202	1059884	1379767	1670891	0.800	5.7%
RRF	0.805	0.841	0.846	0.765	0.742		

Continuing Calibrations

	1008H04									
	Sample	%D	Sample	%D	Sample	%D	Sample	%D	Sample	%D
Conc. of Compound	50									
1,4-Dichlorobenzene-d4	225206									
Phenol	351303	11.8%		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!
RRF	1.248		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!	
Naphthalene-d8	752499									
Naphthalene	810314	7.0%		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!
RRF	0.861		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!	
Acenaphthene-d10	365211									
Acenaphthylene	774578	0.9%		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!
RRF	1.697		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!	
Phenanthrene-d10	649099									
Phenanthrene	711459	0.9%		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!
RRF	0.877		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!	
Chrysene-d12	493811									
Pyrene	775584	6.0%		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!
RRF	1.256		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!	
Perylene-d12	452616									
Benzo(g,h,i)perylene	353145	22.0%		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!
RRF	0.624		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!	

SDG: 97129

SOP NO. HW-6
Revision #8

CLP ORGANICS DATA REVIEW
AND PRELIMINARY REVIEW

BY: _____ Date: Jan. 2 1992
Leon Lazarus, Environmental Scientist
Toxic and Hazardous Waste Section

BY: _____ Date: January 3, 1992
George Karras, Chemist
Toxic and Hazardous Waste Section

BY: _____ Date: 1/3/1992
Stelios Gerazounis, Chemist
Toxic and Hazardous Waste Section

CONCURRED BY: _____ Date: 1/3/92
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: _____ Date: 1/7/92
Robert Runyon, Chief
Monitoring Management Branch

304312

STANDARD OPERATING PROCEDURE
Date: January 1992
Revision: 8

YES NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES
CASE NUMBER: 90129 LAB: Pace Analytical
SDG
SITE: Island Chemical

1.0 Data Completeness and Deliverables

1.1 Have any missing deliverables been received and added to the data package? [ ] X ___

ACTION: Call lab for explanation/resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-Compliance" section of reviewer narrative.

1.2 Was SMO CCS checklist included with package? [ ] ___ X

2.0 Cover Letter SDG Narrative

2.1 Is the Narrative or Cover Letter Present? [X] ___ ___

2.2 Are Case Number and/or SAS number contained in the Narrative or Cover letter? [ ] ___ X

3.0 Data Validation Checklist

The following checklist is divided into three parts. Part A is filled out if the data package contains any VOA analyses. Part B for any BNA analyses and Part C for Pesticide/PCBs.

Does this package contain:

VOA Data? ___ X

BNA Data? X ___

Pesticide/PCB data? ___ X

Action: Complete corresponding parts of checklist.

304313

	YES	NO	N/A

PART B: BNA ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? [ ] [ ] [X]

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab 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 upon receipt at the laboratory, 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] [ ] [ ]

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.

YES NO N/A

Table of Holding Time Violations

(See Traffic Report)

Sample	Sample Matrix	Date Sampled	Date Lab Received	Date Extracted	Date Analyzed
RG0003	SOIL	9/23/91	9/24/91	10/9/91	10/13/91

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 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 the 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 are exceeded by more than 28 days, all non detect data are unusable (R).

3.0 Surrogate Recovery (Form II)

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

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

		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. Low Soil	[ ]	X	

ACTION: Call lab for explanation/resubmittals. If missing deliverables are unavailable, document effect in data assessments.

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

ACTION: Circle all outliers in red.

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. base-neutral or acid 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. If recoveries are greater than the upper acceptance limit, do not qualify non-detects.

	YES	NO	N/A

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

1. Positive results for the fraction with <10% surrogate recovery are qualified with "J".

2. Non-detects for that fraction should be qualified 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.

3.5 Are there any transcription/calculation errors between raw data and Form I? [ ] [X]

ACTION: If large errors exist, call lab for explanation/resubmittal. Make any necessary corrections and document effect in data assessments.

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 3.2 above.

YES NO N/A

4.3 How many BNA spike recoveries are outside QC limits?

Water	Soils
____ out of 22	0 out of 22

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
____ out of 11	0 out of 11

ACTION: No action is taken on 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.

5.0 Blanks (Form IV)

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? X ___ ___
(See SOW p. D - 89/SV, Section 8.7)

ACTION: If any method blank data are missing, call lab for explanation/resubmittal. If not available, use professional judgement to determine if the associated sample data should be qualified.

YES NO N/A

5.4 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 BNAs? YES ___ ___

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

6.0 Contamination

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

6.1 Do any method/instrument/reagent blanks have positive results (TCL and/or TIC) for BNAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for % moisture where necessary. ___ YES

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

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (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 data. 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.

YES NO N/A

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).

Sample conc > CRQL but < 10x blank	Sample conc <CRQL & is< 10x blank value	Sample conc > CRQL value & >10x blank
Common Phthalate Esters		
Flag sample result with a "U";	Report CRQL & qualify "U"	No qualification is needed
Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & >5 blank value
Other Contaminants		
Flag sample result with a "U";	Report CRQL & qualify "U"	No qualification is needed

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" (unusable).

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

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

	YES	NO	N/A

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 analyses for which no associated GC/MS tuning data are available.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

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

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

7.4 Have the ion abundances been normalized to m/z 198? X

	YES	NO	N/A

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 Have the appropriate number of significant figures (two) been reported? X

ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document effect in data assessments.

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

8.1 Are the Organic Analysis Data Sheets (Form I BNA) 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

		YES	NO	N/A
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".			
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.			
8.4	Are the response factors shown in the Quant Report?	[ ]	[X]	[ ]
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.			

	YES	NO	N/A

8.6 Are the lab-generated standard mass spectra of identified SVA compounds present for each sample? N/A

ACTION: If any mass spectra are missing, take action specified in 3.2 above. If lab does not generate their own standard spectra, make note in "Contract Problems/ Non-compliance". 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? Y

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? Y

8.9 Do sample and standard relative ion intensities agree within 20%? Y

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.

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 (TICs)

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

YES NO N/A

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 ☒ ___ ___

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

ACTION: Add "JN" qualifier 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)? ___ ☒ ___

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? ☒ ___ ___

9.5 Do TIC and "best match" standard relative ion intensities agree within 20%? ☒ ___ ___

ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change 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).

	YES	NO	N/A

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 standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found? ___ X ___

10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture? X ___ ___

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.

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 it's 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 I's 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 initial and continuing calibration? X ___

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

YES NO N/A

12.0 GC/MS Initial Calibration (Form VI)

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.

12.2 Are response factors stable for BNAs over the concentration range of the calibration? (% Relative standard deviation (%RSD) < 30.0%) X ___

ACTION: Circle all outliers in red.

NOTE: Although 20 BNA compounds have a minimum RRF and no maximum %RSD, the technical criteria are the same for all analytes.

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

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

12.3 Are all BNA compound RRFs > 0.05? X ___

ACTION: Circle all outliers in red.

ACTION: If any RRF < 0.05
1. "R" all non-detects.
2. "J" all positive results.

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

ACTION: Circle Errors in red.

YES NO N/A

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors in data assessments.

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 within twelve hours of a continuing calibration analysis for each instrument used.

_____

_____

_____

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

13.3 Do any semivolatile compounds have a % Difference (% D) between the initial and continuing RRF which exceeds the ± 25.0% criteria? [X] [ ] ___

ACTION: Circle all outliers in red.

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

YES NO N/A

13.4 Do any semivolatile compounds have a RRF <0.05? ___ (X)

ACTION: Circle all outliers in red.

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

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

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.

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) ___

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limi

(Attach additional sheets if necessary.)

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

YES NO N/A

2. Non-detects associated with IS areas > 100% should not be qualified.

3. If the IS area is below the lower limit (<50%), qualify all associated non-detects (U-values) "J". If extremely low area counts are reported (<25%) or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable (R).

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.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for SNA 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.

SDG No. 97130

SVOCs, VOCs, Inorganics, and Organics Checklist

304331

QA/QC Review of TAL Inorganic
Data for Pace Analytical SDG: 97130

November 3, 1997

Holding Times: Samples were analyzed within EPA Region II CLP holding times.

Initial and Continuing Calibration Verification: Sodium (111.2%) had a percent recovery outside control limits (90-110%). Cyanide (119.6%, 120.0%, 118.2%, 117.8%, 116.6%, and 119.0%) had percent recoveries outside control limits (85-115%). Results for sodium and cyanide should be considered estimates (J) in associated samples.

CRDL Standard for AA and ICP: Arsenic (79.4%, 79.0%, 77.2% and 77.0%), lead (73.8%), selenium (64.4% , 75.2%, and 74.8%), silver (76.2%), and thallium (78.6%) had percent recoveries outside Region II control limits (80-120%). Results for these metals in associated samples within effected ranges should be considered estimates (J).

Blanks: Initial and continuing calibration, and preparation blanks had analyte levels less than the CRDLs as required by Region II. Field blank FB0918 contained copper (82.8 ug/L), selenium (2.5 ug/L), and zinc (166 ug/L) above their CRDLs. Field blank FB0919 contained calcium (13000 ug/L) and zinc (381 ug/L) above their CRDLs. Field blank FB0922 contained calcium (16200 ug/L) and zinc (452 ug/L) above their CRDLs. Field blank FB0923 contained zinc (46.6 ug/L) above its CRDLs. Field blank FB0924 contained zinc (42.8 ug/L) above its CRDLs. Field blank FB0930 contained calcium (11500 ug/L) and zinc (432 ug/L) above their CRDLs. Results for these metals less than five times the associated blank level should be considered unusable (R) in samples.

ICP Interference Check Sample: Arsenic (79.5% and 79.6%), cobalt (79.4%, 79.6%, 78.8%, and 78.5%), and selenium (54.2% and 54.4%) had percent recoveries outside control limits (80-120%). Results for these metals should be considered estimates (J) in associated samples.

Spike Sample Recovery: All percent recoveries were within control limits (75-125%) for water spike samples FB0918S, FB0919S, FB0926S, and FB0930S. Antimony (41.9%), manganese (65.1%), and cyanide (51.2%) had percent recoveries outside control limits (75-125%) for soil spike sample 70202S. Antimony (73.4%) had a percent recovery outside control limits (75-125%) for soil spike sample 200204S. Results for antimony, manganese, and cyanide should be considered estimates (J) in associated soil samples.

Duplicates: Calcium (39.1%) had relative percent difference the CLP maximum (20%) but were below the allowable maximum (100%) for duplicate sample 702022D. Zinc (27.6%) had relative percent difference the CLP maximum (20%) but were below the allowable maximum (100%) for duplicate sample 200204D. These metals were appropriately flagged as per Region II.

Laboratory Control Sample: All percent recoveries were within control limits for the water LCSs. Silver (7.1 mg/kg) had a recovery outside control limits (54.6-92.1 mg/kg). Results for silver should be considered estimates (J) in associated soil samples.

Standard Addition Results: No results were quantitated by MSA in this LP.

ICP Serial Dilution: Copper (21.7%), potassium (22.8%), and zinc (12.8%) had %Ds above the allowable maximum (10%) for soil serial dilution sample 702022L. Lead (13.2%), potassium (18.8%), sodium (11.5%), and zinc (28.7%) had %Ds above the allowable maximum (10%) for soil serial dilution sample 200204L. Results for copper, lead, potassium, sodium, and zinc should be considered estimates (J) in associated soil samples. Magnesium (15.1%), potassium (38.4%), and sodium (12.8%) had %Ds above the allowable maximum (10%) for water serial dilution sample FB0918L. Calcium (11.9%), potassium (88.8%), and sodium (58.8%) had %Ds above the allowable maximum (10%) for water serial dilution sample FB0926L. Results for calcium, magnesium, potassium, and sodium should be considered estimates (J) in associated water samples.

Instrument Detection Limits: All IDLs were at or below the CRDLs as required.

Percent Solids for Soils: All soil samples had percent solids above the allowable minimum (50%).

SDG # 97130

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

based on

SOW. 3/90

(SOP Revision XI)

EPARED BY: _____ DATE: 1-30-92
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

PROVED BY: _____ DATE: 1-30-92
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

PROVED BY: _____ DATE: 1/30/92
Robert Runyon, Chief
Monitoring Management Branch

Evaluation of Metals Data for the
Contract Laboratory Program

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

Scope

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

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

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

. For a total review:

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

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 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).

.3 CLP Data Assessment Summary Forms

.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 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.

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

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).

1.7 Forwarded Paperwork

.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).

.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.

.8 Filed Paperwork - Upon completion of review, the following are to be filed within MTB 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)

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.

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.

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.

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.

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".

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.

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

e: 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
1 Contract Compliance Screening Report (CCS) - Present?	[ ]	___	X
ACTION: If no, contact RSCC.			
2 Record of Communication (from RSCC) - Present?	[ ]	___	X
ACTION: If no, request from RSCC.			
3 Trip Report - Present and complete?	[ ]	___	X
ACTION: If no, contact RSCC for trip report.			
mple Traffic Report - Present?	[ ]	___	X
Legible?	[ ]	___	X
ACTION: If no, request from Regional Sample Control Center (RSCC).			
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]	___	___
CTION: If no for any of the above, contact RSCC for clarification.			

.6 Form I to IX	Yes	No	N/A
.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".

.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.

e: 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
.7	Raw Data			
.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 p[illegible]ation dates present on sample preparation logs sheets?	[X]	___	___
.7.2	Measu[illegible]nt read out record present? ICP	[X]	___	___
	Flame AA	[___]	___	X
	Furnace AA	[___]	___	X
	Mercury	[X]	___	___
	Cyanides	[X]	___	___
.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.

Compliance (Total Review)

	YES	NO	N/A
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.

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.

Form I (Final Data)

.1	Are all Form I's present and complete?	[X]	___	___

ACTION: If no, prepare telephone record log and contact laboratory for submittal.

.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.			
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".			
1.10	Calibration			
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
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.).

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).

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

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.

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.			
.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".			
.12 Form II B (CRDL Standards for AA and ICP) -			
.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.			

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

		YES	NO	N/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".			
.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.			
.1.13	Form III (Initial and Continuing Calibration Blanks)			
.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".			
.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.			
.14 FORM III (Preparation Blank) - (Note: The preparation blank for mercury is the same as the calibration blank.)			
.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
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.			
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.			
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.			
1.15	Form IV (ICP Interference Check Sample)			
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.			
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").			
.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.)			
.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).			
.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.			
.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".			

.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".

.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".			
1.17	Form VI (Lab Duplicates)			
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.			
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.			
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.

.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.

.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.			
.18	Field Duplicates			
.18.1	Were field duplicates analyzed?	[___]	___	___
	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.			
.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?	___	[___]	___
	Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	___
	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

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.

1.19 Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)

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
.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.			
.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
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.			
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.			
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.			
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".			
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)			
..21	Furnace Atomic Absorbtion (AA) QC Analysis	No samples were analyted by furnace AA		
..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.			
..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.			
..21.3	Is *analytical spike recovery outside the control limits (85-115%) for any sample?	___	[___]	___
	ACTION: If yes, flag 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%.			

nalytical 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.			
.22	Form VIII (Method of Standard Addition Results)			
.22.1	Present?	[___]	___	___
	If no, is any Form I result coded with "S" or a "+"?	___	[___]	___
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			
.22.2	Is coefficient of correlation for MSA less than 0.990 for any sample?	___	[___]	___
	ACTION: If yes, reject (red-line) the affected data.			
.22.3	Was *MSA required for any sample but not performed?	___	[___]	___
	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?	___	[___]	___
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
.22.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23?	[___]	___	___
	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
1.23	Dissolved/Total or Inorganic/Total Analytes -			
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.			
1.23.2	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	___
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.			
1.24	Form I (Field Blank) -			
	(Note: Designate "Field Blank" as such on Form I.)			
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.

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

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.

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

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.

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.

1.25.3 Form XI (Linear Ranges)

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).

1.26 Percent Solids of Sediments

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.

tle: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.2: Data Assessment Narrative

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

se# _____ Site Island Chemical Matrix: Soil X

3# 97130 Lab Pace Water X

ntractor _____ Reviewer Don Anne' Other _____

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 IILM01.0.

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

See the QA/QC Review of TAL Inorganic Data for Pace Analytical SDG: 97130

304361

A.2 (continuation)

.2.2 (continuation)

2.3 Contract-Problem/Non-Compliance

MSB/ESAT Rviewer: _____ Date: _____
Signature

ntractor Reviewer: Ronald Lane' Date: 11-3-97
Signature

Verified by: _____ Date: _____

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.3: Contract Non-Compliance (SMO Report)

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

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste
Site Contract Laboratory Data Package

CASE NO._____

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

c. & Matrix:_____

ract No.(_____) requires that specific analytical work be done and ssociated reports be provided by the contractor to the Regions, EMSL-LV, and SMO. The l 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

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

ments:_____

_____

_____

_____

_____

_____

_____

_____

_____

_____ _____
Reviewer's Initial Date

[illegible] LIST FOR DATA REVIEWERS

1. USEPA Region I (ESD)
60 Westview Street
Lexington, MA 02173
Dot Stark
(617) 861-6312
CT, ME, MA, NH, RI, VT
CAA, Resource Analysts, York, ESI, Skinner, DPA

2. USEPA Region II (ESD)
Woodbridge Avenue
Edison, New Jersey 08837
(201) 321-6676
NJ, NY, PR, VI
Century, Chemtech, US Test, Maxon, ETC, Gedeon, EMS, Galson, ICH

3. USEPA Region III (CRL)
839 Bestgate Road
Annapolis, MD 21401
Chuck Sands
(301) 266-9180
DE, MD, PA, VA, WV, DC
Centec, Mitkem, JTC, MACH, VERSAR, ITAS, Weston, PRC, EA Engineering Subject Tech., Key PA

4. USEPA Region IV (ESD)
Analytical Support Branch
College Station Road
Athens, GA 30613
Tom Bennett, Jr.
(404) 546-3112
AL, FL, GA, KY, MS, NC, SC, TN
Compuchem, EPS, ESI, PESE, Triangle Labs

5. USEPA Region V (ESD)
536 South Clark Street
Tenth Floor, CRL
Chicago, IL 60605
Pat Churilla
312-353-5087
IL, IN, MI, MN, OH, WI
NEI, DAC/EDC

6. USEPA Region VI (ESD)
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6624 Hornwood Drive
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David Stockton
(713) 953-3425
AR, LA, NM, TX, OK
ARATEX, RADIAN, SPECS, ELS, Glocker Research, Inc., SPL Inc., SARI, Allied, Key TX, ECRA

7. USEPA Region VII Laboratory
25 Funston Road
Kansas City, KS 66115
Debra Morey
(913) 236-3851
IA, KS, NE, MO
Wilson, Kansas City Scientific Enterprises, Eagle Picher

8. USEPA Region VIII Laboratory
BOX 25366
Denver Federal Center
Lakewood, CO 80225
Eva Hoffman
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CO, ND, SD, UT, WY, MT
ACCU, CSMSI, PPAL, Data Chem, Centec

9. USEPA Region IX (ESD)
QA Management Section
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Kent Kristiansen
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AZ, CA, HI, NV, American Samoa, Guam Trust Territories of Pacific Islands, Wake Island
ALS, CAL Western, S-Cubed, IT-CA, Vegas

10. USEPA Region X Laboratory
P.O. BOX 549
Manchester, WA 98353
Gerald Kuch
(206) 442-0370
AK, ID, OR, WA
Lasers Testing Labs, Century Testing Labs (For VOA Only), Weyerhauser Co. Columbia Testing, Silver Valley

11. Carla Dempsey - (OE-230)
USEPA
401 "M" Street, S.W.
Washington, DC 20460
FTS 382-5746

12. Edward Kantor
USEPA
EMSL-LV
944 E. Harmon Avenue
BOX 93478
Las Vegas, NV 89119

13. Sample Management Office
Viar and Company
P.O. BOX 818

Title: Evaluation of Metals Data for the Contract Laboratory Program Appendix A.6: CLP Data Assessment Summary Form (Inorganics)

Date: Oct. 1989
Number: HW-2
Revision: 9

CLP DATA ASSESSMENT SUMMARY FORM (INORGANICS)

Type of Review: CLP Date: Nov 3, 1997 SDG #: 97130

Site: Island Chemical Lab Name: Pace Analytical

Reviewer's Initials: DCA Number of Samples: 30

Analytes Rejected Due to Exceeding Review Criteria:*

	Holding Times	Calibration	Prep Blank	Field Blank	Inter-ferences	Spike Recovery	Duplicates Lab	Duplicates Field	Detection Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejection
ICP	0	0	0	26	0	0	0	X	0	0	0	X	690	26
Flame AA														
Furnace AA														
Mercury	0	0	0	0	X	0	0	X	0	0	X	X	30	0
Total CN	0	0	0	0	X	0	0	X	0	0	X	X	30	0
Other														

Analytes Flagged as Estimated (J) Due to Exceeding Criteria For:*

ICP	0	0	0	0	20	23	0	X	0	7	63	X	690	113
Flame AA														
Furnace AA														
Mercury	0	0	0	0	X	0	0	X	0	0	X	X	30	0
Total CN	0	0	0	0	X	0	0	X	0	0	X	X	30	0
Other														

Note:
Asterisk (*) Indicates additional exceedances of review criteria.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.7: CLP Data Assessment Checklist
Inorganic Analysis

Date: Oct. 1989
Number: HW-2
Revision: 9

INORGANIC REGIONAL DATA ASSESSMENT Region 2

CASE NO. _____ SITE Island Chemical

LABORATORY Pace Analytical NO. OF SAMPLES/ MATRIX 23/soil 9/water

SDG# 97130 REVIEWER (IF NOT ESD) _____

SOW# ILM02.0 REVIEWER'S NAME Donald Anne'

DPO: ACTION _____ FYI X COMPLETION DATE Nov 3, 1997

DATA ASSESSMENT SUMMARY

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

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: _____

QA/QC Review of Semivolatiles Data
for Pace Analytical SDG: 97130

October 31, 1997

Holding Times: All samples were extracted and analyzed within Region II holding times.

GC/MS Tuning and Mass Calibration: All DFTPP tuning criteria were within control limits.

Initial Calibration: All compounds with contract criteria for RRFs and %RSDs met those requirements.

All target compounds had average RRFs above the allowable minimum (0.050) and %RSDs below the allowable maximum (30%) as required.

Continuing Calibration: All compounds with contract criteria for RRF50s met those requirements. Pyridine (25.1%) had a %D above the contractual maximum (25%) on 10-03-97 (1003J01). Pyridine (28.9%) had a %D above the contractual maximum (25%) on 10-07-97 (1007J01). No action is taken on two or fewer compounds per calibration outside contract limits as long as %Ds are below 40% and RRF50s are above 0.010.

All target compounds had RRF50s above the allowable minimum (0.050) as required. 2,2'-Oxybis(1-chloropropane) (52.8%) had a %D above the allowable maximum (25%) on 09-26-97 (0926J02). 2,2'-Oxybis(1-chloropropane) (47.4%) had a %D above the allowable maximum (25%) on 10-01-97 (1001J02). Pyridine (25.1%) had a %D above the allowable maximum (25%) on 10-03-97 (1003J01). Hexachlorocyclopentadiene (28.6%) had a %D above the allowable maximum (25%) on 10-06-97 (1006J01). Pyridine (28.9%) had a %D above the allowable maximum (25%) on 10-07-97 (1007J01). Results for these compounds should be considered estimates (J) in associated samples.

Blanks: Method blank SBLKW1 contained traces of bis(2-ethylhexyl)phthalate(20 ug/L) and di-n-octylphthalate (4 ug/L). Method blank SBLKW5 contained a trace of bis(2-ethylhexyl)phthalate (1 ug/L). Method blank SBLKL4 contained a trace of bis(2-ethylhexyl)phthalate (35 ug/kg). Field blank FB0919 contained a trace of bis(2-ethylhexyl)phthalate (4 ug/L). Field blank FB0922 contained traces of dimethyl phthalate (3 ug/L) and bis(2-ethylhexyl)phthalate (3 ug/L). Field blank FB0923 contained a trace of bis(2-ethylhexyl)phthalate (1 ug/L). Field blank FB0924 contained a trace of diethylphthalate(1 ug/L). Field blank FB0930 contained traces of diethylphthalate (2 ug/L) and bis(2-ethylhexyl)phthalate (1 ug/L). Results for dimethyl phthalate, diethylphthalate, bis(2-ethylhexyl)phthalate,and di-n-octylphthalateless than ten times the highest associated

blank level should be reported as not detected (U) in samples. The following are contaminated blanks and their associated samples:

Method blank SBLKW1: FB0918, FB0919
Method blank SBLKW5: FB0930
Method blank SBLKL4: 200204, 200406, 300810, 300810RE
Field blank FB0919: B00001, B00002, B00003, B00004
Field blank FB0922: 5A2022, 5A2224, 6A2022, 6A2224
Field blank FB0923: 101618, 102224
Field blank FB0924: 201820, 202022, 301820, 301012
Field blank FB0930: 300608, 100608, 101214, D11214

Internal Standard Area Summary: All internal standard retention times were within control limits. Samples 300608 and 300608RE had 3 of 6 internal standard areas (IS4, IS5, IS6) outside control limits. Samples 300810 and 300810RE had 4 of 6 internal standard areas (IS3, IS4, IS5, IS6) outside control limits. Results for samples 300608, 300810, 300608RE, and 300810RE quantitated off internal standards with areas outside control limits should be considered estimates (J) or unusable (R) depending on the severity of the problem.

Surrogate Recovery: Samples 300608, 300608RE, 300810, and 300810RE had 1 of 4 base/neutral surrogate recoveries above control limits. Sample 300810 had 1 of 4 acid extractable surrogate recoveries above control limits. No action is taken on one surrogate per fraction outside control limits as long as no recovery is less than 10%.

Matrix Spike/Matrix Spike Duplicate: MS/MSD samples 300608 and 702022 had all relative percent differences and percent recoveries within control limits.

Compound ID: Checked compounds were within GC/MS quantitation and qualitation limits. All positive hit compounds had the primary and secondary ions in their mass spectra as outlined in the SOW.

Conc. of Internal Standard: 40 ID: J Date: 10/2/97

RRF							
	1002J13 Sample 1	1002J09 Sample 2	1002J10 Sample 3	1002J11 Sample 4	1002J12 Sample 5	Average	% RSD
Conc. of Compound	20	50	80	120	160		
1,4-Dichlorobenzene-d4	187641	171654	161679	174935	176840		
Phenol	129872	298576	457470	713618	887320	1.361	4.6%
RRF	1.384	1.392	1.415	1.360	1.254		
Naphthalene-d8	690684	630679	613144	641248	626980		
Naphthalene	304252	683694	1099163	1680330	2069686	0.869	3.1%
RRF	0.881	0.867	0.896	0.873	0.825		
Acenaphthene-d10	342609	315328	316455	320344	318578		
Acenaphthylene	302723	695803	1172934	1703599	2178756	1.774	2.9%
RRF	1.767	1.765	1.853	1.773	1.710		
Phenanthrene-d10	629821	600611	598024	551560	556997		
Phenanthrene	298771	696903	1127785	1593636	1959586	0.933	3.4%
RRF	0.949	0.928	0.943	0.963	0.880		
Chrysene-d12	522698	488331	500105	456936	441688		
Pyrene	333964	770298	1277698	1767302	2264727	1.278	0.8%
RRF	1.278	1.262	1.277	1.289	1.282		
Perylene-d12	578926	565479	599934	556907	536144		
Benzo(g,h,i)perylene	232130	604949	1000773	1398912	1723822	0.827	2.8%
RRF	0.802	0.856	0.834	0.837	0.804		

Continuing Calibrations										
	1007J01		1008J02		1013J04		1003J01		1006J01	
	Sample	%D	Sample	%D	Sample	%D	Sample	%D	Sample	%D
Conc. of Compound	50		50		50		50		50	
1,4-Dichlorobenzene-d4	140691		154924		129458		158489		241003	
Phenol	253103	5.8%	282547	7.2%	257043	16.7%	284781	5.6%	450856	10.0%
RRF	1.439		1.459		1.588		1.437		1.497	
Naphthalene-d8	511329		576289		502190		596715		829839	
Naphthalene	571759	3.0%	611754	2.2%	552863	1.4%	645311	0.4%	883316	2.0%
RRF	0.895		0.849		0.881		0.865		0.852	
Acenaphthene-d10	254900		273488		229820		290904		374913	
Acenaphthylene	570434	0.9%	597751	1.4%	511521	0.4%	652830	1.2%	799675	3.8%
RRF	1.790		1.749		1.781		1.795		1.706	
Phenanthrene-d10	473744		514459		388716		528817		659393	
Phenanthrene	568026	2.9%	604803	0.9%	491858	8.6%	634084	2.9%	762991	0.7%
RRF	0.959		0.940		1.012		0.959		0.926	
Chrysene-d12	394913		400625		353288		454569		501945	
Pyrene	601020	4.7%	643567	0.6%	515082	8.7%	696288	4.1%	803552	0.2%
RRF	1.218		1.285		1.166		1.225		1.281	
Perylene-d12	486430		480061		413591		516788		573455	
Benzo(g,h,i)perylene	526535	4.8%	538747	8.6%	458894	7.4%	514995	3.6%	631668	6.6%
RRF	0.866		0.898		0.888		0.797		0.881	

Conc. of Internal Standard: 40 ID: J Date: 9/29/97

RRF							
	0902J06 Sample 1	0902J02 Sample 2	0902J03 Sample 3	0902J04 Sample 4	0902J05 Sample 5	Average	% RSD
Conc. of Compound	20	50	80	120	160		
1,4-Dichlorobenzene-d4	175685	212382	180946	183237	174313		
Phenol	145676	461368	634471	891635	1154864	1.686	3.4%
RRF	1.658	1.738	1.753	1.622	1.656		
Naphthalene-d8	617657	823919	666651	725764	639928		
Naphthalene	268558	910476	1254619	1828629	2243292	0.882	4.2%
RRF	0.870	0.884	0.941	0.840	0.876		
Acenaphthene-d10	282899	341909	294293	311169	287049		
Acenaphthylene	221842	735686	1067414	1575233	1934620	1.695	5.2%
RRF	1.568	1.721	1.814	1.687	1.685		
Phenanthrene-d10	494360	537590	467214	497941	491497		
Phenanthrene	224364	673570	937752	1387750	1960050	0.968	4.7%
RRF	0.908	1.002	1.004	0.929	0.997		
Chrysene-d12	385907	401316	357082	377501	398786		
Pyrene	221290	629044	998673	1296991	1926677	1.230	8.5%
RRF	1.147	1.254	1.398	1.145	1.208		
Perylene-d12	450381	430964	373440	393577	442164		
Benzo(g,h,i)perylene	154488	424797	616842	939257	1280596	0.764	7.5%
RRF	0.686	0.789	0.826	0.795	0.724		

Continuing Calibrations										
	0926J02		1001J02							
	Sample	%D	Sample	%D	Sample	%D	Sample	%D	Sample	%D
Conc. of Compound	50		50							
1,4-Dichlorobenzene-d4	181285		186003							
Phenol	325964	14.7%	332361	15.2%		#DIV/0!		#DIV/0!		#DIV/0!
RRF	1.438		1.429		#DIV/0!		#DIV/0!		#DIV/0!	
Naphthalene-d8	674957		691867							
Naphthalene	736652	1.0%	755962	0.9%		#DIV/0!		#DIV/0!		#DIV/0!
RRF	0.873		0.874		#DIV/0!		#DIV/0!		#DIV/0!	
Acenaphthene-d10	323045		330634							
Acenaphthylene	699675	2.2%	705253	0.7%		#DIV/0!		#DIV/0!		#DIV/0!
RRF	1.733		1.706		#DIV/0!		#DIV/0!		#DIV/0!	
Phenanthrene-d10	569477		580694							
Phenanthrene	698125	1.3%	727858	3.6%		#DIV/0!		#DIV/0!		#DIV/0!
RRF	0.981		1.003		#DIV/0!		#DIV/0!		#DIV/0!	
Chrysene-d12	514786		520568							
Pyrene	775867	2.0%	776937	3.0%		#DIV/0!		#DIV/0!		#DIV/0!
RRF	1.206		1.194		#DIV/0!		#DIV/0!		#DIV/0!	
Perylene-d12	575723		606490							
Benzo(g,h,i)perylene	524406	4.6%	625527	8.0%		#DIV/0!		#DIV/0!		#DIV/0!
RRF	0.729		0.825		#DIV/0!		#DIV/0!		#DIV/0!	

QA/QC Review of Volatiles Data
for Pace Analytical SDG: 97130

October 31, 1997

Holding Times: All samples 102224RE, 200204RE, and 200406RE were re-analyzed outside Region II holding times. Results for samples 102224RE, 200204RE, and 200406RE should be considered estimates(J).

GC/MS Tuning and Mass Calibration: All BFB tuning criteria were within control limits.

Initial Calibration: All compounds with contract criteria for RRFs and %RSDs met those requirements.

All target compounds had average RRFs above the allowable minimum (0.050) as required. Methylene chloride (42.1%) had a %RSD above the allowable maximum (30%) on 08-26-97. Acetone (35.1%) and 2-butanone (42.8%) had %RSDs above the allowable maximum (30%) on 10-09-97. Methylene chloride (37.6%), 2-butanone (26.3%), and 4-methyl-2-pentanone (58.1%) had %RSDs above the allowable maximum (30%) on 09-19-97. Results for these compounds should be considered estimates (J) in associated samples. 2-Hexanone(108.5%) had a %RSD above an acceptable maximum (90%) on 09-19-97. Results for 2-hexanone should be considered unusable (R) in associated samples.

Continuing Calibration: All compounds with contract criteria for RRF50s met those requirements. Bromodichloromethane (25.4%), dibromochloromethane(33.0%), trans-1,3-dichloropropene (26.1%), and bromoform (38.3%) had %Ds above the contractual maximum (25%) on 10-01-97 (1001K03). Carbon tetrachloride (26.2%) bromodichloromethane (26.5%), dibromochloromethane (36.8%), trans-1,3-dichloropropene (27.2%), and bromoform (44.9%) had %Ds above the contractual maximum (25%) on 10-02-97 (1002K03). Bromodichloromethane (29.1%), dibromochloromethane(38.2%), trans-1,3-dichloropropene (32.2%), and bromoform (47.4%) had %Ds above the contractual maximum (25%) on 10-03-97 (1003K03). These calibrations had greater than to compounds outside contract requirements. These calibrations were not compliant with the CLP statement of work.

All target compounds had RRF50s above the allowable minimum (0.050) as required. Methylene chloride (25.8%), 2-butanone (25.2%), 4-methyl-2-pentanone (59.7%), and 2-hexanone (86.6%) had %Ds above the allowable maximum (25%) on 09-23-97 (0923L04). 2-Butanone (34.1%), 4-methyl-2-pentanone (57.3%), and 2-hexanone (82.3%) had %Ds above the allowable maximum (25%) on 09-24-97 (0924L03). 2-Butanone (32.2%) and 2-hexanone (35.8%) had %Ds above the allowable maximum (25%) on 09-29-97 (0929L01). Methylene chloride (26.4%), acetone (35.3%), bromodichloromethane (25.4%), dibromochloromethane (33.0%), trans-1,3-dichloropropene (26.1%), bromoform (38.3%), 4-methyl-2-pentanone (42.9%), and 2-hexanone (47.9%) had %Ds above the allowable

maximum (25%) on 10-01-97 (1001K03). Methylene chloride (36.2%), carbon tetrachloride (26.2%) bromodichloromethane (26.5%), dibromochloromethane (36.8%), trans-1,3-dichloropropene (27.2%), bromoform (44.9%), and 4-methyl-2-pentanone(39.0%) had %Ds above the allowable maximum (25%) on 10-02-97 (1002K03). Methylene chloride (29.9%), acetone (31.6%), 2-butanone (38.3%), bromodichloromethane (29.1%), dibromochloromethane (38.2%), trans-1,3-dichloropropene (32.2%), bromoform (47.4%), 4-methyl-2-pentanone (41.2%), and 2-hexanone (35.7%) had %Ds above the allowable maximum (25%) on 10-03-97 (1003K03). Acetone (50.1%) had a %D above the allowable maximum (25%) on 10-10-97 (1010K03). Results for these compounds should be considered estimates (J) in associated samples.

Blanks: Method blank VBLKL1 contained a trace of methylene chloride (11 ug/kg). Method blank VBLKL2 contained traces of methylene chloride (14 ug/kg) and acetone (12 ug/kg). Method blank VBLKL3 contained traces of methylene chloride (9 ug/kg) and acetone (21 ug/kg). Method blank VBLKL4 contained a trace of methylene chloride (8 ug/kg). Method blank VBLKL5 contained a trace of methylene chloride (18 ug/kg). Method blank VBLKL6 contained traces of methylene chloride (7 ug/kg) and acetone (4 ug/kg). Method blank VBLKL7 contained traces of methylene chloride (7 ug/kg) and acetone (2 ug/kg). Method blank VBLKW1 contained traces of methylene chloride (2 ug/L) and acetone (10 ug/L). Method blank VBLKW2 contained traces of methylene chloride (3 ug/L) and acetone (5 ug/L). Method blank VBLKW3 contained traces of methylene chloride (4 ug/L) and acetone (7 ug/L). Trip blank TB0918 contained traces of methylene chloride (4 ug/L) and acetone (11 ug/L). Trip blank TB0919 contained traces of methylene chloride (25 ug/L) and acetone (14 ug/L). Trip blank TB0922 contained a trace of methylene chloride (27 ug/L). Trip blank TB0923 contained a trace of methylene chloride (4 ug/L). Trip blank TB0924 contained traces of methylene chloride (3 ug/L) and acetone (7 ug/L). Trip blank TB0926 contained a trace of methylene chloride (4 ug/L). Trip blank TB0930 contained traces of methylene chloride (5 ug/L) and acetone (6 ug/L). Field blank FB0918 contained a trace of methylene chloride (6 ug/L). Field blank FB0919 contained a trace of methylene chloride (4 ug/L). Field blank FB0922 contained traces of methylene chloride (14 ug/L) and acetone (39 ug/L). Field blank FB0923 contained traces of methylene chloride (4 ug/L) and acetone (22 ug/L). Field blank FB0924 contained traces of methylene chloride (4 ug/L), acetone (40 ug/L), and 2-butanone (11 ug/L). Field blank FB0926 contained traces of methylene chloride (3 ug/L), 2-butanone (4 ug/L), and xylene (3 ug/L). Field blank FB0930 contained traces of methylene chloride (5 ug/L) and xylene (3 ug/L). Results for acetone and toluene less than ten times the highest associated blank should be considered not detected (U) in samples. Trip blank TB0922 contained an unacceptable level of acetone (110 ug/L). Field blank FB0918 contained an unacceptable level of acetone (62 ug/L). Field blank FB0919 contained an unacceptable level of acetone (69 ug/L). Field blank FB0926 contained an unacceptable level of acetone (190 ug/L). Field blank FB0930 contained an unacceptable level of acetone (92 ug/L). Results for acetone less than ten times the highest blank level should be considered unusable (R) in associated samples. The following are listed the contaminated blanks and associated samples:

Method blank VBLKL1: 702224, B00001, B00002, B00003, B00003RE, B00004

Method blank VBLKL2: 5A2022, 5A2224, 6A2022, 6A2224, 702022, 702224DL
Method blank VBLKL3: 101618, 201820, 202022, 301012, 301820, 5A2224DL
Method blank VBLKL4: 102224, 200204, 301012RE
Method blank VBLKL5: 200406, 300810
Method blank VBLKL6: 100608, 101214, 102224RE, 200204RE, 200406RE, 300608, D11214
Method blank VBLKL7: 300608RE, D11214RE
Method blank VBLKW1: FB0918, FB0919, FB0922, TB0918, TB0919, TB0922
Method blank VBLKW2: FB0923, FB0924, TB0923, TB0924
Method blank VBLKW3: FB0926, FB0930, TB0926, TB0930
Trip blank TB0918: 702022, 702224
Trip blank TB0919: B00001, B00002, B00003, B00004
Trip blank TB0922: 5A2022, 5A2224, 6A2022, 6A2224
Trip blank TB0923: 101618, 102224
Trip blank TB0924: 201820, 202022, 301820, 301012
Trip blank TB0926: 200204, 200406, 300810
Trip blank TB0930: 300608, 100608, 101214, D11214
Field blank FB0918: 702022, 702224
Field blank FB0919: B00001, B00002, B00003, B00004
Field blank FB0922: 5A2022, 5A2224, 6A2022, 6A2224
Field blank FB0923: 101618, 102224
Field blank FB0924: 201820, 202022, 301820, 301012
Field blank FB0926: 200204, 200406, 300810
Field blank FB0930: 300608, 100608, 101214, D11214

Internal Standard Area Summary: All internal standard retention times were within control limits. Sample D11214 and D11214RE had 3 of 3 internal standard areas (IS1, IS2, IS3) outside control limits. Sample 301012RE, 300608RE, and B00003 had 2 of 3 internal standard areas (IS2, IS3) outside control limits. Samples 300608, 301012, and B00003RE had 1 of 3 internal standard areas (IS3) outside control limits. Results for samples D11214, D11214RE, 301012RE, 300608RE, B00003, 300608, 301012, and B00003RE quantitated off internal standard with areas outside control limits should be considered estimates (J).

Surrogate Recovery: Sample B00003RE had 2 of 3 surrogate recoveries outside control limits. Sample D11214RE had 1 of 3 surrogate recoveries outside control limits. Results for samples D11214RE and B00003RE should be considered estimates (J).

Matrix Spike/Matrix Spike Duplicate: MS/MSD samples 300608 and 702022 had all relative percent differences and percent recoveries within control limits.

Compound ID: Checked compounds were within GC/MS quantitation and qualitation limits. All positive hit compounds had the primary and secondary ions in their mass spectra as outlined in the SOW.

Conc. of Internal Standard: 50 ID: K Date: 10/9/97

RRF							
	1009K04 Sample 1	1009K02 Sample 2	1009K07 Sample 3	1009K03 Sample 4	1009K05 Sample 5	Average	% RSD
Conc. of Compound	10	20	50	100	200		
Bromochloromethane	639742	771107	621468	731897	780724		
Vinyl Chloride	129095	268154	524508	1147217	1920937	0.824	17.4%
RRF	1.009	0.869	0.844	0.784	0.615		
1,4-Difluorobenzene	3097512	3580223	3018181	3434892	3302809		
Trichloroethene	310827	734938	1467186	3321478	7149955	0.505	4.7%
RRF	0.502	0.513	0.486	0.483	0.541		
Chlorobenzene-d5	2224315	2564585	2270397	2565484	2727871		
Tetrachloroethene	353847	766370	1551428	3494071	7661025	0.722	6.8%
RRF	0.795	0.747	0.683	0.681	0.702		

Continuing Calibrations										
	1010K03									
	Sample	%D	Sample	%D	Sample	%D	Sample	%D	Sample	%D
Conc. of Compound	50									
Bromochloromethane	767840									
Vinyl Chloride	602076	4.9%		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!
RRF	0.784		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!	
1,4-Difluorobenzene	3418979									
Trichloroethene	1635586	5.3%		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!
RRF	0.478		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!	
Chlorobenzene-d5	2488971									
Tetrachloroethene	1682552	6.3%		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!
RRF	0.676		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!	

Conc. of Internal Standard: 50 ID: K Date: 8/26/97

RRF							
	0826K07 Sample 1	0826K06 Sample 2	0826K04 Sample 3	0826K10 Sample 4	0826K08 Sample 5	Average	% RSD
Conc. of Compound	10	20	50	100	200		
Bromochloromethane	271486	258409	230277	288988	297013		
Vinyl Chloride	86886	142622	256709	779699	1421132	1.328	14.1%
RRF	1.600	1.380	1.115	1.349	1.196		
1,4-Difluorobenzene	1086101	1043398	898106	1170177	1180685		
Trichloroethene	125322	206470	444951	1227788	2604003	0.529	6.8%
RRF	0.577	0.495	0.495	0.525	0.551		
Chlorobenzene-d5	896773	840502	724344	987744	1034678		
Tetrachloroethene	140331	232258	476865	1337155	2939330	0.704	6.8%
RRF	0.782	0.691	0.658	0.677	0.710		

Continuing Calibrations										
	1001K03		1002K03		1003K03					
	Sample	%D	Sample	%D	Sample	%D	Sample	%D	Sample	%D
Conc. of Compound	50		50		50					
Bromochloromethane	585872		746374		610227					
Vinyl Chloride	762352	2.0%	907581	8.4%	741921	8.4%		#DIV/0!		#DIV/0!
RRF	1.301		1.216		1.216		#DIV/0!		#DIV/0!	
1,4-Difluorobenzene	2723990		3569198		2896976					
Trichloroethene	1284533	10.8%	1629717	13.6%	1315797	14.1%		#DIV/0!		#DIV/0!
RRF	0.472		0.457		0.454		#DIV/0!		#DIV/0!	
Chlorobenzene-d5	1959065		2499677		2074703					
Tetrachloroethene	1352323	1.9%	1604903	8.8%	1341455	8.1%		#DIV/0!		#DIV/0!
RRF	0.690		0.642		0.647		#DIV/0!		#DIV/0!	

Conc. of Internal Standard: 50 ID: L Date: 9/19/97

RRF							
	0919L05 Sample 1	0919L03 Sample 2	0919L02 Sample 3	0919L04 Sample 4	0919L06 Sample 5	Average	% RSD
Conc. of Compound	10	20	50	100	200		
Bromochloromethane	325198	320639	287146	320764	315462	1.173	8.2%
Vinyl Chloride	68455	139753	366307	779684	1555796		
RRF	1.053	1.090	1.276	1.215	1.233		
1,4-Difluorobenzene	1724399	1677946	1611119	1681899	1648146	0.487	2.9%
Trichloroethene	175858	327341	759729	1638721	3161653		
RRF	0.510	0.488	0.472	0.487	0.480		
Chlorobenzene-d5	1441655	1439373	1367960	1435104	1376883	0.600	3.1%
Tetrachloroethene	182502	340179	811715	1689683	3270481		
RRF	0.633	0.591	0.593	0.589	0.594		

Continuing Calibrations										
	0923L04		0924L03							
	Sample	%D	Sample	%D	Sample	%D	Sample	%D	Sample	%D
Conc. of Compound	50		50							
Bromochloromethane	317143	19.5%	328129	8.3%		#DIV/0!		#DIV/0!		#DIV/0!
Vinyl Chloride	299383		353165							
RRF	0.944		1.076		#DIV/0!		#DIV/0!		#DIV/0!	
1,4-Difluorobenzene	1722560	8.7%	1704050	8.8%		#DIV/0!		#DIV/0!		#DIV/0!
Trichloroethene	766209		757322							
RRF	0.445		0.444		#DIV/0!		#DIV/0!		#DIV/0!	
Chlorobenzene-d5	1482775	6.0%	1496828	11.7%		#DIV/0!		#DIV/0!		#DIV/0!
Tetrachloroethene	836093		793286							
RRF	0.564		0.530		#DIV/0!		#DIV/0!		#DIV/0!	

Conc. of Internal Standard: 50 ID: L Date: 9/26/97

RRF							
	0926L04 Sample 1	0926L02 Sample 2	0926L01 Sample 3	0926L03 Sample 4	0926L05 Sample 5	Average	% RSD
Conc. of Compound	10	20	50	100	200		
Bromochloromethane	552220	579499	610791	567230	550173	1.085	5.7%
Vinyl Chloride	109258	254777	651924	1275933	2523783		
RRF	0.989	1.099	1.067	1.125	1.147		
1,4-Difluorobenzene	2805652	2846434	2932968	2825003	2768989	0.459	5.5%
Trichloroethene	235852	539091	1314166	2663113	5338884		
RRF	0.420	0.473	0.448	0.471	0.482		
Chlorobenzene-d5	2360617	2448393	2523023	2398336	2398860	0.543	4.3%
Tetrachloroethene	240796	559302	1340009	2649736	5299839		
RRF	0.510	0.571	0.531	0.552	0.552		

Continuing Calibrations										
	0929L01		1003L01							
	Sample	%D	Sample	%D	Sample	%D	Sample	%D	Sample	%D
Conc. of Compound	50		50							
Bromochloromethane	370336	13.0%	521869	0.3%		#DIV/0!		#DIV/0!		#DIV/0!
Vinyl Chloride	349830		568236							
RRF	0.945		1.089		#DIV/0!		#DIV/0!		#DIV/0!	
1,4-Difluorobenzene	1808094	4.0%	2577991	0.5%		#DIV/0!		#DIV/0!		#DIV/0!
Trichloroethene	796867		1177039							
RRF	0.441		0.457		#DIV/0!		#DIV/0!		#DIV/0!	
Chlorobenzene-d5	1634344	13.1%	2145463	2.1%		#DIV/0!		#DIV/0!		#DIV/0!
Tetrachloroethene	771898		1140884							
RRF	0.472		0.532		#DIV/0!		#DIV/0!		#DIV/0!	

QA/QC Review of 8270 Pyridine Data*
for Pace Analytical SDG: 97130

November 3, 1997

Holding Times: All samples were extracted and analyzed within Region II holding times.

GC/MS Tuning and Mass Calibration: All DFTPP tuning criteria were within control limits.

Initial Calibration: All SPCCs and CCCs were within control limits.

Pyridine had average RRFs above the allowable minimum (0.050) and %RSDs below the allowable maximum (30%) as required.

Continuing Calibration: All SPCCs and CCCs were within control limits.

Pyridine had RRF50s above the allowable minimum (0.050) and %Ds below the allowable maximum (25%) as required.

Blanks: Method blanks reported pyridine as not detected.

Internal Standard Area Summary: All internal standard areas and retention times were within control limits.

Surrogate Recovery: All percent recoveries were within control limits.

Matrix Spike/Matrix Spike Duplicate: MS/MSD samples did not include pyridine as a target compound.

Compound ID: All samples reported pyridine as not detected.

* only four field blanks were analyzed for pyridine by 8270, all others pyridine was included as part of the CLP semivolatile analyses.

G:\STAFF\DANNE\Island\97130.PYR.wpd

SDG: 97130

SOP NO. HW-6
Revision #8

CLP ORGANIC DATA REVIEW
AND PRELIMINARY REVIEW

BY: _____ Date: January 2 1992
Leon Lazarus, Environmental Scientist
Toxic and Hazardous Waste Section

BY: _____ Date: January 3 1992
George Karras, Chemist
Toxic and Hazardous Waste Section

BY: _____ Date: 1/3/1992
Stellos Gerazounis, Chemist
Toxic and Hazardous Waste Section

CONCURRED BY: _____ Date: 1/3/92
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: _____ Date: 1/7/92
Robert Runyon, Chief
Monitoring Management Branch

304381

STANDARD OPERATING PROCEDURE

Date: January 1992
Revision: 8

YES NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES
~~CASE~~ NUMBER: 97130 LAB: Pace Analytical
SDG

SITE: Island Chemical

1.0 Data Completeness and Deliverables

1.1 Have any missing deliverables been received and added to the data package? [ ] X ___

ACTION: Call lab for explanation/resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-Compliance" section of reviewer narrative.

1.2 Was SMO CCS checklist included with package? [ ] ___ X

2.0 Cover Letter SDG Narrative

2.1 Is the Narrative or Cover Letter Present? [X] ___ ___

2.2 Are Case Number and/or SAS number contained in the Narrative or Cover letter? [ ] ___ X

3.0 Data Validation Checklist

The following checklist is divided into three parts. Part A is filled out if the data package contains any VOA analyses. Part B for any BNA analyses and Part C for Pesticide/PCBs.

Does this package contain:

VOA Data? X ___

BNA Data? X ___

Pesticide/PCB data? ___ X

Action: Complete corresponding parts of checklist.

304382

YES NO N/A

PART A: VOA ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? [ ] ___ X

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports 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 upon receipt at the laboratory, flag all positive results "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".

304383

STANDARD OPERATING PROCEDURE
Date: January 1992
Revision: 8

YES NO N/A

2.0 Holding Times

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

If unpreserved, aqueous samples maintained at 4°C which are to be analyzed for aromatic hydrocarbons 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 not samples were preserved.

The holding time for soils is 10 days.

Table of Holding Time Violations

Sample ID	Sample Matrix	Preserved?	(See Traffic Report) Date Sampled	Date Lab Received	Date Analyzed
10224RE	Soil		9/23/97	9/24/97	10/9/97
200204RE	Soil		9/29/97	9/30/97	10/9/97
200406RE	Soil		9/29/97	9/30/97	10/10/97

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 narrative 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).

	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: Call lab for explanation/ resubmittals. If missing deliverables are unavailable. document effect in data assessments.

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

ACTION: Circle all outliers in red.

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

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YES NO N/A

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.
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.

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

ACTION: If large errors exist, call lab for explanation/resubmittal, make any 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 ___ ___

	YES	NO	N/A

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 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 RPD's 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 on 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.

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 analyzed for each SDG or every 20 samples of similar matrix (low water, low soil, medium soil), whichever is more frequent? [X] ___ ___

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YES NO N/A

5.3 Has a VOA method/instrument blank been analyzed at least once every twelve hours for each concentration level and GC/MS system used? [X] ___ ___

ACTION: If any method blank data are missing, call lab for explanation/ resubmittal. 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.

5.4 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.

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 blanks have positive results (TCL and/or TIC) for VOAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for % moisture when necessary. [X] [ ] ___

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.)

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YES NO N/A

NOTE: All field blank results associated to 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).

	Sample conc > CRQL but < 10x blank value	Sample conc < CRQL & <10x blank value	Sample conc > CRQL & >10x blank value
Methylene Chloride Acetone Toluene 2-Butanone	Flag sample result with a "U;	Report CRQL & qualify "U"	No qualification is needed

	Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & > 5x blank value
Other Contam-inants	Flag sample result with a "U"	Report CRQL & qualify "U"	No qualification is needed

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

		YES	NO	N/A
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 data assessment that there is no associated field/rinse/equipment blank. 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 mass/charge (m/z) listing for the BFB provided for each twelve hour shift?	X		
7.3	Has an instrument performance compound been analyzed for every twelve hours of sample analysis per instrument?	X		

YES NO N/A

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

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: If lab cannot provide 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? X ___ ___

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 between mass lists and Form Vs? (Check at least two values but if errors are found, check more.) ___ X ___

		YES	NO	N/A
7.7	Have the appropriate number of significant figures (two) been reported?	X		
	ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document effect in data assessments.			
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			
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 8.2 above.			

		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:			
	Baseline stability?	[X]		
	Resolution?	[X]		
	Peak shape?	[X]		
	Full-scale graph (attenuation)?	[X]		
	Other: _____	[ ]		X

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 specified in 3.2 above. If lab does not generate their own standard spectra, make note in "Contract Problems/Non-compliance".

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]		

	YES	NO	N/A

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 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 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] ___ ___

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

ACTION: Add "JN" qualifier if missing.

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

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

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). (i.e. Common Lab Contaminants: CO_2 (M/E 44), Siloxanes (M/E 73) Hexane, Aldol Condensation Products, Solvent Preservatives, and related by products - see Functional Guidelines for more guidance).

	YES	NO	N/A

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 standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found? — X —

10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture? X — —

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors under "Conclusions".

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 I's 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 initial and continuing calibration? X — —

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

	YES	NO	N/A

12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI) present and complete for the volatile fraction at concentrations of 10, 20, 50, 100, 200 ug/l? Are there separate calibrations for low water/med soils and low soil samples? 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" and non-detects "R".

12.3 Are response factors stable for VOA's over the concentration range of the calibration (%Relative Standard Deviation (%RSD) <30.0%)? X

ACTION: Circle all outliers in red.

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

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

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

12.4 Are the RRFs above 0.05? X

Action: Circle all outliers in red.
Action: If any RRF are < 0.05, qualify associated non-detects (R) and flag associated positive data as estimated (J).

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	YES	NO	N/A
12.5 Are there any transcription/calculation errors in the reporting of average response factors (RRF) or %RSD? (Check at least 2 values, but if errors are found, check more.)	___	[X]	___

13.0 GC/MS Continuing Calibration (Form VII)

13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the volatile 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 within twelve hours of the previous continuing calibration analysis.

_____

_____

_____

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

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

ACTION: Circle all outliers in red.

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

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YES NO N/A

13.4 Do any volatile compounds have a RRF <0.05? ___ X ___

ACTION: Circle all outliers in red.

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

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

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors under "Conclusions".

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 ___

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit
D11214	241991	IS1	310734	1242936
"	1079664	IS2	1509090	6036362
"	952104	IS3	1135198	4540794
301012	844375	IS3	979532	3918130
301012RE	1642520	IS2	1784599	7138396
"	850261	IS3	1249838	4999354

(Attach additional sheets if necessary.)

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Sample#	Internal Std	Area	Lower Limit	Upper Limit
300608	976231	IS 3	1135198	4540794
300608RE	1698485	IS 2	1709490	6837958
"	1136123	IS 3	1244486	4977942
D11214 RE	179974	IS 1	383920	1535680
"	804676	IS 2	1709490	6837958
"	892394	IS 3	1244486	4977942
B00003	546480	IS 3	741388	2965550
B00003RE	662275	IS 2	861280	3445120
"	300161	IS 3	741388	2965550

YES NO N/A

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. Non-detects associated with IS area counts > 100% should not be qualified.

3. If IS area is below the lower limit (< 50%), qualify all associated non-detects (U values) "J". If extremely low area counts are reported, (< 25%) or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable ("R").

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.

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 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? ___ ___ X

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab 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 80%-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 upon receipt at the laboratory, 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 ___

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.

YES NO N/A

Table of Holding Time Violations

(See Traffic Report)

Sample	Sample Matrix	Date Sampled	Date Lab Received	Date Extracted	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 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 the 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 are exceeded by more than 28 days, all non detect data are unusable (R).

3.0 Surrogate Recovery (Form II)

3.1 Are the 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]

	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. Low Soil			X

ACTION: Call lab for explanation/resubmittals. If missing deliverables are unavailable, document effect in data assessments.

3.3 Were outliers marked correctly with an asterisk?	X		

ACTION: Circle all outliers in red.

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. base-neutral or acid 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. If recoveries are greater than the upper acceptance limit, do not qualify non-detects.

		YES	NO	N/A
	If any base-neutral or acid surrogate has a recovery of <10%:			
	1. Positive results for the fraction with <10% surrogate recovery are qualified with "J".			
	2. Non-detects for that fraction should be qualified 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.			
3.5	Are there any transcription/calculation errors between raw data and Form II?		X	
	ACTION: If large errors exist, call lab for explanation/resubmittal. Make any necessary corrections and document effect in data assessments.			
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 3.2 above.			

YES NO N/A

4.3 How many BNA spike recoveries are outside QC limits?

Water	Soils
____ out of 22	0 out of 22

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
____ out of 11	0 out of 11

ACTION: No action is taken on 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.

5.0 Blanks (Form VI)

5.1 Is the Method Blank Summary (Form VI) 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 p. D - 89/SV, Section 8.7) X ____

ACTION: If any method blank data are missing, call lab for explanation/resubmittal. If not available, use professional judgement to determine if the associated sample data should be qualified.

YES NO N/A

5.4 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 BNAs? X

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

6.0 Contamination

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

6.1 Do any method/instrument/reagent blanks have positive results (TCL and/or TIC) for BNAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for % moisture where necessary. X

6.2 Do any field/rinse/ blanks have positive BNA 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 to a particular group of samples (may exceed one per case) must be used to qualify data. 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.

YES NO N/A

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).

Sample conc > CRQL but < 10x blank	Sample conc <CRQL & is< 10x blank value	Sample conc > CRQL value & >10x blank
Common Phthalate Esters		
Flag sample result with a "U";	Report CRQL & qualify "U"	No qualification is needed
Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & >5 blank value
Other Contaminants		
Flag sample result with a "U";	Report CRQL & qualify "U"	No qualification is needed

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" (unusable).

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

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

YES NO N/A

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 analyses for which no associated GC/MS tuning data are available.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

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

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

7.4 Have the ion abundances been normalized to m/z 198? X ___

	YES	NO	N/A

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

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.) ___ YES ___

7.7 Have the appropriate number of significant figures (two) been reported? YES ___ ___

ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document effect in data assessments.

7.8 Are the spectra of the mass calibration compound acceptable? YES ___ ___

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

8.0 Target Compound List (TCL) Analytes

8.1 Are the Organic Analysis Data Sheets (Form I BNA) present with required header information on each page, for each of the following:

a. Samples and/or fractions as appropriate YES ___ ___

b. Matrix spikes and matrix spike duplicates YES ___ ___

c. Blanks YES ___ ___

		YES	NO	N/A
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".			
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.			
8.4	Are the response factors shown in the Quant Report?	[ ]	[X]	—
8.5	Is chromatographic performance acceptable with respect to:			
	Baseline stability?	[X]	—	—
	Resolution?	[X]	—	—
	Peak shape?	[X]	—	—
	Full-scale graph (attenuation)?	[X]	—	—
	Other: _____	[ ]	—	[X]
	ACTION: Use professional judgement to determine the acceptability of the data.			

	YES	NO	N/A

8.6 Are the lab-generated standard mass spectra of identified SNA compounds present for each sample? X

ACTION: If any mass spectra are missing, take action specified in 3.2 above. If lab does not generate their own standard spectra, make note in "Contract Problems/ Non-compliance". 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.

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 (TICs)

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

YES NO N/A

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 — YES — — —

b. Blanks — YES — — —

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

ACTION: Add "JN" qualifier 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;? — — YES —

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? — YES — — —

9.5 Do TIC and "best match" standard relative ion intensities agree within 20%? — — NO —

ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change 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).

YES NO N/A

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 standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found? ___ X ___

10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture? X ___ ___

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.

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 it's 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 I's 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 initial and continuing calibration? X ___

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

YES NO N/A

12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI) present and complete for the BNA fraction? YES ___ ___

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

12.2 Are response factors stable for BNAs over the concentration range of the calibration? (% Relative standard deviation (%RSD) < 30.0%) YES ___ ___

ACTION: Circle all outliers in red.

NOTE: Although 20 BNA compounds have a minimum RRF and no maximum %RSD, the technical criteria are the same for all analytes.

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

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

12.3 Are all BNA compound RRFs > 0.05? YES ___ ___

ACTION: Circle all outliers in red.

ACTION: If any RRF < 0.05
1. "R" all non-detects.
2. "J" all positive results.

12.4 Are there any transcription/calculation errors in the reporting of average response factors (RRF) or % RSD? (Check at least two values but if errors are found, check more.) ___ YES

ACTION: Circle Errors in red.

YES NO N/A

ACTION: If errors are large, call lab for explanation/resubmittal. Make any necessary corrections and note errors in data assessments.

13.0 GC/MS Continuing Calibration (Form VII)

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

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

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

_____

_____

_____

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

13.3 Do any semivolatile compounds have a % Difference (% D) between the initial and continuing RRF which exceeds the ± 25.0% criteria? Y ___ ___

ACTION: Circle all outliers in red.

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

YES NO N/A

13.4 Do any semivolatile compounds have a RRF <0.05? ___ X

ACTION: Circle all outliers in red.

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

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

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.

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

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit
300810 ~~300810~~	95338	IS3	145452	581808
300810 ~~300810~~	~~105702~~ 68833	IS4	264408	1057634
300810 ~~300810~~	~~96321~~ 73859	IS5	227284	909138
300810 ~~300810~~	~~162036~~ 127304	IS6	258394	1033576

(Attach additional sheets if necessary.)

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

Sample #	Internal Std.	Area	Lower Limit	Upper Limit
~~300810~~ 300608	105702	IS4	264408	1057634
300608	96321	IS5	227284	909138
300608	162036	IS6	258394	1033576
300810RE	102507	IS3	187456	749826
300810 RE	94053	IS4	329696	1318786
300810 RE	83756	IS5	250972	1003890
300810 RE	153354	IS6	286728	1146910
300608RE	161832	IS4	329696	1318786
300608RE	148363	IS5	250972	1003890
300608RE	239110	IS6	286728	1146910

YES NO N/A

2. Non-detects associated with IS areas > 100% should not be qualified.

3. If the IS area is below the lower limit (<50%), qualify all associated non-detects (U-values) "J". If extremely low area counts are reported (<25%) or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable (R).

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.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for SNA 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.

SDG No. 97135

SVOC and Inorganic Checklist

304420

QA/QC Review of Semivolatile Data
For Pace Analytical SDG: 97135

November 20, 1997

Holding Times:
Samples CSD002RE and CSD003RE were reanalyzed outside the Region II holding time of seven days. The results were qualified as estimated (J).

GC/MS Tuning and Mass Calibration:
All DFTPP tuning criteria were within control limits.

Initial Calibration:
All compounds had percent relative standard deviations (%RSD) below 30 % and all relative response factors (RRF) were above 0.05 units.

Continuing Calibration:
All compounds had percent differences (%D) below 25% and all RRFs were above 0.05 units.

Blanks:
No target compounds were detected in the method blanks and field blank FB100797. No sample data were qualified based on the tentatively identified compounds (TIC) detected in the method blank. TICs qualified (A) were rejected as these are identified as aldol condensation products.

Internal Standard Area Summary:
All internal standard retention times and area counts were within acceptable limits.

Surrogate Recovery:
Samples CSD002 and CSD003 had recoveries for 4 acid volatile surrogate compounds below acceptable limits. 2 of these recoveries were below 10% in both samples. The samples were re-extracted and analyzed by the laboratory. The re-extracted samples met all surrogate recovery criteria. Since the results showed disparity, both sets of results were reported by the laboratory. For sample CSD002, results from the re-analyses are acceptable for use and were qualified as estimated (J), if detected and (UJ) if not detected. For sample CSD003, results from the re-analyses were found acceptable for use. All data were qualified as estimated for sample CSD003 RE.

Matrix Spike/Matrix Spike Duplicate:
MS/MSD samples had all percent recoveries and percent differences within control limits.

Compound ID:
All reported compounds were correctly identified and quantitated accurately.

SDG: 97135

SOP NO. HW-6
Revision #8

CLP ORGANICS DATA REVIEW
AND PRELIMINARY REVIEW

BY: _____ Date: Jan. 2 1992
Leon Lazarus, Environmental Scientist
Toxic and Hazardous Waste Section

BY: _____ Date: January 3 1992
George Karras, Chemist
Toxic and Hazardous Waste Section

BY: _____ Date: 1/3/92
Stelios Gerazounis, Chemist
Toxic and Hazardous Waste Section

CONCURRED BY: _____ Date: 1/3/92
Kevin Kubly, Chief
Toxic and Hazardous Waste Section

APPROVED BY: _____ Date: 1/4/92
Robert Runyon, Chief
Monitoring Management Branch

304422

STANDARD OPERATING PROCEDURE

Date: January 1992
Revision: 8

	YES	NO	N/A

PACKAGE COMPLETENESS AND DELIVERABLES
~~CASE~~ NUMBER: 97135 LAB: Pace Analytical
SDG
SITE: Island Chemical

1.0 Data Completeness and Deliverables

1.1 Have any missing deliverables been received and added to the data package? [ ] X ___

ACTION: Call lab for explanation/resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-Compliance" section of reviewer narrative.

1.2 Was SMO CCS checklist included with package? [ ] ___ X

2.0 Cover Letter SDG Narrative

2.1 Is the Narrative or Cover Letter Present? [X] ___ ___

2.2 Are Case Number and/or SAS number contained in the Narrative or Cover letter? [ ] ___ X

3.0 Data Validation Checklist

The following checklist is divided into three parts. Part A is filled out if the data package contains any VOA analyses. Part B for any BNA analyses and Part C for Pesticide/PCBs.

Does this package contain:

VOA Data? ___ X

BNA Data? X ___

Pesticide/PCB data? ___ X

Action: Complete corresponding parts of checklist.

304423

YES NO N/A

PART B: BNA ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? ( ) ( ) (X)

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab 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 upon receipt at the laboratory, 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) ( ) ( )

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.

YES NO N/A

Table of Holding Time Violations

(See Traffic Report)

Sample	Sample Matrix	Date Sampled	Date Lab Received	Date Extracted	Date Analyzed
CSD002RE	Soil	10/07/97	10/08/97	10/24/97	10/27/97
CSD003RE				10/24/97	10/27/97
CSD002REDL				10/24/97	10/27/97

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 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 the 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 are exceeded by more than 28 days, all non detect data are unusable (R).

3.0 Surrogate Recovery (Form II)

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

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

	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. Low Soil			X

ACTION: Call lab for explanation/resubmittals. If missing deliverables are unavailable, document effect in data assessments.

3.3 Were outliers marked correctly with an asterisk?	X		

ACTION: Circle all outliers in red.

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. base-neutral or acid 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. If recoveries are greater than the upper acceptance limit, do not qualify non-detects.

YES NO N/A

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

1. Positive results for the fraction with <10% surrogate recovery are qualified with "J".

2. Non-detects for that fraction should be qualified 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.

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

ACTION: If large errors exist, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.

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 3.2 above.

YES NO N/A

4.3 How many BNA spike recoveries are outside QC limits?

Water	Soils
____ out of 22	0 out of 22

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
____ out of 11	0 out of 11

ACTION: No action is taken on 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.

5.0 Blanks (Form III)

5.1 Is the Method Blank Summary (Form III) 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? X ____
(See SOW p. D - 89/SV, Section 8.7)

ACTION: If any method blank data are missing, call lab for explanation/resubmittal. If not available, use professional judgement to determine if the associated sample data should be qualified.

YES NO N/A

5.4 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 BNAs? X

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

6.0 Contamination

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

6.1 Do any method/instrument/reagent blanks have positive results (TCL and/or TIC) for BNAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for % moisture where necessary. X

6.2 Do any field/rinse/ blanks have positive BNA 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 to a particular group of samples (may exceed one per case) must be used to qualify data. 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.

YES NO N/A

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).

Sample conc > CRQL but < 10x blank	Sample conc <CRQL & is< 10x blank value	Sample conc > CRQL value & >10x blank
Common Phthalate Esters		
Flag sample result with a "U";	Report CRQL & qualify "U"	No qualification is needed
Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & >5 blank value
Other Contaminants		
Flag sample result with a "U";	Report CRQL & qualify "U"	No qualification is needed

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" (unusable).

6.3 Are there field/rinse/equipment blanks associated with every sample? X — —

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

YES NO N/A

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 analyses for which no associated GC/MS tuning data are available.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

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

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

7.4 Have the ion abundances been normalized to m/z 198? X ___

	YES	NO	N/A

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 Have the appropriate number of significant figures (two) been reported? X

ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document effect in data assessments.

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

8.1 Are the Organic Analysis Data Sheets (Form I BNA) 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

		YES	NO	N/A
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".			
8.3	Are the SMA 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.			
8.4	Are the response factors shown in the Quant Report?	[ ]	X	—
8.5	Is chromatographic performance acceptable with respect to:			
	Baseline stability?	X	—	—
	Resolution?	X	—	—
	Peak shape?	X	—	—
	Full-scale graph (attenuation)?	X	—	—
	Other: _____	[ ]	—	X
	ACTION: Use professional judgement to determine the acceptability of the data.			

		YES	NO	N/A
8.6	Are the lab-generated standard mass spectra of identified SVA compounds present for each sample?	X		
	ACTION: If any mass spectra are missing, take action specified in 8.2 above. If lab does not generate their own standard spectra, take note in "Contract Problems/ Non-compliance". 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.			
	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 (TICs)

		YES	NO	N/A
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		

YES NO N/A

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 Y ___

b. Blanks Y ___

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

ACTION: Add "JN" qualifier 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)? ___ N

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? Y ___

9.5 Do TIC and "best match" standard relative ion intensities agree within 20%? Y ___

ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change 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).

YES NO N/A

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 standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found? ___ NO ___

10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture? NO ___ ___

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.

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 it's 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 I's 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 initial and continuing calibration? NO ___

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

YES NO N/A

12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI) present and complete for the BNA fraction? YES ___ ___

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

12.2 Are response factors stable for BNAs over the concentration range of the calibration? (% Relative standard deviation (%RSD) < 30.0%) YES ___ ___

ACTION: Circle all outliers in red.

NOTE: Although 20 BNA compounds have a minimum RRF and no maximum %RSD, the technical criteria are the same for all analytes.

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

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

12.3 Are all BNA compound RRFs > 0.05? YES ___ ___

ACTION: Circle all outliers in red.

ACTION: If any RRF < 0.05
1. "R" all non-detects.
2. "J" all positive results.

12.4 Are there any transcription/calculation errors in the reporting of average response factors (RRF) or % RSD? (Check at least two values but if errors are found, check more.) ___ YES ___

ACTION: Circle Errors in red.

YES NO N/A

ACTION: If errors are large, call lab for explanation/resubmittal. Make any necessary corrections and note errors in data assessments.

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 within twelve hours of a continuing calibration analysis for each instrument used.

_____

_____

_____

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

13.3 Do any semivolatile compounds have a % Difference (% D) between the Initial and Continuing RRF which exceeds the ± 25.0% criteria? X

ACTION: Circle all outliers in red.

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

YES NO N/A

13.4 Do any semivolatile compounds have a RRF <0.05? ___ (X)

ACTION: Circle all outliers in red.

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

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

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation/resubmittal. Make any necessary corrections and document effect in data assessments.

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) ___

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit

(Attach additional sheets if necessary.)

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

YES NO N/A

2. Non-detects associated with IS areas > 100% should not be qualified.

3. If the IS area is below the lower limit (<50%), qualify all associated non-detects (U-values) "J". If extremely low area counts are reported (<25%) or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable (R).

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.

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.

QA/QC Review of TAL Inorganic Data
For Pace Analytical SDG: 97135

November 21, 1997

Holding Times:
Samples were analyzed within the EPA Region II CLP holding times.

Initial and Continuing Calibration Verification:
All percent recoveries were within control limits.

CRDL Standard for ICP:
All compounds had percent recoveries within the Region II control limits.

Blanks:
Initial and continuing calibrations and preparation blanks had detected analyte levels that were below the CRDLs as required by Region II. Field blank FB100797 reported 63.7 ug/L of zinc which is above the CRDL. Zinc result in sample SSD001 was less than five times the amount detected in the field blank. Therefore, the zinc result in sample SSD001 was rejected as unusable.

ICP Interference Check Sample:
Cobalt (76.7%) and selenium (68.4%) had percent recoveries outside the control limits. Results for these metals in all samples were qualified as estimated (J).

Spike Sample Recovery:
Spike recovery for antimony (23.2%) was outside the control limits (75-125%). Antimony results in all soil samples were qualified as estimated (J).

Duplicates:
All compounds had percent differences that were acceptable.

Laboratory Control Sample:
Percent recoveries for beryllium, copper, and manganese were below acceptable criteria in the solid laboratory control sample. The results for these metals were qualified as estimated in all soil samples.

Standard Addition Results:
No results were quantitated by MSA in this SDG.

ICP Serial Dilution:
The ICP serial dilution was conducted on sample SSD001. Recoveries for calcium (14.3%), potassium (24.4%), and sodium (60.8%) were above the acceptable level of 10%. Calcium results were qualified estimated (J) in all soil samples with results greater

than the CRDL. Potassium and sodium results in all samples were below the CRDL and therefore, not estimated.

Instrument Detection Limit:
All IDLs were at or below the CRDLs as required.

Percent Solids for Soils:
All soil samples had percent solids above the allowable minimum (50%).

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SDG 97135

Island Chemical - Soi

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

based on

SOW. 3/90

(SOP Revision XI)

PREPARED BY: Hanif Sheikh DATE: 1-30-92
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

APPROVED BY: Kevin W. Kubik DATE: 1-30-92
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: Robert Runyon DATE: 1/30/92
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 t 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 revi

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 respc 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 Analys 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 revi or consideration.

5.0 Acceptance Criteria - In order that reviews be consistent among reviewers, acceptan criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidan 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 locati any problems, both corrected and uncorrected. However, the validation should be carri out even if CCS is not present. Resubmittals received from laboratory in response CCS must be used by the reviewer.

7.0 Request for Reanalysis - Data reviewers must note all items of contract non-complian within Data Assessment Narrative. If holding times and sample storage times have not be exceeded, TPO may request reanalysis if items of non-compliance are critical to da 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.			

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.1.6	**Form I to IX**			
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
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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?	[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

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
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?	___	[___]	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.1.19.2	**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	___

	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.			

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.2: Data Assessment Narrative

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

Case# – Site Island Chemical Matrix: Soil X

SDG# 97135 Lab Pace Analytical, Louisiana Water X

Contractor – Reviewer Uma Paresan 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 significan 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 usabl

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 attached narrative for SDG 97135.

A.2.2 (continuation)

A.2.2 (continuation)

A.2.3 Contract-Problem/Non-Compliance

MMB/ESAT Rviewer: _____ Date: _____
Signature

Contractor Reviewer: Uma Pacasar Date: 11/21/97
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 a 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. T 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

[illegible]/MAILING LIST FOR DATA REVIEWERS

1. USEPA Region I (ESD)
60 Westview Street
Lexington, MA 02173
Deb Szaro
(617) 861-4312
CT, ME, MA, NH, RI, VT
CAA, Resource Analysts, York, ESI, Skinner, DPA

2. USEPA Region II (ESD)
Woodbridge Avenue
Edison, New Jersey 08837
(201) 321-6676
NJ, NY, PR, VI
Century, Chemtech, US Test, Nanco, ETC, Gadson, EMS, Galson, ICH

3. USEPA Region III (CRL)
839 Bestgate Road
Annapolis, MD 21401
Chuck Sands
(301) 266-9180
DE, MD, PA, VA, WV, DC
Cantec, Hitman, JTC, MACK, VERSAR, ITAS, Weston, MMES, EA Engineering Subject Tech., Key PA

4. USEPA Region IV (ESD)
Analytical Support Branch
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Athens, GA 30613
Tom Bennett, Jr.
(404) 546-3112
AL, FL, GA, KY, MS, NC, SC, TN
Compuchem, EPS, ESI, PESAT, Triangle Labs

5. USEPA Region V (ESD)
536 South Clark Street
Tenth Floor, CRL
Chicago, IL 60625
Pat Churilla
312-353-9027
IL, IN, MI, MN, OH, WI
NEI, TAT/IRC

6. USEPA Region VI (ESD)
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6608 Hornwood Drive
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David Stockton
(713) 953-3425
AR, LA, NM, TX, OK
ANACON, RADIAN, SPECS, EIS, Clocher Research, Inc., SPL Inc., SWRI, Allied, Key TX, ERA

7. USEPA Region VII Laboratory
25 Funston Road
Kansas City, KS 66115
Debra Morey
(913) 236-3851
IO, KS, NE, MO
Wilson, Kansas City Scientific Enterprises, Eagle Pitcher

8. USEPA Region VIII Laboratory
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Denver Federal Center
Lakewood, CO 80225
Eva Hoffman
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CO, ND, SD, UT, WY, MT
ACCL, CSMGI, PRAL, Data Chem, Centec

9. USEPA Region IX (ESD)
QA Management Section
215 Fremont Street
San Francisco, CA 94105
Kent Kitchingman
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ALI, CAL Weston, S-Cubed, IT-CA, Vegas

10. USEPA Region X Laboratory
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Manchester, WA 98353
Gerald Ruth
(206) 442-0370
AK, ID, OR, WA
Laucks Testing Labs, Century Testing Labs (For VOA Only), Weyerhauser Co. Columbia Testing, Silver Valley

11. Carla Dempsey - (OS-230)
USEPA
401 "M" Street, S.W.
Washington, DC 20460
FTS 382-5746

12. Edward Kantor
USEPA
EMSL-LV
944 E. Harmon Avenue
BOX 93478
Las Vegas, NV 89119

13. Sample Management Office
Viar and Company
P.O. BOX 818
Alexandria, VA 22313

CLP DATA ASSESSMENT SUMMARY FORM (INORGANICS)

pe of Review: CLP Date: NOV 21, 1997 SDG Case #: 97135

te: Island Chemical Lab Name: Pace Analytical

viewer's Initials: UP Number of Samples: 5

Analytes Rejected Due to Exceeding Review Criteria:*

	Holding Times	Calibration	Prep Blank	Field Blank	Inter-ferences	Spike Recovery	Duplicates Lab	Duplicates Field	Detection Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejection
CP	0	0	0	1	0	0	0	X	0	0	0	X	115	1
'lame AA														
'urnace AA														
lercury	0	0	0	0	X	0	0	X	0	0	X	X	5	0
'otal CN	0	0	0	0	X	0	0	X	0	0	X	X	5	0
)ther														

Analytes Flagged as Estimated (J) Due to Exceeding Criteria For:*

:CP	0	0	0	0	10	4	0	X	0	12	4	X	115	30
'lame AA														
Furnace AA														
lercury	0	0	0	0	0	X	0	X	0	0	X	X		0
Total CN	0	0	0	0	0	X	0	X	0	0	X	X		0
Other														

Note:
Asterisk (*) indicates additional exceedances of review criteria.

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. _____ SITE Island Chemical

LABORATORY Pace Analytical NO. OF SAMPLES/ MATRIX 4/soil 1/water

SDG# 97135 REVIEWER (IF NOT ESD) _____

SOW# ILM02.0 REVIEWER'S NAME Uma Parasar

DPO: ACTION _____ FYI X COMPLETION DATE Nov, 21 1997

DATA ASSESSMENT SUMMARY

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

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: Zinc result reject in sample 680001

AREAS OF CONCERN: _____

NOTABLE PERFORMANCE: _____

SDG No. 97162

VOC Checklist

304478

QA/QC Review of Volatile Data
For Pace Analytical SDG: 97162
ISLAND CHEMICAL

Reviewer: Uma Parasar
January 27, 1998

Holding Times:
Samples PP1 (25'-27'), PP2 (10'-12'), PP3 (24'-26'), PP4 (8'-10'), PP4 (21'-23'), and PP4D (21'-23') were re-analyzed outside the Region II holding time of ten days for soil samples due to internal standard area counts outside acceptable limits in the original analyses. Both the original and re-analyzed results were included in the data package. The results from the re-analyses were qualified as estimated (J) for the detected compounds and (UJ) for compounds that were not detected.

GC/MS Tuning and Mass Calibration:
All BFB tuning criteria were within control limits.

Initial Calibration:
The percent relative standard deviations (%RSD) for methylene chloride were 45.2% and 48%, respectively, in the initial calibrations run on December 11th and December 12th, 1997. Positive detects for methylene chloride in associated samples were qualified as estimated (J).

All other compounds had %RSDs below 30 % and all relative response factors (RRF) were above 0.05 units.

Continuing Calibration:
The following compounds had percent differences (%Ds) that were greater than 25% in the continuing calibration run on December 19, 1997:

Acetone	110.2%
2-Butanone	70.8%
2-Hexanone	55.6%

Positive results for acetone in samples FB1210, TB1210, and TB1297 were qualified as estimated (J). Non detect results for 2-butanone in samples FB1210, TB1210, and TB1297 were qualified as estimated (UJ).

All other compounds had %Ds below 25% and all RRFs were above 0.05 units.

Blanks:
All method blanks associated with both aqueous and soil analyses reported elevated concentrations of methylene chloride. Methylene chloride data in all samples were qualified as not detected based on method blank contamination.

Field blanks were associated with the soil samples only. Field blanks 1297, 1208, and 1203 reported acetone at concentrations of 310, 120, and 98 micrograms per liter (ug/L), respectively. Acetone results in samples 121820, 122224, 131820, 132426, BAST12, and P12527 were qualified as not detected based on field blank contamination. Field blanks also reported concentrations of methylene chloride but samples were already qualified based on method blanks. Field blank FB1203 reported toluene at a concentration of 1 ug/L. Toluene detected in associated samples P12527 RE and P21012 RE were qualified as not detected (U).

The following tentatively identified compounds (TIC) were rejected in all samples based on being laboratory artifacts: 1,1,2-trichloro-1,2-ethane, unknown hydrocarbon (retention time: 17.67), and carbon dioxide.

Three trip blanks were collected along with the soil samples. They were not used to evaluate blank contamination. Trip blanks reported low concentrations of methylene chloride, acetone, and toluene.

Internal Standard Area Summary:
Internal standard area counts were below acceptable limits in the initial analyses of samples P12527, P21012, P30810, P32426, P42123, and PD2123. Samples P30810 and P21012 reported recoveries that were below 25% of the acceptable limit for bromochloromethane, and therefore data associated with this internal standard were rejected. Sample P30810 was re-analyzed the same day and reported recoveries that were unacceptable, but higher than 25% of the acceptable limit. The remaining samples were re-analyzed outside holding time. The internal standard recoveries in the re-analyses were within acceptable limits.

All other internal standard retention times and area counts were acceptable.

Surrogate Recovery:
All surrogate recoveries were acceptable.

Matrix Spike/Matrix Spike Duplicate:
The recoveries for 1,1-dichloroethene were above acceptable limits in one MS/MSD pair evaluated for the soil samples. No data were qualified based on MS/MSD data alone. All other percent recoveries and percent differences were within control limits in all MS/MSD samples.

Compound ID:
All reported compounds were correctly identified and quantitated accurately.

Field Duplicates:
Three soil field duplicates were collected in this data set. The data were compared and the relative percent differences calculated. Chloroform was detected in samples PP5 and PP5D at concentrations that differed by 128%. The validity of the identification of the replicate was confirmed with the sampling personnel. No data were qualified as per the guidelines.

Re-analyses/Dilutions:

The following is a tabulation of the samples that were re-analyzed or diluted in this data set with an explanation of which analyses is better representative for further use.

Sample	RE/DL	Reason	Data Set To Use
P1212527 (PP1 25-27)	RE	Low IS area counts	Re-analyses[1]
P21012 (PP2 10-12)	RE	Low IS area counts	Re-analyses[2]
P30810 (PP3 8-10)	RE	Low IS area counts	Re-analyses[3]
P32426 (PP3 24-26)	RE	Low IS area counts	Re-analyses[4]
P40810 (PP4 8-10)	RE	Low IS area counts	Re-analyses[4]
P42123 (PP4 21-23)	RE	Low IS area counts	Re-analyses[4]
PD2123 (PP4D 21-23)	RE	Low IS area counts	Re-analyses[4]
P11113 (PP1 11-13)	DL	Acetone out of range	Initial analyses[5]

RE = Re-analyses
DL= Dilution
IS = Internal Standard

[1] Sample was re-analyzed outside holding time. IS area counts in re-analyses were acceptable. Chloroform was detected in re-analyses only.

[2] Sample was re-analyzed outside holding time. IS area counts in initial analyses were severely low requiring rejection of data. IS area counts in re-analyses were acceptable. Chloroform was detected in re-analyses only.

[3] Sample was re-analyzed within holding time. IS area counts in initial analyses were severely low requiring rejection of data. IS area counts in re-analyses were not acceptable but required only estimation of data.

[4] Sample was re-analyzed outside holding time. IS area counts in re-analyses were acceptable.

[5] Sample was re-run at a dilution due to acetone concentrations exceeding the calibration range. Acetone was outside the calibration range in the re-analyses also. Acetone result in this sample is qualified EJ to account for the uncertainty of the result.

G\staff\uparas\DVMEMO\97162IC_VOC

SOP NO. HW-6
Revision #8

CLP ORGANICS DATA REVIEW
AND PRELIMINARY REVIEW

BY: _____ Date: Jan. 2 1992
Leon Lazarus, Environmental Scientist
Toxic and Hazardous Waste Section

BY: _____ Date: January 3 1992
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304482

STANDARD OPERATING PROCEDURE

Date: January 1992
Revision: 8

YES NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES
~~CASE~~ SDG NUMBER: 97162 LAB: PACE ANALYTICAL

SITE: ISLAND CHEMICAL

1.0 Data Completeness and Deliverables

1.1 Have any missing deliverables been received and added to the data package? [ ] X ___

ACTION: Call lab for explanation/resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-Compliance" section of reviewer narrative.

1.2 Was SMO CCS checklist included with package? [ ] ___ X

2.0 Cover Letter SDG Narrative

2.1 Is the Narrative or Cover Letter Present? [X] ___ ___

2.2 Are Case Number and/or SAS number contained in the Narrative or Cover letter? [ ] ___ X

3.0 Data Validation Checklist

The following checklist is divided into three parts. Part A is filled out if the data package contains any VOA analyses. Part B for any BNA analyses and Part C for Pesticide/PCBs.

Does this package contain:

VOA Data? X ___

BNA Data? ___ X

Pesticide/PCB data? ___ X

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STANDARD OPERATING PROCEDURE

Date: January 1992
Revision: 8

	YES	NO	N/A

PART A: VOA ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? ( ) ___ X

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports 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 upon receipt at the laboratory, flag all positive results "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".

	YES	NO	N/A
2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded?	X	[ ]	

If unpreserved, aqueous samples maintained at 4°C which are to be analyzed for aromatic hydrocarbons 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 not samples were preserved.

The holding time for soils is 10 days.

Table of Holding Time Violations

Sample ID	Sample Matrix	Preserved?	(See Traffic Report) Date Sampled	Date Lab Received	Date Analyzed
PP1 (25'-27') RE	SOIL	NO	12/03/97	12/04/97	Re-analyzed 12/15/97
PP2 (10'-12') RE					
PP3 (24'-26') RE					
PP4 (8'-10') RE					
PP4 (21'-23') RE					
PP4D (21'-23') RE					

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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 narrative 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 no

	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	[ ]	—	—
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	[ ]	—	—
ACTION: Call lab for explanation/ resubmittals. If missing deliverables are unavailable. document effect in data assessments.			
3.3 Were outliers marked correctly with an asterisk?	[ ]	—	X
ACTION: Circle all outliers in red.			
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

	YES	NO	N/A

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.
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.

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

ACTION: If large errors exist, call lab for explanation/resubmittal, make any 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 ___ ___

	YES	NO	N/A

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

a.	Low Water	1 for 5 samples	[X]	___ ___
b.	Low Soil	3 MS/MSD for 27 samples	[X]	___ ___
c.	Med Soil		[ ]	___ ___

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

4.3 How many VOA spike recoveries are outside QC limits?

Water	Soils
0 out of 10	1 out of 10

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
0 out of 5	1 out of 5

ACTION: No action is taken based on 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.

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 analyzed for each SDG or every 20 samples of similar matrix (low water, low soil, medium soil), whichever is more frequent?

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	YES	NO	N/A

5.3 Has a VOA method/instrument blank been analyzed at least once every twelve hours for each concentration level and GC/MS system used? [X] ___ ___

ACTION: If any method blank data are missing, call lab for explanation/ resubmittal. 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.

5.4 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.

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 blanks have positive results (TCL and/or TIC) for VOAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for % moisture when necessary. [X] [ ] ___

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

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Field Blank FB120997

Methylene chloride 10BJ
Acetone 320BE

Associated Samples:

SBLP 1 (8'-10')
SBLP 1 (15'-17')
SBLP 2 (8'-10')
SBLP 2 (13'-15')
SBAST12(18'-20'
SBAST 12(22'-24
SBAST 12D

Field Blank FB120397

Toluene 1J
Methylene chloride 6BJ
Acetone 98

Associated Samples:

PP1 (11'-13')
PP1 (25'-27')
PP2 (10'-12')
PP2 (23'-25')
PP3 (8'-10')
PP3 (24'-26')
PP4 (8'-10')
PP4 (21'-23')
PP4D (21'-23')

Field Blank FB120897

Methylene chloride 3BJ
Acetone 120

Associated Samples:

SBAST 10(18-20)
SBAST 11 (28-30)
SBAST 11 (30-32)
SBAST 13 (18-20)
SBAST 13 (24-26)

Field Blank FB121097

Methylene chloride 5BJ
Acetone, 320BE

Associated Samples:

PP5(22-24')
PP5D (22'-24')
PP6 (28'-30')
PP5 (18'-20')

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Method Blank Water VBLKW1 12/11/97

Methylene Chloride 3J

Associated samples:

FB1203
FB1208
FB1297
MW7606 [MW-7(60-62)]
MW8575 [MW-8(57-59)]
MW9606 [MW-9(60-62)]
TB1203
TB1208

Method Blank Soil VBLKL1 12/12/97

Methylene chloride 12
TIC - unknown HC (17.67) 20J

Associated samples:

PP1 (11-13)
PP1 (25'-27')
PP2 (10'-12')
PP2 (23'-25')
PP3 (8'-10')
PP3 RE (8'-10')
PP3 (24'-26')
PP4 (8'-10')
PP4 (21'-23')
PP4D (21'-23')

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Method Blank Soil VBLKL2 12/15/97

Methylene chloride 43
TIC- 1,1,2-trichloro-1,2-ethane (3.25) - 29JN

Associated Samples:

SBAST 11 (30'-32')
SBAST 12 (18'-20')
SBAST 12 (22'-24')
SBAST 13 (24'-26')
SBAST 12D
PP2D (21'-23') RE
PP5D (22'-24')
PP1 (11'-13') DL
PP1 (25'-27') RE
PP2 (10'-12') RE
PP3 (24'-26') RE
PP4 (8'-10') RE
PP4 (21'-23') RE
PP5 (22-24)

Method Blank Soil VBLKL3 12/16/97

Methylene chloride 24
TIC: 1,1,2-trichloro-1,2-ethane (3.2

Associated Samples:

SBAST 10 (18'-20')
SBAST 11 (28'-30')
SBAST 13 (18'-20')
PP6 (28'-30')
PP5 (18'-20')
SBLP 1 (15'-17')
SBLP 1 (8'-10')
SBLP 2 (8'-10')
SBLP 2 (13'-15')

Methylene chloride 6J
Acetone 1J
- Not evaluated.

Method Blank Water VBLKW2 12/19/97

Associated Samples:

FB1210
FB1210
TB1297

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YES NO N/A

NOTE: All field blank results associated to 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).

	Sample conc > CRQL but < 10x blank value	Sample conc < CRQL & <10x blank value	Sample conc > CRQL & >10x blank value
Methylene Chloride Acetone Toluene 2-Butanone	Flag sample result with a "U;	Report CRQL & qualify "U"	No qualification is needed

	Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & > 5x blank value
Other Contaminants	Flag sample result with a "U"	Report CRQL & qualify "U"	No qualification is needed

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

		YES	NO	N/A
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? Except aqueous samples from temporary drive point	[X]		
ACTION:	For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. 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 mass/charge (m/z) listing for the BFB provided for each twelve hour shift?	[X]	___	___
7.3	Has an instrument performance compound been analyzed for every twelve hours of sample analysis per instrument?	[X]	___	___

YES NO N/A

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

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: If lab cannot provide 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? (X) ___ ___

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 between mass lists and Form Vs? (Check at least two values but if errors are found, check more.) ___ (X) ___

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	YES	NO	N/A
7.7 Have the appropriate number of significant figures (two) been reported?	X		
ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document effect in data assessments.			
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

	YES	NO	N/A
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 8.2 above.			

		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:			
	Baseline stability?	[X]		
	Resolution?	[X]		
	Peak shape?	[X]		
	Full-scale graph (attenuation)?	[X]		
	Other: _____	[ ]		X

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 specified in 3.2 above. If lab does not generate their own standard spectra, make note in "Contract Problems/Non-compliance".

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]		

	YES	NO	N/A
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 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 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 8) 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)	___	___

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

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ACTION: Add "JN" qualifier if missing.

		YES	NO	N/A
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	___	___
9.5	Do TIC and "best match" standard relative ion intensities agree within 20%?	X	___	___
	ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change identification to "unknown" or to some less specific identification (example: "Cl substituted benzene") as appropriate.			
	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). (i.e. Common Lab Contaminants: CO_2 (M/E 44), Siloxanes (M/E 73) Hexane, Aldol Condensation Products, Solvent Preservatives, and related by products - see Functional Guidelines for more guidance).			

	YES	NO	N/A

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 standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found? — X —

10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture? X — —

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors under "Conclusions".

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 I's 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 initial and continuing calibration? X — —

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

304500

	YES	NO	N/A

12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI) present and complete for the volatile fraction at concentrations of 10, 20, 50, 100, 200 ug/l? Are there separate calibrations for low water/med soils and low soil samples? [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" and non-detects "R".

12.3 Are response factors stable for VOA's over the concentration range of the calibration (%Relative Standard Deviation (%RSD) <30.0%)? [X] ___ ___

ACTION: Circle all outliers in red.

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

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

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

12.4 Are the RRFs above 0.05? [X] ___ ___

Action: Circle all outliers in red.
Action: If any RRF are < 0.05, qualify associated non-detects (R) and flag associated positive data as estimated (J).

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	YES	NO	N/A
12.5 Are there any transcription/calculation errors in the reporting of average response factors (RRF) or %RSD? (Check at least 2 values, but if errors are found, check more.)	___	[X]	___

13.0 GC/MS Continuing Calibration (Form VII)

13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the volatile 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 within twelve hours of the previous continuing calibration analysis.

_____

_____

_____

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

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

ACTION: Circle all outliers in red.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated. When % D is above 90%, reject

304502

	YES	NO	N/A
13.4 Do any volatile compounds have a RRF <0.05?	[ ]	X	

ACTION: Circle all outliers in red.

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

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

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors under "Conclusions".

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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	

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit
See attached Sheet.				

INTERNAL STANDARD OUTLIERS

SAMPLE	INT STD	AREA	LOWER LIMIT	UPPER LIM
P1113	IS1	98653	142846	571384
P21012		65689		
P30810		58845		
P30810RE		83841		
P32426		97977		
P40810		120847		
P42123		107064		
PD2123		95009		
P1113	IS2	541806	598802	239520
P21012		337186		
P30810		394635		
P32426		561696		
P42123		576056		
PD2123		572912		
P1113	IS3	348842	416351	166540
P21012		271145		
P30810		266092		
P30810RE		389884		
P32426		385395		
P42123		408924		
PD2123		337726		

	YES	NO	N/A

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. Non-detects associated with IS area counts > 100% should not be qualified.

3. If IS area is below the lower limit (< 50%), qualify all associated non-detects (U values) "J". If extremely low area counts are reported, (< 25%) or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable ("R").

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.

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.

SDG No. 97187

VOC, SVOC, and Inorganics Checklist

304506

June '97 event

QA/QC Review of Volatiles Data
for Pace Analytical SDG: 97187

December 19, 1997

Holding Times: All samples were analyzed within Region II holding times.

GC/MS Tuning and Mass Calibration: All BFB tuning criteria were within control limits.

Initial Calibration: All compounds with contract criteria for RRFs met those requirements. Vinyl chloride (22.0%) had a %RSD below the contractual maximum (20.5%) 06-23-97. No action is taken on two or fewer compounds outside contract requirements as long as no %RSD is above 40% and no RRF is below 0.010.

All target compounds had average RRFs above the allowable minimum (0.050) as required. Acetone (39.4%) had a %RSD above the allowable maximum (30%) on 06-20-97. Results for acetone should be considered estimates (J) in associated samples.

Continuing Calibration: 1,1,2,2-Tetrachloroethane (0.489) had an RRF50 below the contractual minimum (0.500) on 06-22-97 (0622L01). 1,1-Dichloroethene (36.3%) and 1,1,2,2-tetrachloroethane (32.0%) had %Ds above the contractual maximum (25%) on 10-01-97 (0622L01). Bromomethane (31.2%) and vinyl chloride (39.0%) had %Ds above the contractual maximum (25%) on 06-23-97 (0623L03). Vinyl chloride (31.0%) had a %D above the contractual maximum (25%) on 10-03-97 (0627L04). No action is taken on two or fewer compounds outside contract requirements as long as no %RSD is above 40% and no RRF is below 0.010.

All target compounds had RRF50s above the allowable minimum (0.050) as required. Chloroethane (26.6%), methylene chloride (42.7%), carbon disulfide (38.8%), 1,1-dichloroethene (36.3%), 1,2-dichloroethene (40.0%), and 1,1,2,2-tetrachlroethane (32.0%) had %Ds above the allowable maximum (25%) on 06-22-97 (0622L01). Chloromethane (33.2%), bromomethane (31.2%), vinyl chloride (39.0%), chloroethane (26.1%), and 1,2-dichloroethene (28.5%) had %Ds above the allowable maximum (25%) on 06-23-97 (0623L03). Chloromethane (40.2%), vinyl chloride (31.0%), chloroethane (25.5%), and methylene chloride (32.4%) had %Ds above the allowable maximum (25%) on 06-27-97 (0627L04). Results for these compounds should be considered estimates (J) in associated samples.

Blanks: Method blank VBLKL1 contained a trace of methylene chloride (6 ug/kg). Method blank VBLKL2 contained a trace of methylene chloride (10 ug/kg). Method blank VBLKL3 contained traces of methylene chloride (3 ug/kg) and toluene (2 ug/kg). Method blank

MeCl2 AL
10×10 = 100

VBLKL4 contained a trace of methylene chloride (12 ug/kg). Method blank VBLKW1 contained a trace of methylene chloride (2 ug/L). Method blank VBLKM1 contained a trace of methylene chloride (250 ug/L). Trip blank TB0611 contained a trace of methylene chloride (1 ug/L). Trip blank TB0612 contained a trace of methylene chloride (2 ug/L). Trip blank TB0616 contained a trace of methylene chloride (1 ug/L). Trip blank TB0617 contained a trace of methylene chloride (2 ug/L). Trip blank TB0618 contained a trace of methylene chloride (2 ug/L). Rinseate blank RB0611 contained a trace of methylene chloride (1 ug/L). Rinseate blank RB0612 contained a trace of methylene chloride (1 ug/L). Rinseate blank RB0613 contained a trace of methylene chloride (1 ug/L). Rinseate blank RB0616 contained a trace of methylene chloride (1 ug/L). Rinseate blank RB0617 contained a trace of methylene chloride (2 ug/L). Rinseate blank RB0618 contained a trace of methylene chloride (2 ug/L). Results for acetone, methylene chloride, and toluene less than ten times the highest associated blank should be considered not detected (U) in samples. Rinse blank RB0617 contained an unacceptable level of acetone (76 ug/L). Results for acetone less than ten times the highest blank level should be considered unusable (R) in associated samples. The following are listed the contaminated blanks and associated samples:

MeCl2 AL
2×10=20

Method blank VBLKL1: S10318, S12628, S1810, S2810, S2810RE, S31820, S32224
Method blank VBLKL2: S11012, S12224, S12426, S23032, S2810DL1, S468, S81416, S81820
Method blank VBLKL3: S146, S21012, S21618, S3810, S42224, SD2022
Method blank VBLKL4: S32628, S32628MS, S32628MSD
Method blank VBLKW1: RB0611, RB0612, RB0613, RB0616, RB0617, RB0618, TB0611, TB0612, TB0616, TB0617, TB0618
Method blank VBLKM1: S2810DL2 soil

No way of telling which field ID this is.

Trip blank TB0611: S1810, S12628
Trip blank TB0612: S2810, S23032, S31820, S10318, S32224
Trip blank TB0616: S468, S42224, S81416, S81829, S11012, S12224, S21012, S22022
Trip blank TB0617: S146, S12426, S21618, SD2022
Trip blank TB0618: S3810, S3812, S32628
Rinseate blank RB0611: S1810, S12628
Rinseate blank RB0612: S2810, S23032, S31820, S10318, S32224
Rinseate blank RB0613: S468, S42224, S81416, S81829
Rinseate blank RB0616: S11012, S12224, S21012, S22022
Rinseate blank RB0617: S146, S12426, S21618, SD2022
Rinseate blank RB0618: S3810, S3812, S32628

Internal Standard Area Summary: All internal standard areas and retention times were within control limits.

Surrogate Recovery: Samples S2810, S2810RE, and S2810DL2 had 1 of 3 surrogate recoveries outside control limits. Results for samples S2810, S2810RE, and S2810DL2 should be considered estimates (J).

Matrix Spike/Matrix Spike Duplicate: MS/MSD sample S32628 had all percent recoveries within control limits but had 1 of 5 relative percent differences outside control limits. No action is taken on MS/MSD data alone to qualify or reject an entire set of samples.

Compound ID: Checked compounds were within GC/MS quantitation and qualitation limits. All positive hit compounds had the primary and secondary ions in their mass spectra as outlined in the SOW.

Conc. of Internal Standard: 50 ID: L Date: 6/20/97

RRF							
	0620L06 Sample 1	0620L08 Sample 2	0620L07 Sample 3	0620L05 Sample 4	0620L04 Sample 5	Average	% RSD
Conc. of Compound	10	20	50	100	200		
Bromochloromethane	605444	531239	546104	563257	580881		
Vinyl Chloride	81288	129928	384455	728629	1724508	0.675	7.5%
RRF	0.671	0.611	0.704	0.647	0.742		
1,4-Difluorobenzene	2425076	2164944	2351141	2427419	2434336		
Trichloroethene	265128	402222	1156282	2439278	5074801	0.505	6.1%
RRF	0.547	0.464	0.492	0.502	0.521		
Chlorobenzene-d5	1916077	1688423	1967773	1996681	2099223		
Tetrachloroethene	282026	369383	1187893	2538995	5487379	0.635	10.9%
RRF	0.736	0.547	0.604	0.636	0.654		

Continuing Calibrations										
	0622L01		0623L03		0627L04					
	Sample	%D	Sample	%D	Sample	%D	Sample	%D	Sample	%D
Conc. of Compound	50		50		50					
Bromochloromethane	676406		530050		586001					
Vinyl Chloride	401246	12.1%	218288	39.0%	273339	30.9%		#DIV/0!		#DIV/0!
RRF	0.593		0.412		0.466		#DIV/0!		#DIV/0!	
1,4-Difluorobenzene	2709458		2287905		2642517					
Trichloroethene	1261202	7.9%	1152278	0.3%	1207459	9.6%		#DIV/0!		#DIV/0!
RRF	0.465		0.504		0.457		#DIV/0!		#DIV/0!	
Chlorobenzene-d5	2091956		1925614		2176952					
Tetrachloroethene	1195697	10.0%	1164133	4.8%	1282775	7.2%		#DIV/0!		#DIV/0!
RRF	0.572		0.605		0.589		#DIV/0!		#DIV/0!	

Conc. of Internal Standard: 50 ID: M Date: 6/23/97

RRF							
	0623M05 Sample 1	0623M04 Sample 2	0623M01 Sample 3	0623M03 Sample 4	0623M02 Sample 5	Average	% RSD
Conc. of Compound	10	20	50	100	200		
Bromochloromethane	1468100	1445007	1318115	1272475	1202084		
Vinyl Chloride	164068	381666	1019239	2318950	4659111	0.775	22.0%
RRF	0.559	0.660	0.773	0.911	0.969		
1,4-Difluorobenzene	4921565	4818828	4406720	4664494	4456095		
Trichloroethene	478811	957638	2147533	4572065	8575395	0.488	1.2%
RRF	0.486	0.497	0.487	0.490	0.481		
Chlorobenzene-d5	4394212	4131600	3848702	4059735	3869328		
Tetrachloroethene	513779	980967	2045731	4463221	8032718	0.556	5.9%
RRF	0.585	0.594	0.532	0.550	0.519		

Continuing Calibrations										
	Sample	%D	Sample	%D	Sample	%D	Sample	%D	Sample	%D
Conc. of Compound										
Bromochloromethane										
Vinyl Chloride		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!
RRF	#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!	
1,4-Difluorobenzene										
Trichloroethene		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!
RRF	#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!	
Chlorobenzene-d5										
Tetrachloroethene		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!
RRF	#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!	

QA/QC Review of 8270 Pyridine Data*
for Pace Analytical SDG: 97187

November 12, 1997

Holding Times: All samples were extracted and analyzed within Region II holding times.

GC/MS Tuning and Mass Calibration: All DFTPP tuning criteria were within control limits.

Initial Calibration: All SPCCs and CCCs were within control limits.

Pyridine had average RRFs above the allowable minimum (0.050) and %RSDs below the allowable maximum (30%) as required.

Continuing Calibration: All SPCCs and CCCs were within control limits.

Pyridine had RRF50s above the allowable minimum (0.050) and %Ds below the allowable maximum (25%) as required.

Blanks: Method blanks reported pyridine as not detected.

Internal Standard Area Summary: All internal standard areas and retention times were within control limits for reported data.

Surrogate Recovery: All percent recoveries were within control limits.

Matrix Spike/Matrix Spike Duplicate: MS/MSD data was not provided in this SDG.

Compound ID: All samples reported pyridine as not detected.

* only six rinse blanks were analyzed for pyridine by 8270, for all other samples pyridine was included as part of the CLP semivolatile analyses.

G:\STAFF\DANNE\Island\97187.PYR.wpd

QA/QC Review of Semivolatiles Data
for Pace Analytical SDG: 97187

November 12, 1997

Holding Times: All samples S21012 and S23032 were extracted outside Region II holding times. Results for samples S21012 and S23032 should be considered estimates (J).

GC/MS Tuning and Mass Calibration: All DFTPP tuning criteria were within control limits.

Initial Calibration: All compounds with contract criteria for RRFs and %RSDs met those requirements.

All target compounds had average RRFs above the allowable minimum (0.050) and %RSDs below the allowable maximum (30%) as required.

Continuing Calibration: All compounds with contract criteria for RRF50s met those requirements. Pyridine (25.4%) had a %D above the contractual maximum (25%) on 06-30-97 (0630J07). Pyridine (28.9%) had a %D above the contractual maximum (25%) on 10-07-97 (1007J01). No action is taken on two or fewer compounds per calibration outside contract limits as long as %Ds are below 40% and RRF50s are above 0.010.

All target compounds had RRF50s above the allowable minimum (0.050) as required. 2,2'-Oxybis(1-chloropropane) (35.8%) had a %D above the allowable maximum (25%) on 06-25-97 (0625H04). 3-Nitroaniline (29.7%), 4-nitroaniline (43.3%), and carbazole (28.8%) had %Ds above the allowable maximum (25%) on 06-18-97 (0618J04). 3-Nitroaniline (25.3%), 4-nitroaniline (47.1%), and carbazole (31.9%) had %Ds above the allowable maximum (25%) on 06-19-97 (0619J05). Pyridine (25.4%), 2,2'-oxybis(1-chloropropane) (32.4%), 2,4-dinitrophenol (34.6%), and 4,6-dinitro-2-methylphenol (25.3%) had %Ds above the allowable maximum (25%) on 06-30-97 (0630J07). 2,2'-Oxybis(1-chloropropane) (29.3%) and 2,4-dinitrophenol (25.2%) had %Ds above the allowable maximum (25%) on 07-01-97 (0630J07). Results for these compounds should be considered estimates (J) in associated samples.

Blanks: Method blank SBLKW3 contained a trace of bis(2-ethylhexyl)phthalate (1 ug/L). Rinse blank RB0612 contained a trace of bis(2-ethylhexyl)phthalate (22 ug/L). Rinse blank RB0613 contained a trace of diethylphthalate (1 ug/L). Rinse blank RB0616 contained traces of diethylphthalate (2 ug/L) and bis(2-ethylhexyl)phthalate (2 ug/L). Rinse blank RB0617 contained traces of diethylphthalate (6 ug/L) and bis(2-ethylhexyl)phthalate (4 ug/L). Rinse blank RB0618 contained traces of diethylphthalate (2 ug/L) and bis(2-

ethylhexyl)phthalate (2 ug/L). Results for diethylphthalate and bis(2-ethylhexyl)phthalate less than ten times the highest associated blank level should be reported as not detected (U) in samples. The following are contaminated blanks and their associated samples:

Method blank SBLKW3: RB0618
Rinse blank RB0612: S2810, S23032, S31820, S10318, S32224
Rinse blank RB0613: S468, S42224, S81416, S81820
Rinse blank RB0616: S11012, S12224, S21012, S22022
Rinse blank RB0617: S146, S12426, S21618, S22022
Rinse blank RB0618: S3810, S3812, S32628

Internal Standard Area Summary: All internal standard areas and retention times were within control limits.

Surrogate Recovery: All surrogate recoveries were within control and advisory limits.

Matrix Spike/Matrix Spike Duplicate: MS/MSD sample S32628 had all percent recoveries within control limits but had 2 of 11 relative percent differences outside control limits. No action is taken on MS/MSD data alone to qualify or reject an entire set of samples.

Compound ID: Checked compounds were within GC/MS quantitation and qualitation limits. All positive hit compounds had the primary and secondary ions in their mass spectra as outlined in the SOW.

Conc. of Internal Standard: 40 ID: H Date: 5/27/97

RRF							
	527H13 Sample 1	527H09 Sample 2	527H10 Sample 3	527H11 Sample 4	527H12 Sample 5	Average	% RSD
Conc. of Compound	20	50	80	120	160		
1,4-Dichlorobenzene-d4	252355	223158	247832	246894	226612		
Phenol	177261	404273	730966	1027763	1231303	1.415	3.3%
RRF	1.405	1.449	1.475	1.388	1.358		
Naphthalene-d8	825312	758498	841422	806095	738525		
Naphthalene	387228	900829	1570428	2172435	2693690	0.926	2.3%
RRF	0.938	0.950	0.933	0.898	0.912		
Acenaphthene-d10	376171	374566	387891	350044	343896		
Acenaphthylene	336874	769684	1305348	1922535	2221879	1.713	5.5%
RRF	1.791	1.644	1.683	1.831	1.615		
Phenanthrene-d10	713509	650158	661404	660962	591271		
Phenanthrene	313295	704473	1190186	1689423	2007993	0.869	2.4%
RRF	0.878	0.867	0.900	0.852	0.849		
Chrysene-d12	566635	561160	596557	550925	511221		
Pyrene	332485	849134	1444729	1905575	2408100	1.185	2.1%
RRF	1.174	1.211	1.211	1.153	1.178		
Perylene-d12	628054	608823	626306	601143	562629		
Benzo(g,h,i)perylene	252879	640202	1059884	1379767	1670891	0.800	5.7%
RRF	0.805	0.841	0.846	0.765	0.742		

Continuing Calibrations										
	1008H04		0625H04							
	Sample	%D	Sample	%D	Sample	%D	Sample	%D	Sample	%D
Conc. of Compound	50		50							
1,4-Dichlorobenzene-d4	225206		231649							
Phenol	351303	11.8%	377811	7.8%		#DIV/0!		#DIV/0!		#DIV/0!
RRF	1.248		1.305		#DIV/0!		#DIV/0!		#DIV/0!	
Naphthalene-d8	752499		724076							
Naphthalene	810314	7.0%	824558	1.7%		#DIV/0!		#DIV/0!		#DIV/0!
RRF	0.861		0.911		#DIV/0!		#DIV/0!		#DIV/0!	
Acenaphthene-d10	365211		361116							
Acenaphthylene	774578	0.9%	783718	1.4%		#DIV/0!		#DIV/0!		#DIV/0!
RRF	1.697		1.736		#DIV/0!		#DIV/0!		#DIV/0!	
Phenanthrene-d10	649099		623230							
Phenanthrene	711459	0.9%	699573	3.3%		#DIV/0!		#DIV/0!		#DIV/0!
RRF	0.877		0.898		#DIV/0!		#DIV/0!		#DIV/0!	
Chrysene-d12	493811		444845							
Pyrene	775584	6.0%	707122	7.3%		#DIV/0!		#DIV/0!		#DIV/0!
RRF	1.256		1.272		#DIV/0!		#DIV/0!		#DIV/0!	
Perylene-d12	452616		477996							
Benzo(g,h,i)perylene	353145	22.0%	526118	10.1%		#DIV/0!		#DIV/0!		#DIV/0!
RRF	0.624		0.881		#DIV/0!		#DIV/0!		#DIV/0!	

Conc. of Internal Standard: 40 ID: J Date: 4/9/97

RRF							
	0409J20 Sample 1	0409J16 Sample 2	0409J17 Sample 3	0409J18 Sample 4	0409J19 Sample 5	Average	% RSD
Conc. of Compound	20	50	80	120	160		
1,4-Dichlorobenzene-d4	228652	229953	237256	238036	219263		
Phenol	176576	465248	774680	1167641	1479771	1.624	3.2%
RRF	1.544	1.619	1.633	1.635	1.687		
Naphthalene-d8	823312	875897	912435	927977	855660		
Naphthalene	354022	1052503	1819207	2645593	3407800	0.953	5.9%
RRF	0.860	0.961	0.997	0.950	0.996		
Acenaphthene-d10	359452	396804	426559	390110	403856		
Acenaphthylene	292002	924666	1607291	2325749	3061075	1.851	7.3%
RRF	1.625	1.864	1.884	1.987	1.895		
Phenanthrene-d10	632930	727128	766572	692977	707185		
Phenanthrene	284821	869749	1509354	2155240	2903918	0.981	5.7%
RRF	0.900	0.957	0.984	1.037	1.027		
Chrysene-d12	596568	668952	635622	670516	638199		
Pyrene	302416	931049	1601558	2328080	3027844	1.146	8.0%
RRF	1.014	1.113	1.260	1.157	1.186		
Perylene-d12	703129	718735	701965	723844	636172		
Benzo(g,h,i)perylene	243227	704460	1239884	1737069	2306968	0.813	10.5%
RRF	0.692	0.784	0.883	0.800	0.907		

Continuing Calibrations										
	0618J04		0619J05		0630J07		0701J05			
	Sample	%D	Sample	%D	Sample	%D	Sample	%D	Sample	%D
Conc. of Compound	50		50		50		50			
1,4-Dichlorobenzene-d4	153523		153694		123803		97789			
Phenol	309063	0.8%	321639	3.1%	284501	13.2%	222924	12.3%		#DIV/0!
RRF	1.611		1.674		1.838		1.824		#DIV/0!	
Naphthalene-d8	619230		595602		473718		383023			
Naphthalene	794329	7.7%	750946	5.9%	606572	7.5%	470509	3.1%		#DIV/0!
RRF	1.026		1.009		1.024		0.983		#DIV/0!	
Acenaphthene-d10	290213		275495		234288		178597			
Acenaphthylene	665278	0.9%	627205	1.6%	514289	5.1%	401712	2.8%		#DIV/0!
RRF	1.834		1.821		1.756		1.799		#DIV/0!	
Phenanthrene-d10	544988		478562		416220		328013			
Phenanthrene	645680	3.4%	561748	4.3%	484173	5.1%	372293	7.4%		#DIV/0!
RRF	0.948		0.939		0.931		0.908		#DIV/0!	
Chrysene-d12	411506		356408		342654		265160			
Pyrene	646498	9.7%	582459	14.1%	511512	4.2%	414158	9.0%		#DIV/0!
RRF	1.257		1.307		1.194		1.250		#DIV/0!	
Perylene-d12	430284		349826		370522		283510			
Benzo(g,h,i)perylene	474928	8.6%	395650	11.3%	394735	4.8%	314849	9.3%		#DIV/0!
RRF	0.883		0.905		0.852		0.888		#DIV/0!	

QA/QC Review of TAL Inorganic
Data for Pace Analytical SDG: 97187

November 13, 1997

Holding Times: Samples were analyzed within EPA Region II CLP holding times.

Initial and Continuing Calibration Verification: Sodium (84.7%) had a percent recovery outside control limits (90-110%). Results for sodium should be considered estimates (J) in associated samples.

CRDL Standard for AA and ICP: Antimony (75.5% and 73.1%), arsenic (78.4%), mercury (145.0%), selenium (39.5%, 24.4%, and 60.0%), and zinc (134.6%) had percent recoveries outside Region II control limits (80-120%). Results for these metals in associated samples within effected ranges should be considered estimates (J).

Blanks: Initial and continuing calibration, and preparation blanks had analyte levels less than the CRDLs as required by Region II. Rinse blank RB0611 contained sodium (9940 ug/L) and zinc (37.5 ug/L) above their CRDLs. Rinse blank RB0612 contained zinc (35.0 ug/L) above its CRDL. Rinse blank RB0613 contained zinc (30.5 ug/L) above its CRDL. Rinse blank RB0616 contained zinc (31.0 ug/L) above its CRDL. Rinse blank RB0617 contained zinc (115.0 ug/L) above its CRDL. Rinse blank RB0618 contained zinc (61.7 ug/L) above its CRDL. Results for these metals less than five times the associated blank level should be considered unusable (R) in samples.

ICP Interference Check Sample: Thallium (78.2% and 76.5%) had percent recoveries outside control limits (80-120%). Results for these metals should be considered estimates (J) in associated samples.

Spike Sample Recovery: Mercury (58.3%) had a percent recovery were within control limits (75-125%) for water spike sample IBW001S. Results for mercury should be considered estimates (J) in water samples. Antimony (41.8%), arsenic (71.5%), beryllium (61.6%), cobalt (72.8%), lead (73.5%), manganese (271.5%), nickel (74.9%), selenium (68.3%), silver (51.4%), thallium (69.8%), and zinc (1135.2%) had percent recoveries outside control limits (75-125%) for soil spike sample S32628S. Results for antimony, arsenic, beryllium, cobalt, lead, nickel, selenium, silver, and thallium should be considered estimates (J) in soil samples. Positive results for manganese and zinc should be considered unusable (R).

Duplicates: All applicable relative percent differences were less than the CLP maximum (20%) for duplicate water sample RB0611D. Barium (55.4%), calcium (68.5%), manganese (71.9%), and vanadium (23.9%) had relative percent difference above the CLP maximum (20%) but were below the allowable maximum (100%) for duplicate sample S32628D. These metals in soil samples were appropriately flagged as per Region II. Cadmium (101.9%), copper (115.0%), lead (140.0%), and zinc (23.9%) had relative percent difference above the CLP

maximum (20%) and the allowable maximum (100%) for duplicate sample S32628D. Results for cadmium, copper, lead, and zinc should be considered estimates in soil samples

Laboratory Control Sample: All recoveries were within control limits for the soil LCSs. Sodium (79.4%) had a percent recovery outside control limits (80-120%). Results for sodium should be considered estimates (J) in water samples.

Standard Addition Results: No results were quantitated by MSA in this LP.

ICP Serial Dilution: Cadmium (15.7%), potassium (20.8%), sodium (16.2%), and zinc (65.3%) had %Ds above the allowable maximum (10%) for soil serial dilution sample S32628L. Results for cadmium, potassium, sodium, and zinc should be considered estimates (J) in soil samples.

Instrument Detection Limits: All IDLs were at or below the CRDLs as required.

Percent Solids for Soils: All soil samples had percent solids above the allowable minimum (50%).

Mercury

Date: 7/8/97

x range	y range
0	199
0.2	4033
0.5	11381
1	23199
5	136416
10	264336

Slope: 26710.03
Intercept: -1082.25
Cor. Coef.: 0.999765

304519

Mercury

Date: 79/97

x range	y range
0	1827
0.2	10257
0.5	21491
1	39321
5	202997
10	387314

Slope: 38771.85
Intercept: 2619.517
Cor. Coef.: 0.999763

304520

Mercury

Date: 79/97

x range	y range
0	5817
0.2	16802
0.5	29891
1	48934
5	310412
10	599056

Slope: 60095.92
Intercept: 1218.369
Cor. Coef.: 0.999524

304521

SDG: 97187

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

based on

SOW. 3/90

(SOP Revision XI)

EPARED BY: _____ DATE: 1-30-92
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

PROVED BY: _____ DATE: 1-30-92
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

PROVED BY: _____ DATE: 1/30/92
Robert Runyon, Chief
Monitoring Management Branch

Evaluation of Metals Data for the
Contract Laboratory Program

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

Scope

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

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

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

For a total review:

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

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.

.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).

.4 CLP Data Assessment Summary Forms

.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 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.

..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

.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).

.7 Forwarded Paperwork

.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).

.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.

.8 Filed Paperwork - Upon completion of review, the following are to be filed within MTB 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)

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.

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.

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.

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.

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".

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.

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

e: 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
1 Contract Compliance Screening Report (CCS) - Present?	[ ]	___	X
ACTION: If no, contact RSCC.			
2 Record of Communication (from RSCC) - Present?	[ ]	___	X
ACTION: If no, request from RSCC.			
3 Trip Report - Present and complete?	[ ]	___	X
ACTION: If no, contact RSCC for trip report.			
4 Sample Traffic Report - Present?	[ ]	___	X
Legible?	[ ]	___	X
ACTION: If no, request from Regional Sample Control Center (RSCC).			
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.			

le: 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

.6 Form I to IX	Yes	No	N/A
.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".

.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.

e: 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
.7	Raw Data			
.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 sheets?	[X]	___	___
.7.2	Measurement read out record present? ICP	[X]	___	___
	Flame AA	[___]	___	X
	Furnace AA	[___]	___	X
	Mercury	[X]	___	___
	Cyanides	[X]	___	___
.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.

Compliance (Total Review)

	YES	NO	N/A
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.

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.

Form I (Final Data)

.1	Are all Form I's present and complete?	[X]	___	___

ACTION: If no, prepare telephone record log and contact laboratory for submittal.

.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.			
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".			
1.10	Calibration			
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
.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.).

.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).

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

.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.

.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.			
.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".			
.12 Form II B (CRDL Standards for AA and ICP) -			
.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.			

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

		YES	NO	N/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".			
.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.			
.1.13	Form III (Initial and Continuing Calibration Blanks)			
.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".			
.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.			
.14	FORM III (Preparation Blank) - (Note: The preparation blank for mercury is the same as the calibration blank.)			
.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
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.			
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.			
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.			
1.15	Form IV (ICP Interference Check Sample)			
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.			
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").			
.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.)			
.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).			
.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.			
.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".			

.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".

.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".			
1.17	Form VI (Lab Duplicates)			
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.			
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.			
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.

.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.

.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.			
.18	Field Duplicates			
.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.			
.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

..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.

..19 Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)

..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
.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.			
.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
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.			
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.			
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.			
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".			
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)			
.21	Furnace Atomic Absorbtion (AA) QC Analysis	No samples were analyzed by Graphite furnace AA.		
.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.			
.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.			
.21.3	Is *analytical spike recovery outside the control limits (85-115%) for any sample?	___	[___]	___
	ACTION: If yes, flag 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%.			

nalytical 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.			
.22	Form VIII (Method of Standard Addition Results)			
.22.1	Present?	[___]	___	___
	If no, is any Form I result coded with "S" or a "+"?	___	[___]	___
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			
.22.2	Is coefficient of correlation for MSA less than 0.990 for any sample?	___	[___]	___
	ACTION: If yes, reject (red-line) the affected data.			
.22.3	Was *MSA required for any sample but not performed?	___	[___]	___
	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?	___	[___]	___
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
.22.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23?	[___]	___	___
	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
1.23	Dissolved/Total or Inorganic/Total Analytes -			
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.			
1.23.2	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	X
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.			
1.24	Form I (Field Blank) -			
	(Note: Designate "Field Blank" as such on Form I.)			
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.

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

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.

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

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.

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.			
1.25.3 Form XI (Linear Ranges)			
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).			
1.26 Percent Solids of Sediments			
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.			

tle: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.2: Data Assessment Narrative

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

se# _____ Site Island Chemical Matrix: Soil X

3# 97187 Lab Pace Analytical Water _____

ntractor _____ Reviewer Don Anne' Other _____

3.1 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.

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

See QA/QC Review of TAL Inorganic Data for Pace Analytical SDG: 97187

304549

A.2 (continuation)

2.2 (continuation)

2.3 Contract-Problem/Non-Compliance

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

M:B/ESAT Rviewer: _____ Date: _____
Signature

:ractor Reviewer: _____ Date: _____
Signature

Verified by: _____ Date: _____

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.3: Contract Non-Compliance (SMO Report)

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

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste Site Contract Laboratory Data Package

CASE NO._____

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

c. & Matrix:_____

ct No.(_____) requires that specific analytical work be done and ssociated reports be provided by the contractor to the Regions, EMSL-LV, and SMO. The l 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

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

ments:_____

_____

_____

_____

_____

_____

_____

_____

_____

_____ _____
Reviewer's Initial Date

[illegible] LIST FOR DATA REVIEWERS

1. USEPA Region I (ESD)
60 Westview Street
Lexington, MA 02173
Dan Staro
(617) 861-6312
CT, ME, MA, NH, RI, VT
CAA, Resource Analysts, York, EAI, Skinner, DPA

2. USEPA Region II (ESD)
Woodbridge Avenue
Edison, New Jersey 08837

(201) 321-6676
NJ, NY, PR, VI
Century, Chemtech, US Test, Naman, ETC, Gadson, EMS, Galson, ICM

3. USEPA Region III (ESD)
839 Bestgate Road
Annapolis, MD 21401
Chuck Sands
(301) 266-9180
DE, MD, PA, VA, WV, DC
Centec, Hittman, STC, MACK, VERSAR, ITAS, Weston, NUS, LA Engineering Subject Tech., Key PA

4. USEPA Region IV (ESD)
Analytical Support Branch
College Station Road
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Tom Bennett, Jr.
(404) 546-3112
AL, FL, GA, KY, MS, NC, SC, TN
Compuchem, EPS, ESI, PESAC, Triangle Labs

5. USEPA Region V (ESD)
536 South Clark Street
Tenth Floor, CRL
Chicago, IL 60605
Pat Churilla
312-353-9387
IL, IN, MI, MN, OH, WI
NEI, DAI/IDC

6. USEPA Region VI (ESD)
Monterey Park Plaza, Bldg. C
6608 Hornwood Drive
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David Stockton
(713) 953-3425
AR, LA, NM, TX, OK
ANALEN, RADIAN, SPECS, ECS, Glocher Research, Inc., SPL Inc., SWRI, Allied, Key TX, ERA

7. USEPA Region VII Laboratory
25 Funston Road
Kansas City, KS 66115
Debra Merry
(913) 236-3851
IA, KS, NE, MO
Wilson, Kansas City Scientific Enterprises, Eagle Picher

8. USEPA Region VIII Laboratory
BOX 25366
Denver Federal Center
Lakewood, CO 80225
Eva Hoffman
(303) 236-7371
CO, ND, SD, UT, WY, MT
ACCU, CSMRI, RMAL, Data Chem, Centec

9. USEPA Region IX (ESD)
QA Management Section
215 Fremont Street
San Francisco, CA 94105
Kent Richardson
(415) 974-0924
AZ, CA, HI, NV, American Samoa, Guam Trust Territories of Pacific Islands, Wake Island
ALS, CAL Western, S-Cubed, IT-CA, Vegas

10. USEPA Region X Laboratory
P.O. BOX 549
Manchester, WA 98353
Gerald Muth
(206) 442-0370
AK, ID, OR, WA
Labat-s Testing Labs, Century Testing Labs (For VOA Only), Weyerhaeuser Co. Columbia Testing, Silver Valley

11. Carla Dempsey - (OS-230)
USEPA
401 "M" Street, S.W.
Washington, DC 20460
FTS 382-5746

12. Edward Kantor
USEPA
EMSL-LV
944 E. Harmon Avenue
BOX 93478
Las Vegas, NV 89119

13. Sample Management Office
Viar and Company
P.O. BOX 818

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.6: CLP Data Assessment Summary Form (Inorganics)

Date: Oct. 1989
Number: HW-2
Revision: 9

CLP DATA ASSESSMENT SUMMARY FORM (INORGANICS)

Type of Review: CLP Date: Nov 13, 1997 SDG Case #: 97187

Site: Island Chemical Lab Name: Pace Analytical

Reviewer's Initials: DCA Number of Samples: 27

Analytes Rejected Due to Exceeding Review Criteria:*

	Holding Times	Calibration	Prep Blank	Field Blank	Inter-ferences	Spike Recovery	Duplicates Lab	Duplicates Field	Detection Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejection
ICP	0	0	0	2	0	42	0	X	0	0	0	X	594	44
Flame AA														
Furnace AA														
Mercury	0	0	0	0	X	0	0	X	0	0	X	X	27	0
Total CN	0	0	0	0	X	0	0	X	0	0	X	X	27	0
Other														

Analytes Flagged as Estimated (J) Due to Exceeding Criteria For:*

ICP	0	12	0	0	0	72	42	X	0	0	11	X	594	137
Flame AA														
Furnace AA														
Mercury	0	0	0	0	X	0	0	X	0	0	X	X	27	0
Total CN	0	0	0	0	X	0	0	X	0	0	X	X	27	0
Other														

Note:
Asterisk (*) Indicates additional exceedances of review criteria.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.7: CLP Data Assessment Checklist
Inorganic Analysis

Date: Oct. 1989
Number: HW-2
Revision: 9

INORGANIC REGIONAL DATA ASSESSMENT Island Region 2

CASE NO. _____ SITE Chemical

LABORATORY Pace Analytical NO. OF SAMPLES/MATRIX 21/Soil 6/WATER

SDG# 98187 REVIEWER (IF NOT ESD) _____

SOW# ILM03.0 REVIEWER'S NAME Don Anne'

DPO: ACTION _____ FYI X COMPLETION DATE Nov 13, 1997

DATA ASSESSMENT SUMMARY

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

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: _____

SDG # 97187

SOP NO. HW-6
Revision #8

CLP ORGANICS DATA REVIEW
AND PRELIMINARY REVIEW

BY: _____ Date: Jan. 2 1992
Leon Lazarus, Environmental Scientist
Toxic and Hazardous Waste Section

BY: _____ Date: January 3 1992
George Karras, Chemist
Toxic and Hazardous Waste Section

BY: _____ Date: 1/3/1992
Stellos Gerazounis, Chemist
Toxic and Hazardous Waste Section

CONCURRED BY: _____ Date: 1/3/92
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: _____ Date: 1/7/92
Robert Runyon, Chief
Monitoring Management Branch

304557

STANDARD OPERATING PROCEDURE

Date: January 1992
Revision: 8

	YES	NO	N/A

PACKAGE COMPLETENESS AND DELIVERABLES

~~CASE~~ NUMBER: 97197 SDG LAB: Pace Analytical

SITE: Island Chemical

1.0 Data Completeness and Deliverables

1.1	Have any missing deliverables been received and added to the data package?	[ ]	X	___

ACTION: Call lab for explanation/resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-Compliance" section of reviewer narrative.

1.2	Was SMO CCS checklist included with package?	[ ]	___	X
2.0	Cover Letter SDG Narrative			
2.1	Is the Narrative or Cover Letter Present?	[X]	___	___
2.2	Are Case Number and/or SAS number contained in the Narrative or Cover letter?	[ ]	___	X

3.0 Data Validation Checklist

The following checklist is divided into three parts. Part A is filled out if the data package contains any VOA analyses, Part B for any BNA analyses and Part C for Pesticide/PCBs.

Does this package contain:

VOA Data?	X	___
BNA Data?	X	___
Pesticide/PCB data?	___	X

Action: Complete corresponding parts of checklist.

304558

YES NO N/A

PART A: VOA ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? [ ] ___ X

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports 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 upon receipt at the laboratory, flag all positive results "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".

304559

YES NO N/A

2.0 Holding Times

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

If unpreserved, aqueous samples maintained at 4°C which are to be analyzed for aromatic hydrocarbons 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 not samples were preserved.

The holding time for soils is 10 days.

Table of Holding Time Violations

Sample ID	Sample Matrix	Preserved?	(See Traffic Report) Date Sampled	Date Lab Received	Date Analyzed

304560

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 narrative 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).

	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: Call lab for explanation/ resubmittals. If missing deliverables are unavailable. document effect in data assessments.

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

ACTION: Circle all outliers in red.

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

304561

YES NO N/A

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.
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.

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

ACTION: If large errors exist, call lab for explanation/resubmittal, make any 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 ___ ___

	YES	NO	N/A

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 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 RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
_____ out of 5	1 out of 5

ACTION: No action is taken based on 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.

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 analyzed for each SDG or every 20 samples of similar matrix (low water, low soil, medium soil), whichever is more frequent?	[X]	___	___

304563

	YES	NO	N/A
5.3 Has a VOA method/instrument blank been analyzed at least once every twelve hours for each concentration level and GC/MS system used?	[X]	___	___

ACTION: If any method blank data are missing, call lab for explanation/ resubmittal. 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.

5.4 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.

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 blanks have positive results (TCL and/or TIC) for VOAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for % moisture when necessary.	X	[ ]	___
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.)

YES NO N/A

NOTE: All field blank results associated to 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).

	Sample conc > CRQL but < 10x blank value	Sample conc < CRQL & <10x blank value	Sample conc > CRQL & >10x blank value
Methylene Chloride Acetone Toluene 2-Butanone	Flag sample result with a "U:	Report CRQL & qualify "U"	No qualification is needed

	Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & > 5x blank value
Other Contaminants	Flag sample result with a "U"	Report CRQL & qualify "U"	No qualification is needed

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

	YES	NO	N/A

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 data assessment that there is no associated field/rinse/equipment blank. 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 mass/charge (m/z) listing for the BFB provided for each twelve hour shift? X

7.3 Has an instrument performance compound been analyzed for every twelve hours of sample analysis per instrument? X

YES NO N/A

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

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: If lab cannot provide 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? X

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 between mass lists and Form Vs? (Check at least two values but if errors are found, check more.) X

	YES	NO	N/A
7.7 Have the appropriate number of significant figures (two) been reported?	X		
ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document effect in data assessments.			
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

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 8.2 above.			

		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:			
	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.

8.5	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 specified in 3.2 above. If lab does not generate their own standard spectra, make note in "Contract Problems/Non-compliance".

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]		

	YES	NO	N/A
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 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 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)

	YES	NO	N/A
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		

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

ACTION: Add "JN" qualifier if missing.

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

ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change 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 detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable (R). (i.e. Common Lab Contaminants: CO_2 (M/E 44), Siloxanes (M/E 73) Hexane, Aldol Condensation Products, Solvent Preservatives, and related by products - see Functional Guidelines for more guidance).

	YES	NO	N/A

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 standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found? — X —

10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture? X — —

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors under "Conclusions".

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 I's 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 initial and continuing calibration? X — —

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

YES NO N/A

12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI) present and complete for the volatile fraction at concentrations of 10, 20, 50, 100, 200 ug/l? Are there separate calibrations for low water/med soils and low soil samples? [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" and non-detects "R".

12.3 Are response factors stable for VOA's over the concentration range of the calibration (%Relative Standard Deviation (%RSD) <30.0%)? [ ] X ___

ACTION: Circle all outliers in red.

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

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

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

12.4 Are the RRFs above 0.05? [X] ___ ___

Action: Circle all outliers in red.
Action: If any RRF are < 0.05, qualify associated non-detects (R) and flag associated positive data as estimated (J).

304573

	YES	NO	N/A
12.5 Are there any transcription/calculation errors in the reporting of average response factors (RRF) or %RSD? (Check at least 2 values, but if errors are found, check more.)		X	

13.0 GC/MS Continuing Calibration (Form VII)

13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the volatile 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 within twelve hours of the previous continuing calibration analysis.

_____

_____

_____

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

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

ACTION: Circle all outliers in red.

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

304574

	YES	NO	N/A
13.4 Do any volatile compounds have a RRF <0.05?	___	X	___

ACTION: Circle all outliers in red.

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

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

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors under "Conclusions".

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	___	___

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit

(Attach additional sheets if necessary.)

304575

YES NO N/A

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. Non-detects associated with IS area counts > 100% should not be qualified.

3. If IS area is below the lower limit (< 50%), qualify all associated non-detects (U values) "J". If extremely low area counts are reported, (< 25%) or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable ("R").

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.

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 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? [ ] __ X

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab 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 upon receipt at the laboratory, 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 [ ] __

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.

YES NO N/A

Table of Holding Time Violations

Sample	Sample Matrix	Date Sampled (See Traffic Report)	Date Lab Received	Date Extracted	Date Analyzed
S21012	soil	6/16/97	6/18/97	6/24/97	7/1/97
S23032	Soil	6/12/97	6/13/97	6/29/97	7/1/97

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 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 the 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 are exceeded by more than 28 days, all non detect data are unusable (R).

3.0 Surrogate Recovery (Form II)

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

a. Low Water [ ] ___ ___

b. Low Soil [ ] ___ ___

c. Med Soil [ ] ___ ___

304578

		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. Low Soil	[ ]	___	X

ACTION: Call lab for explanation/resubmittals. If missing deliverables are unavailable, document effect in data assessments.

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

ACTION: Circle all outliers in red.

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. base-neutral or acid 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. If recoveries are greater than the upper acceptance limit, do not qualify non-detects.

	YES	NO	N/A

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

1. Positive results for the fraction with <10% surrogate recovery are qualified with "J".

2. Non-detects for that fraction should be qualified 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.

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

ACTION: If large errors exist, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.

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 3.2 above.

YES NO N/A

4.3 How many BNA spike recoveries are outside QC limits?

Water	Soils
____ out of 22	0 out of 22

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
____ out of 11	2 out of 11

ACTION: No action is taken on 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.

5.0 Blanks (Form IV)

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? X ____ ____
(See SOW p. D - 59/SV, Section 8.7)

ACTION: If any method blank data are missing, call lab for explanation/resubmittal. If not available, use professional judgement to determine if the associated sample data should be qualified.

YES NO N/A

5.4 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 BNAs? (X) ___ ___

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

6.0 Contamination

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

6.1 Do any method/instrument/reagent blanks have positive results (TCL and/or TIC) for BNAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for % moisture where necessary. X ( ) ___

6.2 Do any field/rinse/ blanks have positive BNA 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 to a particular group of samples (may exceed one per case) must be used to qualify data. 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.

YES NO N/A

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).

Sample conc > CRQL but < 10x blank	Sample conc <CRQL & is< 10x blank value	Sample conc > CRQL value & >10x blank
Common Phthalate Esters		
Flag sample result with a "U";	Report CRQL & qualify "U"	No qualification is needed

Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & >5 blank value
Other Contaminants		
Flag sample result with a "U";	Report CRQL & qualify "U"	No qualification is needed

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" (unusable).

6.3 Are there field/rinse/equipment blanks associated with every sample? YES NO N/A

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

YES NO N/A

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 analyses for which no associated GC/MS tuning data are available.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

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

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

7.4 Have the ion abundances been normalized to m/z 198? X ___

	YES	NO	N/A
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 Have the appropriate number of significant figures (two) been reported?	X		

ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document effect in data assessments.

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

8.1 Are the Organic Analysis Data Sheets (Form I BNA) 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		

		YES	NO	N/A
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".			
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.			
8.4	Are the response factors shown in the Quant Report?	[ ]	X	—
8.5	Is chromatographic performance acceptable with respect to:			
	Baseline stability?	[X]	—	—
	Resolution?	[X]	—	—
	Peak shape?	[X]	—	—
	Full-scale graph (attenuation)?	[X]	—	—
	Other: _____	[ ]	—	X
	ACTION: Use professional judgement to determine the acceptability of the data.			

	YES	NO	N/A
8.6 Are the 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. If lab does not generate their own standard spectra, make note in "Contract Problems/ Non-compliance". 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.			
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		

	YES	NO	N/A

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] ___ ___

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

ACTION: Add "JN" qualifier 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 acceptability of TIC identifications. If it is determined that an incorrect identification was made, change 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).

YES NO N/A

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 standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found? ___ [X] ___

10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture? [X] ___ ___

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.

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 it's 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 I's 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 initial and continuing calibration? [X] ___

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

	YES	NO	N/A

12.0 GC/MS Initial Calibration (Form VI)

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.

12.2 Are response factors stable for BNAs over the concentration range of the calibration? (% Relative standard deviation (%RSD) < 30.0%) [X]

ACTION: Circle all outliers in red.

NOTE: Although 20 BNA compounds have a minimum RRF and no maximum %RSD, the technical criteria are the same for all analytes.

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

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

12.3 Are all BNA compound RRFs > 0.05? [X]

ACTION: Circle all outliers in red.

ACTION: If any RRF < 0.05
1. "R" all non-detects.
2. "J" all positive results.

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

ACTION: Circle Errors in red.

YES NO N/A

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors in data assessments.

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 within twelve hours of a continuing calibration analysis for each instrument used.

_____

_____

_____

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

13.3 Do any semivolatile compounds have a % Difference (% D) between the initial and continuing RRF which exceeds the ± 25.0% criteria? [X] [ ] ___

ACTION: Circle all outliers in red.

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

YES NO N/A

13.4 Do any semivolatile compounds have a RRF <0.05? ___ (X)

ACTION: Circle all outliers in red.

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

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

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.

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) ___

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit

(Attach additional sheets if necessary.)

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

YES NO N/A

2. Non-detects associated with IS areas > 100% should not be qualified.

3. If the IS area is below the lower limit (<50%), qualify all associated non-detects (U-values) "J". If extremely low area counts are reported (<25%) or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable (R).

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.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for SNA 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.

SDG No. 98004

VOC, SVOC, and Metals Checklist

304594

 GW Jan '98

QA/QC Review of Low Concentration Volatile Data
For Pace Analytical SDG: 98004
ISLAND CHEMICAL

Reviewer: Uma Parasar
February 19, 1998

Holding Times:
All samples were analyzed within seven days, the holding time for unpreserved aqueous samples.

GC/MS Tuning and Mass Calibration:
All BFB tuning criteria were within control limits.

Initial Calibration:
The percent relative standard deviations (%RSD) for methylene chloride (65.3%) and acetone (37.7%) exceeded the criteria of 30% in the initial calibration run on January 6th 1998. Positive detects for methylene chloride and acetone in all samples included in this sample delivery group (SDG) were qualified as estimated (J).

All other compounds had %RSDs below 30 % and all relative response factors (RRF) were above 0.05 units.

Continuing Calibration:
The following compounds had percent differences (%Ds) that were greater than 30% in the continuing calibration run on January 15, 1998:

Chloromethane	33.8%
Vinyl Chloride	30.4%

Non detect results for chloromethane and vinyl chloride in associated samples FB109, TB109, FB0110, MW-4, MW-1, and P-1 were qualified as estimated (UJ).

The following compounds had %Ds that were greater than 30% in the continuing calibration run on January 16, 1998:

Carbon tetrachloride	31.3%
Bromoform	30.3%

Non detect results for carbon tetrachloride and bromoform in associated samples PW-2, MW-10, MW-3, MW-2, FB013, MW-2D, TB0113, MW-7, FB0111, MW-5, TB0112, MW-9, FB0112, MW-8, FB0114, TB0114, and MW-6 were qualified as estimated (UJ).

All other compounds had %Ds below 30% and all RRFs were above 0.05 units.

Blanks:
All method blanks, trip blanks and field blanks associated with aqueous analyses reported concentrations of methylene chloride and acetone. Methylene chloride and acetone data in samples MW-4, P-1, MW-3, MW-5, MW-8, MW-9, MW-7, MW-10, and P-2, were qualified as not detected based on method blank contamination.

Six field blanks were collected along with the aqueous samples. One or more field blanks reported concentrations of methylene chloride, acetone, 2-butanone, ethylbenzene, toluene, and total xylenes. Sample data for acetone and methylene chloride were qualified based on method blanks. Total xylene results in samples P-1, MW-10, and MW-5 were qualified as not detected based on the associated field blanks.

Four trip blanks were collected along with the aqueous samples. All trip blanks reported low concentrations of methylene chloride and acetone. No data were qualified based on the trip blanks.

Internal Standard Area Summary:
Internal standard area counts were within acceptable limits in all the analyses.

Surrogate Recovery:
All surrogate recoveries were acceptable.

Matrix Spike/Matrix Spike Duplicate:
The spike/spike duplicate recoveries and relative percent differences were evaluated in conjunction with other QC parameters. No matrix effect is reported in the analyses.

Compound ID:
All reported compounds were correctly identified and quantitated accurately.

Field Duplicates:
One field duplicate was collected in this data set. The data were compared and the relative percent differences calculated. All percent differences were within 20%.

Sample Receipt:
Samples MW-2, MW-2D, MW-7 and MW-8 were received with air bubbles in all 3 VOC vials. The VOC data for these samples were qualified as estimated (J) if detected and (UJ) if not detected.

Samples collected on January 10th, 11th, and 12th were received by the laboratory on January 14th. No data were qualified as estimated since all analyses were performed within holding time and the sample coolers were received sealed with the samples stored at 4° centigrade.

QA/QC Review of Low Concentration TCL Semivolatile and Pyridine Data For Pace Analytical SDG: 98004
ISLAND CHEMICAL

Reviewer: Uma Parasar
February 23, 1997

Holding Times:
All samples were extracted and analyzed within the holding time.

GC/MS Tuning and Mass Calibration:
All DFTPP tuning criteria were within control limits.

Initial Calibration:
All compounds had percent relative standard deviations (%RSD) below 30 % and all relative response factors (RRF) were above 0.05 units.

Continuing Calibration:
All compounds had percent differences (%D) below 25% and all RRFs were above 0.05 units.

Blanks:
One method blank was analyzed with the samples in this SDG. The method blank was reported to contain 2 micrograms per liter of bis(2-ethylhexyl)phthalate. Bis(2-ethylhexyl)phthalate detected in samples MW-2, MW-3, MW-4, MW-7, MW-8, MW-9, MW-2D, P1, and P2 were qualified as not detected based on the method blank.

Six field blanks were collected along with the samples in this SDG. Bis(2-ethylhexyl)phthalate was detected in all six blanks at low concentrations. Bis(2-ethylhexyl)phthalate concentrations in samples MW-10 and MW-5 were qualified as not detected based on the associated field blanks FB0111 and FB0112.

Ethylbenzene and dimethylbenzene (xylene) which are part of the TCL VOC list were reported as tentatively identified compounds (TICs) in samples MW-1, MW-6, and field blank FB0113. These results were rejected as unusable.

Internal Standard Area Summary:
Samples MW-1 and MW-6 exhibited low area counts associated with one or more internal standards.

The area counts for 1,4-dichlorobenzene-d_4 associated with samples MW-1 and MW-6 were 10% and 6%, respectively of the area lower limit for the compound. Therefore, the results for compounds in MW-1 and MW-6 quantitated using this internal standard were qualified as estimated (J) if detected and rejected as unusable if not detected.

The area counts for naphthalene-d_8 associated with samples MW-1 and MW-6 were 44% and 27%, respectively. The positive results for compounds in MW-1 quantitated using this internal standard were qualified as estimated (J). The results for compounds in MW-6 quantitated using this internal standard were qualified as estimated (J) if detected and rejected as unusable if not detected.

The area count for phenanthrene-d_{10} associated with sample MW-6 was below the acceptable limit. The positive results for compounds in MW-6 quantitated using this internal standard were qualified as estimated (J).

All other internal standard retention times and area counts were within acceptable limits.

Surrogate Recovery:
All surrogate recoveries were within acceptable limits. Surrogates in samples MW-1 and MW-6 were diluted out. Based on the internal standard area counts, no data were qualified.

Matrix Spike/Matrix Spike Duplicate:
MS/MSD samples had all percent recoveries and percent differences within control limits.

Compound ID:
All reported compounds were correctly identified and quantitated accurately.

Laboratory Control Sample:
The laboratory control sample recovery (32%) was below acceptable limits (35 – 98%) for 4-chloroaniline. 4-Chloroaniline data in all samples were qualified as estimated (J) if detected and rejected as unusable if not detected.

Sample Receipt:
Samples collected on January 10th, 11th, and 12th were received by the laboratory on January 14th. No data were qualified as estimated since the samples were analyzed within holding time and the samples were received in sealed coolers stored at a temperature of 4° centigrade.

Pyridine Analyses:
All samples were analyzed for pyridine using SW-846 Method 8270. Samples were analyzed in conformance with the method. The only deviation noted was the area counts for the internal standard compound 1,4-dichlorobenzene-d_4, which was used to quantitate pyridine, associated with samples MW-1and MW-6. The area counts were 10% and 6.2%, respectively and required the rejection of pyridine data in these samples.

SOP NO. HW-13
Revision 1

Superfund Analytical Methods
For
Low Concentration Water for Organics
June 1991

Prepared by the Region II
Organic ESAT Team

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APPROVED BY: Robert A. Runyon Date: 10/2/92
Robert Runyon, Chief
Monitoring Management Branch

YES NO N/A

SDG
~~CASE~~ NUMBER: 98004 LAB: PACE ANALYTICAL
SITE: ISLAND CHEMICAL

1.0 Data Completeness and Deliverables

1.1 Have any missing deliverables been received and added to the data package? [X] ___ ___

ACTION: Call lab for explanation/resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-Compliance" section of reviewer narrative.

1.2 Was SAS-request included with package? [ ] ___ X

If no, a SAS-request can be retrieved from RSCC.

2.0 Cover Letter SDG Narrative

2.1 Is the Narrative or Cover Letter Present? [X] ___ ___

2.2 Are Case Number and/or SAS number contained in the Narrative or Cover letter? [X] ___ ___

3.0 Data Validation Checklist

The following checklist is divided into three parts. Part A is filled out if the data package contains any Low Concentration Volatile analyses, Part B for any Low Concentration Semivolatile analyses and Part C for Low Concentration Pesticide/Aroclors.

Does this package contain:

Low Concentration Volatile Data? X ___

Low Concentration Semivolatile Data? X ___

Low Concentration Pesticide/Aroclor data? ___ X

Action: Complete corresponding parts of checklist.

YES NO N/A

PART A: VOA ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are Traffic Report Forms present for all samples? [X] ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do Traffic Reports 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 samples were not iced upon receipt at the laboratory, flag all positive results "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 non-detects using professional judgement.

1.3 Does Lab narrative contain a list of pH determinations for all samples? [X] ___ ___

ACTION: If Lab narrative does not contain a list of sample pH determinations, contact the lab for explanation/resubmittals.

2.0 Holding Times

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

If unpreserved, samples maintained at 4°C and are to be analyzed for aromatic hydrocarbons must be analyzed within 7 days of collection. If preserved with HCl (pH<2) and stored at 4°C, then samples must be analyzed within 14 days of collection. If uncertain about preservation, contact sampler to determine whether or not samples were preserved.

YES NO N/A

Table of Holding Time Violations

Sample ID	Preserved?	Date Sampled	(See Traffic Report) 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 narrative 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).

3.0 Surrogate Recovery (Form II LCV)

3.1 Are the VOA Surrogate Recovery Summaries (Form II LCV) present? [X] ___ ___

ACTION: Call lab for explanation/resubmittals. If missing deliverables are unavailable, document effect in data assessments.

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

ACTION: Circle all outliers in red.

3.3 Was the surrogate (p-bromofluorobenzene) recovery outside of contract specifications for any sample or method blank? ___ [X] ___

	YES	NO	N/A
If yes, were samples re-analyzed?	[ ]	___	X
Were method blanks re-analyzed?	[ ]	___	X

ACTION: If bromofluorobenzene recovery is >10%, but fails 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.

3. If surrogate recovery is above allowable levels, do not qualify non-detects.

If surrogate 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 the method blank's surrogate recovery out of specification in both original and reanalyses. Check the internal standard areas.

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

ACTION: If large errors exist, call lab for explanation/resubmittal, make any necessary corrections and note errors in the data assessment.

4.0 Laboratory Control Sample (Form III LCV)

4.1 Is the Laboratory Control Sample Recovery Form (Form III LCV) present?	X	___	___

YES NO N/A

4.2 Was the Laboratory Control Sample (LCS) analyzed at the required frequency (once per SDG or every 20 samples, whichever is more frequent) for the Low Concentration VOA method? [X] ___ ___

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

4.3 How many VOA LCS recoveries are outside QC limits of 60-140%?

Low Conc. Water

0 out of 12

ACTION: If the LCS recovery is greater than 140%, positive results should be flagged "J" for the affected compound.

If the mass spectral criteria are met but the LCS recovery is less than 60%, then the associated detected target compounds should be flagged "J". Associated non-detected target compounds should be flagged "R".

If 25 % of the analyte recoveries are below QC-limits qualify all associated positive sample data as "J" and non-detects "R".

If two or more analytes show recoveries of < 10% all associated positive sample data as "J" and non-detects "R".

It should be noted for TPO action if a laboratory fails to analyze an LCS with each SDG, or if a laboratory consistently fails to generate acceptable LCS recoveries.

5.0 Method Blanks (Form IV-LCV)

5.1 Is the Method Blank Summary (Form IV LCV) present? [X] ___ ___

YES NO N/A

5.2 Frequency of Analysis:

For the analysis of Low Concentration VOA TCL compounds, has a method blank been analyzed for each SDG or every 20 samples, whichever is more frequent? [X] ___ ___

5.3 Has a VOA method blank been analyzed at least once every twelve hours for each GC/MS system used? [X] ___ ___

ACTION: If any method blank data are missing, call lab for explanation/resubmittal. 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.

5.4 Chromatography: review the method blank raw data - chromatograms (RICs), quant reports or data system printouts and spectra.

Is the chromatographic performance (baseline stability) for each instrument acceptable for Low Concentration VOAs? [X] ___ ___

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

5.0.1 Storage Blank

5.0.1a Has a storage blank been analyzed at the required frequency (once per SDG) for VOAs? [X] ___ ___

5.0.1b Chromatography: Compare the storage blank raw data with the associated method blank data in order to determine if the contamination is also present in the method blank.

ACTION: If the storage blank contains target compounds at a concentration greater than the CRQL, positive results for that compound(s) should be flagged "J". If gross contamination occurred positive sample results may require rejection for that compound.

YES NO N/A

5.0.1c Is the chromatographic performance (baseline stability) for the storage blank acceptable for Low Conc. VOAs? [X] ___ ___

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

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 Has an instrument blank been analyzed following a sample analysis which contained an analyte(s) at high concentration(s). ___ [X] ___

ACTION: Sample analysis results after the high concentration sample must be evaluated for carryover. Instrument cross contamination should be noted for TPO action if an effect on the data is suspected.

6.2 Do any method/storage blanks have positive results (TCL and/or TIC) for Low Conc. VOAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor. X [ ] ___

6.3 Do any field/trip/rinse blanks have positive Low Conc. 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.)

Method Blanks

VBLKW1 : Methylene chloride 2
Acetone 3J

Associated samples : FB0109, FB0110, MW0001, MW0004, P0001, TB0109,

VBLKW2 : Methylene chloride 3
Acetone 3J

Associated samples : FB0110DL, FB0111, FB0112, FB0113, FB0114, MW0002 MW0003, MW0005, MW0006, MW0007, MW0008, MW0009, MW0010, MW200D, P00001DL, P00002, TB0112, TB0113, TB0114.

VBLKW3 : VSBLK1 (Associated sample)

Field Blanks

FB0109 : Associated samples : MW1, MW4,

Methylene chloride 10B
Acetone 3BJ
Trichloroethene 0.2J
Toluene 0.3J

FB0110 : Associated samples : P-1, P-2,

Methylene chloride 2B
Acetone 380BD
2-Butanone 1J
Ethylbenzene 0.2J
Xylene 1

Field Blanks (continued)

FB0111: Associated Samples: MW-10, MW-3

Methylene chloride	8B
Acetone	3BJ
Toluene	0.2J
Xylene	0.2J

FB0112: Associated Samples: MW-5, MW-9

Methylene chloride	11B
Acetone	3BJ
Xylene	0.4J

FB0113: Associated Samples: MW-2, MW-2D, MW-7 MW-6

Methylene chloride	10B
Acetone	4BJ
2-Butanone	0.3J
Xylene	0.3J
TIC: Trichlorofluoromethane	0.7JN
Unknown	0.6JN.

FB0114: Associated Samples: MW-8

Methylene Chloride	10B
Acetone	4B
2-Butanone	0.7J
Xylene	0.6J

YES NO N/A

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. 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).

	Sample conc > CRQL but < 10x blank value	Sample conc < CRQL & <10x blank value	Sample conc > CRQL & >10x blank value
Methylene Chloride Acetone 2-Butanone	Flag sample result with a "U"	Report CRQL & qualify "U"	No qualification is needed

	Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & > 5x blank value
Other Contam-inants	Flag sample result with a "U"	Report CRQL & qualify "U"	No qualification is needed

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

YES NO N/A

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: Note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V-LCV)

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

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

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

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

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

ACTION: If lab cannot provide 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 95?	[X]		
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 between mass lists and Form Vs? (Check at least two values but if errors are found, check more.)		[X]	
7.7 Have the appropriate number of significant figures (two) been reported?	[X]		
ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document effect in data assessments.			
7.8 Is the spectrum 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 LCV)

	YES	NO	N/A
8.1 Are the Organic Analysis Data Sheets (Form I LCV) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate?	[X]		
b. Laboratory Control Samples?	[X]		
c. Blanks?	[X]		

	YES	NO	N/A
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. Laboratory Control Samples?	[X]	___	___
c. Blanks?	[X]	___	___
ACTION: If any data are missing, take action specified in 3.2 above.			
8.3 Are the response factors shown in the Quant Report?	[ ]	X	___
8.4 Is chromatographic performance acceptable with respect to:			
Baseline stability?	[X]	___	___
Resolution?	[X]	___	___
Peak shape?	[X]	___	___
Full-scale graph (attenuation)?	[X]	___	___
Other: _____	[ ]	___	X
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 specified in 3.2 above. If lab does not generate their own standard spectra, make note in data assessment - "Contract Problems/Non-Compliance".			

	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 25% 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 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 the SOW page VOA D-32, section 21.

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)

	YES	NO	N/A
9.1 Are all Tentatively Identified Compound Forms (Form I LCV-TIC) present? 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]	___	___

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

YES NO N/A

ACTION: Add "JN" qualifier 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 25% 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 acceptability of TIC identifications. If it is determined that an incorrect identification was made, change its 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 detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable (R). (i.e. Common Lab Contaminants: CO_2 (M/E 44), Siloxanes (M/E 73) Hexane, Aldol Condensation Products, Solvent Preservatives, and related by products - see Functional Guidelines for more guidance).

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 standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found? ___ [X] ___

YES NO N/A

10.2 Are the CRQLs adjusted to reflect sample dilutions? [X] ___ ___

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors under "Conclusions".

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 I's 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 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 LCV) present and complete for the volatile fraction at concentrations of 1, 2, 5, 10, and 25 ug/l? [X] ___ ___

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

YES NO N/A

12.2 Are response factors stable for VOA's over the concentration range of the calibration (%Relative Standard Deviation (%RSD) <30.0%)? [ ] [X] ___

ACTION: Circle all outliers in red.

NOTE: Although 12 Low Conc. VOA compounds have a minimum RRF and no maximum %RSD, the technical criteria are the same for all analytes.

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

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

12.3 Are the $\overline{RRF}$s above 0.05? [X] ___ ___

Action: Circle all outliers in red.

Action: If any $\overline{RRF}$ values are < 0.05, qualify associated non-detects (R) and flag associated positive data as estimated (J).

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

13.0 GC/MS Continuing Calibration (Form VII LCV)

13.1 Are the Continuing Calibration Forms (Form VII LCV) present and complete for the volatile fraction? [X] ___ ___

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

YES NO N/A

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

_____

_____

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

13.3 Do any volatile compounds have a % Difference (% D) between the initial and continuing RRF which exceeds the ± 30% criteria? X [ ] ___

ACTION: Circle all outliers in red.

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

13.4 Do any volatile compounds have a RRF <0.05? [ ] X ___

ACTION: Circle all outliers in red.

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

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

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors under "Conclusions".

YES NO N/A

14.0 Internal Standard (Form VIII LCV)

14.1 Are the internal standard areas (Form VIII LCV) of every sample and blank within the upper and lower limits (±40%) for each continuing calibration? [X] ___ ___

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit
_____	_____	____	_____	_____
_____	_____	____	_____	_____
_____	_____	____	_____	_____

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. Non-detects associated with IS area counts > 40% should not be qualified.

3. If IS area is below the lower limit (< 40%), qualify all associated non-detects (U values) "J". If extremely low area counts are reported, (< 20%) or if performance exhibits a major, abrupt drop off, flag all associated non-detects as unusable ("R").

14.2 Are the retention times of the internal standards within 20 seconds of the associated calibration standard? [X] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 20 seconds.

YES NO N/A

15.0 Field Duplicates

15.1 Were any field duplicates submitted for Low Conc. 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 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? [X] ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [X] ___

ACTION: If samples were not iced upon receipt at the laboratory, 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] ___

Continuous liquid-liquid extraction of samples for BNA analysis must be started within seven days of the date of collection. Extracts must be analyzed within 40 days of the date of extraction.

Table of Holding Time Violations

Sample ID	Date Sampled	(See Traffic Report) Date Lab Received	Date Extracted	Date Analyzed
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

	YES	NO	N/A

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 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 the 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 are exceeded by more than 28 days, all non-detect data are unusable (R).

3.0 Surrogate Recovery (Form II LCSV)

		YES	NO	N/A
3.1	Are the Low Conc. Semivolatile Surrogate Recovery Summaries (Form II LCSV) present?	[X]	___	___
3.2	Are all the semivolatile samples in each SDG listed on the proper Surrogate Recovery Form(s)?	[X]	___	___

ACTION: Call lab for explanation/resubmittals. If missing deliverables are unavailable, document effect in data assessments.

3.3	Were outliers marked correctly with an asterisk?	[ ]	___	X
	ACTION: Circle all outliers in red.			
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

YES NO N/A

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

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. If recoveries are greater than the upper acceptance limit, do not qualify non-detects.

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

1. Positive results for the fraction with <10% surrogate recovery are qualified with "J".

2. Non-detects for that fraction should be qualified 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.

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

ACTION: If large errors exist, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.

4.0 <u>Laboratory Control Sample (Form III LCSV)</u>

4.1 Is the Semivolatile Laboratory Control Sample (LCS) Recovery Form (Form III LCSV) present? [X] ___ ___

YES NO N/A

4.2 Was the LCS analyzed at the required frequency (once per SDG, or every 20 samples)? [X] ___ ___

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

4.3 How many Low Conc. Semivolatile LCS recoveries are outside QC limits?

Low Conc. Water

__1__ out of 15

ACTION: If the LCS recovery is greater than the QC-limit, provided on Form III LCSV (140%), positive results should be flagged "J" for the affected compound(s).

If the mass spectral criteria are met but the LCS recovery is less than 60%, then the associated detected target compounds should be flagged "J". Associated non-detected target compounds should be flagged "R".

If 25 % of the analyte recoveries are below QC-limits qualify all associated positive sample data as "J" and non-detects "R".

If two or more analytes show recoveries of < 10% all associated positive sample data as "J" and non-detects "R".

It should be noted for TPO action if a laboratory fails to analyze an LCS with each SDG, or if a laboratory consistently fails to generate acceptable LCS recoveries.

5.0 Blanks (Form IV LCSV)

5.1 Is the Method Blank Summary Form (Form IV LCSV) present? [X] ___ ___

YES NO N/A

5.2 Frequency of Analysis:

For the analysis of Low Conc. Semivolatile TCL compounds, has a method blank been reported per 20 samples and for each extraction batch? [X] ___ ___

5.3 Has a Low Conc. Semivolatile method blank been analyzed for each GC/MS system used? (See SOW page SV D-34, section 26.2.2) [X] ___ ___

ACTION: If any method blank data are missing, call lab for explanation/resubmittal. If method blank data are not available, reject (R) all associated positive data. However, using professional judgement, the data reviewer may substitute field blank data for missing method blank data.

5.4 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 BNAs? [X] ___ ___

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

6.0 Contamination

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

6.1 Do any method blanks have positive results (TCL and/or TIC) for Low Conc. semivolatiles? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor. X [ ] ___

Method Blank:

SBLKW1 analyzed 2/12/98 : Associated samples : All samp in this SDG.

Field Blank:

FB0109 : Diethylphthalate 2J
Bis(2-ethylhexyl) phthalate 3J
Associated samples : mw-1, MW-4.

FB0110 : Bis(2-ethylhexyl) phthalate 10
Associated samples : P-1, P-2.

FB0111 : Bis(2-ethylhexyl) phthalate 5
Associated samples : MW-10, MW-3

FB0112 : Bis(2-ethylhexyl) phthalate 3
Associated samples : MW-5, MW-9

FB0113 : Bis(2-ethylhexyl) phthalate 9
Associated samples : MW-2, MW-20, MW-6, MW-7

FB0114 : Diethylphthalate 2J
Bis(2-ethylhexyl) phthalate 3J
Associated samples : MW-8

YES NO N/A

6.2 Do any field/rinse blanks have positive Low Conc. Semivolatile 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. 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).

Sample conc > CRQL but < 10x blank	Sample conc <CRQL & is < 10x blank value	Sample conc > CRQL value & > 10x blank
Common Phthalate Esters		
Flag sample result with a "U";	Report CRQL & qualify "U"	No qualification is needed
Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & >5 blank value
Other Contaminants Flag sample result with a "U";	Report CRQL & qualify "U"	No qualification is needed

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

YES NO N/A

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: Note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V LCSV)

7.1 Are the GC/MS Instrument Performance Check Forms (Form V LCSV) 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 analyses for which no associated GC/MS tuning data are available.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: If lab cannot provide 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?	[X]		
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: 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 Have the appropriate number of significant figures (two) been reported?	[X]		
ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document effect in data assessments.			
7.8 Is the spectrum 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 LCSV)

	YES	NO	N/A
8.1 Are the Organic Analysis Data Sheets (Form I LCSV-1,2) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate?	[X]		
b. Laboratory Control Sample(s)?	[X]		
c. Blanks?	[X]		

	YES	NO	N/A
8.2 Are the Low Conc. Semivolatile 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. Laboratory Control Sample(s)?	[X]	___	___
c. Blanks	[X]	___	___

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

8.3 Are the response factors shown in the Quant Report?	[ ]	X	___
8.4 Is chromatographic performance acceptable with respect to:			
Baseline stability?	[X]	___	___
Resolution?	[X]	___	___
Peak shape?	[X]	___	___
Full-scale graph (attenuation)?	[X]	___	___
Other:_____	[ ]	___	X

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

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

ACTION: If any mass spectra are missing, take action specified in 3.2 above. If lab does not generate their own standard spectra, make note in "Contract Problems/ Non-Compliance". If spectra are missing, reject all positive data.

	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 25% 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 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 SOW page SV D-27, section 20.

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]	___	___

YES NO N/A

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

ACTION: Add "JN" qualifier 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 25% 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 acceptability of TIC identifications. If it is determined that an incorrect identification was made, change 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).

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 standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found? ___ [X] ___

	YES	NO	N/A
10.2 Are the CRQLs adjusted to reflect sample dilutions?	[X]	___	___

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.

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 it's 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 I's 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 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 LCSV)

12.1 Are the Initial Calibration Forms (Form VI LCSV-1,2) present and complete for the Low Conc. Semivolatile fraction at concentrations of 5, 10, 20, 50 and 80 ug/l?	[X]	___	___

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

YES NO N/A

12.2 Are response factors stable for semivolatiles over the concentration range of the calibration (% Relative standard deviation (%RSD) < 30.0%)? [X] ___ ___

ACTION: Circle all outliers in red.

NOTE: Although 22 Low Conc. Semivolatile compounds have a minimum RRF and no maximum %RSD, the technical criteria are the same for all analytes.

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

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

12.3 Are all Semivolatile compound $\overline{RRF}$s > 0.05? [X] ___ ___

ACTION: Circle all outliers in red.

ACTION: If any $\overline{RRF}$ < 0.05:

1. "R" all non-detects.

2. "J" all positive results.

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

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors in data assessments.

YES NO N/A

13.0 GC/MS Continuing Calibration (Form VII LCSV)

13.1 Are the Continuing Calibration Forms (Form VII LCSV-1,2) present and complete for the semivolatile 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 within twelve hours of a continuing calibration analysis for each instrument used.

_____

_____

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

13.3 Do any semivolatile compounds have a % Difference (% D) between the initial and continuing RRF which exceeds the ± 25.0% criteria? ___ [X] ___

ACTION: Circle all outliers in red.

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) unusable.

13.4 Do any semivolatile compounds have a RRF <0.05? ___ [X] ___

ACTION: Circle all outliers in red.

YES NO N/A

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

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

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document the effect in data assessments.

14.0 Internal Standards (Form VIII LCSV)

14.1 Are the Internal Standard Area and RT Summary Forms (Form VIII LCSV-1,2) present and complete for the semivolatile fraction? [X] ___ ___

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

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit

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

2. Non-detects associated with IS areas > 100% should not be qualified.

YES NO N/A

3. If the IS area is below the lower limit (<50%), qualify all associated non-detects (U-values) "J". If extremely low area counts are reported (<25%) or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable (R).

14.3 Are the retention times of the internal standards within 20 seconds of the associated calibration standard? [X] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 20 seconds.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for Low Conc. Semivolatile 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.

QA/QC Review of Target Analyte List Metals Data
For Pace Analytical SDG: 98004
ISLAND CHEMICAL

January 19, 1998
Reviewer: Uma Parasar

Holding Times:
Samples were analyzed within holding times.

Initial and Continuing Calibration Verification:
All percent recoveries were within control limits except for cyanide. The percent recoveries associated with the continuing calibration verifications for cyanide were 120.6%, 117.4%, 118.2%, and 115.8%. No data were qualified since cyanide was not detected in any of the samples.

Blank Contamination:
No metals were detected in the calibration and preparation blanks at concentrations above the contract required detection limit (CRDL). Field blanks reported concentrations of iron, lead, and zinc above the CRDL. Iron results in samples MW-1, MW-4, MW-2, MW-2D, and MW-7 were qualified as not detected based on the field blanks. Lead results in samples MW-1, MW-4, MW-10, MW-3, MW-5, and MW-9 were qualified as not detected based on the field blanks. Zinc results in samples MW-2, MW-2D, MW-5, MW-9, and MW-7 were qualified as not detected based on the field blanks.

CRDL Standard:
The percent recoveries for the CRDL standard were outside acceptable limits (80-120%) for selenium (78.6%) and zinc (69.8% and 66.6%). All selenium and zinc data were qualified as estimated (J) if detected and (UJ) if not detected.

ICP Interference Check Sample:
The percent recoveries were outside acceptable control limits (80-120%) for calcium (70.8%, 69.8%) and cobalt (79.6%, 77.9%). All associated calcium and cobalt data were qualified as estimated (J) if detected and (UJ) if not detected.

Spike Sample Recovery:
All spike recoveries were within control limits with the following exceptions: lead (-56.9%), manganese (-20.1%), and cyanide (26.2%). Based on these recoveries, the cyanide data for all samples is rejected as unusable.

Duplicates:
The RPDs exceeded 50% or the difference between replicate results exceeded the CRDL for the following metals: aluminum, calcium, iron, magnesium, manganese, and zinc. The associated data for these metals in all samples were qualified as estimated (J) if detected and (UJ) if not detected.

Laboratory Control Sample:
All recoveries were within control limits.

ICP Serial Dilution:
All %Ds were below the allowable maximum (10%) with the exception of calcium (11.1%). Calcium data in all samples were qualified as estimated (J) if detected and (UJ) if not detected.

Field Replicate:
One field replicate was collected and the data were compared and the RPDs calculated. The RPD for zinc (69.6%) was greater than 50%. Zinc data were qualified as not detected based on field blank contamination; therefore, no additional qualifiers were applied.

ICP Linear Ranges:
The following results in the respective samples were qualified as estimated since the results exceeded the linear range and were not re-analyzed at a dilution.

Sample	Metal (s)	Qualifier
MW-1	Manganese, Potassium	J
MW-3	Manganese	J
MW-5	Potassium	J
MW-6	Manganese	J
MW-10	Manganese	J

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

based on

SOW. 3/90

(SOP Revision XI)

PREPARED BY: Hanif Sheikh DATE: 1-30-92
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

APPROVED BY: Kevin W. Kubik DATE: 1-30-92
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: Robert Runyon DATE: 1/30/92
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 th 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 c the reviews completed to include: a. date of start of case revie

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 respon 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 Analysi 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 revie or consideration.

5.0 Acceptance Criteria - In order that reviews be consistent among reviewers, acceptanc criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidanc 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 locatin any problems, both corrected and uncorrected. However, the validation should be carrie out even if CCS is not present. Resubmittals received from laboratory in response t CCS must be used by the reviewer.

7.0 Request for Reanalysis - Data reviewers must note all items of contract non-complianc within Data Assessment Narrative. If holding times and sample storage times have not bee exceeded, TPO may request reanalysis if items of non-compliance are critical to dat 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.

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?	[___]	___	___
	Furnace AA?	[___]	___	___
	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?	[___]	___	___
	Present and complete for 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.1.11.2	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

		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*

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?	[___]	___	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	___

	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.			

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.2: Data Assessment Narrative

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

Case#	—	Site	ISLAND CHEMICAL	Matrix: Soil	
SDG#	98004	Lab	PACE ANALYTICAL	Water	X
Contractor	—	Reviewer	UMA PARASAR	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 usabl

Contractual Qualifiers- The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW IIM01.0.

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

See attached narrative

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: _____

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.3: Contract Non-Compliance (SMO Report)

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

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 an 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. Th 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

REG/MAILING LIST FOR DATA REVIEWERS

1. USEPA Region I (ESD)
60 Westview Street
Lexington, MA 02173
Deb Szaro
(617) 861-6312
CT, ME, MA, NH, RI, VT
CAA, Resource Analysts, York, ESI, Skinner, DRA

2. USEPA Region II (ESD)
Woodbridge Avenue
Edison, New Jersey 08837
(201) 321-6676
NJ, NY, PR, VI
Century, Chemtech, US Test, Nanco, ETC, Gadson, EMS, Galson, ICH

3. USEPA Region III (CRL)
839 Bestgate Road
Annapolis, MD 21401
Chuck Sands
(301) 266-9180
DE, MD, PA, VA, WV, DC
Centec, Mitkem, JTC, MACK, VERSAR, ITAS, Weston, MESS, EA Engineering Subject Tech., Key PA

4. USEPA Region IV (ESD)
Analytical Support Branch
College Station Road
Athens, GA 30613
Tom Bennett, Jr.
(404) 546-3112
AL, FL, GA, KY, MS, NC, SC, TN
Compuchem, EPS, ESI, PESAT, Triangle Labs

5. USEPA Region V (ESD)
536 South Clark Street
Tenth Floor, CRL
Chicago, IL 60605
Pat Churilla
312-353-9027
IL, IN, MI, MN, OH, WI
NEI, TAT/ERC

6. USEPA Region VI (ESD)
Monterey Park Plaza, Bldg. C
6608 Hornwood Drive
Houston, TX 77074
David Stockton
(713) 953-3425
AR, LA, NM, TX, OK
ANACON, RADIAN, SPECS, ESS, Glocher Research, Inc., SPL Inc., SwRI, Allied, Key TX, EDRA

7. USEPA Region VII Laboratory
25 Funston Road
Kansas City, KS 66115
Debra Morey
(913) 236-3851
IO, KS, NB, MO
Wilson, Kansas City Scientific Enterprises, Eagle Pitcher

8. USEPA Region VIII Laboratory
BOX 25166
Denver Federal Center
Lakewood, CO 80225
Eva Hoffman
(303) 236-7371
CO, ND, SD, UT, WY, MT
ACCU, CSMRI, RMAL, Data Chem, Centec

9. USEPA Region IX (ESD)
QA Management Section
215 Fremont Street
San Francisco, CA 94105
Kent Kitchingman
(415) 974-0924
AZ, CA, HI, NV, American Samoa, Guam Trust Territories of Pacific Islands, Wake Island
ALS, CAL Weston, S-Cubed, IT-CA, Vegas

10. USEPA Region X Laboratory
P.O. BOX 549
Manchester, WA 98353
Gerald Muth
(206) 442-0370
AK, ID, OR, WA
Lauchs Testing Labs, Century Testing Labs (For VOA Only), Weyerhaeuser Co. Columbia Testing, Silver Valley

11. Carla Dempsey - (OS-230)
USEPA
401 "M" Street, S.W.
Washington, DC 20460
FTS 382-5746

12. Edward Kantor
USEPA
EMSL-LV
944 E. Harmon Avenue
BOX 93478
Las Vegas, NV 89119

13. Sample Management Office
Viar and Company
P.O. BOX 818
Alexandria, VA 22313

CLP DATA ASSESSMENT SUMMARY FORM (INORGANICS)

pe of Review:_____ Date:_____ Case #:_____

te:_____ Lab Name:_____

viewer's Initials:_____ Number of Samples:_____

Analytes Rejected Due to Exceeding Review Criteria:*

	Holding Times	Calibration	Prep Blank	Field Blank	Inter-ferences	Spike Recovery	Duplicates Lab	Duplicates Field	Detection Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejection
CP														
lame AA														
urnace AA														
ercury														
otal														
ther														

Analytes Flagged as Estimated (J) Due to Exceeding Criteria For:*

CP														
lame AA														
urnace AA														
ercury														
otal														
ther														

Note:
Asterisk (*) Indicates additional exceedances of review criteria.

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

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

Inorganic Analysis

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:_____

SDG No. 98037

VOCs, SVOCs, and Metals Checklist

304674

Pace SOP: 98037

SOP NO. HW-13
Revision 1

Superfund Analytical Methods
For
Low Concentration Water for Organics
June 1991

Prepared by the Region II
Organic ESAT Team

By: George Karras
George Karras, Organic Task Monitor/Chemist
Toxic and Hazardous Waste Section
Date: 9/8/92

By: Leon Lazarus
Leon Lazarus, Environmental Scientist
Toxic and Hazardous Waste Section
Date: 9/8/92

By: Stelios Gerazounis
Stelios Gerazounis, Chemist
Toxic and Hazardous Waste Section
Date: 9/9/92

CONCURRED BY: Kevin W. Kubik
Kevin Kubik, Chief
Toxic and Hazardous Waste Section
Date: 9/30/92

APPROVED BY: Robert M. Runyon
Robert Runyon, Chief
Monitoring Management Branch
Date: 10/2/92

304675

YES NO N/A

~~CASE NUMBER~~ SDG: 98037 LAB: Pace

SITE: Island Chemical

1.0 Data Completeness and Deliverables

1.1 Have any missing deliverables been received and added to the data package? [ ] X ___

ACTION: Call lab for explanation/resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-Compliance" section of reviewer narrative.

1.2 Was SAS-request included with package? [ ] ___ X

If no, a SAS-request can be retrieved from RSCC.

2.0 Cover Letter SDG Narrative

2.1 Is the Narrative or Cover Letter Present? [X] ___ ___

2.2 Are Case Number and/or SAS number contained in the Narrative or Cover letter? [ ] ___ X

3.0 Data Validation Checklist

The following checklist is divided into three parts. Part A is filled out if the data package contains any Low Concentration Volatile analyses, Part B for any Low Concentration Semivolatile analyses and Part C for Low Concentration Pesticide/Aroclors.

Does this package contain:

Low Concentration Volatile Data? X ___

Low Concentration Semivolatile Data? X ___

Low Concentration Pesticide/Aroclor data? ___ X

Action: Complete corresponding parts of checklist.

YES NO N/A

PART A: VOA ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are Traffic Report Forms present for all samples? [ ] ___ X

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do Traffic Reports 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 samples were not iced upon receipt at the laboratory, flag all positive results "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 non-detects using professional judgement.

1.3 Does Lab narrative contain a list of pH determinations for all samples? [ ] X ___

ACTION: If Lab narrative does not contain a list of sample pH determinations, contact the lab for explanation/resubmittals.

2.0 Holding Times

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

If unpreserved, samples maintained at 4°C and are to be analyzed for aromatic hydrocarbons must be analyzed within 7 days of collection. If preserved with HCl (pH<2) and stored at 4°C, then samples must be analyzed within 14 days of collection. If uncertain about preservation, contact sampler to determine whether or not samples were preserved.

YES NO N/A

Table of Holding Time Violations

Sample ID	Preserved?	Date Sampled (See Traffic Report)	Date Lab Received	Date Analyzed
FB0323RE	Yes	3/23/98	3/25/98	4/7/98
TB0323RE	Yes	3/23/98	3/25/98	4/7/98
FB0324RE2	Yes	3/24/98	3/25/98	4/9/98
TB0324RE	Yes	3/24/98	3/25/98	4/8/98
MW0004RE	Yes	3/23/98	3/25/98	4/7/98

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 narrative 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).

3.0 Surrogate Recovery (Form II LCV)

3.1 Are the VOA Surrogate Recovery Summaries (Form II LCV) present? [X] ___ ___

ACTION: Call lab for explanation/resubmittals. If missing deliverables are unavailable, document effect in data assessments.

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

ACTION: Circle all outliers in red.

3.3 Was the surrogate (p-bromofluorobenzene) recovery outside of contract specifications for any sample or method blank? ___ [X] ___

	YES	NO	N/A
If yes, were samples re-analyzed?	[ ]	___	X
Were method blanks re-analyzed?	[ ]	___	X

ACTION: If bromofluorobenzene recovery is >10%, but fails 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.

3. If surrogate recovery is above allowable levels, do not qualify non-detects.

If surrogate 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 the method blank's surrogate recovery out of specification in both original and reanalyses. Check the internal standard areas.

		YES	NO	N/A
3.4	Are there any transcription/calculation errors between raw data and Form II?	___	[X]	___

ACTION: If large errors exist, call lab for explanation/resubmittal, make any necessary corrections and note errors in the data assessment.

4.0 Laboratory Control Sample (Form III LCV)

		YES	NO	N/A
4.1	Is the Laboratory Control Sample Recovery Form (Form III LCV) present?	[X]	___	___

YES NO N/A

4.2 Was the Laboratory Control Sample (LCS) analyzed at the required frequency (once per SDG or every 20 samples, whichever is more frequent) for the Low Concentration VOA method? [X] ___ ___

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

4.3 How many VOA LCS recoveries are outside QC limits of 60-140%?

Low Conc. Water

__0__ out of 12 on re-analysis

ACTION: If the LCS recovery is greater than 140%, positive results should be flagged "J" for the affected compound.

If the mass spectral criteria are met but the LCS recovery is less than 60%, then the associated detected target compounds should be flagged "J". Associated non-detected target compounds should be flagged "R".

If 25 % of the analyte recoveries are below QC-limits qualify all associated positive sample data as "J" and non-detects "R".

If two or more analytes show recoveries of < 10% all associated positive sample data as "J" and non-detects "R".

It should be noted for TPO action if a laboratory fails to analyze an LCS with each SDG, or if a laboratory consistently fails to generate acceptable LCS recoveries.

5.0 Method Blanks (Form IV-LCV)

5.1 Is the Method Blank Summary (Form IV LCV) present? [X] ___ ___

YES NO N/A

5.2 Frequency of Analysis:

For the analysis of Low Concentration VOA TCL compounds, has a method blank been analyzed for each SDG or every 20 samples, whichever is more frequent? [X] ___ ___

5.3 Has a VOA method blank been analyzed at least once every twelve hours for each GC/MS system used? [X] ___ ___

ACTION: If any method blank data are missing, call lab for explanation/resubmittal. 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.

5.4 Chromatography: review the method blank raw data - chromatograms (RICs), quant reports or data system printouts and spectra.

Is the chromatographic performance (baseline stability) for each instrument acceptable for Low Concentration VOAs? [X] ___ ___

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

5.0.1 Storage Blank

5.0.1a Has a storage blank been analyzed at the required frequency (once per SDG) for VOAs? [ ] [X] ___

5.0.1b Chromatography: Compare the storage blank raw data with the associated method blank data in order to determine if the contamination is also present in the method blank.

ACTION: If the storage blank contains target compounds at a concentration greater than the CRQL, positive results for that compound(s) should be flagged "J". If gross contamination occurred positive sample results may require rejection for that compound.

YES NO N/A

5.0.1c Is the chromatographic performance (baseline stability) for the storage blank acceptable for Low Conc. VOAs? [ ] ___ X

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

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 Has an instrument blank been analyzed following a sample analysis which contained an analyte(s) at high concentration(s). X [ ] ___

ACTION: Sample analysis results after the high concentration sample must be evaluated for carryover. Instrument cross contamination should be noted for TPO action if an effect on the data is suspected.

6.2 Do any method/storage blanks have positive results (TCL and/or TIC) for Low Conc. VOAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor. X [ ] ___

6.3 Do any field/trip/rinse blanks have positive Low Conc. 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.)

YES NO N/A

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. 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).

	Sample conc > CRQL but < 10x blank value	Sample conc < CRQL & <10x blank value	Sample conc > CRQL & >10x blank value
Methylene Chloride Acetone 2-Butanone	Flag sample result with a "U"	Report CRQL & qualify "U"	No qualification is needed

	Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & > 5x blank value
Other Contam-inants	Flag sample result with a "U"	Report CRQL & qualify "U"	No qualification is needed

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

YES NO N/A

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: Note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V-LCV)

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

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

7.3 Has an instrument performance compound been analyzed for every twelve hours of sample analysis per instrument? [N/A] ___ ___

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

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

ACTION: If lab cannot provide 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 95?	X		
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 between mass lists and Form Vs? (Check at least two values but if errors are found, check more.)		X	
7.7 Have the appropriate number of significant figures (two) been reported?	X		
ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document effect in data assessments.			
7.8 Is the spectrum 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 LCV)

	YES	NO	N/A
8.1 Are the Organic Analysis Data Sheets (Form I LCV) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate?	X		
b. Laboratory Control Samples?	X		
c. Blanks?	X		

	YES	NO	N/A
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. Laboratory Control Samples?	[X]	___	___
c. Blanks?	[X]	___	___

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

8.3 Are the response factors shown in the Quant Report?	[ ]	X	___
8.4 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.

8.5 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 specified in 3.2 above. If lab does not generate their own standard spectra, make note in data assessment - "Contract Problems/Non-Compliance".

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? [Y] ___ ___

8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 25% also present in the sample mass spectrum? [Y] ___ ___

8.8 Do sample and standard relative ion intensities agree within 20%? [Y] ___ ___

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 the SOW page VOA D-32, section 21.

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 LCV-TIC) present? Do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier? [Y] ___ ___

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? [Y] ___ ___

b. Blanks? [Y] ___ ___

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

YES NO N/A

ACTION: Add "JN" qualifier 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 25% 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 acceptability of TIC identifications. If it is determined that an incorrect identification was made, change its 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 detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable (R). (i.e. Common Lab Contaminants: CO_2 (M/E 44), Siloxanes (M/E 73) Hexane, Aldol Condensation Products, Solvent Preservatives, and related by products - see Functional Guidelines for more guidance).

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 standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found? ___ X ___

YES NO N/A

10.2 Are the CRQLs adjusted to reflect sample dilutions? [X] ___ ___

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors under "Conclusions".

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 I's 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 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 LCV) present and complete for the volatile fraction at concentrations of 1, 2, 5, 10, and 25 ug/l? [X] ___ ___

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

YES NO N/A

12.2 Are response factors stable for VOA's over the concentration range of the calibration (%Relative Standard Deviation (%RSD) <30.0%)? [ ] X ___

ACTION: Circle all outliers in red.

NOTE: Although 12 Low Conc. VOA compounds have a minimum RRF and no maximum %RSD, the technical criteria are the same for all analytes.

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

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

12.3 Are the $\overline{RRF}$s above 0.05? [ ] X ___

Action: Circle all outliers in red.

Action: If any $\overline{RRF}$ values are < 0.05, qualify associated non-detects (R) and flag associated positive data as estimated (J).

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

13.0 GC/MS Continuing Calibration (Form VII LCV)

13.1 Are the Continuing Calibration Forms (Form VII LCV) present and complete for the volatile fraction? [X] ___ ___

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

YES NO N/A

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

_____

_____

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

13.3 Do any volatile compounds have a % Difference (% D) between the initial and continuing RRF which exceeds the ± 30% criteria? ___ X ___

ACTION: Circle all outliers in red.

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

13.4 Do any volatile compounds have a RRF <0.05? X ___ ___

ACTION:Circle all outliers in red.

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

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

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors under "Conclusions".

YES NO N/A

14.0 Internal Standard (Form VIII LCV)

14.1 Are the internal standard areas (Form VIII LCV) of every sample and blank within the upper and lower limits (±40%) for each continuing calibration? [X] ___ ___

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit
_____	_____	____	_____	_____
_____	_____	____	_____	_____
_____	_____	____	_____	_____

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. Non-detects associated with IS area counts > 40% should not be qualified.

3. If IS area is below the lower limit (< 40%), qualify all associated non-detects (U values) "J". If extremely low area counts are reported, (< 20%) or if performance exhibits a major, abrupt drop off, flag all associated non-detects as unusable ("R").

14.2 Are the retention times of the internal standards within 20 seconds of the associated calibration standard? [X] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 20 seconds.

YES NO N/A

15.0 Field Duplicates

15.1 Were any field duplicates submitted for Low Conc. 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 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? [ ] ___ [X]

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [X] ___

ACTION: If samples were not iced upon receipt at the laboratory, 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] ___

Continuous liquid-liquid extraction of samples for BNA analysis must be started within seven days of the date of collection. Extracts must be analyzed within 40 days of the date of extraction.

Table of Holding Time Violations

Sample ID	Date Sampled	(See Traffic Report) Date Lab Received	Date Extracted	Date Analyzed
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

YES NO N/A

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 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 the 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 are exceeded by more than 28 days, all non-detect data are unusable (R).

3.0 Surrogate Recovery (Form II LCSV)

3.1 Are the Low Conc. Semivolatile Surrogate Recovery Summaries (Form II LCSV) present? [X] ___ ___

3.2 Are all the semivolatile samples in each SDG listed on the proper Surrogate Recovery Form(s)? [X] ___ ___

ACTION: Call lab for explanation/resubmittals. If missing deliverables are unavailable, document effect in data assessments.

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

ACTION: Circle all outliers in red.

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

YES NO N/A

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. base-neutral or acid 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. If recoveries are greater than the upper acceptance limit, do not qualify non-detects.

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

1. Positive results for the fraction with <10% surrogate recovery are qualified with "J".

2. Non-detects for that fraction should be qualified 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.

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

ACTION: If large errors exist, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.

4.0 Laboratory Control Sample (Form III LCSV)

4.1 Is the Semivolatile Laboratory Control Sample (LCS) Recovery Form (Form III LCSV) present? N ___ ___

YES NO N/A

4.2 Was the LCS analyzed at the required frequency (once per SDG, or every 20 samples)? [X] ___ ___

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

4.3 How many Low Conc. Semivolatile LCS recoveries are outside QC limits?

Low Conc. Water

0 out of 15

ACTION: If the LCS recovery is greater than the QC-limit, provided on Form III LCSV (140%), positive results should be flagged "J" for the affected compound(s).

If the mass spectral criteria are met but the LCS recovery is less than 60%, then the associated detected target compounds should be flagged "J". Associated non-detected target compounds should be flagged "R".

If 25 % of the analyte recoveries are below QC-limits qualify all associated positive sample data as "J" and non-detects "R".

If two or more analytes show recoveries of < 10% all associated positive sample data as "J" and non-detects "R".

It should be noted for TPO action if a laboratory fails to analyze an LCS with each SDG, or if a laboratory consistently fails to generate acceptable LCS recoveries.

5.0 Blanks (Form IV LCSV)

5.1 Is the Method Blank Summary Form (Form IV LCSV) present? [X] ___ ___

YES NO N/A

5.2 Frequency of Analysis:

For the analysis of Low Conc. Semivolatile TCL compounds, has a method blank been reported per 20 samples and for each extraction batch? [X] ___ ___

5.3 Has a Low Conc. Semivolatile method blank been analyzed for each GC/MS system used? (See SOW page SV D-34, section 26.2.2) [X] ___ ___

ACTION: If any method blank data are missing, call lab for explanation/resubmittal. If method blank data are not available, reject (R) all associated positive data. However, using professional judgement, the data reviewer may substitute field blank data for missing method blank data.

5.4 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 BNAs? [X] ___ ___

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

6.0 Contamination

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

6.1 Do any method blanks have positive results (TCL and/or TIC) for Low Conc. semivolatiles? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor. ___ [X] ___

YES NO N/A

6.2 Do any field/rinse blanks have positive Low Conc. Semivolatile 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. 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).

Sample conc > CRQL but < 10x blank	Sample conc <CRQL & is < 10x blank value	Sample conc > CRQL value & > 10x blank
Common Phthalate Esters		
Flag sample result with a "U";	Report CRQL & qualify "U"	No qualification is needed
Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & >5 blank value
Other Contaminants Flag sample result with a "U";	Report CRQL & qualify "U"	No qualification is needed

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

YES NO N/A

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? [N] ___ ___

ACTION: Note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V LCSV)

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

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

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

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

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: If lab cannot provide 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?	X		
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: 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 Have the appropriate number of significant figures (two) been reported?	X		
ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document effect in data assessments.			
7.8 Is the spectrum 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 LCSV)

8.1 Are the Organic Analysis Data Sheets (Form I LCSV-1,2) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate?	X		
b. Laboratory Control Sample(s)?	X		
c. Blanks?	X		

	YES	NO	N/A
8.2 Are the Low Conc. Semivolatile 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. Laboratory Control Sample(s)?	[X]	___	___
c. Blanks	[X]	___	___

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

8.3 Are the response factors shown in the Quant Report?	[ ]	X	___
8.4 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.

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

ACTION: If any mass spectra are missing, take action specified in 3.2 above. If lab does not generate their own standard spectra, make note in "Contract Problems/ Non-Compliance". If spectra are missing, reject all positive data.

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? [Y] ___ ___

8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 25% also present in the sample mass spectrum? [Y] ___ ___

8.8 Do sample and standard relative ion intensities agree within 20%? [Y] ___ ___

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 SOW page SV D-27, section 20.

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? [Y] ___ ___

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? [Y] ___ ___

b. Blanks? [Y] ___ ___

YES NO N/A

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

ACTION: Add "JN" qualifier 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 25% 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 acceptability of TIC identifications. If it is determined that an incorrect identification was made, change 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).

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 standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found? ___ [X] ___

YES NO N/A

10.2 Are the CRQLs adjusted to reflect sample dilutions? [N] ___ ___

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document effect in data assessments.

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 it's 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 I's 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 initial and continuing calibration? [Y] ___ ___

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

12.0 GC/MS Initial Calibration (Form VI LCSV)

12.1 Are the Initial Calibration Forms (Form VI LCSV-1,2) present and complete for the Low Conc. Semivolatile fraction at concentrations of 5, 10, 20, 50 and 80 ug/l? [Y] ___ ___

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

YES NO N/A

12.2 Are response factors stable for semivolatiles over the concentration range of the calibration (% Relative standard deviation (%RSD) < 30.0%)? [ ] [X] ___

ACTION: Circle all outliers in red.

NOTE: Although 22 Low Conc. Semivolatile compounds have a minimum RRF and no maximum %RSD, the technical criteria are the same for all analytes.

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

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

12.3 Are all Semivolatile compound $\overline{RRF}$s > 0.05? [X] ___ ___

ACTION: Circle all outliers in red.

ACTION: If any $\overline{RRF}$ < 0.05:

1. "R" all non-detects.

2. "J" all positive results.

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

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors in data assessments.

YES NO N/A

13.0 GC/MS Continuing Calibration (Form VII LCSV)

13.1 Are the Continuing Calibration Forms (Form VII LCSV-1,2) present and complete for the semivolatile 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 within twelve hours of a continuing calibration analysis for each instrument used.

_____

_____

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

13.3 Do any semivolatile compounds have a % Difference (% D) between the initial and continuing RRF which exceeds the ± 25.0% criteria? X [ ] ___

ACTION: Circle all outliers in red.

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) unusable.

13.4 Do any semivolatile compounds have a RRF <0.05? ___ [X] ___

ACTION: Circle all outliers in red.

YES NO N/A

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

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

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document the effect in data assessments.

14.0 Internal Standards (Form VIII LCSV)

14.1 Are the Internal Standard Area and RT Summary Forms (Form VIII LCSV-1,2) present and complete for the semivolatile fraction? X ___ ___

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

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit

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

2. Non-detects associated with IS areas > 100% should not be qualified.

YES NO N/A

3. If the IS area is below the lower limit (<50%), qualify all associated non-detects (U-values) "J". If extremely low area counts are reported (<25%) or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable (R).

14.3 Are the retention times of the internal standards within 20 seconds of the associated calibration standard? [X] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 20 seconds.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for Low Conc. Semivolatile 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.

soil/water
3/98

QA/QC Review of Volatiles Data
for Pace Analytical SDG: 98037

May 4, 1998

Holding Times: Samples FB0323RE, FB0324RE2, MW0004RE, TB0323RE, and TB0324RE were re-analyzed outside Region II holding times. Results for samples FB0323RE, FB0324RE2, MW0004RE, TB0323RE, and TB0324RE should be considered estimates.

GC/MS Tuning and Mass Calibration: All BFB tuning criteria were within control limits.

Initial Calibration: All compounds with contract criteria for %RSDs met those requirements. Vinyl chloride (0.097) had an RRF below the contractual minimum (0.100) 04-01-98. No action is taken on two or fewer compounds outside contract requirements as long as no %RSD is above 40% and no RRF is below 0.010.

2-Hexanone (0.041) had an average RRF below the allowable minimum (0.050) on 04-01-98. 2-Hexanone (0.040) had an average RRF below the allowable minimum (0.050) on 04-06-98. Positive results for 2-hexanone should be considered estimates (J) and negative results unusable (R). Methylene chloride (36.2%) and acetone (51.1%) had %RSDs above the allowable maximum (30%) on 04-01-98. Results for these compounds should be considered estimates (J) in associated samples.

Continuing Calibration: All compounds with contractual requirements for RRFs and %RSDs met those criteria.

2-Hexanone (0.037) had an RRF5 below the allowable minimum (0.050) on 04-02-98 (0402M02). 2-Hexanone (0.039) had an RRF5 below the allowable minimum (0.050) on 04-03-98 (0403M02). 2-Hexanone (0.041) had an RRF5 below the allowable minimum (0.050) on 04-06-98 (0406M04). 2-Hexanone (0.040) had an RRF5 below the allowable minimum (0.050) on 04-07-98 (0407M02). 2-Hexanone (0.039) had an RRF5 below the allowable minimum (0.050) on 04-08-98 (0408M02). Positive results for 2-hexanone should be considered estimates (J) and negative results unusable (R). All target compounds had %RSDs below the allowable maximum (25%) as required.

Blanks: Method blank VBLKW1 contained traces of methylene chloride (1 ug/L) and acetone (4 ug/L). Method blank VBLKW2 contained traces of methylene chloride (1 ug/L) and acetone (4 ug/L). Method blank VBLKW3 contained traces of methylene chloride (1 ug/kg) and acetone (4 ug/L). Method blank VBLKW4 contained traces of methylene chloride (0.5 ug/L) and acetone (4 ug/L). Method blank VBLKW5 contained traces of methylene chloride (0.5 ug/L) and acetone (3 ug/L). Instrument blank VIBLK02 contained a trace of xylene (0.2

ug/L). Instrument blank VIBLK06 contained a trace of chloroform (0.4 ug/L). Instrument blank VIBLK09 contained a trace of chloroform (0.5 ug/L). Instrument blank VIBLK10 contained traces of ethyl benzene (0.6 ug/L) and xylene (1 ug/L). Trip blank TB0323RE contained a trace of carbon disulfide (0.2 ug/L). Trip blank TB0324 contained a trace of carbon disulfide (0.3 ug/L). Trip blank TB0324RE contained a trace of carbon disulfide (0.2 ug/L). Trip blank TB0326 contained a trace of carbon disulfide (0.1 ug/L). Trip blank TB0327 contained a trace of carbon disulfide (0.1 ug/L). Field blank FB0323 contained traces of acetone (930 ug/L) and 2-butanone (4 ug/L). Field blank FB0324RE2 contained trace of chloromethane (0.8 ug/L), acetone (400 ug/L) and toluene (0.1 ug/L). Field blank FB0325 contained a trace of toluene (0.1 ug/L). Field blank FB0326 contained traces of acetone (160 ug/L), toluene (0.5 ug/L), ethyl benzene (0.2 ug/L), and xylene (0.8 ug/L). Field blank FB0326DL contained a trace of toluene (0.6 ug/L). Field blank FB0326RE contained a trace of toluene (0.6 ug/L). Field blank FB0327 contained traces of methylene chloride (7 ug/L), toluene (0.5 ug/L), ethyl benzene (0.5 ug/L), and xylene (2 ug/L). Field blank FB0329 contained traces of acetone (140 ug/L), ethyl benzene (0.7 ug/L), and xylene (3 ug/L). Field blank FB0329DL contained traces of acetone (150 ug/L), toluene (0.3 ug/L), ethyl benzene (0.7 ug/L), and xylene (3 ug/L). Results for acetone, methylene chloride, 2-butanone, and toluene less than ten times the highest associated blank should be considered not detected (U) in samples. Results for chloromethane, carbon disulfide, chloroform, ethyl benzene, and xylene less than five times the highest associated blank should be considered not detected (U) in samples. Field blanks FB0323 (930 ug/L), FB0324RE2 (400 ug/L), FB0326 (160 ug/L), FB0329 (140 ug/L), and FB0329DL (150 ug/L) contained unacceptable levels of acetone. Results for acetone less than ten times the highest blank level should be considered unusable (R) in associated samples. The following are listed the contaminated blanks and associated samples:

Method blank VBLKW1: FB0323, FB0326, MW0003, MW0004, MW0005, MW0008
Method blank VBLKW2: FB0323DL, FB0324, FB0326DL, MW0002, TB0323, TB0324
Method blank VBLKW3: FB0325, FB0326RE, MW0001, MW0006, MW0007, MW0008RE, MW0009, MW002D, TB0326
Method blank VBLKW4: FB0323RE, FB0324RE, FB0327, FB0329DL, MW0002RE, MW0003RE, MW0004RE, MW0005RE, MW0010, P00002, TB0323RE, TB0324RE, TB0327
Method blank VBLKW5: FB0324RE2, FB0329, MW0001RE, MW0002RE2, MW0006RE, MW002DRE, P00001
Instrument blank VIBLK02: No samples
Instrument blank VIBLK06: FB0329
Instrument blank VIBLK09: MW0001RE
Instrument blank VIBLK10: MW0006RE
Trip blank TB0323RE: MW0004
Trip blank TB0324: MW0003, MW0005
Trip blank TB0324RE: MW0003, MW0005
Trip blank TB0326: MW0001, MW0006, MW0008
Trip blank TB0327: P00002, MW0010
Field blank FB0323: MW0004

Field blank FB0324RE2: MW0003, MW0005
Field blank FB0325: MW0002, MW002D, MW0007, MW0009
Field blank FB0326: MW0001, MW0006, MW0008
Field blank FB0326DL: MW0001, MW0006, MW0008
Field blank FB0326RE: MW0001, MW0006, MW0008
Field blank FB0327: P00002, MW0010
Field blank FB0329: P00001
Field blank FB0329DL: P00001

Internal Standard Area Summary: All internal standard areas and retention times were within control limits.

Surrogate Recovery: All surrogate recoveries were within control limits.

Matrix Spike/Matrix Spike Duplicate: MS/MSD samples were analyzed but the data was not reported as per the SOW.

Laboratory Control Sample: VLCS01 had 2 of 12 percent recoveries outside control limits on the initial analysis but VLCS01RE had all percent recoveries within control limits on the re-analysis.

Compound ID: Checked compounds were within GC/MS quantitation and qualitation limits. All positive hit compounds had the primary and secondary ions in their mass spectra as outlined in the SOW.

Conc. of Internal Standard: 5 ID: M Date: 4/1/98

RRF							
	0401M06 Sample 1	0401M07 Sample 2	0401M08 Sample 3	0401M09 Sample 4	0401M10 Sample 5	Average	% RSD
Conc. of Compound	1	2	5	10	25		
1,4-Difluorobenzene	2903861	2558135	2804841	2444456	2208571	0.119	11.8%
Vinyl Chloride	76172	128774	272515	553762	1419265		
RRF	0.131	0.126	0.097	0.113	0.129		
Chlorobenzene-d5	3056446	2894671	3136479	2818903	2519352	0.431	6.7%
Trichloroethene	280439	512926	1216022	2342764	5638387		
RRF	0.459	0.443	0.388	0.416	0.448		
1,4-Dichlorobenzene-d4	2351023	2292894	2451916	2165967	1979383	1.193	5.2%
1,2-Dichlorobenzene	567596	1116090	2655128	5310170	12199960		
RRF	1.207	1.217	1.083	1.226	1.233		

Continuing Calibrations										
	0402M02		0403M02							
	Sample	%D	Sample	%D	Sample	%D	Sample	%D	Sample	%D
Conc. of Compound	5		5							
1,4-Difluorobenzene	2705284	10.6%	2583795	15.3%		#DIV/0!		#DIV/0!		#DIV/0!
Vinyl Chloride	288265		260859							
RRF	0.107		0.101		#DIV/0!		#DIV/0!		#DIV/0!	
Chlorobenzene-d5	3118716	11.4%	3032991	2.4%		#DIV/0!		#DIV/0!		#DIV/0!
Trichloroethene	1189689		1274871							
RRF	0.381		0.420		#DIV/0!		#DIV/0!		#DIV/0!	
1,4-Dichlorobenzene-d4	2396935	3.0%	2166044	3.5%		#DIV/0!		#DIV/0!		#DIV/0!
1,2-Dichlorobenzene	2773541		2493966							
RRF	1.157		1.151		#DIV/0!		#DIV/0!		#DIV/0!	

Conc. of Internal Standard: 5 ID: M Date: 4/6/98

RRF							
	0406M02 Sample 1	0406M03 Sample 2	0406M04 Sample 3	0406M05 Sample 4	0406M06 Sample 5	Average	% RSD
Conc. of Compound	1	2	5	10	25		
1,4-Difluorobenzene	1993501	2032503	2166252	2037184	1956675		
Vinyl Chloride	192538	379866	932464	1862540	4383896	0.457	4.3%
RRF	0.483	0.467	0.430	0.457	0.448		
Chlorobenzene-d5	2526273	2501909	2641183	2475506	2393981		
Trichloroethene	238680	492947	1250227	2560991	5858705	0.489	3.7%
RRF	0.472	0.493	0.473	0.517	0.489		
1,4-Dichlorobenzene-d4	1969133	2025749	2196270	2085271	1976144		
1,2-Dichlorobenzene	549026	1061008	2764167	5394959	12203450	1.298	4.7%
RRF	1.394	1.309	1.259	1.294	1.235		

Continuing Calibrations										
	0406M04		0407M02		0408M02					
	Sample	%D	Sample	%D	Sample	%D	Sample	%D	Sample	%D
Conc. of Compound	5		5		5					
1,4-Difluorobenzene	2166252		1720851		1493406					
Vinyl Chloride	932464	5.8%	864319	9.9%	689330	1.0%		#DIV/0!		#DIV/0!
RRF	0.430		0.502		0.462		#DIV/0!		#DIV/0!	
Chlorobenzene-d5	2641183		2102412		1917947					
Trichloroethene	1250227	3.2%	1102473	7.2%	848067	9.6%		#DIV/0!		#DIV/0!
RRF	0.473		0.524		0.442		#DIV/0!		#DIV/0!	
1,4-Dichlorobenzene-d4	2196270		1672942		1571980					
1,2-Dichlorobenzene	2764167	3.0%	2249814	3.6%	2051431	0.5%		#DIV/0!		#DIV/0!
RRF	1.259		1.345		1.305		#DIV/0!		#DIV/0!	

QA/QC Review of Semivolatiles Data
for Pace Analytical SDG: 98037

May 5, 1998

Holding Times: All samples were extracted and analyzed within Region II holding times.

GC/MS Tuning and Mass Calibration: All DFTPP tuning criteria were within control limits.

Initial Calibration: All compounds with contract criteria for RRFs and %RSDs met those requirements.

All target compounds had average RRFs above the allowable minimum (0.050) and %RSDs below the allowable maximum (30%) as required.

Continuing Calibration: All compounds with contract criteria for RRF20s met those requirements. 2,4-Dinitrotoluene (31.2%) had a %D above the contractual maximum (25%) on 03-31-98 (0331H01). 2,4-Dinitrotoluene (31.5%) had a %D above the contractual maximum (25%) on 04-01-98 (0401H01). No action is taken on two or fewer compounds per calibration outside contract limits as long as %Ds are below 40% and RRF50s are above 0.010.

All target compounds had RRF50s above the allowable minimum (0.050) as required. Hexachlorocyclopentadiene (53.0%), 2,4-dinitrotoluene (31.2%), and bis(2-ethylhexyl)phthalate (25.4%) had %Ds above the allowable maximum (25%) on 03-31-98 (0331H01). Hexachlorocyclopentadiene (49.7%) and 2,4-dinitrotoluene (31.5%) had %Ds above the allowable maximum (25%) on 04-01-98 (0401H01). Hexachlorocyclopentadiene (37.2%), hexachlorobenzene (27.9%), and bis(2-ethylhexyl)phthalate (26.1%) had %Ds above the allowable maximum (25%) on 04-06-98 (0406H02). Results for these compounds should be considered estimates (J) in associated samples.

Blanks: Method blank SBLKB2 contained a trace of bis(2-ethylhexyl)phthalate (3 ug/L). Field blank FB0323 contained a trace of bis(2-ethylhexyl)phthalate(6 ug/L). Field blank FB0324 contained traces of diethylphthalate(3 ug/L) and bis(2-ethylhexyl)phthalate(93 ug/L). Field blank FB0324DL contained traces of diethylphthalate (3 ug/L) and bis(2-ethylhexyl)phthalate(100 ug/L). Field blank FB0325 contained a trace of diethylphthalate (2 ug/L). Field blank FB0326 contained a trace of diethylphthalate (5 ug/L). Field blank FB0327 contained a trace of diethylphthalate(5 ug/L). Field blank FB0329 contained a trace of diethylphthalate (14 ug/L). Results for diethylphthalate and bis(2-ethylhexyl)phthalate less than ten times the highest associated blank level should be reported as not detected (U) in samples. The following are contaminated blanks and their associated samples:

Method blank SBLKB2: FB0325, FB0326, FB0327, FB0329, MW0001, MW0002, MW0006, MW0007, MW0008, MW0009, MW0010, MW002D, P00001, P00002
Field blank FB0323: MW0004
Field blank FB0324: MW0003, MW0005
Field blank FB0324DL: MW0003, MW0005
Field blank FB0325: MW0002, MW002D, MW0007, MW0009
Field blank FB0326: MW0001, MW0006, MW0008
Field blank FB0327: MW0010, P00002
Field blank FB0329: P00001

Internal Standard Area Summary: All internal standard areas and retention times were within control limits.

Surrogate Recovery: Sample MW0002 had 1 of 3 acid extractable surrogate recoveries outside control limits but not below 10%. Sample MW0006 had 1 of 3 acid extractable and 1 of 3 base/neutral surrogates diluted beyond detection limits. No action is taken on 1 of 3 surrogates per fraction outside control limits as long as no recovery is below 10%. Sample MW002D had 1 of 3 acid extractable surrogate recoveries outside control limits and below 10%. Positive results should be considered estimates (J) and negative results unusable for the acid extractable fraction of sample MW002D.

Matrix Spike/Matrix Spike Duplicate: MS/MSD samples were analyzed but the data was not reported.

Laboratory Control Sample: All percent recoveries were within control limits for sample SLCS1.

Compound ID: Checked compounds were within GC/MS quantitation and qualitation limits. All positive hit compounds had the primary and secondary ions in their mass spectra as outlined in the SOW.

Conc. of Internal Standard: 20 ID: H Date: 2/11/98

RRF							
	0211H05 Sample 1	0211H06 Sample 2	0211H04 Sample 3	0211H07 Sample 4	0211H08 Sample 5	Average	% RSD
Conc. of Compound	5	10	20	50	80		
1,4-Dichlorobenzene-d4	251347	250325	268652	250886	230685	1.349	9.1%
Phenol	92952	180181	370497	790541	1096505		
RRF	1.479	1.440	1.379	1.260	1.188		
Naphthalene-d8	880326	918271	955926	838528	703126	0.888	10.7%
Naphthalene	226543	423029	847831	1686200	2246680		
RRF	1.029	0.921	0.887	0.804	0.799		
Acenaphthene-d10	400005	388620	404776	330227	276304	1.964	8.4%
Acenaphthylene	217601	401037	796645	1529307	1943686		
RRF	2.176	2.064	1.968	1.852	1.759		
Phenanthrene-d10	706344	678133	697452	583210	468554	0.911	11.7%
Phenanthrene	187432	329665	624541	1196836	1511052		
RRF	1.061	0.972	0.895	0.821	0.806		
Chrysene-d12	529508	515973	516476	392560	295370	1.439	5.7%
Pyrene	195496	370200	701925	1343044	1838252		
RRF	1.477	1.435	1.359	1.368	1.556		
Perylene-d12	605760	584393	624222	476428	363077	0.916	5.8%
Benzo(g,h,i)perylene	145503	254634	548967	1048678	1431081		
RRF	0.961	0.871	0.879	0.880	0.985		

Continuing Calibrations

	0331H01		0401H01		0406H02					
	Sample	%D	Sample	%D	Sample	%D	Sample	%D	Sample	%D
Conc. of Compound	20		20		20					
1,4-Dichlorobenzene-d4	267601	8.6%	215299	5.1%	295132	1.3%		#DIV/0!		#DIV/0!
Phenol	392231		305278		403290					
RRF	1.466		1.418		1.366		#DIV/0!		#DIV/0!	
Naphthalene-d8	927546	0.1%	727988	0.8%	919426	2.5%		#DIV/0!		#DIV/0!
Naphthalene	824497		651917		795948					
RRF	0.889		0.896		0.866		#DIV/0!		#DIV/0!	
Acenaphthene-d10	376190	5.5%	287533	6.1%	369738	4.4%		#DIV/0!		#DIV/0!
Acenaphthylene	779608		599365		758173					
RRF	2.072		2.085		2.051		#DIV/0!		#DIV/0!	
Phenanthrene-d10	731823	3.1%	567348	1.0%	690777	3.8%		#DIV/0!		#DIV/0!
Phenanthrene	646023		511699		605571					
RRF	0.883		0.902		0.877		#DIV/0!		#DIV/0!	
Chrysene-d12	544850	2.3%	410505	1.8%	524003	2.1%		#DIV/0!		#DIV/0!
Pyrene	802105		580134		738070					
RRF	1.472		1.413		1.409		#DIV/0!		#DIV/0!	
Perylene-d12	640317	4.0%	455261	1.8%	605722	1.4%		#DIV/0!		#DIV/0!
Benzo(g,h,i)perylene	562899		409370		546897					
RRF	0.879		0.899		0.903		#DIV/0!		#DIV/0!	

QA/QC Review of 8270 Pyridine Data
for Pace Analytical SDG: 98037

May 5, 1998

Holding Times: All samples were extracted and analyzed within Region II holding times.

GC/MS Tuning and Mass Calibration: All DFTPP tuning criteria were within control limits.

Initial Calibration: All SPCCs and CCCs were within control limits.

Pyridine had average RRFs above the allowable minimum (0.050) and %RSDs below the allowable maximum (30%) as required.

Continuing Calibration: All SPCCs and CCCs were within control limits.

Pyridine had RRF50s above the allowable minimum (0.050) and %Ds below the allowable maximum (25%) as required.

Blanks: Method and field blanks reported pyridine as not detected.

Internal Standard Area Summary: All internal standard areas and retention times were within control limits for reported data.

Surrogate Recovery: Samples FB0323, MW0002, FB0325, MW0001, and FB0326 had 1 of 3 base/neutral surrogate percent recoveries outside control limits but above 10%. No action is taken on 1 surrogate per fraction outside control limits as long as no recovery is below 10%.

Matrix Spike/Matrix Spike Duplicate: MS/MSD sample MW0005 had the relative percent difference and percent recoveries within QC limits.

Laboratory Control Sample: Pyridine had a percent recovery within QC limits for the LCS.

Compound ID: All samples reported pyridine as not detected.

G:\STAFF\DANNE\Island\98037.PYR

SDG: 98037

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

based on

SOW. 3/90

(SOP Revision XI)

PREPARED BY: Hanif Sheikh DATE: 1-30-92
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

APPROVED BY: Kevin W. Kubik DATE: 1-30-92
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: Robert Runyon DATE: 1/30/92
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.

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).

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.

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.

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?	[ ]		
(b) Form I's?	[X]		
ACTION: If no for any of the above, contact RSCC for clarification.			

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

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
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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?	[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?	[___]	___	___
A.1.7.2	Measurement read out record present? ICP	[X]	___	___
	Flame AA	[___]	___	___
	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?	[___]	___	___
	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".			
..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.			
..1.14	FORM III (Preparation Blank) - (Note: The preparation blank for mercury is the same as the calibration blank.)			
..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%?	___	[___]	___
(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?	[___]	___	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%?		[ ]	
Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) : > 2x*CRDL?		[ ]	

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?	[___]	___	___

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?	___	[___]	___
Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	___

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?	[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?	___	[___]	___
	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.			

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Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
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		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]	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:

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%? ___ [___] ___

< 10%? ___ [___] ___

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.

e: Evaluation of Metals Data for the
Contract Laboratory Program
Appendix A.2: Data Assessment Narrative

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

Case# _____ Site Island Chemical Matrix: Soil _____

SDG# 98037 Lab Pace Water X

Contractor _____ Reviewer Don Anne' 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.

For data assessment see QA/QC Review of TAL Inorganics Data for Pace Analytical SDG: 98037

A.2.2 (continuation)

A.2.2 (continuation)

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.2: Data Assessment Narrative

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

A.2.3 Contract-Problem/Non-Compliance

MMB/ESAT Rviewer: _____ Date: _____
Signature

Contractor Reviewer: Donald Sanchez Date: 5/5/98
Signature

Verified by: _____ Date: _____

tle: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.4: Mailing List for Data Reviewers

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

MAILING LIST FOR DATA REVIEWERS

1. USEPA Region I (ESD)
60 Westview Street
Lexington, MA 02173
Deb Szaro
(617) 861-6312
CT, ME, MA, NH, RI, VT
CAA, Resource Analysts, York, ESI, Skinner, DPA

2. USEPA Region II (ESD)
Woodbridge Avenue
Edison, New Jersey 08837
(201) 321-6676
NJ, NY, PR, VI
Century, Chemtech, US Test, Nanco, ETC, Gadson, EMS, Galson, ICF

3. USEPA Region III (CRL)
839 Bestgate Road
Annapolis, MD 21401
Chuck Sands
(301) 266-9180
DE, MD, PA, VA, WV, DC
Centec, Hitman, JTC, MACK, VERSAR, ITAS, Weston, MESS, EA Engineering Subject Tech., Key PA

4. USEPA Region IV (ESD)
Analytical Support Branch
College Station Road
Athens, GA 30613
Tom Bennett, Jr.
(404) 546-3112
AL, FL, GA, KY, MS, NC, SC, TN
Compuchem, EPS, ESI, PRC, Triangle Labs

5. USEPA Region V (ESD)
536 South Clark Street
Tenth Floor, CRL
Chicago, IL 60605
Pat Churilla
312-353-9027
IL, IN, MI, MN, OH, WI
NEI, TAT/ERC

6. USEPA Region VI (ESD)
Monterey Park Plaza, Bldg. C
6608 Hornwood Drive
Houston, TX 77074
David Stockton
(713) 953-3425
AR, LA, NM, TX, OK
ANACON, RADIAN, SPECS, ELS, Glocher Research, Inc., SPL Inc., SWRI, Allied, Key TX, EDRA

7. USEPA Region VII Laboratory
25 Funston Road
Kansas City, KS 66115
Debra Morey
(913) 236-3881
IO, KS, NE, MO
Wilson, Kansas City Scientific Enterprises, Eagle Pitcher

8. USEPA Region VIII Laboratory
BOX 25366
Denver Federal Center
Lakewood, CO 80225
Eva Hoffman
(303) 236-7371
CO, ND, SD, UT, WY, MT
ACCU, CSMRI, RMAL, Data Chem., Centec

9. USEPA Region IX (ESD)
QA Management Section
215 Fremont Street
San Francisco, CA 94105
Kent Kitchingman
(415) 974-0924
AZ, CA, HI, NV, American Samoa, Guam Trust Territories of Pacific Islands, Wake Island
All, CAL Weston, S-Cubed, IT-CA, Vegas

10. USEPA Region X Laboratory
P.O. BOX 549
Manchester, WA 98353
Gerald Muth
(206) 442-0370
AK, ID, OR, WA
Lauchs Testing Labs, Century Testing Labs (For VOA Only), Weyerhauser Co. Columbia Testing, Silver Valley

11. Carla Dempsey - (OS-230)
USEPA
401 "M" Street, S.W.
Washington, DC 20460
FTS 382-5746

12. Edward Kantor
USEPA
EMSL-LV
944 E. Harmon Avenue
BOX 93478
Las Vegas, NV 89119

13. Sample Management Office
Viar and Company
P.O. BOX 818
Alexandria, VA 22313

Evaluation of Metals Data for the Contract Laboratory Program
Apendix A.5: CLP Data Assessment Summary Form (Inorganics)

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

CLP DATA ASSESSMENT SUMMARY FORM (INORGANICS)

Type of Review: CLP Date: May 5, 1993 Case #:

Site: Island Chemical Lab Name: Pace

Reviewer's Initials: DCA Number of Samples: 19

Analytes Rejected Due to Exceeding Review Criteria:*

	Holding Times	Calibration	Prep Blank	Field Blank	Inter-ferences	Spike Recovery	Duplicates Lab	Duplicates Field	Detection Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejection
CP	0	0	0	13	0	0	0	X	0	0	0	X	399	13
Flame AA														
Furnace AA	0	0	0	0	X	0	0	X	0	0	X	X	19	0
Mercury	0	0	0	4	X	0	0	X	0	0	X	X	19	4
CN	0	0	0	0	X	0	0	X	0	0	X	X	19	0
Other														

Analytes Flagged as Estimated (J) Due to Exceeding Criteria For:*

Estimated

CP	0	7	0	0	0	0	0	X	0	0	18	X	399	25
Flame AA														
Furnace AA	0	0	0	0	X	0	0	X	0	0	X	X	19	0
Mercury	0	0	0	0	X	0	0	X	0	0	X	X	19	0
Total	0	0	0	0	X	0	0	X	0	0	X	X	19	0
Other														

Note:
Asterisk (*) Indicates additional exceedances of review criteria.

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

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

Inorganic Analysis

INORGANIC REGIONAL DATA ASSESSMENT Region 2

ASE NO. _____ SITE Island Chemical

ABORATORY Pace NO. OF SAMPLES/ MATRIX 19/water

OG# 98037 REVIEWER (IF NOT ESD) _____

OW# ILM02.0 REVIEWER'S NAME Don Anne'

PO: ACTION _____ FYI X COMPLETION DATE May 5, 1998

DATA ASSESSMENT SUMMARY

	ICP	AA	Hg	CYANIDE
HOLDING TIMES	O	O	O	O
CALIBRATIONS	O	O	O	O
BLANKS	M	O	M	O
ICS	O			
LCS	O	O		
DUPLICATE ANALYSIS	O	O	O	O
MATRIX SPIKE	O	O	O	O
MSA		O		
SERIAL DILUTION	O			
SAMPLE VERIFICATION	O	O	O	O
OTHER QC	O			
OVERALL ASSESSMENT	O	O	O	O

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.

TION ITEMS: _____

EAS OF CONCERN: _____

TABLE PERFORMANCE: _____

QA/QC Review of TAL Inorganic
Data for Pace Analytical SDG: 98037

May 5, 1998

Holding Times: Samples were analyzed within EPA Region II CLP holding times.

Initial and Continuing Calibration Verification: Aluminum (124.0% and 117.3%), calcium (110.8%), magnesium (113.5%), potassium (88.1%), sodium (113.2%), and thallium (89.6%) had percent recoveries outside control limits (90-110%). Results for aluminum, calcium, magnesium, potassium, sodium, and thallium should be considered estimates (J) in associated samples.

CRDL Standard for AA and ICP: Lead (73.5%) and silver (63.2% and 59.8%), and zinc (134.6%) had percent recoveries outside Region II control limits (80-120%). Results for these metals in associated samples within effected ranges should be considered estimates (J).

Blanks: Initial and continuing calibration, and preparation blanks had analyte levels less than the CRDLs as required by Region II. Field blank FB0323 contained aluminum (559 ug/L) and zinc (61.8 ug/L) above their CRDLs. Field blank FB0324 contained zinc (46.9 ug/L) above its CRDL. Field blank FB0325 contained mercury (0.27 ug/L) and zinc (24.2 ug/L) above their CRDLs. Field blank FB0326 contained zinc (58.2 ug/L) above its CRDL. Field blank FB0327 contained aluminum (233 ug/L) and zinc (71.2 ug/L) above their CRDLs. Field blank FB0329 contained calcium (5650 ug/L) and zinc (132 ug/L) above their CRDLs. Results for these metals less than five times the associated blank level should be considered unusable (R) in samples.

ICP Interference Check Sample: All applicable percent recoveries were within control limits (80-120%).

Spike Sample Recovery: All percent recoveries were within control limits (75-125%) for spike samples MW0005S and MW0003S

Duplicates: Zinc (83%) had a relative percent difference above the CLP maximum (20%) and the allowable maximum (50%) for duplicate sample MW0005D. Results for should be considered estimates (J) in water samples

Laboratory Control Sample: All percent recoveries were within control limits (80-120%) for the water LCSs.

Standard Addition Results: No results were quantitated by MSA in this LP.

ICP Serial Dilution: Aluminum (16.4%), potassium (24.9%), and zinc (15.2%) had %Ds above the allowable maximum (10%) for serial dilution sample MW0005L. Results for aluminum, potassium, and zinc should be considered estimates (J) in water samples.

Instrument Detection Limits: All IDLs were at or below the CRDLs as required.

G:\STAFF\DANNE\Island\98037.INO

Thallium

Date: 4/20/98

x range	y range
10	0.012
25	0.034
50	0.068
100	0.13
0	0

Slope: 0.001308
Intercept: 0.000422
Cor. Coef.: 0.999568

Thallium

Date: 4/20/98

x range	y range
0	0
10	0.016
25	0.04
50	0.077
100	0.142

Slope:	0.001416
Intercept:	0.002603
Cor. Coef.:	0.998863

Mercury

Date: 4/15/98

x range	y range
0	-1916
0.2	1603
0.5	6124
1	13727
5	83837
10	171008

Slope: 17324.95
Intercept: -2490.61
Cor. Coef.: 0.999956

Cyanide

Date: 4/6/98

x range	y range
0	0.0004
0.01	0.0031
0.05	0.0129
0.1	0.0246
0.5	0.1057
1	0.2026

Slope:	0.201593
Intercept:	0.002443
Cor. Coef.:	0.99972

Cyanide

Date: 4/7/98

x range	y range
0	0.0004
0.01	0.0036
0.05	0.0155
0.1	0.03
0.5	0.1311
1	0.2511

Slope: 0.250237
Intercept: 0.002718
Cor. Coef.: 0.999729

304758

Cyanide

Date: 4/9/98

x range	y range
0	0.0005
0.01	0.0029
0.05	0.0148
0.1	0.0289
0.5	0.1285
1	0.245

Slope: 0.244659
Intercept: 0.002411
Cor. Coef.: 0.999688

SDG No. 98045

VOC Checklist

304760

QA/QC Review of Volatiles Data
for Pace Analytical SDG: 98045

May 19, 1998

Holding Times: Samples were analyzed within Region II holding times.

GC/MS Tuning and Mass Calibration: All BFB tuning criteria were within control limits.

Initial Calibration: All SPCCs andCCCs were within control limits.

Acetone (0.030) and 2-butanone (0.031) had an average RRF below the allowable minimum (0.050) on 01-27-98. Positive results for acetone and 2-butanone should be considered estimates (J) and negative results unusable (R). Methylene chloride (55.94%) had a %RSD above the allowable maximum (30%) on 01-27-98. Methylene chloride (50.72%) and acetone (50.72%) had %RSDs above the allowable maximum (30%) on 03-25-98. Results for these compounds should be considered estimates (J) in associated samples.

Continuing Calibration: All SPCCs and CCCs were within control limits.

2-Butanone had an RRF50 (0.040) below the allowable minimum (0.050) and %D (30.6%) above the allowable maximum (25%) on 04-06-98 (0406A02). Acetone (191.8%) had an unacceptable (>100%) %D on 04-06-98 (0406A02). Acetone (0.023) and 2-butanone (0.039) had an RRF50 below the allowable minimum (0.050) on 04-07-98 (0407A02). Positive results for these compounds should be considered estimates (J) and negative results unusable (R). Methylene chloride (48.5%), 1,2-dichloroethane (40.5%), 4-methyl-2-pentanone (56.5%), and 2-hexanone (66.8%) had %Ds above the allowable maximum (25%) on 04-06-98 (0406A02). Methylene chloride (52.3%), 2-butanone (25.8%), 1,2-dichloroethane (32.2%), carbon tetrachloride (35.1%), and 2-hexanone (41.9%) had %Ds above the allowable maximum (25%) on 04-07-98 (0407A02). Methylene chloride (42.5%) and 4-methyl-2-pentanone(29.6%) had %Ds above the allowable maximum (25%) on 04-07-98 (0407K02). Methylene chloride (34.3%) and chloroethane (31.3%) had %Ds above the allowable maximum (25%) on 04-08-98 (0408K02). Results for these compounds should be considered estimates (J).

Blanks: Method blank 25900B1A06 contained a trace of acetone (23.5 ug/kg). Method blank 25900B1A07 contained a trace of acetone (20.1 ug/kg). Results for acetone less than ten times the highest associated blank should be considered not detected (U) in samples. The following are listed the contaminated blanks and associated samples:

Method blank 25900B1A06: LSF-001, LSF-002

Method blank 25900B1A07: LTC-001, LTC-003, LTC-004

Internal Standard Area Summary: All internal standard areas and retention times were within control limits.

Surrogate Recovery: All surrogate recoveries were within control limits.

Matrix Spike/Matrix Spike Duplicate: The water MS/MSD sample had all relative percent differences and percent recoveries within QC limits. The soil MS/MSD sample had all percent recoveries within QC limits but had 1 of 33 relative percent differences outside QC limits. No action is taken on MS/MSD data alone to qualify or reject an entire set of samples.

Laboratory Control Sample: Soil and water LCSs had all percent recoveries within QC limits.

Compound ID: Checked compounds were within GC/MS quantitation and qualitation limits. All positive hit compounds had the primary and secondary ions in their mass spectra as outlined in the method.

Conc. of Internal Standard: 50 ID: K Date: 3/25/98

RRF								
	0325K02 Sample 1	0325K03 Sample 2	0325K04 Sample 3	0325K07 Sample 4	0325K09 Sample 5	Sample 6	Average	% RSD
Conc. of Compound	10	20	50	100	200			
Pentafluorobenzene	1161895	1153870	1191064	1218328	1238466			
Vinyl chloride	90048	173418	455000	892510	1906038		0.379	2.2%
RRF	0.388	0.376	0.382	0.366	0.385			
1,4-Difluorobenzene	1945587	1994395	1983344	2034306	2160979			
Trichloroethene	197375	392549	985329	2094578	4432082		0.505	2.0%
RRF	0.507	0.492	0.497	0.515	0.513			
Chlorobenzene-d5	1578693	1592610	1666983	1721541	1816447			
Tetrachloroethene	207031	412916	1051865	2272730	4550831		0.644	2.3%
RRF	0.656	0.648	0.631	0.660	0.626			
1,4-Dichlorobenzene-d4	1078045	1100783	1167975	1198770	1254927			
Isoprpopylbenzene	511138	1043476	2711490	5860096	12871861		2.414	3.9%
RRF	2.371	2.370	2.322	2.444	2.564			

Continuing Calibrations												
	0407K02		0408K02									
	Sample	%D	Sample	%D		Sample	%D	Sample	%D	Sample	%D
Conc. of Compound	50		50								
Pentafluorobenzene	1346916		1272025								
Vinyl chloride	460665	9.8%	486711	0.9%			#DIV/0!		#DIV/0!		#DIV/0!
RRF	0.342		0.383			#DIV/0!		#DIV/0!		#DIV/0!	
1,4-Difluorobenzene	2361331		2222677								
Trichloroethene	1152030	3.3%	1154393	2.9%			#DIV/0!		#DIV/0!		#DIV/0!
RRF	0.488		0.519			#DIV/0!		#DIV/0!		#DIV/0!	
Chlorobenzene-d5	2000626		1938338								
Tetrachlorobenzene	1178926	8.5%	1219903	2.3%			#DIV/0!		#DIV/0!		#DIV/0!
RRF	0.589		0.629			#DIV/0!		#DIV/0!		#DIV/0!	
1,4-Dichlorobenzene-d4	1348498		1320538								
Isopropylbenzene	2902472	10.8%	3080404	3.4%			#DIV/0!		#DIV/0!		#DIV/0!
RRF	2.152		2.333			#DIV/0!		#DIV/0!		#DIV/0!	

Conc. of Internal Standard: 50 ID: A Date: 1/27/98

RRF								
	0127A03 Sample 1	0127A04 Sample 2	0127A05 Sample 3	0127A07 Sample 4	0127A09 Sample 5	Sample 6	Average	% RSD
Conc. of Compound	10	20	50	100	200			
Pentafluorobenzene	1375565	1405270	1520249	1578624	1821357		0.380	14.5%
Vinyl chloride	84700	205540	554889	1284856	3324900			
RRF	0.308	0.366	0.365	0.407	0.456			
1,4-Difluorobenzene	1607921	1639526	1706759	1732702	2088927		0.487	3.4%
Trichloroethene	163329	319293	791891	1662193	4150200			
RRF	0.508	0.487	0.464	0.480	0.497			
Chlorobenzene-d5	1178812	1189086	1200720	1233289	1549981		0.723	6.3%
Tetrachloroethene	164034	327777	826851	1849468	4898829			
RRF	0.696	0.689	0.689	0.750	0.790			
1,4-Dichlorobenzene-d4	650886	700574	737177	925306	1128744		4.053	3.5%
Isoprpopylbenzene	551876	1159863	2904208	7492985	17604839			
RRF	4.239	4.139	3.940	4.049	3.899			

Continuing Calibrations												
	0406A02		0407A02									
	Sample	%D	Sample	%D		Sample	%D	Sample	%D	Sample	%D
Conc. of Compound	50		50								
Pentafluorobenzene	2596376	4.2%	2101897	5.0%			#DIV/0!		#DIV/0!		#DIV/0!
Vinyl chloride	1029488		839416								
RRF	0.397		0.399			#DIV/0!		#DIV/0!		#DIV/0!	
1,4-Difluorobenzene	2798758	4.2%	2043558	2.4%			#DIV/0!		#DIV/0!		#DIV/0!
Trichloroethene	1306086		971347								
RRF	0.467		0.475			#DIV/0!		#DIV/0!		#DIV/0!	
Chlorobenzene-d5	2010408	6.3%	1428422	2.1%			#DIV/0!		#DIV/0!		#DIV/0!
Tetrachlorobenzene	1361457		1010550								
RRF	0.677		0.707			#DIV/0!		#DIV/0!		#DIV/0!	
1,4-Dichlorobenzene-d4	1324110	6.2%	1085821	13.3%			#DIV/0!		#DIV/0!		#DIV/0!
Isopropylbenzene	5034327		3816266								
RRF	3.802		3.515			#DIV/0!		#DIV/0!		#DIV/0!	

MEMORANDUM

To: Anuj Gulati; M/H-Warren

From: John Samuelian; M/H-Portland

Date: 16 July 1998

Re: **Island Chemical Corporation - Validation of Method 8260 Analytical Data**
M/H Project No. 12.0805380.001.004

Soil samples, groundwater samples, and aqueous field blanks were analyzed for up to 17 volatile organic componds (VOCs) following EPA Method 8260. The analyses were performed by a mobile laboratory operated by McLaren/Hart. The analytical results were validated using relevant criteria from EPA Region II guidance (USEPA, 1996). The EPA Region II checklists were used to review the data but were not completed as part of this assessment.

The following information was used to validate the analytical results:

- Sample Hold Time before Analysis
- Initial and Continuing Calibration
- Surrogate Recoveries
- Internal Standards
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) analyses
- Laboratory Control Sample
- PE Sample Results
- Method Blank Contamination
- Rinsate Blank Contamination
- Compound Identification
- Chromatogram quality
- Calculations.

A holding time summary table (Table 1) is attached to this memorandum.

McLaren/Hart – ChemRisk
1685 Congress Street
Portland, ME 04102
Phone: (207) 774-0012
Fax: (207) 774-8263

1. Sample Holding Time Before Extraction and Analysis: The technical holding times for VOC analyses by Method 8260 is 14 days from sample collection to analysis. Review of Table 1 shows that all holding times were met.

2. Initial and Continuing Calibrations: The instrument was initially calibrated using a five point calibration standard. The relative standard deviations (RSDs) of each analyte in the multi-concentration calibration are assessed. In the continuing calibration, the percent difference (%D) of the continuing calibration concentration and the average of the initial multipoint calibration is assessed. RRF values must be greater than 0.05, RSD values less than 30%, and %D values less than 25%, for the analytes to be in compliance. The RRFs, RSDs and %D values were within controls, except for the following:

   - Initial Calibration, 4/1/98, aqueous: acetone (63%), methylene chloride (41%), and 1122-tetrachloroethane (38%).
   - Initial Calibration, 4/15/98, soil: bromoform (41%).
   - Continuing Calibration, 4/1/98, aqueous and soil: vinyl chloride (27%)
   - Continuing Calibration, 4/7/98, aqueous: chloromethane (32%)

   No qualifications were required for either initial or continuing calibrations.

3. Surrogate Recoveries: Surrogates measure the ability of the laboratory to extract the targeted analytes by evaluating the recovery of indicator compounds which are structurally similar to the targeted analytes as indicators for all of the analytes. For these analyses, three surrogates were used (1,2-dichloroethane-d4, toluene-d8, and bromofluorobenzene), Control limits were 75-125% for the water samples, and 70-130% for the soil samples. All surrogate recoveries were within the control limits, except for the following samples:

   - Drainage Pit-1 SW: 1,2-dichloroethane-d4 (74%)
   - SB-PP-8/4-6: bromoflurobenzene (68%)
   - SB-PP-10/4-6: bromoflurobenzene (67%)
   - SB-PP-32/16-18: bromoflurobenzene (66%)
   - SB-PP-32/24-26: bromoflurobenzene (68%)
   - SB-PP-13/16-18: bromoflurobenzene (68%)
   - GW31 DL: 1,2-dichloroethane-d4 (134%)

   Qualifications:

   a) All positive VOCs were qualified with a "J," and all non-detects with a "UJ" in 6 samples (Drainage Pit-1 SW, SB-PP-8/4-6, SB-PP-10/4-6, SB-PP-32/16-18, SB-PP-32/24-26, and SB-PP-13/16-18) due to one SMC below the lower control limit.

   b) All positive VOCs were qualified with a "J" in sample GW31 DL due to one SMC above the upper contol limit. No action was required for the non-detect results in this sample.

4. Internal Standards: Internal standards are added to all sample, blank and calibrations and are used to quantify the analytes. For these analyses, 3 internal standards (bromochloromethane, 1,4-difluorobenzene, and chlorobenzene-d5) were used. All internal standard retention times and areas were within the control limits.

5. MS/MSD Analyses: An MS/MSD was performed for the soil samples only. The samples were spiked with a mixture of 4 VOCs (11-dichloroethene, benzene, toluene, and chlorobenzene), with accuracy measured by the spike recovery and precision measured by the relative percent difference between the MS and MSD results. All recoveries and RPDs were within the control limits.

   MS/MSD frequency is typically one per batch or one per 20 samples. This was not the frequency used by the mobile laboratory.

6. LCS Analysis: An LCS (blank spike) was also performed with a mixture of 4 VOCs (11-dichloroethene, benzene, toluene, and chlorobenzene). The spike recoveries were within the control limits.

7. PE Results: A PE sample was analyzed with these samples. The results are summarized in Table 2. All observed results were within the acceptance limits.

8. Analysis Sequence: The laboratory properly performed an initial calibration, sample analyses, and continuing calibration as described by the method.

9. Method Blank Contamination: A method blank measures the potential for false-positive results introduced by internal laboratory contamination. A total of 11 aqueous method blanks and 8 soil method blanks were prepared. All of these contained no detectable analytes, with the exception of the following blank:

   - WB040898A, aqueous blank (Corresponding samples: GWPP28 and GWPP29): acetone (8 J µg/L).

   Qualifications:

   a) Acetone was qualified with a "U" in sample GWPP29 due to method blank contamination.

10. Field Blank Contamination: The field blank (FB) measures the potential for false-positive results introduced by improper field decontamination procedures of sampling equipment. A total of two field blanks were included with this package, and neither contained any detectable VOCs.

11. Trip Blank Contamination: The Trip Blank measures the potential for cross-contamination during sample storage and shipment. Since these samples were hand-delivered to the mobile laboratory, trip blanks were not required.

12. Compound Identification: Verification of identification of VOC analyte analuzed using a GC/MS is based upon the relative retention time compared to the internal standard and ion spectra match. All positive results met RRT and ion spectra criteria.

13. Chromatogram Quality: The quality of the VOC chromatograms is evaluated to determine whether there are any interfering unknowns present which prevent the identification of the targeted analytes. All chromatograms were of acceptable quality.

14. Calculations: The reported analyte concentrations and any internal QC calculations were verified for their accuracy. All checked calculations were acceptable within rounding errors.

15. Other QC:

- Reporting limits and VOC concentrations in the soil samples were calculated and reported based on a wet weight basis.

- Medium level soil extractions were performed on all soil samples using purge and trap grade methanol.

- Chlorobenzene and bromoform were incorporated into the target parameter list during the initial calibration acquired on 4/3/98, and were not originally analytes of concern at this Site. According to the laboratory narrative, they were added to round out quality control procedures.

- The following samples required dilutions due to high concentrations of chloroform:

    - GW-PP-15 (8'-10') - 10X;
    - GW-PP-19 (8'12') - 10X;
    - GW-PP-23 (22'-27') - 20X;
    - GW-PP-28 (26'-3l') - 5X; and
    - GW-PP-31 (22'-27') - 25X.

  The laboratory reflected these dilutions by adjusting the sample volumes on the Form I's, instead of reporting them in the dilution factor field. The appropriate non-detects and positive results to report were identified by the Reviewer on the affected Form Is.

Data Limitation Overview

The VOC analysis of the soil and groundwater samples from the Island Chemical site showed compliance with the QC requirements of the method and all data are valid and acceptable, with qualifications applied and other actions as summarized below:

Drainage Pit-1 SW: All results were qualified with a "UJ" due to SMC recovery below the lower control limit. There were no positive results in this sample.

GW-PP-15 and GW-PP-15DL: Report the non-detect results from the undiluted analysis, and the chloroform result from the undiluted analysis as the sample result.

GW-PP-19 and GW-PP-19DL: Report the non-detect results from the undiluted analysis, and the chloroform result from the undiluted analysis as the sample result.

GW-PP-23 and GW-PP-23DL: Report the non-detect results from the undiluted analysis, and the chloroform result from the undiluted analysis as the sample result.

GW-PP-28 and GW-PP-28DL: Report the non-detect results from the undiluted analysis, and the chloroform result from the undiluted analysis as the sample result.

GWPP29: Acetone was qualified with a "U" due to method blank contamination. The result was raised to the sample quantitation limit.

GW-PP-31 and GW-PP-31 DL: Report the non-detect results from the undiluted analysis, and the chloroform result from the undiluted analysis as the sample result. Chloroform was qualified with a "J" in sample GW31 DL due SMC recovery above the upper control limit.

SB-PP-8/4-6: All results were qualified with a "UJ" due to SMC recovery below the lower control limit. There were no positive results in this sample.

SB-PP-10/4-6: All results were qualified with a "UJ" due to SMC recovery below the lower control limit. There were no positive results in this sample.

SB-PP-13/16-18: All results were qualified with a "UJ" due to SMC recovery below the lower control limit. There were no positive results in this sample.

SB-PP-32/16-18: All results were qualified with a "UJ" due to SMC recovery below the lower control limit. There were no positive results in this sample.

SB-PP-32/24-26: The 16 non -detect results were qualified with a "UJ," and the single positive result (chloroform) was qualified with a "J," due to SMC recovery below the lower control limit. There were no positive results in this sample.

Table 1. Table of Holding Times

Field Sample ID	Matrix	Parameter	Date Collected	Date Lab Received	Date Lab Analyzed	Holding Times	
						C→R	R→A
Drainage Pit 1-SW	aqueous	VOCs	3/30/98	3/30/98	4/2/98	0	3
FB033098	aqueous	VOCs	3/30/98	3/30/98	4/7/98	0	8
FB040498	aqueous	VOCs	4/4/98	4/4/98	4/7/98	0	3
GW-OR-1	aqueous	VOCs	4/1/98	4/1/98	4/1/98	0	0
GW-PP-10	aqueous	VOCs	3/31/98	3/31/98	4/1/98	0	1
GW-PP-11	aqueous	VOCs	3/29/98	3/29/98	4/1/98	0	3
GW-PP-12	aqueous	VOCs	3/30/98	3/30/98	4/2/98	0	3
GW-PP-13	aqueous	VOCs	3/31/98	3/31/98	4/1/98	0	1
GW-PP-14	aqueous	VOCs	4/1/98	4/1/98	4/2/98	0	1
GW-PP-15	aqueous	VOCs	4/2/98	4/2/98	4/3/98	0	1
GW-PP-15 DL	aqueous	VOCs	4/2/98	4/2/98	4/4/98	0	2
GW-PP-16	aqueous	VOCs	4/3/98	4/3/98	4/4/98	0	1
GW-PP-17	aqueous	VOCs	4/3/98	4/3/98	4/3/98	0	0
GW-PP-19	aqueous	VOCs	4/3/98	4/3/98	4/3/98	0	0
GW-PP-19 DL	aqueous	VOCs	4/3/98	4/3/98	4/3/98	0	0
GW-PP-20	aqueous	VOCs	4/3/98	4/3/98	4/4/98	0	1
GW-PP-21	aqueous	VOCs	4/5/98	4/5/98	4/6/98	0	1
GW-PP-23	aqueous	VOCs	4/4/98	4/4/98	4/5/98	0	1
GW-PP-23 DL	aqueous	VOCs	4/4/98	4/4/98	4/5/98	0	1
GW-PP-24	aqueous	VOCs	4/5/98	4/5/98	4/6/98	0	1
GW-PP-25	aqueous	VOCs	4/5/98	4/5/98	4/6/98	0	1
GW-PP-26	aqueous	VOCs	4/5/98	4/5/98	4/7/98	0	2
GW-PP-27 DL	aqueous	VOCs	4/5/98	4/5/98	4/7/98	0	2
GW-PP-28	aqueous	VOCs	4/8/98	4/8/98	4/8/98	0	0
GW-PP-28 DL	aqueous	VOCs	4/8/98	4/8/98	4/9/98	0	1
GW-PP-29	aqueous	VOCs	4/8/98	4/8/98	4/8/98	0	0
GW-PP-30	aqueous	VOCs	4/9/98	4/9/98	4/9/98	0	0
GW-PP-31	aqueous	VOCs	4/8/98	4/8/98	4/9/98	0	1
GW-PP-31 DL	aqueous	VOCs	4/8/98	4/8/98	4/9/98	0	1
GW-PP-32	aqueous	VOCs	4/7/98	4/7/98	4/8/98	0	1
GW-PP-33	aqueous	VOCs	4/9/98	4/9/98	4/9/98	0	0
GW-PP-34	aqueous	VOCs	4/9/98	4/9/98	4/9/98	0	0
GW-PP-35	aqueous	VOCs	4/10/98	4/10/98	4/10/98	0	0
GW-PP-7	aqueous	VOCs	3/27/98	3/27/98	4/1/98	0	5
GW-PP-8	aqueous	VOCs	3/27/98	3/27/98	4/1/98	0	5
GW-PP-9	aqueous	VOCs	3/29/98	3/29/98	4/1/98	0	3
GW-PP-9 RE	aqueous	VOCs	3/29/98	3/29/98	4/2/98	0	4
PE, Lot No. 577		VOCs		4/6/98	4/10/98		4
SB-OR-1/10-12	soil	VOCs	4/1/98	4/1/98	4/4/98	0	3
SB-OR-1/14-16	soil	VOCs	4/1/98	4/1/98	4/4/98	0	3
SB-OR-1/20-22	soil	VOCs	4/1/98	4/1/98	4/4/98	0	3
SB-OR-1/22-24	soil	VOCs	4/1/98	4/1/98	4/4/98	0	3
SB-OR-1/2-4	soil	VOCs	4/1/98	4/1/98	4/4/98	0	3
SB-OR-1/24-26	soil	VOCs	4/1/98	4/1/98	4/4/98	0	3
SB-OR-1/26-28	soil	VOCs	4/1/98	4/1/98	4/4/98	0	3
SB-OR-1/4-6	soil	VOCs	4/1/98	4/1/98	4/4/98	0	3

Table 1 (Continued)

Field Sample ID	Matrix	Parameter	Date Collected	Date Lab Received	Date Lab Analyzed	Holding Times	
						C→R	R→A
SB-PP-10/10-12	soil	VOCs	3/30/98	3/30/98	4/7/98	0	8
SB-PP-10/16-18	soil	VOCs	3/30/98	3/30/98	4/7/98	0	8
SB-PP-10/20-22	soil	VOCs	3/30/98	3/30/98	4/7/98	0	8
SB-PP-10/22-24	soil	VOCs	3/30/98	3/30/98	4/7/98	0	8
SB-PP-10/24-26	soil	VOCs	3/30/98	3/30/98	4/7/98	0	8
SB-PP-10/26-28	soil	VOCs	3/30/98	3/30/98	4/7/98	0	8
SB-PP-10/28-30	soil	VOCs	3/30/98	3/30/98	4/7/98	0	8
SB-PP-10/30-32	soil	VOCs	3/30/98	3/30/98	4/7/98	0	8
SB-PP-10/4-6	soil	VOCs	3/30/98	3/30/98	4/7/98	0	8
SB-PP-13/10-12	soil	VOCs	3/31/98	3/31/98	4/8/98	0	8
SB-PP-13/16-18	soil	VOCs	3/31/98	3/31/98	4/8/98	0	8
SB-PP-13/16-18 Dup	soil	VOCs	3/31/98	3/31/98	4/8/98	0	8
SB-PP-13/20-22	soil	VOCs	3/31/98	3/31/98	4/8/98	0	8
SB-PP-13/22-24	soil	VOCs	3/31/98	3/31/98	4/15/98	0	15
SB-PP-13/24-26	soil	VOCs	3/31/98	3/31/98	4/15/98	0	15
SB-PP-13/26-28	soil	VOCs	3/31/98	3/31/98	4/15/98	0	15
SB-PP-13/28-30	soil	VOCs	3/31/98	3/31/98	4/16/98	0	16
SB-PP-13/4-6	soil	VOCs	3/31/98	3/31/98	4/8/98	0	8
SB-PP-15/10-12	soil	VOCs	4/2/98	4/2/98	4/4/98	0	2
SB-PP-15/5-7	soil	VOCs	4/2/98	4/2/98	4/4/98	0	2
SB-PP-22/10-12	soil	VOCs	4/3/98	4/3/98	4/4/98	0	1
SB-PP-22/12-14	soil	VOCs	4/3/98	4/3/98	4/4/98	0	1
SB-PP-22/1-3	soil	VOCs	4/3/98	4/3/98	4/4/98	0	1
SB-PP-22/5-7	soil	VOCs	4/3/98	4/3/98	4/4/98	0	1
SB-PP-22/7.5-9.5	soil	VOCs	4/3/98	4/3/98	4/4/98	0	1
SB-PP-23/10-12	soil	VOCs	4/4/98	4/4/98	4/4/98	0	0
SB-PP-23/16-18	soil	VOCs	4/4/98	4/4/98	4/5/98	0	1
SB-PP-23/20-22	soil	VOCs	4/4/98	4/4/98	4/5/98	0	1
SB-PP-23/22-24	soil	VOCs	4/4/98	4/4/98	4/5/98	0	1
SB-PP-23/24-26	soil	VOCs	4/4/98	4/4/98	4/5/98	0	1
SB-PP-23/26-28	soil	VOCs	4/4/98	4/4/98	4/5/98	0	1
SB-PP-23/28-30	soil	VOCs	4/4/98	4/4/98	4/6/98	0	2
SB-PP-23/6-8	soil	VOCs	4/4/98	4/4/98	4/5/98	0	1
SB-PP-23/8-10	soil	VOCs	4/4/98	4/4/98	4/5/98	0	1
SB-PP-26/10-12	soil	VOCs	4/5/98	4/5/98	4/5/98	0	0
SB-PP-26/6-8	soil	VOCs	4/5/98	4/5/98	4/6/98	0	1
SB-PP-26/8	soil	VOCs	4/5/98	4/5/98	4/6/98	0	1
SB-PP-26/8-10	soil	VOCs	4/5/98	4/5/98	4/6/98	0	1
SB-PP-27/10-12	soil	VOCs	4/5/98	4/5/98	4/6/98	0	1
SB-PP-27/16-18	soil	VOCs	4/5/98	4/5/98	4/6/98	0	1
SB-PP-27/4-6	soil	VOCs	4/5/98	4/5/98	4/6/98	0	1
SB-PP-32/10-12	soil	VOCs	4/7/98	4/8/98	4/8/98	1	0
SB-PP-32/16-18	soil	VOCs	4/7/98	4/8/98	4/8/98	1	0
SB-PP-32/24-26	soil	VOCs	4/7/98	4/8/98	4/8/98	1	0
SB-PP-32/26	soil	VOCs	4/7/98	4/8/98	4/8/98	1	0
SB-PP-32/27-28	soil	VOCs	4/7/98	4/8/98	4/8/98	1	0
SB-PP-32/4-6	soil	VOCs	4/7/98	4/8/98	4/8/98	1	0

Table 1 (Continued)

Field Sample ID	Matrix	Parameter	Date Collected	Date Lab Received	Date Lab Analyzed	Holding Times	
						C→R	R→A
SB-PP-7/12-14	soil	VOCs	3/27/98	3/27/98	4/4/98	0	8
SB-PP-7/15-17	soil	VOCs	3/27/98	3/27/98	4/4/98	0	8
SB-PP-7/20-22	soil	VOCs	3/27/98	3/27/98	4/4/98	0	8
SB-PP-7/22-24	soil	VOCs	3/27/98	3/27/98	4/5/98	0	9
SB-PP-7/24-26	soil	VOCs	3/27/98	3/27/98	4/5/98	0	9
SB-PP-7/4-6	soil	VOCs	3/27/98	3/27/98	4/3/98	0	7
SB-PP-8/10-12	soil	VOCs	3/27/98	3/27/98	4/2/98	0	6
SB-PP-8/16-18	soil	VOCs	3/27/98	3/27/98	4/2/98	0	6
SB-PP-8/20-22	soil	VOCs	3/27/98	3/27/98	4/2/98	0	6
SB-PP-8/22-24	soil	VOCs	3/27/98	3/27/98	4/2/98	0	6
SB-PP-8/4-6	soil	VOCs	3/27/98	3/27/98	4/2/98	0	6
SB-PP-9/10-12	soil	VOCs	3/29/98	3/29/98	4/3/98	0	5
SB-PP-9/16-18	soil	VOCs	3/29/98	3/29/98	4/3/98	0	5
SB-PP-9/20-22	soil	VOCs	3/29/98	3/29/98	4/3/98	0	5
SB-PP-9/22-24	soil	VOCs	3/29/98	3/29/98	4/3/98	0	5
SB-PP-9/4-6	soil	VOCs	3/29/98	3/29/98	4/3/98	0	5

Table 2. PE Sample[1] Results

Analyte	Observed Result (µg/L)	Certified Value (µg/L)	Acceptance Limits (µg/L)	Comment
Chloromethane	*ND (10 U)*			
Vinyl chloride	*ND (10 U)*			
1,1-Dichloroethene	*ND (10 U)*			
Acetone	*ND (25 U)*			
Methylene chloride	27	28.3	19.6 - 37.0	Within control
1,1-Dichloroethane	53	60.1	42.4 - 77.8	Within control
Chloroform	100	112	84.4 - 138	Within control
Benzene	42	45	34.6 - 56.4	Within control
1,2-Dichloropropane	*ND (10 U)*			
Bromoform	67	73.8	53.1 - 95.8	Within control
Toluene	64	74.4	57.2 - 89.8	Within control
Chlorobenzene	53	61.3	47.8 - 73.4	Within control
Ethylbenzene	51	64.9	48.3 - 76.1	Within control
m&p Xylenes	*ND (20 U)*			
o-Xylene	*ND (10 U)*			
Styrene	40	48.4	33.0 - 59.6	Within control
1,1,2,2-Tetrachloroethane	*ND (10 U)*			

Note:

1. The PE sample was provided by Environmental Research Associates (Arvada, Colorado), Lot No. 577, Catalog No. PP-41. The PE sample included eleven other analytes that were not targeted for analysis. None of the results that were reported as non-detects in this table were present in the PE sample.

REFERENCES

USEPA 1996. *US EPA Region II Data Validation Guidance for CLP/SOW OLMO3.2.* SOP HW-6, Rev. 11, June

Pace SDG # 98045

SOP NO. HW-6
Revision #8

CLP ORGANICS DATA REVIEW
AND PRELIMINARY REVIEW

BY: _____ Date: Jan. 2 1992
Leon Lazarus, Environmental Scientist
Toxic and Hazardous Waste Section

BY: _____ Date: January 3 1992
George Harris, Chemist
Toxic and Hazardous Waste Section

BY: _____ Date: 1/3/1992
Stelios Gerazounis, Chemist
Toxic and Hazardous Waste Section

CONCURRED BY: _____ Date: 1/3/92
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: _____ Date: 1/7/92
Robert Runyon, Chief
Monitoring Management Branch

304775

STANDARD OPERATING PROCEDURE

Date: January 1992
Revision: 8

YES NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES
~~CASE~~ NUMBER: 90045 LAB: Pace
SDG
SITE: Island Chemical

1.0 Data Completeness and Deliverables

1.1 Have any missing deliverables been received and added to the data package? [ ] X ___

ACTION: Call lab for explanation/resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-Compliance" section of reviewer narrative.

1.2 Was SMO CCS checklist included with package? [ ] ___ X

2.0 Cover Letter SDG Narrative

2.1 Is the Narrative or Cover Letter Present? [X] ___ ___

2.2 Are Case Number and/or SAS number contained in the Narrative or Cover letter? [X] ___ ___

3.0 Data Validation Checklist

The following checklist is divided into three parts. Part A is filled out if the data package contains any VOA analyses. Part B for any BNA analyses and Part C for 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 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? X[1] ___ X

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? ___ X[1] ___

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 upon receipt at the laboratory, flag all positive results "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".

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YES NO N/A

2.0 Holding Times

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

If unpreserved, aqueous samples maintained at 4°C which are to be analyzed for aromatic hydrocarbons 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 not samples were preserved.

The holding time for soils is 10 days.

Table of Holding Time Violations

Sample ID	Sample Matrix	Preserved?	(See Traffic Report) Date Sampled	Date Lab Received	Date Analyzed

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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 narrative 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).

	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: Call lab for explanation/ resubmittals. If missing deliverables are unavailable, document effect in data assessments.

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

ACTION: Circle all outliers in red.

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

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YES NO N/A

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.
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.

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

ACTION: If large errors exist, call lab for explanation/resubmittal, make any 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) ___ ___

	YES	NO	N/A

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 3.2 above.

4.3 How many VOA spike recoveries are outside QC limits?

Water	Soils
0 out of ~~20~~ 66	0 out of ~~20~~ 66

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
0 out of ~~8~~ 33	1 out of ~~8~~ 33

ACTION: No action is taken based on 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.

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 analyzed for each SDG or every 20 samples of similar matrix (low water, low soil, medium soil), whichever is more frequent?	[X]		

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	YES	NO	N/A
5.3 Has a VOA method/instrument blank been analyzed at least once every twelve hours for each concentration level and GC/MS system used?	X	—	—

ACTION: If any method blank data are missing, call lab for explanation/ resubmittal. 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.

5.4 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.

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 blanks have positive results (TCL and/or TIC) for VOAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample dilution factor and corrected for % moisture when necessary.	X	[ ]	—
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.)

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YES NO N/A

NOTE: All field blank results associated to 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).

	Sample conc > CRQL but < 10x blank value	Sample conc < CRQL & <10x blank value	Sample conc > CRQL & >10x blank value
Methylene Chloride Acetone Toluene 2-Butanone	Flag sample result with a "U:	Report CRQL & qualify "U"	No qualification is needed

	Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & > 5x blank value
Other Contaminants	Flag sample result with a "U"	Report CRQL & qualify "U"	No qualification is needed

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

		YES	NO	N/A
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 data assessment that there is no associated field/rinse/equipment blank. 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 mass/charge (m/z) listing for the BFB provided for each twelve hour shift?	[X]		
7.3	Has an instrument performance compound been analyzed for every twelve hours of sample analysis per instrument?	[X]		

YES NO N/A

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

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: If lab cannot provide 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? [X] ___ ___

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 between mass lists and Form Vs? (Check at least two values but if errors are found, check more.) ___ [X] ___

	YES	NO	N/A
7.7 Have the appropriate number of significant figures (two) been reported?	X		
ACTION: If large errors exist, call lab for explanation/resubmittal, make necessary corrections and document effect in data assessments.			
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

	YES	NO	N/A
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 8.2 above.			

		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:			
	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.

8.5	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 specified in 3.2 above. If lab does not generate their own standard spectra, make note in "Contract Problems/Non-compliance".

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]		

YES NO N/A

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 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 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 S) present; and do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier? [X] — X NR

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] — X

b. Blanks [X] — X

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

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ACTION: Add "JN" qualifier if missing.

NR - TICs not requested

	YES	NO	N/A

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 NR

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 NR

9.5 Do TIC and "best match" standard relative ion intensities agree within 20%? [ ] ___ X NR

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

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). (i.e. Common Lab Contaminants: CO_2 (M/E 44), Siloxanes (M/E 73) Hexane, Aldol Condensation Products, Solvent Preservatives, and related by products - see Functional Guidelines for more guidance).

	YES	NO	N/A

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 standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found? — X —

10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture? X — —

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors under "Conclusions".

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 I's 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 initial and continuing calibration? X — —

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

	YES	NO	N/A

12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI) present and complete for the volatile fraction at concentrations of 10, 20, 50, 100, 200 ug/l? Are there separate calibrations for low water/med soils and low soil samples? [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" and non-detects "R".

12.3 Are response factors stable for VOA's over the concentration range of the calibration (%Relative Standard Deviation (%RSD) <30.0%)? [ ] X ___

ACTION: Circle all outliers in red.

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

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

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

12.4 Are the RRFs above 0.05? [X] X ___

Action: Circle all outliers in red.
Action: If any RRF are < 0.05, qualify associated non-detects (R) and flag associated positive data as estimated (J).

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	YES	NO	N/A
12.5 Are there any transcription/calculation errors in the reporting of average response factors (RRF) or %RSD? (Check at least 2 values, but if errors are found, check more.)		X	

13.0 GC/MS Continuing Calibration (Form VII)

13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the volatile 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 within twelve hours of the previous continuing calibration analysis.

_____

_____

_____

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

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

ACTION: Circle all outliers in red.

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

	YES	NO	N/A
13.4 Do any volatile compounds have a RRF <0.05?	X		

ACTION: Circle all outliers in red.

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

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

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and note errors under "Conclusions".

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		

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit

(Attach additional sheets if necessary.)

YES NO N/A

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. Non-detects associated with IS area counts > 100% should not be qualified.

3. If IS area is below the lower limit (< 50%), qualify all associated non-detects (U values) "J". If extremely low area counts are reported, (< 25%) or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable ("R").

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.

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.

QA/QC Review of Total Organic Carbon (TOC)
Data for Pace Analytical SDG: 98045

May 19, 1998

Holding Times: Samples were analyzed within holding times.

Initial and Continuing Calibration Verification: TOC had percent recoveries within control limits (85-115%).

Blanks: The method blank reported TOC as not detected.

Spike Sample Recovery: TOC (94%) had a percent recovery within control limits (75-125%) for soil spike sample.

Duplicates: TOC (8%) had a relative percent difference below the allowable maximum (35%) for soil duplicate sample.

Laboratory Control Sample: TOC (102%) had a percent recovery within control limits for the soil LCS.

SDG No. A98287

VOC Checklist

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10/98

MEMORANDUM

To: Norma Eichlin

From: B.F. Cockcroft

Date: January 18, 1999

Re: **Island Chemical Corporation - Validation of Method 8260 Analytical Data**

M/H Project No. 12.0805380.001.004

Fifty-six groundwater samples, trip blanks, and field blanks were analyzed for up to 15 volatile organic compounds (VOCs) following EPA Method 8260B. The analyses were performed by a mobile laboratory operated by McLaren/Hart. The analytical results were validated using relevant criteria from EPA Region II guidance. The EPA Region II checklists were used to review the data but were not completed as part of this assessment.

The following information was used to validate the analytical results:

- Sample Hold Time before Analysis
- GC/MS Tuning Criteria
- Initial and Continuing Calibration
- Surrogate Recoveries
- Internal Standards
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) analyses
- Laboratory Control Sample
- PE Sample Results
- Method Blank Contamination
- Rinsate Blank Contamination
- Compound Identification
- Chromatogram Quality
- Calculations.

A holding time summary table (Table 1) is attached to this memorandum.

1.) Sample Holding Time Before Extraction and Analysis: The technical holding times for VOC analyses by Method 8260B is 14 days from sample collection to analysis. Review of Table 1 shows that all holding times were met.

2.) GC/MS Tuning Criteria: Bromofluorobenzene (BFB) was run every 12 hours of sample analysis. The BFB ion abundance criteria were met for all analyses.

3.) Initial and Continuing Calibration: The instrument was initially calibrated using a six point calibration standard. The relative standard deviations (RSDs) of each analyte in the multi-concentration calibration are assessed. In the continuing calibration, the percent difference (%D) of the continuing calibration concentration and the average of the initial multipoint calibration is assessed. RRF values must be greater than 0.05, RSD values less than 30%, and %D values less than 25%, for the analytes to be in compliance. The RRFs, RSDs and %D values were within control and for the following:

Sample Group A98278

- Initial Calibration, (ISLVOA.M) and
- Continuing Calibrations 10/07/98, 10/08/98, 10/09/98, 10/1/98, 10/12/98, and 10/13/98. No qualifications were required for these initial or continuing calibrations.

Sample Group A98287

- Initial Calibration (ISLVOA70.M): acetone (58%) and methylene chloride (34%) had %RSD above the allowable maximum (30%). Qualifications: Positive results for these compounds should be considered estimates (J) in associated samples.
- Continuing Calibrations: On 10/20/98, chloromethane (27%) and methylene chloride (28%) had %D above the allowable maximum (25%). Acetone (43%) and methylene chloride (26%) had %D above the allowable maximum (25%) on 10/21/98. Qualifications: Positive results for these compounds should be considered estimates (J) in associated samples.

4.) Surrogate Recoveries: Surrogates measure the ability of the laboratory to extract the targeted analytes by evaluating the recovery of indicator compounds which are structurally similar to the targeted analytes as indicators for all of the analytes. For these analyses, three surrogates were used (1,2-dichloroethane-d4, toluene-d8, and bromoflourobenzene). Control limits were 75-125% for the water samples. All surrogate recoveries were within the control limits, except for the following sample:

- VBLK10 (10/21/98): 1,2-dichloroethane-d4 (115%)

No qualification was required for the non-detect results of this sample because the one SMC was above the upper control limit.

5.) Internal Standards: Internal standards are added to all sample, blank calibrations and are used to quantify the analytes. For these analyses, 3 internal standards (bromochloromethane, 1,4-difluorobenzene, and chlorobenzene-d5) were used. All internal standard retention times and areas were within the control limits.

6.) MS/MSD Analyses: Three MS/MSD analyses were performed for the water samples (a frequency of one per 20 samples). The samples were spiked with a mixture of three VOCs (1,1-dichloroethane, toluene, and chlorobenzene). Accuracy was measured by the spike recovery, and precision was measured by the relative percent difference between the MS and MSD results. All recoveries and RPDs were within the control limits.

7.) LCS Analysis: An LCS (blank spike) was also performed with a mixture of three VOCs (1,1-dichloroethane, toluene, and chlorobenzene). The spike recoveries were within the control limits.

8.) PE Results: A PE sample was not analyzed with these samples. However, five replicate samples were shipped to an independent laboratory for confirmatory analysis. The results are summarized in Table 2. All observed results correlate well and within acceptable limits.

9.) Analysis Sequence: The laboratory properly performed an initial calibration, sample analyses, and continuing calibration as described by the method.

10.) Method Blank Contamination: A method blank measures the potential for false-positive results introduced by internal laboratory contamination. A total of 10 aqueous method blanks were prepared. None of the method blanks contained detectable analytes.

11.) Field Blank Contamination: The field blank (FB) measures the potential for false-positive results introduced by improper field decontamination procedures of sampling equipment. One field blank was included with the samples analyzed on 10/12/98. Acetone was detected in the field blank (at a concentration 10X greater than the detected sample concentration) and attributed to the decontamination procedures because acetone was not detected in the method blank and the groundwater samples preceding (3) and following (1) the field blank.

Required data of significant contamination

12.) Trip Blank Contamination: The trip blank (TB) measures the potential for cross-contamination during sample storage and shipment. Because these samples were hand-delivered to the mobile laboratory, trip blanks were not required. However, three trip blanks were included with this package. Target analytes were not detected in the 10/09/98 and the 10/13/98 trip blanks. Acetone was detected in the 10/12/98 trip blank and attributed to instrument carryover from the 10/12/98 field blank.

13.) Compound Identification: Verification of identification of VOC analytes analyzed using a GC/MS is based upon the relative retention time compared to the internal standard and ion spectra match. All positive results met RRT and ion spectra criteria.

14.) Chromatogram Quality: The quality of VOC chromatograms is evaluated to determine whether there are any interfering unknowns present which prevent the identification of the targeted analytes. All chromatograms were of acceptable quality.

15.) Calculations: The reported analyte concentrations and any internal QC calculations were verified for their accuracy. All checked calculations were acceptable within rounding errors.

16.) Other QC: The following samples required dilutions due to presence of the respective target analytes outside of the initial calibration range:

* MW-2 - Chloroform - 5X
* FB101198 - Acetone - 100X
* GWPP29A Waste 2 - Acetone - No dilution was completed due to insufficient sample volume.

The laboratory reflected these dilutions by adjusting the sample volumes on the respective Form I, instead of reporting them in the dilution factor field. The appropriate non-detects and positive results to report were identified by the reviewer on the affected Form Is.

Data Limitation Overview

The VOC analysis of the groundwater samples from the Island Chemical site showed compliance with the QC requirements of the method and all data are valid and acceptable, with qualifications applied and other actions as summarized below:

MW-2 and MW-2DL: Report the non-detect results from the undiluted analysis, and the chloroform result from the diluted analysis as the sample result.

FB101198 and FB101198DL: Report the non-detect results from the undiluted analysis, and the acetone result from the diluted analysis as the sample result.
GWPP29A Waste 2: Report the non-detect and estimated (J) detected results from the undiluted analysis. Report the acetone result as estimated (J) and exceeding the initial calibration range (E).

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Fax: (412)395-1410

TABLE 1

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOA ANALYSES - SDG A98287
ISLAND CHEMICAL CORPORATION

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Holding Time	Date Extracted	Date Analyzed
CHARLIE#1	A9827801	Water	10/5/98	10/5/98	10/19/98	NA	10/6/98
CHARLIE#2	A9827802	Water	10/5/98	10/5/98	10/19/98	NA	10/6/98
GWPP37(45-49)	A9828002	Water	10/7/98	10/7/98	10/21/98	NA	10/7/98
VIPA#1	A9828004	Water	10/7/98	10/7/98	10/21/98	NA	10/7/98
VIPA#2	A9828005	Water	10/7/98	10/7/98	10/21/98	NA	10/7/98
SOURCE WATER	A9828006	Water	10/7/98	10/7/98	10/21/98	NA	10/7/98
GWPP37 WASTE	A9828007	Water	10/7/98	10/7/98	10/21/98	NA	10/7/98
GWPP37(80-84)	A9828008	Water	10/7/98	10/7/98	10/21/98	NA	10/7/98
GWPP37(35-39)	A9828001	Water	10/7/98	10/7/98	10/21/98	NA	10/8/98
GWPP37(70-74)	A9828003	Water	10/7/98	10/7/98	10/21/98	NA	10/8/98
MW-2	A9828101	Water	10/8/98	10/8/98	10/22/98	NA	10/8/98
GWPP37(97-107)	A9828102	Water	10/8/98	10/8/98	10/22/98	NA	10/8/98
MW-7	A9828103	Water	10/8/98	10/8/98	10/22/98	NA	10/8/98
GWPP29A(150-154)	A9828104	Water	10/8/98	10/8/98	10/22/98	NA	10/8/98
GWPP29A(50-54)	A9828105	Water	10/8/98	10/8/98	10/22/98	NA	10/8/98
GWPP29A(95-99)	A2821	Water	10/9/98	10/9/98	10/23/98	NA	10/9/98
TB100998	A9828202	Water	10/9/98	10/9/98	10/23/98	NA	10/9/98
GWPP29A WASTE1	A9828301	Water	10/10/98	10/10/98	10/24/98	NA	10/12/98
GWPP29A WASTE2	A9828302	Water	10/10/98	10/10/98	10/24/98	NA	10/12/98
GWPP29A WASTE3	A9828303	Water	10/10/98	10/10/98	10/24/98	NA	10/12/98
GWPP29A(137-147)	A9828401	Water	10/11/98	10/11/98	10/25/98	NA	10/12/98
GWPP27A(84-87)	A9828402	Water	10/11/98	10/11/98	10/25/98	NA	10/12/98
FB101198	A9828403	Water	10/11/98	10/11/98	10/25/98	NA	10/12/98
TB101198	A9828404	Water	10/11/98	10/11/98	10/25/98	NA	10/12/98
GWPP27A(95-99)	A9828501	Water	10/12/98	10/12/98	10/26/98	NA	10/12/98
FB101198DL	28403DL	Water	10/12/98	10/12/98	10/26/98	NA	10/12/98
GWPP27A(110-120)	A9828601	Water	10/13/98	10/13/98	10/27/98	NA	10/13/98
GWPP27A WASTE1	A9828602	Water	10/13/98	10/13/98	10/27/98	NA	10/13/98
GWPP27A WASTE2	A9828603	Water	10/13/98	10/13/98	10/27/98	NA	10/13/98
TB101398	A9828604	Water	10/13/98	10/13/98	10/27/98	NA	10/13/98

TABLE 1 (continued)

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOA ANALYSES - SDG A98278
ISLAND CHEMICAL CORPORATION

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Holding Time	Date Extracted	Date Analyzed
MW-11 PRELIM	A9829001	Water	10/17/98	10/17/98	10/31/98	NA	10/20/98
GWPP36(97-107)	A9829003	Water	10/17/98	10/17/98	10/31/98	NA	10/20/98
MW-14	A9829304	Water	10/18/98	10/18/98	11/1/98	NA	10/20/98
P-1 ABOVE	A9829301	Water	10/18/98	10/18/98	11/1/98	NA	10/20/98
P-1 BELOW	A9829302	Water	10/18/98	10/18/98	11/1/98	NA	10/20/98
P-1 TOTAL	A9829303	Water	10/18/98	10/18/98	11/1/98	NA	10/20/98
MW-12 WASTE1	A9829002	Water	10/18/98	10/18/98	11/1/98	NA	10/20/98
MW-14 WASTE1	A9828702	Water	10/14/98	10/14/98	10/28/98	NA	10/20/98
MW-14 WASTE2	A9828703	Water	10/14/98	10/14/98	10/28/98	NA	10/20/98
FAIR PLAINS#9	A9828701	Water	10/14/98	10/14/98	10/28/98	NA	10/20/98
GWPP36 WASTE	A9828902	Water	10/14/98	10/14/98	10/28/98	NA	10/20/98
GWPP36(197-207)	A2904	Water	10/17/98	10/17/98	10/31/98	NA	10/20/98
GWPP36(82-85)	A9828901	Water	10/16/98	10/16/98	10/30/98	NA	10/20/98
MW-3	A9828801	Water	10/15/98	10/15/98	10/29/98	NA	10/20/98
MW-11	A9829403	Water	10/20/98	10/20/98	11/3/98	NA	10/21/98
MW-13	A9829404	Water	10/20/98	10/20/98	11/3/98	NA	10/21/98
MW-11 WASTE	A9829401	Water	10/20/98	10/20/98	11/3/98	NA	10/21/98
MW-13 WASTE	A9829402	Water	10/20/98	10/20/98	11/3/98	NA	10/21/98
MW-2	A9829405	Water	10/20/98	10/20/98	11/3/98	NA	10/21/98
GWPP37(124-134)	A9828802	Water	10/15/98	10/15/98	10/29/98	NA	10/21/98
GWPP36(20-24)	A9828803	Water	10/15/98	10/15/98	10/29/98	NA	10/21/98
GWPP36(50-54)	A9828804	Water	10/15/98	10/15/98	10/29/98	NA	10/21/98
GWPP36(82-85)	A9828805	Water	10/15/98	10/15/98	10/29/98	NA	10/21/98
GWPP36(75-79)	A2886	Water	10/15/98	10/15/98	10/29/98	NA	10/21/98
MW-12	A9829406	Water	10/19/98	10/19/98	11/2/98	NA	10/21/98
MW-2DL	29405DL	Water	10/20/98	10/20/98	11/3/98	NA	10/22/98

TABLE 2

CONFIRMATORY SAMPLE ANALYSIS SUMMARY [1]
SDG A98278 AND A98287 - VOA ANALYSES
ISLAND CHEMICAL CORPORATION

Client Sample ID	Compound [2]	McLaren/Hart Analytical Results	PACE [3] Analytical Results
MW-2	Chloroform	150	125
MW-11	Acetone Toluene Xylene (totel)	10 U 5 U 5 U	10.3 A11 [5]
Fairplaines #9	Acetone	10 U	15.4 A11
GWPP36 (82-85)	ND	5 U - 10 U	5 U - 10 U
GWPP36 (124-134)	ND	5 U - 10 U	5 U - 10 U
Trip Blank 102098	ND	ND	5 U - 10 U

NOTES:
1) All concentration are presented in μg/L or parts per billion.
2) Samples analyzed for 15 target compounds following EPA Method 8620, only compounds detected in the samples at concentrations above the quantitation/reporting limit are listed. ND indicates that none of the 15 compounds were detected.
3) PACE Analytical Services, Inc., St. Rose, Louisiana.
4) Compound analyzed, but not detected; value represents the minimum quantitation limit.
5) A11 indicates analyte is a common solvent. Its presence in field samples may be an artifact of sample collection, transport, lab storage or analysis.

STANDARD OPERATING PROCEDURE

US EPA Region II
Method: CLP/SOW OLM03.1

Date: October 1995
SOP HW-6, Rev. 10

YES NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES

October 1998

CASE NUMBER: Groups A98278 and A98287 LABORATORY: M/H – S_2C_2 Inc.

SITE NAME: Island Chemical SDG Number(s): A98278 and A98287

1.0 Chain of Custody and Sampling Trip Reports

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

ACTION: If no, contact lab for replacement of missing or illegible copies.

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

ACTION: If no, contact either RSCC or the prime contractor for this information.

2.0 Data Completeness and Deliverables

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, from the most concentrated dilution analyzed and one further dilution.)

ACTION: Call lab for an explanation or resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the Contract Non- compliance section of the Data Assessment and the Organic Regional Data Assessment summary.

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

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

ACTION: If yes, contract the laboratory for an explanation or resubmittal of any missing deliverables.

304804

	YES	NO	N/A
3.0 Cover Letter SDG Narrative			
3.1 Is the Narrative or Cover Letter Present?	✓		
3.2 Are Case Number and/or SAS number contained in the Narrative or Cover letter?	✓		
3.3 Does the narrative contain the following information:			
VOA: description of trap and columns used during sample analyses?	✓		
BNA: description of columns used during sample analyses?			✓
Pest: description of columns used during sample analyses?			✓
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?		✓	
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.		✓	
3.6 Does the narrative contain a list of the pH values determined for each water sample submitted for volatile analysis?		✓	
3.7 Does the Case Narrative contain the statement, "verbatim", as required in Section B of the SOW?		✓	
ACTION: If "No", to any question in this section, contact the laboratory for all necessary resubmittals. If information is not available, document in the Data Assessment under Problems/Non-Compliance section.			

304805

	YES	NO	N/A

4.0 Data Validation Checklist

4.1 Check the package for the following discrepancies:

	YES	NO	N/A
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?	✓		

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:

	YES	NO
VOA Data?	✓	
BNA Data?		✓
Pesticide/PCB data?		✓

ACTION: Complete corresponding parts of checklist.

304806

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? ___ ☑ ___

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 temperature of the cooler 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? ___ ☑ ___

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

304807

YES NO N/A

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, 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.

304808

	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?	☑		
b. Low Soil?			☑
c. Med Soil?			☑

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?	☑		
b. Low Soil?			☑
c. Med Soil?			☑

ACTION: Call lab for explanation/resubmittals. If missing deliverables are unavailable, document effect in the Data Assessments.

3.3 Were outliers marked correctly with an asterisk?	☑		

ACTION: Circle all outliers in red.

3.4 Was one or more VOA system monitoring compound recovery outside of contract specifications for any sample or method blank?		☑	
If yes, were samples re-analyzed?			☑
Were method blanks re-analyzed?			☑

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.

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

304809

YES NO N/A

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.

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? ___ ☑ ___

ACTION: If large errors exist, call lab for explanation/resubmittal, make any 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? ☑ ___ ___

304810

	YES	NO	N/A

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 3.2 above.

4.3 How many VOA spike recoveries are outside QC limits?

Water	Soils
-0- out of 10	NA 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	NA 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 in red.

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 analyzed for each SDG or every 20 samples of similar matrix (low water, low soil or medium soil), whichever is more frequent?	☑		
5.3 Has a VOA method blank been analyzed at least once every twelve hours for each concentration level and GC/MS system used?	☑		

304811

YES NO N/

5.4 Was a VOA instrument blank analyzed after each sample/dilution which contained a target compound that exceeded the initial calibration range? * ☑ ___ ___

5.5 Was a VOA storage blank analyzed at the end of all samples for each SDG in a case? ☐ ☑ ___

ACTION: If any method/instrument blank data are missing, call lab for explanation or resubmittal. 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 for resubmittals. 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 for the data. If unavailable, note in the Data Assessment under Contract Problems/Non-Compliance.

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? ☑ ___ ___

ACTION: Contact the lab for resubmittals 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? ☑ ___ ___

YES NO N/A

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

5.8 Are all detected hits for target compounds in method and instrument blanks less than the CRQL for that analyte? ☑ ___ ___

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

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.

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)? ☑* ☐ ___

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

* One rinse blank not associated with any samples, detected acetone (at a concentration more than 10X greater than any detected sample concentration). Acetone in the rinse blank is attributed to the decontamination procedures.

YES NO N/A

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".

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 < 10x blank value.	Sample conc. is < CRQL and < 10x blank value.	Sample conc. is > CRQL and > 10x blank value.
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 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

YES NO N/A

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)? ☑ ___ ___

7.2 Are the enhanced bar graph spectrum and 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 analysis for which no associated GC/MS tuning data are available.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: If 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? ☑ ___ ___

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).

304815

	YES	NO	N/A

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, call lab for explanation/resubmittal, make necessary corrections and document any effects in the Data Assessments.

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

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? ☑ — —

	YES	NO	N/A

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

8.3 Are the response factors shown in the Quant Report? ☑ ___ ___

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? ☑ ___ ___

ACTION: If any mass spectra are missing, take action specified in 3.2 above. If the lab does not generate its own standard spectra, document in the Data Assessment in the Contract Non-compliance section 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? ☑ ___ ___

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? ☑ ___ ___

8.8 Do sample and standard relative ion intensities agree within ±20%? ☑ ___ ___

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

YES NO N/

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 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? [ ] ___ ✓

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 "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 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? [ ] ___ ✓

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

304818

YES NO N/A

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 Functional Guidelines for more guidance.)

9.6 Are TICs with responses < 10% of the internal standard (as determined by inspection of the peak areas or height) reported? ___ [1] ✓

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.) ___ ✓ ___

10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture? ✓ ___ ___

ACTION: If errors are large, call the lab for explanation/resubmittals, make any necessary corrections, and note errors under Contract Problems/Non-Compliance section of the Data Assessment and the Organic Regional Data Assessment Summary.

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

YES NO N/A

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 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? [ ] [✓] ___

ACTION: Circle all outliers in red.

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

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

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

304820

	YES	NO	N/A
12.4 Are any average RRFs < 0.05?		☑	

Action: Circle all outliers in red.

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

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.)		☑	

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

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

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, call lab for explanation or 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.

_____

_____

_____

304821

	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?	✓		

ACTION: Circle all outliers in red.

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 "R" (unusable) and positive results "J" (estimated).

	YES	NO	N/A
13.4 Are any continuing calibration RRFs < 0.05?		✓	

ACTION: Circle all outliers in red.

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

NOTE: The SOW allows up to two of the required analytes to fail %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.)

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 in red.

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document in the Data Assessment under the Contract Problems/Non-Compliance section and the Organic Regional Data Assessment Summary.

304822

YES NO N/A

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? ☑ ___ ___

If no, was the sample re-analyzed? ☑ ___ ___

ACTION: 1. Circle all outliers in red.

2. List all the outliers below.

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. Non-detects associated with IS area counts > 100% should not be qualified.

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? ☑ ___ ___

304823

YES NO N/I

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 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.

304824

YES NO N/A

PART B: BNA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records or Lab 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? ___ [ ] ✓

NOTE: 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

304825

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 the 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 are exceeded by more than 28 days, all non-detect data must be qualified "R", unstable.

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? [ ] __ ✓

b. Low Soil? [ ] __ ✓

c. Med Soil? [ ] __ ✓

3.2 Are all the BNA samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:

a. Low Water? [ ] __ ✓

	YES	NO	N/A
b. Low Soil?	[ ]	___	✓
c. Med Soil?	[ ]	___	✓

ACTION: Call lab for explanation/resubmittals. If missing deliverables are unavailable, document effect in the Data Assessments.

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

ACTION: Circle all outliers in red.

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

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 with "J" (estimated).

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

3. If recoveries are greater than the upper acceptance limit, do not qualify non-detects.

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

1. Positive results for the fraction with < 10% surrogate recovery are qualified with "J".

2. Non-detects for that fraction should be qualified 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.

YES NO N/A

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? __ [ ] ✓

ACTION: If large errors exist, call the lab for explanation/resubmittal, make any necessary corrections and document effect in the Data Assessments.

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 3.2 above.

4.3 How many BNA spike recoveries are outside QC limits?

Water	Soils
NA out of 22	NA out of 22

304828

YES NO N/A

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

Water	Soils
NA out of 11	NA 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 in red.

5.0 Blanks (Form IV)

5.1 Is the Method Blank Summary (Form IV) present? [ ] ___ ✓

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? [ ] ___ ✓

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.) [ ] ___ ✓

ACTION: If any method blank data are missing, call lab for explanation/resubmittal. If not available, 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? [ ] ___ ✓

ACTION: Contact the lab for resubmittals 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.

5.5 Chromatography: review the blank raw data -

304829

YES NO N/A

chromatograms (RICs), quant reports or data system printouts and spectra. Is the chromatographic performance (baseline stability) acceptable for each instrument? [ ] __ ✓

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.

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 blanks have positive results (TCL and/or TIC)? __ [ ] ✓

NOTE
Water: When applied as directed in the table below (page 28), the contaminant concentration in method/ instrument/reagent blanks is multiplied by the sample dilution factor, where necessary.

Soil: 30 grams of sodium sulfate (1 gram for medium level soils) are used to prepare the soil method blank as instructed on page D-54/SVOA, section 12.1.3. When applied as directed in the table of 6.2, the contaminant concentration in the method blank is multiplied by the sample dilution factor, where necesary. Contact the laboratory if the soil method blanks are not reported in soil units (µg/kg).

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

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (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

YES NO N/A

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 Pthalate-Esters	Sample conc. is > CRQL, but < 10x blank value.	Sample conc. is < CRQL and < 10x blank value.	Sample conc. is > CRQL and > 10x blank value.
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 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" (unusable).

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 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.

YES NO N/A

7.0 GC/MS Instrument Performance Check

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

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

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

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

SAMPLE NUMBERS	DATE	TIME	INSTRUMENT ID

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

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

7.4 Have the ion abundances been normalized to m/z 198? [ ] ___ ✓

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.) ___ [ ] ✓

	YES	NO	N/A
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, call lab for explanation/resubmittal, make necessary corrections and document effect in the Data Assessments.

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

8.1 Are the Organic Analysis Data Sheets (Form I BNA) 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 Has GPC cleanup been performed on all soil/ sediment sample extracts?	[ ]	___	✓

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.

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?	[ ]	___	✓
b. Matrix spikes and matrix spike duplicates (mass spectra not required)?	[ ]	___	✓
c. Blanks?	[ ]	___	✓

	YES	NO	N/A
ACTION: If any data are missing, take action specified in 3.2 above.			
8.4 Are the response factors shown in the Quant Report?	[ ]	__	✓
8.5 Is chromatographic performance acceptable with respect to:			
Baseline stability?	[ ]	__	✓
Resolution?	[ ]	__	✓
Peak shape?	[ ]	__	✓
Full-scale graph (attenuation)?	[ ]	__	✓
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?	[ ]	__	✓
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?	[ ]	__	✓
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?	[ ]	__	✓
8.9 Do sample and standard relative ion intensities agree within ±20%?	[ ]	__	✓
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			

	YES	NO	N/A

with the criteria listed in 8.7, 8.8, and 8.9.

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)

		YES	NO	N/A
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 "N" qualifier to all chemically named TICs, if missing.

		YES	NO	N/A
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.)	—	[ ]	✓

ACTION: Flag with "R" any TCL compound listed as a TIC.

		YES	NO	N/A
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?	[ ]	—	✓
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 that an incorrect identification was made, change the identification to "unknown," or to some less specific identification

	YES	NO	N/A

(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

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, call lab for explanation/resubmittal, make any necessary corrections and document effect in the Data Assessments.

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 initial and continuing calibration? [ ] ___ ✓

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

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	YES	NO	N/A

12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI) present and complete for the BNA fraction? [ ] ___ ✓

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

12.2 Are the % relative standard deviation (%RSD) values for BNAs ≤ 30% over the concentration range of the calibration? [ ] ___ ✓

ACTION: Circle all outliers in red.

NOTE: Although 20 BNA compounds have a 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. Check the SOW for a list of these compounds.

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.

12.3 Are any average RRFs < 0.05? ___ [ ] ✓

ACTION: Circle all outliers in red.

ACTION: If the average RRF is < 0.05 then:

1. "R" all non-detects.

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, but if errors are found check more.) ___ [ ] ✓

ACTION: Circle errors in red.

YES NO N/A

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document errors in the Data Assessments.

NOTE: The SOW allows up to four of the required analytes to fail %RSD or RRF criteria provided that the %RSD is ≤ 40% or 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.)

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 twelve hours of every sample analysis, call lab for explanation/ resubmittal. If continuing calibration data are not available, 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 in red.

YES NO N/A

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 in red.

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

NOTE: The SOW allows up to four of the required analytes to fail %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.)

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.) ___ [ ] ✓

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation/resubmittal, make any necessary corrections and document effect in the Data Assessments.

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? [ ] ___ ✓

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

ACTION: 1. Circle all outliers in red.

YES NO N/A

2. List all the outliers below.

ACTION: If sample was not reanalyzed, document the 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. Non-detects associated with IS area > 100% should not be qualified.

3. If the IS area in the sample is below the "lower limit," < 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 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 re-analyzed, document in the Data Assessment under Contract Problems/Non-Compliance.

304840

YES NO N/A

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? [ ] ___ ✓

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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