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RESOURCE CONSERVATION AND RECOVERY ACT FACILITY INVESTIGATION REPORT ADDENDUM AREA OF CONCERN 634 (AOC 634) ZONE G CNC CHARLESTON SC

4/4/2001

CH2M HILL

RFI ADDENDUM

Area of Concern 634, Zone G

Charleston Naval Complex
North Charleston, South Carolina

SUBMITTED TO
U.S. Navy Southern Division
Naval Facilities Engineering Command

CH2M-Jones

April 2001

Revision 0
Contract N62467-99-C-0960

CH2M HILL
3011 S W Williston Road
Gainesville, FL
32608-3928
Mailing address
P O Box 147009
Gainesville, FL
32614-7009
Tel 352 335.7991
Fax 352.335 2959

CH2MHILL

April 4, 2001

John Litton, P.E.
Director
Division of Hazardous and Infectious Wastes
South Carolina Department of Health and
Environmental Control
Bureau of Land and Waste Management
2600 Bull Street
Columbia, SC 29201

Dear Mr. Litton:

Enclosed please find four copies of the RCRA Facility Investigation (RFI) Addendum for Area of Concern 634, Zone G, at the Charleston Naval Complex (CNC). This report has been prepared pursuant to agreements by the CNC BRAC Cleanup Team for completing the RCRA Corrective Action process.

Please contact me if you have any questions or comments.

Sincerely,

Dean Williamson, P.E.

xc: Tony Hunt/Navy, w/att
Rob Harrell/Navy, w/att
Mihir Mehta/SCDHEC
Gary Foster/CH2M HILL, w/att

RFI ADDENDUM

Area of Concern 634, Zone G

Charleston Naval Complex
North Charleston, South Carolina

SUBMITTED TO
U.S. Navy Southern Division
Naval Facilities Engineering Command

PREPARED BY
CH2M-Jones

F:\3/0010\38/GNV

April 2001

158814.ZG.PR.04
Revision 0
Contract N62467-99-C-0960

Certification Page for RFI Addendum – AOC 634, Zone G

I, Dean Williamson, certify that this report has been prepared under my direct supervision. The data and information are, to the best of my knowledge, accurate and correct, and the report has been prepared in accordance with current standards of practice for engineering.

South Carolina

Temporary Permit No. T2000342

Dean Williamson, P.E.

3/29/2001

Date

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Acronyms and Abbreviations

AOC	area of concern
BCT	BRAC Cleanup Team
BRAC	Base Realignment and Closure Act
CA	corrective action
CMCOPC	contaminant migration chemical of potential concern
CMS	corrective measures study
CNC	Charleston Naval Complex
COC	chemical of concern
COPC	chemical of potential concern
CSI	confirmatory sampling investigation
DAF	dilution attenuation factor
EnSafe	Ensafe Inc.
EPA	U.S. Environmental Protection Agency
HHRA	human health risk assessment
MCL	maximum contaminant level
mg/kg	milligram per kilogram
NAVBASE	Naval Base
NFA	no further action
NFI	no further investigation
OWS	oil-water separator
RBC	risk-based concentration
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
SCDHEC	South Carolina Department of Health and Environmental Control
SPLP	synthetic precipitation leaching procedure
SSL	soil screening level
SWMU	solid waste management unit
UST	underground storage tank

SECTION 1.0

Introduction

1.0 Introduction

In 1993, Naval Base (NAVBASE) Charleston was added to the list of bases scheduled for closure as part of the Defense Base Realignment and Closure Act (BRAC), which regulates closure and transition of property to the community. The Charleston Naval Complex (CNC) was formed as a result of the dis-establishment of the Charleston Naval Shipyard and NAVBASE on April 1, 1996.

Corrective Action (CA) activities are being conducted under the Resource Conservation and Recovery Act (RCRA) with the South Carolina Department of Health and Environmental Control (SCDHEC) as the lead agency for CA activities at the CNC. All RCRA CA activities are performed in accordance with the Final Permit (Permit No. SC0 170 022 560).

In April 2000, CH2M-Jones was awarded a contract to provide environmental investigation and remediation services at the CNC. This submittal has been prepared by CH2M-Jones to complete the RCRA Facility Investigation (RFI) for Area of Concern (AOC) 634 in Zone G of the Naval Complex. The site is recommended for No Further Action (NFA). Figure 1-1 illustrates the location of Zone G within the CNC.

1.1 Background

AOC 634 is located at former Building 1814, a 704 square foot flammable materials storage facility. Built in 1977 near the south end of Building 224 (a supply warehouse), Building 1814 was a chain-link fenced area with an aluminum roof, and was used until 1992 to store small (less than one gallon) containers of flammable material. Figure 1-2 shows an aerial photograph of the AOC 634 area. The fence and roof were removed in 1992; there is no longer any structure on the site.

AOC 634 is located in the central portion of Zone G and was investigated independently of the adjacent Building 224. According to a 1993 inspection survey report and the Final RCRA Facility Assessment (RFA) (June 1995), no spills of hazardous substances are known to have occurred in or around this facility. There were no chemicals of potential concern (COPCs) identified in surface soils, subsurface soils, or groundwater for this site.

1.2 Purpose of the RFI Addendum

This report provides information about AOC 634 that documents the conclusions from the RFI report, provides the results of some limited additional sampling performed after the RFI, and supports the RFI recommendation of NFA for AOC 634 (EnSafe Inc. [EnSafe], 1998). A copy of the table which presents this recommendation (Table 11.1, *Site Conclusions and Zone G Preliminary Recommendations*) is provided as Appendix A.

Prior to changing the status of any site to NFA in the CNC RCRA CA permit, the BRAC Cleanup Team (BCT) agreed that the following issues should be considered:

- Status of the RFI
- Presence of metals (inorganics) in groundwater
- Potential linkage to Solid Waste Management Unit (SWMU) 37, Investigated Sanitary Sewers at the CNC
- Potential linkage to AOC 699, Investigated Storm Sewers at the CNC
- Potential linkage of AOC 504, Investigated Railroad Lines at the CNC
- Potential linkage to surface water bodies (Zone J)
- Potential contamination associated with oil-water separators (OWSs)
- Relevance or need for land use controls at the site

Information regarding these issues is provided in this RFI Addendum to expedite evaluation of closure of the site.

Provided that the information presented in this report is adequate to address these site closeout items, it is expected that the BCT will concur that NFA is appropriate for the site. At that time, a Statement of Basis will be prepared that will be available for public comment in accordance with SCDHEC policy. This will allow for public participation in the final remedy selection.

1.3 Report Organization

This RFI Addendum consists of the following sections, including this introductory section:

1.0 Introduction — Presents the purpose of the report and background information relating to the RFI Addendum.

2.0 Summary of RFI Conclusions for AOC 634 — Summarizes the conclusions from the RFI investigations and risk evaluations for AOC 634.

3.0 Summary of Additional Information — Summarizes information collected after completion of the RFI report.

4.0 Summary of Closeout Issues—Discusses the various site closeout issues that the BCT agreed to evaluate prior to site closeout.

5.0 Recommendations—Provides recommendations for proceeding with site closure.

6.0 References — Lists the references used in this document.

Appendix A contains Table 11.1 of the *Zone G RFI Report*.

Appendix B contains excerpts from the *Zone G RFI Report*.

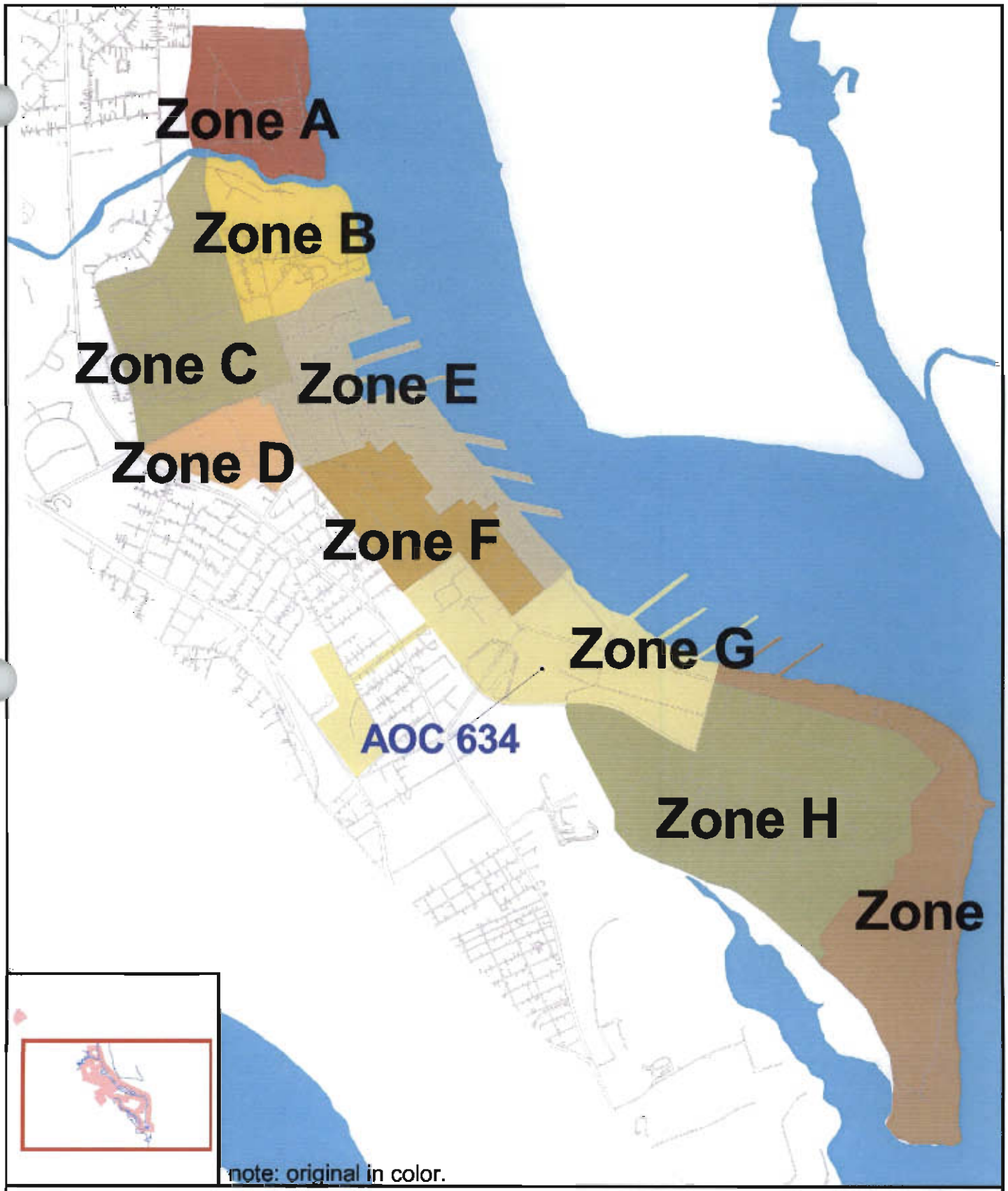
Appendix C contains analytical data from sampling subsequent to the RFI report.

Appendix D contains validation reports from the data from sampling subsequent to the RFI report.

Appendix E contains the results of the synthetic precipitation leaching procedure (SPLP) metals test conducted at this site.

Appendix F contains responses to SCDHEC comments.

All tables and figures appear at the end of their respective sections.



Roads - Lines
Zone A
Zone B
Zone C
Zone D
Zone E
Zone F
Zone G
Zone H
Zone I
Zone K

N

0 2000 4000 Feet

Figure 1-1
Zone G - AOC 634
Zone Map
Charleston Naval Complex

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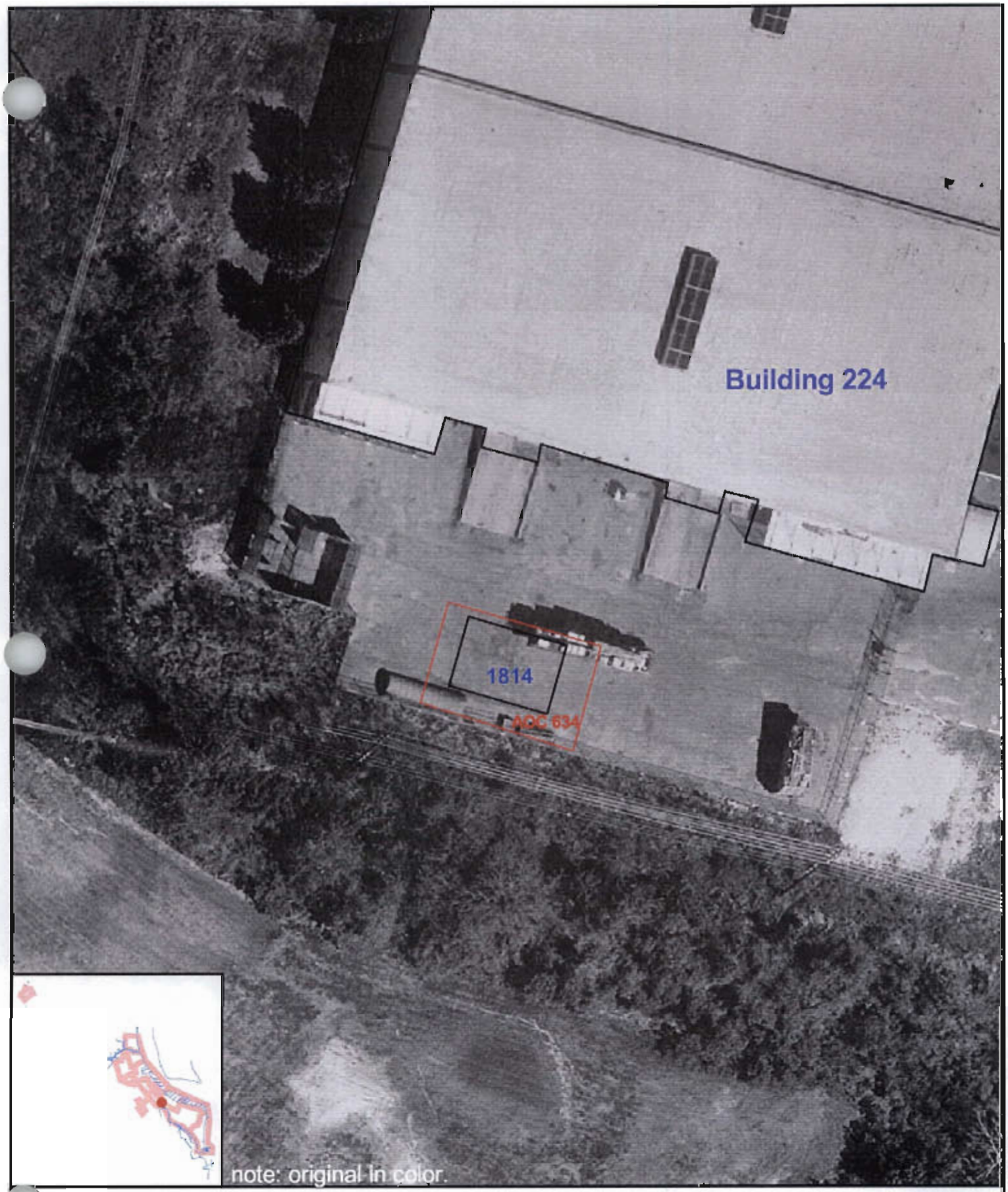

AOC Boundary
SWMU Boundary

N

0 30 60 Feet

Figure 1-2
AOC 634
Zone G
Charleston Naval Complex

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SECTION 2.0

Summary of RFI Conclusions for AOC 634

2.0 Summary of RFI Conclusions for AOC 634

As part of the Zone G RFI, soil investigations were conducted in the area of former Building 1814. Figure 2-1 presents the site and RFI sample locations within this area. Initially, soil borings were made for collection and analysis of three surface and three subsurface soil samples (G634SB001, G634SB002, and G634SB003) to determine if there was any impact from the storage building to surrounding soil.

The RFI Report presented the results of these soil tests and conclusions concerning contamination and risk. Soil borings G634SB004, G634SB005, and G634SB006 were installed subsequent to the RFI report and are discussed in Section 3.0 of this addendum. Appendix B contains excerpts from the *Zone G RFI Report, Revision 0* (EnSafe, 1998). Conclusions from the RFI are summarized below:

- The nature of contamination section (10.3.3) concludes that no organic or inorganic chemicals were detected above appropriate risk-based concentrations (RBCs), SSLs, or background levels. Though iron did exceed the residential RBC in all three surface soil samples, it was not considered a site contaminant. No COPCs were identified.
- The fate and transport section (10.3.4) concludes no organic or inorganic chemicals were detected in site soil above applicable SSLs. Thus, the soil to groundwater pathway is invalid.
- The human health risk assessment (HHRA) section (10.3.5) concludes no COPCs were identified in surface soil. According to the risk summary in paragraph 10.3.5.4 of the *Zone G RFI Report*, "surface soil data were screened according to the risk-based screening evaluation presented in Section 7 of this RFI. As a result of conservative risk-based screening, no surface soil COPCs were identified for AOC 634" (EnSafe, 1998). In paragraph 10.3.4.1, it was stated that "no inorganic parameters or organic compounds were detected in site soil above applicable SSLs. Consequently, no significant residual mass remains onsite which poses a threat to groundwater quality" (EnSafe, 1998).

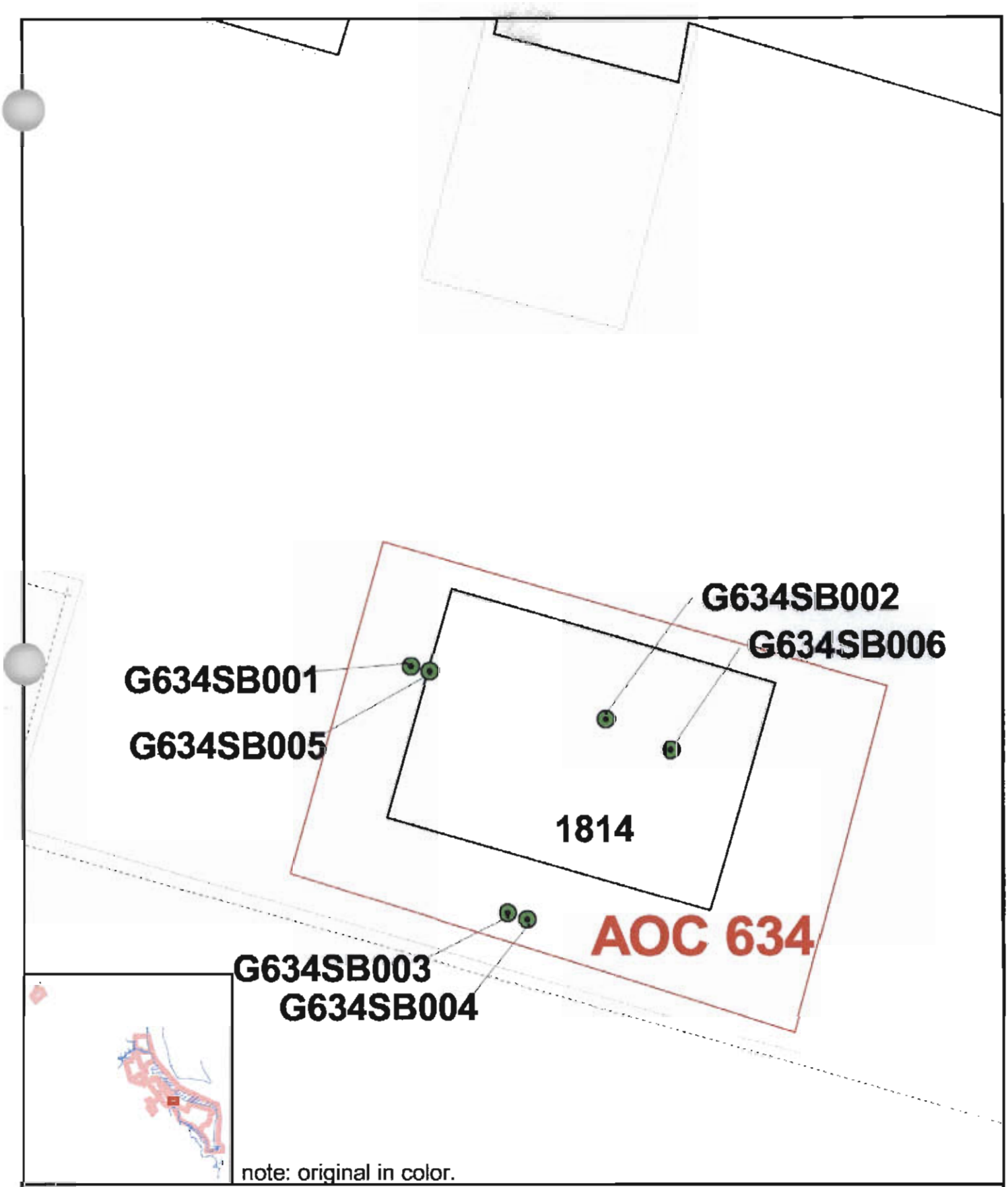
Groundwater was not investigated at this site. According to the fate and transport summary in paragraph 10.3.4.3 of the *Zone G RFI Report* (see Appendix B), "environmental media samples at AOC 634 included surface and subsurface soil. While a number of parameters were detected in these samples, none were present at concentrations above their applicable SSLs. As a result, the soil-to-groundwater pathway is considered invalid at this site" (EnSafe, 1998). This confirmatory sampling investigation (CSI) was a supplemental

(focused) soil investigation following the RFA to determine if there has been a release. All information obtained, including review of spill records and soil test data, indicate there has been no release at this site.

According to a 1993 inspection survey report, wetlands exist approximately 100 ft south of the former location of 1814. Six sediment samples were collected as part of the AOC 633 RFI field work. These samples were to identify contaminants potentially introduced by AOCs 633, 634, and 706 to adjacent wetlands. The wetlands are a series of drainage ditches surrounded by dense vegetation. The wetlands are influenced by a broad area in Zone G, including fields and roads, as well as the AOCs listed above. Typical influences include general pesticide applications and storm water runoff. Thus, defining trends and attributing causes to specific sites is complex.

The soil-to-sediment fate and transport analysis is presented in RFI Section 10.2.5.2 (for AOC 633). Evaluation of sediment results was focused on the consequent risk to ecological receptors, and is presented in the Environmental Risk Assessment for Zone G (RFI Section 8). The impact to aquatic and terrestrial organisms by sediments in this wetland and any required corrective actions will be addressed separately as part of the Zone J work.

The RFI concluded that NFA is appropriate at AOC 634, according to the recommendations provided in Table 11.1 (see Appendix A).



Surface and Subsurface Samples
Fence
Pavement
AOC Boundary
SWMU Boundary
Buildings

N

0 10 20 Feet

Figure 2-1
Surface and Subsurface Soil Sample Locations
AOC 634 - Zone G
Charleston Naval Complex

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SECTION 3.0

Summary of Additional Information

3.0 Summary of Additional Information

During the latter part of 1999, additional field activities were conducted subsequent to the RFI report. Additional soil samples were collected at sites with no monitoring wells to determine SPLP leach ratios for metals. From these results, site-specific SSL values would be calculated to determine whether monitoring wells would be needed. No additional field activities were conducted for contamination delineation purposes. The data from the additional investigations are summarized in this section; analytical data, validation reports, and SPLP metals results are provided in Appendices C, D, and E, respectively.

Three additional surface soil samples (G634SB004, G634SB005 and G634SB006) and two additional subsurface soil samples (G634SB004 and G634SB005) were collected and analyzed for metals and SPLP metals. Locations of these borings are shown in Figure 2-1. Tables 3-1 and 3-2 present summary results of the analyses from these additional investigations for surface and subsurface soil, respectively. These tables show all detections and compare them to appropriate screening criteria; concentrations that exceed the screening criteria are in bold and outlined within the tables.

Stations G634SB004, G634SB005 and G634SB006 surface soil sample results did not exceed the RBCs[1] and background[2] screening criteria. Thus, surface soil does not warrant further investigation or action at AOC 634.

The subsurface soil sample results were compared to generic EPA SSL[3] (dilution attenuation factor [DAF]= 10] and Zone G reference concentrations. Where generic EPA Region III SSLs were not available, SSLs[4] calculated by EnSafe using a DAF=10 were used. Station G634SB005 subsurface soil sample results did not exceed the SSL or reference concentrations. Station G634SB004 subsurface soil sample results showed a concentration of aluminum (23,600 mg/kg), arsenic (17 mg/kg), total chromium (62 mg/kg), iron (38,400 mg/kg), selenium (3.2 mg/kg), and thallium (1.1 mg/kg) that exceeded their SSL and reference concentrations. However, the exceedances are marginal and results are within the specific parameter background concentration ranges detected in Zone G for arsenic (1.4 - 35.8 mg/kg), total chromium (7.4 - 65.4 mg/kg), and iron (3,110 - 58,100 mg/kg). The one

[1] Residential RBCs were obtained from the EPA Region III, RBC Tables, 10/5/2000.

[2] Zone G RCRA Facility Investigation Report – Section 5 – Data Evaluation and Background

[3] Generic soil-to-groundwater SSLs (DAF = 10) are from EPA Soil Screening Guidance. Technical Background Document (Table A-1), EPA/540/R-95/128, May 1996

[4] EnSafe calculated Soil- to-Groundwater SSLs (DAF=10) based on EPA Soil Screening Guidance User's Guide (1996)

aluminum exceedance and the thallium exceedance were only marginally above the Zone G background concentration range (aluminum: 2,630 - 36,800 mg/kg; thallium: 1.0 mg/kg[5]), and are within the practical range of background values collected at CNC as a whole (aluminum: 798 - 45,300 mg/kg; thallium: 0.36 - 1.9 mg/kg). The one selenium exceedance was only marginally above the SSL (2.5 mg/kg), and well within the range of background values collected at CNC as a whole (0.34 - 3.9 mg/kg). Because all these metals are within the CNC practical range of background values, they do not warrant further investigation or action at AOC 634.

[5] Only one background value is available for thallium

TABLE 3-1
Analytes Detected in Surface Soil
RFI Addendum, AOC 634, Zone G, Charleston Naval Complex

Parameter	Location	Concentration	Units	Region III Residential Soil RBC[a]	Surface Background Concentrations
Aluminum	G634SB004	7,640	mg/kg	7,800	18,700
	G634SB005	8,550			
	G634SB006	8,790			
Antimony	G634SB004	0.69	mg/kg	3.1	2.89
	G634SB005	0.42			
	G634SB006	0.65			
Arsenic	G634SB004	5.6	mg/kg	0.43©	17.2
	G634SB005	3.9			
	G634SB006	6.2			
Barium	G634SB004	21.8	mg/kg	550	109
	G634SB005	15.1			
	G634SB006	27.8			
Beryllium	G634SB004	0.64	mg/kg	16	1.2
Cadmium	G634SB006	0.34	mg/kg	3.9	1.07
Calcium	G634SB004	109,000	mg/kg	NL	NL
	G634SB005	21,600			
	G634SB006	148,000			
Chromium, Total	G634SB004	30.9	mg/kg	23	42.8
	G634SB005	13.5			
	G634SB006	27			
Cobalt	G634SB004	1.7	mg/kg	470	6.6
	G634SB005	2.3			
	G634SB006	4.7			
Copper	G634SB004	8.5	mg/kg	310	260
	G634SB005	4.8			
	G634SB006	11.3			
Iron	G634SB004	5,880	mg/kg	2,300	29,200
	G634SB005	6,050			
	G634SB006	6,960			
Lead	G634SB004	11.8	mg/kg	400[b]	181
	G634SB005	10.1			
	G634SB006	36.2			
Magnesium	G634SB004	3,080	mg/kg	NL	NL
	G634SB005	1,140			
	G634SB006	3,170			
Manganese	G634SB004	75.7	mg/kg	160	325
	G634SB005	50.2			
	G634SB006	129			

TABLE 3-1
Analytes Detected in Surface Soil
RFI Addendum, AOC 634, Zone G, Charleston Naval Complex

Parameter	Location	Concentration	Units	Region III Residential Soil RBC[a]	Surface Background Concentrations
Mercury	G634SB004	0.12	mg/kg	2.3[c]	1.03
	G634SB005	0.05			
	G634SB006	0.11			
Nickel	G634SB004	10.7	mg/kg	160	20.6
	G634SB005	6			
	G634SB006	11.2			
Potassium	G634SB004	1,560	mg/kg	NL	NL
	G634SB005	509			
	G634SB006	1,630			
Selenium	G634SB004	1.6	mg/kg	39	1.22
	G634SB005	0.89			
	G634SB006	0.92			
Sodium	G634SB004	2,620	mg/kg	NL	NL
	G634SB005	771			
	G634SB006	1,490			
Thallium	G634SB006	0.54	mg/kg	0.55	0.85
Vanadium	G634SB004	18.8	mg/kg	55	60.9
	G634SB005	15.4			
	G634SB006	20.3			
Zinc	G634SB004	31.7	mg/kg	2,300	519
	G634SB005	21.3			
	G634SB006	42.5			

RBC risk-based concentration
ThQ target hazard quotient
NA not applicable/not available/not analyzed
NL no limit
HI Hazard Index
DAF dilution attenuation factor
SSL soil level

[a] Residential RBCs (HI = 0.1) were obtained from the EPA Region III, RBC Table, October 5, 2000 (http://www.epa.gov/epahome/search.html) unless otherwise noted.

[b] Residential RBC for lead was obtained from Soil Screening Guidance: Technical Background Document, EPA/540/R-95/128, May 1996.

[c] Residential RBC (ThQ = 0.1) for mercury was obtained from the EPA Region III, RBC Table document distributed on October 22, 1997.

© Carcinogen-residential RBC was used directly from the EPA Region III RBC Table, October 5, 2000.

All background values for Zone G are based on twice the means of the grid sample concentrations, as described in the Zone G RFI Report, Section 5 – Data Evaluation and Background Comparison.

Concentrations in bold and outlined exceed the RBCs and the zone background.

TABLE 3-2
Analytes Detected in Subsurface Soil
RFI Addendum, AOC 634, Zone G, Charleston Naval Complex

Parameter	Location	Concentration	Units	Soil-to-Groundwater SSL[a] (DAF=10)	Subsurface Background Concentrations
Aluminum	G634SB004	**37,100**	mg/kg	NL	23,600
	G634SB005	13,900			
Antimony	G634SB004	0.94	mg/kg	2.5	0.42
	G634SB005	0.5			
Arsenic	G634SB004	**17**	mg/kg	14.5	15.5
	G634SB005	9			
Barium	G634SB004	52.1	mg/kg	800	64.5
	G634SB005	23.8			
Beryllium	G634SB004	1.9	mg/kg	31.5	1.63
	G634SB005	0.68			
Calcium	G634SB004	10,500	mg/kg	NL	NL
	G634SB005	47,600			
Chromium, Total	G634SB004	**62**	mg/kg	19	43.4
	G634SB005	27.7			
Cobalt	G634SB004	10.8	mg/kg	994[b]	8.14
	G634SB005	3.9			
Copper	G634SB004	48.5	mg/kg	5,590[b]	32.6
	G634SB005	12.3			
Iron	G634SB004	**38,400**	mg/kg	2,770[b]	35,800
	G634SB005	15,300			
Lead	G634SB004	47.6	mg/kg	135[b]	66.3
	G634SB005	18			
Magnesium	G634SB004	6,100	mg/kg	NL	NL
	G634SB005	3,170			
Manganese	G634SB004	250	mg/kg	1110[b]	291
	G634SB005	236			
Mercury	G634SB004	0.3	mg/kg	1.04[b]	0.31
	G634SB005	0.34			
Nickel	G634SB004	20.1	mg/kg	65	18.3
	G634SB005	11.1			
Potassium	G634SB004	4,530	mg/kg	NL	NL
	G634SB005	1,930			
Selenium	G634SB004	**3.2**	mg/kg	2.5	1.26

TABLE 3-2
Analytes Detected in Subsurface Soil
RFI Addendum, AOC 634, Zone G, Charleston Naval Complex

Parameter	Location	Concentration	Units	Soil-to-Groundwater SSL[a] (DAF=10)	Subsurface Background Concentrations
	G634SB005	1.7			
Sodium	G634SB004	7,110	mg/kg	NL	NL
	G634SB005	3,820			
Thallium	G634SB004	1.1	mg/kg	0.35	0.95
Vanadium	G634SB004	94.3	mg/kg	3,000	72.5
	G634SB005	29.9			
Zinc	G634SB004	126	mg/kg	6,000	145
	G634SB005	47.1			

RBC risk-based concentration
ThQ target hazard quotient
SSL soil screening level
DAF dilution attenuation factor
NA not applicable/not available/not analyzed
NL no limit

[a] Generic soil-to-groundwater SSLs (DAF = 10) are from EPA Soil Screening Guidance: Technical Background Document (Table A-1), EPA/540/R-95/128, May 1996, unless otherwise noted.

[b] Where SSLs are not available from EPA Tables, EnSafe-calculated soil-to-groundwater SSLs are used (based on EPA Soil Screening Guidance, May 1996).

All background values for Zone G are based on twice the means of the grid sample concentrations, as described in the Zone G RFI Report, Section 5 – Data Evaluation and Background Comparison.

Concentrations in bold and outlined exceed the SSLs and the zone background.

SECTION 4.0

Summary of Information Related to Site Closeout Issues

4.0 Summary of Information Related to Site Closeout Issues

4.1 RFI Status

The *Zone G RFI Report, Revision 0* (EnSafe, 1998) addressed SWMUs/AOCs within the Naval Complex, including AOC 634. Because the investigation was considered to be complete for this site, the subsequent *Zone G RFI Report Work Plan Addendum* (EnSafe, 2000) did not address AOC 634. Reports, comments, and responses following the *Zone G RFI Report* also confirm that additional soil or groundwater samples are not required. A copy of the responses to SCDHEC comments on the report for this site are provided as Appendix F.

In accordance with the RFI completion process, if a determination of no further investigation (NFI) is made upon completion of the RFI, then a site may proceed to either NFA status or to a corrective measures study (CMS). Because there were no chemicals of concern (COCs) detected at this site, CH2M-Jones recommends this site for NFA.

4.2 Presence of Inorganics in Groundwater

For the purpose of site closeout documentation, the inorganics in groundwater issue refers to the occasional or intermittent detection of several metals (primarily arsenic, thallium, and antimony) in groundwater at concentrations above the applicable maximum contaminant level (MCL), preceded or followed by detections of these same metals below the MCL or below the practicable quantitation limit.

The RFI determined that no soil sample inorganics were present at concentrations above their applicable SSLs. The subsequent investigation detected minor exceedances of arsenic, chromium, and iron at one location as discussed in Section 3.0, but these are within background and do not represent source areas. As a result, the soil-to-groundwater pathway is considered invalid at this site, and a groundwater investigation is not warranted.

4.3 Potential Linkage to SWMU 37, Investigated Sanitary Sewers at the CNC

AOC 634 was a small unoccupied storage facility used only for container storage. No wastewater or sanitary wastewater was produced at this facility, and no access to a sewer system was provided (Figure 4-1) . Therefore, there is no linkage between AOC 634 and the sanitary sewers, and further evaluation of this issue is not warranted. Further, there are no COCs that could migrate from this site.

4.4 Potential Linkage to AOC 699, Investigated Storm Sewers at the CNC

No man-made storm water collection devices were observed or are known to be present at this facility. Storm drainage from AOC 634 appears to go directly into the wetland drainage system to the south. There is no known linkage between AOC 634 and the investigated sanitary sewers of AOC 699, and further evaluation of this issue is not warranted.

4.5 Potential Linkage to AOC 504, Investigated Railroad Lines at the CNC

The nearest investigated railroad line to AOC 634 is more than 800 ft to the northwest. There is no known linkage between AOC 634 and the investigated railroad lines of AOC 504, and further evaluation of this issue is not warranted.

4.6 Potential Migration Pathways to Surface Water Bodies at the CNC

Two potential migration pathways from the site to surface water are overland flow via storm water runoff, and subsurface flow via groundwater. There were no COPCs in surface soil at AOC 634; therefore, further evaluation of a potential pathway for contaminant migration via stormwater runoff is not warranted.

There were no COPCs in soils at AOC 634. As a result, the soil-to-groundwater pathway is considered invalid at this site. Therefore, further evaluation of potential migration of contaminated groundwater to a surface water body is not warranted.

4.7 Potential Contamination in Oil-Water Separators (OWSs)

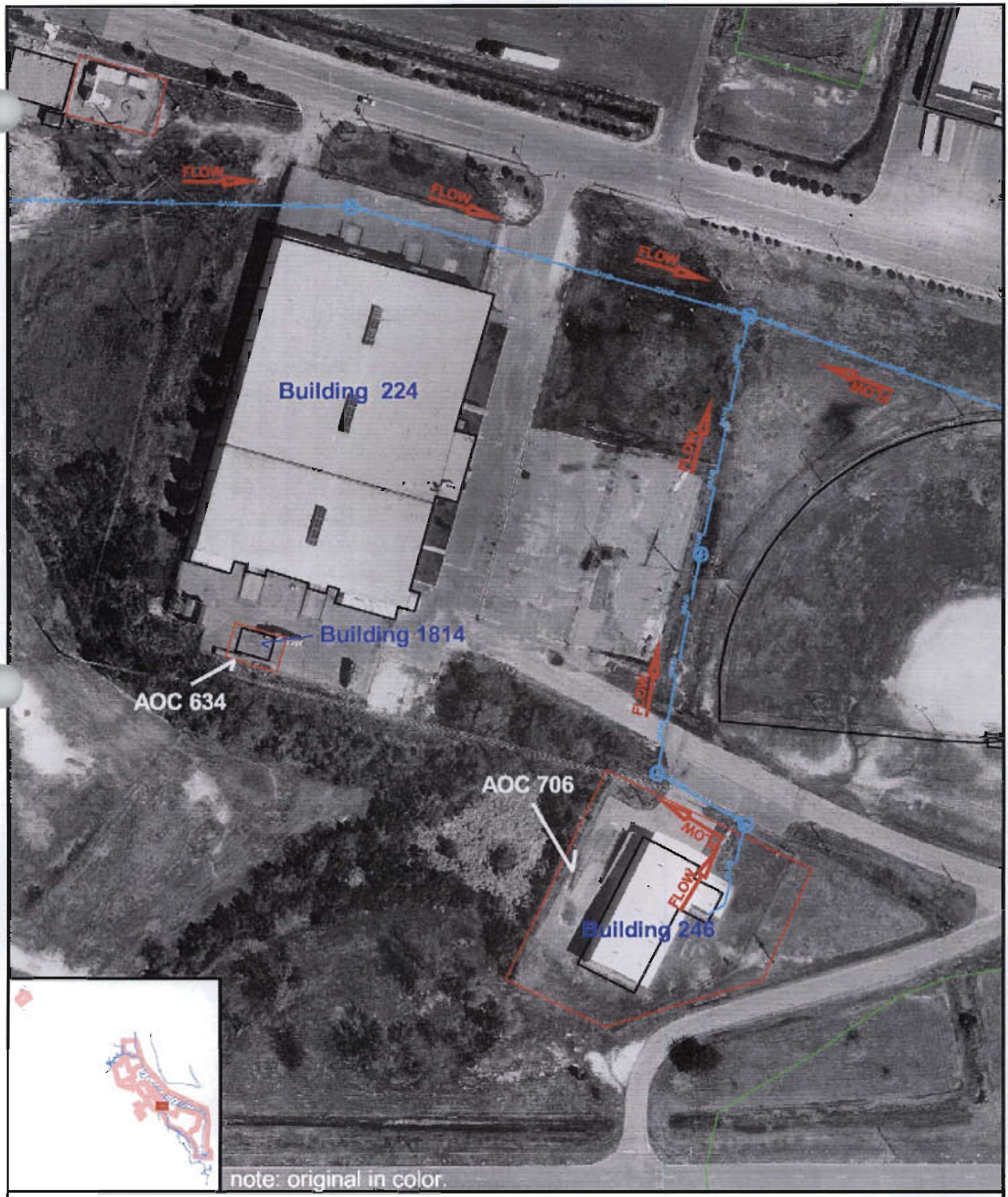
The issue of potential contamination of OWSs refers to the possible presence of an OWS that has not yet been investigated at a SWMU or AOC as part of the RCRA or underground storage tank (UST) process.

Neither the RFA nor the RFI refer to the presence or possible presence of an OWS at AOC 634. In addition, there is no visual evidence of an OWS at this site. Therefore, further evaluation of this issue at AOC 634 is not warranted.

In addition, there is no reference made in the basewide OWS report prepared by the Navy in Y2000 to an OWS at this facility.

4.8 Land Use Control Management Plan

The HHRA in the RFI screening did not detect any COPCs in soil at AOC 634. This conservative evaluation considered potential future residential use, which is regarded as unrestricted use. This residential use assumption is conservative, considering the planned light industrial marine use at this Zone G site; therefore, no land use restrictions are needed.



SEWER-LINE/MANHOLE
AOC Boundary
SWMU Boundary
Buildings

N

0 200 400 Feet

Figure 4-1
Sanitary Sewer Lines
AOC 634, Zone G
Charleston Naval Complex

CH2MHILL

File Path: c:\18gis\aoc634\aoc634.apr, Date: 08 Mar 2001 10:10, User: RPFEILST

SECTION 5.0

Recommendations

5.0 Recommendations

AOC 634 is located at former Building 1814, a 704 ft^2 flammable materials storage facility. Built in 1977 near the south end of Building 224 (a supply warehouse), Building 1814 was used until 1992 to store small (less than one gallon) containers of flammable material. The building has been removed and there is no longer any structure on the site. There have been no reports or observations indicating any past spills or contaminants that may have been discharged to the environment.

According to the RFI, no surface soil COPCs were identified for AOC 634, and no contaminants were detected in site soil above applicable SSLs; as a result, the soil-to-groundwater pathway is considered invalid at this site. Thus, groundwater sampling and analysis is not appropriate.

The RFI further concludes that NFA is appropriate at AOC 634 as stated in the recommendations provided in Table 11.1 (see Appendix A). Further investigation or corrective action is not necessary at AOC 634.

Once the BCT concurs that NFA is appropriate for the site, a Statement of Basis will be prepared that will be made available for public comment in accordance with SCDHEC policy. This will allow for public participation in the final remedy selection .

SECTION 6.0

References

6.0 References

EnSafe Inc. *Zone G RFI Report, NAVBASE Charleston*. Revision 0. February 20, 1998.

EnSafe Inc. *Zone G RFI Report Work Plan Addendum, NAVBASE Charleston*. January 17, 2000.

U.S. Environmental Protection Agency. *RCRA Corrective Action Plan*. OSWER Directive 9902.3-2A. May 1994.

APPENDIX A

Table 11.1, *Zone G RFI Report*

of contaminants driving risk, data trends for quarterly groundwater monitoring events, etc. are considered. No further action recommendations are not acceptable for sites where a potential risk exists under a residential scenario even though an industrial reuse of the property is expected since institutional controls for the site will be required. Final recommendations and the rationale for the risk management decisions will be documented in the final version of this report.

A summary of the preliminary recommendations for all the sites investigated in Zone G is included in Table 11.1.

Table 11.1
Site Conclusions and Zone G Preliminary Recommendations

Site Designation	Conclusion/Recommendations
AOC 628	Recommended for CMS - Surface Soil
AOC 633	No Further Action
AOC 634	No Further Action
AOC 638	Recommended for CMS - Surface Soil
AOC 642	Recommended for CMS - Surface Soil
SWMU 8, AOC 636	Recommended for CMS - Surface Soil and Shallow Groundwater
AOC 637	Recommended for CMS - Surface Soil and Shallow Groundwater
SWMU 11	Recommended for CMS - Surface Soil
SWMU 120	Recommended for CMS - Surface Soil and Shallow Groundwater
AOC 643	Recommended for CMS - Surface Soil
SWMU 3	Recommended for CMS - Surface Soil and Shallow Groundwater
SWMU 6, 7 and AOC 635	Recommended for CMS - Surface Soil and Shallow Groundwater
AOC 646	Recommended for CMS - Surface Soil
AOC 706	Recommended for CMS - Shallow Groundwater
SWMU 24	Recommended for CMS - Surface Soil and Shallow Groundwater

APPENDIX B

Excerpts from the *Zone G RFI Report*

10.3.3.1 Nature of Contamination in Soil

Organic compound analytical results for soil are summarized in Table 10.3.2. Inorganic analytical results for soil are summarized in Table 10.3.3. Table 10.3.4 summarizes all analytes detected in soil at AOC 634. Appendix D contains a complete analytical data report for all Zone G samples collected.

Volatile Organic Compounds in Soil

No VOCs were detected in surface soil at AOC 634. One VOC, carbon disulfide, was detected at one location in subsurface soil at a concentration far below its SSL.

Inorganic Elements in Soil

Twenty-one metals were detected in surface soil and with the exception of iron, all were detected at concentrations below their respective RBC and background. Iron was detected above its surface soil RBC, however no background was established because iron is considered an essential nutrient. In subsurface soil, 22 metals were detected at AOC 634. None of the subsurface metal concentrations exceeded their respective SSLs and/or background concentrations for Zone G subsurface soil.

10.3.4 Fate and Transport Assessment

Environmental media sampled as part of the AOC 634 investigation include surface and subsurface soil. The potential constituent migration pathways investigated for AOC 634 include the soil-to-groundwater and the soil-to-air pathways.

10.3.4.1 Soil-to-Groundwater Cross-Media Transport

Table 10.3.5 compares maximum detected organic constituent concentrations in surface soil and subsurface soil samples to risk-based SSLs considered protective of groundwater. For inorganics,

maximum concentrations in soil are compared to the greater of (a) risk-based soil screening levels, or (b) background concentrations for subsurface soil. To provide a conservative screen, generic soil screening levels are used; leachate entering the aquifer is assumed to be diluted by a ratio of 20:1, with no attenuation of constituents in soil (DAF=20).

No inorganic parameters or organic compounds were detected in site soil above applicable SSLs. Consequently, no significant residual mass remains onsite which poses a threat to groundwater quality. Due to the absence of any analytes present above SSLs, this pathway is invalid for this site.

10.3.4.2 Soil-to-Air Cross-Media Transport

No VOCs were detected in the surficial soil samples. As a result, the soil-to-air migration pathway is not valid at AOC 634.

10.3.4.3 Fate and Transport Summary

Environmental media samples at AOC 634 included surface and subsurface soil. While a number of parameters were detected in these samples, none were present at concentrations above their applicable SSLs. As a result, the soil-to-groundwater pathway is considered invalid at this site. No VOCs were detcted above their applicable soil-to-air volatilization concentrations, and therefore this pathway is considered invalid.

10.3.5 Human Health Risk Assessment

10.3.5.1 Site Background and Investigative Approach

AOC 634 is a former flammable materials storage facility, located at Building 1814. Materials stored at this site include paint and flammable materials.

During the CSI, a total of three soil borings were advanced to identify potential impacts resulting from the activities listed above. Surface soil samples from all three boring locations were used to quantitatively assess the direct contact soil exposure pathways. Subsurface soil detections were addressed in the previous section, Fate and Transport Assessment. Section 10.3.3 provides a summary of the sampling effort for AOC 634 soil.

10.3.5.2 COPC Identification

Based on the screening comparisons described in Section 7 of this RFI and presented in Table 10.3.6. No COPCs were identified in surface soil. Arsenic and beryllium were detected in surface soil samples at concentrations exceeding their RBCs but lower than their background concentrations. As a result, arsenic and beryllium were eliminated as COPCs based on comparison to their background concentrations. Wilcoxon rank sum test analysis confirmed that site concentrations of arsenic and beryllium were consistent with their background concentrations.

10.3.5.3 Risk Uncertainty

COPC Selection

A conservative screening process was used to identify COPCs for AOC 634. The potential for eliminating CPSSs with the potential for cumulative HI greater than one was addressed for noncarcinogens through the use of RBCs that were reduced one order of magnitude. For carcinogens the RBCs are based on a conservative target risk of 1E-06. Use of conservative RBCs in combination with the use of maximum detected concentrations minimizes the likelihood of a

significant contribution to risk/hazard based on eliminated CPSSs. Of the CPSSs screened and eliminated from formal assessment, none was reported at a concentration close to its RBC (e.g. within 10% of its RBC). Arsenic and beryllium were detected at concentrations exceeding their RBCs and were not considered COPCs based on a direct comparison of their maximum concentrations to their background concentrations. Wilcoxon rank sum test analysis confirmed that site concentrations of arsenic and beryllium were consistent with their background concentrations.

10.3.5.4 Risk Summary

Surface soil data were screened according to the risk-based screening evaluation presented in Section 7 of this RFI. As a result of conservative risk-based screening, no surface soil COPCs were identified for AOC 634.

10.3.6 Corrective Measures Considerations

Based on the analytical results and the human health risk assessment for AOC 634, no COPCs or COCs have been identified. Arsenic and beryllium were detected in surface soil samples at concentrations exceeding their RBCs but lower than their background concentrations. As a result, arsenic and beryllium were eliminated as COPCs based on comparison to their background concentrations.

To determine the leaching potential of contaminants from the subsurface soil media to groundwater, contaminant concentrations in subsurface soil were compared against generic SSLs based on a DAF of 20. This comparison did not indicate contaminant concentrations above the SSLs, therefore there exists no leaching potential at AOC 634. For further information regarding the subsurface soil detections refer to Section 10.3.4, Fate and Transport Assessment.

APPENDIX C

Analytical Data from EnSafe RFI Investigation

Charleston Naval Complex
AOC 634, Zone G

	StationID	G634SB004		G634SB004		G634SB004	
	SampleID	634SB004S1 (0-1ft)		634SB004S2 (3-5ft)		634SB004T1 (0-1ft)	
	DateCollected	12/16/1999		12/16/1999		12/16/1999	
	DateAnalyzed	12/30/1999		12/30/1999		12/29/1999	
	LabSampleID	9912406-31		9912406-32		9912406-14	
Parameter	**Units**						
ALUMINUM, SPLP	UG/L	271	=	912	=		
ANTIMONY, SPLP	UG/L	6.2	U	3.3	U		
ARSENIC,SPLP	UG/L	3.1	J	6.1	J		
BARIUM, SPLP	UG/L	755	J	832	J		
BERYLLIUM, SPLP	UG/L	0.9	U	0.9	U		
CADMIUM, SPLP	UG/L	1.8	J	1.7	J		
CALCIUM, SPLP	UG/L	11900	=	7580	=		
COBALT, SPLP	UG/L	0.5	UJ	0.5	UJ		
COPPER, SPLP	UG/L	2.2	J	5.6	J		
IRON, SPLP	UG/L	192	=	926	=		
LEAD, SPLP	UG/L	3.2	J	3.7	J		
MAGNESIUM, SPLP	UG/L	5410	=	5890	=		
MANGANESE, SPLP	UG/L	1.4	U	7	J		
MERCURY, SPLP	UG/L	0.2	U	0.2	U		
NICKEL, SPLP	UG/L	3.2	J	2.5	J		
POTASSIUM, SPLP	UG/L	3470	J	17800	=		
SELENIUM, SPLP	UG/L	2.6	J	2.8	J		
SILVER, SPLP	UG/L	0.5	U	0.5	U		
SODIUM, SPLP	UG/L	48200	=	172000	=		
THALLIUM, SPLP	UG/L	2.4	UJ	2.4	UJ		
Tin (Sn), SPLP	UG/L	2.7	U	2.7	U		
VANADIUM, SPLP	UG/L	3.3	J	10.7	J		
ZINC, SPLP	UG/L	27.3	=	34.9	=		
ALUMINUM	MG/KG					7640	=
ANTIMONY	MG/KG					0.69	J
ARSENIC	MG/KG					5.6	=
BARIUM	MG/KG					21.8	=
BERYLLIUM	MG/KG					0.64	=
CADMIUM	MG/KG					0.17	U
CALCIUM	MG/KG					109000	=
CHROMIUM, TOTAL	MG/KG					30.9	=
CHROMIUM, TOTAL	UG/L	1.3	J	2.1	J		
COBALT	MG/KG					1.7	J
COPPER	MG/KG					8.5	=
IRON	MG/KG					5880	=
LEAD	MG/KG					11.8	J
MAGNESIUM	MG/KG					3080	J
MANGANESE	MG/KG					75.7	=
MERCURY	MG/KG					0.12	=
NICKEL	MG/KG					10.7	=
POTASSIUM	MG/KG					1560	=
SELENIUM	MG/KG					1.6	=
SILVER	MG/KG					0.05	U
SODIUM	MG/KG					2620	=
THALLIUM	MG/KG					0.24	UJ
Tin (Sn)	MG/KG					3	U
VANADIUM	MG/KG					18.8	=
ZINC	MG/KG					31.7	=

Charleston Naval Complex
AOC 634, Zone G

	StationID	G634SB004		G634SB005		G634SB005	
	SampleID	634SB004T2 (3-5ft)		634SB005S1 (0-1ft)		634SB005S2 (3-5ft)	
	DateCollected	12/16/1999		12/16/1999		12/16/1999	
	DateAnalyzed	12/29/1999		12/30/1999		12/30/1999	
	LabSampleID	9912406-15		9912406-33		9912406-34	
Parameter	**Units**						
ALUMINUM, SPLP	UG/L			1620	=	741	=
ANTIMONY, SPLP	UG/L			3	U	4.8	U
ARSENIC,SPLP	UG/L			3.2	J	3.2	J
BARIUM, SPLP	UG/L			793	J	799	J
BERYLLIUM, SPLP	UG/L			0.9	U	0.9	U
CADMIUM, SPLP	UG/L			2	J	1.9	J
CALCIUM, SPLP	UG/L			12700	=	10300	=
COBALT, SPLP	UG/L			0.5	UJ	0.5	UJ
COPPER, SPLP	UG/L			5.2	J	1.9	J
IRON, SPLP	UG/L			850	=	502	=
LEAD, SPLP	UG/L			5.2	J	3.2	J
MAGNESIUM, SPLP	UG/L			2700	J	6320	=
MANGANESE, SPLP	UG/L			7.2	J	3.8	J
MERCURY, SPLP	UG/L			0.2	U	0.2	U
NICKEL, SPLP	UG/L			3.6	J	2.9	J
POTASSIUM, SPLP	UG/L			3200	J	9440	=
SELENIUM, SPLP	UG/L			1.7	U	2.6	J
SILVER, SPLP	UG/L			0.5	U	0.5	U
SODIUM, SPLP	UG/L			32000	=	89500	=
THALLIUM, SPLP	UG/L			2.4	UJ	2.4	UJ
Tin (Sn), SPLP	UG/L			2.7	U	2.7	U
VANADIUM, SPLP	UG/L			4.8	J	5.8	J
ZINC, SPLP	UG/L			33.6	=	27	=
ALUMINUM	MG/KG	37100	=				
ANTIMONY	MG/KG	0.94	J				
ARSENIC	MG/KG	17	=				
BARIUM	MG/KG	52.1	=				
BERYLLIUM	MG/KG	1.9	=				
CADMIUM	MG/KG	0.04	U				
CALCIUM	MG/KG	10500	=				
CHROMIUM, TOTAL	MG/KG	62	=				
CHROMIUM, TOTAL	UG/L			2	J	1.8	J
COBALT	MG/KG	10.8	=				
COPPER	MG/KG	48.5	=				
IRON	MG/KG	38400	=				
LEAD	MG/KG	47.6	J				
MAGNESIUM	MG/KG	6100	J				
MANGANESE	MG/KG	250	=				
MERCURY	MG/KG	0.3	=				
NICKEL	MG/KG	20.1	=				
POTASSIUM	MG/KG	4530	=				
SELENIUM	MG/KG	3.2	=				
SILVER	MG/KG	0.07	U				
SODIUM	MG/KG	7110	=				
THALLIUM	MG/KG	1.1	J				
Tin (Sn)	MG/KG	2.8	U				
VANADIUM	MG/KG	94.3	=				
ZINC	MG/KG	126	=				

Charleston Naval Complex
AOC 634, Zone G

	StationID	G634SB005		G634SB005		G634SB006	
	SampleID	634SB005T1 (0-1ft)		634SB005T2 (3-5ft)		634SB006S1 (0-1ft)	
	DateCollected	12/16/1999		12/16/1999		12/16/1999	
	DateAnalyzed	12/29/1999		12/29/1999		12/30/1999	
	LabSampleID	9912406-16		9912406-17		9912406-35	
Parameter	**Units**						
ALUMINUM, SPLP	UG/L					253	=
ANTIMONY, SPLP	UG/L					5.3	U
ARSENIC,SPLP	UG/L					4.7	J
BARIUM, SPLP	UG/L					862	J
BERYLLIUM, SPLP	UG/L					0.9	U
CADMIUM, SPLP	UG/L					1.5	U
CALCIUM, SPLP	UG/L					14900	=
COBALT, SPLP	UG/L					0.5	UJ
COPPER, SPLP	UG/L					2.4	J
IRON, SPLP	UG/L					439	=
LEAD, SPLP	UG/L					3.8	J
MAGNESIUM, SPLP	UG/L					3440	J
MANGANESE, SPLP	UG/L					3.3	J
MERCURY, SPLP	UG/L					0.2	U
NICKEL, SPLP	UG/L					3.6	J
POTASSIUM, SPLP	UG/L					3010	J
SELENIUM, SPLP	UG/L					1.8	J
SILVER, SPLP	UG/L					0.5	U
SODIUM, SPLP	UG/L					31500	=
THALLIUM, SPLP	UG/L					2.4	UJ
Tin (Sn), SPLP	UG/L					2.7	U
VANADIUM, SPLP	UG/L					3.3	J
ZINC, SPLP	UG/L					27.8	=
ALUMINUM	MG/KG	8550	=	13900	=		
ANTIMONY	MG/KG	0.42	J	0.5	J		
ARSENIC	MG/KG	3.9	=	9	=		
BARIUM	MG/KG	15.1	J	23.8	=		
BERYLLIUM	MG/KG	0.25	U	0.68	=		
CADMIUM	MG/KG	0.03	U	0.03	U		
CALCIUM	MG/KG	21600	=	47600	=		
CHROMIUM, TOTAL	MG/KG	13.5	=	27.7	=		
CHROMIUM, TOTAL	UG/L					1.2	J
COBALT	MG/KG	2.3	J	3.9	J		
COPPER	MG/KG	4.8	=	12.3	=		
IRON	MG/KG	6050	=	15300	=		
LEAD	MG/KG	10.1	J	18	J		
MAGNESIUM	MG/KG	1140	J	3170	J		
MANGANESE	MG/KG	50.2	=	236	=		
MERCURY	MG/KG	0.05	=	0.34	=		
NICKEL	MG/KG	6	=	11.1	=		
POTASSIUM	MG/KG	509	=	1930	=		
SELENIUM	MG/KG	0.89	=	1.7	=		
SILVER	MG/KG	0.04	U	0.06	U		
SODIUM	MG/KG	771	=	3820	=		
THALLIUM	MG/KG	0.2	UJ	0.27	UJ		
Tin (Sn)	MG/KG	2.6	U	3.1	U		
VANADIUM	MG/KG	15.4	=	29.9	=		
ZINC	MG/KG	21.3	=	47.1	=		

Charleston Naval Complex
AOC 634, Zone G

	StationID	G634SB006	
	SampleID	634SB006T1 (0-1ft)	
	DateCollected	12/16/1999	
	DateAnalyzed	12/29/1999	
	LabSampleID	9912406-18	
Parameter	**Units**		
ALUMINUM, SPLP	UG/L		
ANTIMONY, SPLP	UG/L		
ARSENIC,SPLP	UG/L		
BARIUM, SPLP	UG/L		
BERYLLIUM, SPLP	UG/L		
CADMIUM, SPLP	UG/L		
CALCIUM, SPLP	UG/L		
COBALT, SPLP	UG/L		
COPPER, SPLP	UG/L		
IRON, SPLP	UG/L		
LEAD, SPLP	UG/L		
MAGNESIUM, SPLP	UG/L		
MANGANESE, SPLP	UG/L		
MERCURY, SPLP	UG/L		
NICKEL, SPLP	UG/L		
POTASSIUM, SPLP	UG/L		
SELENIUM, SPLP	UG/L		
SILVER, SPLP	UG/L		
SODIUM, SPLP	UG/L		
THALLIUM, SPLP	UG/L		
Tin (Sn), SPLP	UG/L		
VANADIUM, SPLP	UG/L		
ZINC, SPLP	UG/L		
ALUMINUM	MG/KG	8790	=
ANTIMONY	MG/KG	0.65	J
ARSENIC	MG/KG	6.2	=
BARIUM	MG/KG	27.8	=
BERYLLIUM	MG/KG	0.49	U
CADMIUM	MG/KG	0.34	J
CALCIUM	MG/KG	148000	=
CHROMIUM, TOTAL	MG/KG	27	=
CHROMIUM, TOTAL	UG/L		
COBALT	MG/KG	4.7	=
COPPER	MG/KG	11.3	=
IRON	MG/KG	6960	=
LEAD	MG/KG	36.2	J
MAGNESIUM	MG/KG	3170	J
MANGANESE	MG/KG	129	=
MERCURY	MG/KG	0.11	=
NICKEL	MG/KG	11.2	=
POTASSIUM	MG/KG	1630	=
SELENIUM	MG/KG	0.92	=
SILVER	MG/KG	0.04	U
SODIUM	MG/KG	1490	=
THALLIUM	MG/KG	0.54	J
Tin (Sn)	MG/KG	2.7	U
VANADIUM	MG/KG	20.3	=
ZINC	MG/KG	42.5	=

U	Undetected. Samples were analyzed for this analyte, but it was not detected above the method detection limit (MDL).
UJ	Detection limit estimated. Samples were analyzed for this analyte, but the results were qualified as not detected. The result is estimated.
J	Estimated. The analyte was present, but the reported value may not be accurate or precise.
R	Rejected. The data are unusable. (NOTE: Analyte/compound may or may not be present.)
=	Detected. Target parameter detected at the concentration reported.

APPENDIX D

Validation Reports from EnSafe RFI Investigation

Data Validation Report

Ensafe
Charleston - Zone G
SDG#: EN034

HEARTLAND
ENVIRONMENTAL SERVICES, INC.

Data Validation Report

SDG#:	EN034
Date:	January 24, 2000
Client Name:	Ensafe
Project/Site Name:	Charleston Zone G
Date Sampled:	December 16, 1999
Number of Samples:	21 Non-Aqueous Sample(s) with 0 MS/MSD(s) 17 Aqueous Sample(s) with 0 MS/MSD(s)
Laboratory:	Laucks Testing Laboratories
Validation Guidance:	National Functional Guidelines for Organic and Inorganic Data, February, 1994
QA/QC Level:	EPA DQO Level III
Method(s) Utilized:	SW846 Third Edition
Analytical Fractions:	Semivolatiles, Pesticides/PCBs, Metals, SPLP Metals and Total Organic Carbon

Analytical data in this report were screened to determine usability of results and also to determine contractual compliance relative to these requirements and deliverables. This screening assumes analytical results are correct as reported and merely provides an interpretation of the reported quality control results. A minimum of 10% of all laboratory calculations have been verified as part of this validation. All instrument output, i.e. spectra, chromatograms, etc., for each sample have been carefully reviewed. The end-user is urged to review the Specific Findings and associated Data Qualifications presented in this report. Annotated Form 1s or spreadsheets for all samples reviewed are included after the Data Assessment Narratives. Form 1s for MS/MSD samples or spreadsheets are not annotated.

The release of this Data Validation Report is authorized by the following signature:

Craig G. Searfoss — 1-27-00.

for Paul B. Humburg, President — Date

4127 Plaza 94 South • St. Charles, MO 63304
(636) 936-1332 • Fax (636) 936-1335

SDG# EN034

Samples and Fractions Reviewed

Sample Identifications — Analytical Fractions

ENSAFE ID	MATRIX	SVOA		P/P		MET		SPLP-MET		TOC	
634SB00401	SOIL						X				X
634SB00402	SOIL						X				X
634SB00501	SOIL						X				X
634SB00502	SOIL						X				X
634SB00601	SOIL						X				X
638SB00801	SOIL						X				X
638SB00802	SOIL						X				X
638SB00901	SOIL						X				X
638SB00902	SOIL						X				X
646SB00501	SOIL		X								
646SB00502	SOIL		X								
646SB00601	SOIL		X								
646SB00602	SOIL		X								
646SB00701	SOIL				X		X				X
646SB00702	SOIL				X		X				X
646SB00801	SOIL				X		X				X
646SB00802	SOIL				X		X				X
646SB00901	SOIL				X		X				X
646SB00902	SOIL				X		X				X
646SB01001	SOIL				X		X				X
646SB01002	SOIL				X		X				X
634SB00401	WATER							X			
634SB00402	WATER							X			
634SB00501	WATER							X			
634SB00502	WATER							X			
634SB00601	WATER							X			
638SB00801	WATER							X			
638SB00802	WATER							X			
638SB00901	WATER							X			
638SB00902	WATER							X			
646SB00701	WATER							X			
646SB00702	WATER							X			
646SB00801	WATER							X			
646SB00802	WATER							X			
646SB00901	WATER							X			
646SB00902	WATER							X			
646SB01001	WATER							X			
646SB01002	WATER							X			
Total Billable Samples (Water/Soil)		0	4	0	8	0	17	17	0	0	17

SVOA= Semivolatiles
P/P= Pesticides/PCBs
MET= Metals
SPLP-MET= SPLP Metals
TOC= Total Organic Carbon

DATA ASSESSMENT NARRATIVE

SEMIVOLATILE ORGANICS

General

The organic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, surrogate and matrix spike recoveries, GC/MS performance, tuning results, calibration results and internal standard areas. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the SW-846 Method 8270C for GC/MS Semivolatiles; the National Functional Guidelines for Organic Data Validation, 2/94, and DQO Level III requirements. All comments made within this report should be considered when examining the analytical results. Please refer the specific findings found in each category to the Summary of Data Qualification table.

SDG # EN034

A validation was performed on the Semivolatile Data from SDG EN034. The data was evaluated based on the following parameters:

*	•	Data Completeness
*	•	Holding Times
*	•	GC/MS Tuning
*	•	Calibration
*	•	Blanks
*	•	Internal Standard Performance
*	•	Surrogate Recoveries
*	•	Matrix Spike/Matrix Spike Duplicates
*	•	Field Duplicates
*	•	Compound Identification
*	•	Compound Quantitation

* - All criteria were met for this parameter.

System Performance and Overall Assessment

The data, as reported, did not require qualifications.

GLOSSARY OF DATA QUALIFIERS

QUALIFICATION CODES

U = Not detected

J = Estimated value

UJ = Reported Quantitation limit is qualified as estimated

L = Result is estimated and biased low.

K = Result is estimated and biased high.

R = Result is rejected and unusable

D = Result value is based on dilution analysis

BLANK QUALIFICATION CODES

CRQL =	The sample result for the blank contaminant is less than the sample CRQL and is less than 5X (10X for common laboratory contaminants) the method blank value. The sample result for the blank contaminant is rejected and the CRQL for that compound is reported.
U =	The sample result for the blank contaminant is greater than the sample CRQL and is less than 5X (10X for common laboratory contaminants) the method blank value. The sample result for the blank contaminant is qualified as non detected at the compound value reported.
No Action =	The sample result for the blank contaminant is greater than the sample CRQL and is greater than 5X (10X for common laboratory contaminants) the method blank value. The sample result for the blank contaminant is not qualified with any blank qualifiers.

SUMMARY OF DATA QUALIFICATIONS

SAMPLE ID	COMPOUND ID	DL	QL

NO QUALIFICATIONS WERE REQUIRED

* DL denotes the Form I qualifier supplied by the laboratory
QL denotes the qualifier used by the data validation firm
+ in the DL column denotes a positive result
- in the DL column denotes a non detect result

DATA ASSESSMENT NARRATIVE

PESTICIDES

General

The organic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, surrogate and matrix spike recoveries, GC performance, and calibration results. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the SW846 Method 8081A; the National Functional Guidelines for Organic Data Validation, February 1994; and DQO Level III requirements. All comments made within this report should be considered when examining the analytical results. Please refer the specific findings found in each category to the Summary of Data Qualification table.

SDG # EN034

A validation was performed on the Pesticide Data from SDG EN034. The data was evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • GC Performance
* • Calibration
* • Blanks
* • Surrogate Recoveries
* • Matrix Spike/Matrix Spike Duplicates
* • Field Duplicates
* • Compound Identification
* • Compound Quantitation

* - All criteria were met for this parameter.

System Performance and Overall Assessment

The data did not require qualifications.

GLOSSARY OF DATA QUALIFIERS

QUALIFICATION CODES

U = Not detected

J = Estimated value

UJ = Reported quantitation limit is qualified as estimated

NJ = Result is considered presumptively present at an estimated concentration

UR = Result is rejected and unusable

D = Result value is based on dilution analysis

METHOD BLANK QUALIFICATION CODES

CRQL = The sample result for the blank contaminant is less than the sample CRQL and is less than 5X the method blank value. The sample result for the blank contaminant is rejected and the CRQL for that compound is reported.

U = The sample result for the blank contaminant is greater than the sample CRQL and is less than 5X the method blank value. The sample result for the blank contaminant is qualified as non detected at the compound value reported.

No Action = The sample result for the blank contaminant is greater than the sample CRQL and is greater than 5X the method blank value. The sample result for the blank contaminant is not qualified with any blank qualifiers.

SUMMARY OF DATA QUALIFICATIONS

SAMPLE ID	COMPOUND ID	DL	QL

NO QUALIFICATIONS WERE REQUIRED.

* DL denotes the Form I qualifier supplied by the laboratory
QL denotes the qualifier used by the data validation firm
+ in the DL column denotes a positive result
- in the DL column denotes a non-detect result

DATA ASSESSMENT NARRATIVE
METALS (SOILS AND SPLP) AND TOC

General

The inorganic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, matrix spike and LCS recoveries, matrix duplicates and calibration results. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the SW846 methods: the Functional Guidelines for Inorganic Data Validation, February 1994, and DQO Level III requirements. All comments made within this report should be considered when examining the analytical results. Please refer the specific findings found in each category to the Summary of Data Qualification table.

SDGs # EN034

A validation was performed on the Metals for soils and SPLP and TOC Data from SDG EN034. The data was evaluated based on the following parameters.

*	●	Data Completeness
*	●	Holding Times
*	●	Calibrations
	●	Blanks
*	●	Interferences
	●	Matrix Spike Recovery
*	●	Matrix Duplicates
*	●	Field Duplicates
*	●	Laboratory Control Samples
	●	Serial Dilutions

* - All criteria were met for this parameter.

Preparation and Field Blanks

The preparation and calibration blanks exhibited contamination for the following elements.

Elements	Conc.	Samples affected
Barium	0.06 mg/kg	no impact
Beryllium	0.10 mg/kg	all soil samples below 0.5 mg/kg
Cadmium	0.05 mg/kg	all soil samples below 0.25 mg/kg
Chromium	0.18 mg/kg	no impact
Iron	2.36 mg/kg	no impact
Lead	0.35 mg/kg	no impact
Manganese	0.04 mg/kg	no impact

Zinc	0.25 mg/kg	no impact
Tin	2.31 mg/kg	all soil samples below 11.6 mg/kg
Antimony	2.4 ug/l	all SPLP samples below 12.0 ug/l
Barium	0.3 ug/l	no impact
Cadmium	0.3 ug/l	all SPLP samples below 1.5 ug/l
Manganese	0.6 ug/l	all SPLP samples below 3.0 ug/l
Zinc	2.6 ug/l	no impact

The USEPA requires that all sample values below five times the preparation or calibration blank contamination be qualified as non-detect, "U".

The preparation blanks exhibited negative bias for the following elements.

Elements	Conc.	Samples affected
Cobalt	-0.08 mg/kg	all soil samples below 0.8 mg/kg
Thallium	-0.77 mg/kg	all soil samples below 7.7 mg/kg
Calcium	-36.2 ug/l	no impact
Cobalt	-0.80 ug/l	all SPLP samples below 8.0 ug/l
Thallium	-4.8 ug/l	all SPLP samples below 48.0 ug/l

This reviewer qualifies all samples results below 10 times the absolute value of the negative blank value.

Matrix Spike Recovery results

The matrix spike recovery for soils for Antimony (47%) was below the lower control limits (>30% but <75%). All positive and non-detect results are qualified as estimated, "J" or "UJ".

The matrix spike recovery for soils for Lead (178%) was above the upper control limits (>125%). All positive results are qualified as estimated, "J".

Matrix Duplicate results

The differences for soils for Aluminum (20%), Calcium (25%) and Manganese (34%) was not greater than 35% and will not be qualified for soils.

Serial Dilution recovery results

The serial dilution results for soils for Magnesium and for SPLP samples for Barium were greater than 10%. All positive results are qualified as estimated, "J".

All sample results left with a "B" qualifier after all other qualifications, will be qualified with a "J" qualifier in place of the "B". Value is below the CRDL but greater than the IDL.

SUMMARY OF DATA QUALIFICATIONS

Sample ID	Analyte	DL	QL
all soil samples below 0.5 mg/kg	Be.	+	U
all soil samples below 0.25 mg/kg	Cd.		
all soil samples below 11.6 mg/kg	Sn.		
all SPLP samples below 12.0 ug/l	Sb.		
all SPLP samples below 1.5 ug/l	Cd.		
all SPLP samples below 3.0 ug/l	Mn.		
all soil samples below 0.8 mg/kg	Co.	+/U	J/UJ
all soil samples below 7.7 mg/kg	Tl.		
all SPLP samples below 8.0 ug/l	Co.		
all SPLP samples below 48.0 ug/l	Tl.		
all soil samples	Sb.	+/U	J/UJ
all soil samples	Pb.	+	J
all soil samples	Mg.	+	J
all SPLP samples	Ba.		
all "B" results	all analytes	B	J

CHARLESTON - ZONE G
CHARLESTON ZONE G SOIL (ONLY)
SDG# EN034

EN034 SPLP-META																	
	SAMPLE ID ------->	634-S-B004-01		634-S-B004-02		634-S-B005-01		634-S-B005-02		634-S-B006-01		638-S-B008-01	
	ORIGINAL ID ----->	634SB00401		634SB00402		634SB00501		634SB00502		634SB00601		638SB00801	
	LAB SAMPLE ID --->	9912406-31		9912406-32		9912406-33		9912406-34		9912406-35		9912406-36	
	SAMPLE DATE ----->	12/16/99		12/16/99		12/16/99		12/16/99		12/16/99		12/16/99	
	DATE EXTRACTED -->	12/22/99		12/22/99		12/22/99		12/22/99		12/22/99		12/22/99	
	DATE ANALYZED --->	12/30/99		12/30/99		12/30/99		12/30/99		12/30/99		12/30/99	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L	A	UG/L	A	UG/L	A	UG/L	A	UG/L	A	UG/L	A
CAS #	Parameter												
7429-90-5	Aluminum (Al)	271.		912.		1620.		741.		253.		1210.	
7440-36-0	Antimony (Sb)	6.2	~~B~~ U	3.3	~~B~~ U	3.	~~B~~ U	4.8	~~B~~ U	5.3	~~B~~ U	3.5	~~B~~ U
7440-38-2	Arsenic (As)	3.1	~~B~~ J	6.1	~~B~~ J	3.2	~~B~~ J	3.2	~~B~~ J	4.7	~~B~~ J	2.1	~~B~~ J
7440-39-3	Barium (Ba)	755.	~~B~~ J	832.	~~B~~ J	793.	~~B~~ J	799.	~~B~~ J	862.	~~B~~ J	816.	~~B~~ J
7440-41-7	Beryllium (Be)	0.9	U	0.9	U	0.9	U	0.9	U	0.9	U	0.9	U
7440-43-9	Cadmium (Cd)	1.8	~~B~~ J	1.7	~~B~~ J	2.	~~B~~ J	1.9	~~B~~ J	1.5	~~B~~ U	2.1	~~B~~ J
7440-70-2	Calcium (Ca)	11900.		7580.		12700.		10300.		14900.		12600.	
7440-47-3	Chromium (Cr)	1.3	~~B~~ J	2.1	~~B~~ J	2.	~~B~~ J	1.8	~~B~~ J	1.2	~~B~~ J	2.1	~~B~~ J
7440-48-4	Cobalt (Co)	0.5	~~B~~ U J	0.5	~~B~~ U J	0.5	~~B~~ U J	0.5	~~B~~ U J	0.5	~~B~~ U J	0.5	~~B~~ U J
7440-50-8	Copper (Cu)	2.2	~~B~~ J	5.6	~~B~~ J	5.2	~~B~~ J	1.9	~~B~~ J	2.4	~~B~~ J	3.6	~~B~~ J
7439-89-6	Iron (Fe)	192.		926.		850.		502.		439.		948.	
7439-92-1	Lead (Pb)	3.2	~~B~~ J	3.7	~~B~~ J	5.2	~~B~~ J	3.2	~~B~~ J	3.8	~~B~~ J	17.1	
7439-95-4	Magnesium (Mg)	5410.		5890.		2700.	~~B~~ J	6320.		3440.	~~B~~ J	668.	~~B~~ J
7439-96-5	Manganese (Mn)	1.4	~~B~~ U	7.	~~B~~ J	7.2	~~B~~ J	3.8	~~B~~ J	3.3	~~B~~ J	5.2	~~B~~ J
7439-97-6	Mercury (Hg)	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
7440-02-0	Nickel (Ni)	3.2	~~B~~ J	2.5	~~B~~ J	3.6	~~B~~ J	2.9	~~B~~ J	3.6	~~B~~ J	1.1	U
7440-09-7	Potassium (K)	3470.	~~B~~ J	17800.		3200.	~~B~~ J	9440.		3010.	~~B~~ J	206.	~~B~~ J
7782-49-2	Selenium (Se)	2.6	~~B~~ J	2.8	~~B~~ J	1.7	U	2.6	~~B~~ J	1.8	~~B~~ J	1.7	U
7440-22-4	Silver (Ag)	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
7440-23-5	Sodium (Na)	48200.		172000.		32000.		89500.		31500.		5970.	
7440-28-0	Thallium (Tl)	2.4	~~B~~ U J	2.4	~~B~~ U J	2.4	~~B~~ U J	2.4	~~B~~ U J	2.4	~~B~~ U J	2.4	~~B~~ U J
7440-62-2	Vanadium (V)	3.3	~~B~~ J	10.7	~~B~~ J	4.8	~~B~~ J	5.8	~~B~~ J	3.3	~~B~~ J	3.5	~~B~~ J
7440-66-6	Zinc (Zn)	27.3		34.9		33.6		27.		27.8		39.9	
7440-31-5	Tin (Sn)	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U

PBG 1/21/00

019

CHARLESTON - ZONE G
CHARLESTON ZONE G SOIL (ONLY)
SDG# EN034

EN034 SPLP-META																			
	SAMPLE ID ------->	638-S-B008-02		638-S-B009-01		638-S-B009-02		646-S-B007-01		646-S-B007-02		646-S-B008-01	
	ORIGINAL ID ----->	638SB00802		638SB00901		638SB00902		646SB00701		646SB00702		646SB00801	
	LAB SAMPLE ID --->	9912406-37		9912406-38		9912406-13		9912406-23		9912406-24		9912406-25	
	SAMPLE DATE ----->	12/16/99		12/16/99		12/16/99		12/16/99		12/16/99		12/16/99	
	DATE EXTRACTED -->	12/22/99		12/22/99		12/22/99		12/22/99		12/22/99		12/22/99	
	DATE ANALYZED --->	12/30/99		12/30/99		12/30/99		12/30/99		12/30/99		12/30/99	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L	A	UG/L	A	UG/L	A	UG/L	A	UG/L	A	UG/L	A
CAS #	Parameter												
7429-90-5	Aluminum (Al)	3690.		2270.		724.		2360.		58.7	U	1480.	
7440-36-0	Antimony (Sb)	2.6	U	3.	U	2.4	U	2.4	U	2.4	U	2.5	U
7440-38-2	Arsenic (As)	5.3	J	4.2	J	4.7	J	4.2	J	2.	U	2.	U
7440-39-3	Barium (Ba)	1190.	J	782.	J	574.	J	480.	J	152.	J	713.	J
7440-41-7	Beryllium (Be)	0.9	U	0.9	U	0.9	U	0.9	U	0.9	U	0.9	U
7440-43-9	Cadmium (Cd)	1.6	J	1.9	J	0.6	U	1.	U	0.4	U	0.8	U
7440-70-2	Calcium (Ca)	7080.		16100.		14400.		14000.		2300.	J	2820.	J
7440-47-3	Chromium (Cr)	6.4	J	4.8	J	4.7	J	4.	J	0.6	U	1.1	J
7440-48-4	Cobalt (Co)	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ
7440-50-8	Copper (Cu)	6.4	J	4.1	J	1.2	J	1.3	J	0.6	U	1.2	J
7439-89-6	Iron (Fe)	4520.		1790.		484.		2330.		48.9	J	513.	
7439-92-1	Lead (Pb)	13.5		9.7	J	3.4	J	3.9	J	2.1	U	3.6	J
7439-95-4	Magnesium (Mg)	1560.	J	546.	J	688.	J	333.	J	276.	J	208.	J
7439-96-5	Manganese (Mn)	44.1		8.3	J	2.7	U	5.9	J	0.9	U	2.8	U
7439-97-6	Mercury (Hg)	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
7440-02-0	Nickel (Ni)	2.8	J	2.	J	1.2	J	2.1	J	1.1	U	1.1	J
7440-09-7	Potassium (K)	526.	J	272.	J	185.	J	205.	J	81.3	J	157.	J
7782-49-2	Selenium (Se)	2.	J	1.8	J	1.7	J	1.7	U	1.7	U	1.7	U
7440-22-4	Silver (Ag)	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
7440-23-5	Sodium (Na)	7430.		6000.		5570.		4970.	J	2400.	J	4920.	J
7440-28-0	Thallium (Tl)	2.4	UJ	2.4	UJ	2.4	UJ	2.4	UJ	2.4	UJ	2.4	UJ
7440-62-2	Vanadium (V)	13.5	J	6.7	J	2.5	J	6.7	J	0.5	U	2.8	J
7440-66-6	Zinc (Zn)	124.		62.2		23.5		39.7		16.7	J	46.6	
7440-31-5	Tin (Sn)	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U

1/21/00

020

CHARLESTON - ZONE G
CHARLESTON ZONE G SOIL (ONLY)
SDG# EN034

EN034
SPLP-META

	SAMPLE ID ------->	646-S-B008-02		646-S-B009-01		646-S-B009-02		646-S-B010-01		646-S-B010-02		BLK-0-N034-02	
	ORIGINAL ID ----->	646SB00802		646SB00901		646SB00902		646SB01001		646SB01002		B122001	
	LAB SAMPLE ID --->	9912406-26		9912406-27		9912406-28		9912406-29		9912406-30		B1220-01	
	SAMPLE DATE ----->	12/16/99		12/16/99		12/16/99		12/16/99		12/16/99		12/20/99	
	DATE EXTRACTED -->	12/22/99		12/22/99		12/22/99		12/22/99		12/22/99		12/22/99	
	DATE ANALYZED --->	12/30/99		12/30/99		12/30/99		12/30/99		12/30/99		12/30/99	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L	A	UG/L	A	UG/L	A	UG/L	A	UG/L	A	UG/L	0
CAS #	Parameter												
7429-90-5	Aluminum (Al)	133.	~~B~~ J	2490.		60.8	~~B~~ J	579.		1390.		83.6	B
7440-36-0	Antimony (Sb)	2.4	U	2.9	~~B~~ U	2.5	~~B~~ U	2.4	~~B~~ U	2.4	~~B~~ U	2.9	B
7440-38-2	Arsenic (As)	2.6	~~B~~ J	2.	U	2.	U	2.	U	2.	U	2.	U
7440-39-3	Barium (Ba)	185.	~~BE~~ J	737.	~~B~~ J	220.	~~B~~ J	405.	~~B~~ J	538.	~~B~~ J	125.	BE
7440-41-7	Beryllium (Be)	0.9	U	0.9	U	0.9	U	0.9	U	0.9	U	0.9	U
7440-43-9	Cadmium (Cd)	1.	~~B~~ U	0.7	~~B~~ U	0.9	~~B~~ U	0.8	~~B~~ U	1.2	~~B~~ U	1.4	B
7440-70-2	Calcium (Ca)	1130.	~~B~~ J	3740.	~~B~~ J	2100.	~~B~~ J	13000.		2000.	~~B~~ J	53.9	B
7440-47-3	Chromium (Cr)	0.7	~~B~~ J	2.9	~~B~~ J	0.6	U	1.	~~B~~ J	1.	~~B~~ J	0.6	B
7440-48-4	Cobalt (Co)	0.5	~~B~~ U J	0.5	~~B~~ U J	0.5	~~B~~ U J	0.5	~~B~~ U J	0.5	~~B~~ U J	0.5	U
7440-50-8	Copper (Cu)	0.6	U	1.1	~~B~~ J	0.6	U	0.9	~~B~~ J	0.6	U	0.6	U
7439-89-6	Iron (Fe)	129.		1240.		58.5	~~B~~ J	408.		464.		21.2	U
7439-92-1	Lead (Pb)	2.1	U	10.1		2.1	U	2.1	U	2.7	~~B~~ J	2.1	U
7439-95-4	Magnesium (Mg)	141.	~~B~~ J	224.	~~B~~ J	220.	~~B~~ J	344.	~~B~~ J	146.	~~B~~ J	13.6	U
7439-96-5	Manganese (Mn)	0.7	~~B~~ U	3.9	~~B~~ J	0.9	~~B~~ U	1.7	~~B~~ U	2.	~~B~~ U	0.8	B
7439-97-6	Mercury (Hg)	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
7440-02-0	Nickel (Ni)	1.1	U	1.2	~~B~~ J	1.1	U	1.1	U	1.1	U	1.1	U
7440-09-7	Potassium (K)	77.5	~~B~~ J	183.	~~B~~ J	75.6	~~B~~ J	162.	~~B~~ J	147.	~~B~~ J	160.	B
7782-49-2	Selenium (Se)	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
7440-22-4	Silver (Ag)	0.5	~~B~~ J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
7440-23-5	Sodium (Na)	2450.	~~B~~ J	5190.		2230.	~~B~~ J	5040.		4670.	~~B~~ J	734.	B
7440-28-0	Thallium (Tl)	2.4	~~B~~ U J	2.4	~~B~~ U J	2.4	~~B~~ U J	2.4	~~B~~ U J	2.4	~~B~~ U J	2.4	U
7440-62-2	Vanadium (V)	0.8	~~B~~ J	4.4	~~B~~ J	0.5	~~B~~ J	2.7	~~B~~ J	2.9	~~B~~ J	0.5	U
7440-66-6	Zinc (Zn)	15.1	~~B~~ J	35.1		26.2		22.8		35.6		182.	
7440-31-5	Tin (Sn)	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U

PBW 1/21/00

CHARLESTON - ZONE G
CHARLESTON ZONE G SOIL (ONLY)
SDG# EN034

EN034
SPLP-META

SAMPLE ID ------->	BLK-0-N034-07	
ORIGINAL ID ----->	PBW1EN034	
LAB SAMPLE ID --->	PBW1-EN034	
SAMPLE DATE ----->	12/22/99	
DATE EXTRACTED -->	12/22/99	
DATE ANALYZED --->	12/30/99	
MATRIX ---------->	Water	
UNITS ---------->	UG/L	D

CAS #	Parameter		
7429-90-5	Aluminum (Al)	58.7	U
7440-36-0	Antimony (Sb)	2.4	B
7440-38-2	Arsenic (As)	2.	U
7440-39-3	Barium (Ba)	0.3	B
7440-41-7	Beryllium (Be)	0.9	U
7440-43-9	Cadmium (Cd)	0.3	B
7440-70-2	Calcium (Ca)	-36.2	B
7440-47-3	Chromium (Cr)	0.6	U
7440-48-4	Cobalt (Co)	-0.8	B
7440-50-8	Copper (Cu)	0.6	U
7439-89-6	Iron (Fe)	21.2	U
7439-92-1	Lead (Pb)	2.1	U
7439-95-4	Magnesium (Mg)	13.6	U
7439-96-5	Manganese (Mn)	0.6	B
7439-97-6	Mercury (Hg)	0.2	U
7440-02-0	Nickel (Ni)	1.1	U
7440-09-7	Potassium (K)	40.2	U
7782-49-2	Selenium (Se)	1.7	U
7440-22-4	Silver (Ag)	0.5	U
7440-23-5	Sodium (Na)	387.	U
7440-28-0	Thallium (Tl)	-4.8	B
7440-62-2	Vanadium (V)	0.5	U
7440-66-6	Zinc (Zn)	2.6	B
7440-31-5	Tin (Sn)	2.7	U

PBK 1/21/00

022

CHARLESTON - ZONE G
CHARLESTON ZONE G SOIL (ONLY)
SDG# EN034

EN034
SW846-META

SAMPLE ID ------->	634-S-B004-01	634-S-B004-02	634-S-B005-01	634-S-B005-02	634-S-B006-01	638-S-B008-01
ORIGINAL ID ----->	634SB00401	634SB00402	634SB00501	634SB00502	634SB00601	638SB00801
LAB SAMPLE ID --->	9912406-14	9912406-15	9912406-16	9912406-17	9912406-18	9912406-19
SAMPLE DATE ----->	12/16/99	12/16/99	12/16/99	12/16/99	12/16/99	12/16/99
DATE EXTRACTED -->	12/20/99	12/20/99	12/20/99	12/20/99	12/20/99	12/20/99
DATE ANALYZED --->	12/29/99	12/29/99	12/29/99	12/29/99	12/29/99	12/29/99
MATRIX ---------->	Soil	Soil	Soil	Soil	Soil	Soil
UNITS ---------->	MG/KG A	MG/KG A	MG/KG A	MG/KG A	MG/KG A	MG/KG A
CAS # Parameter						
7429-90-5 Aluminum (Al)	7640.	37100.	8550.	13900.	8790.	15400.
7440-36-0 Antimony (Sb)	0.69 ~~BN~~ J	0.94 ~~BN~~ J	0.42 ~~BN~~ J	0.5 ~~BN~~ J	0.65 ~~BN~~ J	0.75 ~~BN~~ J
7440-38-2 Arsenic (As)	5.6	17.	3.9	9.	6.2	11.4
7440-39-3 Barium (Ba)	21.8	52.1	15.1 ~~B~~ J	23.8	PBL 27.8	37.6
7440-41-7 Beryllium (Be)	0.64 ~~B~~ PBL	1.9	0.25 ~~B~~ U	0.68 ~~B~~	0.49 U	0.66 ~~B~~ PBL
7440-43-9 Cadmium (Cd)	0.17 ~~B~~ U	0.04 U	0.03 U	0.03 U	0.34 ~~B~~ J	0.05 ~~B~~ U
7440-70-2 Calcium (Ca)	109000.	10500.	21600.	47600.	148000.	34500.
7440-47-3 Chromium (Cr)	30.9	62.	13.5	27.7	27.	25.5
7440-48-4 Cobalt (Co)	1.7 ~~B~~ J	10.8	2.3 ~~B~~ J	3.9 ~~B~~ J	4.7	4.2 ~~B~~ J
7440-50-8 Copper (Cu)	8.5	48.5	4.8	12.3	11.3	33.8
7439-89-6 Iron (Fe)	5880.	38400.	6050.	15300.	6960.	13900.
7439-92-1 Lead (Pb)	11.8 ~~E~~ J	47.6 ~~E~~ J	10.1 ~~E~~ J	18. ~~E~~ J	36.2 ~~E~~ J	75.1 ~~E~~ J
7439-95-4 Magnesium (Mg)	3080. ~~E~~ J	6100. ~~E~~ J	1140. ~~E~~ J	3170. ~~E~~ J	3170. ~~E~~ J	1920. ~~E~~ J
7439-96-5 Manganese (Mn)	75.7	250.	50.2	236.	129.	156.
7439-97-6 Mercury (Hg)	0.12	0.3	0.05	0.34	0.11	0.15
7440-02-0 Nickel (Ni)	10.7	20.1	6.	11.1	11.2	9.9
7440-09-7 Potassium (K)	1560.	4530.	509.	1930.	1630.	1070.
7782-49-2 Selenium (Se)	1.6	3.2	0.89	1.7	0.92	1.2
7440-22-4 Silver (Ag)	0.05 U	0.07 U	0.04 U	0.06 U	0.04 U	0.05 U
7440-23-5 Sodium (Na)	2620.	7110.	771.	3820.	1490.	270.
7440-28-0 Thallium (Tl)	0.24 ~~B~~ U J	1.1 ~~B~~ J	0.2 ~~B~~ U J	0.27 ~~B~~ U J	0.54 ~~B~~ J	0.45 ~~B~~ J
7440-31-5 Tin (Sn)	3. ~~B~~ U	2.8 ~~B~~ U	2.6 ~~B~~ U	3.1 ~~B~~ U	2.7 ~~B~~ U	3.3 ~~B~~ U
7440-62-2 Vanadium (V)	18.8	94.3	15.4	29.9	20.3	34.2
7440-66-6 Zinc (Zn)	31.7	126.	21.3	47.1	42.5	114.

1/21/00

016

CHARLESTON - ZONE G
CHARLESTON ZONE G SOIL (ONLY)
SDG# EN034

EN034 SW846-META						
SAMPLE ID ------->	638-S-B008-02	638-S-B009-01	638-S-B009-02	646-S-B007-01	646-S-B007-02	646-S-B008-01
ORIGINAL ID ----->	638SB00802	638SB00901	638SB00902	646SB00701	646SB00702	646SB00801
LAB SAMPLE ID --->	9912406-20	9912406-21	9912406-22	9912406-05	9912406-06	9912406-07
SAMPLE DATE ----->	12/16/99	12/16/99	12/16/99	12/16/99	12/16/99	12/16/99
DATE EXTRACTED -->	12/20/99	12/20/99	12/20/99	12/20/99	12/20/99	12/20/99
DATE ANALYZED --->	12/29/99	12/29/99	12/29/99	12/29/99	12/29/99	12/29/99
MATRIX ---------->	Soil	Soil	Soil	Soil	Soil	Soil
UNITS ---------->	MG/KG A	MG/KG A	MG/KG A	MG/KG A	MG/KG A	MG/KG A
CAS # Parameter						
7429-90-5 Aluminum (Al)	36400.	11100.	8880.	7740.	17100.	9110.
7440-36-0 Antimony (Sb)	1.1 BN	0.59 BN	0.32 BN	0.44 BN	0.48 BN	0.21 BN
7440-38-2 Arsenic (As)	27.1	5.2	2.8	4.4	4.7	1.7
7440-39-3 Barium (Ba)	54.3	23.6	41.1	29.9	28.8	24.5
7440-41-7 Beryllium (Be)	1.9	0.42 U	0.4 U	0.57	0.34 U	0.22 U
7440-43-9 Cadmium (Cd)	0.19 U	0.02 U	0.03 U	0.03 U	0.14 U	0.03 U
7440-70-2 Calcium (Ca)	7370.	2130.	2350.	5950.	632.	698.
7440-47-3 Chromium (Cr)	58.	17.2	11.	12.3	26.8	10.7
7440-48-4 Cobalt (Co)	11.4	1.9 B J	1.6 B J	1.7 B J	1.3 B J	0.7 B J
7440-50-8 Copper (Cu)	35.7	8.5	3.2	3.8	1. B J	1.1 B J
7439-89-6 Iron (Fe)	45300.	12100.	6480.	7140.	16800.	6300.
7439-92-1 Lead (Pb)	51.7 N J	166. N J	11.6 N J	14.9 N J	13.2 N J	6.8 N J
7439-95-4 Magnesium (Mg)	4680. E J	745. E J	496. E J	413. BE J	703. E J	366. BE J
7439-96-5 Manganese (Mn)	605.	67.	49.	59.7	12.	13.5
7439-97-6 Mercury (Hg)	0.33	0.11	0.05	0.12	0.05 U	0.05
7440-02-0 Nickel (Ni)	17.9	3.7	3.2 B J	3.1 B J	3.8	2.2 B J
7440-09-7 Potassium (K)	3030.	315. B J	216. B J	262. B J	535.	236. B J
7782-49-2 Selenium (Se)	3.7	1.4	0.81 B J	1.1	1.8	0.86
7440-22-4 Silver (Ag)	0.06 U J	0.04 U	0.04 U J	0.04 U	0.05 U	0.04 U
7440-23-5 Sodium (Na)	442. B J	85.8 B J	81.1 B J	94.8 B J	85.8 B J	61.6 B J
7440-28-0 Thallium (Tl)	1.3 J	0.19 B U J	0.2 B U J	0.21 B U J	0.22 B U J	0.21 B U J
7440-31-5 Tin (Sn)	3.1 B U	2.3 B U	2.3 B U	2.5 B U	2.6 B U	1.7 B U
7440-62-2 Vanadium (V)	93.1	23.1	14.	15.2	39.4	16.5
7440-66-6 Zinc (Zn)	134.	29.8	19.3	13.1	8.6	6.

1/21/00

017

CHARLESTON - ZONE G
CHARLESTON ZONE G SOIL (ONLY)
SDG# EN034

EN034
SW846-META

SAMPLE ID ------->	646-S-B008-02	646-S-B009-01	646-S-B009-02	646-S-B010-01	646-S-B010-02	BLK-0-N034-06
ORIGINAL ID ----->	646SB00802	646SB00901	646SB00902	646SB01001	646SB01002	PBS1EN034
LAB SAMPLE ID --->	9912406-08	9912406-09	9912406-10	9912406-11	9912406-12	PBS1-EN034
SAMPLE DATE ----->	12/16/99	12/16/99	12/16/99	12/16/99	12/16/99	12/20/99
DATE EXTRACTED -->	12/20/99	12/20/99	12/20/99	12/20/99	12/20/99	12/20/99
DATE ANALYZED --->	12/29/99	12/29/99	12/29/99	12/29/99	12/29/99	12/29/99
MATRIX ---------->	Soil	Soil	Soil	Soil	Soil	Soil
UNITS ---------->	MG/KG A	MG/KG A	MG/KG A	MG/KG A	MG/KG A	MG/KG 0
CAS # Parameter						
7429-90-5 Aluminum (Al)	10900.	8080.	15500.	6750.	7150.	5.87 U
7440-36-0 Antimony (Sb)	0.28 ~~BN~~ J	0.27 ~~BN~~ J	0.41 ~~BN~~ J	0.32 ~~BN~~ J	0.21 ~~UN~~ UJ	0.24 U
7440-38-2 Arsenic (As)	1.8	2.1	3.4	3.	1.3	0.2 U
7440-39-3 Barium (Ba)	18.2	22.8	25.2	18.3	18.8	0.06 B
7440-41-7 Beryllium (Be)	0.23 ~~B~~ U	0.26 ~~B~~ U	0.28 ~~B~~ U	0.39 ~~B~~ U	0.2 ~~B~~ U	0.1 B
7440-43-9 Cadmium (Cd)	0.02 U	0.03 U	0.02 U	0.03 U	0.03 U	0.05 B
7440-70-2 Calcium (Ca)	254. ~~BA~~ J	1100.	462.	6650.	546.	3.26 U
7440-47-3 Chromium (Cr)	14.7	10.1	19.9	11.4	8.4	0.18 B
7440-48-4 Cobalt (Co)	0.82 ~~B~~ J	0.63 ~~B~~ J	1. ~~B~~ J	1.6 ~~B~~ J	0.5 ~~B~~ J	-0.08 B
7440-50-8 Copper (Cu)	0.72 ~~B~~ J	2.1 ~~B~~ J	0.89 ~~B~~ J	2.7	0.7 ~~B~~ J	0.06 U
7439-89-6 Iron (Fe)	6300.	5230.	10400.	4770.	5110.	2.36 B
7439-92-1 Lead (Pb)	6.3 ~~N~~ J	11.9 ~~N~~ J	10.2 ~~N~~ J	8. ~~N~~ J	4.2 ~~N~~ J	0.35 B
7439-95-4 Magnesium (Mg)	454. ~~E~~ J	328. ~~BE~~ J	577. ~~B~~ J	377. ~~BE~~ J	295. ~~BE~~ J	1.36 U
7439-96-5 Manganese (Mn)	7.2	16.3	8.5 ~~B~~ J	24.	9.1	0.04 B
7439-97-6 Mercury (Hg)	0.05 U	0.05	0.05 U	0.05	0.05	0.1 U
7440-02-0 Nickel (Ni)	2.6 ~~B~~ J	2.4 ~~B~~ J	3.3	2.8 ~~B~~ J	1.5 ~~B~~ J	0.11 U
7440-09-7 Potassium (K)	333. ~~B~~ J	189. ~~B~~ J	426.	262. ~~B~~ J	198. ~~B~~ J	4.02 U
7782-49-2 Selenium (Se)	0.78 ~~B~~ J	0.7 ~~B~~ J	1.3	0.62 ~~B~~ J	0.73 ~~B~~ J	0.17 U
7440-22-4 Silver (Ag)	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U
7440-23-5 Sodium (Na)	58. ~~B~~ J	56.8 ~~B~~ J	65.5 ~~B~~ J	125. ~~B~~ J	56.3 ~~B~~ J	38.7 U
7440-28-0 Thallium (Tl)	0.19 ~~B~~ UJ	0.21 ~~B~~ UJ	0.2 ~~B~~ UJ	0.2 ~~B~~ UJ	0.21 ~~B~~ UJ	-0.77 B
7440-31-5 Tin (Sn)	2.6 ~~B~~ U	2.1 ~~B~~ U	2.2 ~~B~~ U	2. ~~B~~ U	1.6 ~~B~~ U	2.31 B
7440-62-2 Vanadium (V)	14.7	13.7	24.3	12.2	12.6	0.05 U
7440-66-6 Zinc (Zn)	5.2	8.7	6.5	10.4	3.4	0.25 B

PB 1/24/00

018

CH
1-29-00

CHARLESTON - ZONE G
CHARLESTON ZONE G SOIL (ONLY)
SDG# EN034

EN034
SW846-PEST

	SAMPLE ID ------->	646-S-B007-01		646-S-B007-02		646-S-B008-01		646-S-B008-02		646-S-B009-01		646-S-B009-02	
	ORIGINAL ID ----->	646SB00701		646SB00702		646SB00801		646SB00802		646SB00901		646SB00902	
	LAB SAMPLE ID --->	9912406-05		9912406-06		9912406-07		9912406-08		9912406-09		9912406-10	
	SAMPLE DATE ----->	12/16/99		12/16/99		12/16/99		12/16/99		12/16/99		12/16/99	
	DATE EXTRACTED -->	12/20/99		12/20/99		12/20/99		12/20/99		12/20/99		12/20/99	
	DATE ANALYZED --->	12/28/99		12/28/99		12/28/99		12/29/99		12/29/99		12/29/99	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG	A	UG/KG	A	UG/KG	A	UG/KG	A	UG/KG	A	UG/KG	A
CAS #	Parameter												
319-84-6	alpha-BHC	1.9	U	2.	U	1.9	U	1.9	U	1.9	U	2.	U
319-85-7	beta-BHC	1.9	U	2.	U	1.9	U	1.9	U	1.9	U	2.	U
319-86-8	delta-BHC	1.9	U	2.	U	1.9	U	1.9	U	1.9	U	2.	U
58-89-9	gamma-BHC (Lindane)	1.9	U	2.	U	1.9	U	1.9	U	1.9	U	2.	U
76-44-8	Heptachlor	1.9	U	2.	U	1.9	U	1.9	U	1.9	U	2.	U
309-00-2	Aldrin	1.9	U	2.	U	1.9	U	1.9	U	1.9	U	2.	U
1024-57-3	Heptachlor epoxide	1.9	U	2.	U	1.9	U	1.9	U	1.9	U	2.	U
959-98-8	Endosulfan I	1.9	U	2.	U	1.9	U	1.9	U	1.9	U	2.	U
60-57-1	Dieldrin	3.7	U	3.9	U	3.6	U	3.7	U	3.7	U	3.8	U
72-55-9	4,4'-DDE	3.7	U	3.9	U	3.6	U	3.7	U	3.7	U	3.8	U
72-20-8	Endrin	3.7	U	3.9	U	3.6	U	3.7	U	3.7	U	3.8	U
3213-65-9	Endosulfan II	3.7	U	3.9	U	3.6	U	3.7	U	3.7	U	3.8	U
72-54-8	4,4'-DDD	3.7	U	3.9	U	3.6	U	3.7	U	3.7	U	3.8	U
1031-07-8	Endosulfan sulfate	3.7	U	3.9	U	3.6	U	3.7	U	3.7	U	3.8	U
50-29-3	4,4'-DDT	3.7	U	3.9	U	3.6	U	3.7	U	3.7	U	3.8	U
72-43-5	Methoxychlor	19.	U	20.	U	19.	U	19.	U	19.	U	20.	U
5494-70-5	Endrin ketone	3.7	U	3.9	U	3.6	U	3.7	U	3.7	U	3.8	U
7421-93-4	Endrin aldehyde	3.7	U	3.9	U	3.6	U	3.7	U	3.7	U	3.8	U
5103-71-9	alpha-Chlordane	1.9	U	2.	U	1.9	U	1.9	U	1.9	U	2.	U
5103-74-2	gamma-Chlordane	1.9	U	2.	U	1.9	U	1.9	U	1.9	U	2.	U
8001-35-2	Toxaphene	190.	U	200.	U	190.	U	190.	U	190.	U	200.	U
57-74-9	Chlordane	370.	U	390.	U	360.	U	370.	U	370.	U	380.	U

CH
1/25/00

014

CHARLESTON - ZONE G
CHARLESTON ZONE G SOIL (ONLY)
SDG# EN034

EN034
SW846-PEST

	SAMPLE ID ------->	646-S-B010-01		646-S-B010-02		BLK-0-N034-04		BLK-0-N034-05			
	ORIGINAL ID ----->	646SB01001		646SB01002		B1220PXSLH		B1230PXSLG			
	LAB SAMPLE ID --->	9912406-11		9912406-12		B1220PXSLH		B1230PXSLG			
	SAMPLE DATE ----->	12/16/99		12/16/99		12/20/99		01/03/00			
	DATE EXTRACTED -->	12/20/99		12/30/99		12/20/99		12/30/99			
	DATE ANALYZED --->	12/29/99		01/04/00		12/28/99		01/04/00			
	MATRIX ---------->	Soil		Soil		Soil		Soil			
	UNITS ---------->	UG/KG	A	UG/KG	A	UG/KG	D	UG/KG	D		
CAS #	Parameter										
319-84-6	alpha-BHC	1.8	U	1.9	U	1.7	U	1.7	U		
319-85-7	beta-BHC	1.8	U	1.9	U	1.7	U	1.7	U		
319-86-8	delta-BHC	1.8	U	1.9	U	1.7	U	1.7	U		
58-89-9	gamma-BHC (Lindane)	1.8	U	1.9	U	1.7	U	1.7	U		
76-44-8	Heptachlor	1.8	U	1.9	U	1.7	U	1.7	U		
309-00-2	Aldrin	1.8	U	1.9	U	1.7	U	1.7	U		
1024-57-3	Heptachlor epoxide	1.8	U	1.9	U	1.7	U	1.7	U		
959-98-8	Endosulfan I	1.8	U	1.9	U	1.7	U	1.7	U		
60-57-1	Dieldrin	3.5	U	3.7	U	3.3	U	3.3	U		
72-55-9	4,4'-DDE	3.5	U	3.7	U	3.3	U	3.3	U		
72-20-8	Endrin	3.5	U	3.7	U	3.3	U	3.3	U		
3213-65-9	Endosulfan II	3.5	U	3.7	U	3.3	U	3.3	U		
72-54-8	4,4'-DDD	3.5	U	3.7	U	3.3	U	3.3	U		
1031-07-8	Endosulfan sulfate	3.5	U	3.7	U	3.3	U	3.3	U		
50-29-3	4,4'-DDT	4.5		3.7	U	3.3	U	3.3	U		
72-43-5	Methoxychlor	18.	U	19.	U	17.	U	17.	U		
3494-70-5	Endrin ketone	3.5	U	3.7	U	3.3	U	3.3	U		
7421-93-4	Endrin aldehyde	3.5	U	3.7	U	3.3	U	3.3	U		
5103-71-9	alpha-Chlordane	1.8	U	1.9	U	1.7	U	1.7	U		
5103-74-2	gamma-Chlordane	1.8	U	1.9	U	1.7	U	1.7	U		
8001-35-2	Toxaphene	180.	U	190.	U	170.	U	170.	U		
57-74-9	Chlordane	350.	U	370.	U	330.	U	330.	U		

EAL
4/25/00

015

CAW
1-29-00

CHARLESTON - ZONE G
CHARLESTON ZONE G SOIL (ONLY)
SDG# EN034

EN034 SW846-SVOA	SAMPLE ID ------->	646-S-B005-01		646-S-B005-02		646-S-B006-01		646-S-B006-02		BLK-O-N034-03	
	ORIGINAL ID ----->	646SB00501		646SB00502		646SB00601		646SB00602		B122099MSV	
	LAB SAMPLE ID --->	9912406-01		9912406-02		9912406-03		9912406-04		B122099MSV	
	SAMPLE DATE ----->	12/16/99		12/16/99		12/16/99		12/16/99		12/20/99	
	DATE EXTRACTED -->	12/20/99		12/20/99		12/20/99		12/20/99		12/20/99	
	DATE ANALYZED --->	12/23/99		12/23/99		12/23/99		12/23/99		12/23/99	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG	A	UG/KG	A	UG/KG	A	UG/KG	A	UG/KG	D
CAS #	Parameter										
108-95-2	Phenol	370.	U	380.	U	370.	U	410.	U	330.	U
111-44-4	bis(2-Chloroethyl)ether	370.	U	380.	U	370.	U	410.	U	330.	U
95-57-8	2-Chlorophenol	370.	U	380.	U	370.	U	410.	U	330.	U
541-73-1	1,3-Dichlorobenzene	370.	U	380.	U	370.	U	410.	U	330.	U
106-46-7	1,4-Dichlorobenzene	370.	U	380.	U	370.	U	410.	U	330.	U
100-51-6	Benzyl alcohol	370.	U	380.	U	370.	U	410.	U	330.	U
95-50-1	1,2-Dichlorobenzene	370.	U	380.	U	370.	U	410.	U	330.	U
95-48-7	2-Methylphenol (o-Cresol)	370.	U	380.	U	370.	U	410.	U	330.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	370.	U	380.	U	370.	U	410.	U	330.	U
106-44-5	4-Methylphenol (p-Cresol)	370.	U	380.	U	370.	U	410.	U	330.	U
621-64-7	N-Nitroso-di-n-propylamine	370.	U	380.	U	370.	U	410.	U	330.	U
67-72-1	Hexachloroethane	370.	U	380.	U	370.	U	410.	U	330.	U
98-95-3	Nitrobenzene	370.	U	380.	U	370.	U	410.	U	330.	U
78-59-1	Isophorone	370.	U	380.	U	370.	U	410.	U	330.	U
88-75-5	2-Nitrophenol	370.	U	380.	U	370.	U	410.	U	330.	U
105-67-9	2,4-Dimethylphenol	370.	U	380.	U	370.	U	410.	U	330.	U
65-85-0	Benzoic acid	1800.	U	1900.	U	1800.	U	2000.	U	1700.	U
111-91-1	bis(2-Chloroethoxy)methane	370.	U	380.	U	370.	U	410.	U	330.	U
120-83-2	2,4-Dichlorophenol	370.	U	380.	U	370.	U	410.	U	330.	U
120-82-1	1,2,4-Trichlorobenzene	370.	U	380.	U	370.	U	410.	U	330.	U
91-20-3	Naphthalene	370.	U	380.	U	370.	U	410.	U	330.	U
106-47-8	4-Chloroaniline	370.	U	380.	U	370.	U	410.	U	330.	U
87-68-3	Hexachlorobutadiene	370.	U	380.	U	370.	U	410.	U	330.	U
59-50-7	4-Chloro-3-methylphenol	370.	U	380.	U	370.	U	410.	U	330.	U
91-57-6	2-Methylnaphthalene	370.	U	380.	U	370.	U	410.	U	330.	U
77-47-4	Hexachlorocyclopentadiene	370.	U	380.	U	370.	U	410.	U	330.	U
88-06-2	2,4,6-Trichlorophenol	370.	U	380.	U	370.	U	410.	U	330.	U
95-95-4	2,4,5-Trichlorophenol	370.	U	380.	U	370.	U	410.	U	330.	U
91-58-7	2-Chloronaphthalene	370.	U	380.	U	370.	U	410.	U	330.	U
88-74-4	2-Nitroaniline	370.	U	380.	U	370.	U	410.	U	330.	U
131-11-3	Dimethyl phthalate	370.	U	380.	U	370.	U	410.	U	330.	U
208-96-8	Acenaphthylene	370.	U	380.	U	370.	U	410.	U	330.	U
99-09-2	3-Nitroaniline	370.	U	380.	U	370.	U	410.	U	330.	U
83-32-9	Acenaphthene	370.	U	380.	U	370.	U	410.	U	330.	U
51-28-5	2,4-Dinitrophenol	730.	U	770.	U	730.	U	810.	U	670.	U
100-02-7	4-Nitrophenol	730.	U	770.	U	730.	U	810.	U	670.	U
132-64-9	Dibenzofuran	370.	U	380.	U	370.	U	410.	U	330.	U

VC 2-6-00

CHARLESTON - ZONE G
CHARLESTON ZONE G SOIL (ONLY)
SDG# EN034

EN034
SW846-SVOA

	SAMPLE ID ------->	646-S-B005-01		646-S-B005-02		646-S-B006-01		646-S-B006-02		BLK-O-N034-03	
	ORIGINAL ID ----->	646SB00501		646SB00502		646SB00601		646SB00602		B122099MSV	
	LAB SAMPLE ID --->	9912406-01		9912406-02		9912406-03		9912406-04		B122099MSV	
	SAMPLE DATE ----->	12/16/99		12/16/99		12/16/99		12/16/99		12/20/99	
	DATE EXTRACTED -->	12/20/99		12/20/99		12/20/99		12/20/99		12/20/99	
	DATE ANALYZED --->	12/23/99		12/23/99		12/23/99		12/23/99		12/23/99	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG	A	UG/KG	A	UG/KG	A	UG/KG	A	UG/KG	D
CAS #	Parameter										
121-14-2	2,4-Dinitrotoluene	370.	U	380.	U	370.	U	410.	U	330.	U
606-20-2	2,6-Dinitrotoluene	370.	U	380.	U	370.	U	410.	U	330.	U
84-66-2	Diethylphthalate	370.	U	380.	U	370.	U	410.	U	330.	U
7005-72-3	4-Chlorophenylphenylether	370.	U	380.	U	370.	U	410.	U	330.	U
86-73-7	Fluorene	370.	U	380.	U	370.	U	410.	U	330.	U
100-01-6	4-Nitroaniline	370.	U	380.	U	370.	U	410.	U	330.	U
534-52-1	2-Methyl-4,6-Dinitrophenol	730.	U	770.	U	730.	U	810.	U	670.	U
86-30-6	N-Nitrosodiphenylamine	370.	U	380.	U	370.	U	410.	U	330.	U
101-55-3	4-Bromophenyl-phenylether	370.	U	380.	U	370.	U	410.	U	330.	U
118-74-1	Hexachlorobenzene	370.	U	380.	U	370.	U	410.	U	330.	U
87-86-5	Pentachlorophenol	730.	U	770.	U	730.	U	810.	U	670.	U
85-01-8	Phenanthrene	370.	U	380.	U	370.	U	410.	U	330.	U
120-12-7	Anthracene	370.	U	380.	U	370.	U	410.	U	330.	U
84-74-2	Di-n-butylphthalate	370.	U	380.	U	370.	U	410.	U	330.	U
206-44-0	Fluoranthene	370.	U	380.	U	370.	U	410.	U	330.	U
129-00-0	Pyrene	370.	U	380.	U	370.	U	410.	U	330.	U
85-68-7	Butylbenzylphthalate	370.	U	380.	U	370.	U	410.	U	330.	U
91-94-1	3,3'-Dichlorobenzidine	730.	U	770.	U	730.	U	810.	U	670.	U
56-55-3	Benzo(a)anthracene	370.	U	380.	U	370.	U	410.	U	330.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	370.	U	380.	U	370.	U	410.	U	330.	U
218-01-9	Chrysene	370.	U	380.	U	370.	U	410.	U	330.	U
117-84-0	Di-n-octyl phthalate	370.	U	380.	U	370.	U	410.	U	330.	U
205-99-2	Benzo(b)fluoranthene	370.	U	380.	U	370.	U	410.	U	330.	U
207-08-9	Benzo(k)fluoranthene	370.	U	380.	U	370.	U	410.	U	330.	U
50-32-8	Benzo(a)pyrene	370.	U	380.	U	370.	U	410.	U	330.	U
193-39-5	Indeno(1,2,3-cd)pyrene	370.	U	380.	U	370.	U	410.	U	330.	U
53-70-3	Dibenz(a,h)anthracene	370.	U	380.	U	370.	U	410.	U	330.	U
191-24-2	Benzo(g,h,i)perylene	370.	U	380.	U	370.	U	410.	U	330.	U

1-26-00

Cfu 1-29-00

CHARLESTON - ZONE G
CHARLESTON ZONE G SOIL (ONLY)
SDG# EN034

EN034 TOC							
SAMPLE ID ------->	634-S-B004-01	634-S-B004-02	634-S-B005-01	634-S-B005-02	634-S-B006-01	638-S-B008-01
ORIGINAL ID ----->	634SB00401	634SB00402	634SB00501	634SB00502	634SB00601	638SB00801
LAB SAMPLE ID --->	9912406-14	9912406-15	9912406-16	9912406-17	9912406-18	9912406-19
SAMPLE DATE ----->	12/16/99	12/16/99	12/16/99	12/16/99	12/16/99	12/16/99
DATE EXTRACTED -->	01/06/00	01/06/00	01/06/00	01/06/00	01/06/00	01/06/00
DATE ANALYZED --->	01/11/00	01/11/00	01/11/00	01/11/00	01/11/00	01/11/00
MATRIX ---------->	Soil	Soil	Soil	Soil	Soil	Soil
UNITS ---------->	%, DR A	%, DR A	%, DR A	%, DR A	%, DR A	%, DR A
CAS # Parameter						
99990-00-1 Total Organic Carbon, TOC (bad CAS #)	0.1 U	0.2	0.1	0.2	0.3	0.1

1/21/00

023

CHARLESTON - ZONE G
CHARLESTON ZONE G SOIL (ONLY)
SDG# EN034

EN034 TOC							
	SAMPLE ID ------->	638-S-B008-02	638-S-B009-01	638-S-B009-02	646-S-B007-01	646-S-B007-02	646-S-B008-01
	ORIGINAL ID ----->	638SB00802	638SB00901	638SB00902	646SB00701	646SB00702	646SB00801
	LAB SAMPLE ID --->	9912406-20	9912406-21	9912406-22	9912406-05	9912406-06	9912406-07
	SAMPLE DATE ----->	12/16/99	12/16/99	12/16/99	12/16/99	12/16/99	12/16/99
	DATE EXTRACTED -->	01/06/00	01/06/00	01/06/00	01/06/00	01/06/00	01/06/00
	DATE ANALYZED --->	01/11/00	01/11/00	01/11/00	01/11/00	01/11/00	01/11/00
	MATRIX ---------->	Soil	Soil	Soil	Soil	Soil	Soil
	UNITS ---------->	%, DR A	%, DR A	%, DR A	%, DR A	%, DR A	%, DR A
CAS #	Parameter						
9990-00-1	Total Organic Carbon, TOC (bad CAS #)	0.1 U	0.1 U	0.1 U	0.1 U	0.1	0.1

1/24/00

CHARLESTON - ZONE G
CHARLESTON ZONE G SOIL (ONLY)
SDG# EN034

EN034 TOC						
SAMPLE ID ------->	646-S-B008-02	646-S-B009-01	646-S-B009-02	646-S-B010-01	646-S-B010-02	BLK-0-N034-01
ORIGINAL ID ----->	646SB00802	646SB00901	646SB00902	646SB01001	646SB01002	B010600_TO
LAB SAMPLE ID --->	9912406-08	9912406-09	9912406-10	9912406-11	9912406-12	B010600_TO
SAMPLE DATE ----->	12/16/99	12/16/99	12/16/99	12/16/99	12/16/99	01/06/00
DATE EXTRACTED -->	01/06/00	01/06/00	01/06/00	01/06/00	01/06/00	01/06/00
DATE ANALYZED --->	01/11/00	01/11/00	01/11/00	01/11/00	01/11/00	01/11/00
MATRIX ---------->	Soil	Soil	Soil	Soil	Soil	Soil
UNITS ---------->	%, DR A	%, DR A	%, DR A	%, DR A	%, DR A	PERCE D
CAS # Parameter						
9990-00-1 Total Organic Carbon, TOC (bad CAS #)	0.1 U	0.1	0.1 U	0.2	0.1 U	0.1 U

1/21/00

025

MULTI-MEDIA SEMIVOLATILE ORGANIC FRACTION

CASE NUMBER: _____ SDG NUMBER: EN034

LABORATORY: Laucks

CLIENT: Ensafe PROJECT: Charleston Zone G

REVIEWER: JA Cleveland DATE: 1-26-00

QA/QC LEVEL

- ☐ NEESA C
- ☐ NEESA D
- ☒ DQO LEVEL III
- ☐ DQO LEVEL IV
- ☐ _____

Statement Of Work (SOW)

- ☐ CLP 3/90
- ☐ CLP 2/88
- ☐ SW846 8270
- ☐ SW846 8270 Appendix IX
- ☒ SW846 8270C

ANALYSIS MODIFICATIONS: _____

SEMIVOLATILE HOLDING TIMES

	Water	soil	Analysis
CLP:	7 days from sampling	14 days from sampling	40 days from VTSR
SW846:	7 days from sampling	14 days from sampling	40 days from VTSR
Region I:	5 days from VTSR	7 days from VTSR	40 days from VTSR
Region III:	7 days from sampling	7 days from sampling	40 days from VTSR
NYSDEC:	5 days form VTSR	5 days from VTSR	40 days From VTSR

1. Were the holding times met for the all semivolatile samples? YES NO

S- 12/16 e- 12/20 a- 12/23

If yes, complete the following form for all samples that exceeded holding times.

EPA SAMPLE NO.	MATRIX	VTSR OR DATE SAMPLED	DATE OF EXTRACTION / ANALYSIS	DA	Action

1-26-00

Action: DA - The number of days that the holding time was exceeded.

DA ≤ 5: Qualify all positive results as estimated (J).

DA > 5 ≤ 15: Qualify all positive results as estimated (J) and all non detects estimated (UJ).

DA > 15: Qualify all positive results estimated (J) and reject all non detects.

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Laucks Testing Labs Contract:

Lab Code: Case No.: SAS No.: SDG No.: EN034

Lab File ID: Z1108006.D DFTPP Injection Date: 11/08/99

Instrument ID: 5970Z DFTPP Injection Time: 13:33

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 80.0% of mass 198	39.9
68	Less than 2.0% of mass 69	1.1 (2.0)1
70	Less than 2.0% of mass 69	0.3 (0.5)1
127	25.0 - 75.0% of mass 198	46.2
197	Less than 1.0% of mass 198	0.3
198	Base Peak, 100% relative abundance	100.0
199	5.0 - 9.0% of mass 198	6.6
275	10.0 - 30.0% of mass 198	20.0
365	Greater than 1.0% of mass 198	1.6
441	Present, but less than mass 443	71.4
442	40.0 -110% of mass 198	58.7
443	15.0 - 24.0% of mass 442	11.2 (19.1)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD010	5 NG/UL ABN STD	Z1108008.D	11/08/99	15:00
02	SSTD020	10 NG/UL ABN STD	Z1108009.D	11/08/99	15:57
03	SSTD050	25 NG/UL ABN STD	Z1108010.D	11/08/99	16:54
04	SSTD080	40 NG/UL ABN STD	Z1108011.D	11/08/99	17:51
05	SSTD120	60 NG/UL ABN STD	Z1108012.D	11/08/99	18:50
06	SSTD160	80 NG/UL ABN STD	Z1108013.D	11/08/99	19:47

6C

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Laucks Testing Labs Contract:

Lab Code: Case No.: SAS No.: SDG No.: EN034

Instrument ID: 5970Z Calibration Date(s): 11/08/99 11/08/99

Calibration Times: 15:00 19:47

LAB FILE ID: RRF5 = Z1108008.D RRF10 = Z1108009.D RRF80 = Z1108013.D

RRF25 = Z1108010.D RRF40 = Z1108011.D RRF60 = Z1108012.D

COMPOUND	RRF5	RRF10	RRF25	RRF40	RRF60	RRF80	$\overline{RRF}$	% RSD	
Dimethylphthalate	1.765	1.601	1.616	1.552	1.714	1.539	1.631	5.5	
2,6-Dinitrotoluene	0.348	0.348	0.378	0.378	0.443	0.410	0.384	9.7	
Acenaphthene	1.312	1.205	1.160	1.111	1.208	1.088	1.181	6.8	
3-Nitroaniline	0.421	0.406	0.430	0.432	0.477	0.432	0.433	5.5	
2,4-Dinitrophenol		0.087	0.161	0.189	0.249	0.245	0.186	36.0	Jt-N
Dibenzofuran	1.929	1.798	1.735	1.666	1.883	1.709	1.786	5.8	
2,4-Dinitrotoluene	0.502	0.515	0.528	0.525	0.602	0.564	0.539	6.9	
4-Nitrophenol	0.173	0.187	0.217	0.223	0.259	0.247	0.217	15.4	Jt-N
Fluorene	1.554	1.411	1.312	1.222	1.334	1.211	1.341	9.6	
4-Chlorophenyl-phenylether	0.756	0.692	0.665	0.639	0.683	0.601	0.673	7.8	
Diethylphthalate	1.789	1.651	1.556	1.461	1.534	1.385	1.563	9.1	
4-Nitroaniline	0.399	0.398	0.425	0.436	0.504	0.468	0.438	9.5	
4,6-Dinitro-2-methylphenol	0.093	0.120	0.160	0.170	0.198	0.173	0.152	25.5	Jt-Ni
n-Nitrosodiphenylamine	0.612	0.575	0.552	0.539	0.575	0.502	0.559	6.7	
2,4,6-Tribromophenol	0.140	0.138	0.143	0.146	0.171	0.157	0.149	8.4	
4-Bromophenyl-phenylether	0.267	0.244	0.243	0.241	0.272	0.248	0.253	5.3	
Hexachlorobenzene	0.303	0.278	0.269	0.264	0.306	0.275	0.282	6.3	
Pentachlorophenol	0.166	0.174	0.190	0.193	0.226	0.213	0.194	11.8	
Phenanthrene	1.295	1.187	1.147	1.117	1.275	1.162	1.197	6.0	
Anthracene	1.263	1.204	1.143	1.126	1.279	1.156	1.195	5.4	
Di-n-butylphthalate	1.727	1.659	1.698	1.727	1.843	1.681	1.722	3.8	
Fluoranthene	1.355	1.271	1.233	1.236	1.372	1.278	1.291	4.6	
Pyrene	1.509	1.445	1.429	1.372	1.639	1.472	1.478	6.2	
Terphenyl-d14	1.193	1.121	1.130	1.103	1.316	1.192	1.176	6.6	
Butylbenzylphthalate	0.821	0.827	0.854	0.844	1.020	0.926	0.882	8.8	
3,3'-Dichlorobenzidine	0.400	0.328	0.407	0.450	0.569	0.524	0.446	19.7	Jt-Ni
Benzo[a]anthracene	1.340	1.261	1.293	1.278	1.508	1.383	1.344	6.8	
Chrysene	1.266	1.161	1.179	1.164	1.388	1.274	1.239	7.2	
Bis(2-Ethylhexyl)phthalate	1.221	1.167	1.197	1.195	1.404	1.285	1.245	7.0	
Di-n-octylphthalate	2.367	2.390	2.485	2.455	2.728	2.382	2.468	5.5	
Benzo[b]fluoranthene	1.408	1.444	1.553	1.539	2.133	2.141	1.703	20.0	Jt-N
Benzo[k]fluoranthene	1.213	1.351	1.224	1.227	1.065	0.816	1.149	16.3	
Benzo[a]pyrene	1.298	1.247	1.259	1.261	1.482	1.372	1.320	6.9	
Indeno[1,2,3-cd]pyrene	1.361	1.308	1.296	1.279	1.478	1.338	1.343	5.4	
Dibenz[a,h]anthracene	1.163	1.088	1.086	1.088	1.275	1.160	1.143	6.5	
Benzo[g,h,i]perylene	1.153	1.114	1.095	1.075	1.236	1.130	1.134	5.0	

(1) Cannot be separated from Diphenylamine

6C

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Laucks Testing Labs Contract:

Lab Code: Case No.: SAS No.: SDG No.: EN034

Instrument ID: 5970Z Calibration Date(s): 11/08/99 11/08/99

Calibration Times: 15:00 19:47

LAB FILE ID:	RRF5 = Z1108008.D	RRF10 = Z1108009.D	RRF80 =
RRF25 = Z1108010.D	RRF40 = Z1108011.D	RRF60 = Z1108012.D	Z1108013.D

COMPOUND	RRF5	RRF10	RRF25	RRF40	RRF60	RRF80	$\overline{RRF}$	% RSD
Average % RSD								8.1

(1) Cannot be separated from Diphenylamine

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Laucks Testing Labs Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: EN034

Lab File ID: Z1223001.D DFTPP Injection Date: 12/23/99

Instrument ID: 5970Z DFTPP Injection Time: 08:09

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	30.0 - 80.0% of mass 198	37.6	
68	Less than 2.0% of mass 69	0.6	(1.1)1
70	Less than 2.0% of mass 69	0.3	(0.6)1
127	25.0 - 75.0% of mass 198	43.4	
197	Less than 1.0% of mass 198	~~0.2~~ 0.4	MTB 1/3/2000
198	Base Peak, 100% relative abundance	100.0	
199	5.0 - 9.0% of mass 198	6.6	
275	10.0 - 30.0% of mass 198	18.8	
365	Greater than 1.0% of mass 198	1.8	
441	Present, but less than mass 443	74.0	
442	40.0 -110% of mass 198	62.1	
443	15.0 - 24.0% of mass 442	11.8	(19.0)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	25 NG/UL ABN STD	Z1223002.D	12/23/99	08:33
02	SBLK01	B122099MSVSLG	Z1223003.D	12/23/99	09:43
03	SBLKSPK01	S122099MSVSLG	Z1223004.D	12/23/99	10:43

7B
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Laucks Testing Labs Contract:

Lab Code: Case No.: SAS No.: SDG No.: EN034

Instrument ID: 5970Z Calibration Date: 12/23/99 Time: 08:33

Lab File ID: Z1223002.D Init. Calib. Date(s): 11/08/99 11/[illegible]

Init. Calib. Times: 15:00 [illegible]

COMPOUND	RRF	RRF25	MIN RRF	% D	MAX % D
2-Fluorophenol	1.398	1.303		6.9	
bis(2-Chloroethyl)ether	1.519	1.451		4.5	
Phenol-d5	1.746	1.731		0.9	
Phenol	1.728	1.685		2.5	20
2-Chlorophenol-d4	1.580	1.507		4.6	
1,2-Dichlorobenzene-d4	0.985	1.009		-2.5	
2-Chlorophenol	1.545	1.440		6.8	
1,3-Dichlorobenzene	1.657	1.647		0.6	
1,4-Dichlorobenzene	1.696	1.711		-0.9	20
1,2-Dichlorobenzene	1.538	1.553		-0.9	
Benzyl alcohol	0.868	0.920		-6.0	
2,2'-oxybis(1-chloropropane)	1.515	1.355		10.5	
2-Methylphenol	1.291	1.275		1.2	
Hexachloroethane	0.690	0.689		0.0	
N-Nitroso-di-n-propylamine	0.985	0.876	0.050	11.0	
4-Methylphenol	1.265	1.232		2.7	
Nitrobenzene-d5	0.403	0.388		3.9	
Nitrobenzene	0.389	0.378		2.7	
Isophorone	0.790	0.785		0.6	
2-Nitrophenol	0.253	0.257		-1.6	20
2,4-Dimethylphenol	0.410	0.406		0.8	
Benzoic Acid	0.310	0.200		35.5	NQ
bis(2-Chloroethoxy)methane	0.519	0.514		1.0	
2,4-Dichlorophenol	0.365	0.379		-3.8	20
1,2,4-Trichlorobenzene	0.393	0.383		2.5	
Naphthalene	1.139	1.165		-2.3	
4-Chloroaniline	0.528	0.517		2.1	
Hexachlorobutadiene	0.201	0.195		3.0	20
4-Chloro-3-methylphenol	0.377	0.379		-0.5	20
2-Methylnaphthalene	0.621	0.626		-0.9	
Hexachlorocyclopentadiene	0.309	0.349	0.050	-12.8	
2,4,6-Trichlorophenol	0.456	0.467		-2.3	20
2,4,5-Trichlorophenol	0.493	0.516		-4.5	
2-Fluorobiphenyl	1.443	1.521		-5.4	
2-Chloronaphthalene	1.263	1.282		-1.4	

no field samples assoc

7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Laucks Testing Labs Contract:

Lab Code: Case No.: SAS No.: SDG No.: EN034

Instrument ID: 5970Z Calibration Date: 12/23/99 Time: 08:33

Lab File ID: Z1223002.D Init. Calib. Date(s): 11/08/99 11/08/99

Init. Calib. Times: 15:00

COMPOUND	RRF	RRF25	MIN RRF	% D	MAX % D	
2-Nitroaniline	0.388	0.386		0.5		
Acenaphthylene	1.983	2.120		-6.9		
Dimethylphthalate	1.631	1.670		-2.4		
2,6-Dinitrotoluene	0.384	0.406		-5.8		
Acenaphthene	1.181	1.250		-5.9	20	
3-Nitroaniline	0.433	0.434		-0.2		
2,4-Dinitrophenol	0.186	0.126	0.050	32.3		NQ
Dibenzofuran	1.786	1.889		-5.7		
2,4-Dinitrotoluene	0.539	0.558		-3.4		
4-Nitrophenol	0.217	0.189	0.050	12.9		
Fluorene	1.341	1.450		-8.1		
4-Chlorophenyl-phenylether	0.673	0.716		-6.4		
Diethylphthalate	1.563	1.615		-3.3		
4-Nitroaniline	0.438	0.418		4.6		
4,6-Dinitro-2-methylphenol	0.152	0.147		3.6		
n-Nitrosodiphenylamine	0.559	0.571		-2.1		
2,4,6-Tribromophenol	0.149	0.141		5.3		
4-Bromophenyl-phenylether	0.253	0.248		1.9		
Hexachlorobenzene	0.282	0.286		-1.4		
Pentachlorophenol	0.194	0.182		6.2	20	
Phenanthrene	1.197	1.183		1.1		
Anthracene	1.195	1.236		-3.4		
Di-n-butylphthalate	1.722	1.702		1.2		
Fluoranthene	1.291	1.302		-0.9	20	
Pyrene	1.478	1.393		5.7		
Terphenyl-d14	1.176	1.056		10.2		
Butylbenzylphthalate	0.882	0.827		6.2		
3,3'-Dichlorobenzidine	0.446	0.295		33.8		NQ
Benzo[a]anthracene	1.344	1.265		5.9		
Chrysene	1.239	1.193		3.7		
Bis(2-Ethylhexyl)phthalate	1.245	1.161		6.7		
Di-n-octylphthalate	2.468	2.320		6.0	20	
Benzo[b]fluoranthene	1.703	1.420		16.6		
Benzo[k]fluoranthene	1.149	1.220		-6.2		
Benzo[a]pyrene	1.320	1.210		8.3	20	
Indeno[1,2,3-cd]pyrene	1.343	1.245		7.3		

(1) Cannot be separated from Diphenylamine

7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Laucks Testing Labs Contract:

Lab Code: Case No.: SAS No.: SDG No.: EN034

Instrument ID: 5970Z Calibration Date: 12/23/99 Time: 08:33

Lab File ID: Z1223002.D Init. Calib. Date(s): 11/08/99 11/08/99

Init. Calib. Times: 15:00 :

COMPOUND	RRF	RRF25	MIN RRF	% D	MAX % D
Dibenz[a,h]anthracene	1.143	1.064		7.0	
Benzo[g,h,i]perylene	1.134	1.059		6.6	
Average %D				5.6	

(1) Cannot be separated from Diphenylamine

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Laucks Testing Labs Contract:

Lab Code: Case No.: SAS No.: SDG No.: EN034

Lab File ID: D1119002.D DFTPP Injection Date: 11/19/99

Instrument ID: 5970D DFTPP Injection Time: 09:58

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	30.0 - 80.0% of mass 198	65.2	
68	Less than 2.0% of mass 69	1.2	(1.7)1
70	Less than 2.0% of mass 69	0.6	(0.8)1
127	25.0 - 75.0% of mass 198	62.7	
197	Less than 1.0% of mass 198	0.1	
198	Base Peak, 100% relative abundance	100.0	
199	5.0 - 9.0% of mass 198	7.7	
275	10.0 - 30.0% of mass 198	18.2	
365	Greater than 1.0% of mass 198	3.2	
441	Present, but less than mass 443	96.2	
442	40.0 -110% of mass 198	87.2	
443	15.0 - 24.0% of mass 442	16.9	(19.4)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD010	5 NG/UL ABN STD	D1119008.D	11/19/99	15:19
02	SSTD020	10 NG/UL ABN STD	D1119009.D	11/19/99	16:18
03	SSTD050	25 NG/UL ABN STD	D1119010.D	11/19/99	17:17
04	SSTD080	40 NG/UL ABN STD	D1119011.D	11/19/99	18:16
05	SSTD120	60 NG/UL ABN STD	D1119012.D	11/19/99	19:15
06	SSTD160	80 NG/UL ABN STD	D1119013.D	11/19/99	20:13

6B

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Laucks Testing Labs Contract:

Lab Code: Case No.: SAS No.: SDG No.: EN034

Instrument ID: 5970D Calibration Date(s): 11/19/99 11/19/99

Calibration Times: 15:19 20:13

LAB FILE ID: RRF5 = D1119008.D RRF10 = D1119009.D RRF80 = D1119013.D
RRF25 = D1119010.D RRF40 = D1119011.D RRF60 = D1119012.D

COMPOUND	RRF5	RRF10	RRF25	RRF40	RRF60	RRF80	$\overline{RRF}$	% RSD
2-Fluorophenol	1.264	1.335	1.313	1.413	1.400	1.376	1.350	4.2
bis(2-Chloroethyl)ether	1.609	1.736	1.651	1.777	1.619	1.473	1.644	6.5
Phenol-d5	1.819	1.795	1.869	2.091	2.016	1.852	1.907	6.2
Phenol	1.802	1.968	1.982	2.091	1.896	1.753	1.915	6.5
2-Chlorophenol-d4	1.435	1.593	1.572	1.552	1.531	1.450	1.522	4.3
1,2-Dichlorobenzene-d4	1.596	1.668	1.664	1.818	1.798	1.720	1.710	5.0
2-Chlorophenol	1.415	1.444	1.399	1.540	1.493	1.377	1.445	4.3
1,3-Dichlorobenzene	1.424	1.532	1.540	1.632	1.607	1.564	1.550	4.7
1,4-Dichlorobenzene	1.519	1.578	1.585	1.686	1.567	1.556	1.582	3.6
1,2-Dichlorobenzene	1.408	1.482	1.495	1.564	1.531	1.493	1.495	3.5
Benzyl alcohol	0.838	0.980	0.969	1.135	1.098	1.050	1.011	10.6
2,2'-oxybis(1-chloropropane)	2.174	2.369	2.233	2.600	2.492	2.307	2.362	6.8
2-Methylphenol	1.202	1.373	1.402	1.554	1.488	1.412	1.405	8.5
Hexachloroethane	0.668	0.738	0.736	0.810	0.748	0.717	0.736	6.3
N-Nitroso-di-n-propylamine	1.411	1.442	1.467	1.624	1.507	1.288	1.457	7.6
4-Methylphenol	1.133	1.296	1.343	1.562	1.574	1.378	1.381	12.1
Nitrobenzene-d5	0.478	0.489	0.503	0.486	0.532	0.491	0.496	3.8
Nitrobenzene	0.448	0.477	0.468	0.455	0.472	0.458	0.463	2.4
Isophorone	0.928	0.984	0.986	1.001	1.076	0.956	0.988	5.1
2-Nitrophenol	0.177	0.183	0.207	0.220	0.247	0.240	0.212	13.5
2,4-Dimethylphenol	0.445	0.483	0.493	0.503	0.541	0.489	0.492	6.3
Benzoic Acid	0.121	0.195	0.257	0.286	0.347	0.334	0.256	33.7 J+ no
bis(2-Chloroethoxy)methane	0.483	0.539	0.544	0.551	0.572	0.508	0.533	6.0
2,4-Dichlorophenol	0.248	0.287	0.315	0.347	0.380	0.347	0.321	14.9
1,2,4-Trichlorobenzene	0.329	0.367	0.343	0.353	0.392	0.377	0.360	6.4
Naphthalene	1.072	1.163	1.083	1.061	1.006	0.869	1.042	9.5
4-Chloroaniline	0.370	0.436	0.452	0.468	0.522	0.480	0.455	11.1
Hexachlorobutadiene	0.188	0.197	0.198	0.207	0.218	0.186	0.199	6.0
4-Chloro-3-methylphenol	0.409	0.451	0.461	0.467	0.528	0.458	0.462	8.3
2-Methylnaphthalene	0.639	0.707	0.682	0.670	0.777	0.718	0.699	6.8
Hexachlorocyclopentadiene	0.114	0.170	0.217	0.234	0.258	0.243	0.206	26.4 J+ not
2,4,6-Trichlorophenol	0.330	0.339	0.373	0.375	0.422	0.389	0.371	9.0
2,4,5-Trichlorophenol	0.348	0.361	0.411	0.390	0.445	0.409	0.394	9.0
2-Fluorobiphenyl	1.281	1.399	1.423	1.445	1.390	1.249	1.364	5.9
2-Chloronaphthalene	1.061	1.187	1.175	1.143	1.212	1.128	1.151	4.7
2-Nitroaniline	0.393	0.473	0.510	0.479	0.538	0.492	0.481	10.2
Acenaphthylene	1.706	1.761	1.886	1.718	1.648	1.535	1.709	6.8

6C

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Laucks Testing Labs Contract:

Lab Code: Case No.: SAS No.: SDG No.: EN034

Instrument ID: 5970D Calibration Date(s): 11/19/99 11/19/99

Calibration Times: 15:19 20:13

LAB FILE ID: RRF5 = D1119008.D RRF10 = D1119009.D RRF80 = D1119013.D

RRF25 = D1119010.D RRF40 = D1119011.D RRF60 = D1119012.D

COMPOUND	RRF5	RRF10	RRF25	RRF40	RRF60	RRF80	$\overline{RRF}$	% RSD	
Dimethylphthalate	1.610	1.691	1.711	1.671	1.665	1.499	1.641	4.7	
2,6-Dinitrotoluene	0.251	0.296	0.329	0.336	0.390	0.355	0.326	14.7	
Acenaphthene	1.074	1.201	1.152	1.135	1.200	1.084	1.141	4.8	
3-Nitroaniline	0.283	0.325	0.344	0.359	0.397	0.371	0.346	11.4	
2,4-Dinitrophenol		0.036	0.079	0.105	0.143	0.150	0.103	45.9	Jt-No
Dibenzofuran	1.598	1.688	1.812	1.665	1.680	1.542	1.664	5.5	
2,4-Dinitrotoluene	0.327	0.403	0.483	0.495	0.564	0.531	0.467	18.8	Jt-No
4-Nitrophenol	0.208	0.251	0.321	0.298	0.334	0.315	0.288	16.9	Jt-No
Fluorene	1.286	1.274	1.342	1.384	1.476	1.333	1.349	5.5	
4-Chlorophenyl-phenylether	0.549	0.596	0.617	0.591	0.606	0.580	0.590	4.0	
Diethylphthalate	1.861	1.917	1.956	1.769	1.860	1.534	1.816	8.4	
4-Nitroaniline	0.234	0.292	0.333	0.320	0.368	0.356	0.317	15.4	Jt-No
4,6-Dinitro-2-methylphenol	0.050	0.078	0.107	0.127	0.128	0.119	0.101	31.2	Jt-No
n-Nitrosodiphenylamine	0.581	0.550	0.590	0.514	0.563	0.499	0.550	6.6	
2,4,6-Tribromophenol	0.089	0.090	0.101	0.107	0.118	0.107	0.102	10.9	
4-Bromophenyl-phenylether	0.162	0.173	0.179	0.191	0.197	0.179	0.180	6.9	
Hexachlorobenzene	0.190	0.205	0.210	0.240	0.252	0.234	0.222	10.8	
Pentachlorophenol	0.076	0.098	0.115	0.127	0.148	0.141	0.117	22.9	Jt-No
Phenanthrene	1.184	1.150	1.207	1.218	1.202	1.026	1.164	6.2	
Anthracene	1.080	1.168	1.159	1.215	1.142	1.017	1.130	6.3	
Di-n-butylphthalate	2.020	2.089	2.191	1.668	1.397	1.183	1.758	23.2	Jt-No
Fluoranthene	1.187	1.242	1.260	1.193	1.252	1.131	1.211	4.1	
Pyrene	1.350	1.434	1.486	1.505	1.742	1.445	1.493	8.9	
Terphenyl-d14	0.977	1.028	1.031	1.225	1.339	1.170	1.128	12.4	
Butylbenzylphthalate	1.092	1.150	1.067	1.104	1.260	1.129	1.134	6.0	
3,3'-Dichlorobenzidine	0.357	0.373	0.385	0.435	0.490	0.477	0.420	13.4	
Benzo[a]anthracene	1.203	1.249	1.229	1.252	1.461	1.340	1.289	7.5	
Chrysene	1.086	1.135	1.226	1.227	1.359	1.216	1.208	7.7	
Bis(2-Ethylhexyl)phthalate	1.561	1.688	1.734	1.653	1.632	1.331	1.600	9.0	
Di-n-octylphthalate	3.668	3.680	3.710	3.275	2.829	2.881	3.340	12.2	
Benzo[b]fluoranthene	1.161	1.270	1.443	1.434	1.809	1.625	1.457	16.1	Jt-No
Benzo[k]fluoranthene	1.104	1.157	1.210	1.233	1.379	1.631	1.286	15.0	
Benzo[a]pyrene	0.994	1.077	1.121	1.126	1.357	1.330	1.168	12.4	
Indeno[1,2,3-cd]pyrene	1.066	1.156	1.156	1.044	0.992	0.886	1.050	9.8	
Dibenz[a,h]anthracene	0.828	0.915	0.936	0.830	0.841	0.760	0.852	7.5	
Benzo[g,h,i]perylene	0.848	0.888	0.880	0.732	0.695	0.577	0.770	16.1	Jt-No

(1) Cannot be separated from Diphenylamine

6C

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Laucks Testing Labs Contract:

Lab Code: Case No.: SAS No.: SDG No.: EN034

Instrument ID: 5970D Calibration Date(s): 11/19/99 11/19/99

Calibration Times: 15:19 20:13

LAB FILE ID:	RRF5 = D1119008.D	RRF10 = D1119009.D		RRF80 =
RRF25 = D1119010.D	RRF40 = D1119011.D	RRF60 = D1119012.D		D1119013.D

COMPOUND	RRF5	RRF10	RRF25	RRF40	RRF60	RRF80	$\overline{RRF}$	% RSD
Average % RSD								8.3

(1) Cannot be separated from Diphenylamine

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Laucks Testing Labs Contract:

Lab Code: Case No.: SAS No.: SDG No.: EN034

Lab File ID: D1223001.D DFTPP Injection Date: 12/23/99

Instrument ID: 5970D DFTPP Injection Time: 09:12

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	30.0 - 80.0% of mass 198	47.1	
68	Less than 2.0% of mass 69	0.1	(0.2)1
70	Less than 2.0% of mass 69	0.3	(0.6)1
127	25.0 - 75.0% of mass 198	50.1	
197	Less than 1.0% of mass 198	0.5	
198	Base Peak, 100% relative abundance	100.0	
199	5.0 - 9.0% of mass 198	7.1	
275	10.0 - 30.0% of mass 198	19.2	
365	Greater than 1.0% of mass 198	3.2	
441	Present, but less than mass 443	82.2	
442	40.0 -110% of mass 198	82.5	
443	15.0 - 24.0% of mass 442	17.3	(21.0)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	25 NG/UL ABN STD	D1223002.D	12/23/99	09:38
02	646SB00501	9912406-01	D1223003.D	12/23/99	10:37
03	646SB00501MSD	9912406-01MSD	D1223005.D	12/23/99	12:34
04	646SB00502	9912406-02	D1223006.D	12/23/99	13:34
05	646SB00601	9912406-03	D1223007.D	12/23/99	14:34
06	646SB00602	9912406-04	D1223008.D	12/23/99	15:32

7B

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Laucks Testing Labs Contract:

Lab Code: Case No.: SAS No.: SDG No.: EN034

Instrument ID: 5970D Calibration Date: 12/23/99 Time: 09:38

Lab File ID: D1223002.D Init. Calib. Date(s): 11/19/99 11/1 [illegible]

Init. Calib. Times: 15.19 20:[illegible]

COMPOUND	RRF	RRF25	MIN RRF	% D	MAX % D
2-Fluorophenol	1.350	1.445		-7.1	
bis(2-Chloroethyl)ether	1.644	1.660		-1.0	
Phenol-d5	1.907	2.004		-5.1	
Phenol	1.915	2.021		-5.5	20
2-Chlorophenol-d4	1.522	1.657		-8.9	
1,2-Dichlorobenzene-d4	1.710	1.758		-2.8	
2-Chlorophenol	1.445	1.605		-11.1	
1,3-Dichlorobenzene	1.550	1.713		-10.6	
1,4-Dichlorobenzene	1.582	1.755		-10.9	20
1,2-Dichlorobenzene	1.495	1.683		-12.5	
Benzyl alcohol	1.011	1.039		-2.7	
2,2'-oxybis(1-chloropropane)	2.362	2.361		0.0	
2-Methylphenol	1.405	1.494		-6.4	
Hexachloroethane	0.736	0.853		-15.8	
N-Nitroso-di-n-propylamine	1.457	1.495	0.050	-2.6	
4-Methylphenol	1.381	1.489		-7.8	
Nitrobenzene-d5	0.496	0.499		-0.5	
Nitrobenzene	0.463	0.448		3.2	
Isophorone	0.988	0.943		4.6	
2-Nitrophenol	0.212	0.223		-4.9	20
2,4-Dimethylphenol	0.492	0.493		-0.2	
Benzoic Acid	0.256	0.249		3.1	
bis(2-Chloroethoxy)methane	0.533	0.512		4.0	
2,4-Dichlorophenol	0.321	0.328		-2.3	20
1,2,4-Trichlorobenzene	0.360	0.357		0.9	
Naphthalene	1.042	1.156		-10.9	
4-Chloroaniline	0.455	0.438		3.6	
Hexachlorobutadiene	0.199	0.224		-12.8	20
4-Chloro-3-methylphenol	0.462	0.469		-1.5	20
2-Methylnaphthalene	0.699	0.688		1.5	
Hexachlorocyclopentadiene	0.206	0.200	0.050	3.1	
2,4,6-Trichlorophenol	0.371	0.352		5.1	20
2,4,5-Trichlorophenol	0.394	0.409		-3.9	
2-Fluorobiphenyl	1.364	1.324		3.0	
2-Chloronaphthalene	1.151	1.142		0.8	

7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Laucks Testing Labs Contract:

Lab Code: Case No.: SAS No.: SDG No.: EN034

Instrument ID: 5970D Calibration Date: 12/23/99 Time: 09:38

Lab File ID: D1223002.D Init. Calib. Date(s): 11/19/99 11/19/99

Init. Calib. Times: 15:19 10:13

COMPOUND	RRF	RRF25	MIN RRF	% D	MAX % D	
2-Nitroaniline	0.481	0.454		5.7		
Acenaphthylene	1.709	1.922		-12.5		
Dimethylphthalate	1.641	1.635		0.4		
2,6-Dinitrotoluene	0.326	0.359		-10.2		
Acenaphthene	1.141	1.123		1.6	20	
3-Nitroaniline	0.346	0.290		16.2		
2,4-Dinitrophenol	0.103	0.085	0.050	17.2		
Dibenzofuran	1.664	1.653		0.6		
2,4-Dinitrotoluene	0.467	0.525		-12.4		
4-Nitrophenol	0.288	0.264	0.050	8.4		
Fluorene	1.349	1.387		-2.8		
4-Chlorophenyl-phenylether	0.590	0.595		-0.8		
Diethylphthalate	1.816	1.942		-6.9		
4-Nitroaniline	0.317	0.232		26.9		not
4,6-Dinitro-2-methylphenol	0.101	0.112		-10.2		
n-Nitrosodiphenylamine	0.550	0.569		-3.6		
2,4,6-Tribromophenol	0.102	0.131		-28.3		not
4-Bromophenyl-phenylether	0.180	0.235		-30.3		↓
Hexachlorobenzene	0.222	0.267		-20.2		
Pentachlorophenol	0.117	0.137		-16.6	20	
Phenanthrene	1.164	1.141		2.0		
Anthracene	1.130	1.152		-1.9		
Di-n-butylphthalate	1.758	2.032		-15.6		
Fluoranthene	1.211	1.221		-0.8	20	
Pyrene	1.493	1.626		-8.9		
Terphenyl-d14	1.128	1.328		-17.7		
Butylbenzylphthalate	1.134	1.119		1.3		
3,3'-Dichlorobenzidine	0.420	0.228		45.7		not
Benzo[a]anthracene	1.289	1.514		-17.5		
Chrysene	1.208	1.309		-8.3		
Bis(2-Ethylhexyl)phthalate	1.600	1.740		-8.7	-	
Di-n-octylphthalate	3.340	3.531		-5.7	20	
Benzo[b]fluoranthene	1.457	1.372		5.8		
Benzo[k]fluoranthene	1.286	1.302		-1.2		
Benzo[a]pyrene	1.168	1.180		-1.1	20	
Indeno[1,2,3-cd]pyrene	1.050	1.036		1.3		

(1) Cannot be separated from Diphenylamine

7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Laucks Testing Labs Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: EN034

Instrument ID: 5970D Calibration Date: 12/23/99 Time: 09:38

Lab File ID: D1223002.D Init. Calib. Date(s): 11/19/99 11/19/99

Init. Calib. Times: 15:19 20:13

COMPOUND	RRF	RRF25	MIN RRF	% D	MAX % D
Dibenz[a,h]anthracene	0.852	0.778		8.6	
Benzo[g,h,i]perylene	0.770	0.784		-1.8	
Average %D				6.4	

(1) Cannot be separated from Diphenylamine

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK

DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Laucks Testing Labs Contract:

Lab Code: Case No.: SAS No.: SDG No.: EN034

Lab File ID: D1227002.D DFTPP Injection Date: 12/27/99

Instrument ID: 5970D DFTPP Injection Time: 10:06

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
51	30.0 - 80.0% of mass 198	48.1	
68	Less than 2.0% of mass 69	0.5	(1.0)1
70	Less than 2.0% of mass 69	0.2	(0.3)1
127	25.0 - 75.0% of mass 198	56.0	
197	Less than 1.0% of mass 198	0.0	
198	Base Peak, 100% relative abundance	100.0	
199	5.0 - 9.0% of mass 198	7.8	
275	10.0 - 30.0% of mass 198	20.0	
365	Greater than 1.0% of mass 198	3.0	
441	Present, but less than mass 443	86.5	
442	40.0 -110% of mass 198	86.8	
443	15.0 - 24.0% of mass 442	18.0	(20.7)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD050	25 NG/UL ABN STD	D1227004.D	12/27/99	11:33
02	646SB00501MS	9912406-01MS	D1227005.D	12/27/99	12:32

7B

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Laucks Testing Labs Contract:

Lab Code: Case No.: SAS No.: SDG No.: EN034

Instrument ID: 5970D Calibration Date: 12/27/99 Time: 11:33

Lab File ID: D1227004.D Init. Calib. Date(s): 11/19/99 11/19/99

Init. Calib. Times: 15:19 [illegible]

COMPOUND	RRF	RRF25	MIN RRF	% D	MAX % D
2-Fluorophenol	1.350	1.480		-9.6	
bis(2-Chloroethyl)ether	1.644	1.696		-3.1	
Phenol-d5	1.907	2.045		-7.3	
Phenol	1.915	2.109		-10.1	20
2-Chlorophenol-d4	1.522	1.708		-12.2	
1,2-Dichlorobenzene-d4	1.710	1.938		-13.3	
2-Chlorophenol	1.445	1.685		-16.6	
1,3-Dichlorobenzene	1.550	1.763		-13.7	
1,4-Dichlorobenzene	1.582	1.868		-18.1	20
1,2-Dichlorobenzene	1.495	1.751		-17.1	
Benzyl alcohol	1.011	1.063		-5.1	
2,2'-oxybis(1-chloropropane)	2.362	2.414		-2.2	
2-Methylphenol	1.405	1.582		-12.6	
Hexachloroethane	0.736	0.854		-16.0	
N-Nitroso-di-n-propylamine	1.457	1.508	0.050	-3.5	
4-Methylphenol	1.381	1.514		-9.6	
Nitrobenzene-d5	0.496	0.497		0.0	
Nitrobenzene	0.463	0.456		1.6	
Isophorone	0.988	0.919		7.0	
2-Nitrophenol	0.212	0.244		-14.8	20
2,4-Dimethylphenol	0.492	0.498		-1.2	
Benzoic Acid	0.256	0.212		17.3	
bis(2-Chloroethoxy)methane	0.533	0.531		0.4	
2,4-Dichlorophenol	0.321	0.342		-6.5	20
1,2,4-Trichlorobenzene	0.360	0.357		1.0	
Naphthalene	1.042	1.214		-16.4	
4-Chloroaniline	0.455	0.474		-4.1	
Hexachlorobutadiene	0.199	0.232		-16.6	20
4-Chloro-3-methylphenol	0.462	0.472		-2.1	20
2-Methylnaphthalene	0.699	0.750		-7.4	
Hexachlorocyclopentadiene	0.206	0.228	0.050	-10.5	
2,4,6-Trichlorophenol	0.371	0.407		-9.5	20
2,4,5-Trichlorophenol	0.394	0.438		-11.1	
2-Fluorobiphenyl	1.364	1.395		-2.2	
2-Chloronaphthalene	1.151	1.175		-2.1	

no field samples

7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Laucks Testing Labs Contract:

Lab Code: Case No.: SAS No.: SDG No.: EN034

Instrument ID: 5970D Calibration Date: 12/27/99 Time: 11:33

Lab File ID: D1227004.D Init. Calib. Date(s): 11/19/99 11

Init. Calib. Times: 15:19

COMPOUND	RRF	RRF25	MIN RRF	% D	MAX % D	
2-Nitroaniline	0.481	0.466		3.0		
Acenaphthylene	1.709	1.908		-11.6		
Dimethylphthalate	1.641	1.738		-5.9		
2,6-Dinitrotoluene	0.326	0.380		-16.7		
Acenaphthene	1.141	1.193		-4.6	20	
3-Nitroaniline	0.346	0.334		3.7		
2,4-Dinitrophenol	0.103	0.067	0.050	34.9		NQ
Dibenzofuran	1.664	1.806		-8.5		
2,4-Dinitrotoluene	0.467	0.551		-17.9		
4-Nitrophenol	0.288	0.266	0.050	7.6		
Fluorene	1.349	1.400		-3.8		
4-Chlorophenyl-phenylether	0.590	0.616		-4.5		
Diethylphthalate	1.816	1.847		-1.7		
4-Nitroaniline	0.317	0.298		6.0		
4,6-Dinitro-2-methylphenol	0.101	0.104		-2.4		
n-Nitrosodiphenylamine	0.550	0.596		-8.4		
2,4,6-Tribromophenol	0.102	0.145		-42.1		NQ
4-Bromophenyl-phenylether	0.180	0.221		-22.5		
Hexachlorobenzene	0.222	0.269		-21.1		
Pentachlorophenol	0.117	0.136		-15.5	20	
Phenanthrene	1.164	1.274		-9.5		
Anthracene	1.130	1.221		-8.0		
Di-n-butylphthalate	1.758	1.990		-13.2		
Fluoranthene	1.211	1.323		-9.3	20	
Pyrene	1.493	1.675		-12.1		
Terphenyl-d14	1.128	1.271		-12.6		
Butylbenzylphthalate	1.134	1.216		-7.3		
3,3'-Dichlorobenzidine	0.420	0.334		20.5		
Benzo[a]anthracene	1.289	1.423		-10.4		
Chrysene	1.208	1.271		-5.2		
Bis(2-Ethylhexyl)phthalate	1.600	1.635		-2.2		
Di-n-octylphthalate	3.340	3.274		2.0	20	
Benzo[b]fluoranthene	1.457	1.539		-5.6		
Benzo[k]fluoranthene	1.286	1.293		-0.5		
Benzo[a]pyrene	1.168	1.225		-4.9	20	
Indeno[1,2,3-cd]pyrene	1.050	1.193		-13.7		

(1) Cannot be separated from Diphenylamine

7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Laucks Testing Labs Contract:

Lab Code: Case No.: SAS No.: SDG No.: EN034

Instrument ID: 5970D Calibration Date: 12/27/99 Time: 11:33

Lab File ID: D1227004.D Init. Calib. Date(s): 11/19/99 11/19/99

Init. Calib. Times: 15:19 20:13

COMPOUND	RRF	RRF25	MIN RRF	% D	MAX % D
Dibenz[a,h]anthracene	0.852	0.914		-7.3	
Benzo[g,h,i]perylene	0.770	0.844		-9.7	
Average %D				7.6	

(1) Cannot be separated from Diphenylamine

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Laucks Testing Labs Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: EN034

Lab File ID (Standard): Z1223002.D Date Analyzed: 12/23/99

Instrument ID: 5970Z Time Analyzed: 08:33

		IS1(DCB)		IS2(NPT)		IS3(ANT)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	56408	12.66	200413	16.48	113540	22.01
	UPPER LIMIT	112816	13.16	400826	16.98	227080	22.51
	LOWER LIMIT	28204	12.16	100207	15.98	56770	21.51
	SAMPLE NO.						
01	SBLK01	52357	12.66	187951	16.47	115298	22.01
02	SBLKSPK01	53354	12.66	195144	16.47	118640	22.00

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column to be used to flag values outside QC limit with an astensk.
* Values outside of contract required QC limits

048

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Laucks Testing Labs Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: EN034

Lab File ID (Standard): Z1223002.D Date Analyzed: 12/23/99

Instrument ID: 5970Z Time Analyzed: 08:33

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	12 HOUR STD	204268	26.64	190239	35.05	170734	39.23
	UPPER LIMIT	408536	27.14	380478	35.55	341468	39.73
	LOWER LIMIT	102134	26.14	95120	34.55	85367	38.73
	SAMPLE NO.						
01	SBLK01	213208	26.63	199061	35.02	179849	39.20
02	SBLKSPK01	208561	26.63	197507	35.01	178841	39.21

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column to be used to flag values outside QC limit with an asterisk.
* Values outside of contract required QC limits

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Laucks Testing Labs Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: EN034

Lab File ID (Standard): D1223002.D Date Analyzed: 12/23/99

Instrument ID: 5970D Time Analyzed: 09:38

		IS1(DCB)		IS2(NPT)		IS3(ANT)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	49027	11.48	208425	15.22	135387	20.68
	UPPER LIMIT	98054	11.98	416850	15.72	270774	21.18
	LOWER LIMIT	24514	10.98	104213	14.72	67694	20.18
	SAMPLE NO.						
01	646SB00501	48905	11.48	204790	15.22	129235	20.66
02	646SB00501MSD	53633	11.50	208313	15.22	130816	20.67
03	646SB00502	49081	11.48	197079	15.22	133698	20.66
04	646SB00601	48652	11.51	196982	15.22	128257	20.66
05	646SB00602	53267	11.48	226805	15.22	127924	20.66

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0 50 minutes of internal standard RT

Column to be used to flag values outside QC limit with an asterisk.
* Values outside of contract required QC limits

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Laucks Testing Labs Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: EN034

Lab File ID (Standard): D1223002.D Date Analyzed: 12/23/99

Instrument ID: 5970D Time Analyzed: 09:38

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	12 HOUR STD	221650	25.24	171282	33.55	146983	37.71
	UPPER LIMIT	443300	25.74	342564	34.05	293966	38.21
	LOWER LIMIT	110825	24.74	85641	33.05	73492	37.21
	SAMPLE NO.						
01	646SB00501	194485	25.22	168799	33.53	137295	37.67
02	646SB00501MSD	214043	25.22	175026	33.53	148087	37.69
03	646SB00502	204341	25.22	165841	33.53	134364	37.69
04	646SB00601	207391	25.22	172581	33.53	138932	37.69
05	646SB00602	200456	25.22	149585	33.54	99464	37.69

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column to be used to flag values outside QC limit with an asterisk.
* Values outside of contract required QC limits

051

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Laucks Testing Labs Contract:

Lab Code: Case No.: SAS No.: SDG No.: EN034

Lab File ID (Standard): D1227004.D Date Analyzed: 12/27/99

Instrument ID: 5970D Time Analyzed: 11:33

		IS1(DCB)		IS2(NPT)		IS3(ANT)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	56385	11.50	242148	15.23	160990	20.69
	UPPER LIMIT	112770	12.00	484296	15.73	321980	21.19
	LOWER LIMIT	28193	11.00	121074	14.73	80495	20.19
	SAMPLE NO.						
01	646SB00501MS	48051	11.50	199359	15.23	125295	20.67

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column to be used to flag values outside QC limit with an asterisk.
* Values outside of contract required QC limits

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Laucks Testing Labs Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: EN034

Lab File ID (Standard): D1227004.D Date Analyzed: 12/27/99

Instrument ID: 5970D Time Analyzed: 11:33

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	12 HOUR STD	271438	25.24	213659	33.57	178112	37.72
	UPPER LIMIT	542876	25.74	427318	34.07	356224	38.22
	LOWER LIMIT	135719	24.74	106830	33.07	89056	37.22
	SAMPLE NO.						
01	646SB00501MS	194522	25.23	181147	33.53	157995	37.69

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10
IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column to be used to flag values outside QC limit with an asterisk.
* Values outside of contract required QC limits

BLANK SUMMARY
SEMIVOLATILE ORGANIC FRACTION

1. Blank qualification guidelines:

   a) If a compound is found in the blank but not in the sample, no action is taken.

   b) Any compound (other than listed below) detected in the sample, which was also detected in the associated blank, must be qualified by elevating the limit of detection or adjusting the limit of detection to the sample result, when the sample concentration is less than five (5) times the blank concentration. For the following four (4) compounds, the results are qualified by elevating the limit of detection or adjusting the limit of detection to the sample result, when the sample concentration is less than ten (10) times the blank concentration.

      Common laboratory contaminants: phthalates

   c) The reviewer should take note that the blank analysis may not involve the same weights, volumes or dilution factors as associated samples. These factors must be taken into consideration when applying the 5X and 10X criteria.

   d) In addition, the reviewer must review the trip blanks, rinseate blanks and field blanks (if they were submitted with the data package) and all associated samples. Apply the same data validation guidelines used in assessing the method blanks.

   e) Qualification/Action codes:

      U - The sample result is greater than the CRQL and less than ten times (10X) the blank value. Cross out the "B" flag and qualify the sample result with a "U".

      CRQL - The sample result is less than the CRQL and less than ten times (10X) the blank value. Reject the sample result, cross out the "B" flag, and report the CRQL.

      No Action - The sample result is greater than the CRQL and than ten times (10X) the blank value.

4B

SEMIVOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

SBLK01

Lab Name: Laucks Testing Labs Contract:

Lab Code: Case No.: SAS No.: SDG No.: EN034

Lab File ID: Z1223003.D Lab Sample ID: B122099MSVSLG

Instrument ID: 5970Z Date Extracted: 12/20/99

Matrix: (soil/water) SOIL Date Analyzed: 12/23/99

Level: (low/med) LOW Time Analyzed: 09:43

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	646SB00501	9912406-01	D1223003.D	12/23/99
02	SBLKSPK01	S122099MSVSLG	Z1223004.D	12/23/99
03	646SB00501MSD	9912406-01MSD	D1223005.D	12/23/99
04	646SB00502	9912406-02	D1223006.D	12/23/99
05	646SB00601	9912406-03	D1223007.D	12/23/99
06	646SB00602	9912406-04	D1223008.D	12/23/99
07	646SB00501MS	9912406-01MS	D1227005.D	12/27/99

No Contamination

COMMENTS:

2D
SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: Laucks Testing Labs Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: EN034

Level: (low/med) LOW

	SAMPLE NO.	S1 (2FP) #	S2 (PHL) #	S3 (2CP) #	S4 (DCB) #	S5 (NBZ) #	S6 (FBP) #	S7 (TBP) #	S8 (TPH) #	TOT OUT
1	SBLK01	49	46	46	46	42	48	41	39	0
2	646SB00501	56	50	50	36	44	52	62	57	0
3	SBLKSPK01	67	63	63	61	58	65	62	56	0
4	646SB00501MSD	44	39	40	29	37	40	54	41	0
5	646SB00502	73	62	66	37	57	61	87	70	0
6	646SB00601	72	66	70	39	57	64	82	62	0
7	646SB00602	51	51	50	29	40	58	82	64	0
8	646SB00501MS	74	67	67	53	60	71	100	67	0

				QC LIMITS	
S1	(2FP)	=	2-Fluorophenol	(25-108)	
S2	(PHL)	=	Phenol-d5	(24-112)	
S3	(2CP)	=	2-Chlorophenol-d4	(29-111)	Advisory
S4	(DCB)	=	1,2-Dichlorobenzene-d4	(23-95)	Advisory
S5	(NBZ)	=	Nitrobenzene-d5	(24-102)	
S6	(FBP)	=	2-Fluorobiphenyl	(19-101)	
S7	(TBP)	=	2,4,6-Tribromophenol	(19-122)	
S8	(TPH)	=	Terphenyl-d14	(31-109)	

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogate diluted out

Blank Spike Report

Lab Name : LAUCKS TESTING LABS

Description : ABNS - LAUCKS CONTROL LIMITS
Lab ID : S122099MSVSLG
Matrix : S
Units : UG/KG

(Database Reference: S122099_MSVS01)

Analyte	Spike Added	Amount Found	% Rec	Recovery Limits	
Phenol----------	2500	1733.0	69	41	109
2-Chlorophenol----------	2500	1698.0	68	40	106
1,4-Dichlorobenzene----------	1667	1059.0	64	34	107
N-Nitroso-di-n-propylamine----	1667	1008.0	60	48	118
1,2,4-Trichlorobenzene--------	1667	1082.0	65	40	121
4-Chloro-3-methylphenol-------	2500	1751.0	70	55	120
Acenaphthene----------	1667	1179.0	71	41	122
4-Nitrophenol----------	2500	1275.0	51	23	143
2,4-Dinitrotoluene----------	1667	1065.0	64	32	127
Pentachlorophenol----------	2500	1513.0	61	20	159
Pyrene----------	1667	1185.0	71	25	141

* = Recovery exceeded control limit

Form BLKSPK-1

Blank Spike Report

Lab Sample ID: S122099MSVSLG
Description : ABNS - LAUCKS CONTROL LIMITS
Matrix : S
Units : UG/KG

(Database Reference: S122099_MSVS01)

Work Orders Verified

Work Order	Sample Fractions Verified
9912369	1-14
9912406	1-4

MS/MSD Report

Lab Name : LAUCKS TESTING LABS

Client ID : 646SB00501

Lab ID : 9912406-01
Matrix : SOIL
Units : UG/KG

Description : ABNs - by SW 8270

(Database Reference: K122099_MSVS01)

Matrix Spike Data

Analyte	Spike Added	Sample Found	MS Found	MS Rec	Recovery Limits
Phenol----------	2760	0	1970.0	71	41 109
2-Chlorophenol----------	2760	0	2160.0	78	40 106
1,4-Dichlorobenzene----------	1840	0	1170.0	64	34 107
N-Nitroso-di-n-propylamine----	1840	0	1270.0	69	48 118
1,2,4-Trichlorobenzene--------	1840	0	1270.0	69	40 121
4-Chloro-3-methylphenol-------	2760	0	2040.0	74	55 120
Acenaphthene----------	1840	0	1330.0	72	41 122
4-Nitrophenol----------	2760	0	1970.0	71	23 143
2,4-Dinitrotoluene----------	1840	0	1420.0	77	32 127
Pentachlorophenol----------	2760	0	2490.0	90	20 159
Pyrene----------	1840	0	1390.0	76	25 14[illegible]

Matrix Spike Duplicate Data

Analyte	Spike Added	MSD Found	MSD Rec	RPD	Control Limits Recov	Control Limits RPD
Phenol----------	2760	1200.0	44	47 *	41 109	28
2-Chlorophenol----------	2760	1300.0	47	50 *	40 106	30
1,4-Dichlorobenzene----------	1840	601.00	33 *	64 *	34 107	36
N-Nitroso-di-n-propylamine----	1840	746.00	40 *	53 *	48 118	28
1,2,4-Trichlorobenzene--------	1840	687.00	37 *	60 *	40 121	30
4-Chloro-3-methylphenol-------	2760	1240.0	45 *	49 *	55 120	22
Acenaphthene----------	1840	815.00	44	48 *	41 122	42
4-Nitrophenol----------	2760	1060.0	38	61 *	23 143	37
2,4-Dinitrotoluene----------	1840	805.00	44	55 *	32 127	25
Pentachlorophenol----------	2760	1130.0	41	75 *	20 159	43
Pyrene----------	1840	839.00	46	49	25 141	50

Comments

No Quals

Form MS/MSD-1

* = Recovery or RPD exceeded control limit

MS/MSD Report

Client ID : 646SB00501
Spike Sample: 9912406-01
Description : ABNs - by SW 8270
Matrix : SOIL
Units : UG/KG

(Database Reference: K122099_MSVS01)

Work Orders Verified

Work Order	Sample Fractions Verified
9912369	1-14
9912406	1-4

FIELD DUPLICATE SAMPLE SUMMARY
SEMIVOLATILE ORGANIC FRACTION

Sample ID: NONE **Duplicate Sample ID:**

Matrix: aqueous / non aqueous **Units:** ug/L ug/Kg

Compound Name	Sample Concentration	Duplicate Concentration	RPD	Action

Water RPDs < ~~20%~~ 30% RPD

Soil RPDs < ~~35%~~ 50% RPD

Comments:

LAUCKS TESTING LABORATORIES
940 S. Harney
Seattle, WA 98108

To: Ensafe
Laboratory No. : 9912406
SDG No. : EN034
Date of Report: January 14, 2000

SAMPLE RECEIPT, IDENTIFICATION, AND GENERAL COMMENTS:

Sample Receipt and Identification:

The samples submitted under the laboratory number(s) indicated above were identified and analyzed as tabulated below. The samples were collected and received on the dates noted on the enclosed chain-of-custody copies, Attachment A.

Client Sample Identification	Laucks Sample Identification	Testing Analytical Request
646SB00501	9912406-01	ABN
646SB00502	9912406-02	ABN
646SB00601	9912406-03	ABN
646SB00602	9912406-04	ABN
646SB00701	9912406-05	PEST/MET/TOC
646SB00702	9912406-06	PEST/MET/TOC
646SB00801	9912406-07	PEST/MET/TOC
646SB00802	9912406-08	PEST/MET/TOC
646SB00901	9912406-09	PEST/MET/TOC
646SB00902	9912406-10	PEST/MET/TOC
646SB01001	9912406-11	PEST/MET/TOC
646SB01002	9912406-12	PEST/MET/TOC
638SB00902 SPLP	9912406-13	SPLP
634SB00401	9912406-14	MET/TOC
634SB00402	9912406-15	MET/TOC
624SB00501	9912406-16	MET/TOC
634SB00502	9912406-17	MET/TOC
634SB00601	9912406-18	MET/TOC
638SB00801	9912406-19	MET/TOC
638SB00802	9912406-20	MET/TOC
638SB00901	9912406-21	MET/TOC
638SB00902	9912406-22	MET/TOC
646SB00701 SPLP	9912406-23	SPLP
646SB00702 SPLP	9912406-24	SPLP
646SB00801 SPLP	9912406-25	SPLP
646SB00802 SPLP	9912406-26	SPLP
646SB00901 SPLP	9912406-27	SPLP
646SB00902 SPLP	9912406-28	SPLP
646SB01001 SPLP	9912406-29	SPLP

LAUCKS TESTING LABORATORIES
940 S. Harney
Seattle, WA 98108

646SB01002 SPLP	9912406-30	SPLP
634SB00401 SPLP	9912406-31	SPLP
634SB00402 SPLP	9912406-32	SPLP
634SB00501 SPLP	9912406-33	SPLP
634SB00502 SPLP	9912406-34	SPLP
634SB00601 SPLP	9912406-35	SPLP
638SB00801 SPLP	9912406-36	SPLP
638SB00802 SPLP	9912406-37	SPLP
638SB00901 SPLP	9912406-38	SPLP

Analytical Request Key:

ABN =	Semi-Volatile Organics (8270C)
PEST =	Pesticides (8081A)
MET =	TAL Metals + Tin (6010B/7000)
SPLP =	SPLP Metals (1312), TAL Metals + Tin (6010B/7000)
TOC =	Total Organic Carbon (9060)

Sample Receipt Comments:

Several samples received were measured at temperatures which exceeded the temperature control limits of 4°C ± 2°C. Approval to run the samples with high temperatures was given by Charlie Vernoy on 12/16/1999. One jar was received with no sample ID on the label. The correct ID of 646SB00702 was matched using the sample time and test indicated on the container. See the sample receipt logs for documentation.

Sample Identification on Forms:

When completing forms created through the CLP software, every attempt is made to use both your sample IDs as well as the laboratory sample IDs. The forms have varied default sizes to their sample identification fields, and are not amenable to alteration or editing. When it is not possible to use your complete sample ID because of field length limitations, Laucks will usually do one of two things: 1) use as much of your ID as will fit, beginning from the RIGHT hand side of the sample ID number; or 2) select some sub-set of your sample identifier if it is clearly a discrete number. In addition, all forms will contain our sample IDs, which can be cross-referenced from the table above.

GENERAL REMARKS ON ORGANIC ANALYSES:

The following comments describe general analysis conditions. For remarks specific to the samples reported in this case, see "SPECIFIC REMARKS ON ORGANIC ANALYSIS."

Manual Integration:
One or analytes may have been manually integrated on the data system quantitation reports. The manual integrations have been flagged, initialed and dated by the analyst. A list of the manual integration flags is detailed below.

M	Manual integration due to irregular peak shape
MS	Manual integration due to split peak
MR	Manual integration due to retention time shift
MI	Manual integration of correct isomer
MT	Manual integration due to peak tailing
MB	Manual integration due to irregular baseline

All GC/MS Fractions:

The computerized printout for sample analysis may tabulate values for target analytes that are not reported on the relevant Form I. In that case, we have manually searched the mass spectral data and have eliminated the compound(s) as reportable based on this search.

Semi-Volatile Fraction:

All soil/sediment extracts are cleaned using Gel Permeation Chromatography (GPC) in accordance with SW-846 Method 3640A.

SPECIFIC REMARKS ON ORGANIC ANALYSES:

Holding Time Compliance:

Following the Contract Laboratory Program (CLP) model, Laucks calculates holding time compliance for organic determinations based on the first injection and/or analysis of an extract or sample. Subsequent analyses (for instance, for the purpose of dilution) are not tabulated.

Semi-Volatile Organic Compounds:

The holding time to extraction is 7 days in water and 14 days in soil calculated from the date of collection. In either case, the holding time from extraction to analysis is 40 days. All samples were extracted and analyzed within holding time.

Pesticides:

The holding time to extraction is 7 days in water and 14 days in soil calculated from the date of collection. In either case, the holding time from extraction to analysis is 40 days. All samples were extracted and analyzed within holding time.

Semi-Volatile Fraction:

Initial Calibration Standards:
A minimum of five standards is required for the initial calibration analyses in accordance with SW 846. Six standard concentration levels were analyzed for initial calibration. The standards concentrations were 5, 10, 25, 40, 60 and 80 injected respectively.

Quality Control Analyses:
MS/MSD analyses were performed on sample 646SB00501. Several analyte recoveries from the MSD analysis fell below the lower control limits. Since all analyte recoveries were in control in the MS and the associated blank spike, no corrective action was taken.

Tentatively Identified Compounds (TICs):
Ten non-target organic compounds of greatest apparent concentrations are reported as TICs. Alkanes were library searched and were reported as part of the 10 TICs.

Reporting Limits:
All analytes have been "J" flagged down to 1 µg/L for waters and 33 µg/kg for the soils.

Pesticides Fraction:

Initial Calibration Standards:
Analyses of the initial calibration standards yielded a %RSD value for alpha-BHC which exceeded 20 percent on both columns. However, since the average %RSD for all compounds was below 20 percent, the initial calibration is compliant in accordance with SW 846. Since alpha-BHC was not detected in any of the sample extracts, no further action was taken.

Continuing Calibration Verification Analyses:
Analyses of CCV files DC28920.d, DC28926.d and D0103023.d yielded %D values for the surrogates, decachlorobiphenyl and tetrachloro-m-xylene, and the target analytes, gamma-BHC and heptachlor epoxide which exceeded the control limit due to an increase in response. However, since the %Ds for all compounds were in control on one of the two columns and there were no target analytes detected in any of the sample extracts, no further action was taken.

Surrogate Recoveries:
Analysis of the extract for sample 646SB01002 yielded a recovery value for tetrachloro-m-xylene which exceeded the control limit. Corrective action was taken in the form of sample re-extraction and reanalysis. Reanalysis of the sample extract yielded all surrogate recovery values in control. Since the sample was re-extracted within holding time, only data from the re-extract were submitted.

ENSAFE

800-988-7962
MEMPHIS, TENNESSEE
CHARLESTON, SC; CINCINNATI, OH; DALLAS, TX; JACKSON, TN; KNOXVILLE, TN; LANCASTER, PA; NASHVILLE, TN; NORFOLK, VA; PADUCAH, KY; PENSACOLA, FL; RALEIGH, NC; COLOGNE, GERMANY

99124 EN#34

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1
PROJECT/JOB NO: 290700 247000
COC NO:
PO NO: 1540
REL NO: 38
LAB NAME: Lancis

CLIENT: Navy Clean CNC
LOCATION: Zone G / AOC 646
SAMPLERS: (SIGNATURE) William Herrick
PROJECT MANAGER: T. Haverkost
TELE/FAX NO.: (843) 884-0029

ANALYSIS REQUIRED

	FIELD SAMPLE NUMBER	DATE	TIME	SAMPLE TYPE	TYPE/SIZE OF CONTAINER	PRESERVATION TEMP	PRESERVATION CHEMICAL	NO. OF CONTAINERS	SVOCs	Metals	SPLP Metals	TOC	Pesticides						REMARKS
1	NBCG/646SB00501	12/16/99	0955	S	Glass/8 oz	Ice	None	1	✓										
2	NBCG/646SB00502	"	1000	"	"	"	"	1	✓										
3	NBCG/646SB00601	"	1010	"	"	"	"	1	✓										
4	NBCG/646SB00602	"	1015	"	"	"	"	1	✓										
5	NBCG/646SB00701	"	1030	"	"	"	"	4	✓	✓	✓	✓							offset to 002
6	NBCG/646SB00702	"	1035	"	"	"	"	4		✓	✓	✓	✓						"
7	NBCG/646SB00801	"	1050	"	"	"	"	4		✓	✓	✓	✓						offset to 001
8	NBCG/646SB00802	"	1055	"	"	"	"	4		✓	✓	✓	✓						"
9	NBCG/646SB00901	"	1115	"	"	"	"	4		✓	✓	✓	✓						offset to 004
10	NBCG/646SB00902	"	1120	"	"	"	"	4		✓	✓	✓	✓						"
11	NBCG/646SB01001	"	1135	"	"	"	"	4		✓	✓	✓	✓						offset to 003
12	NBCG/646SB01002	"	1145	"	"	"	"	4		✓	✓	✓	✓						

RELINQUISHER:	DATE	RECEIVER:	DATE	RELINQUISHER:	DATE	RECEIVER:	DATE
PRINTED: Fred Erdmann	12/16/99	PRINTED: ~~Charles Christensen~~	12/17/99	PRINTED:		PRINTED:	
COMPANY: EnSafe	TIME 1550	COMPANY: LAVCICS	TIME 0830	COMPANY:	TIME	COMPANY:	TIME

METHOD OF SHIPMENT: Fed Exp
SHIPMENT NO. 814795922603
SEND RESULTS TO: Charles Verny

COMMENTS:

SAMPLE RESULT VERIFICATION
SEMIVOLATILE ORGANIC FRACTION

1. Were the sample results reported within the calibration range? Yes No

2. Were the percent moistures reported? Yes No NR

3. Were the data reported on a dry weight basis? Yes No NR

4. Did the GC/MS RIC and TIC exhibit interferences, off scale peaks or elevated baseline? Level 3 Yes No

5. Did the data contain elevated detection limits that could not be accounted for? Yes No

6. Were any computational or transcription errors found? Yes No

Specific Comments: _____

Reviewer: Jacqueline A Cleveland Date: 1/26/00

HEARTLAND
ENVIRONMENTAL SERVICES, INC.

MULTI-MEDIA PESTICIDE/AROCLOR FRACTION

CASE/SDG NUMBER:	EN034
LABORATORY:	Laucks Testing Labs, Inc.
CLIENT:	ENSAFE
PROJECT:	Charleston Zone G
REVIEWER:	Erica K. Ketcham
DATE:	January 25, 2000
QA/QC LEVEL:	DQO Level III
STATEMENT OF WORK:	SW-846 Method 8081A
ANALYSIS MODIFICATIONS:	none
NUMBER OF SAMPLES:	8
SAMPLE MATRIX:	soil
NUMBER OF MS/MSDs:	2

MULTI-MEDIA PESTICIDE/AROCLOR FRACTION

HOLDING TIMES

	Water	Soil	Analysis
CLP:	7 days from sampling	14 days from sampling	40 days from VTSR
SW846:	7 days from sampling	14 days from sampling	40 days from VTSR
Region I:	7 days from sampling	7 days from sampling	40 days from VTSR
Region II:	7 days from sampling	7 days from sampling	40 days from VTSR
Region III:	7 days from sampling	7 days from sampling	40 days from VTSR
NYSDEC:	5 days from VTSR	5 days from VTSR	40 days from VTSR

DA - The number of days that the holding time was exceeded.

DA ≤ 5:	Qualify all positive results as estimated (J).
DA > 5 ≤ 15:	Qualify all positive results as estimated (J) and all non detects as estimated (UJ).
DA > 15:	Qualify all positive results as estimated (J) and reject (R) all non detects.

All associated samples met holding time requirements for extraction and/or analysis. No qualifications are required.

Report Date : 29-Dec-1999 12:35

Laucks Testing Labs, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 17-DEC-1999 12:43
End Cal Date : 28-DEC-1999 18:00
Quant Method : ESTD
Origin : Disabled
Target Version : 4.00
Integrator : Falcon
Method file : \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\D8080AW-1.M
Cal Date : 29-Dec-1999 12:22 frankc
Curve Type : Average

Calibration File Names:
Level 1: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\DC28903.d
Level 2: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\DC28905.d
Level 3: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\DC28907.d
Level 4: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\DC28909.d
Level 5: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\DC28911.d

Compound	0.00500 Level 1	0.01000 Level 2	0.02000 Level 3	0.04000 Level 4	0.08000 Level 5	RRF	% RSD	
1 Aroclor-1221(1)	*****	*****	20578	*****	*****	20578	0.000	<-
(2)	*****	*****	17826	*****	*****	17826	0.000	<-
(3)	*****	*****	49986	*****	*****	49986	0.000	<-
41 2,4,5-Trichlorophenol	*****	*****	*****	*****	*****	*****	*****	<-
40 Aroclor-1268(1)	*****	*****	*****	*****	*****	*****	*****	<-
(2)	*****	*****	*****	*****	*****	*****	*****	<-
(3)	*****	*****	*****	*****	*****	*****	*****	<-
(4)	*****	*****	*****	*****	*****	*****	*****	<-
(5)	*****	*****	*****	*****	*****	*****	*****	<-
3 Aroclor-1232(1)	*****	*****	21358	*****	*****	21358	0.000	<-
(2)	*****	*****	19338	*****	*****	19338	0.000	<-
(3)	*****	*****	22494	*****	*****	22494	0.000	<-
(4)	*****	*****	18158	*****	*****	18158	0.000	<-
(5)	*****	*****	18400	*****	*****	18400	0.000	<-
4 Aroclor-1016(1)	62920	55804	51110	47260	44623	52343	13.369	
(2)	54360	50956	48906	45823	44029	48815	8.397	
(3)	66380	60580	57372	54833	52777	58388	9.136	
(4)	49970	39500	36022	34885	33705	38816	17.004	
(5)	46830	43244	41370	38624	37548	41523	8.959	
5 alpha-BHC	6527800	6317700	8153550	9378850	10876338	8372848	21.402	J not
6 beta-BHC	991800	1002200	1101500	1106975	1141200	1068755	6.301	
7 gamma-BHC (Lindane)	1364600	1529300	1846100	2046100	2225650	1802150	19.760	
8 delta-BHC	5369000	4327800	5326900	6403425	7697338	5924894	19.319	
9 Aroclor-1242(1)	*****	*****	38532	*****	*****	38532	0.000	<-
(2)	*****	*****	36420	*****	*****	36420	0.000	<-
(3)	*****	*****	43562	*****	*****	43562	0.000	<-
(4)	*****	*****	31374	*****	*****	31874	0.000	<-
(5)	*****	*****	33260	*****	*****	33260	0.000	<-

Avg % RSD = 10.709

Report Date : 29-Dec-1999 12:35

Laucks Testing Labs, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 17-DEC-1999 12:43
End Cal Date : 28-DEC-1999 18:00
Quant Method : ESTD
Origin : Disabled
Target Version : 4.00
Integrator : Falcon
Method file : \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\D8080AW-1.M
Cal Date : 29-Dec-1999 12:22 frankc
Curve Type : Average

Compound	0.00500 Level 1	0.01000 Level 2	0.02000 Level 3	0.04000 Level 4	0.08000 Level 5	RRF	% RSD	
10 Technical Chlordane(1)	*****	*****	86280	*****	*****	86280	0.000	<-
(2)	*****	*****	110680	*****	*****	110680	0.000	<-
(3)	*****	*****	151200	*****	*****	151200	0.000	<-
(4)	*****	*****	137760	*****	*****	137760	0.000	<-
(5)	*****	*****	105620	*****	*****	105620	0.000	<-
11 Aroclor-1248(1)	*****	*****	40530	*****	*****	40530	0.000	<-
(2)	*****	*****	48236	*****	*****	48236	0.000	<-
(3)	*****	*****	48690	*****	*****	48690	0.000	<-
(4)	*****	*****	59038	*****	*****	59038	0.000	<-
(5)	*****	*****	55092	*****	*****	55092	0.000	<-
12 Heptachlor	1856000	1740300	1826700	1860125	1915838	1839793	3.494	
14 Aldrin	1183000	1219200	1422450	1602750	1820650	1449610	18.447	
15 Isodrin	1244880	1386240	1582900	1572230	1545495	1466349	10.030	
16 Heptachlor epoxide	1354000	1352100	1530900	1601900	1765100	1520800	11.514	
17 Aroclor-1254(1)	*****	*****	77988	*****	*****	77988	0.000	<-
(2)	*****	*****	98848	*****	*****	98848	0.000	<-
(3)	*****	*****	69938	*****	*****	69938	0.000	<-
(4)	*****	*****	49348	*****	*****	49348	0.000	<-
(5)	*****	*****	76280	*****	*****	76280	0.000	<-
18 gamma-Chlordane	1387600	1392500	1558750	1607625	1680925	1525480	8.592	
19 Endosulfan I	1218800	1258800	1336650	1387275	1469550	1334215	7.509	
20 alpha-Chlordane	1525200	1478100	1599150	1633250	1765025	1600145	6.902	
21 Toxaphene(1)	*****	*****	23460	*****	*****	23460	0.000	<-
(2)	*****	*****	27652	*****	*****	27652	0.000	<-
(3)	*****	*****	22194	*****	*****	22194	0.000	<-
(4)	*****	*****	23324	*****	*****	23324	0.000	<-
(5)	*****	*****	26760	*****	*****	26760	0.000	<-
22 4,4'-DDE	5811800	6071850	7197300	7941450	8857963	7176073	17.758	
23 Dieldrin	1129300	1211950	1436400	1513900	1578081	1373926	14.153	
24 Endrin	1407400	1310000	1407100	1454188	1523025	1420343	5.477	
25 Aroclor-1260(1)	95440	82960	75700	71100	67254	78491	14.186	
(2)	110400	95424	87716	82507	77535	90748	14.107	
(3)	108450	103376	94638	91991	86659	97023	9.064	
(4)	134490	123232	118952	114801	110240	120343	7.697	
(5)	65290	61190	59460	57244	56635	59970	5.785	

Report Date : 29-Dec-1999 12:35

Laucks Testing Labs, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 17-DEC-1999 12:43
End Cal Date : 28-DEC-1999 18:00
Quant Method : ESTD
Origin : Disabled
Target Version : 4.00
Integrator : Falcon
Method file : \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\D8080AW-1.M
Cal Date : 29-Dec-1999 12:22 frankc
Curve Type : Average

Compound	0.00500 Level 1	0.01000 Level 2	0.02000 Level 3	0.04000 Level 4	0.08000 Level 5	RRF	% RSD
26 Endosulfan II	1259000	1234300	1416425	1414013	1472538	1359255	-7.783
27 4,4'-DDD	774700	825700	968550	1074200	1111619	950954	15.603
28 Endrin aldehyde	933500	958800	962550	981338	997731	966784	2.512
29 Endosulfan sulfate	846800	812450	918475	1002988	996625	915468	9.394
30 4,4'-DDT	931700	981600	1088450	1167225	1227069	1079209	11.441
31 Endrin ketone	1156000	1224600	1396000	1443650	1455319	1335114	10.203
32 Methoxychlor	766260	737850	745800	658383	619949	705648	8.935
$ 2 Tetrachloro-m-xylene	1584400	1621200	1804750	1828725	1874763	1742768	7.510
$ 33 Decachlorobiphenyl	1071500	1025750	1028900	902350	872450	980190	8.902

Report Date : 29-Dec-1999 12:14

Laucks Testing Labs, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 17-DEC-1999 12:43
End Cal Date : 28-DEC-1999 18:00
Quant Method : ESTD
Origin : Disabled
Target Version : 4.00
Integrator : Falcon
Method file : \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\D8080BW-2.M
Cal Date : 29-Dec-1999 12:13 frankc
Curve Type : Average

Calibration File Names:
Level 1: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\DC28903.d
Level 2: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\DC28905.d
Level 3: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\DC28907.d
Level 4: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\DC28909.d
Level 5: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\DC28911.d

Compound	0.00500 Level 1	0.01000 Level 2	0.02000 Level 3	0.04000 Level 4	0.08000 Level 5	RRF	% RSD	
1 Aroclor-1221(1)	*****	*****	9878	*****	*****	9878	0.000	
(2)	*****	*****	9368	*****	*****	9368	0.000	
(3)	*****	*****	26138	*****	*****	26138	0.000	
39 Aroclor-1268(1)	*****	*****	*****	*****	*****	*****	*****	<-
(2)	*****	*****	*****	*****	*****	*****	*****	<-
(3)	*****	*****	*****	*****	*****	*****	*****	<-
(4)	*****	*****	*****	*****	*****	*****	*****	<-
(5)	*****	*****	*****	*****	*****	*****	*****	<-
3 Aroclor-1016(1)	22830	22092	19942	18315	17101	20056	12.116	
(2)	45560	39992	36026	33503	31224	37261	15.207	
(3)	29230	25808	24306	22915	21653	24782	11.823	
(4)	23780	21896	20636	19132	18158	20720	10.748	
(5)	19380	16584	15304	14048	13377	15739	15.102	
4 Aroclor-1232(1)	*****	*****	16714	*****	*****	16714	0.000	
(2)	*****	*****	15476	*****	*****	15476	0.000	
(3)	*****	*****	17968	*****	*****	17968	0.000	
(4)	*****	*****	9752	*****	*****	9752	0.000	
(5)	*****	*****	9988	*****	*****	9988	0.000	
5 alpha-BHC	625400	683800	829800	914275	1022850	915225	20.010	< J not
6 Aroclor-1242(1)	*****	*****	27288	*****	*****	27288	0.000	
(2)	*****	*****	34748	*****	*****	34748	0.000	
(3)	*****	*****	18190	*****	*****	18190	0.000	
(4)	*****	*****	16152	*****	*****	16152	0.000	
(5)	*****	*****	18418	*****	*****	18418	0.000	
7 Aroclor-1248 1	*****	*****	29388	*****	*****	29388	0.000	
2	*****	*****	24060	*****	*****	24060	0.000	
3	*****	*****	29064	*****	*****	29064	0.000	
4	*****	*****	30008	*****	*****	30008	0.000	
5	*****	*****	28214	*****	*****	28214	0.000	

Avg %D = 10.16

Report Date : 29-Dec-1999 12:14

Laucks Testing Labs, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 17-DEC-1999 12:43
End Cal Date : 28-DEC-1999 18:00
Quant Method : ESTD
Origin : Disabled
Target Version : 4.00
Integrator : Falcon
Method file : \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\D8080BW-2.M
Cal Date : 29-Dec-1999 12:13 frankc
Curve Type : Average

Compound	0.00500 Level 1	0.01000 Level 2	0.02000 Level 3	0.04000 Level 4	0.08000 Level 5	RRF	% RSD
8 gamma-BHC (Lindane)	667800	709000	820700	892625	963913	810808	15.237
9 beta-BHC	500200	501900	534550	524250	527963	517773	3.035
10 Technical Chlordane (1)	*****	*****	49720	*****	*****	49720	0.000
(2)	*****	*****	32200	*****	*****	32200	0.000
(3)	*****	*****	63200	*****	*****	63200	0.000
(4)	*****	*****	48260	*****	*****	48260	0.000
(5)	*****	*****	60380	*****	*****	60380	0.000
11 Heptachlor	745200	735000	764100	740450	754950	747940	1.555
12 delta-BHC	658400	608000	557400	658225	751500	646705	11.130
13 Aldrin	526800	529200	585750	623475	684775	590000	11.310
14 Isodrin	553040	576480	627940	623510	607310	597556	5.368
15 Heptachlor epoxide	689000	654200	686300	665175	691300	677195	2.443
16 gamma-Chlordane	639600	596100	644950	658150	656213	639003	3.941
17 Aroclor-1254 (1)	*****	*****	31598	*****	*****	31598	0.000
(2)	*****	*****	34174	*****	*****	34174	0.000
(3)	*****	*****	50006	*****	*****	50006	0.000
(4)	*****	*****	32588	*****	*****	32588	0.000
(5)	*****	*****	32202	*****	*****	32202	0.000
19 alpha-Chlordane	984200	776400	723300	702975	698750	777125	15.417
20 Endosulfan I	619600	591700	578450	576300	579675	589145	3.064
21 4,4'-DDE	476000	486900	584125	624125	672825	568795	15.082
22 Dieldrin	540300	538300	572300	593325	603725	569590	5.247
23 Aroclor-1260 (1)	27820	25016	23166	21625	20588	23643	12.142
(2)	39560	38876	34088	31872	30793	35036	11.436
(3)	51790	45396	40208	37128	34910	41886	16.215
(4)	69350	62924	59056	55644	53485	60072	10.452
(5)	37660	33204	31198	29815	28717	32119	10.965
24 Endrin	511900	507450	539200	569950	584906	542581	6.335
25 4,4'-DDD	351700	367950	425525	450613	480669	415291	13.140
26 Endosulfan II	538800	532750	576675	574313	585738	561665	4.293
27 4,4'-DDT	417500	426950	472600	485488	504331	461374	8.155
28 Endrin aldehyde	416900	396700	417600	412975	418131	412461	2.192
29 Toxaphene (1)	*****	*****	6916	*****	*****	6916	0.000
(2)	*****	*****	9536	*****	*****	9536	0.000
(3)	*****	*****	9674	*****	*****	9674	0.000
(4)	*****	*****	7508	*****	*****	7508	0.000
(5)	*****	*****	17846	*****	*****	17846	0.000

Report Date : 29-Dec-1999 12:14

Laucks Testing Labs, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 17-DEC-1999 12:43
End Cal Date : 28-DEC-1999 18:00
Quant Method : ESTD
Origin : Disabled
Target Version : 4.00
Integrator : Falcon
Method file : \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\D8080BW-2.M
Cal Date : 29-Dec-1999 12:13 frankc
Curve Type : Average

Compound	0.00500 Level 1	0.01000 Level 2	0.02000 Level 3	0.04000 Level 4	0.08000 Level 5	RRF	% RSD
30 Endosulfan sulfate	614900	409600	418425	430125	435144	461639	18.684
31 Methoxychlor	330460	315100	301000	271968	246889	293083	11.475
32 Endrin ketone	519600	526550	585400	586975	588150	561335	6.240
S 2 Tetrachloro-m-xylene	858600	868800	938750	945175	938200	909905	4.662
S 33 Decachlorobiphenyl	479400	457200	441825	399925	362888	428248	10.898

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\DC28901.d
Report Date: 29-Dec-1999 12:55

Laucks Testing Labs, Inc.

1ul 0.45mm DB5

Data file : \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\DC28901.d
Lab Smp Id: PEM Client Smp ID: PX6-47-4
Inj Date : 28-DEC-1999 10:27
Operator : FC Inst ID: 5890D.i
Smp Info : PEM
Misc Info :
Comment :
Method : \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\D8080AW-1.m
Meth Date : 29-Dec-1999 12:39 frankc Quant Type: ESTD
Cal Date : 28-DEC-1999 18:00 Cal File: DC28911.d
Als bottle: 1 QC Sample: PEM
Dil Factor: 1.00000 Sample Compound Amounts Loaded
Integrator: Falcon Compound Sublist: PEM.SUB
Target Version: 4.00 Sample Matrix: None
Processing Host: AMDK645001

RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COL (ng)	CONCENTRATIONS FINAL (ng)	TARGET RANGE	RATIO	
5 alpha-BHC					CAS #: 319-84-6			
11.892	11.892	0.000	72752	0.00869	0.00869			
6 beta-BHC					CAS #: 319-85-7			
13.000	13.000	0.000	10778	0.01008	0.0101			
7 gamma-BHC (Lindane)					CAS #: 58-89-9			
13.350	13.358	-0.008	15754	0.00874	0.00874			
24 Endrin					CAS #: 72-20-8			
24.342	24.350	-0.008	74803	0.05267	0.0527			
30 4,4'-DDT					CAS #: 50-29-3			
26.958	26.958	0.000	124051	0.11495	0.115			
32 Methoxychlor					CAS # 72-43-5			
29.500	29.500	0.000	183611	0.26020	0.260			
$ 2 Tetrachloro-m-xylene					CAS #:			
10.200	10.200	0.000	34292	0.02026	0.0202			(R)
$ 33 Decachlorobiphenyl					CAS #:			
39.625	39.625	0.000	19186	0.02140	0.0214			(R)
22 4,4'-DDE					CAS # 72-55-9			
23.092	23.083	0.009	11436	0.00159	0.00159			(M)

Breakdown:
Endrin = 0.3
DDT = 9.2

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\DC2890.
Report Date: 29-Dec-1999 12:55

RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COL (ng)	CONCENTRATIONS FINAL (ng)	TARGET RANGE	RATIO
27 4,4'-DDD						CAS #: 72-54-8	
25.067	25.067	0.000	1100	0.00116	0.00116		
31 Endrin ketone						CAS #: 53494-70-5	
29.000	28.992	0.008	257	<0.0	0.000192		

QC Flag Legend

R - Spike/Surrogate failed recovery limits.
M - Compound response manually integrated.

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\DC28901.d
Report Date: 29-Dec-1999 13:01

Laucks Testing Labs, Inc.

1ul 0.45mm DB608

Data file : \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\DC28901.d
Lab Smp Id: PEM Client Smp ID: PX6-47-4
Inj Date : 28-DEC-1999 10:27
Operator : FC Inst ID: 5890D.i
Smp Info : PEM
Misc Info :
Comment :
Method : \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\D8080BW-2.m
Meth Date : 29-Dec-1999 12:45 frankc Quant Type: ESTD
Cal Date : 28-DEC-1999 18:00 Cal File: DC28911.d
Als bottle: 1 QC Sample: PEM
Dil Factor: 1.00000 Sample Compound Amounts Loaded
Integrator: Falcon Compound Sublist: PEM.SUB
Target Version: 4.00 Sample Matrix: None
Processing Host: AMDK645001

RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COL (ng)	FINAL (ng)	TARGET RANGE	RATIO
5 alpha-BHC						CAS #: 319-84-6	
10.992	10.992	0.000	34677	0.00921	0.00921		
Sum of Peak Concentrations =					0.00921		
9 beta-BHC						CAS #: 319-85-7	
13.267	13.267	0.000	5352	0.01034	0.0103		
8 gamma-BHC (Lindane)						CAS #: 58-89-9	
12.858	12.858	0.000	7539	0.00930	0.00930		
24 Endrin						CAS #: 72-20-8	
23.708	23.717	-0.009	27539	0.05075	0.0507		
27 4,4'-DDT						CAS #: 50-29-3	
25.917	25.917	0.000	51315	0.11122	0.111		
31 Methoxychlor						CAS #: 72-43-5	
30.242	30.242	0.000	75767	0.25852	0.258		
$ 2 Tetrachloro-m-xylene						CAS #:	
7.8500	7.8500	0.000	18135	0.02036	0.0204		(R)
$ 33 Decachlorobiphenyl						CAS #:	
36.908	36.908	0.000	8224	0.02130	0.0213		(R)

Breakdown:
Endrin - 0.0
DDT - 4.4

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\DC28901.d
Report Date: 29-Dec-1999 13:01

RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COL (ng)	CONCENTRATIONS FINAL (ng)	TARGET RANGE	RATIO
21 4,4'-DDE					CAS #: 72-55-9		
21.750	21.750	0.000	1749	0.00307	0.00307		
25 4,4'-DDD					CAS #: 72-54-8		
24.483	24.483	0.000	639	0.00154	0.00154		

QC Flag Legend

R - Spike/Surrogate failed recovery limits.

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\DC29916.
Report Date: 05-Jan-2000 10:50

Laucks Testing Labs, Inc.

1ul 0.45mm DB5

Data file : \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\DC29
Lab Smp Id: PEM Client Smp ID: PX6-17-1
Inj Date : 30-DEC-1999 02:26
Operator : FC Inst ID: 5890D.i
Smp Info : PEM
Misc Info :
Comment :
Method : \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\D8080AW-1.m
Meth Date : 05-Jan-2000 10:01 frankc Quant Type: ESTD
Cal Date : 28-DEC-1999 18:00 Cal File: DC28911.d
Als bottle: 1 QC Sample: PEM
Dil Factor: 1.00000 Sample Compound Amounts Loaded
Integrator: Falcon Compound Sublist: PEM.SUB
Target Version: 4.00 Sample Matrix: None
Processing Host: AMDK645001

RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COL (ng)	CONCENTRATIONS FINAL (ng)	TARGET RANGE	RATIO
5 alpha-BHC						CAS #: 319-84-6	
11.892	11.892	0.000	72872	0.00870	0.00870		
6 beta-BHC						CAS #: 319-85-7	
13.000	13.000	0.000	10896	0.01020	0.0102		
7 gamma-BHC (Lindane)						CAS #: 58-89-9	
13.358	13.358	0.000	15709	0.00872	0.00872		
24 Endrin						CAS #: 72-20-8	
21.350	21.350	0.000	69426	0.04888	0.0489		
30 4,4'-DDT						CAS #: 50-29-3	
26.858	26.858	0.000	123304	0.11425	0.114		
32 Methoxychlor						CAS #: 72-43-5	
29.500	29.500	0.000	180816	0.25624	0.256		
$ 2 Tetrachloro-m-xylene						CAS #:	
10.200	10.200	0.000	34466	0.02036	0.0204		(R)
$ 33 Decachlorobiphenyl						CAS #:	
39.617	39.625	-0.008	18440	0.02057	0.0206		(R)
27 4,4'-DDD						CAS #: 72-54-8	
25.067	25.067	0.000	982	0.00103	0.00103		

Breakdown:
Endrin - 2.6
DDT - 0.9

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\DC29916
Report Date: 05-Jan-2000 10:50

RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COL (ng)	FINAL (ng)	TARGET RANGE	RATIO
31 Endrin ketone						CAS #: 53494-70-5	
28.992	28.992	0.000	987	<0.0	0.000739		
28 Endrin aldehyde						CAS #: 7421-93-4	
25.625	25.625	0.000	890	<0.0	0.000920		

QC Flag Legend

R - Spike/Surrogate failed recovery limits.

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\DC29916.d
Report Date: 05-Jan-2000 10:49

Laucks Testing Labs, Inc.

1ul 0.45mm DB608

Data file : \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\DC29916.d
Lab Smp Id: PEM Client Smp ID: PX6-47-4
Inj Date : 30-DEC-1999 02:26
Operator : FC Inst ID: 5890D.i
Smp Info : PEM
Misc Info :
Comment :
Method : \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\D8080BW-2.m
Meth Date : 05-Jan-2000 10:20 frankc Quant Type: ESTD
Cal Date : 28-DEC-1999 18:00 Cal File: DC28911.d
Als bottle: 1 QC Sample: PEM
Dil Factor: 1.00000 Sample Compound Amounts Loaded
Integrator: Falcon Compound Sublist: PEM.SUB
Target Version: 4.00 Sample Matrix: None
Processing Host: AMDK645001

RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COL (ng)	FINAL (ng)	TARGET RANGE	RATIO
5 alpha-BHC						CAS #: 319-84-6	
10.992	10.992	0.000	34325	0.00912	0.00912		
Sum of Peak Concentrations =					0.00912		
9 beta-BHC						CAS #: 319-85-7	
13.267	13.267	0.000	5534	0.01069	0.0107		
8 gamma-BHC (Lindane)						CAS #: 58-89-9	
12.858	12.858	0.000	7546	0.00931	0.00931		
24 Endrin						CAS #: 72 20 8	
23.708	23.708	0.000	27701	0.05104	0.0510		
27 4,4'-DDT						CAS #. 50-29-3	
25.917	25.917	0 000	51687	0.11203	0 112		
31 Methoxychlor						CAS #. 72-43-5	
30.233	30.233	0.000	72363	0.24690	0.247		
$ 2 Tetrachloro-m-xylene						CAS #:	
7.8500	7.8417	0.008	18131	0.02035	0.0204		(R)
$ 33 Decachlorobiphenyl						CAS #	
36.908	36.900	0.008	8335	0.02159	0.0216		(R)

Breakdown:
Endrin = 1.4
DDT = 2.0

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\DC2991
Report Date: 05-Jan-2000 10:49

RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COL (ng)	CONCENTRATIONS FINAL (ng)	TARGET RANGE	RATIO
21 4,4'-DDE					CAS #: 72-55-9		
21.750	21.750	0.000	1923	0.00338	0.00338		
25 4,4'-DDD					CAS #: 72-54-8		
24.483	24.483	0.000	654	0.00157	0.00157		
28 Endrin aldehyde					CAS #: 7421-93-4		
26.275	26.267	0.008	400	0.00097	0.000970		

QC Flag Legend

R - Spike/Surrogate failed recovery limits.

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\DC28919.d
Report Date: 29-Dec-1999 12:59

Laucks Testing Labs, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 5890D.i
Lab File ID: DC28919.d
Analysis Type:
Lab Sample ID: INDAM
Method: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\D8080AW-1.m

Injection Date: 29-DEC-1999 00:02
Init. Cal. Date(s): 17-DEC-1999 20-DEC-1999
Init. Cal. Times: 12:43 18:00
Quant Type: ESTD

	COMPOUND	RRF	RFO	MIN RRF	%D	MAX %D
	5 alpha-BHC	8372850	8653588	0.010	3.3	15.0
	12 Heptachlor	1839793	1903750	0.010	3.5	15.0
	7 gamma-BHC (Lindane)	1802150	1941750	0.010	7.7	15.0
	19 Endosulfan I	1334215	1437900	0.010	7.8	15.0
	23 Dieldrin	1373926	1533950	0.010	11.6	15.0
	24 Endrin	1420343	1512000	0.010	6.5	15.0
	27 4,4'-DDD	950954	1051850	0.010	10.6	15.0
	30 4,4'-DDT	1079209	1144200	0.010	6.0	15.0
	32 Methoxychlor	705648	758125	0.010	7.4	15.0
$	2 Tetrachloro-m-xylene	1692733	1866900	0.010	8.9	15.0
$	33 Decachlorobiphenyl	896575	960300	0.010	3.2	15.0
	~~15 Isodrin~~	~~1480349~~	~~1662300~~	~~0.010~~	~~13.4~~	~~15.0~~

1/14/00

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\DC28919.d
Report Date: 29-Dec-1999 13:04

Laucks Testing Labs, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 5890D.i
Lab File ID: DC28919.d
Analysis Type:
Lab Sample ID: INDAM
Method: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\D8080BW-2.m

Injection Date: 29-DEC-1999 00:02
Init. Cal. Date(s): 17-DEC-1999 28-DEC-1999
Init. Cal. Times: 12:43 18:00
Quant Type: ESTD

	COMPOUND	RRF	RF0	MIN RRF	%D	MAX %D
	5 alpha-BHC	3764890	3942812	0.010	4.7	15.0
	11 Heptachlor	747940	813600	0.010	8.8	15.0
	8 gamma-BHC (Lindane)	810808	862900	0.010	6.4	15.0
	20 Endosulfan I	589145	628450	0.010	6.7	15.0
	22 Dieldrin	569590	613800	0.010	7.8	15.0
	24 Endrin	542681	577900	0.010	6.5	15.0
	~~25 4,4'-DDD~~	415291	454675	0.010	9.5	15.0
	27 4,4'-DDT	461374	494850	0.010	7.3	15.0
	31 Methoxychlor	293083	310660	0.010	6.0	15.0
$	2 Tetrachloro-m-xylene	890868	974100	0.010	9.3	15.0
$	33 Decachlorobiphenyl	386128	411750	0.010	6.6	15.0
	~~14 Isodrin~~	~~597656~~	~~668980~~	~~0.010~~	~~11.9~~	~~15.0~~

1/28/00

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\DC28920.d
Report Date: 29-Dec-1999 12:59

Laucks Testing Labs, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 5890D.i
Lab File ID: DC28920.d
Analysis Type:
Lab Sample ID: INDBM
Method: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\D8080AW-1.m

Injection Date: 29-DEC-1999 00:47
Init. Cal. Date(s): 17-DEC-1999 18-DEC-1999
Init. Cal. Times: 12:43 18:00
Quant Type: ESTD

	COMPOUND	RRF	RF0	MIN RRF	%D	MAX %D
	6 beta-BHC	1068755	1130700	0.010	5.8	15.0
	8 delta-BHC	5924893	5425888	0.010	-8.4	15.0
	14 Aldrin	1449610	1474200	0.010	1.7	15.0
	16 Heptachlor epoxide	1520800	1579450	0.010	3.9	15.0
	20 alpha-Chlordane	1600145	1671100	0.010	4.4	15.0
	18 gamma-Chlordane	1525480	1612200	0.010	5.7	15.0
	22 4,4'-DDE	7176073	7491275	0.010	3.9	15.0
	29 Endosulfan sulfate	915468	913750	0.010	-0.2	15.0
	28 Endrin aldehyde	966784	991925	0.010	2.6	15.0
	31 Endrin ketone	1335114	1433100	0.010	7.3	15.0
	26 Endosulfan II	1359255	1449050	0.010	6.6	15.0
S	2 Tetrachloro-m-xylene	1692733	1893650	0.010	10.5	15.0
S	33 Decachlorobiphenyl	896575	1052425	0.010	13.1	15.0

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\DC28920.d
Report Date: 29-Dec-1999 13:04

Laucks Testing Labs, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 5890D.i Injection Date: 29-DEC-1999 00:17
Lab File ID: DC28920.d Init. Cal. Date(s): 17-DEC-1999 28-DEC-1999
Analysis Type: Init. Cal. Times: 12:43 18:00
Lab Sample ID: INDBM Quant Type: ESTD
Method: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\D8080BW-2.m

	COMPOUND	$\overline{RRF}$	RF0	MIN RRF	%D	MAX %D	
	9 beta-BHC	517773	553350	0.010	6.9	15.0	
	12 delta-BHC	646705	557950	0.010	-13.7	15.0	
	13 Aldrin	590000	616500	0.010	4.5	15.0	
	15 Heptachlor epoxide	677195	701800	0.010	3.6	15.0	
	19 alpha-Chlordane	777125	743450	0.010	-4.3	15.0	
	16 gamma-Chlordane	639003	668300	0.010	4.6	15.0	
	21 4,4'-DDE	568795	603175	0.010	6.0	15.0	
	30 Endosulfan sulfate	461639	417725	0.010	-9.5	15.0	
	28 Endrin aldehyde	412461	429325	0.010	4.1	15.0	
	32 Endrin ketone	561335	583350	0.010	3.9	15.0	
	26 Endosulfan II	561665	598625	0.010	6.6	15.0	
$	2 Tetrachloro-m-xylene	890868	998900	0.010	12.1	15.0	
$	33 Decachlorobiphenyl	386128	448425	0.010	16.1	15.0	<- NA

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\DC28926
Report Date: 29-Dec-1999 13:01

Laucks Testing Labs, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 5890D.i
Lab File ID: DC28926.d
Analysis Type:
Lab Sample ID: INDAM
Method: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\D8080AW-1.m

Injection Date: 29-DEC-1999 05:1
Init. Cal. Date(s): 17-DEC-1999
Init. Cal. Times: 12:43
Quant Type: ESTD

	COMPOUND	RRF	RF0	MIN RRF	%D	MAX %D	
	5 alpha-BHC	8372850	9237213	0.010	10.3	15.0	
	12 Heptachlor	1839793	1989300	0.010	8.1	15.0	
	7 gamma-BHC (Lindane)	1802150	2078450	0.010	15.3	15.0	<- J no + NA
	19 Endosulfan I	1334215	1459350	0.010	9.4	15.0	
	23 Dieldrin	1373926	1557350	0.010	13.4	15.0	
	24 Endrin	1420343	1502275	0.010	5.8	15.0	
	27 ~~4,4'-DDD~~	950954	1087875	0.010	14.4	15.0	
	30 4,4'-DDT	1079209	1181275	0.010	9.5	15.0	
	32 Methoxychlor	705648	779340	0.010	10.4	15.0	
$	2 Tetrachloro-m-xylene	1692733	1973950	0.010	15.2	15.0	<- NA
$	33 Decachlorobiphenyl	896575	902650	0.010	-3.0	15.0	
	~~15 Isodrin~~	~~1466349~~	~~1731360~~	~~0.010~~	~~18.1~~	~~15.0~~	~~<-~~

E.
1/10/00

No assoc samples

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\DC28926.d
Report Date: 29-Dec-1999 13:05

Laucks Testing Labs, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 5890D.i
Lab File ID: DC28926.d
Analysis Type:
Lab Sample ID: INDAM
Method: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\D8080BW-2.m

Injection Date: 29-DEC-1999 05:[illegible]
Init. Cal. Date(s): 17-DEC-1999 [illegible]-DEC-1999
Init. Cal. Times: 12:43 18:[illegible]0
Quant Type: ESTD

	COMPOUND	RRF	RF0	MIN RRF	%D	MAX %D	
	5 alpha-BHC	3764890	4205350	0.010	11.7	15.0	
	11 Heptachlor	747940	845300	0.010	13.0	15.0	
	8 gamma-BHC (Lindane)	810808	920350	0.010	13.5	15.0	
	20 Endosulfan I	589145	632300	0.010	7.3	15.0	
	22 Dieldrin	569590	637550	0.010	11.9	15.0	
	24 Endrin	542681	592000	0.010	9.1	15.0	
	~~25 4,4'-DDD~~	415291	473100	0.010	13.9	15.0	
	27 4,4'-DDT	461374	519550	0.010	12.6	15.0	
	31 Methoxychlor	293083	319865	0.010	9.1	15.0	
$	2 Tetrachloro-m-xylene	890868	1044050	0.010	17.2	15.0	<- NA
$	33 Decachlorobiphenyl	386128	393550	0.010	1.9	15.0	
	~~14 Isodrin~~	~~597656~~	~~699740~~	~~0.010~~	~~18.4~~	~~15.0~~	~~<-~~

1/10/00

No ASSOC Samples

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\DC28927.d
Report Date: 29-Dec-1999 13:01

Laucks Testing Labs, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 5890D.i Injection Date: 29-DEC-1999 06:03
Lab File ID: DC28927.d Init. Cal. Date(s): 17-DEC-1999 28-DEC-1999
Analysis Type: Init. Cal. Times: 12:43 18:00
Lab Sample ID: INDBM Quant Type: ESTD
Method: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\D8080AW-1.m

	COMPOUND	RRF	RF0	MIN RRF	%D	MAX %D
	6 beta-BHC	1068755	1084300	0.010	1.5	15.0
	8 delta-BHC	5924893	5306050	0.010	-10.4	15.0
	14 Aldrin	1449610	1406700	0.010	-3.0	15.0
	16 Heptachlor epoxide	1520800	1495500	0.010	-1.7	15.0
	20 alpha-Chlordane	1600145	1542900	0.010	-3.6	15.0
	18 gamma-Chlordane	1525480	1499750	0.010	-1.7	15.0
	22 4,4'-DDE	7176073	6942500	0.010	-3.7	15.0
	29 Endosulfan sulfate	915468	870750	0.010	-4.9	15.0
	28 Endrin aldehyde	966784	915450	0.010	-5.3	15.0
	31 Endrin ketone	1335114	1347200	0.010	0.9	15.0
	26 Endosulfan II	1359255	1339650	0.010	-1.4	15.0
S	2 Tetrachloro-m-xylene	1692733	1794800	0.010	4.7	15.0
S	33 Decachlorobiphenyl	896575	936250	0.010	0.6	15.0

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\DC28927.d
Report Date: 29-Dec-1999 13:06

Laucks Testing Labs, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 5890D.i Injection Date: 29-DEC-1999 06:03
Lab File ID: DC28927.d Init. Cal. Date(s): 17-DEC-1999 28-DEC-[illegible]
Analysis Type: Init. Cal. Times: 12:43 18:00
Lab Sample ID: INDBM Quant Type: ESTD
Method: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\D8080BW-2.m

COMPOUND	RRF	RF0	MIN RRF	%D	MAX %D
9 beta-BHC	517773	531550	0.010	2.7	15.0
12 delta-BHC	646705	550500	0.010	-14.9	15.0
13 Aldrin	590000	584300	0.010	-1.0	15.0
15 Heptachlor epoxide	677195	661850	0.010	-2.3	15.0
19 alpha-Chlordane	777125	692250	0.010	-10.9	15.0
16 gamma-Chlordane	639003	644600	0.010	0.9	15.0
21 4,4'-DDE	563795	561250	0.010	-1.3	15.0
30 Endosulfan sulfate	461639	398575	0.010	-13.7	15.0
28 Endrin aldehyde	412461	399300	0.010	-3.2	15.0
32 Endrin ketone	561335	550300	0.010	-2.0	15.0
26 Endosulfan II	561665	561050	0.010	-0.1	15.0
$ 2 Tetrachloro-m-xylene	890868	950300	0.010	6.7	15.0
$ 33 Decachlorobiphenyl	386128	404900	0.010	4.9	15.0

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\D0103023.d
Report Date: 05-Jan-2000 10:52

Laucks Testing Labs, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 5890D.i Injection Date: 04-JAN-2000 08:19
Lab File ID: D0103023.d Init. Cal. Date(s): 17-DEC-1999 [illegible]
Analysis Type: Init. Cal. Times: 12:43 [illegible]
Lab Sample ID: INDBM Quant Type: ESTD
Method: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\D8080AW-1.m

	COMPOUND	RRF	RF0	MIN RRF	%D	MAX %D	
	6 beta-BHC	1068755	1087650	0.010	2.7	15.0	
	8 delta-BHC	5924893	5699650	0.010	2.8	15.0	
	14 Aldrin	1449610	1401500	0.010	-0.7	15.0	
	16 Heptachlor epoxide	1520800	1506700	0.010	22.8	15.0	<- J not
	20 alpha-Chlordane	1600145	1569200	0.010	-1.4	15.0	
	18 gamma-Chlordane	1525480	1569050	0.010	4.3	15.0	
	22 4,4'-DDE	7176073	7065494	0.010	1.2	15.0	
	29 Endosulfan sulfate	915468	940750	0.010	5.3	15.0	
	28 Endrin aldehyde	966784	916475	0.010	-4.8	15.0	
	31 Endrin ketone	1335114	1394975	0.010	6.7	15.0	
	26 Endosulfan II	1359255	1365975	0.010	1.5	15.0	
$	2 Tetrachloro-m-xylene	1692733	1808100	0.010	7.6	15.0	
$	33 Decachlorobiphenyl	896575	988025	0.010	8.1	15.0	

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\D0103023.d
Report Date: 05-Jan-2000 10:53

Laucks Testing Labs, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 5890D.i
Lab File ID: D0103023.d
Analysis Type:
Lab Sample ID: INDBM
Method: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\D8080BW-2.m

Injection Date: 04-JAN-2000 08:19
Init. Cal. Date(s): 17-DEC-1999 28-DEC-1999
Init. Cal. Times: 12:43 18:00
Quant Type: ESTD

	COMPOUND	RRF	RF0	MIN RRF	%D	MAX %D	
	9 beta-BHC	517773	558800	0.010	7.9	15.0	
	12 delta-BHC	646705	623700	0.010	-3.6	15.0	
	13 Aldrin	590000	609800	0.010	3.4	15.0	
	15 Heptachlor epoxide	677195	717250	0.010	5.9	15.0	
	19 alpha-Chlordane	777125	727000	0.010	-6.5	15.0	
	16 gamma-Chlordane	639003	699800	0.010	9.5	15.0	
	21 4,4'-DDE	568795	589075	0.010	3.6	15.0	
	30 Endosulfan sulfate	461639	452975	0.010	-1.9	15.0	
	28 Endrin aldehyde	412461	417225	0.010	1.2	15.0	
	32 Endrin ketone	561335	591075	0.010	5.3	15.0	
	26 Endosulfan II	561665	602675	0.010	7.3	15.0	
$	2 Tetrachloro-m-xylene	909905	979500	0.010	9.9	15.0	
$	33 Decachlorobiphenyl	428248	450500	0.010	16.7	15.0	<- NA

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\D0103024.d
Report Date: 05-Jan-2000 10:53

Laucks Testing Labs, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 5890D.i
Lab File ID: D0103024.d
Analysis Type:
Lab Sample ID: INDAM
Method: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\D8080AW-1.m

Injection Date: 04-JAN-2000 09:04
Init. Cal. Date(s): 17-DEC-1999 28-DEC-1999
Init. Cal. Times: 12:43 18:00
Quant Type: ESTD

COMPOUND	RRF	RF0	MIN RRF	%D	MAX %D
5 alpha-BHC	8372850	7898363	0.010	-2 7	15.0
12 Heptachlor	1839793	1773350	0.010	-3.3	15.0
7 gamma-BHC (Lindane)	1802150	1791700	0.010	2.9	15.0
19 Endosulfan I	1334215	1358250	0.010	2.8	15.0
23 Dieldrin	1373926	1423150	0.010	6.3	15.0
24 Endrin	1420343	1381800	0.010	-2.1	15.0
27 4,4'-DDD	950954	952350	0.010	3.5	15.0
30 4,4'-DDT	1079209	1044650	0.010	-1.2	15.0
32 Methoxychlor	705648	696690	0.010	-2.9	15.0
$ 2 Tetrachloro-m-xylene	1692733	1768850	0.010	5.3	15.0
$ 33 Decachlorobiphenyl	896575	911300	0.010	-0.3	15.0
~~15 Isodrin~~	~~1466349~~	~~1555420~~	~~0.010~~	~~8.0~~	~~15.0~~

1/10/00

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\D0103024.d
Report Date: 05-Jan-2000 10:53

Laucks Testing Labs, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 5890D.i Injection Date: 04-JAN-2000 09:04
Lab File ID: D0103024.d Init. Cal. Date(s): 17-DEC-1999 28-DEC-1999
Analysis Type: Init. Cal. Times: 12:43 10:00
Lab Sample ID: INDAM Quant Type: ESTD
Method: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\D8080BW-2.m

	COMPOUND	RRF	RF0	MIN RRF	%D	MAX %D
	5 alpha-BHC	3764888	3890050	0.010	3.3	15.0
	11 Heptachlor	747940	812750	0.010	8.7	15.0
	8 gamma-BHC (Lindane)	810808	859900	0.010	6.1	15.0
	20 Endosulfan I	589145	637000	0.010	8.1	15.0
	22 Dieldrin	569590	613050	0.010	7.6	15.0
	24 Endrin	542681	535300	0.010	-1.4	15.0
	25 4,4'-DDD	415291	443375	0.010	6.8	15.0
	27 4,4'-DDT	461374	495900	0.010	7.5	15.0
	31 Methoxychlor	293083	299360	0.010	2.1	15.0
$	2 Tetrachloro-m-xylene	909905	971300	0.010	6.7	15.0
$	33 Decachlorobiphenyl	428248	403050	0.010	-5.9	15.0
	~~14 Isodrin~~	~~597656~~	~~654000~~	~~0.010~~	~~9.4~~	~~15.0~~

1/06/00

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\D0103033.d
Report Date: 05-Jan-2000 10:53

Laucks Testing Labs, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 5890D.i Injection Date: 04-JAN-2000 15:52
Lab File ID: D0103033.d Init. Cal. Date(s): 17-DEC-1999 28-DEC-1999
Analysis Type: Init. Cal. Times: 12:43 18:00
Lab Sample ID: INDBM Quant Type: ESTD
Method: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\D8080AW-1.m

COMPOUND	RRF	RF0	MIN RRF	%D	MAX %D
6 beta-BHC	1068755	1111200	0.010	4.0	15.0
8 delta-BHC	5924893	5766062	0.010	-2.7	15.0
14 Aldrin	1449610	1425200	0.010	-1.7	15.0
16 Heptachlor epoxide	1520800	1544850	0.010	1.6	15.0
20 alpha-Chlordane	1600145	1635750	0.010	2.2	15.0
18 gamma-Chlordane	1525480	1596250	0.010	4.6	15.0
22 4,4'-DDE	7176073	7226138	0.010	0.7	15.0
29 Endosulfan sulfate	915468	935475	0.010	2.2	15.0
28 Endrin aldehyde	966784	930875	0.010	-3.7	15.0
31 Endrin ketone	1335114	1421350	0.010	6.5	15.0
26 Endosulfan II	1359255	1426150	0.010	4.9	15.0
$ 2 Tetrachloro-m-xylene	1692733	1836600	0.010	8.5	15.0
$ 33 Decachlorobiphenyl	896575	1027800	0.010	14.6	15.0

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\D0103033.d
Report Date: 05-Jan-2000 10:54

Laucks Testing Labs, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 5890D.i Injection Date: 04-JAN-2000 15:52
Lab File ID: D0103033.d Init. Cal. Date(s): 17-DEC-1999 28-DEC-1999
Analysis Type: Init. Cal. Times: 12:43 18:00
Lab Sample ID: INDBM Quant Type: ESTD
Method: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\D8080BW-2.m

	COMPOUND	RRF	RF0	MIN RRF	%D	MAX %D
	9 beta-BHC	517773	561750	0.010	8.5	15.0
	12 delta-BHC	646705	610250	0.010	-5.6	15.0
	13 Aldrin	590000	627900	0.010	6.4	15.0
	15 Heptachlor epoxide	677195	724800	0.010	7.0	15.0
	19 alpha-Chlordane	777125	726750	0.010	-6.5	15.0
	16 gamma-Chlordane	639003	727450	0.010	13.8	15.0
	21 4,4'-DDE	568795	598175	0.010	5.2	15.0
	30 Endosulfan sulfate	461639	447175	0.010	-3.1	15.0
	28 Endrin aldehyde	412461	427725	0.010	3.7	15.0
	32 Endrin ketone	561335	590675	0.010	5.2	15.0
	26 Endosulfan II	561665	615450	0.010	9.6	15.0
S	2 Tetrachloro-m-xylene	909905	1000450	0.010	10.0	15.0
S	33 Decachlorobiphenyl	428248	452225	0.010	5.6	15.0

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\D0103034.d
Report Date: 05-Jan-2000 10:53

Laucks Testing Labs, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 5890D.i Injection Date: 04-JAN-2000 16:37
Lab File ID: D0103034.d Init. Cal. Date(s): 17-DEC-1999 28-DEC-1999
Analysis Type: Init. Cal. Times: 12:43 18:00
Lab Sample ID: INDAM Quant Type: ESTD
Method: \\AMDK645001\DROOT\chem\5890D.i\DC1799-1.b\D8080AW-1.m

COMPOUND	RRF	RF0	MIN RRF	%D	MAX %D
5 alpha-BHC	8372850	8137663	0.010	-2.8	15.0
12 Heptachlor	1839793	1859100	0.010	1.0	15.0
7 gamma-BHC (Lindane)	1802150	1857000	0.010	3.0	15.0
19 Endosulfan I	1334215	1392400	0.010	4.4	15.0
23 Dieldrin	1373926	1455950	0.010	6.0	15.0
24 Endrin	1420343	1371850	0.010	-3.4	15.0
27 4,4'-DDD	950954	958150	0.010	0.8	15.0
30 4,4'-DDT	1079209	1106575	0.010	2.5	15.0
32 Methoxychlor	705648	718655	0.010	1.8	15.0
$ 2 Tetrachloro-m-xylene	1692733	1825850	0.010	7.9	15.0
$ 33 Decachlorobiphenyl	896575	933850	0.010	4.2	15.0
~~15 Isodrin~~	~~1466349~~	~~1575580~~	~~0.010~~	~~7.4~~	~~15.0~~

RE.
1/10/00

Data File: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\D0103034.d
Report Date: 05-Jan-2000 10:54

Laucks Testing Labs, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 5890D.i
Lab File ID: D0103034.d
Analysis Type:
Lab Sample ID: INDAM
Method: \\AMDK645001\DROOT\chem\5890D.i\DC1799-2.b\D8080BW-2.m

Injection Date: 04-JAN-2000 16:37
Init. Cal. Date(s): 17-DEC-1999 28-DEC-1999
Init. Cal. Times: 12:43 18:00
Quant Type: ESTD

	COMPOUND	RRF	RFO	MIN RRF	%D	MAX %D
	5 alpha-BHC	3764888	3966463	0.010	5.4	15.0
	11 Heptachlor	747940	828450	0.010	10.8	15.0
	8 gamma-BHC (Lindane)	810808	878350	0.010	8.3	15.0
	20 Endosulfan I	589145	646150	0.010	9.7	15.0
	22 Dieldrin	569590	627800	0.010	10.2	15.0
	24 Endrin	542681	554125	0.010	2.1	15.0
	25 4,4'-DDD	415291	452625	0.010	9.0	15.0
	27 4,4'-DDT	461374	509100	0.010	10.3	15.0
	31 Methoxychlor	293083	302725	0.010	3.3	15.0
$	2 Tetrachloro-m-xylene	909905	997400	0.010	9.6	15.0
$	33 Decachlorobiphenyl	428248	423850	0.010	-1.0	15.0
	~~14 Isodrin~~	~~597656~~	~~661530~~	~~0.010~~	~~10.7~~	~~15.0~~

F.C.
1/10/00

MULTI-MEDIA PESTICIDE/AROCLOR FRACTION BLANK SUMMARY

1. Blank qualification guidelines:

   a) If a compound is found in the blank but not in the sample, no action is taken.

   b) Any compound detected in the sample, which was also detected in the associated blank, must be qualified by elevating the limit of detection or adjusting the limit of detection to the sample result, when the sample concentration is less than five (5) times the blank concentration.

   c) The reviewer should take note that the blank analysis may not involve the same weights, volumes or dilution factors as associated samples. These factors must be taken into consideration when applying the 5X and 10X criteria.

   d) In addition, the reviewer must review the trip blanks, rinseate blanks and field blanks (if they were submitted with the data package) and all associated samples. Apply the same data validation guidelines used in assessing the method blanks.

   e) Qualification/Action codes:

      U - The sample result is greater than the CRQL and less than five times (5X) the blank value. Cross out the "B" flag and qualify the sample result with a "U".

      CRQL - The sample result is less than the CRQL and less than five times (5X) the blank value. Reject the sample result, cross out the "B" flag, and report the CRQL.

      No Action - The sample result is greater than the CRQL and greater than five times (5X) the blank value.

METHOD BLANK SUMMARY REPORT

ab Name: Laucks Testing Labs, Inc.

Lab Sample ID: B122099GPXSLH

Matrix: (soil/water) SOIL | Date Prepared: 12/20/99

Lab File ID(1): DC28912.D | Lab File ID(2): DC28912.D

Date Analyzed (1) : 12/28/99 | Date Analyzed (2) : 12/28/99

Time Analyzed (1) : 1845 | Time Analyzed (2) : 1845

Instrument ID (1) : 5890D.i | Instrument ID (2) : 5890D.i

Column (1) : DB5 ID: 0.45 (mm) | Column (2) : DB608 ID: 0.45 (mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES AND QC:

CLIENT SAMPLE ID.	LAB SAMPLE ID	LAB FILE 1	ANAL DATE(1)	ANAL TIME(1)	LAB FILE 2	ANAL DATE(2)	ANAL TIME(2)
646SB00701	9912406-05	DC28914 d	12/28/99	20:16	DC28914.d	12/28/99	20:16
646SB00702	9912406-06	DC28915.d	12/28/99	21:01	DC28915.d	12/28/99	21:01
646SB00801	9912406-07	DC28916.d	12/28/99	21:46	DC28916.d	12/28/99	21:46
646SB00801MS	9912406-07MS	DC28917.d	12/28/99	22:31	DC28917.d	12/28/99	22:31
646SB00801MSD	9912406-07MSD	DC28918.d	12/28/99	23:16	DC28918.d	12/28/99	23:16
646SB00802	9912406-08	DC28921.d	12/29/99	1:32	DC28921.d	12/29/99	1:32
646SB00901	9912406-09	DC28922.d	12/29/99	2:17	DC28922.d	12/29/99	2:17
646SB00902	9912406-10	DC28923.d	12/29/99	3:02	DC28923.d	12/29/99	3:02
646SB01001	9912406-11	DC28924.d	12/29/99	3:47	DC28924.d	12/29/99	3:47
PBLKBS01	S122099GPXSLH	DC28913.d	12/28/99	19:30	DC28913.d	12/28/99	19:30

No Contamination

METHOD BLANK SUMMARY REPORT

›b Name:	Laucks Testing Labs, Inc.		
Lab Sample ID:	B123099GPXSLG		
Matrix: (soil/water)	SOIL	Date Prepared:	12/30/99
Lab File ID(1):	D0103028.D	Lab File ID(2):	D0103028.D
Date Analyzed (1) :	01/04/00	Date Analyzed (2) :	01/04/00
Time Analyzed (1) :	1205	Time Analyzed (2) :	1205
Instrument ID (1) :	5890D.i	Instrument ID (2) :	5890D.i
Column (1) : DB5	ID: 0.45 (mm)	Column (2) : DB608	ID: 0.45 (mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES AND QC:

CLIENT SAMPLE ID.	LAB SAMPLE ID	LAB FILE 1	ANAL DATE(1)	ANAL TIME(1)	LAB FILE 2	ANAL DATE(2)	ANAL TIME(2)
646SB01002MDRE	9912406-12MDRE	D0103032.d	01/04/00	15:06	D0103032.d	01/04/00	15:06
646SB01002MSRE	9912406-12MSRE	D0103031.d	01/04/00	14:21	D0103031.d	01/04/00	14:21
646SB01002RE	9912406-12RE	D0103030.d	01/04/00	13:36	D0103030.d	01/04/00	13:36
PBLKMS30	S123099GPXSLG	D0103029.d	01/04/00	12:50	D0103029.d	01/04/00	12:50

No Contamination

SURROGATE RECOVERY FORM

Lab Name: Laucks Testing Labs, Inc. Matrix: SOIL

LAB SAMPLE ID.	CLIENT SAMPLE ID.	Surr 1	Surr 2	Surr 3	Surr 4	Surr 5	Surr 6
9912406-05	646SB00701	70	98				
9912406-06	646SB00702	70	101				
9912406-07	646SB00801	61	101				
9912406-07MS	646SB00801MS	72	107				
9912406-07MSD	646SB00801MSD	81	112				
9912406-08	646SB00802	72	100				
9912406-09	646SB00901	56	86				
9912406-10	646SB00902	47	80				
9912406-11	646SB01001	100	103				
9912406-12MDRE	646SB01002MDRE	80	101				
9912406-12MSRE	646SB01002MSRE	80	100				
9912406-12RE	646SB01002RE	80	99				
B122099GPXSLH	PBLK01	58	93				
B123099GPXSLG	PBLK30	65	85				
S122099GPXSLH	PBLKBS01	58	88				
S123099GPXSLG	PBLKMS30	69	87				

		Surrogate Compound	LCL	UCL
1	=	Tetrachloro-m-xylene	20	150
2	=	Decachlorobiphenyl	20	160

* = values outside of recovery limit

D = surrogate diluted out

LCL = Lower Control Limi

UCL = Upper Control Limi

Surr-Rep

FormVer 1.0 11/23/96

Blank Spike Report

Lab Name : LAUCKS TESTING LABS

Description : Pesticides/PCBs
Lab ID : S122099GPXSLH
Matrix : S
Units : UG/KG

(Database Reference: S122099_GPXS03)

Analyte	Spike Added	Amount Found	% Rec	Recovery Limits	
Gamma-BHC (Lindane)----------	16.67	13.770	83	20	128
Heptachlor----------	16.67	12.100	73	20	131
Aldrin----------	16.67	13.730	82	20	138

* = Recovery exceeded control limit

Form BLKSPK-1

Blank Spike Report

Lab Sample ID: S122099GPXSLH
Description : Pesticides/PCBs
Matrix : S
Units : UG/KG

(Database Reference: S122099_GPXS03)

Work Orders Verified

Work Order	Sample Fractions Verified
9912406	5-12

Form BLKSPK-2

Blank Spike Report

Lab Name : LAUCKS TESTING LABS

Description : Pesticides/PCBs
Lab ID : S123099GPXSLG
Matrix : S
Units : UG/KG

(Database Reference: S123099_GPXS01)

Analyte	Spike Added	Amount Found	% Rec	Recovery Limits	
Gamma-BHC (Lindane)----------	16.67	13.530	81	20	128
Heptachlor----------	16.67	12.430	75	20	131
Aldrin----------	16.67	13.270	80	20	138

* = Recovery exceeded control limit

Form BLKSPK-1

Blank Spike Report

Lab Sample ID: S123099GPXSLG
Description : Pesticides/PCBs
Matrix : S
Units : UG/KG

(Database Reference: S123099_GPXS01)

Work Orders Verified

Work Order	Sample Fractions Verified
9912406	12

Form BLKSPK-2

MS/MSD Report

Lab Name : LAUCKS TESTING LABS

Client ID : 646SB00801

Lab ID : 9912406-07
Matrix : SOIL
Units : UG/KG

Description : Pesticide Blank Spike Mix

(Database Reference: K122099_GPXS03)

Matrix Spike Data

Analyte	Spike Added	Sample Found	MS Found	MS Rec	Recovery Limits
gamma-BHC----------	18.4	0	17.500	95	20 128
Heptachlor----------	18.4	0	15.300	83	20 131
Aldrin----------	18.4	0	17.600	96	20 138

Matrix Spike Duplicate Data

Analyte	Spike Added	MSD Found	MSD Rec	RPD	Control Limits Recov	RPD
gamma-BHC----------	18.4	19.000	103	8	20 128	50
Heptachlor----------	18.4	16.600	90	8	20 131	50
Aldrin----------	18.4	19.100	104	8	20 138	50

Comments

Form MS/MSD-1

* = Recovery or RPD exceeded control limit

Form MS/MSD-1

MS/MSD Report

Client ID : 646SB00801
Spike Sample: 9912406-07
Description : Pesticide Blank Spike Mix
Matrix : SOIL
Units : UG/KG

(Database Reference: K122099_GPXS03)

Work Orders Verified

Work Order	Sample Fractions Verified
9912406	5-12

Form MS/MSD-2

MS/MSD Report

Lab Name : LAUCKS TESTING LABS

Client ID : 646SB01002

Description : Pesticide Blank Spike Mix

Lab ID : 9912406-12
Matrix : SOIL
Units : UG/KG

(Database Reference: K123099_GPXS01)

Matrix Spike Data					
Analyte	Spike Added	Sample Found	MS Found	MS Rec	Recovery Limits
gamma-BHC----------	18.7	0	16.800	90	20 128
Heptachlor----------	18.7	0	15.400	82	20 131
Aldrin----------	18.7	0	16.600	89	20 138

Matrix Spike Duplicate Data						
Analyte	Spike Added	MSD Found	MSD Rec	RPD	Control Limits Recov	Control Limits RPD
gamma-BHC----------	18.7	18.100	97	7	20 128	50
Heptachlor----------	18.7	16.100	86	5	20 131	50
Aldrin----------	18.7	17.400	93	4	20 138	50

Comments

Form MS/MSD-1

* = Recovery or RPD exceeded control limit

Form MS/MSD-1

MS/MSD Report

Client ID : 646SB01002
Spike Sample: 9912406-12
Description : Pesticide Blank Spike Mix
Matrix : SOIL
Units : UG/KG

(Database Reference: K123099_GPXS01)

Work Orders Verified

Work Order	Sample Fractions Verified
9912406	12

Form MS/MSD-2

MULTI-MEDIA PESTICIDE/AROCLOR FRACTION
FIELD DUPLICATE SAMPLE SUMMARY

Sample ID: NONE **Duplicate Sample ID:**

Water: **RPD > 30%** **Soil:** **RPD > 50%**

Compound	Sample Conc.	Dup. Sample Conc.	RPD
			??
			??
			??
			??
			??
			??
			??
			??
			??
			??
			??
			??
			??
			??
			??
			??
			??
			??

Comments:

CONFIRMATION SUMMARY WORKSHEET
FOR SINGLE COMPONENT ANALYTES

Client Sample ID

646SB01001

Lab Name: Laucks Testing Labs, Inc.

Lab Sample ID: 9912406-11

Instrument ID (1): 5890D.i Instrument ID (2): 5890D.i

Column (1): DB5 ID 0.45 (mm) Column (2): DB608 ID: 0.45 (mm)

File (1): DC28924.d File (2): DC28924.d

Date Analyzed (1) 12/29/99 Date Analyzed (2): 12/29/99

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION Final Units: ug/kg	%D
4,4'-DDT	1	26.87	26.79	26.93	4.07	9.3
	2	25.92	25.85	25.99	4.45 X	

X = Concentration Reported

LAUCKS TESTING LABORATORIES
940 S. Harney
Seattle, WA 98108

To: Ensafe
Laboratory No. : 9912406
SDG No. : EN034
Date of Report: January 14, 2000

SAMPLE RECEIPT, IDENTIFICATION, AND GENERAL COMMENTS:

Sample Receipt and Identification:

The samples submitted under the laboratory number(s) indicated above were identified and analyzed as tabulated below. The samples were collected and received on the dates noted on the enclosed chain-of-custody copies, Attachment A.

Client Sample Identification	Laucks Sample Identification	Testing Analytical Request
646SB00501	9912406-01	ABN
646SB00502	9912406-02	ABN
646SB00601	9912406-03	ABN
646SB00602	9912406-04	ABN
646SB00701	9912406-05	PEST/MET/TOC
646SB00702	9912406-06	PEST/MET/TOC
646SB00801	9912406-07	PEST/MET/TOC
646SB00802	9912406-08	PEST/MET/TOC
646SB00901	9912406-09	PEST/MET/TOC
646SB00902	9912406-10	PEST/MET/TOC
646SB01001	9912406-11	PEST/MET/TOC
646SB01002	9912406-12	PEST/MET/TOC
638SB00902 SPLP	9912406-13	SPLP
634SB00401	9912406-14	MET/TOC
634SB00402	9912406-15	MET/TOC
624SB00501	9912406-16	MET/TOC
634SB00502	9912406-17	MET/TOC
634SB00601	9912406-18	MET/TOC
638SB00801	9912406-19	MET/TOC
638SB00802	9912406-20	MET/TOC
638SB00901	9912406-21	MET/TOC
638SB00902	9912406-22	MET/TOC
646SB00701 SPLP	9912406-23	SPLP
646SB00702 SPLP	9912406-24	SPLP
646SB00801 SPLP	9912406-25	SPLP
646SB00802 SPLP	9912406-26	SPLP
646SB00901 SPLP	9912406-27	SPLP
646SB00902 SPLP	9912406-28	SPLP
646SB01001 SPLP	9912406-29	SPLP

646SB01002 SPLP	9912406-30	SPLP
634SB00401 SPLP	9912406-31	SPLP
634SB00402 SPLP	9912406-32	SPLP
634SB00501 SPLP	9912406-33	SPLP
634SB00502 SPLP	9912406-34	SPLP
634SB00601 SPLP	9912406-35	SPLP
638SB00801 SPLP	9912406-36	SPLP
638SB00802 SPLP	9912406-37	SPLP
638SB00901 SPLP	9912406-38	SPLP

Analytical Request Key:

ABN =	Semi-Volatile Organics (8270C)
PEST =	Pesticides (8081A)
MET =	TAL Metals + Tin (6010B/7000)
SPLP =	SPLP Metals (1312), TAL Metals + Tin (6010B/7000)
TOC =	Total Organic Carbon (9060)

Sample Receipt Comments:

Several samples received were measured at temperatures which exceeded the temperature control limits of 4°C ± 2°C. Approval to run the samples with high temperatures was given by Charlie Vernoy on 12/16/1999. One jar was received with no sample ID on the label. The correct ID of 646SB00702 was matched using the sample time and test indicated on the container. See the sample receipt logs for documentation.

Sample Identification on Forms:

When completing forms created through the CLP software, every attempt is made to use both your sample IDs as well as the laboratory sample IDs. The forms have varied default sizes to their sample identification fields, and are not amenable to alteration or editing. When it is not possible to use your complete sample ID because of field length limitations, Laucks will usually do one of two things: 1) use as much of your ID as will fit, beginning from the RIGHT hand side of the sample ID number; or 2) select some sub-set of your sample identifier if it is clearly a discrete number. In addition, all forms will contain our sample IDs, which can be cross-referenced from the table above.

GENERAL REMARKS ON ORGANIC ANALYSES:

The following comments describe general analysis conditions. For remarks specific to the samples reported in this case, see "SPECIFIC REMARKS ON ORGANIC ANALYSIS."

Manual Integration:
One or analytes may have been manually integrated on the data system quantitation reports. The manual integrations have been flagged, initialed and dated by the analyst. A list of the manual integration flags is detailed below.

M	Manual integration due to irregular peak shape
MS	Manual integration due to split peak
MR	Manual integration due to retention time shift
MI	Manual integration of correct isomer
MT	Manual integration due to peak tailing
MB	Manual integration due to irregular baseline

All GC/MS Fractions:

The computerized printout for sample analysis may tabulate values for target analytes that are not reported on the relevant Form I. In that case, we have manually searched the mass spectral data and have eliminated the compound(s) as reportable based on this search.

Semi-Volatile Fraction:

All soil/sediment extracts are cleaned using Gel Permeation Chromatography (GPC) in accordance with SW-846 Method 3640A.

SPECIFIC REMARKS ON ORGANIC ANALYSES:

Holding Time Compliance:

Following the Contract Laboratory Program (CLP) model, Laucks calculates holding time compliance for organic determinations based on the first injection and/or analysis of an extract or sample. Subsequent analyses (for instance, for the purpose of dilution) are not tabulated.

Semi-Volatile Organic Compounds:

The holding time to extraction is 7 days in water and 14 days in soil calculated from the date of collection. In either case, the holding time from extraction to analysis is 40 days. All samples were extracted and analyzed within holding time.

Pesticides:

The holding time to extraction is 7 days in water and 14 days in soil calculated from the date of collection. In either case, the holding time from extraction to analysis is 40 days. All samples were extracted and analyzed within holding time.

LAUCKS TESTING LABORATORIES
940 S. Harney
Seattle, WA 98108

Semi-Volatile Fraction:

Initial Calibration Standards:
A minimum of five standards is required for the initial calibration analyses in accordance with SW 846. Six standard concentration levels were analyzed in the initial calibration. The standards concentrations were 5, 10, 25, 40, 60 and 80 ng/µL injected respectively.

Quality Control Analyses:
MS/MSD analyses were performed on sample 646SB00501. Several analyte recoveries from the MSD analysis fell below the lower control limits. Since all analyte recoveries were in control in the MS and the associated blank spike, no corrective action was taken.

Tentatively Identified Compounds (TICs):
Ten non-target organic compounds of greatest apparent concentrations are reported as TICs. Alkanes were library searched and were reported as part of the 10 TICs.

Reporting Limits:
All analytes have been "J" flagged down to 1 µg/L for waters and 33 µg/kg for the soils.

Pesticides Fraction:

Initial Calibration Standards:
Analyses of the initial calibration standards yielded a %RSD value for alpha-BHC which exceeded 20 percent on both columns. However, since the average %RSD for all compounds was below 20 percent, the initial calibration is compliant in accordance with SW 846. Since alpha-BHC was not detected in any of the sample extracts, no further action was taken.

Continuing Calibration Verification Analyses:
Analyses of CCV files DC28920.d, DC28926.d and D0103023.d yielded %D values for the surrogates, decachlorobiphenyl and tetrachloro-m-xylene, and the target analytes, gamma-BHC and heptachlor epoxide which exceeded the control limit due to an increase in response. However, since the %Ds for all compounds were in control on one of the two columns and there were no target analytes detected in any of the sample extracts, no further action was taken.

Surrogate Recoveries:
Analysis of the extract for sample 646SB01002 yielded a recovery value for tetrachloro-m-xylene which exceeded the control limit. Corrective action was taken in the form of sample re-extraction and reanalysis. Reanalysis of the sample extract yielded all surrogate recovery values in control. Since the sample was re-extracted within holding time, only data from the re-extract were submitted.

LAUCKS TESTING LABORATORIES
940 S. Harney
Seattle, WA 98108

GENERAL REMARKS ON INORGANIC ANALYSES:

The following comments describe general analysis conditions. For remarks spe[illegible] the samples reported in this case, see "SPECIFIC REMARKS ON INORGANI[illegible] ANALYSES."

ICP Metals:

On the first timed and dated page of each ICP run, the data to be reported or rejected will be tabulated for that run.

Mercury:

Laucks purchases a 1000 mg/L Hg stock solution from Inorganic Ventures. The 1.0 mg/L working standard is made by diluting 100 µL to 100 mL with 2% HNO_3. The calibration curve is made by placing 0, 20, 50, 100, 200, 500 and 1000 µL of the working standard in BOD bottles and diluting up to 100 mL. The standard curve is equivalent to 0, 0.2, 0.5, 1.0, 2.0, 5.0 and 10.0 µg/L.

SPECIFIC REMARKS ON INORGANIC ANALYSES:

Holding Time Compliance:

Laucks calculates holding time compliance for inorganic determinations using the date on which reportable data were acquired.

Metals:

The holding time for metals is six months from the date of collection, excepting mercury, which is 28 days. All analyses were performed within holding time.

Miscellaneous:

The following analytes do not have a Contract Laboratory Program holding time. The holding times tabulated below derive from the relevant EPA methods and are applicable when the sample was appropriately preserved and/or cooled. All samples submitted followed the preservation guidelines unless explicitly noted otherwise.

Analyte	Holding Time	Violations
TOC	28 days	None

ICP Metals (Soils):

The matrix spike sample percent recoveries of antimony and lead were outside of the established control limits of 75-125% for sample 646SB00701. The LCS percent recoveries for antimony and lead were within control limits. No further corrective was required. All relevant data have been flagged with an "N" on Forms I and V.

The duplicate sample relative percent differences of aluminum, calcium and manganese were outside the control limits of ±20% for sample 646SB00701. No further corrective action was required. All relevant data have been flagged with an "*" on Forms I and VI.

The serial dilution for magnesium did not agree within 10% of the original determination after correction for dilution for sample 646SB00701. No further corrective action was required. All relevant data have been flagged with an "E" on the applicable Forms I and IX.

Mercury (Soils):

No comments.

Metals (SPLP):

Zinc was present in the SPLP blank. No further corrective action was required per client data quality objectives.

The serial dilution for barium did not agree within 10% of the original determination after correction for dilution for sample 646SB00902. No further corrective action was required. All relevant data have been flagged with an "E" on the applicable Forms I and IX.

Total Organic Carbon:

No comments.

ENSAFE

800-588-7863
MEMPHIS, TENNESSEE
CHARLESTON, SC; CINCINNATI, OH; DALLAS, TX; JACKSON, TN; KNOXVILLE, TN; LANCASTER, PA; NASHVILLE, TN; NORFOLK, VA; PADUCAH, KY; PENSACOLA, FL; RALEIGH, NC; COLOGNE, GERMANY

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT/JOB NO: 290700
COC NO:
PO NO: 1540
REL NO: 38
LAB NAME: Laucks

CLIENT: Navy Clean CNC
PROJECT MANAGER: T. Havermann
LOCATION: Zone G / AOC 646
TELE/FAX NO.: (543) 884-0029
SAMPLERS: (SIGNATURE) William Herrick

ANALYSIS REQUIRED

	FIELD SAMPLE NUMBER	DATE	TIME	SAMPLE TYPE	TYPE/SIZE OF CONTAINER	PRESERVATION TEMP.	PRESERVATION CHEMICAL	NO. OF CONTAINERS	SVOCs	Metals	SPLP Metals	TOC	Pesticides						REMARKS
1	NBCG/646 SB00501	12/16/99	0955	S	Glass/8 oz	Ice	None	1	✓										
2	NBCG/646 SB00502	"	1000	"	"	"	"	1	✓										
3	NBCG/646 SB00601	"	1010	"	"	"	"	1	✓										
4	NBCG/646 SB00602	"	1015	"	"	"	"	1	✓										
5	NBCG/646 SB00701	"	1030	"	"	"	"	4	✓	✓	✓	✓	✓						offset to 002
6	NBCG/646 SB00702	"	1035	"	"	"	"	4		✓	✓	✓	✓						"
7	NBCG/646 SB00801	"	1050	"	"	"	"	4		✓	✓	✓	✓						offset to 001
8	NBCG/646 SB00802	"	1055	"	"	"	"	4		✓	✓	✓	✓						"
9	NBCG/646 SB00901	"	1115	"	"	"	"	4		✓	✓	✓	✓						offset to 004
10	NBCG/646 SB00902	"	1120	"	"	"	"	4		✓	✓	✓	✓						"
11	NBCG/646 SB01001	"	1135	"	"	"	"	4		✓	✓	✓	✓						offset to 003
12	NBCG/646 SB01002	"	1145	"	"	"	"	4		✓	✓	✓	✓						

RELINQUISHER:	DATE	RECEIVER:	DATE	RELINQUISHER:	DATE	RECEIVER:	DATE
PRINTED: Fred Erdmann	12/16/99	PRINTED: ~~Charles Christenson~~	12/17/99	PRINTED:	TIME	PRINTED	TIME
COMPANY: EnSafe	TIME 1550	COMPANY: LAUCKS	TIME 0830	COMPANY:		COMPANY:	

METHOD OF SHIPMENT: Fed Exp
SHIPMENT NO. 814795922603
SEND RESULTS TO: Charles Verny

COMMENTS:

ENSAFE

800-588-7962
MEMPHIS, TENNESSEE
CHARLESTON, SC; CINCINNATI, OH; DALLAS, TX; JACKSON, TN; KNOXVILLE, TN; LANCASTER, PA; NASHVILLE, TN; NORFOLK, VA; PADUCAH, KY; PENSACOLA, FL; RALEIGH, NC; COLOGNE, GERMANY

1112406 8M/SY

CHAIN OF CUSTODY RECORD

PROJECT/JOB NO: 2907001084200
COC NO: 1
PO NO: 1840
REL NO: 38
LAB NAME: Laucks

CLIENT: Navy Clean CNC
PROJECT MANAGER: T. Harrakosi
LOCATION: Zone G / AOC 634
TELE/FAX NO.: (843) 884-0029
SAMPLERS: (SIGNATURE) William Herrick

ANALYSIS REQUIRED

FIELD SAMPLE NUMBER	DATE	TIME	SAMPLE TYPE	TYPE/SIZE OF CONTAINER	PRESERVATION TEMP.	PRESERVATION CHEMICAL	NO. OF CONTAINERS	Metals	SPLP Metals	TOC							REMARKS
NBCG/634SB00401	12/16/99	1355	S	Glass 8oz	Ice	None	3	✓	✓	✓							near 003
NBCG/634SB00402	"	1400	"	"	"	"	3	✓	✓	✓							"
NBCG/634SB00501	"	1415	"	"	"	"	3	✓	✓	✓							near 001
NBCG/634SB00502	"	1420	"	"	"	"	3	✓	✓	✓							"
NBCG/634SB00601	"	1435	"	"	"	"	3	✓	✓	✓							near 002

RELINQUISHER	DATE	RECEIVER	DATE	RELINQUISHER	DATE	RECEIVER	DATE
Fred Erdmann	12/16/99	Charles Christensen	12/17/99				
PRINTED: Fred Erdmann	TIME 1550	PRINTED: Charles Christensen	TIME 0830	PRINTED:	TIME	PRINTED:	TIME
COMPANY: EnSafe		COMPANY: LAUCKS		COMPANY:		COMPANY	

METHOD OF SHIPMENT: Fed Exp
SHIPMENT NO. 814 795 922603
SEND RESULTS TO: Charles Verney

COMMENTS:

ANALYTICAL DATA RECEIVED BY (INITIALS)

ENSAFE

800-583-7962
MEMPHIS, TENNESSEE
CHARLESTON, SC; CINCINNATI, OH; DALLAS, TX; JACKSON, TN; KNOXVILLE, TN; LANCASTER, PA; NASHVILLE, TN; NORFOLK, VA; PADUCAH, KY; PENSACOLA, FL; RALEIGH, NC; COLOGNE, GERMANY

9912406 EN034

CHAIN OF CUSTODY RECORD

PAGE ___ OF ___

PROJECT/JOB NO: 290700 F10000
COC NO: 12
PO NO: 1840 1
REL NO: 38
LAB NAME: Laucks

CLIENT: Navy Clean CNC
PROJECT MANAGER: T. Haverhirst
LOCATION: Zone G/ AOC 638
TELE/FAX NO.: (843) 854-0029
SAMPLERS: (SIGNATURE) William Herrick

ANALYSIS REQUIRED

FIELD SAMPLE NUMBER	DATE	TIME	SAMPLE TYPE	TYPE/SIZE OF CONTAINER	PRESERVATION TEMP.	PRESERVATION CHEMICAL	NO. OF CONTAINERS	Metals	SPLP Metals	TOC								REMARKS
NBCG/638SB00801	12/16/99	0900	S	Glass 8oz	Ice	None	3	✓	✓	✓								offset to 004
NBCG/638SB00802	"	0905	S	"	"	"	3	✓	✓	✓								
NBCG/638SB00901	12/16/99	0925	S	"	"	"	3	✓	✓	✓								offset to 003
NBCG/638SB00902	"	0930	S	"	"	"	3	✓	✓	✓								

RELINQUISHER	DATE	RECEIVER	DATE	RELINQUISHER	DATE	RECEIVER	DATE
Fred Erdmann	12/16/99	Chl Chst	12/17/99				
PRINTED: Fred Erdmann	TIME 1550	PRINTED: Charles Christensen	TIME 0830	PRINTED:	TIME	PRINTED:	TIME
COMPANY: EnSafe		COMPANY: LAUCKS		COMPANY:		COMPANY:	

METHOD OF SHIPMENT: Fed Exp
SHIPMENT NO. 814775922603
SEND RESULTS TO: Charlie Verney

COMMENTS:

ORIGINAL DATA RECEIVED BY (INITIALS/DATE)

MULTI-MEDIA PESTICIDE/AROCLOR FRACTION

SAMPLE RESULT VERIFICATION

1. Were the sample results reported within the calibration range (YES/NO)? YES

2. Was the percent moisture reported for all soil samples (YES/NO/NA)? YES

3. Was the data reported on a dry weight basis (YES/NO/NA)? YES

4. Did the GC chromatograms exhibit interferences, off scale peaks or elevated baseline (YES/NO)? Chromatograms not included

5. Did the data contain elevated detection limits that could not be verified (YES/NO)?NO

6. Were any computational or transcription errors found (YES/NO)? NO

Specific Comments:

The analytical sequence or run log was not provided in the data package. The samples and standards were associated by file ID and analysis date and time.

Reviewer Erica K. Ketchum **Date:** 1/25/00

DATA DELIVERABLES(DCO III or C)
INORGANICS

Site Name: Chalkton Client: Ensafe

Location: EN034. Lab: Laucks

Analytical Fraction: Metals + TOC

Reviewer: P. Humby Date(s): 1/21/00

A.	Control Chart - results of the method blank spikes run with each batch of samples processed	: Yes	(No)	NR
B.	CLP Form 1s with associated sample results and CLP flagging system. All percent moistures for soils and discussion of sample type	: (Yes)	No	NR
C.	CLP Form 2s with initial and continuing calibration standards (part 1 only)	: (Yes)	No	NR
D.	CLP Form 3s with prep and method blanks	: (Yes)	No	NR
E.	CLP Form 4s with interference check sample data	: (Yes)	No	NR
F.	CLP Form 5s with Matrix spike recovery and the postdigestion spike recovery for ICP Metals. Only done if predigest spike recovery exceeds limits	: (Yes)	No	NR
G.	CLP Form 6s with Duplicate data results	: (Yes)	No	NR
H.	CLP Form 8s with GFAA standard addition data	: Yes	No	(NR)
I.	CLP Form 10s with holding time data	: (Yes)	No	NR

HEARTLAND ESI Form A

DATA DELIVERABLE REQUIREMENTS

A.	Permanently Bound	Yes	No	NR
B.	Paginated	Yes	No	NR
C.	Table of Contents	Yes	No	NR
D.	Digestion Records(internal C-O-C)	Yes	No	NR
E.	Chain-Of-Custody (external)	Yes	No	NR
F.	Case Narrative			
	1. Sample list with Client and Lab IDs cross-referenced (copy attached)	Yes	No	NR
	2. All Protocol deviations and QC problems noted	Yes	No	NR
	3. Comments:			
G.	Uninitialed Strikeovers	Yes	No	NR
H.	Legible Photocopies	Yes	No	NR
I.	Consistent Dates	Yes	No	NR
J.	Preparation Logs	Yes	No	NR
K.	Instrument Run Logs	Yes	No	NR
L.	Other Deviations or Comments:			

HEARTLAND ESI Form 8

HOLDING TIMES FOR METALS

1. Was the holding time exceeded on any of the Metal Fractions

   ICP/GFAA/FAA - Holding time of 6 months VTSR
   Mercury - Holding time of 28 days VTSR
   Cyanide - Holding time of 14 days VTSR

   PBG 1/26/00

   Yes No

2. If yes, complete the following form for all samples that exceeding holding times.

   Fraction:_____

Sample ID	Matrix	VTSR	Date of Analysis	DA	QC Decision

Note: DA = The number of days holding time to analysis is exceeded.

S = Non-aqueous
A = Aqueous
X = Air

QA Decision: Results > IDL - J - estimated

HEARTLAND ESI Form C-1

INSTRUMENT CALIBRATION AND INITIAL CALIBRATION VERIFICATION (ICV)

Associated Samples All Samples

1. a. Was the ICP instrument properly standardized? (Yes) No
If no, explain and list action.

b. Was the furnace instrument properly standardized? If no, were the required standards analyzed immediately after the instrument calibration and results within 85-105% recovery? Yes No Yes No
If no, explain and list action. NR

c. Were the instruments for the analyses of Cyanide and Mercury properly standardized? (Yes) No
If no, explain and list action.

2. Was the ICV analyzed immediately after the system(s) were calibrated? (Yes) No
If no, explain and list action.

3. Was the ICV analyzed for every analyte? (Yes) No
If no, explain and list action.

4. Do all ICV analytes meet the QC requirements for % recovery? (Yes) No
If no, list affected analytes, their % recovery, and action for which:

a. % recovery is between 75-89% (CN, 70-84%; or HG, 85-79%)

b. % recovery is between 111-125% (CN. 116-130% or HG. 121-135%)_____

c. % recovery is less than 75% or greater than 125%(CN. <70 or >130%, Hg <65 or >135)_____

5. a. Show calculation for the % recovery of one ICV analyte by ICP. Lab value 96.7%

Auling $\frac{967}{1000} \times 100 = 96.7\%$

b. Show calculation for the % recovery of one ICV analyte by furnace AA. Lab value NR

c. Show calculation for the ICV % recovery of Mercury. Lab Value 98.8%

$\frac{3.95}{4.00} \times 100 = 98.8\%$

d. Show calculation for the ICV % recovery of Cyanide. Lab value NR

6. Specific comments:_____

HEARTLAND ESI Form 0-1

CONTINUING CALIBRATION VERIFICATION (CCV)

Associated Samples All samples

1. a. Was the CCV performed every two hours or at the 10% frequency? Yes No
If no, list action.

b. Was the CCV performed at the beginning and end of the sample analysis? Yes No
If no, list action.

2. Were the CCV standards analyzed for all analytes? Yes No
If no, list affected analytes, their associated samples and action.

3. Was the same concentration used for CCV throughout the analyses? Yes No
If no, list affected analytes, their associated samples and action.

4. Do all CCV analytes meet the QC requirements for % recovery? Yes No
If no, list affected analytes, their associated samples and action for which:

a. % recovery is between 75-89%(CN,70-84% or Hg, 65-79%)

b. % recovery is between 111-125%(CN,116-130% or Hg, 121-135%)

HEARTLAND ESI Form D-2

5. a. Show calculation for the % recovery of one CCV analyte analyzed by ICP. Lab value 103.59

Aluminum $\frac{52259}{50000} \times 100 = 103.59$

b. Show calculation for the % recovery of one CCV analyte analyzed by furnace AA. Lab value NR

c. Show calculation for the % recovery of one CCV analyte analyzed for Mercury. Lab value 101.49

$\frac{5.07}{5.00} \times 100 = 101.49$

d. Show calculation for the % recovery of one CCV analyte for Cyanide. Lab value NR

6. Specific comments: _____

HEARTLAND ESI Form F

INITIAL & CONTINUING CALIBRATION BLANK

Associated Samples All Samples

1. Were the initial calibration blanks analyzed for all analytes and run after the initial calibration verification? Yes No
If no, list affected analytes, and action.

2. Was the absolute value for all analytes in the initial calibration blank below the CRDL? Yes No
If no, list affected analytes and reject them.

3. Were the continuing calibration blanks analyzed for all analytes and run after the continuing calibration verification? Yes No
If no, list affected analytes, associated samples and action.

4. Was the frequency for the continuing calibration blanks correct? Yes No
If no, list affected analytes, associated samples and action.

5. Was the absolute value of all analytes for the continuing calibration blank below the CRDL? Yes No
If no, list affected analytes, associated samples and reject them.

HEARTLAND ESI Form G

PREPARATION BLANK SUMMARY

Sample Matrix: Soil Water Air Preparation Blank ID PBS
Units: mg/kg ug/l ug/m3

1. Did the frequency of the preparation blank analysis meet method requirements? Yes No
If no, explain and note action: _____

Analyte	Conc	<CRDL	Comments/Action
Barium	0.06	yes	qualify all data
Beryllium	0.10		as necessary
Calcium	0.05		
Chromium	0.18		
Iron	2.36		
Lead	0.35		
Manganese	0.04		
Zinc	0.25		
Tin	2.31		
Cobalt	-0.08		
Thallium	-0.77		

Associated Samples All soil samples

CRDL Codes: Yes < CRDL

U.S. EPA - CLP

5A

SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

A00701S

Lab Name: LAUCKS TESTING LABS, INC. Contract: _____

Lab Code: LAUCKS Case No.: ___ SAS No.: ___

Matrix: SOIL Level: LOW

% Solids for Sample: 89.5

Concentration Units (ug/L or mg/kg dry weight: MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	21.4596		0.4365	B	44.34	47.4	N	P
Arsenic	75-125	168.4047		4.3558		177.35	92.5		P
Barium	75-125	205.3117		29.9232		177.35	98.9		P
Beryllium	75-125	5.0013		0.5674		4.43	100.1		P
Cadmium	75-125	3.5559		0.0262	U	4.43	80.3		P
Calcium									NR
Chromium	75-125	31.9589		12.3167		17.74	110.7		P
Cobalt	75-125	43.7350		1.7458	B	44.34	94.7		P
Copper	75-125	27.4984		3.8146		22.17	106.8		P
Iron									NR
Lead	75-125	93.8193		14.8568		44.34	178.1	N	P
Magnesium									NR
Manganese	75-125	99.2374		59.7067		44.34	89.2		P
Mercury	75-125	1.1767		0.1152		1.05	101.1		AV
Nickel	75-125	45.2514		3.0726	B	44.34	95.1		P
Potassium									NR
Selenium	75-125	148.0358		1.0999		177.35	82.9		P
Silver	75-125	4.3185		0.0436	U	4.43	97.5		P
Sodium									NR
Thallium	75-125	154.4737		0.2095	U	177.35	87.1		P
Vanadium	75-125	61.4259		15.1624		44.34	104.3		P
Zinc	75-125	57.9941		13.0761		44.34	101.3		P
Tin	75-125	87.4302		2.5435	B	90.11	94.2		P

Comments:

U.S. EPA - CLP

5A

SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

0009020

Lab Name: LAUCKS TESTING LABS, INC. Contract: ____

Lab Code: LAUCKS Case No.: ___ SAS No.: ___ SDG No.: EN034P

Matrix: SPLP Level: LOW

% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight: UG/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	1835.7000		60.8000	B	2000.00	88.7		P
Antimony	75-125	439.8000		2.5000	B	500.00	87.5		P
Arsenic	75-125	3381.4000		2.0000	U	4000.00	84.5		P
Barium	75-125	2027.7000		220.0000		2000.00	90.4		P
Beryllium	75-125	53.6000		0.9000	U	50.00	107.2		P
Cadmium	75-125	48.2000		0.9000	B	50.00	94.6		P
Calcium									NR
Chromium	75-125	204.3000		0.6000	U	200.00	102.2		P
Cobalt	75-125	473.2000		0.5000	U	500.00	94.6		P
Copper	75-125	238.8000		0.6000	U	250.00	95.5		P
Iron	75-125	1110.8000		58.5000	B	1000.00	105.2		P
Lead	75-125	444.3000		2.1000	U	500.00	88.9		P
Magnesium									NR
Manganese	75-125	509.7000		0.9000	B	500.00	101.8		P
Mercury	75-125	181.5350		0.2000	U	200.00	90.8		AV
Nickel	75-125	485.3000		1.1000	U	500.00	97.1		P
Potassium									NR
Selenium	75-125	2309.1000		1.7000	U	3000.00	77.0		P
Silver	75-125	970.6000		0.5000	U	1000.00	97.1		P
Sodium									NR
Thallium	75-125	1608.5000		2.4000	U	2000.00	80.4		P
Vanadium	75-125	498.4000		0.5000	B	500.00	99.6		
Zinc	75-125	506.9000		26.2000		500.00	96.1		P
Tin	75-125	888.5000		2.7000	U	1000.00	88.8		P

Comments:

U.S. EPA - CLP

6

DUPLICATES

EPA SAMPLE NO.

A0070:D

Lab Name: LAUCKS TESTING LABS, INC. Contract: _____

Lab Code: LAUCKS Case No.: ___ SAS No.: ___ SDG No.: [illegible]

Matrix: SOIL Level: LOW

% Solids for Sample: 89.5 % Solids for Duplicate: 89.5

Concentration Units (ug/L or mg/kg dry weight: MG/KG

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		7743.3834		9531.0381		20.7		P
Antimony		0.4365	B	0.2512	B	53.9		P
Arsenic	0.9	4.3558		4.0968		6.1		P
Barium	17.5	29.9232		42.0510		33.7		P
Beryllium	0.4	0.5674		0.7189		23.6		P
Cadmium		0.0262	U	0.0260	U			P
Calcium		5948.2629		4618.9338		25.2		P
Chromium		12.3167		14.3779		15.4		P
Cobalt		1.7458	B	1.9488	B	11.0		P
Copper	2.2	3.8146		3.6811		3.6		P
Iron		7142.4668		7431.7613		4.0		P
Lead		14.8568		13.7629		7.6		P
Magnesium	436.5	412.9015	B	474.9296		14.0		P
Manganese		59.7067		42.3282		34.1		P
Mercury		0.1152		0.1013		12.8		AV
Nickel	3.5	3.0726	B	5.2055		51.5		P
Potassium		261.8279	B	329.6522	B	22.9		P
Selenium	0.9	1.0999		1.0047		9.0		P
Silver		0.0436	U	0.0433	U			P
Sodium		94.8062	B	87.6878	B	7.8		P
Thallium		0.2095	U	0.2079	U			P
Vanadium	4.4	15.1624		16.8897		10.8		P
Zinc		13.0761		15.8070		18.9		P
Tin		2.5435	B	2.1371	B	17.4		P

U.S. EPA - CLP

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DUPLICATES

EPA SAMPLE NO.

3000[illegible]2D

Lab Name: LAUCKS TESTING LABS, INC. Contract: _____

Lab Code: LAUCKS Case No.: ___ SAS No.: ___ SDG No.: EN034P

Matrix: SPLP Level: LOW

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight: UG/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		60.8000	B	58.7000	U	200.0		P
Antimony		2.5000	B	2.4000	U	200.0		P
Arsenic		2.0000	U	2.0000	U			P
Barium	200.0	220.0000		226.0000		2.7		P
Beryllium		0.9000	U	0.9000	U			P
Cadmium		0.9000	B	1.1000	B	20.0		P
Calcium		2098.9000	B	2136.2000	B	1.8		P
Chromium		0.6000	U	0.6000	U			P
Cobalt		0.5000	U	0.5000	U			P
Copper		0.6000	U	0.6000	U			P
Iron		58.5000	B	65.8000	B	11.7		P
Lead		2.1000	U	2.1000	U			P
Magnesium		219.5000	B	223.7000	B	1.9		P
Manganese		0.9000	B	0.9000	B	0.0		P
Mercury		0.2000	U	0.2000	U			AV
Nickel		1.1000	U	1.1000	U			P
Potassium		75.6000	B	83.8000	B	10.3		P
Selenium		1.7000	U	1.7000	U			P
Silver		0.5000	U	0.5000	U			P
Sodium		2226.0000	B	2317.2000	B	4.0		P
Thallium		2.4000	U	2.4000	U			P
Vanadium		0.5000	B	0.5000	U	200.0		
Zinc	20.0	26.2000		26.7000		1.9		P
Tin		2.7000	U	2.7000	U			P

U.S. EPA - CLP

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LABORATORY CONTROL SAMPLE

Lab Name: LAUCKS TESTING LABS, INC. Contract: _____

Lab Code: LAUCKS Case No.: ___ SAS No.: ___ SDG No.: [illegible]

Solid LCS Source: IV

Aqueous LCS Source: IV

Analyte	Aqueous (ug/L)			Solid (mg/kg)					
	True	Found	%R	True	Found	C	Limits		%R
Aluminum				200.0	183.8		160.0	240.0	91.9
Antimony				50.0	41.3		40.0	60.0	82.6
Arsenic				200.0	168.8		160.0	240.0	84.4
Barium				200.0	179.7		160.0	240.0	89.8
Beryllium				5.0	4.7		4.0	6.0	94.0
Cadmium				5.0	4.4		4.0	6.0	88.0
Calcium				5000.0	4794.0		4000.0	6000.0	95.9
Chromium				20.0	19.0		16.0	24.0	95.0
Cobalt				50.0	44.8		40.0	60.0	89.6
Copper				25.0	22.6		20.0	30.0	90.4
Iron				100.0	100.4		80.0	120.0	100.4
Lead				50.0	43.0		40.0	60.0	86.0
Magnesium				5000.0	4396.7		4000.0	6000.0	87.9
Manganese	–			50.0	46.9		40.0	60.0	93.8
Mercury				2.5	2.5		2.0	3.0	100.0
Nickel				50.0	44.9		40.0	60.0	89.8
Potassium				5000.0	4383.0		4000.0	6000.0	87.7
Selenium				200.0	173.4		160.0	240.0	86.7
Silver				5.0	4.6		4.0	6.0	92.0
Sodium				5000.0	3988.9		4000.0	6000.0	79.8
Thallium				200.0	163.5		160.0	240.0	81.8
Vanadium				50.0	47.1		40.0	60.0	94.2
Zinc				50.0	46.3		40.0	60.0	92.6
Tin				100.0	96.1		80.0	120.0	96.1

U.S. EPA - CLP

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LABORATORY CONTROL SAMPLE

Lab Name: LAUCKS TESTING LABS, INC. Contract: _____

Lab Code: LAUCKS Case No.: ___ SAS No.: ___ SDG No.: EN034P

Solid LCS Source: IV _____

Aqueous LCS Source: IV _____

Analyte	Aqueous (ug/L)			Solid (mg/kg)					
	True	Found	%R	True	Found	C	Limits		%R
Aluminum	2000.0	2242.20	112.1						
Antimony	500.0	534.00	106.8						
Arsenic	2000.0	2095.60	104.8						
Barium	2000.0	2077.40	103.9						
Beryllium	50.0	59.40	118.8						
Cadmium	50.0	55.20	110.4						
Calcium	50000.0	49654.80	99.3						
Chromium	200.0	226.50	113.2						
Cobalt	500.0	543.30	108.7						
Copper	250.0	272.90	109.2						
Iron	1000.0	1124.00	112.4						
Lead	500.0	538.30	107.7						
Magnesium	50000.0	47701.30	95.4						
Manganese	500.0	562.60	112.5						
Mercury	4.0	3.93	98.2						
Nickel	500.0	555.00	111.0						
Potassium	50000.0	44919.10	89.8						
Selenium	2000.0	1971.90	98.6						
Silver	50.0	53.50	107.0						
Sodium	50000.0	43198.20	86.4						
Thallium	2000.0	2043.40	102.2						
Vanadium	500.0	554.90	111.0						
Zinc	500.0	560.80	112.2						
Tin	2000.0	1991.20	99.6						

U.S. EPA - CLP
9
ICP SERIAL DILUTIONS

EP NO.

Lab Name: LAUCKS TESTING LABS, INC. Contract: _____

Lab Code: LAUCKS Case No.: ___ SAS No.: ___

Matrix (soil/water): SOIL Level (low/med): LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	88708.20		95264.00		7.4		P
Antimony	5.00	B	12.00	U	100.0		P
Arsenic	49.90		57.50		15.2		P
Barium	342.80		361.00	B	5.3		P
Beryllium	6.50		7.00	B	7.7		P
Cadmium	0.30	U	1.50	U			P
Calcium	68143.30		72526.50		6.4		P
Chromium	141.10		145.50		3.1		P
Cobalt	20.00	B	21.50	B	7.5		P
Copper	43.70		46.50	B	6.4		P
Iron	81824.10		87746.00		7.2		P
Lead	170.20		183.50		7.8		P
Magnesium	4730.20	B	5383.50	B	13.8	E	P
Manganese	684.00		723.50		5.8		P
Mercury							
Nickel	35.20	B	36.00	B	2.3		P
Potassium	2999.50	B	2842.00	B	5.3		P
Selenium	12.60		15.50	B	23.0		P
Silver	0.50	U	2.50	U			P
Sodium	1086.10	B	1935.00	U	100.0		P
Thallium	2.40	U	12.00	U			P
Vanadium	173.70		181.00	B	4.2		P
Zinc	149.80		159.00		6.1		P
Tin	28.00	B	26.00	B	7.1		P

FORM IX - IN

U.S. EPA - CLP

9

ICP SERIAL DILUTIONS

Lab Name: LAUCKS TESTING LABS, INC. Contract: _____

Lab Code: LAUCKS Case No.: ___ SAS No.: ___ SDG No.: EN034P

Matrix (soil/water) : SPLP Level (low/med): LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Differ-ence	Q	M
Aluminum	60.80	B	293.50	U	100.0		P
Antimony	2.50	B	12.00	U	100.0		P
Arsenic	2.00	U	10.00	U			P
Barium	220.00		251.00	B	14.1	E	P
Beryllium	0.90	U	4.50	U			P
Cadmium	0.90	B	1.50	U	100.0		P
Calcium	2098.90	B	2192.50	B	4.5		P
Chromium	0.60	U	3.00	U			P
Cobalt	0.50	U	2.50	U			P
Copper	0.60	U	3.00	U			P
Iron	58.50	B	106.00	U	100.0		P
Lead	2.10	U	10.50	U			P
Magnesium	219.50	B	212.00	B	3.4		P
Manganese	0.90	B	2.00	B	122.2		P
Mercury							
Nickel	1.10	U	5.50	U			P
Potassium	75.60	B	217.50	B	187.7		P
Selenium	1.70	U	8.50	U			P
Silver	0.50	U	3.00	B			P
Sodium	2226.00	B	3862.50	B	73.5		P
Thallium	2.40	U	12.00	U			P
Vanadium	0.50	B	2.50	U			P
Zinc	26.20		34.50	B	31.7		P
Tin	2.70	U	13.50	U			P

LAUCKS TESTING LABORATORIES
940 S. Harney
Seattle, WA 98108

To: Ensafe
Laboratory No. : 9912406
SDG No. : EN034
Date of Report: January 14, 2000

SAMPLE RECEIPT, IDENTIFICATION, AND GENERAL COMMENTS:

Sample Receipt and Identification:

The samples submitted under the laboratory number(s) indicated above were identified and analyzed as tabulated below. The samples were collected and received on the dates noted on the enclosed chain-of-custody copies, Attachment A.

Client Sample Identification	Laucks Sample Identification	Testing Analytical Request
646SB00501	9912406-01	ABN
646SB00502	9912406-02	ABN
646SB00601	9912406-03	ABN
646SB00602	9912406-04	ABN
646SB00701	9912406-05	PEST/MET/TOC
646SB00702	9912406-06	PEST/MET/TOC
646SB00801	9912406-07	PEST/MET/TOC
646SB00802	9912406-08	PEST/MET/TOC
646SB00901	9912406-09	PEST/MET/TOC
646SB00902	9912406-10	PEST/MET/TOC
646SB01001	9912406-11	PEST/MET/TOC
646SB01002	9912406-12	PEST/MET/TOC
638SB00902 SPLP	9912406-13	SPLP
634SB00401	9912406-14	MET/TOC
634SB00402	9912406-15	MET/TOC
624SB00501	9912406-16	MET/TOC
634SB00502	9912406-17	MET/TOC
634SB00601	9912406-18	MET/TOC
638SB00801	9912406-19	MET/TOC
638SB00802	9912406-20	MET/TOC
638SB00901	9912406-21	MET/TOC
638SB00902	9912406-22	MET/TOC
646SB00701 SPLP	9912406-23	SPLP
646SB00702 SPLP	9912406-24	SPLP
646SB00801 SPLP	9912406-25	SPLP
646SB00802 SPLP	9912406-26	SPLP
646SB00901 SPLP	9912406-27	SPLP
646SB00902 SPLP	9912406-28	SPLP
646SB01001 SPLP	9912406-29	SPLP

646SB01002 SPLP	9912406-30	SPLP
634SB00401 SPLP	9912406-31	SPLP
634SB00402 SPLP	9912406-32	SPLP
634SB00501 SPLP	9912406-33	SPLP
634SB00502 SPLP	9912406-34	SPLP
634SB00601 SPLP	9912406-35	SPLP
638SB00801 SPLP	9912406-36	SPLP
638SB00802 SPLP	9912406-37	SPLP
638SB00901 SPLP	9912406-38	SPLP

Analytical Request Key:

ABN =	Semi-Volatile Organics (8270C)
PEST =	Pesticides (8081A)
MET =	TAL Metals + Tin (6010B/7000)
SPLP =	SPLP Metals (1312), TAL Metals + Tin (6010B/7000)
TOC =	Total Organic Carbon (9060)

Sample Receipt Comments:

Several samples received were measured at temperatures which exceeded the temperature control limits of 4°C ± 2°C. Approval to run the samples with high temperatures was given by Charlie Vernoy on 12/16/1999. One jar was received with no sample ID on the label. The correct ID of 646SB00702 was matched using the sample time and test indicated on the container. See the sample receipt logs for documentation.

Sample Identification on Forms:

When completing forms created through the CLP software, every attempt is made to use both your sample IDs as well as the laboratory sample IDs. The forms have varied default sizes to their sample identification fields, and are not amenable to alteration or editing. When it is not possible to use your complete sample ID because of field length limitations, Laucks will usually do one of two things: 1) use as much of your ID as will fit, beginning from the RIGHT hand side of the sample ID number; or 2) select some sub-set of your sample identifier if it is clearly a discrete number. In addition, all forms will contain our sample IDs, which can be cross-referenced from the table above.

GENERAL REMARKS ON ORGANIC ANALYSES:

The following comments describe general analysis conditions. For remarks specific to the samples reported in this case, see "SPECIFIC REMARKS ON ORGANIC ANALYSIS."

Manual Integration:
One or analytes may have been manually integrated on the data system quantitation reports. The manual integrations have been flagged, initialed and dated by the analyst. A list of the manual integration flags is detailed below.

M	Manual integration due to irregular peak shape
MS	Manual integration due to split peak
MR	Manual integration due to retention time shift
MI	Manual integration of correct isomer
MT	Manual integration due to peak tailing
MB	Manual integration due to irregular baseline

All GC/MS Fractions:

The computerized printout for sample analysis may tabulate values for target analytes that are not reported on the relevant Form I. In that case, we have manually searched the mass spectral data and have eliminated the compound(s) as reportable based on this search.

Semi-Volatile Fraction:

All soil/sediment extracts are cleaned using Gel Permeation Chromatography (GPC) in accordance with SW-846 Method 3640A.

SPECIFIC REMARKS ON ORGANIC ANALYSES:

Holding Time Compliance:

Following the Contract Laboratory Program (CLP) model, Laucks calculates holding time compliance for organic determinations based on the first injection and/or analysis of an extract or sample. Subsequent analyses (for instance, for the purpose of dilution) are not tabulated.

Semi-Volatile Organic Compounds:

The holding time to extraction is 7 days in water and 14 days in soil calculated from the date of collection. In either case, the holding time from extraction to analysis is 40 days. All samples were extracted and analyzed within holding time.

Pesticides:

The holding time to extraction is 7 days in water and 14 days in soil calculated from the date of collection. In either case, the holding time from extraction to analysis is 40 days. All samples were extracted and analyzed within holding time.

Semi-Volatile Fraction:

Initial Calibration Standards:
A minimum of five standards is required for the initial calibration analyses in accordance with SW 846. Six standard concentration levels were analyzed for the initial calibration. The standards concentrations were 5, 10, 25, 40, 60 and 80 ng/µL injected respectively.

Quality Control Analyses:
MS/MSD analyses were performed on sample 646SB00501. Several analyte recoveries from the MSD analysis fell below the lower control limits. Since all analyte recoveries were in control in the MS and the associated blank spike, no corrective action was taken.

Tentatively Identified Compounds (TICs):
Ten non-target organic compounds of greatest apparent concentrations are reported as TICs. Alkanes were library searched and were reported as part of the 10 TICs.

Reporting Limits:
All analytes have been "J" flagged down to 1 µg/L for waters and 33 µg/kg for the soils.

Pesticides Fraction:

Initial Calibration Standards:
Analyses of the initial calibration standards yielded a %RSD value for alpha-BHC which exceeded 20 percent on both columns. However, since the average %RSD for all compounds was below 20 percent, the initial calibration is compliant in accordance with SW 846. Since alpha-BHC was not detected in any of the sample extracts, no further action was taken.

Continuing Calibration Verification Analyses:
Analyses of CCV files DC28920.d, DC28926.d and D0103023.d yielded %D values for the surrogates, decachlorobiphenyl and tetrachloro-m-xylene, and the target analytes, gamma-BHC and heptachlor epoxide which exceeded the control limit due to an increase in response. However, since the %Ds for all compounds were in control on one of the two columns and there were no target analytes detected in any of the sample extracts, no further action was taken.

Surrogate Recoveries:
Analysis of the extract for sample 646SB01002 yielded a recovery value for tetrachloro-m-xylene which exceeded the control limit. Corrective action was taken in the form of sample re-extraction and reanalysis. Reanalysis of the sample extract yielded all surrogate recovery values in control. Since the sample was re-extracted within holding time, only data from the re-extract were submitted.

LAUCKS TESTING LABORATORIES
940 S. Harney
Seattle, WA 98108

GENERAL REMARKS ON INORGANIC ANALYSES:

The following comments describe general analysis conditions. For remarks specific to the samples reported in this case, see "SPECIFIC REMARKS ON INORGANIC ANALYSES."

ICP Metals:

On the first timed and dated page of each ICP run, the data to be reported or rejected will be tabulated for that run.

Mercury:

Laucks purchases a 1000 mg/L Hg stock solution from Inorganic Ventures. The 1.0 mg/L working standard is made by diluting 100 µL to 100 mL with 2% HNO_3. The calibration curve is made by placing 0, 20, 50, 100, 200, 500 and 1000 µL of the working standard in BOD bottles and diluting up to 100 mL. The standard curve is equivalent to 0, 0.2, 0.5, 1.0, 2.0, 5.0 and 10.0 µg/L.

SPECIFIC REMARKS ON INORGANIC ANALYSES:

Holding Time Compliance:

Laucks calculates holding time compliance for inorganic determinations using the date on which reportable data were acquired.

Metals:

The holding time for metals is six months from the date of collection, excepting mercury, which is 28 days. All analyses were performed within holding time.

Miscellaneous:

The following analytes do not have a Contract Laboratory Program holding time. The holding times tabulated below derive from the relevant EPA methods and are applicable when the sample was appropriately preserved and/or cooled. All samples submitted followed the preservation guidelines unless explicitly noted otherwise.

Analyte	Holding Time	Violations
TOC	28 days	None

ICP Metals (Soils):

The matrix spike sample percent recoveries of antimony and lead were outside of the established control limits of 75-125% for sample 646SB00701. The LCS percent recoveries for antimony and lead were within control limits. No further corrective action was required. All relevant data have been flagged with an "N" on Forms I and V.

The duplicate sample relative percent differences of aluminum, calcium and manganese were outside the control limits of ±20% for sample 646SB00701. No further corrective action was required. All relevant data have been flagged with an "*" on Forms I and VI.

The serial dilution for magnesium did not agree within 10% of the original determination after correction for dilution for sample 646SB00701. No further corrective action was required. All relevant data have been flagged with an "E" on the applicable Forms I and IX.

Mercury (Soils):

No comments.

Metals (SPLP):

Zinc was present in the SPLP blank. No further corrective action was required per client data quality objectives.

The serial dilution for barium did not agree within 10% of the original determination after correction for dilution for sample 646SB00902. No further corrective action was required. All relevant data have been flagged with an "E" on the applicable Forms I and IX.

Total Organic Carbon:

No comments.

ENSAFE

1100-588-2962
MEMPHIS, TENNESSEE
CHARLESTON, SC; CINCINNATI, OH; DALLAS, TX; JACKSON, TN; KNOXVILLE, TN; LANCASTER, PA; NASHVILLE, TN; NORFOLK, VA; PADUCAH, KY; PENSACOLA, FL; RALEIGH, NC; COLOGNE, GERMANY

9912486 C10437

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1
PROJECT/JOB NO: 2907 001 0547
COC NO:
PO NO: 1540
REL NO: 38
LAB NAME: Lancis

CLIENT: Navy Clean CNC
PROJECT MANAGER: T. Havernost
LOCATION: Zone G / AOC 646
TELE/FAX NO.: (543) 884-0029
SAMPLERS: (SIGNATURE) William Herrick

ANALYSIS REQUIRED

FIELD SAMPLE NUMBER	DATE	TIME	SAMPLE TYPE	TYPE/SIZE OF CONTAINER	PRESERVATION TEMP.	PRESERVATION CHEMICAL	NO. OF CONTAINERS	SVOCs	Metals	SPLP Metals	TOC	Pesticides						REMARKS
NBCG/646SB00501	12/16/99	0955	S	Glass/8 oz	Ice	None	1	✓										
NBCG/646SB00502	"	1000	"	"	"	"	1	✓										
NBCG/646SB00601	"	1010	"	"	"	"	1	✓										
NBCG/646SB00602	"	1015	"	"	"	"	1	✓										
NBCG/646SB00701	"	1030	"	"	"	"	4	✓	✓	✓	✓							offset to 002
NBCG/646SB00702	"	1035	"	"	"	"	4		✓	✓	✓	✓						"
NBCG/646SB00801	"	1050	"	"	"	"	4		✓	✓	✓	✓						offset to 001
NBCG/646SB00802	"	1055	"	"	"	"	4		✓	✓	✓	✓						"
NBCG/646SB00901	"	1115	"	"	"	"	4		✓	✓	✓	✓						offset to 004
NBCG/646SB00902	"	1120	"	"	"	"	4		✓	✓	✓	✓						"
NBCG/646SB01001	"	1135	"	"	"	"	4		✓	✓	✓	✓						offset to 003
NBCG/646SB01002	"	1145	"	"	"	"	4		✓	✓	✓	✓						

RELINQUISHER	DATE	RECEIVER	DATE	RELINQUISHER	DATE	RECEIVER	DATE
PRINTED: Fred Erdmann	12/16/99	PRINTED: Charles Christenson	12/17/99	PRINTED:		PRINTED:	
COMPANY: EnSafe	TIME 1550	COMPANY: LAVCICS	TIME 0830	COMPANY:	TIME	COMPANY:	TIME

METHOD OF SHIPMENT: Fed Exp
SHIPMENT NO. 814 795 922 6-03
SEND RESULTS TO: Charles Verny

COMMENTS:

EnSafe

800-588-7962
MEMPHIS, TENNESSEE
CHARLESTON, SC; CINCINNATI, OH; DALLAS, TX; JACKSON TN; KNOXVILLE, TN; LANCASTER, PA; NASHVILLE, TN; NORFOLK, VA; PADUCAH, KY; PENSACOLA, FL; RALEIGH, NC; COLOGNE, GERMANY

7912406 8M034

CHAIN OF CUSTODY RECORD

PAGE ___ OF ___

PROJECT/JOB NO: 290700 8400
COC NO: 148
PO NO: 1840
REL NO: 38
LAB NAME: Laucks

CLIENT: Navy Clean CNC
PROJECT MANAGER: T. Hawkesi
LOCATION: Zone G / AOC 634
TELE/FAX NO. (843) 884-0029
SAMPLERS: (SIGNATURE) William Herrick

ANALYSIS REQUIRED

FIELD SAMPLE NUMBER	DATE	TIME	SAMPLE TYPE	TYPE/SIZE OF CONTAINER	PRESERVATION TEMP.	PRESERVATION CHEMICAL	NO OF CONTAINERS	Metals	SPLP Metals	TOC							REMARKS
NBCG/634SB00401	12/16/99	1355	S	Glass 8oz	Ice	None	3	✓	✓	✓							near 003
NBCG/634SB00402	"	1400	"	"	"	"	3	✓	✓	✓							"
NBCG/634SB00501	"	1415	"	"	"	"	3	✓	✓	✓							near 001
NBCG/634SB00502	"	1420	"	"	"	"	3	✓	✓	✓							"
NBCG/634SB00601	"	1435	"	"	"	"	3	✓	✓	✓							near 002

RELINQUISHER:	DATE	RECEIVER:	DATE	RELINQUISHER:	DATE	RECEIVER:	DATE
PRINTED: Fred Erdmann	12/16/99	PRINTED: Charles Christensen	12/17/99	PRINTED:		PRINTED:	
COMPANY: EnSafe	TIME 1550	COMPANY: LAUCKS	TIME 0830	COMPANY:	TIME	COMPANY	TIME

METHOD OF SHIPMENT: Fed Exp
SHIPMENT NO. 814 775 922603
SEND RESULTS TO: Charles Verney

COMMENTS:

ANALYTICAL DATA RECEIVED BY (INITIALS/DATE)

ENSAFE

800-588-7962
MEMPHIS, TENNESSEE
CHARLESTON, SC; CINCINNATI, OH; DALLAS, TX; JACKSON, TN; KNOXVILLE, TN; LANCASTER, PA; NASHVILLE, TN; NORFOLK, VA; PADUCAN, KY; PENSACOLA, FL; RALEIGH, NC; COLOGNE, GERMANY

9912406 EN434

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT/JOB NO: 2907001 0F40
COC NO: 14
PO NO: 1F40
REL NO: 3F
LAB NAME: LAUCKS

CLIENT: Navy Clean CNC
PROJECT MANAGER: T. Haverhirt
LOCATION: Zone G/ ACC 63F
TELE/FAX NO. (843) 854-0029
SAMPLERS: (SIGNATURE) William Herrick

ANALYSIS REQUIRED

FIELD SAMPLE NUMBER	DATE	TIME	SAMPLE TYPE	TYPE/SIZE OF CONTAINER	PRESERVATION TEMP.	PRESERVATION CHEMICAL	NO. OF CONTAINERS	Metals	SPLP Metals	TOC								REMARKS
NBCG/63F5B00F01	12/16/99	0900	S	Glass 8oz	Ice	None	3	✓	✓	✓								offset to CC4
NBCG/63F5B00F02	"	0905	S	"	"	"	3	✓	✓	✓								
NBCG/63F5B00901	12/16/99	0925	S	"	"	"	3	✓	✓	✓								offset to CC3
NBCG/63F5B00902	"	0930	S	"	"	"	3	✓	✓	✓								

RELINQUISHER:	DATE	RECEIVER:	DATE	RELINQUISHER:	DATE	RECEIVER:	DATE
Fred Erdmann	12/16/99	Charles Christensen	12/17/99				
PRINTED: Fred Erdmann	TIME 1550	PRINTED: Charles Christensen	TIME 0830	PRINTED:	TIME	PRINTED:	TIME
COMPANY: EnSafe		COMPANY: LAUCKS		COMPANY:		COMPANY:	

METHOD OF SHIPMENT: Fed Exp
SHIPMENT NO. 814 775 922 603
SEND RESULTS TO: Charles Verney

COMMENTS:

LABORATORY DATA RECEIVED BY (INITIALS/DATE):

ENSCF2

APPENDIX E

SPLP Metals Test Results

TABLE E-1
SPLP Sample Analytes Detected in Surface Soil
RFI Addendum, AOC 634, Zone G, Charleston Naval Complex

Parameter	Location	Concentration	Unit
Aluminum, SPLP	G634SB004	271	µg/L
	G634SB005	1,620	
	G634SB006	253	
Arsenic, SPLP	G634SB004	3.1	µg/L
	G634SB005	3.2	
	G634SB006	4.7	
Barium, SPLP	G634SB004	755	µg/L
	G634SB005	793	
	G634SB006	862	
Cadmium, SPLP	G634SB004	1.8	µg/L
	G634SB005	2	
Calcium, SPLP	G634SB004	11,900	µg/L
	G634SB005	12,700	
	G634SB006	14,900	
Chromium, TOTAL	G634SB004	1.3	µg/L
	G634SB005	2	
	G634SB006	1.2	
Copper, SPLP	G634SB004	2.2	µg/L
	G634SB005	5.2	
	G634SB006	2.4	
Iron, SPLP	G634SB004	192	µg/L
	G634SB005	850	
	G634SB006	439	
Lead, SPLP	G634SB004	3.2	µg/L
	G634SB005	5.2	
	G634SB006	3.8	
Magnesium, SPLP	G634SB004	5,410	µg/L
	G634SB005	2,700	
	G634SB006	3,440	
Manganese, SPLP	G634SB005	7.2	µg/L
	G634SB006	3.3	
Nickel, SPLP	G634SB004	3.2	µg/L
	G634SB005	3.6	
	G634SB006	3.6	
Potassium, SPLP	G634SB004	3,470	µg/L
	G634SB005	3,200	

TABLE E-1
SPLP Sample Analytes Detected in Surface Soil
RFI Addendum, AOC 634, Zone G, Charleston Naval Complex

Parameter	Location	Concentration	Unit
	G634SB006	3,010	
Selenium, SPLP	G634SB004	2.6	µg/L
	G634SB006	1.8	
Sodium, SPLP	G634SB004	48,200	µg/L
	G634SB005	32,000	
	G634SB006	31,500	
Vanadium, SPLP	G634SB004	3.3	µg/L
	G634SB005	4.8	
	G634SB006	3.3	
Zinc, SPLP	G634SB004	27.3	µg/L
	G634SB005	33.6	
	G634SB006	27.8	

TABLE E-2
SPLP Sample Analytes Detected in Subsurface Soil
RFI Addendum, AOC 634, Zone G, Charleston Naval Complex

Parameter	Location	Concentration	Unit
Aluminum, SPLP	G634SB004	271	µg/L
	G634SB005	1,620	
	G634SB006	253	
Arsenic, SPLP	G634SB004	3.1	µg/L
	G634SB005	3.2	
	G634SB006	4.7	
Barium, SPLP	G634SB004	755	µg/L
	G634SB005	793	
	G634SB006	862	
Cadmium, SPLP	G634SB004	1.8	µg/L
	G634SB005	2	
Calcium, SPLP	G634SB004	11,900	µg/L
	G634SB005	12,700	
	G634SB006	14,900	
Chromium, TOTAL	G634SB004	1.3	µg/L
	G634SB005	2	
	G634SB006	1.2	
Copper, SPLP	G634SB004	2.2	µg/L
	G634SB005	5.2	
	G634SB006	2.4	
Iron, SPLP	G634SB004	192	µg/L
	G634SB005	850	
	G634SB006	439	
Lead, SPLP	G634SB004	3.2	µg/L
	G634SB005	5.2	
	G634SB006	3.8	
Magnesium, SPLP	G634SB004	5,410	µg/L
	G634SB005	2,700	
	G634SB006	3,440	

TABLE E-2
SPLP Sample Analytes Detected in Subsurface Soil
RFI Addendum, AOC 634, Zone G, Charleston Naval Complex

Parameter	Location	Concentration	Unit
Manganese, SPLP	G634SB005	7.2	µg/L
	G634SB006	3.3	
Nickel, SPLP	G634SB004	3.2	µg/L
	G634SB005	3.6	
	G634SB006	3.6	
Potassium, SPLP	G634SB004	3470	µg/L
	G634SB005	3200	
	G634SB006	3010	
Selenium, SPLP	G634SB004	2.6	µg/L
	G634SB006	1.8	
Sodium, SPLP	G634SB004	48200	µg/L
	G634SB005	32000	
	G634SB006	31500	
Vanadium, SPLP	G634SB004	3.3	µg/L
	G634SB005	4.8	
	G634SB006	3.3	
Zinc, SPLP	G634SB004	27.3	µg/L
	G634SB005	33.6	
	G634SB006	27.8	

APPENDIX F

Responses to SCDHEC Comments

Comments and Responses on the Draft Final Zone G RFI Report June 25, 1999 (NTA: Please verify)

Comment by Stacey French (Specific)

Comment 11:
Section 10.3 AOC 634, Flammable Material Storage, Page 10.3.1
This section provides a description of AOC 634. Please indicate whether there are any records of spills. If there are no records of spills, please indicate.

Response 11:
According to the Final RCRA Facility Assessment (June 1995), the preliminary review found no record of spills or any physical evidence of any unreported releases at the site. Also, the environmental surveys conducted in 1993 for buildings 224 and 1814 included inquiries and observations, and found no spills of hazardous substances known to have occurred in or around this facility.