SEVERN TRENT SERVICES

STL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921-5947

Tel: 865-291-3000
Fax: 865-584-4315
www.stl-inc.com

ANALYTICAL REPORT

PROJECT NO. B99-009

B99-009
SDG #: W03563

Keith Maki

Bechtel Hanford, Inc.
3350 George Washington Way
Richland, WA 99352

SEVERN TRENT LABORATORIES, INC.

RECEIVED
NOV 15 2001
EDMC

Jamie A. McKinney
Project Manager

AUG 2001
RECEIVED

August 23, 2001

SAMPLE SUMMARY

W03563 : H1G230153

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
EGRGN	001	B12C01	07/19/01	08:16
EGRGP	002	B12C02	07/19/01	08:20

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

ANALYTICAL METHODS SUMMARY

W03563

PARAMETER	ANALYTICAL METHOD
Volatile Organics by TO14	EPA-19 TO-14

References:

EPA-19 "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air", EPA/600/4-89/017, June 1988.

PROJECT NARRATIVE
W03563

The results reported herein are applicable to the samples submitted for analysis only.

The original chain of custody documentation is included with this report.

Sample Receipt

There were no custody seals present at time of receipt.

Quality Control

All holding times and QC criteria were met.

This report shall not be reproduced except in full, without the written approval of the laboratory.

STL Knoxville maintains the following certifications, approvals and accreditations: Arkansas DEQ, California DHS ELAP Cert. #2423, Connecticut DPH Cert. #PH-0223, Florida DOH Cert. #E87177, Georgia DNR Cert. #906 (SDWA, 5/14/01-6/21/02), Hawaii DOH, Indiana DOH Cert. #C-TN-02, Kentucky DEP Lab ID #90101, Louisiana DEQ Agency Interest #83979, Maryland DHMH Cert. #277, Massachusetts DEP Cert. #M-TN009, Michigan DEQ Lab ID #9933, New Jersey DEP Cert. #81001, New York DOH Lab #10781, North Carolina DPH Lab ID #21705, North Carolina DEHNR Cert. #64, North Dakota DOHCL Cert. #R-134, Oklahoma DEQ ID #9415, South Carolina DHEC Lab ID #84001, Tennessee DOH Lab ID #02014, Utah DOH Cust. ID QUAN3, Virginia DGS Lab ID #00165, Washington DOE Lab #C120, Wisconsin DNR Lab ID #998044300, US Army Corps of Engineers, Naval Facilities Engineering Service Center, US EPA Perchlorate Approval and USDA Soil Permit #S-46424. This list of approvals is subject to change and does not imply that laboratory certification is available for all parameters reported in this environmental sample data report.

Sample Data Summary

BECHTEL HANFORD, INC.

Lab Name: Severn Trent Laboratories, Inc. SDG Number: W03563

Matrix: (soil/water) AIR Lab Sample ID: H1G230153 001
Method: EPA-19 TO-14
Volatile Organics, (GCMS-TO14 Low Level) ppb(v/v)

Sample WT/Vol: / mL Date Received: 07/23/01
Work Order: EGRGN1AA Date Extracted: 08/13/01
Dilution factor: 1.86 Date Analyzed: 08/13/01

QC Batch: 1226468

Client Sample Id: B12C01

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
67-64-1	Acetone	11	
56-23-5	Carbon tetrachloride	0.54	
67-66-3	Chloroform	0.37	U
75-09-2	Methylene chloride	0.41	
127-18-4	Tetrachloroethene	0.37	U
79-01-6	Trichloroethene	0.37	U
78-93-3	2-Butanone (MEK)	2.0	

BECHTEL HANFORD, INC.

Lab Name: Severn Trent Laboratories, Inc. SDG Number: W03563

Matrix: (soil/water) AIR Lab Sample ID: H1G230153 001
Method: EPA-19 TO-14
Volatile Organics, (GCMS-TO14 Low Level) ppb(v/v)

Sample WT/Vol: / mL Date Received: 07/23/01
Work Order: EGRGN1AC Date Extracted: 08/13/01
Dilution factor: 1.86 Date Analyzed: 08/13/01

QC Batch: 1226468

Client Sample Id: B12C01 DUP

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
67-64-1	Acetone	11	
56-23-5	Carbon tetrachloride	0.52	
67-66-3	Chloroform	0.37	U
75-09-2	Methylene chloride	0.40	
127-18-4	Tetrachloroethene	0.37	U
79-01-6	Trichloroethene	0.37	U
78-93-3	2-Butanone (MEK)	2.1	

BECHTEL HANFORD, INC.

Lab Name: Severn Trent Laboratories, Inc. SDG Number: W03563

Matrix: (soil/water) AIR Lab Sample ID: H1G230153 002
Method: EPA-19 TO-14
Volatile Organics, (GCMS-TO14 Low Level) ppb(v/v)

Sample WT/Vol: / mL
Work Order: EGRGP1AA
Dilution factor: 842.5

Date Received: 07/23/01
Date Extracted: 08/14/01
Date Analyzed: 08/14/01

QC Batch: 1228281

Client Sample Id: B12C02

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
67-64-1	Acetone	4200	U
56-23-5	Carbon tetrachloride	23000	
67-66-3	Chloroform	200	
75-09-2	Methylene chloride	170	U
127-18-4	Tetrachloroethene	170	U
79-01-6	Trichloroethene	170	U
78-93-3	2-Butanone (MEK)	420	U

BECHTEL HANFORD, INC.
METHOD BLANK COMPOUNDS

Lab Name:Severn Trent Laboratories, Inc. SDG Number:W03563

Matrix: (soil/water) AIR Lab Sample ID:H1H140000 468
Method: EPA-19 TO-14
Volatile Organics, (GCMS-TO14 Low Level) ppb(v/v)

Sample WT/Vol: / mL Date Received: 08/01/01
Work Order: EH05E1AA Date Extracted:08/13/01
Dilution factor: 1 Date Analyzed: 08/13/01

QC Batch: 1226468

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
67-64-1	Acetone	5.0	U
56-23-5	Carbon tetrachloride	0.20	U
67-66-3	Chloroform	0.20	U
75-09-2	Methylene chloride	0.20	U
127-18-4	Tetrachloroethene	0.20	U
79-01-6	Trichloroethene	0.20	U
78-93-3	2-Butanone (MEK)	0.50	U

BECHTEL HANFORD, INC.
CHECK SAMPLE COMPOUNDS

Lab Name:Severn Trent Laboratories, Inc. SDG Number:W03563

Matrix: (soil/water) AIR Lab Sample ID:H1H140000 468
Method: EPA-19 TO-14
Volatile Organics, (GCMS-TO14 Low Level) ppb(v/v)

Sample WT/Vol: 100 / mL Date Received: 08/01/01
Work Order: EH05E1AC Date Extracted:08/13/01
Dilution factor: 1 Date Analyzed: 08/13/01

QC Batch: 1226468

Client Sample Id: CHECK SAMPLE

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
79-01-6	Trichloroethene	10	
71-43-2	Benzene	9.9	
108-90-7	Chlorobenzene	9.9	
75-35-4	1,1-Dichloroethene	9.7	
108-88-3	Toluene	10	

BECHTEL HANFORD, INC.
METHOD BLANK COMPOUNDS

Lab Name:Severn Trent Laboratories, Inc. SDG Number:W03563

Matrix: (soil/water) AIR Lab Sample ID:H1H160000 281
Method: EPA-19 TO-14
Volatile Organics, (GCMS-TO14 Low Level) ppb(v/v)

Sample WT/Vol: / mL Date Received: 07/23/01
Work Order: EH4QT1AA Date Extracted:08/14/01
Dilution factor: 1 Date Analyzed: 08/14/01

QC Batch: 1228281

Client Sample Id: INTRA-LAB BLANK

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
67-64-1	Acetone	5.0	U
56-23-5	Carbon tetrachloride	0.20	U
67-66-3	Chloroform	0.20	U
75-09-2	Methylene chloride	0.20	U
127-18-4	Tetrachloroethene	0.20	U
79-01-6	Trichloroethene	0.20	U
78-93-3	2-Butanone (MEK)	0.50	U

BECHTEL HANFORD, INC.
CHECK SAMPLE COMPOUNDS

Lab Name:Severn Trent Laboratories, Inc. SDG Number:W03563

Matrix: (soil/water) AIR Lab Sample ID:H1H160000 281
Method: EPA-19 TO-14
Volatile Organics, (GCMS-TO14 Low Level) ppb(v/v)

Sample WT/Vol: 100 / mL Date Received: 07/23/01
Work Order: EH4QT1AC Date Extracted:08/14/01
Dilution factor: 1 Date Analyzed: 08/14/01

QC Batch: 1228281

Client Sample Id: CHECK SAMPLE

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
79-01-6	Trichloroethene	11	
71-43-2	Benzene	10	
108-90-7	Chlorobenzene	10	
75-35-4	1,1-Dichloroethene	10	
108-88-3	Toluene	10	

EPA-19 TO-14 SURROGATE RECOVERY

Lab Name: Severn Trent Laboratories, Inc. Client: BECHTEL HANFORD, INC.

Lab Code: STLKNX SDG No: W03563

Lot #: H1G230153

	CLIENT ID.	SRG01	SRG02	SRG03	TOT OUT
01	B12C01	99	101	106	00
02	B12C02	101	100	102	00
03	METHOD BLK. EH05E1AA	99	100	104	00
04	METHOD BLK. EH4QT1AA	100	99	102	00
05	LCS EH05E1AC	97	101	101	00
06	LCS EH4QT1AC	99	101	98	00
07	B12C01 DUP	99	101	104	00

SURROGATES		QC LIMITS
SRG01	= 1,2-Dichloroethane-d4	(70-130)
SRG02	= Toluene-d8	(70-130)
SRG03	= 4-Bromofluorobenzene	(70-130)

\# Column to be used to flag recovery values
* Values outside of required QC Limits
D System monitoring Compound diluted out

FORM II

EPA-19 TO-14 CHECK SAMPLE RECOVERY

Lab Name: Severn Trent Laboratories, Inc. Client: BECHTEL HANFORD, INC.

Lab Code: STLKNX SDG No: W03563

Lot #: H1H140000 WO #: EH05E1AC
BATCH: 1226468

COMPOUND	SPIKE ADDED (ppb(v)	SAMPLE CONCENT. (ppb(v)	% REC	QC LIMITS REC	QUAL
Benzene	10	9.9	99	70 - 130	
Chlorobenzene	10	9.9	99	70 - 130	
1,1-Dichloroethene	10	9.7	97	70 - 130	
Toluene	10	10	100	70 - 130	
Trichloroethene	10	10	101	70 - 130	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

FORM III

EPA-19 TO-14 CHECK SAMPLE RECOVERY

Lab Name: Severn Trent Laboratories, Inc. Client: BECHTEL HANFORD, INC.

Lab Code: STLKNX SDG No: W03563

Lot #: H1H160000 WO #: EH4QT1AC
BATCH: 1228281

COMPOUND	SPIKE ADDED (ppb(v)	SAMPLE CONCENT. (ppb(v)	% REC	QC LIMITS REC	QUAL
Benzene	10	10	104	70- 130	
Chlorobenzene	10	10	104	70- 130	
1,1-Dichloroethene	10	10	100	70- 130	
Toluene	10	10	103	70- 130	
Trichloroethene	10	11	105	70- 130	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

FORM III

BLANK WORKORDER NO.

EH05E1AA

EPA-19 TO-14 METHOD BLANK SUMMARY

Lab Name: Severn Trent Laboratories, Inc.

Lab Code: STLKNX

SDG Number: W03563

Lab File ID: bk0813b.d

Lot Number: H1G230153

Date Analyzed: 08/13/01

Time Analyzed: 18:52

Matrix: AIR

Date Extracted: 08/13/01

GC Column: DB-5 ID: .32

Extraction Method: TO-14

Instrument ID: MT

Level: (low/med) LOW

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

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	B12C01	EGRGN1AA	eqrgn.d	08/13/01	21:23
02	B12C01 DUP	EGRGN1AC X	eqrgnd.d	08/13/01	22:00
03	CHECK SAMPLE	EH05E1AC C	rf0813.d	08/13/01	17:39
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

COMMENTS:

FORM IV

BLANK WORKORDER NO.

EH4QT1AA

EPA-19 TO-14 METHOD BLANK SUMMARY

Lab Name: Severn Trent Laboratories, Inc.

Lab Code: STLKNX

SDG Number:W03563

Lab File ID: bk0814.d

Lot Number: H1G230153

Date Analyzed: 08/14/01

Time Analyzed: 16:59

Matrix: AIR

Date Extracted:08/14/01

GC Column: DB-5 ID: .32

Extraction Method: TO-14

Instrument ID: MT

Level:(low/med) LOW

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

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	B12C02	EGRGP1AA	egrgp.d	08/14/01	17:38
02	CHECK SAMPLE	EH4QT1AC C	rf0814.d	08/14/01	16:08
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

COMMENTS:

FORM IV

Sample Receipt Documentation

H162301S3

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-009-13	Page 1 of 1

Collector: Baechler/Johansen	Company Contact: K Maki	Telephone No.: 373-4989	Project Coordinator: TRENT, SJ
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-ZP-1 Operations On-Site and Off-Site Air Monitor Samplin	Sampling Location: 200 West		SAF No.: B99-009
Ice Chest No.: SUMA CASE	Field Logbook No.: EL 1330	COA: R20ZP1D760	Method of Shipment: Hand Delivered
Shipped To: ~~Quantera Incorporated~~ 1427 1901 STL	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples Originated from a non RAD Controlled area. No TA Required.

Special Handling and/or Storage

Preservation	None
Type of Container	Summa Canister
No. of Container(s)	1
Volume	6L

SAMPLE ANALYSIS

See item (1) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B12C01	GASEOUS	7/19/01	0816	X									AS-3
B12C02	GASEOUS	7/19/01	0820	X									AS-2

Rec'd Temp. Ambient — Rec'd 2 cans
No Custody Seals — No Flow Controlers
Airbome #8659901445 — MF-H-07-23-01

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From	Received By/Stored In	
[illegible]	Starkovich	7/19/01 1225
Relinquished By/Removed From	Received By/Stored In	
[illegible] Starkovich	SJ Gale	7/19/01 1330
Relinquished By/Removed From	Received By/Stored In	
SJ Gale	G. Klemeard	7/19/01 15:07
Relinquished By/Removed From	Received By/Stored In	
G. Klemeard	[illegible]	07-23-01 09:40
Relinquished By/Removed From	Received By/Stored In	
Relinquished By/Removed From	Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) VOA - T0-14 (2-Butanone, Acetone, Carbon tetrachloride, Chloroform, Methylenechloride, Tetrachloroethene, Trichloroethene)

Samples did not originate in radiological controlled area. No total activity associated with sample/samples.

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

STL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921-5947
Phone: (865) 291-3000
Fax: (865) 584-4315

H16230133

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 8055
Page 1 of ___

Project Name/No. 1 STL RICHLAND
Sample Team Members 2
Profit Center No. 3
Project Manager 4 JACKIE WADDELL
Purchase Order No. 6
Required Report Date 11

Samples Shipment Date 7 7-11-01
Lab Destination 8 STL RICHLAND
Lab Contact 9
Project Contact/Phone 12
Carrier/Waybill No. 13

Bill to: 5
Report to: 10

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Pre-servative 19	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
04323	SUMMA CAN					CANS FOR AIR TESTING		
12173	"					" "	FOR LAB USE ONLY	
							FOR LAB USE ONLY	

Special Instructions: 23

Possible Hazard Identification: 24
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal: 25
Return to Client ☐ Disposal by Lab ☐ Archive (mos.)

Turnaround Time Required: 26
Normal ☐ Rush ☐

QC Level: 27
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by 28 (Signature/Affiliation) Dwyn K Q Anderson	Date: 7-11-01 Time: 14:00	1. Received by 28 (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: 29

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

MCA 3/15/9

STL KNOXVILLE
SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Page 1 of 2

CLIENT: Bechtel Hanford Inc PROJECT: _____ Lot No.: H1623053

TO BE COMPLETED BY SAMPLE RECEIPT ASSOCIATE:

1. Sample Receipt:	YES	NO	NA
a. Do sample container labels match COC? (IDs, Dates, Times)	✓		
b. Is the cooler temperature within acceptance limits? (NOTE: North Carolina, 1668, 1613B have 0-4°C requirement)			✓
c. Were samples received with correct preservative (excluding Encore)?			✓
d. Were custody seals present/intact on cooler and/or containers?		✓	
e. Were all of the samples listed on the COC received?	✓		
f. Were all of the sample containers received intact?	✓		
g. Were containers received for VOAs received without headspace?			✓
h. Were samples received in the appropriate containers?	✓		
i. Did you check for residual chlorine, if necessary?			✓
j. Were samples received within 1/2 of the holding time?	✓		
k. Were samples screened for radioactivity?			✓
l. Were client's sample documents (RFA/COC) received?	✓		
m. Has the RFA/COC been relinquished? (Signed, Dated, Timed)	✓		
n. Are test/parameters listed for each sample?	✓		
o. Is the matrix of the samples noted?	✓		
p. Is the date/time of sample collection noted?	✓		
q. Is the client and project name/No. identified?	✓		

SAMPLE RECEIVING ASSOCIATE: Matthew F. Howard DATE: 07-23-01

TO BE COMPLETED BY PROJECT MANAGER :

1. Project manager "Sample Greet":	YES	NO	NA
a. Quote number to be logged-in under 21911			
b. Informed Login associates of special instructions ?			✓

2. If custody seals were missing/not intact, was client notified? — — ✓

PROJECT MANAGER : pm DATE: 7/24/01

Client Sample ID	Analysis Requested	Condition (see legend)	Comments/Actions
all	all	5a	

☒ Client informed on 7/24/01 by email. Person contacted: J Waddell.
☐ Noted actions in comments section above.
☒ No action necessary; process as is.
Project Manager: pm Date: 7/24/01

Volatiles

QC Summary

EPA-19 TO-14 SURROGATE RECOVERY

Lab Name: Severn Trent Laboratories, Inc. Client: BECHTEL HANFORD, INC.

Lab Code: STLKNX SDG No: W03563

Lot #: H1G230153

	CLIENT ID.	SRG01	SRG02	SRG03	TOT OUT
01	B12C01	99	101	106	00
02	B12C02	101	100	102	00
03	METHOD BLK. EH05E1AA	99	100	104	00
04	METHOD BLK. EH4QT1AA	100	99	102	00
05	LCS EH05E1AC	97	101	101	00
06	LCS EH4QT1AC	99	101	98	00
07	B12C01 DUP	99	101	104	00

SURROGATES		QC LIMITS
SRG01	= 1,2-Dichloroethane-d4	(70-130)
SRG02	= Toluene-d8	(70-130)
SRG03	= 4-Bromofluorobenzene	(70-130)

\# Column to be used to flag recovery values
* Values outside of required QC Limits
D System monitoring Compound diluted out

FORM II

EPA-19 TO-14 CHECK SAMPLE RECOVERY

Lab Name: Severn Trent Laboratories, Inc. Client: BECHTEL HANFORD, INC.

Lab Code: STLKNX SDG No: W03563

Lot #: H1H140000 WO #: EH05E1AC
BATCH: 1226468

COMPOUND	SPIKE ADDED (ppb(v)	SAMPLE CONCENT. (ppb(v)	% REC	QC LIMITS REC	QUAL
Benzene	10	9.9	99	70 - 130	
Chlorobenzene	10	9.9	99	70 - 130	
1,1-Dichloroethene	10	9.7	97	70 - 130	
Toluene	10	10	100	70 - 130	
Trichloroethene	10	10	101	70 - 130	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

FORM III

EPA-19 TO-14 CHECK SAMPLE RECOVERY

Lab Name: Severn Trent Laboratories, Inc. Client: BECHTEL HANFORD, INC.

Lab Code: STLKNX SDG No: W03563

Lot #: H1H160000 WO #: EH4QT1AC
BATCH: 1228281

COMPOUND	SPIKE ADDED (ppb(v)	SAMPLE CONCENT. (ppb(v)	% REC	QC LIMITS REC	QUAL
Benzene	10	10	104	70 - 130	
Chlorobenzene	10	10	104	70 - 130	
1,1-Dichloroethene	10	10	100	70 - 130	
Toluene	10	10	103	70 - 130	
Trichloroethene	10	11	105	70 - 130	

NOTES(S):

* Values outside of QC limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:

FORM III

BLANK WORKORDER NO.

EH05E1AA

EPA-19 TO-14 METHOD BLANK SUMMARY

Lab Name: Severn Trent Laboratories, Inc.

Lab Code: STLKNX

SDG Number: W03563

Lab File ID: bk0813b.d

Lot Number: H1G230153

Date Analyzed: 08/13/01

Time Analyzed: 18:52

Matrix: AIR

Date Extracted: 08/13/01

GC Column: DB-5 ID: .32

Extraction Method: TO-14

Instrument ID: MT

Level: (low/med) LOW

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

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	B12C01	EGRGN1AA	egrgn.d	08/13/01	21:23
02	B12C01 DUP	EGRGN1AC X	egrgnd.d	08/13/01	22:00
03	CHECK SAMPLE	EH05E1AC C	rf0813.d	08/13/01	17:39
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

COMMENTS:

FORM IV

BLANK WORKORDER NO.

EH4QT1AA

EPA-19 TO-14 METHOD BLANK SUMMARY

Lab Name: Severn Trent Laboratories, Inc.

Lab Code: STLKNX

SDG Number: W03563

Lab File ID: bk0814.d

Lot Number: H1G230153

Date Analyzed: 08/14/01

Time Analyzed: 16:59

Matrix: AIR

Date Extracted: 08/14/01

GC Column: DB-5 ID: .32

Extraction Method: TO-14

Instrument ID: MT

Level: (low/med) LOW

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

	CLIENT ID.	SAMPLE WORK ORDER #	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	B12C02	EGRGP1AA	eqrgp.d	08/14/01	17:38
02	CHECK SAMPLE	EH4QT1AC C	rf0814.d	08/14/01	16:08
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

COMMENTS:

FORM IV

FORM 5
OTHER ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: H1G230153

Lab File ID: BF0805B BFB Injection Date: 08/05/01

Instrument ID: MT BFB Injection Time: 1546

GC Column: DB-5 ID: 0.32 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.6
75	30.0 - 60.0% of mass 95	44.1
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.5
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 100.0% of mass 95	87.4
175	5.0 - 9.0% of mass 174	6.4 (7.3)1
176	95.0 - 101.0% of mass 174	85.1 (97.4)1
177	5.0 - 9.0% of mass 176	5.7 (6.7)2

1-Value is % mass 174 2-Value is % mass 176

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	10PPBV	IC3	MD0805	08/05/01	1626
02	30PPBV	IC5	HI0805	08/05/01	1706
03	15PPBV	IC4	MH0805	08/05/01	1746
04	5PPBV	IC2	ML0805	08/05/01	1827
05	1PPBV	IC1	LW0805	08/05/01	1907
06	0.2PPBV	IC6	RL0805	08/05/01	1947
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 5
OTHER ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: H1G230153

Lab File ID: BF0813 BFB Injection Date: 08/13/01

Instrument ID: MT BFB Injection Time: 1548

GC Column: DB-5 ID: 0.32 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.5
75	30.0 - 60.0% of mass 95	39.7
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.6
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 100.0% of mass 95	91.9
175	5.0 - 9.0% of mass 174	6.6 (7.2)1
176	95.0 - 101.0% of mass 174	88.8 (96.6)1
177	5.0 - 9.0% of mass 176	6.0 (6.8)2

1-Value is % mass 174 2-Value is % mass 176

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	10PPBV	CCV	MD0813B	08/13/01	1704
02	LCS	EH05E1AC	RF0813	08/13/01	1739
03	BLANK	EH05E1AA	BK0813B	08/13/01	1852
04	B12C01	EGRGN1AA	EGRGN	08/13/01	2123
05	B12C01	EGRGN1AC	EGRGND	08/13/01	2200
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 5
OTHER ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: H1G230153

Lab File ID: BF0814 BFB Injection Date: 08/14/01

Instrument ID: MT BFB Injection Time: 1452

GC Column: DB-5 ID: 0.32 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	16.8
75	30.0 - 60.0% of mass 95	39.8
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.5
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 100.0% of mass 95	91.5
175	5.0 - 9.0% of mass 174	6.6 (7.2)1
176	95.0 - 101.0% of mass 174	88.9 (97.1)1
177	5.0 - 9.0% of mass 176	5.9 (6.6)2

1-Value is % mass 174 2-Value is % mass 176

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	10PPBV	CCV	MD0814	08/14/01	1526
02	LCS	EH4QT1AC	RF0814	08/14/01	1608
03	BLANK	EH4QT1AA	BK0814	08/14/01	1659
04	B12C02	EGRGP1AA	EGRGP	08/14/01	1738
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 8
OTHER INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: H1G230153

Lab File ID (Standard): MD0813B Date Analyzed: 08/13/01

Instrument ID: MT Time Analyzed: 1704

GC Column: DB-5 ID: 0.32 (mm) Heated Purge: (Y/N) N

		IS1(BCM) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	396259	9.91	1898961	11.98	1789193	16.49
	UPPER LIMIT	792518	10.41	3797922	12.48	3578386	16.99
	LOWER LIMIT	198130	9.41	949480	11.48	894596	15.99
	CLIENT SAMPLE NO.						
01	LCS	413711	9.92	1984446	11.99	1844330	16.49
02	BLANK	388929	9.87	1895829	11.96	1755448	16.48
03	B12C01	392193	9.85	1892192	11.94	1731924	16.47
04	B12C01	402534	9.85	1926284	11.94	1765862	16.47
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

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 used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM 8
OTHER INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: H1G230153

Lab File ID (Standard): MD0814 Date Analyzed: 08/14/01

Instrument ID: MT Time Analyzed: 1526

GC Column: DB-5 ID: 0.32 (mm) Heated Purge: (Y/N) N

		IS1(BCM) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CBZ) AREA #	RT #
	12 HOUR STD	399656	9.84	1942861	11.93	1756609	16.47
	UPPER LIMIT	799312	10.34	3885722	12.43	3513218	16.97
	LOWER LIMIT	199828	9.34	971430	11.43	878304	15.97
	CLIENT SAMPLE NO.						
01	LCS	408737	9.84	1952695	11.93	1777463	16.47
02	BLANK	401708	9.83	1905077	11.92	1791133	16.46
03	B12C02	413005	9.83	1954979	11.93	1790895	16.46
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

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 used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Raw Sample Data

BECHTEL HANFORD, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:W03563

Matrix: (soil/water) AIR Lab Sample ID:H1G230153 001
Method: EPA-19 TO-14
Volatile Organics, (GCMS-TO14 Low Level) ppb(v/v)

Sample WT/Vol: / mL
Work Order: EGRGN1AA
Dilution factor: 1.86

Date Received: 07/23/01
Date Extracted:08/13/01
Date Analyzed: 08/13/01

QC Batch: 1226468

Client Sample Id: B12C01

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
67-64-1	Acetone	11	
56-23-5	Carbon tetrachloride	0.54	
67-66-3	Chloroform	0.37	U
75-09-2	Methylene chloride	0.41	
127-18-4	Tetrachloroethene	0.37	U
79-01-6	Trichloroethene	0.37	U
78-93-3	2-Butanone (MEK)	2.0	

BECHTEL HANFORD, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:W03563

Matrix: (soil/water) AIR Lab Sample ID:H1G230153 001
Method: EPA-19 TO-14
Volatile Organics, (GCMS-TO14 Low Level) ppb(v/v)

Sample WT/Vol: / mL Date Received: 07/23/01
Work Order: EGRGN1AC Date Extracted:08/13/01
Dilution factor: 1.86 Date Analyzed: 08/13/01

QC Batch: 1226468

Client Sample Id: B12C01 DUP

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
67-64-1	Acetone	11	
56-23-5	Carbon tetrachloride	0.52	
67-66-3	Chloroform	0.37	U
75-09-2	Methylene chloride	0.40	
127-18-4	Tetrachloroethene	0.37	U
79-01-6	Trichloroethene	0.37	U
78-93-3	2-Butanone (MEK)	2.1	

BECHTEL HANFORD, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:W03563

Matrix: (soil/water) AIR Lab Sample ID:H1G230153 002
Method: EPA-19 TO-14
Volatile Organics, (GCMS-TO14 Low Level) ppb(v/v)

Sample WT/Vol: / mL Date Received: 07/23/01
Work Order: EGRGP1AA Date Extracted:08/14/01
Dilution factor: 842.5 Date Analyzed: 08/14/01

QC Batch: 1228281

Client Sample Id: B12C02

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ppb(v	Q
67-64-1	Acetone	4200	U
56-23-5	Carbon tetrachloride	23000	
67-66-3	Chloroform	200	
75-09-2	Methylene chloride	170	U
127-18-4	Tetrachloroethene	170	U
79-01-6	Trichloroethene	170	U
78-93-3	2-Butanone (MEK)	420	U

STL Knoxville GC/MS Air Data Review / Narrative Checklist

LOT/Project # H1G230153

Method: TO-14 - KNOX-MS-0001 Rev 2

Instrument:	MT					
Scanned File Names:	T080501i					
	T081301					
	T081401					

Review Items A. Tune / Continuing Calibration	N/A	Yes	No	Why is data reportable?	2nd ✓
1. Were all samples injected within 12 hr of BFB?		✓			✓
2. Has a Continuing Calibration Checklist been completed for each analytical batch?		✓			✓
3. Was the correct CCAL used for quantitation?		✓			✓
B. CLIENT SAMPLE AND QC SAMPLE Results					
1. Were all special project requirements met?		✓			✓
2. Were dilution factors/header information verified?		✓			✓
3. Are surrogates and internal standards within QC limits? (70-130% R for surr.; 50-150%R from CCAL for IS) *If no, list samples/reason (e.g.,* sur1*):* Sample ____ Reason ____ Sample ____ Reason ____		✓		☐[sur1] DUP surr. %R demonstrated same effect. ☐[sur2] Reanalysis demonstrated same effect. **☐[sur5] At client's request, data was flagged as estimated & released without further investigation.*** **☐[is1] Per client, reanalysis was not performed *** ☐[is2] Reanalysis confirmed a matrix effect.	✓
4. Were positive hits evaluated using qualitative identification criteria and technical judgement?		✓			✓
5. Are positive results within calibration range?		✓			✓
6. For dilutions, is highest concentration hit ≥ 5 ppb? *List samples and reason (e.g.,* elev1*):* Sample ____ Reason ____ Sample ____ Reason ____		✓		☐[elev1] Elevated RL for (ANALYTE) due to sample matrix interferences. ☐[elev3] Elevated RLs for all analytes due to difficult sample matrix. ☐[elev5] Elevated RLs for all analytes due to presence of non-target compounds.	✓
7. If manual integrations were performed, are they clearly identified, initialed, dated and reason given?	✓			Reasons: 1)Corrected split peak; 2)Unresolved peak; 3)tailing; 4)RT shift; 5)wrong peak selected; 6)other	✓
8. Have alternate hits/manual integrations been verified as correct?	✓				✓
9. Final report acceptable? (Results correct, RLs calculated correctly, units correct, surrogate %R correct, appropriate flags used, dilution factor correct, analysis dates correct.)		✓			✓
10. Was a narrative prepared and all deviations noted?		✓			✓
C. Preparation QC					
1. System blank run every 12 hours prior to samples?		✓			✓
2. System blank surrogate recoveries within QC limits (70-130% R)?		✓		**☐[mb1] All sample surrogates OK and there is no analyte >RL in samples associated with blank.***	✓
3. Are all analytes present in the system blank ≤ RL? *If no, list blank ID:* ____		✓		**☐[mb3] No analyte > RL in associated samples.*** **☐[mb4] Sample results > 20x higher than blank.** ☐[mb6] Common lab contaminant (methylene chloride/Freon) ≤2x RL.*	✓
4. DUP done per 20 samples and are all RPDs within limits? (for analytes >5x RL, ≤30 RPD for nonpolars; ≤40 RPD for polars; no criteria for methanol and n-butanol) *If no, list DUP ID:* ____		✓			✓
D. Other					
1. Are all nonconformances documented appropriately and copy included with deliverable?	✓				N/A

Analyst: CWJ	Date: 8/17/01	2nd Level Reviewer:	Date: 082101
Comments:		Comments:	

* Such action must be taken in consultation with client.

RQC058

Severn Trent Laboratories, Inc.
EXTRACTION BENCH WORKSHEET

Run Date: 8/14/01
Time: 15:09:34

LEV 1	LEV 2		LEV 1	LEV 2	
_	_	Blank	_	_	Weights/Volumes
_	_	Check	_	_	Spike & Surrogate Worksheet
_	_	MS/MSD	_	_	Vial contains correct volume
			_	_	Labels, greenbars, worksheets
			_	_	computer batch: correct & all match
			_	_	Anomalies to Extraction Method

_ Expanded Deliverable
_ COC Completed
_ Bench Sheet Copied
_ Package Submitted to AnalyticalGroup
_ Bench Sheet Copied per COC

Extractionist: _____

Concentrationist: _____

Reviewer/Date: _____ / 0/00/00

QC BATCH: 1226468

PREP DATE: 8/13/01
COMP DATE: 8/13/01

Volatile Organics, (GCMS-TO14 Low Level) ppb(v/v)
NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION

EXTR EXPR	ANL DUE	LOT#,MSRUN#/ WORK ORDER	TEST FLGS	EXT	MTH	MATRIX	INIT/FIN WT/VOL	INIT	PH"S ADJI	ADJ2	SOLVENTS EXTRACTION	VOL	EXCHANGE	VOL	SPIKE STANDARD/ SURROGATE ID
0/00/00	9/03/01	H1G230153-001 1226270 EGRGN-1-AA		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-845 CX-772
COMMENTS:															
0/00/00	9/03/01	H1G230153-001 1226270 EGRGN-1-ACX		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-845 CX-772
COMMENTS:															
0/00/00	8/17/01	H1H010249-001 EG99P-1-AD	D	88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-845 CX-772
COMMENTS:															
0/00/00	8/17/01	H1H010249-002 EG99V-1-AC	D	88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-845 CX-772
COMMENTS:															
0/00/00	8/17/01	H1H010249-003 EG992-1-AC	D	88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-845 CX-772
COMMENTS:															
0/00/00	8/22/01	H1H060113-001 EHH2J-1-AA	D	88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-845 CX-772
COMMENTS:															
0/00/00	0/00/00	H1H140000-468 EH05E-1-AAB		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-845 CX-772
COMMENTS:															

RQC058

Severn Trent Laboratories, Inc.
EXTRACTION BENCH WORKSHEET

Run Date: 8/14/01
Time: 15:09:34

****
* *
* QC BATCH: 1226468 *
* *
****

PREP DATE: 8/13/01
COMP DATE: 8/13/01

EXTR EXPR	ANL DUE	LOT#,MSRUN#/ WORK ORDER	TEST FLGS	EXT	MTH	MATRIX	INIT/FIN WT/VOL	INIT	PH"S ADJI	ADJ2	SOLVENTS EXTRACTION	VOL	EXCHANGE	VOL	SPIKE STANDARD/ SURROGATE ID
0/00/00	0/00/00	H1H140000-468 HH05E-1-ACC		88	JY	AIR	100mL 100.00mL	NA	NA	NA		.0		.0	CX-845 CX-772

COMMENTS:

R = RUSH C = CLP
E = EPA 600 D = EXP.DEL)
M = CLIENT REQ MS/MSD
‡

NUMBER OF WORK ORDERS IN BATCH: 8

170

RQC058

Severn Trent Laboratories, Inc.
EXTRACTION BENCH WORKSHEET

Run Date: 8/16/01
Time: 11:03:34

LEV 1	LEV 2		LEV 1	LEV 2			
_	_	Blank	_	_	Weights/Volumes	_	Expanded Deliverable
_	_	Check	_	_	Spike & Surrogate Worksheet	_	COC Completed
_	_	MS/MSD	_	_	Vial contains correct volume	_	Bench Sheet Copied
			_	_	Labels, greenbars, worksheets	_	Package Submitted to AnalyticalGroup
			_	_	computer batch: correct & all match	_	Bench Sheet Copied per COC
			_	_	Anomalies to Extraction Method		

Extractionist: _____

Concentrationist: _____

Reviewer/Date: _____ / 0/00/00

****
* QC BATCH: 1228281 *
****

PREP DATE: 8/14/01
COMP DATE: 8/14/01

Volatile Organics, (GCMS-TO14 Low Level) ppb(v/v)
NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION

EXTR EXPR	ANL DUE	LOT#,MSRUN#/ WORK ORDER	TEST FLGS	EXT	MTH	MATRIX	INIT/FIN WT/VOL	PH"S INIT	PH"S ADJ1	PH"S ADJ2	SOLVENTS EXTRACTION	SOLVENTS VOL	SOLVENTS EXCHANGE	SOLVENTS VOL	SPIKE STANDARD/ SURROGATE ID
0/00/00	9/03/01	H1G230153-002 EGRGP-1-AA		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-845 CX-772
COMMENTS:															
0/00/00	8/22/01	H1H040146-001 EHHGD-1-AA	D	88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-845 CX-772
COMMENTS:															
0/00/00	8/22/01	H1H040146-008 EHHGP-1-AA	D	88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-845 CX-772
COMMENTS:															
0/00/00	8/22/01	H1H060113-002 EHH2M-1-AA	D	88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-845 CX-772
COMMENTS:															
0/00/00	8/22/01	H1H060113-003 EHH2P-1-AA	D	88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-845 CX-772
COMMENTS:															
0/00/00	8/22/01	H1H060116-001 EHH29-1-AA	D	88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-845 CX-772
COMMENTS:															
0/00/00	8/22/01	H1H060137-001 EHH8R-1-AA		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-845 CX-772
COMMENTS:															

RQC058

Severn Trent Laboratories, Inc.
EXTRACTION BENCH WORKSHEET

Run Date: 8/16/01
Time: 11:03:34

QC BATCH: 1228281

PREP DATE: 8/14/01
COMP DATE: 8/14/01

EXTR EXPR	ANL DUE	LOT#,MSRUN#/ WORK ORDER	TEST FLGS	EXT	MTH	MATRIX	INIT/FIN WT/VOL	INIT	PH"S ADJI	ADJ2	SOLVENTS EXTRACTION	VOL	EXCHANGE	VOL	SPIKE STANDARD/ SURROGATE ID
0/00/00	0/00/00	H1H160000-281 EH4QT-1-AAB		88	JY	AIR	mL	NA	NA	NA		.0		.0	CX-845 CX-772
COMMENTS:															
0/00/00	0/00/00	H1H160000-281 EH4QT-1-ACC		88	JY	AIR	100mL 100.00mL	NA	NA	NA		.0		.0	CX-845 CX-772
COMMENTS:															

R = RUSH C = CLP
E = EPA 600 D = EXP.DEL)
M = CLIENT REQ MS/MSD
*

NUMBER OF WORK ORDERS IN BATCH: 9

STL-Knoxville Initial Canister Dilution

Analyst: SAH

Notebook: 2208 Page: 21

Barometer: 30.09 inches Hg at sea level Date: 7/26/01
734.186 mm Hg at Knoxville

Lot #	W/O #	P init inches	P init Abs,mm	P final psig	P final Abs,mm	Dilution Factor	
H1G230153	EGR GN	- 0.1	731.6	12.1	1359.9	1.86	(GN)
	EGR GP	0.0	734.2	13.1	1411.6	1.92	(GP)

1 psig = 2.036 inch Hg
Pinit(Abs,mm)=(Pinit(inch)*25.4mm/inch)+Pbar(mm)
Pfinal(Abs,mm)=(Pfinal(psig)*2.036 (inch Hg/psig)*25.4 (mm/inch))+Pbar(mm)
dilution factor = Pfinal(Abs,mm)/Pinit(Abs,mm)
barometer: correction factor for 300 m altitude of Knoxville = 30.1 from Handbook of Chem and Physics
pressure in mm Hg = [(pressure at sea level in inches*25.4 mm/in) - 30.1]

cjcandil.xls
rev.03

STL-Knoxville In-Can Dilution

Analyst: CWJ

Notebook: 2208 Page: 21

Barometer: 29.98 inches Hg at sea level Date: 8/10/01
731.39 mm Hg at Knoxville

Lot #	Work Order #	P init inches Hg	P init Abs,mm	P final psig	P final Abs,mm	Dilution Factor (In-Can)	Dilution Factor (Total)	
H1G230153	EGR GN	0.0	731.4					
	EGR GP	0.0	731.4	45.0	3058.5	4.18	***8.04***	(GP) (*1.92)

1 psig = 2.036 inch Hg
Pinit(Abs,mm)=(Pinit(inch)*25.4mm/inch)+Pbar(mm)
Pfinal(Abs,mm)=(Pfinal(psig)*2.036 (inch Hg/psig)*25.4 (mm/inch))+Pbar(mm)
dilution factor = Pfinal(Abs,mm)/Pinit(Abs,mm)
barometer: correction factor for 300 m altitude of Knoxville = 30.1 from Handbook of Chem and Physics
pressure in mm Hg = [(pressure at sea level in inches*25.4 mm/in) - 30.1]

cjcandil.xls
rev.03

STL-Knoxville Second In-Can Dilution

Analyst: CWJ

Notebook: 2208 Page: 21

Barometer: 29.99 inches Hg at sea level Date: 8/14/01
731.65 mm Hg at Knoxville

Lot #	Work Order #	P init inches Hg	P init Abs,mm	P final psig	P final Abs,mm	Dilution Factor (In-Can)	Dilution Factor (Total)	
H1G230153	EGR GN	0.0	731.6					
	EGR GP	0.0	731.6	15.5	1533.2	2.10	***16.85***	(GP) (*8.04)

1 psig = 2.036 inch Hg
Pinit(Abs,mm)=(Pinit(inch)*25.4mm/inch)+Pbar(mm)
Pfinal(Abs,mm)=(Pfinal(psig)*2.036 (inch Hg/psig)*25.4 (mm/inch))+Pbar(mm)
dilution factor = Pfinal(Abs,mm)/Pinit(Abs,mm)
barometer: correction factor for 300 m altitude of Knoxville = 30.1 from Handbook of Chem and Physics
pressure in mm Hg = [(pressure at sea level in inches*25.4 mm/in) - 30.1]

cjcandil.xls
rev.03

STL-Knoxville

TO-14 Canister Dilution Log

Initial Dilution								In-Can Dilution				Serial Dilution					
Analyst	Date	Pbarr (in.)	Lot #	Work Order #	Can #	Initial Pressure Pi (in.)	Final Pressure Pf (psig)	Analyst	Date	Pbarr (in.)	Final Pressure Pf (psig)	Analyst	Date	Pbarr (in.)	To Can #	Volume (ml)	Final Pressure Pf (psig)
SAB	7/25/01	30.01	G240185	EGTRR	1107	-1.3	12.2										
SAB	7/26/01	30.09	G230117	EGQ44	03775	15.2 psi	15.2										
				EGRF3	12730	25.5	25.5										
				F4	93121	25.7	25.7										
				F9	12815	11.8	11.8										
			G230153	EGRGN	12173	-0.1	12.1	CWJ	8/14/01	29.99	15.5	Zero in can					
				GP	04323	Ø	13.1	CWJ	8/10/01	29.98	45.0						
			G240112	EGR30	0063	-15.0	10.6										
			G240113	EGR33	93219	-4.7	11.2										
				34	12878	-10.1	10.7										
				35	04402	-13.1	10.7										
				36	0049	-4.7	11.2										
				38	04728	-20.4	10.4										
				39	12836	-14.1	10.2										

Updated: **09:53 AM EDT on July 26, 2001** Observed at Knoxville, Tennessee	
Temperature	**79° F**
HeatIndex	**81° F**
Humidity	**66%**
Dewpoint	**67° F**
Wind	**SW at 18 mph**
Pressure	**30.09 in**

Updated: **05:10 PM EDT on August 10, 2001** Observed at Knoxville, Tennessee	
Temperature	**81° F**
HeatIndex	**85° F**
Humidity	**70%**
Dewpoint	**70° F**
Wind	**WSW at 14 mph**
Pressure	**29.98** in

Updated: **01:53 PM EDT on August 14, 2001** Observed at Knoxville, Tennessee	
Temperature	**84° F**
HeatIndex	**86° F**
Humidity	**53%**
Dewpoint	**65° F**
Wind	**North at 8 mph**
Pressure	**29.99 in**

Sample Receipt Documentation

H1623013

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-009-13	Page 1 of 1

Collector: Baechler/Johansen	Company Contact: K Maki	Telephone No.: 373-4989	Project Coordinator: TRENT, SJ
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-ZP-1 Operations On-Site and Off-Site Air Monitor Samplin	Sampling Location: 200 West		SAF No.: B99-009
Ice Chest No.: SUMA CASE	Field Logbook No.: EL 1330	COA: R20ZP1D760	Method of Shipment: Hand Delivered
Shipped To: ~~Quanterra Incorporated~~ 1927/901 STL	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples Originated from a non RAD Controlled area. No TA Required.

Special Handling and/or Storage

Preservation	None										
Type of Container	Summa Canister										
No. of Container(s)	1										
Volume	6L										
SAMPLE ANALYSIS	See item (1) in Special Instructions.										
Sample No.	Matrix *	Sample Date	Sample Time								
B12C01	GASEOUS	7/19/01	0816	X							AS-3
B12C02	GASEOUS	7/19/01	0820	X							AS-2
							Rec'd Temp. Ambient		Rec'd 2 cans		
							No custody seals		No Flow controlers		
							Airbome #865990144 5		MF-H-07-23-01		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[illegible]	7/19/01 1235	[illegible] Stankovic	7-19-01 1225
[illegible] Stankovich	7-19-01 1330	SJGALE [illegible]	7/19/01 1330
SJGALE [illegible]	7/19/01 1507	G. Klemesrud	7/19/01 15:07
G. Klemesrud	7/19-01 15:20	[illegible]	07-23-01 09:40

SPECIAL INSTRUCTIONS

(1) VOA - T0-14 (2-Butanone, Acetone, Carbon tetrachloride, Chloroform, Methylenechloride, Tetrachloroethene, Trichloroethene)

Samples did not originate in radiological controlled area. No total activity associated with sample/samples.

Matrix *
S=Soil
SD=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

180

STL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921-5947
Phone: (865) 291-3000
Fax: (865) 584-4315

H16230155

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 8055
Page 1 of ___

Project Name/No. 1 STL RICHLAND
Sample Team Members 2
Profit Center No. 3
Project Manager 4 JACKIE WADDELL
Purchase Order No. 6
Required Report Date 11

Samples Shipment Date 7 7-11-01
Lab Destination 8 STL RICHLAND
Lab Contact 9
Project Contact/Phone 12
Carrier/Waybill No. 13

Bill to: 5
Report to: 10

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Pre-servative 19	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
04323	SUMMA CAN					CANS FOR AIR TESTING		
12173	"					" "	FOR LAB USE ONLY	
							FOR LAB USE ONLY	

Special Instructions: 23

Possible Hazard Identification: 24
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal: 25
Return to Client ☐ Disposal by Lab ☐ Archive (mos.)

Turnaround Time Required: 26
Normal ☐ Rush ☐

QC Level: 27
I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by 28 (Signature/Affiliation) [signature]	Date: 7-11-01 Time: 14:00	1. Received by 28 (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: 29

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

MCA 3/15/97

STL KNOXVILLE

SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Page 1 of 2

CLIENT: Bechtel Hanford Inc PROJECT: _____ Lot No.: H1B23053

TO BE COMPLETED BY SAMPLE RECEIPT ASSOCIATE:

1. Sample Receipt:	YES	NO	NA
a. Do sample container labels match COC? (IDs, Dates, Times)	✓		
b. Is the cooler temperature within acceptance limits? (NOTE: North Carolina, 1668, 1613B have 0-4°C requirement)			✓
c. Were samples received with correct preservative (excluding Encore)?			✓
d. Were custody seals present/intact on cooler and/or containers?		✓	
e. Were all of the samples listed on the COC received?	✓		
f. Were all of the sample containers received intact?	✓		
g. Were containers received for VOAs received without headspace?			✓
h. Were samples received in the appropriate containers?	✓		
i. Did you check for residual chlorine, if necessary?			✓
j. Were samples received within 1/2 of the holding time?	✓		
k. Were samples screened for radioactivity?			✓
l. Were client's sample documents (RFA/COC) received?	✓		
m. Has the RFA/COC been relinquished? (Signed, Dated, Timed)	✓		
n. Are test/parameters listed for each sample?	✓		
o. Is the matrix of the samples noted?	✓		
p. Is the date/time of sample collection noted?	✓		
q. Is the client and project name/No. identified?	✓		

SAMPLE RECEIVING ASSOCIATE: Matthew F. Howard DATE: 07-23-01

TO BE COMPLETED BY PROJECT MANAGER :

1. Project manager "Sample Greet":	YES	NO	NA
a. Quote number to be logged-in under 21911			
b. Informed Login associates of special instructions ?			✓
2. If custody seals were missing/not intact, was client notified?			✓

PROJECT MANAGER : pm DATE: 7/24/01

Client Sample ID	Analysis Requested	Condition (see legend)	Comments/Actions
all	all	5a	

☒ Client informed on 7/24/01 by email. Person contacted: J Waddell.
☐ Noted actions in comments section above.
☒ No action necessary; process as is.
Project Manager: pm Date: 7/24/01

QA026R8.doc, 06/0701