TRC

Customer-Focused Solutions

CLOSURE REPORT SURFACE IMPOUNDMENTS B6, B7 AND B8 LINER AND CONTAMINATED SOIL REMOVAL AND DISPOSAL

VOLUME III
APPENDICES E-F

Prepared for
Shieldalloy Metallurgical Corporation
Newfield, New Jersey

Prepared by
TRC Environmental Corporation
Windsor, Connecticut

TRC Project No. 22990-0000-00010
April 1999
Revised June 2000, June 2001

TRC Environmental Corporation
5 Waterside Crossing
Windsor, Connecticut 06095
Telephone 860-289-8631
Facsimile 860-298-6399

APPENDIX E

ADDENDUM TO PHASE I CLOSURE REPORT, SURFACE IMPOUNDMENTS B1, B2, B3, B5, B11 & B12

SUPPLEMENTAL SOIL SAMPLING REPORT
FORMER LAGOON B-11

TRC

October 18, 2000

Ms. Donna L. Gaffigan, Case Manager
State of New Jersey
Department of Environmental Protection
Bureau of Federal Case Management
401 East State Street, 5th Floor, CN-028
Trenton, New Jersey 08625-0028

Re: Supplemental Soil Sampling Report
Former Lagoon B-11
Addendum to Lagoon Closure Report, B1, B2, B3, B5, B11 & B12
Newfield, NJ Facility
TRC Project No.26770-0020

Dear Ms. Gaffigan:

On behalf of Shieldalloy Metallurgical Corporation (SMC), TRC Environmental Corporation (TRC) is pleased to submit the following letter report documenting the collection and analysis of supplemental soil samples from former lagoon B-11 at the SMC Newfield, New Jersey facility. This letter report is to be inserted as Appendix E in Volume II of the Closure Report, Surface Impoundments B6, B7 and B8, Liner and Contaminated Soil Removal And Disposal (TRC, revised June 2000).

Introduction

Soil samples were originally collected beneath the liner of lagoon B-11 as part of Phase I lagoon closure activities at the SMC facility in 1995, as described in Appendix C of Volume II of the Closure Report, Surface Impoundments B6, B7 and B8, Liner and Contaminated Soil Removal And Disposal (TRC, revised June 2000). Prior to the liner being removed by the remediation contractor (Republic Environmental Systems, Inc.), the liner was visually inspected and was found to contain no breaches. After the liner was removed, no signs of staining or contamination were observed in the soils beneath the liner. Four soil samples were collected from beneath the liner; one from each corner of the base of the lagoon. Each soil sample was analyzed for Target Analyte List (TAL) metals. In addition, one sample was also analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), boron, niobium, strontium, titanium and zirconium. Results of the analyses indicated no exceedances of site-specific chromium cleanup criteria or the NJDEP soil cleanup criteria guidelines. The lagoon B-11 area was then graded, with the soil berm material which formed the western and southern walls of the lagoon used to fill in the former lagoon area. Further grading was conducted in this area during the Phase II closure of lagoons B-6, B-7 and B-8. Discussions with SMC indicate that the final

TRC Environmental Corporation
5 Waterside Crossing • Windsor, Connecticut 06095
Telephone 860-289-8631 • Fax 860-298-6399

ground surface elevation in the former lagoon B-11 area is now approximately one-foot to three-feet higher than the elevation of the base of the former lagoon (96 feet above mean sea level).

The remediation contractor had inadvertently omitted the analysis of hexavalent chromium in each of the soil samples collected below the liner. Although total chromium levels were relatively low in the soil samples, hexavalent chromium levels could not be determined because of the contractor oversight. In response to this issue and NJDEP's letter dated April 14, 2000, TRC prepared a Work Plan for the collection of supplemental soil samples in the area of the former lagoon B-11 which was submitted to NJDEP on May 19, 2000. The Work Plan was accepted with minor revisions, as documented in NJDEP's letter of June 9, 2000. TRC notified NJDEP in writing of the sampling schedule and acknowledged the minor modifications to the Work Plan in a letter to NJDEP dated July 13, 2000.

Soil Sampling Summary

The soil sampling event was conducted on July 27, 2000. Initially, the approximate locations of the four original soil samples collected from the base of B-11 were triangulated in the field based on measurements made from surrounding site features (i.e., the corners of the concrete foundation/wall of former tank T-12 and the corners of Building D111 (pole barn)). Figure 1 indicates the locations of the four soil samples (S1 through S4) collected from B-11 relative to the aforementioned surrounding features. A fifth soil sample location (S5) was selected at the center of the four sample locations (i.e., the center of the former lagoon). Ground surface elevations for each sample location were then surveyed by using a nearby known vertical datum point (monitoring well SC-22S). The existing ground surface elevations of the five sampling points ranged from 98.28 to 99.53 feet above mean sea level.

To collect each soil sample, a decontaminated, post hole digger was used to remove soil down to an elevation of approximately 96 ft above mean sea level, requiring excavation of 2.3 to 3.5 feet of soil, depending on the sample location. Following the setting of a four-inch diameter PVC pipe at each sample location, a stainless steel auger was placed inside the PVC pipe and used to collect the soil sample from the target depth interval of 0 to 1.0 feet. The contents from the auger were placed in a dedicated, stainless steel mixing bowl, homogenized with a decontaminated stainless steel spoon, and then placed directly into the appropriate sample container. The soil sample was geologically logged for grain size, texture, etc. and physical observations (i.e., stains, odors, etc.) of the soils were recorded in the field log book. Soil sample information is summarized in Table 1. None of the samples exhibited evidence of stains or odors.

All sampling equipment (i.e., post hole digger, shovel, PVC pipe, bucket augers, spoons, mixing bowls) was decontaminated in accordance with the NJDEP 8-step decontamination procedure

described in the New Jersey Department of Environmental Protection and Energy Field Sampling Procedures Manual, May 1992 prior to the collection of each sample.

Each soil sample was properly labeled and placed in an ice-filled cooler to preserve the samples at a temperature of 4°C. Samples were shipped overnight, under chain-of-custody, to the Washington Group Environmental Services Laboratory, a New Jersey-certified laboratory, for analysis. Each soil sample was analyzed for hexavalent chromium using NJDEP Modified Method 3060A for alkaline digestion and NJDEP Modified Method 7196A for hexavalent chromium analysis (USEPA SW846, Third Edition) .

Quality control (QC) samples were also collected during this sampling event. One duplicate sample was collected at soil sample location S2 and labeled S6 for submittal to the laboratory as a "blind duplicate" sample. One field blank (FB072700) was collected by pouring laboratory-supplied, analyte-free deionized water over the decontaminated sample collection equipment (PVC pipe, bucket augers, spoons, mixing bowls) and into the appropriate sample container prior to the collection of the first sample. The QC samples were also analyzed for hexavalent chromium using the same methods referenced above for the soil samples.

Analytical Results

The analytical results for the lagoon B-11 resampling effort are summarized in Table 2. Hexavalent chromium was detected in only one sample, S4, at a concentration of 5.9 parts per million (ppm). This concentration is below the site-specific hexavalent chromium cleanup criterion of 10 ppm established by NJDEP for the Phase I lagoon closure activities. A complete hexavalent chromium data package is attached.

It should be noted that the analytical laboratory inadvertently did not measure the percent moisture in the soil samples at the time of hexavalent chromium analysis. However, even if significant drying of the sample took place between original sample analysis and moisture content analysis, it can be concluded that the hexavalent chromium cleanup criterion of 10 ppm would not have been exceeded in the one sample in which hexavalent chromium was detected. The analysis upon which this conclusion is based is presented in detail following the attached data package.

TRC had a data validation firm, Heartland Environmental Services, Inc. of St. Charles, Missouri, review the data package with respect to NJDEP modified method analytical requirements. Heartland concluded that there was nothing in the data package that would require NJDEP to reject the data.

Conclusions

Based on the results of the resampling effort, SMC has documented the achievement of the site-specific hexavalent chromium cleanup criterion in the former lagoon B-11 area. Based on these results, no additional sampling in the lagoon B-11 area is required and compliance with the lagoon closure plan has been demonstrated.

If you should have any questions on the information presented herein, please do not hesitate to contact me at (860) 298-6229.

Very truly yours,

TRC ENVIRONMENTAL CORPORATION

Robert C. Smith

Robert C. Smith, P.E.
Program Manager

Enclosures

cc: T. Anderson, EPA (1 copy)
D. Smith, SMC (1 copy)
C. Harp, Archer & Greiner (1 copy)

TABLE 1

FORMER LAGOON B-11 SOIL SAMPLE SUMMARY

Shieldalloy Metallurgical Corporation
Newfield, New Jersey

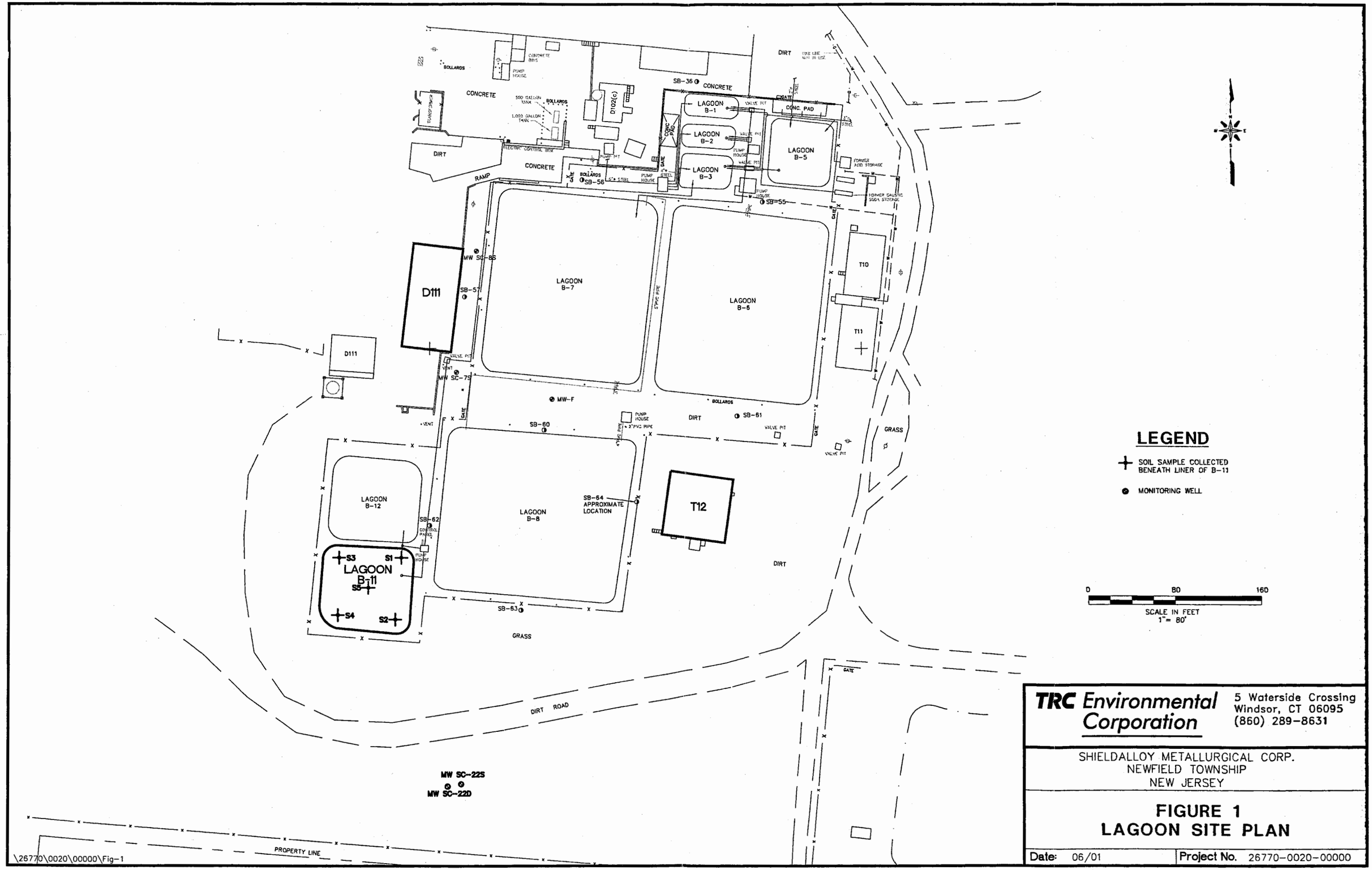
SAMPLE ID	EXISTING GROUND SURFACE ELEVATION (ft)	DEPTH OF EXCAVATION (ft)	SOIL SAMPLE DESCRIPTION
S1	99.53	3.5	Light brown/orange fine-to-coarse sand, some gravel, little silt, moist
S2	98.28	2.3	Light brown/orange fine-to-coarse sand, little silt and gravel, moist
S3	99.22	3.2	Light brown/orange fine-to-coarse sand, some gravel, little silt, moist
S4	98.87	2.9	Grayish brown/orange fine sand, little silt, trace coarse sand and gravel, moist
S5	99.22	3.2	Light brown/orange fine-to-coarse sand, some gravel, little silt, moist

TABLE 2

FORMER LAGOON B-11 SOIL SAMPLE RESULTS SUMMARY

Shieldalloy Metallurgical Corporation
Newfield, New Jersey

SAMPLE ID	HEXAVALENT CHROMIUM CONCENTRATION (ppm)	DETECTION LIMIT (ppm)
S1	ND	4
S2	ND	4
S6 (duplicate of S2)	ND	4
S3	ND	4
S4	5.9	4
S5	ND	4
FB072700	ND	0.02


CONCRETE
BOLLARDS
PUMP HOUSE
500 GALLON TANK
1,000 GALLON TANK
D102(c)
SB-36
DIRT
LAGOON B-1
LAGOON B-2
LAGOON B-3
LAGOON B-5
CONC. PAD
VALVE PIT
GATE
RAMP
SB-56
SB-55
D111
MW SC-8S
SB-57
LAGOON B-7
LAGOON B-6
T10
T11
MW SC-7S
MW-F
SB-60
SB-61
GRASS
LAGOON B-12
SB-62
LAGOON B-8
SB-64 APPROXIMATE LOCATION
T12
S3
S1
LAGOON B-11
S5
S4
S2
SB-63
DIRT ROAD
MW SC-22S
MW SC-22D
PROPERTY LINE
LEGEND
SOIL SAMPLE COLLECTED BENEATH LINER OF B-11
MONITORING WELL
0
80
160
SCALE IN FEET
1" = 80'
TRC Environmental Corporation
5 Waterside Crossing
Windsor, CT 06095
(860) 289-8631
SHIELDALLOY METALLURGICAL CORP.
NEWFIELD TOWNSHIP
NEW JERSEY
FIGURE 1
LAGOON SITE PLAN
Date: 06/01
Project No. 26770-0020-00000
\26770\0020\00000\Fig-1

THE WASHINGTON GROUP
ENVIRONMENTAL SERVICES LABORATORY

301 Chelsea Parkway
Boothwyn, Pa. 19061
(610) 497-8000

Report For:

Shieldalloy Metallurgical Corp.
Mr. David Smith
P.O. Box 768, 12 West Boulevard
Newfield NJ 08344

Job Number

75700787

Summary Number

55461

September 21, 2000

Reviewed by Mary Pierce
Project Manager Mary Pierce

NJ ID# 77343	EPA ID# PA00078	PA ID# 23-272
CA ID# 1924	RI ID# A70	CT ID# PH0687
NY ID# 11345	DE ID# PA00078	MA ID# M-PA078

September 21, 2000

Shieldalloy Metallurgical Corp.
Mr. David Smith
P.O. Box 768, 12 West Boulevard
Newfield, NJ 08344

Subject: RE&C Contract No. 75700787
Laboratory Analysis

Dear Mr. Smith,

Attached is the analytical report for samples submitted to us on 07/27/2000. Inorganic sample results are reported on an as received basis unless otherwise noted. All organic sample results are reported on a dry weight basis unless otherwise noted.

All analyses are performed within method required holding times unless noted in a non-conformance report which, if necessary, is located following the method description summary. In addition, any conditions which may aid in the interpretation of the data are noted on this form.

If there are questions regarding this report, please contact me.

Very truly yours,

Kenneth M. Ives
Laboratory Manager

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The Washington Group International
Environmental Services Laboratory Data Summary
Summary # 55461 Printed - 09/21/00 10:21:42

Log	Description	Code	Parameter	Result	Limit	Units	Sampled	Started	Complete	Analys
232808	S1	429NJ	Cr+6 NJDEP Mod	ND<4		mg/kg-dry	07/27/2000	07/31/2000	07/31/2000	GCW
232808	S1	S06	WATER BY EVAP	4.8		% as received	07/27/2000	09/20/2000	09/21/2000	MCH
232809	S2	429NJ	Cr+6 NJDEP Mod	ND<4		mg/kg-dry	07/27/2000	07/31/2000	07/31/2000	GCW
232809	S2	S06	WATER BY EVAP	3.6		% as received	07/27/2000	09/20/2000	09/21/2000	MCH
232810	S3	429NJ	Cr+6 NJDEP Mod	ND<4		mg/kg-dry	07/27/2000	07/31/2000	07/31/2000	GCW
232810	S3	S06	WATER BY EVAP	4.4		% as received	07/27/2000	09/20/2000	09/21/2000	MCH
232811	S4	429NJ	Cr+6 NJDEP Mod	5.9		mg/kg-dry	07/27/2000	07/31/2000	07/31/2000	GCW
232811	S4	S06	WATER BY EVAP	4.9		% as received	07/27/2000	09/20/2000	09/21/2000	MCH
232812	S5	429NJ	Cr+6 NJDEP Mod	ND<4		mg/kg-dry	07/27/2000	07/31/2000	07/31/2000	GCW
232812	S5	S06	WATER BY EVAP	10.6		% as received	07/27/2000	09/20/2000	09/21/2000	MCH
232813	S6	429NJ	Cr+6 NJDEP Mod	ND<4		mg/kg-dry	07/27/2000	07/31/2000	07/31/2000	GCW
232813	S6	S06	WATER BY EVAP	4.2		% as received	07/27/2000	09/20/2000	09/21/2000	MCH
232814	FB072700	429+6	Cr/Hexavalent	ND (0.02)		mg/l	07/27/2000	07/28/2000	07/28/2000	JSK

Approved by: _____

Report Prep: _____

003A

CHAIN OF CUSTODY DOCUMENTATION

(PLEASE DO NOT WRITE IN SHADED AREAS)

SHIP TO:
Raytheon
Engineers & Constructors
301 CHELSEA PARKWAY
BOOTHWYN, PA 19061
PHONE (610) 497-8000
FAX (610) 497-8005
FAX (610) 485-5274

CLIENT: Shieldalloy Metallurgical Corp - Newfield, NJ
PROJECT DESCRIPTION: Soil Sampling, Lagoon B-11
SEND REPORT TO: Dave Smith SEND INVOICE TO: Dave Smith
DATA NEEDED BY: REPORT NEEDED BY:

LABORATORY JOB NO.: 75706787
SAMPLERS: Client
PHONE: 856-682-4200 FAX:
REPORT TYPE: TIER I ___ TIER II ___ STANDARD ___ QC ___ OTHER ___

FOR LAB USE ONLY:
P.O. NO.:
DUE DATE: 7/31
COOLER SEAL
YES ☐ NO ☐
BROKEN ☐ INTACT ☐
COOLER TEMP.: 4 deg. C

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:
Matrix Spike, Matrix Spike duplicate taken for S1.
Analytical Protocol: SW846

ANALYSIS REQUIRED: Hexavalent Chromium (Method 3060A); Hexavalent Chromium (Method 7196A)

QUOTE NO.
SUMMARY NO. 55461

SAMPLE DATA						CONTAINER DATA						LABORATORY NO.
ID.	DATE	TIME	MATRIX	GRAB	COMP.	TYPE	NO.	PRESERVATIVE	pH			
S1	7/27/00	1030	S	X		4oz g	1	–		X		232808
S1 MS		1030	S					–		X		
S1 MSD		1030	S					–		X		
S2		1100	S					–		X		232809
S3		1145	S					–		X		232810
S4		1225	S					–		X		232811
S5		1300	S					–		X		232812
S6		1240	S					–		X		232813
FB072700		0955	W			500ml(P)		HNO3	<2		X	232814

RELINQUISHED BY		RECEIVED BY		METHOD OF SHIPMENT
NAME: [signature] OF: RE	DATE: 7/27/00 TIME: 1415	NAME: [signature] OF:	DATE: 7/27/00 TIME: 1700	AIRBILL NO.:
NAME: [signature] OF:	DATE: 7-27-00 TIME: 1600	NAME: [signature] OF: Washington Group	DATE: 7/27/00 TIME: 1650	
NAME: OF:	DATE: TIME:	NAME: OF:	DATE: TIME:	

004

THE WASHINGTON GROUP
ENVIRONMENTAL LABORATORY

Methods Used for Summary# 55461:

Code	Description
429+6	Chromium, Hexavalent/USGS I-1230-84/SM 3500-Cr D
429NJ	Chromium, Hexavalent/colorimetric/SW846 7196A&3060,NJ mod.
S06	Water by evaporation/ EPA-600 Mtd 160.3

The Washington Group
Environmental Laboratory

F-32-1-672

REPORT OF NONCONFORMANCES AND COMMENTS

This Form is used for reporting any nonconformances (anything unusual) encountered in the performance of the analysis. Also recorded are any comments about the nature of the sample that might aid in the interpretation of the data.

Laboratory Sample Number: 232808 thru 232814

Summary Number: 55461

Date: 09/21/2000

Analyst:

Analysis:

Comments (including nonconformances):

NONE FOUND

Raytheon Engineers & Constructors
Laboratory Control Data

Control # 96631
Analysis Cr+6 NJDEP Mod
Method 429NJ
Book # 373
Page # 25
Stock # 354-53-4
Analyst GCW

Started 07/31/2000
Complete 07/31/2000
Reported 08/02/2000
Time 11:00

All results reported as: mg/kg

Log Number	Concentration
232808	ND (4)
232809	ND (4)
232810	ND (4)
232811	5.6
232812	ND (4)
232813	ND (4)

STANDARDS

Qc Std Number	True Value	Result	Recovery (%)
CCV	1.0	0.970	97.00
ICV	1.0	0.975	97.50
LCS	1.0	0.924	92.40

SPIKES

Sample #	Result	Spike Result	Difference	Added	Recovery(%)
232808POS	ND (0.1)	1.03	1.03	1.0	103.00
232808PRE	ND (0.1)	0.811	0.81	1.0	81.10
232808PRE	ND (0.1)	0.848	0.85	1.0	84.80

Method: Chromium, Hexavalent/colorimetric/SW846 7196A&3060,NJ mod.
Method Blank - ND (4)
Comments:

Analyst

Reviewed by

Standard Curve 7/31/00

	Abs @ 540	Final pH	
Blk	.000	2.04	
0.1 mg/l	.027	2.01	corr = .9983
0.3 mg/l	.093	2.05	
0.5 mg/l	.187	1.96	
1.0 mg/l	.345	2.01	

Prep Date 7/31/00
Prep Tech GCW
Analysis Date 7/31/00
Analysis Tech GCW
Digestion Start 11:40
" Stop 12:40
" Temp 94 °C
Analysis Start 15:20
" Stop 16:10

	Sample Amt. (g)	pH Final	pH Bkg.	Dilution	Bkg Abs	Abs.	mg/l
ICV	—	2.04	—	—	—	.340	0.975
LCS	—	2.07	—	—	—	.322	0.924
ICB	—	1.96	—	—	—	.000	ND (0.1)
# 232808	2.48	1.80	2.06	—	.001	.025	ND (0.1)
# 232809	2.52	1.86	1.80	—	.000	.001	ND (0.1)
# 232810	2.52	1.85	2.02	—	.000	.016	ND (0.1)
# 232811	2.47	1.82	1.87	—	.002	.045	0.140
# 232812	2.46	2.09	1.92	—	.002	.018	ND (0.1)
# 232813	2.54	1.98	1.96	—	.001	.001	ND (0.1)
232808 dup	2.50	2.10	2.06	—	.001	.023	ND (0.1)
RE Digest " (1.0) ms	2.47	1.95	2.06	—	.001	.282	0.811
" " (1.0) msd	2.51	2.05	2.06	—	.001	.295	0.848
st " " (1.0) ms	2.48	1.80	2.06	—	.001	.360	1.03
Prep Blk		1.95	—	—	—	.000	ND (0.1)
CCV		2.02	—	—	—	.338	0.970
CCB		2.04	—	—	—	.000	ND (0.1)

Digestion Solution
354-85-1 pH = 13.3

Cr^{+6} Spiking Solution 50 ppm
354-85-2

Cr^{+6} Standard 1000 ppm
354-53-4

Filter Paper
Gelman Nylaflo®
0.45 μm

All samples were diluted to 100 mL

	mg/kg
# 232808	ND (4.0)
" dup	ND (4.0)
# 232809	ND (4.0)
# 232810	ND (4.0)
# 232811	5.6
# 232812	ND (4.0)
232813	ND (4.0)

Continued on Page

Read and Understood By

Signed 7/31/00 Date Signed 8/2/00 Date

Washington

Notebook No. 0033

WATER BY EVAP SO6

Analyst: RETHA JOHNSON

Date: 9/20/00 1400 2:00pm

Container No.	0	1	2	3	5	6	7	16
Sample No.	WATER BY BLANK	~~232~~ 808	232809	232810	232811	232812	232813	232813
Analysis							DUP	
Sample Vol. (g)		14.1	11.1	11.38	9.78	14.26	14.9	15.28
Tare & Solids (g) Dry	1.23	14.68	11.96	12.14	10.55	14.00	15.54	15.93
Tare & Solids (g) Wet		15.35	12.36	12.64	11.03	15.51	16.16	16.55
Tare (g)	1.25	1.25	1.26	1.26	1.25	1.25	1.26	1.27
Solids (g) Dry Minus Tare	-0.02	13.43	10.7	10.88	9.30	12.75	14.28	14.66
Solid % Dry		95.2	96.4	95.6	95.1	89.4	95.8	95.9
% Moisture	98421	4.8	3.6	4.4	4.9	10.6	4.2	4.1
								M = 4.2

Analyst: RETHA

0800 Date: 9.21.2000

Container No.	0	1	2	3	5	6	7	16
Sample No.	WATER BY Blank	EVAP ~~237~~ 500	237501	237502	237503	237504	237505	237506
Analysis								
Sample Vol. (g)								
Tare & Solids (g) Dry								
Tare & Solids (g) Wet		14.31	13.54	13.22	11.75	13.48	12.51	11.44
Tare (g)	1.25	1.26	1.26	1.26	1.26	1.26	1.26	1.28
Solids (g) Dry Minus Tare								
Solid % Dry								
% Moisture								

ANALYSIS OF IMPACT OF MOISTURE CONTENT ON FINAL SAMPLE RESULT

The hexavalent chromium soil sample results as reported herein are on a dry weight basis, based on moisture content analyses conducted at a later date than the original hexavalent chromium analyses. For the sample in which hexavalent chromium was detected (S4), the reported moisture content was 4.9%. To evaluate the potential effect that drying of the sample between hexavalent chromium and moisture content analyses could have had on the reported hexavalent chromium results, a mathematical analysis was conducted. This analysis was specifically conducted to determine if the 10 ppm hexavalent chromium cleanup criterion could have been exceeded as a result of the delay in moisture content analysis. Based on the wet weight analysis (5.6 ppm hexavalent chromium on a wet-weight basis for S4) and an assumed 10 ppm dry weight sample level, the theoretical moisture content of the original sample was back-calculated. The equation used is as follows:

$$\frac{\text{wet weight conc}}{(1 - \%\ \text{moisture})} = \text{dry weight conc}$$

where:

- wet weight = 5.6 ppm
- dry weight = 10 ppm

$$\%\ \text{moisture} = 1 - (5.6 \div 10)$$
$$\%\ \text{moisture} = 0.44$$

Therefore, for Sample S4 to have exhibited 10 ppm hexavalent chromium on a dry weight basis, the original sample would have had to contain 44% moisture. Such a sample would be very wet, approaching the consistency of a sludge, rather than a solid fine- to coarse-grained sand soil sample. However, the field notes describe the sample as simply being "moist". Since field observations indicate the original soil sample had a moisture content well below 44%, it can be concluded that the delay between original sample analysis and moisture content analysis would not be responsible for an exceedance of the 10 ppm cleanup criterion.

FINAL SUPPLEMENTAL SOIL SAMPLING REPORT
FORMER LAGOONS B1, B2, B3, B5 AND B12

TRC

Customer-Focused Solutions

February 23, 2001

Ms. Donna L. Gaffigan, Case Manager
State of New Jersey
Department of Environmental Protection
Bureau of Federal Case Management
401 East State Street, 5th Floor, CN-028
Trenton, New Jersey 08625-0028

Re: Final Supplemental Soil Sampling Report
Former Lagoons B1, B2, B3, B5 & B12
Addendum to Lagoon Closure Report, B1, B2, B3, B5, B11 & B12
Newfield, NJ Facility
TRC Project No.26770-0020

Dear Ms. Gaffigan:

On behalf of Shieldalloy Metallurgical Corporation (SMC), TRC Environmental Corporation (TRC) is pleased to submit the following letter report documenting the collection and analysis of supplemental soil samples from former lagoons B-1, B-2, B-3, B-5 & B-12 at the SMC Newfield, New Jersey facility. This letter report is to be inserted as Appendix E in Volume II of the Closure Report, Surface Impoundments B-6, B-7 and B-8, Liner and Contaminated Soil Removal And Disposal (TRC, revised June 2000). Based on discussions held between the New Jersey Department of Environmental Protection (NJDEP), SMC and TRC on February 6, 2001, this submittal supercedes TRC's previous submittal of January 17, 2001.

Introduction

Soil samples were originally collected beneath the liners of lagoons B-1, B-2, B-3, B-5 and B-12 as part of Phase I lagoon closure activities at the SMC facility in 1995, as described in Appendix D of Volume II of the Closure Report, Surface Impoundments B6, B7 and B8, Liner and Contaminated Soil Removal And Disposal (TRC, revised June 2000). Prior to the liners being removed by the remediation contractor (Republic Environmental Systems, Inc.), they were visually inspected and found to contain tears and/or holes which were not the result of closure activities. The liners were removed, and soils exhibiting signs of staining or contamination were excavated and stockpiled for disposal as hazardous waste. Four soil samples were then collected from the base of each lagoon, with one sample collected at each corner. Each soil sample was analyzed for Target Analyte List (TAL) metals. In addition, one sample per lagoon was also analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), boron, niobium, strontium, titanium and zirconium. The Closure Plan for these impoundments (TRC, 1995) indicated that soil which exceeded NJDEP soil

TRC Companies, Inc.
5 Waterside Crossing • Windsor, Connecticut 06095-1563
Telephone 860-298-9692 • Fax 860-298-6399

cleanup criteria or site-specific lagoon closure criteria established for total chromium (500 parts per million or ppm) and hexavalent chromium (10 ppm) would be removed and/or a risk evaluation would be undertaken to determine the appropriate remediation action necessary.

Additional soil excavation was warranted in lagoons B-1, B-2, B-3 and B-5 following receipt of the soil sample analyses, due to exceedances of site-specific chromium cleanup criteria or NJDEP soil cleanup criteria guidelines. No exceedances of these criteria were identified in the samples collected from lagoon B-12. Following removal of any additional soils, confirmation samples were collected and analyzed for those parameters which exceeded the site-specific cleanup criteria. When concentrations still exceeded the cleanup criteria, the soil excavation/confirmation sampling cycle continued until cleanup criteria were achieved. For each sample location in each lagoon, the total thickness of contaminated soil removed during the lagoon closure process is identified in Table 1.

In several specific instances, the cleanup criteria were not achieved during the original lagoon closure activities. In these cases, the NJDEP was verbally notified of the circumstances and the basis for discontinuation of excavation activities. In two such instances, excavation was discontinued due to the fact that the ground water table had been encountered at the depth of sample collection. Specifically, hexavalent chromium was still present at levels exceeding the 10 ppm site-specific cleanup criterion in the samples collected from the southern portion of lagoon B-1 and the eastern portion of lagoon B-3. With the concurrence of NJDEP, it was inferred that the elevated hexavalent chromium concentrations detected in the saturated soils in the bottoms of the excavations were associated with ground water contamination and therefore could not definitely be attributed to a source area within the soils. Hexavalent chromium was also detected in one final confirmatory sample collected from the southeast corner of lagoon B-2 at a level of 11 ppm, which slightly exceeded the site-specific criterion of 10 ppm. The overall lagoon B-2 results were reviewed with NJDEP, however, and approval to backfill the lagoon was obtained.

Following excavation activities, lagoons B-1, B-2, B-3 and B-5 were backfilled and compacted to the grade surrounding the excavations using soils from the berm materials to the west and south of lagoons B-11 and B-12. Lagoon B-12 was graded as specified on the Site Restoration and Final grading Plan (Drawing C-4 of the Plans and Specifications (TRC, 1995)) and backfilled with soil berm material from its southern wall.

In NJDEP letters dated August 8, 2000 and September 22, 2000, all hexavalent chromium data from the Phase I and Phase II lagoon closure activities were rejected. In response to this issue, TRC prepared a Work Plan for the collection of supplemental soil samples in the area of former lagoons B-1, B-2, B-3, B-5 and B-12 which was submitted to NJDEP on October 3, 2000. The Work Plan was then revised in accordance with NJDEP comments, and re-submitted to NJDEP on October 18, 2000. The Work Plan was subsequently approved on November 6, 2000.

The Work Plan for the supplemental sampling effort described the collection of four samples from each of lagoons B-1, B-2, B-3 and B-5, with five samples to be collected from the larger lagoon, B-12. Proposed sample depths were based on the original elevations of the bases of the lagoons, as determined by surrounding berm elevations measured prior to lagoon closure and the reported depths of the lagoons. Based on topographic data (James M. Stewart, 12/20/94), the berms surrounding the lagoons were typically constructed to an elevation of approximately 105 feet above mean sea level (AMSL). Based on reported lagoon depths of 5.5 feet for lagoons B-1, B-2, B-3 and B-5 (see Closure Report), the elevations of the bases of lagoons B-1, B-2, B-3 and B-5 were approximately 99.5 feet AMSL. As reported previously in the resampling work plan for former lagoon B-11, which was located adjacent to lagoon B-12 and was reportedly the same depth as lagoon B-12, the existing ground surface elevation in the former lagoon B-11 area is now approximately one-foot to three-feet higher than the elevation of the base of the former lagoon (96 feet above mean sea level). Therefore, this information was also used in determining the sample depths for former lagoon B-12. The final sample collection depth was then determined in the field using the process described in the following section.

Supplemental Soil Sampling Summary

The supplemental soil sampling event was conducted on November 8, 2000. Initially, the approximate locations of the original soil samples collected from the bases of the lagoons were triangulated in the field based on measurements made from surrounding site features (i.e., the corners of the concrete wall to the west of lagoons B-1 to B-3 and the corners of Building D111 (pole barn)). A fifth soil sample location (B12-S5R) was selected at the center of the four sample locations in former lagoon B-12 (i.e., the center of the former lagoon). Ground surface elevations for each sample location were then surveyed by using a nearby known vertical datum point (monitoring well SC-22S). The existing ground surface elevations of the sampling points in former lagoons B-1, B-2, B-3 and B-5 (four samples per lagoon) ranged from 104.53 to 105.95 feet AMSL. The existing ground surface elevations of the five sampling points for former lagoon B-12 ranged from 99.23 to 100.03 feet AMSL. The final sample collection depth was then determined based on the surveyed ground surface elevation, the calculated elevation of the base of the lagoon, and the reported depth of soil removal from the base of each lagoon. The new samples were collected from a depth interval of 1 foot below the elevation of the base of each lagoon or the reported maximum depth of soil removal from the base of the lagoon. Elevations of the samples collected are identified in Table 1. Final sample locations for the supplemental sampling effort are indicated in Figure 1 for lagoons B-1, B-2, B-3 and B-5 and in Figure 2 for lagoon B-12.

To collect the new soil samples, a truck-mounted Geoprobe® was used to advance a 3-inch diameter drive point connected to 3-foot sections of 1-inch diameter threaded steel rods to the top elevation of the proposed sample interval indicated in Table 1. A soil sample was then collected by retracting the drive point and rods and attaching a 2-inch diameter, 4-foot long Macro-Corer® to the bottom

of the rods. The Macro-Corer® and rods were then reinserted into the hole, with the corer pushed to the bottom of the borehole and then further advanced 1 foot for sample collection. The interior walls of the Macro-Corer® were lined with disposable acetate to prevent cross contamination and to ensure sample integrity. All sampling equipment (i.e., steel rods, Macro-Corer®, spoons, mixing bowls) was decontaminated in accordance with the NJDEP 8-step decontamination procedure described in the New Jersey Department of Environmental Protection and Energy Field Sampling Procedures Manual, May 1992.

The soil sample was geologically logged for grain size and texture, and physical observations (i.e., stains, odors, and moisture) of the soil were recorded in the field log book. Soil sample information is summarized in Table 2. None of the samples exhibited evidence of stains or odors. The contents of the Macro-Corer® were placed in a dedicated, stainless steel mixing bowl. The contents of the bowl were then homogenized with a decontaminated stainless steel spoon and placed directly into the appropriate sample container.

Two of the soil samples (B3-S1R and B3-S2R) were saturated. Both of these samples were air-dried in bowls prior to placement into sample containers. Prior to air drying, duplicate soil samples were collected and placed into sample containers. These samples were centrifuged in the laboratory to decant off all liquid prior to sample digestion and analysis. All centrifuged soil samples were labeled with a "CF" designation (B3-S1R CF and B3-S2R CF).

Each soil sample container was properly labeled and placed in an ice-filled cooler to preserve the samples at a temperature of 4°C. Samples were shipped via courier, under chain-of-custody, to Severn Trent Services (STL-Edison), a New Jersey-certified laboratory, for analysis. Each soil sample was analyzed for hexavalent chromium using the NJDEP Modified Method for alkaline digestion per Method 3060A USEPA SW846, Third Edition.

Quality control (QC) samples were also collected during this sampling event. One duplicate sample was collected at soil sample location B12-S2R and labeled B12-S6R for submittal to the laboratory as a "blind duplicate" sample. One field blank (FB110800) was collected by pouring laboratory-supplied, analyte-free deionized water over the decontaminated sample collection equipment (acetate liner, Macro-Corer®, spoons, mixing bowls) and into the appropriate sample container prior to the collection of the first sample. The QC samples were analyzed for hexavalent chromium (NJDEP Modified Method for alkaline digestion per Method 3060A USEPA SW846, Third Edition for the duplicate sample and Method 7196A USEPA SW846, Third Edition for the field blank).

Following chemical analysis, a data validation firm, Heartland Environmental Services, Inc. (Heartland) of St. Charles, Missouri, reviewed the data packages. The data were screened to determine usability of results and to determine compliance relative to the analytical requirements and deliverables. Reported holding times, blank analysis results, matrix spike and laboratory control

sample (LCS) recoveries, matrix duplications and calibration results were reviewed. On the basis of their review, Heartland qualified all positive and non-detect analytical results as estimated ("J" or "UJ", respectively) with low bias due to high matrix spike recovery results (40% to 55%) which were below the lower control limits (75%).

Under the direction of the NJDEP's Quality Assurance Section, the data qualifiers were subsequently removed due to the fact that the low matrix spike recovery results (which are more applicable to the low-concentration results than the high matrix spike recovery results) were acceptable. Based on additional NJDEP review comments (see NJDEP memo included with the attached data packages), the laboratory also reissued the data packages with minor corrections (eliminating the rounding off of sample weights and percent moisture values in the original calculations of the hexavalent chromium results).

Analytical Results

The analytical results for the resampling effort are summarized in Table 3. Complete data packages corrected on the basis of NJDEP comments are attached, along with the data validation packages which are based on the original, uncorrected data. Exceedances of the 10 ppm hexavalent chromium cleanup criterion are described below. While the original sampling data were disqualified, they are described below for situations where the cleanup criterion was not achieved during the lagoon closure activities.

At least one sample from each of the lagoons exhibited hexavalent chromium at a level exceeding the site-specific hexavalent chromium cleanup criterion of 10 ppm. In lagoons B-1 and B-3, sample locations exhibiting hexavalent chromium cleanup criterion exceedances generally coincided with sample locations from the original sampling effort where the cleanup criterion was not achieved due to the presence of the water table. In lagoon B-1, sample B1-S2R, collected at a depth of 11.4 feet below current ground surface or fbgs, contained hexavalent chromium at 15.3 ppm. The original saturated sample, 1030-B1-S2, collected at this location was reported to contain hexavalent chromium at 21.1 ppm. In lagoon B-3, samples B3-S1R and B3-S2R were located on the eastern side of the lagoon at depths of 14.5 and 14.6 fbgs, respectively and exhibited hexavalent chromium concentrations of 28.1/34.6 ppm (air-dried and centrifuged results) and 34.5/35.7 ppm, respectively. The original saturated samples, 1030-B3-S1 and 10-B3-S2, were reported to contain hexavalent chromium at levels of 32.8 ppm and 97.6 ppm, respectively. Therefore, the supplemental sample results were less than or comparable to the original disqualified sample results at these locations.

Other samples in lagoons B-1 and B-3 which contained hexavalent chromium at levels exceeding 10 ppm include B1-S1R and B3-S4R. In lagoon B-1, sample B1-S1R, collected at a depth of 8.2 fbgs, contained hexavalent chromium at 58.3 ppm.. In lagoon B-3, sample B3-S4R, collected at a depth of 10.0 fbgs, contained hexavalent chromium at a level of 20.4 ppm.

In lagoon B-2, supplemental samples B2-S2R, B2-S3R and B2-S4R, collected at depths ranging from 9.2 to 10.0 fbgs, contained hexavalent chromium at levels of 33.8 ppm, 20.0 ppm and 26.3 ppm, respectively. During the original sampling effort, excavation was ceased in this lagoon when the average hexavalent chromium concentration was below 10 ppm, as discussed with NJDEP at the time. One of the original samples, 1117-B2-S2, was reported to contain hexavalent chromium at 11 ppm, slightly exceeding the 10 ppm cleanup criterion.

Other supplemental samples which contained hexavalent chromium above the cleanup criterion of 10 ppm include sample B5-S3R (at 70.0 ppm), collected at a depth of 6.6 feet in lagoon B-5, and sample B12-S2R and its blind duplicate sample (at 13.3/12.4 ppm), collected at a depth of 3.6 fbgs in lagoon B-12.

As described in the Supplemental Soil Sampling Summary above, two saturated samples were allowed to air dry prior to analysis. However, in response to NJDEP comments on the original supplemental sampling plan, duplicates of the saturated samples (prior to air drying) were also submitted to the laboratory, where they were centrifuged prior to analysis. The hexavalent chromium levels in the air-dried and centrifuged samples were relatively comparable, although the reported moisture contents of the centrifuged samples were approximately 10 percentage points higher than the air-dried samples.

Data Evaluation and Conclusions

Based on the results of the supplemental sampling effort, the site-specific hexavalent chromium cleanup criterion established in the 1995 Closure Plan was exceeded at several locations within the former lagoons. At some of the locations (e.g., B1-S2R, B3-S1R, and B3-S2R), the samples collected during the original excavation effort were saturated and, therefore, resulted in a discontinuation of excavation activities prior to achieving the cleanup criterion. At another location (B5-S3R), hexavalent chromium was not detected in the original sample collected at this location, potentially indicating the detected hexavalent chromium is limited in extent. Overall, the levels of hexavalent chromium detected in the supplemental samples (70 ppm and less) are not indicative of more highly contaminated materials present in the lagoon area prior to closure which are suspected to be a historic source of ground water contamination. Therefore, no additional sampling or remedial activities are recommended in these lagoons to demonstrate compliance with the lagoon closure plan.

If you should have any questions on the information presented herein, please do not hesitate to contact me at (860) 298-6229.

Very truly yours,

TRC ENVIRONMENTAL CORPORATION

Robert C. Smith /JMO

Robert C. Smith, P.E.
Program Manager

Enclosures

cc: T. Anderson, EPA (1 copy)
D. Smith, SMC (1 copy)
C. Harp, Archer & Greiner (1 copy)

TABLE 1

SUMMARY OF SAMPLE ELEVATIONS
FOR SUPPLEMENTAL SAMPLING PROGRAM
LAGOONS B-1, B-2, B-3, B-5 AND B-12
Shieldalloy Metallurgical Corporation
Newfield, New Jersey

Sample Location	Existing Surface Elevation (ft AMSL)	Thickness of Contaminated Soils Removed (ft)	Sample Elevation Interval (ft AMSL)[1]	Depth of Soil Boring to Sample Elevation (ft)
Lagoon B-1				
B1-S1R	105.18	2.67	96 - 97	8.18
B1-S2R	104.86	6.17[2]	92.5 - 93.5	11.36
B1-S3R	104.95	2.67	96 - 97	7.95
B1-S4R	104.53	6.17[2]	92.5 - 93.5	11.03
Lagoon B-2				
B2-S1R	105.44	4	94.5 - 95.5	9.94
B2-S2R	105.50	4	94.5 - 95.5	10.00
B2-S3R	104.74	4	94.5 - 95.5	9.24
B2-S4R	104.80	4	94.5 - 95.5	9.30
Lagoon B-3				
B3-S1R	105.49	8.67[2]	90 - 91	14.49
B3-S2R	105.61	8.67[2]	90 - 91	14.61
B3-S3R	105.20	4.17	94.5 - 95.5	9.70
B3-S4R	105.46	4.17	94.5 - 95.5	9.96
Lagoon B-5				
B5-S1R	105.91	0.5	98 - 99	6.91
B5-S2R	105.32	0.5	98 - 99	6.32
B5-S3R	105.60	0.5	98 - 99	6.60

[1] Based on original sample depth interval, determined by depth of lagoon and amount of visually contaminated soil (if any) removed prior to sample collection, as presented in 10/18/00 Modified Work Plan.
[2] Water table encountered at this depth.

TABLE 1 (continued)

SUMMARY OF SAMPLE ELEVATIONS
FOR SUPPLEMENTAL SAMPLING PROGRAM
LAGOONS B-1, B-2, B-3, B-5 AND B-12
Shieldalloy Metallurgical Corporation
Newfield, New Jersey

Sample Location	Existing Surface Elevation (ft AMSL	Thickness of Contaminated Soils Removed (ft)	Sample Elevation Interval (ft AMSL)[1]	Depth of Soil Boring to Sample Elevation (ft)
Lag. B-5 (cont.)				
B5-S4R	105.95	2.17	96.5 - 97.5	8.45
Lagoon B-12[3]				
B12-S1R	99.91	0	95 - 96	3.91
B12-S2R	99.59	0	95 - 96	3.59
B12-S3R	99.93	0	95 - 96	3.93
B12-S4R	99.23	0	95 - 96	3.23
B12-S5R[2]	100.03	0	95 - 96	4.03

[1] Based on original sample depth interval, determined by 13-foot depth of lagoon and amount of visually contaminated soil (if any) removed prior to sample collection, as presented in 10/18/00 Modified Work Plan.
[2] New sample location not previously sampled.
[3]Sample depth identical to Lagoon B-11 resampling depth.

TABLE 2

SUPPLEMENTAL SOIL SAMPLE DESCRIPTIONS
LAGOONS B-1, B-2, B-3, B-5 AND B-12
Shieldalloy Metallurgical Corporation
Newfield, New Jersey

SAMPLE LOCATION	SOIL SAMPLE DESCRIPTION
Lagoon B-1	
B1-S1R	0-12" Light brown/orange fine sand, some silt, trace coarse sand and gravel, slightly moist.
B1-S2R	0-4" Light brown/orange fine sand, some silt, trace coarse sand and gravel; 4-8" Brown fine sand and silt, trace coarse sand; 8-12" Light brown/orange fine sand, some silt, trace coarse sand and gravel, slightly moist.
B1-S3R	0-4" Light brown/orange fine sand and silt, some gravel, trace coarse sand; 4-12" Light brown/orange fine sand, little silt and gravel, trace coarse sand, slightly moist.
B1-S4R	0-5" Orange fine sand and silt, some medium sand, trace coarse sand and gravel; 5-11" Orange fine-to-medium sand, little silt, trace coarse sand and gravel, moist.
Lagoon B-2	
B2-S1R	0-7" Light brown/orange fine sand, some silt, trace coarse sand, gravel and gray clay, moist.
B2-S2R	0-6" Reddish orange fine sand, little silt, trace medium sand, dry.
B2-S3R	0-12" Orange fine sand, little gravel, trace coarse sand and silt, moist.
B2-S4R	0-2" Orange fine sand, little medium sand and silt, trace coarse sand and gravel; 2-12" Orange fine sand, some silt, little medium sand, trace coarse sand and gravel, moist.
Lagoon B-3	
B3-S1R	0-11" Orange fine-to-medium sand, little silt, trace coarse sand and gravel, wet.
B3-S2R	0-12" Orange fine-to-medium sand, little silt, trace coarse sand and gravel, wet.
B3-S3R	0-9" Orange fine-to-medium sand, trace coarse sand and gravel, dry.

TABLE 2 (continued)

SUPPLEMENTAL SOIL SAMPLE DESCRIPTIONS
LAGOONS B-1, B-2, B-3, B-5 AND B-12
Shieldalloy Metallurgical Corporation
Newfield, New Jersey

SAMPLE LOCATION	SOIL SAMPLE DESCRIPTION
Lag. B-3 (cont.)	
B3-S4R	0-12" Orange/brown fine sand, little medium sand, trace silt and gravel, dry.
Lagoon B-5	
B5-S1R	0-12" Light Brown fine sand and silt, trace coarse sand and gravel, slag pieces, dry.
B5-S2R	0-9" Light brown fine sand and silt, trace medium-to-coarse sand and gravel, moist.
B5-S3R	0-12" Light brown/orange fine sand and silt, trace coarse sand and gravel, slightly moist.
B5-S4R	0-12" Light brown/orange fine sand and silt, trace coarse sand and gravel, dry.
Lagoon B-12	
B12-S1R	0-4" Orange fine sand, little gravel, trace medium-to-coarse sand and silt, moist.
B12-S2R	0-12" Light brown/orange fine sand, some silt, trace coarse sand and gravel, trace clay in lenses, moist.
B12-S3R	0-4" Brown fine sand and silt, little medium sand, trace coarse sand and gravel; 4-10" brown fine-to-medium sand, some gravel, little silt, trace coarse sand, wet.
B12-S4R	0-8" Brown fine sand and silt, little gravel, trace medium-to-coarse sand, moist.
B12-S5R	0-9" Brown/orange fine sand and silt, little gravel, trace medium-to-coarse sand, moist.

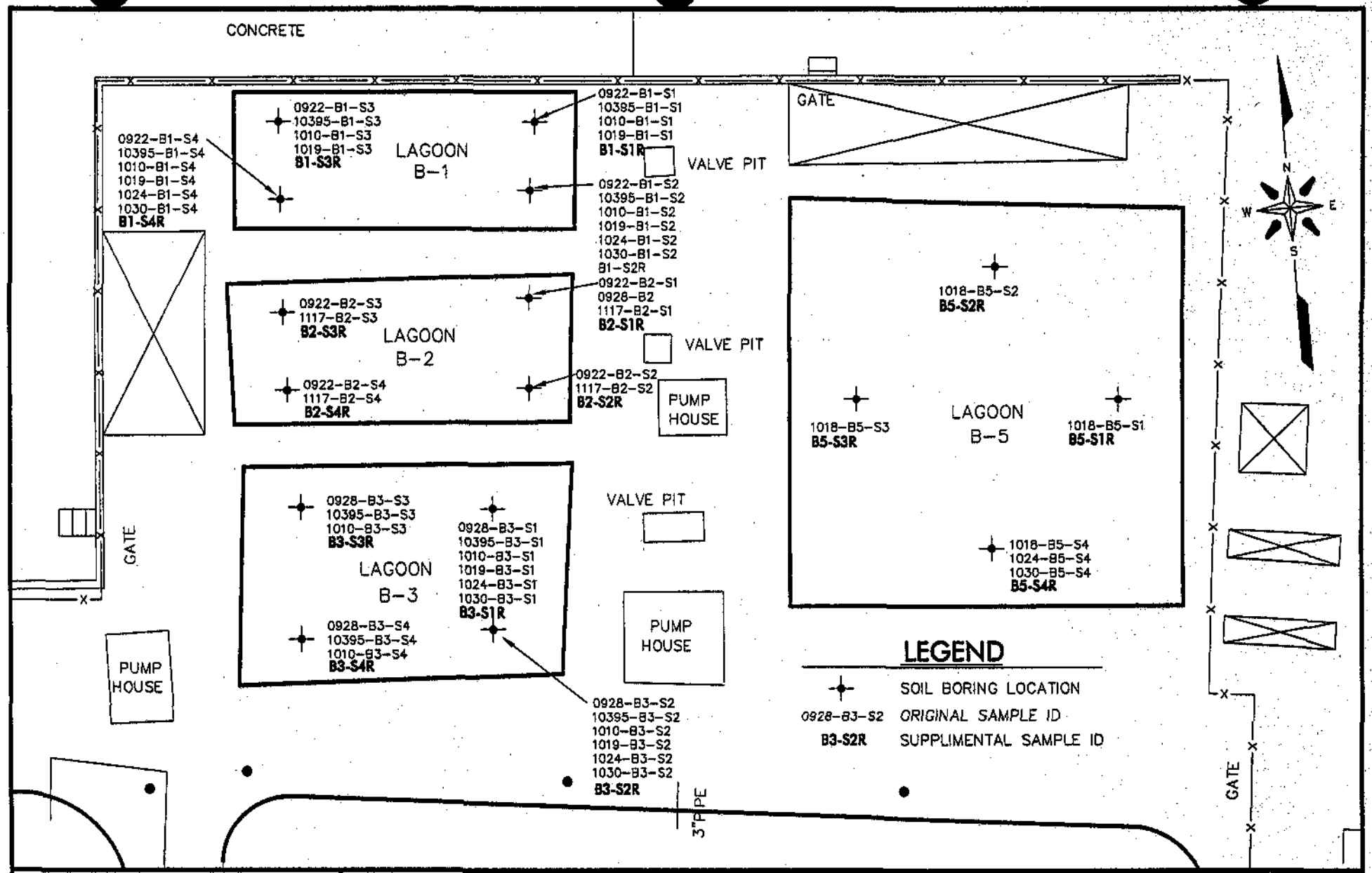
TABLE 3

SUPPLEMENTAL SOIL SAMPLE RESULTS SUMMARY TABLE
LAGOONS B-1, B-2, B-3, B-5 AND B-12

Shieldalloy Metallurgical Corporation
Newfield, New Jersey

Sample ID	Moisture Content (%)	Hexavalent Chromium Concentration (ppm)	Notes
Lagoon B-1			
B1-S1R	9.9	**58.3**	
B1-S2R	6.5	**15.3**	original sample collected at this location and depth was saturated
B1-S3R	5.0	2.0 U	
B1-S4R	5.8	6.9	original sample collected at this location and depth was saturated
Lagoon B-2			
B2-S1R	6.7	7.5	
B2-S2R	6.8	**33.8**	original sample contained 11 ppm hex. chrome
B2-S3R	3.4	**20.0**	
B2-S4R	6.0	**26.3**	
Lagoon B-3			
B3-S1R	2.3	**28.1**	saturated/air-dried
B3-S1RCF	12.9	**34.6**	saturated/centrifuged
B3-S2R	3.3	**34.5**	saturated/air-dried
B3-S2RCF	13.0	**35.7**	saturated/centrifuged
B3-S3R	2.7	5.6	
B3-S4R	4.4	**20.4**	
Lagoon B-5			
B5-S1R	7.5	2.0 U	
B5-S2R	6.9	3.6	
B5-S3R	8.6	**70.0**	
B5-S4R	7.3	2.0 U	
Lagoon B-12			
B12-S1R	3.2	5.3	
B12-S2R	9.2	**13.3**	
B12-S6R	8.6	**12.4**	dupl. of B12-S2R
B12-S3R	2.7	2.0 U	
B12-S4R	4.3	2.0 U	
B12-S5R	4.5	2.0 U	new sample location
FB110800	NA	10.0 U (ug/L)	field blank

NA = not applicable
U = Analyzed but not detected at listed concentration.
Bold print = value exceeds site-specific cleanup criterion of 10 ppm



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Date: 12/2000

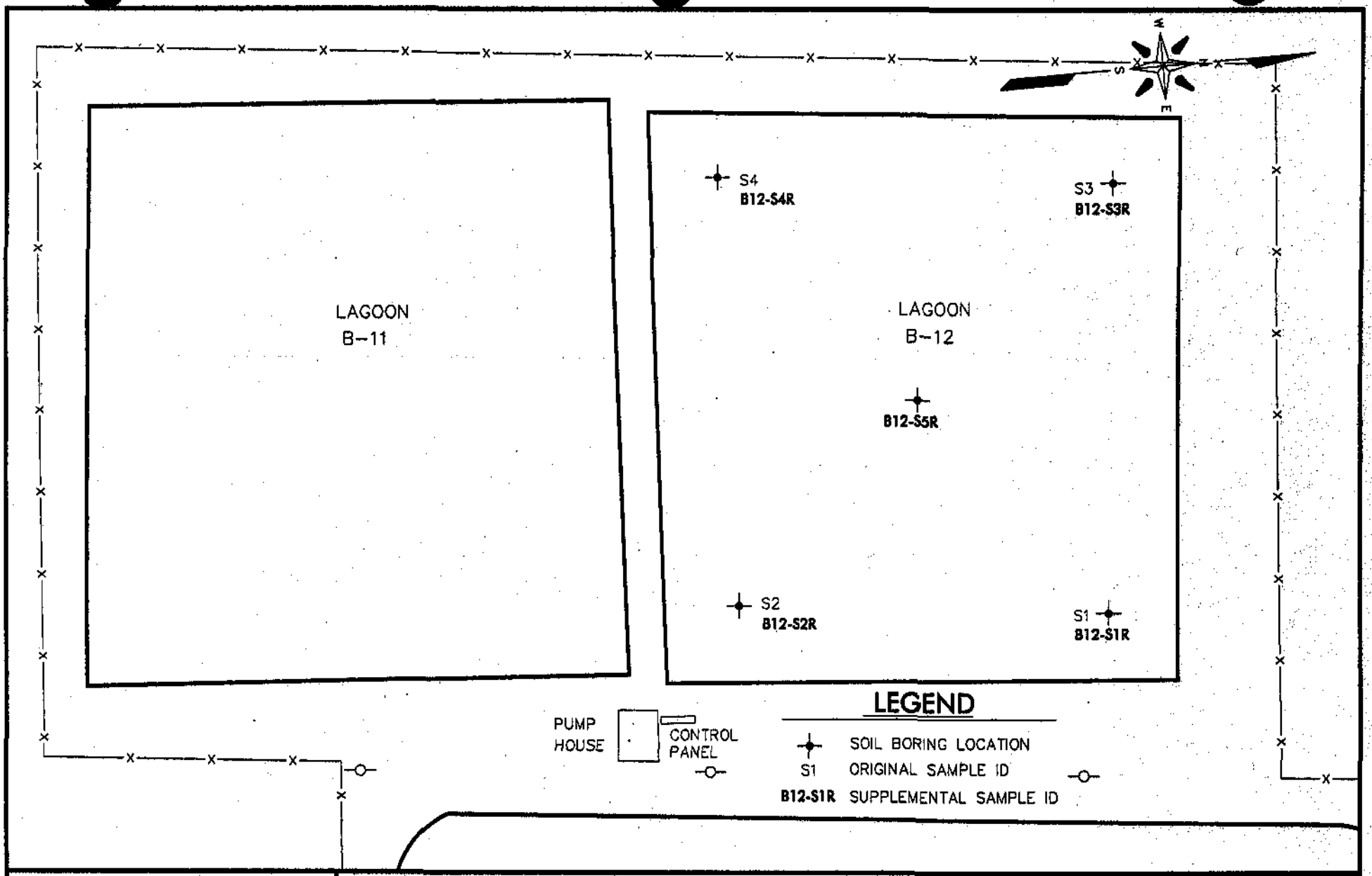
File: \26770\0020\Fig-1

Project No. 26770-0020-00000

SHIELDALLOY METALLURGICAL CORPORATION
NEWFIELD, NEW JERSEY

FIGURE 1
SUPPLEMENTAL SAMPLE LOCATION PLAN
LAGOONS B-1, B-2, B-3 & B-5

TRC Environmental Corporation
5 Waterside Crossing
Windsor, CT 06095
(860) 289-8631



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Date: 12/2000

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Project No. 26770-0020-00000

SHIELDALLOY METALLURGICAL CORPORATION
NEWFIELD, NEW JERSEY

FIGURE 2
SUPPLEMENTAL SAMPLE LOCATION PLAN
LAGOON B-12

TRC Environmental Corporation
5 Waterside Crossing
Windsor, CT 06095
(860) 289-8631

LABORATORY DATA PACKAGES AND ASSOCIATED DATA VALIDATION REPORTS

State of New Jersey

Christine Todd Whitman
Governor

Department of Environmental Protection

Robert C. Shinn, Jr.
Commissioner

MEMORANDUM

FEB 05 2001

TO: John Boyer, Technical Coordinator
Bureau of Environmental Evaluation & Risk Assessment

FROM: Joseph Sanguiliano JS 2/5/01
Quality Assurance Section
Bureau of Environmental Measurements and Quality Assurance

SUBJECT: Quality Assurance Review for the– **Shieldalloy Corporation, Newfield.** Sixty-eight samples from SDGs F445, F490 and F514 were reviewed for Hexavalent Chromium. The analysis was performed by Severn Trent Laboratory Edison.

The Quality Assurance Section, Bureau of Environmental Measurements and Quality Assurance, Division of Publicly Funded Site Remediation has reviewed the above referenced SDGs for hexavalent chromium. The requirements for full regulatory data deliverables are defined in the Technical Requirements for Site Remediation, N.J.A.C. 7:26E Appendix A. The quality assurance review of the data are summarized below.

The analysis was reviewed according to the NJDEP modified USEPA SW-846 Methods 3060 and 7196A. All sample results are acceptable. Please note the following deficiencies.

The laboratory failed to use the actual sample weight in their calculation. Instead, the laboratory utilized a sample weight of 2.5 g in their calculation. In addition, the laboratory rounded off the total solid result. Therefore, the laboratory must go back and recalculate all positive hexavalent chromium results.

The laboratory failed to supply a total solids worksheet. The laboratory only supplied the percent moisture results on the Sample Results form and the percent solids results on the Hexavalent Chromium Soil Calculation forms.

Should you have any questions regarding this review, please contact this office at 633-0752.

c. Donna Gaffigan, BCM

SDG F490

SEVERN
TRENT
SERVICES

STL Edison
777 New Durham Road
Edison, NJ 08817
Tel: 732-549-3900
Fax: 732-549-3679
www.stl-inc.com

November 28, 2000

TRC Environmental Corporation
5 Waterside Crossing
Windsor, CT 06095

Attention: Mr. Larry Butlien

Re: F490 - SMC SITE

Dear Mr. Butlien:

Enclosed are the results you requested for the following sample(s) received at our laboratory on November 08, 2000:

Lab No.	Client ID	Analysis Required
240274	FB110800	Chrome VI
240275	SB7-17R	Chrome VI
240276	SB7-18R	Chrome VI
240277	SB7-19R	Chrome VI
240278	SB7-11R	Chrome VI
240279	SB7-12R	Chrome VI
240280	SB7-25R	Chrome VI
240281	SB7-24R	Chrome VI
240282	SB7-14R	Chrome VI
240283	B1-S1R	Chrome VI
240284	B1-S2R	Chrome VI

SEVERN TRENT SERVICES

Lab No.	Client ID	Analysis Required
240285	B1-S3R	Chrome VI
240286	B1-S4R	Chrome VI
240287	B2-S1R	Chrome VI
240288	B2-S2R	Chrome VI
240289	B2-S3R	Chrome VI
240290	B2-S4R	Chrome VI
240291	B3-S1R	Chrome VI
240292	B3-S1RCF	Chrome VI
240293	B3-S2R	Chrome VI
240294	B3-S2RCF	Chrome VI
240295	B3-S3R	Chrome VI
240296	B3-S4R	Chrome VI
240297	B5-S1R	Chrome VI
240298	B5-S2R	Chrome VI
240299	B5-S3R	Chrome VI
240300	B5-S4R	Chrome VI

An invoice for our services is also enclosed. If you have any questions please contact your Project Manager, Dan Glenn, at (732) 549-3900.

Very truly yours,

Michael J. Urban
Laboratory Manager

SEVERN TRENT SERVICES

Site: SMC SITE

Lab Job No: F490

Date Sampled: 11/7/00-11/8/00
Date Received: 11/8/00
Matrix: SOIL

Date Extracted: 11/9/00
Date Analyzed: 11/9/00
QA Batch: 2228

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240275	SB7-17R	8.7	1.0	ND
240276	SB7-18R	5.3	1.0	ND
240277	SB7-19R	4.0	1.0	ND
240278	SB7-11R	4.3	1.0	8.0
240279	SB7-12R	4.6	1.0	ND
240280	SB7-25R	4.9	1.0	2.2
240281	SB7-24R	5.9	1.0	3.3
240282	SB7-14R	7.1	1.0	4.4
240283	B1-S1R	9.9	2.0	58.3

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

SEVERN TRENT SERVICES

Site: SMC SITE

Lab Job No: F490

Date Sampled: 11/7/00-11/8/00
Date Received: 11/8/00
Matrix: SOIL

Date Extracted: 11/13/00
Date Analyzed: 11/13/00
QA Batch: 2229

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240284	B1-S2R	6.5	1.0	15.3
240285	B1-S3R	5.0	1.0	ND
240286	B1-S4R	5.8	1.0	6.9
240287	B2-S1R	6.7	1.0	7.5
240288	B2-S2R	6.8	1.0	33.8
240289	B2-S3R	3.4	1.0	20.0
240290	B2-S4R	6.0	1.0	26.3
240291	B3-S1R	2.3	1.0	28.1
240292	B3-S1RCF	12.9	1.0	34.6
240293	B3-S2R	3.3	1.0	34.5
240294	B3-S2RCF	13.0	1.0	35.7
240295	B3-S3R	2.7	1.0	5.6
240296	B3-S4R	4.4	1.0	20.4

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

SEVERN TRENT SERVICES

Site: SMC SITE

Lab Job No: F490

Date Sampled: 11/7/00-11/8/00
Date Received: 11/8/00
Matrix: SOIL

Date Extracted: 11/13/00
Date Analyzed: 11/13/00
QA Batch: 2229

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240297	B5-S1R	7.5	1.0	ND
240298	B5-S2R	6.9	1.0	3.6
240299	B5-S3R	8.6	2.0	70.0
240300	B5-S4R	7.3	1.0	ND

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

S[redacted] Envirotech
777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

Name (for report and invoice): Larry Butler	Samplers Name (Printed): Rutkowski, Bere	Site/Project Identification: Shieldalloy Metallurgical
Company: TRC Environmental Corp	P.O. #: 26770	State (Location of site): NJ: [X] NY: [ ] Other:
		Regulatory Program: HazSite Program
Address: 5 Waterside Crossing	Analysis Turnaround Time: Standard [X]	
City: Windsor State: CT	Rush Charges Authorized For: 2 Week [ ] 1 Week [ ] Other [ ]	
Phone: 860-298-6225 Fax: 860-298-6399		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No:
Job No: F490

Sample Identification	Date	Time	Matrix	No. of Cont.	Hexavalent Chromium 3060A/USEPA SW846	Hex. Cr 10-mins 7196A/USEPA SW846	Sample Numbers
FB110800	11/8/00	0830	W	1		X	240274
SB7-17R	11/7/00	1601	S	1	X		240275
SB7-18R	11/7/00	1020	S	1	X		240276
SB7-19R	11/7/00	1640	S	1	X		240277
SB7-11R	11/8/00	0745	S	1	X		240278
SB7-12R	11/8/00	0800	S	1	X		240279
SB7-25R	11/8/00	0805	S	1	X		240280
SB7-24R	11/8/00	0810	S	1	X		240281
SB7-14R	11/8/00	0820	S	1	X		240282
B1-S1R	11/8/00	0910	S	1	X		240283

Preservation Used: (1) = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH
6 = Other _____, 7 = Other _____
Soil:
Water:

Special Instructions

Water Metals Filtered (Yes/No)?

Relinquished by	Company	Date / Time	Received by	Company
1) [signature]	TRC	11/8/00 1600	1) [signature]	STL
2) [signature]	STL	11/8/00 1800	2) [signature]	
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

STL - Envirotech
777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

Name (for report and invoice): Larry Butlien	Samplers Name (Printed): Rukukoski, Bane	Site/Project Identification: Shieldalloy Metallurgical
Company: TRC Environmental	P.O. #: 26770	State (Location of site): NJ: [X] NY: [ ] Other:
		Regulatory Program: Hazsite Program
Address: 5 Waterside Crossing	Analysis Turnaround Time: Standard [X]	ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)
City: Windsor State: CT	Rush Charges Authorized For: 2 Week [ ] 1 Week [ ] Other [ ]	LAB USE ONLY Project No:
Phone: 860-298-6225 Fax: 860-298-6399		Job No: F490

Sample Identification	Date	Time	Matrix	No. of Cont.	Hexavalent Chromium	30 VOA USEPA 25	Sample Numbers
B1-S2R	11/8/00	0930	S	1	X		240284
B1-S3R		0940		1	X		240285
B1-S4R		0955		1	X		240286
B2-S1R		1010		1	X		240287
B2-S2R		1030		1	X		240288
B2-S3R		1040		1	X		240289
B2-S4R		1140		1	X		240290
B3-S1R		1155		1	X		240291
B3-S1R CF *		1155		1	X		240292
B3-S2R		1310		1	X		240293

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH, 6 = Other _____, 7 = Other _____ Soil: Water:

Special Instructions: * Centrifuge Sample Prior to Analysis

Water Metals Filtered (Yes/No)?

Relinquished by	Company	Date / Time	Received by	Company
1) [signature]	TRC	11/8/00 1600	1) [signature]	STL
2) [signature]	STL	11/8/00 1800	2) [signature]	
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

ST Envirotech
777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

Name (for report and invoice): Larry Bothien	Samplers Name (Printed): Rukkaloski, Rane	Site/Project Identification: Shieldalloy Metallurgical
Company: TRC Environmental	P.O. #: 26770	State (Location of site): NJ: ☒ NY: ☐ Other:
		Regulatory Program: Hazsite Program
Address: 5 Waterside Crossing	Analysis Turnaround Time: Standard ☒	
City: Windsor State: CT	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	
Phone: 860-298-6225 Fax: 860-298-6399		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No:
Job No: F490

Sample Identification	Date	Time	Matrix	No. of Cont.	Hex. Chromium 3060A/7196A											Sample Numbers
B3-S2R CF *	11/8/00	1310	S	1	X											240294
B3-S3R		1325		1	X											240295
B3-S4R		1340		1	X											240296
B5-S1R		1355		1	X											240297
B5-S2R		1405		1	X											240298
B5-S3R		1510		1	X											240299
B5-S4R	↓	1520	↓	1	X											240300

Preservation Used: (1) = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH Soil: Water:
6 = Other _____, 7 = Other _____

Special Instructions: * Centrifuge Sample Prior to Analysis. Water Metals Filtered (Yes/No)? _____

Relinquished by	Company	Date / Time	Received by	Company
1) [signature]	TRC	11/8/00 1600	1) [signature]	STL
2) [signature]	STL	11/8/00 1800	2) [signature]	
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

INTERNAL CUSTODY RECORD
AND
LABORATORY CHRONICLE
STL Edison

777 New Durham Road, Edison, New Jersey
08817

Job No: F490 **Site:** SMC SITE

Client: TRC Environmental Corporation

WET CHEM

CHROME VI (3060/7196A)

Lab Sample ID	Date Sampled	Date Received	Preparation Date	Technician's Name	Analysis Date	Analyst's Name	QA Batch
SOLID							
240275	11/8/2000	11/08/2000	11/9/00	AH	11/9/00	AH	2228
240276	11/8/2000	11/08/2000					
240277	11/8/2000	11/08/2000					
240278	11/8/2000	11/08/2000					
240279	11/8/2000	11/08/2000					
240280	11/8/2000	11/08/2000					
240281	11/8/2000	11/08/2000					
240282	11/8/2000	11/08/2000					
240283	11/8/2000	11/08/2000	11/13/00 cc		11/13/00 cc		2229 cc
240284	11/8/2000	11/08/2000	11/13/00		11/13/00		2229
240285	11/8/2000	11/08/2000					
240286	11/8/2000	11/08/2000					
240287	11/8/2000	11/08/2000					
240288	11/8/2000	11/08/2000					
240289	11/8/2000	11/08/2000					
240290	11/8/2000	11/08/2000					
240291	11/8/2000	11/08/2000					
240292	11/8/2000	11/08/2000					
240293	11/8/2000	11/08/2000					
240294	11/8/2000	11/08/2000					
240295	11/8/2000	11/08/2000					
240296	11/8/2000	11/08/2000					
240297	11/8/2000	11/08/2000					
240298	11/8/2000	11/08/2000					
240299	11/8/2000	11/08/2000					

INTERNAL CUSTODY RECORD
AND
LABORATORY CHRONICLE
STL Edison

777 New Durham Road, Edison, New Jersey
08817

Job No: F490 **Site:** SMC SITE

Client: TRC Environmental Corporation

WET CHEM

CHROME VI (3060/7196A)

Lab Sample ID	Date Sampled	Date Received	Preparation Date	Technician's Name	Analysis Date	Analyst's Name	QA Batch
SOLID							
240300	11/8/2000	11/08/2000	11/13/00	AH	11/13/00	AH	2229

CHROME VI (7196A)

Lab Sample ID	Date Sampled	Date Received	Preparation Date	Technician's Name	Analysis Date	Analyst's Name	QA Batch
WATER							
240274	11/8/2000	11/08/2000	11/9/00	AH	11/9/00	AH	2226

Analytical Methodology Summary

Volatile Organics:

Unless otherwise specified, water samples are analyzed for volatile organics by purge and trap GC/MS as specified in EPA Method 624. Drinking water samples are analyzed by EPA Method 524.2. Solid samples are analyzed for volatile organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8260B. Water samples are analyzed for volatile organics by purge and trap GC/PID and GC/ELCD as specified in EPA Methods 601 and 602. Solid samples are analyzed by GC/PID and GC/ELCD in accordance with SW-846, 3rd Edition Method 8021B.

Acid and Base/Neutral Extractable Organics:

Unless otherwise specified, water samples are analyzed for acid and/or base/neutral extractable organics by GC/MS in accordance with EPA Method 625. Solids are analyzed for acid and/or base/neutral extractable organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8270C.

GC/MS Nontarget Compound Analysis:

Analysis for nontarget compounds is conducted, upon request, in conjunction with GC/MS analyses by EPA Methods 624, 625, 8260B and 8270C. Nontarget compound analysis is conducted using a forward library search of the EPA/NIH/NBS mass spectral library of compounds at the greatest apparent concentration (10% or greater of the nearest internal standard) in each organic fraction (15 for volatile, 15 for base/neutrals and 10 for acid extractables).

Organochlorine Pesticides and PCBs:

Unless otherwise specified, water samples are analyzed for organochlorine pesticides and PCBs by dual column gas chromatography with electron capture detectors as specified in EPA Method 608. Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8081A for organochlorine pesticides and Method 8082 for PCBs.

Total Petroleum Hydrocarbons:

Water samples are analyzed for petroleum hydrocarbons by I.R. using EPA Method 418.1. Solid samples are prepared for analysis by soxhlet extraction consistent with the March 1990 N.J. DEP "Remedial Investigation Guide" Appendix A, page 52, and analyzed by U.S. EPA Method 418.1

Metals Analysis:

Metals analyses are performed by any of four techniques specified by a Method Code provided on each data report page, as follows:

P - Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP)

A - Flame Atomic Absorption

F - Furnace Atomic Absorption

CV - Manual Cold Vapor (Mercury)

Water samples are digested and analyzed using EPA methods provided in "Methods for Chemical Analysis of Water and Wastewater" (EPA 600/4-79-020). Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating *Solid Waste" (SW-846, 3rd Edition); samples* are digested according to Method 3050B "Acid Digestion of Soil, Sediments and Sludges."

Specific method references for ICP analyses are water Method 200.7 and solid Method 6010B. Mercury analyses are conducted by the manual cold vapor technique specified by water Method 245.1 and solid Method 7471A. Other specific Atomic Absorption method references are as follows:

	Water Test Method		Solid Test Method	
Element	Flame	Furnace	Flame	Furnace
Aluminum	202.1	202.2	7020	--
Antimony	204.1	204.2	7040	7041
Arsenic	--	206.2	--	7060
Barium	208.1	--	7080	--
Beryllium	210.1	210.2	7090	7091
Cadmium	213.1	213.2	7130	7131
Calcium	215.1	--	7140	--
Chromium, Total	218.1	218.2	7190	7191
Chromium, (+6)	218.4	218.5	7197	7195
Cobalt	219.1	219.2	7200	7201
Copper	220.1	220.2	7210	--
Iron	236.1	236.2	7380	--
Lead	239.1	239.2	7420	7421
Magnesium	242.1	--	7450	--
Manganese	243.1	243.2	7460	--
Nickel	249.1	249.2	7520	--
Potassium	258.1	--	7610	--
Selenium	--	270.2	--	7740
Silver	272.1	272.2	7760	--
Sodium	273.1	--	7770	--
Tin	283.1	283.2	7870	--
Thallium	279.1	279.2	7840	7841
Vanadium	286.1	286.2	7910	7911
Zinc	289.1	289.2	7950	--

Cyanide:

Water samples are analyzed for cyanide using EPA Method 335.3. Cyanide is determined in solid samples as specified in the EPA Contract Laboratory Program IFB dated July 1988, revised February 1989.

Phenols:

Water samples are analyzed for total phenols using EPA Method 420.2. Total phenols are determined in solid samples by preparing the sample as outlined in the EPA Contract Laboratory Program IFB for cyanide, followed by a phenols determination using EPA Method 420.1.

Cleanup of Semivolatile Extracts:

Upon request Method 3611B Alumina Column Cleanup and/or Method 3650B Acid-Base Partition Cleanup are performed to improve detection limits by the removal of saturated hydrocarbon interferences.

Hazardous Waste Characteristics:

Samples for hazardous waste characteristics are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition). Specific method references are as follows:

Ignitability	- Method 1020A
Corrosivity	- Water pH Method 9040B Soil pH Method 9045C
Reactivity	- Chapter 7, Section 7.3.3 and 7.3.4 respectively for hydrogen cyanide and hydrogen sulfide release
Toxicity	- TCLP Method 1311

Miscellaneous Parameters:

Additional analyses performed on both aqueous and solid samples are in accordance with methods published in the following references:

- Test Methods for Evaluating Solid Wastes, SW-846 3rd Edition, November 1986.
- Standard Methods for the Examination of Water and Wastewater, 17th Edition.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, 1979.

ORGANIC DATA REPORTING QUALIFIERS

ND - The compound was not detected at the indicated concentration.

J - Mass spectral data indicates the presence of a compound that meets the identification criteria. The result is less than the specified quantitation limit but greater than zero. The concentration given is an approximate value.

B - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

P - For dual column analysis, the percent difference between the quantitated concentrations on the two *columns is greater* than 40%.

* - For dual column analysis, the lowest quantitated concentration is being reported due to coeluting interference.

INORGANIC DATA REPORTING QUALIFIERS (SW-846 METHODS ONLY)

ND - The compound was not detected at the indicated concentration.

B - Reported value is less than the Method Detection Limit but greater than or equal to the Instrument Detection Limit.

E - The reported value is estimated because of the presence of interference. See explanatory note in the Nonconformance Summary if the problem applies to all of the samples or on the individual Inorganic Analysis Data Sheet if the problem is isolated.

M - Duplicate injection precision not met on the Furnace Atomic Absorption analysis.

N - The spiked sample recovery is not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

* - Duplicate Analysis is not within control limits.

W - Post digestion spike for Furnace Atomic Absorption analysis is out of control.

\+ - Correlation coefficient for MSA is less than 0.995.

M Column - Method Qualifiers

P - Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP).

A - Flame Atomic Absorption Spectroscopy (FAA).

F - Graphite Furnace Atomic Absorption Spectroscopy (GFAA).

CV - Cold Vapor Atomic Absorption Spectroscopy.

NON-CONFORMANCE SUMMARY

STL Edison Job Number: F490

Volatile Organics Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

Base/Neutral and/or Acid Extractable Organics Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

PCBs and/or Organochlorine Pesticides Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

Non-conformance Summary, Page 2 of 2
STL Edison Job Number: F490

Metals Analysis:
includes Cr VI:
All data conforms with method requirements _____; or
Analysis was not requested _____; or
Non-conformance for the specific samples listed is as follows:
(Cr VI: QA Batch 2228): Recovery of MS-High is outside of QC limits (low).
(Cr VI: QA Batch 2229): Recovery of MS-High is outside of QC limits (low)

See continuation page if checked ( )

Total Petroleum Hydrocarbons Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

General Chemistry/Disposal Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

Signature of
Laboratory Manager: [signature] Date: 11-30-00

Site: SMC SITE

Lab Job No: F490

Date Sampled: 11/7/00-11/8/00
Date Received: 11/8/00
Matrix: SOIL

Date Extracted: 11/9/00
Date Analyzed: 11/9/00
QA Batch: 2228

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240275	SB7-17R	8.7	1.0	ND
240276	SB7-18R	5.3	1.0	ND
240277	SB7-19R	4.0	1.0	ND
240278	SB7-11R	4.3	1.0	8.0
240279	SB7-12R	4.6	1.0	ND
240280	SB7-25R	4.9	1.0	2.2
240281	SB7-24R	5.9	1.0	3.3
240282	SB7-14R	7.1	1.0	4.4
240283	B1-S1R	9.9	2.0	58.3

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

Site: SMC SITE

Lab Job No: F490

Date Sampled: 11/7/00-11/8/00
Date Received: 11/8/00
Matrix: SOIL

Date Extracted: 11/13/00
Date Analyzed: 11/13/00
QA Batch: 2229

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240284	B1-S2R	6.5	1.0	15.3
240285	B1-S3R	5.0	1.0	ND
240286	B1-S4R	5.8	1.0	6.9
240287	B2-S1R	6.7	1.0	7.5
240288	B2-S2R	6.8	1.0	33.8
240289	B2-S3R	3.4	1.0	20.0
240290	B2-S4R	6.0	1.0	26.3
240291	B3-S1R	2.3	1.0	28.1
240292	B3-S1RCF	12.9	1.0	34.6
240293	B3-S2R	3.3	1.0	34.5
240294	B3-S2RCF	13.0	1.0	35.7
240295	B3-S3R	2.7	1.0	5.6
240296	B3-S4R	4.4	1.0	20.4

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

Site: SMC SITE

Lab Job No: F490

Date Sampled: 11/7/00-11/8/00
Date Received: 11/8/00
Matrix: SOIL

Date Extracted: 11/13/00
Date Analyzed: 11/13/00
QA Batch: 2229

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240297	B5-S1R	7.5	1.0	ND
240298	B5-S2R	6.9	1.0	3.6
240299	B5-S3R	8.6	2.0	70.0
240300	B5-S4R	7.3	1.0	ND

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: SOIL
QA Batch No.: 2228

QA Sample: 239987
QA Sample from Lab Job No.: F445

Laboratory Blank	
Blank Conc Units: mg/kg	Quant Limit Units: mg/kg
0	2

Duplicate Sample			
Sample Conc Units: mg/kg	Duplicate Conc Units: mg/kg	RPD	RPD** Limit
32.3	31.3	3.1	20

Matrix Spike-Low				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSL Conc Units: mg/kg	% Rec	% Rec Limit
21.1	32.3	59.0	127	75-125

Matrix Spike-High				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSH Conc Units: mg/kg	% Rec	% Rec Limit
42.2	32.3	73.5	97.6	75-125

Post Spike					
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	Spike/ Sample	PS Conc Units: mg/kg	% Rec	% Rec Limit
66.2	32.3	2.0	106	111	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: mg/kg	Acceptable Range: mg/kg	Measured Value: mg/kg
ERA	621	0.242	0.201-0.283	0.245

** If sample/dup conc is less than 8.0ppm a control limit of +/- 2.0 ppm applies.

2/8/01
11:11 AM
001109SA.XLS

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: SOIL **QA Sample: 240285**
QA Batch No.: 2229 **QA Sample from Lab Job No.: F490**

Laboratory Blank	
Blank Conc Units: mg/kg	Quant Limit Units: mg/kg
0	2

Duplicate Sample			
Sample Conc Units: mg/kg	Duplicate Conc Units: mg/kg	RPD	RPD** Limit
ND	ND	0.0	20

Matrix Spike-Low				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSL Conc Units: mg/kg	% Rec	% Rec Limit
21.1	ND	20.8	98.8	75-125

Matrix Spike-High				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSH Conc Units: mg/kg	% Rec	% Rec Limit
42.2	ND	41.3	97.9	75-125

Post Spike					
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	Spike/ Sample	PS Conc Units: mg/kg	% Rec	% Rec Limit
6.3	ND	NA	6.0	95.0	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: mg/kg	Acceptable Range: mg/kg	Measured Value: mg/kg
ERA	621	0.242	0.201-0.283	0.246

** If sample/dup conc is less than 8.0ppm a control limit of +/- 2.0 ppm applies.

2/22/01
8:51 AM
001113S.XLS

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: Water
QA Batch No.: 2226

QA Sample: 240274
QA Sample from Lab Job No.: F490

Laboratory Blank	
Blank Conc Units: ug/l	Quant Limit Units: ug/l
ND	10

Duplicate Sample			
Sample Conc Units: ug/l	Duplicate Conc Units: ug/l	RPD	RPD Limit
ND	ND	0.0	20

Matrix Spike - Low				
Spike Conc Units: ug/l	Sample Conc Units: ug/l	MSL Conc Units: ug/l	% Rec	% Rec Limit
50	ND	52.5	105	85-115

Matrix Spike - High				
Spike Conc Units: ug/l	Sample Conc Units: ug/l	MSH Conc Units: ug/l	% Rec	% Rec Limit
200	ND	206	103	85-115

Post Spike					
Spike Conc Units: ug/l	Sample Conc Units: ug/l	Spike/ Sample	PS Conc Units: ug/l	% Rec	% Rec Limit
15	ND	NA	13.6	90.7	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: ug/l	Acceptable Range: ug/l	Measured Value: ug/l
ERA	621	48.4	40.1-56.6	42.5

11/13/00
5:58 PM
001109W.XLS

HEXAVALENT CHROMIUM WATER CALCULATIONS (7196A)

Date Extracted: 11/9/00
Analyst: Harford, Amanda

Date Analyzed: 11/9/00
Analyst: arford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.9996328
R Square	0.9992657
Adjusted R Sq	0.9990821
Standard Error	0.0019908
Observations	6

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.021574146	0.021574146	5443.252423	2.02257E-07
Residual	4	1.58539E-05	3.96347E-06		
Total	5	0.02159			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.000%*	*Upper 95.000%*
Intercept	0.0008145	0.001200502	0.678482975	0.534689932	-0.00251861	0.004147654	-0.002518614	0.004147654
X Variable 1	0.0008991	1.21866E-05	73.77840079	2.02257E-07	0.000865274	0.000932946	0.000865274	0.000932946

Sample ID	QA Batch	Initial Absorbance	BG Absorbance	Dilution Factor	Conc. ug/l	MDL ug/l	SampleVol ml	
0.0		0.000	0.000		-0.91			
10.0		0.008	0.000		8.0			
50.0		0.046	0.000		50.3			
75.0		0.071	0.000		78.1			
100.0		0.092	0.000		101			
200.0		0.179	0.000		198			
CCS1		0.068	0.000	1.0	74.7	10.00	50	
CCB1		-0.001	0.000	1.0	-2.0	10.00	50	
PBW		0.000	0.000	1.0	-0.91	10.00	50	
LCS		0.039	0.000	1.0	42.5	10.00	50	
240274DUP	2226	-0.001	0.000	1.0	0.00	10.00	50	
240274MSL	2226	0.048	0.000	1.0	52.5	10.00	50	
240274MSH	2226	0.186	0.000	1.0	206	10.00	50	
240274PS	2226	0.013	0.000	1.0	13.6	10.00	50	
240274	2226	0.000	0.000	1.0	0.00	10.00	50	E01
240480	2226	0.000	0.000	1.0	0.00	10.00	50	E01
CCSF		0.069	0.000	1.0	75.8	10.00	50	
CCBF		0.000	0.000	1.0	0.00	10.00	50	

HEXAVALENT CHROMIUM SOIL CALCULATION (3060/7196A)

Date Extracted: 11/9/00
Analyst: , Amanda

Date Analyzed: 11/09/00
Analyst: Harford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.99967
R Square	0.99933
Adjusted R S	0.99917
Standard Err	0.00901
Observations	6

ANOVA

	df	*SS*	*MS*	*F*	*gnificance F*
Regression	1	0.48641	0.48641	5986.828	1.7E-07
Residual	4	0.00032	8.1E-05		
Total	5	0.48674			

	Coefficient	*andard Err*	*t Stat*	*P-value*	*ower 95*	*pper 95*	*wer 95.000*	*er 95.00*
Intercept	0.00255	0.00535	0.47637	0.658662	-0.0123	0.01739	-0.01229	0.017
X Variable 1	0.74988	0.00969	77.3746	1.67E-07	0.72298	0.77679	0.722976	0.777

Sample ID	QA Batch	Initial bsorbanc	BG Absorban	Dilution Factor	% Solids	Soil Conc, mg/kg	MDL mg/kg	Sample Wt (g)
0.00		0.000	0.000			0.00		
0.05		0.040	0.000			0.05		
0.10		0.074	0.000			0.10		
0.50		0.383	0.000			0.51		
0.75		0.577	0.000			0.77		
1.00		0.741	0.000			0.98		
CCV1		0.385	0.000	1.0	100	0.51	2.00	2.5
CCB1		0.000	0.000	1.0	100	0.00	2.00	2.5
PBS		0.000	0.000	1.0	100	0.00	2.00	2.5
LCS		0.186	0.000	1.0	100	0.245	2.00	2.5
239987DUP	2228	0.583	0.000	1.0	95.4	31.2	2.10	2.6
239987MSL	2228	0.530	0.000	2.0	95.4	58.7	4.19	2.51
239987MSH	2228	0.662	0.000	2.0	95.4	73.2	4.19	2.52
239987PS	2228	0.485	0.000	4.0	95.4	105	8.39	2.56
239987	2228	0.592	0.000	1.0	95.4	32.2	2.10	2.56
239988	2228	0.018	0.000	1.0	95.6	0.00	2.09	2.6
239989	2228	0.019	0.000	1.0	92.7	0.00	2.16	2.5
239990	2228	0.011	0.000	1.0	96.2	0.00	2.08	2.6
CCS2		0.395	0.000	1.0	100	0.52	2.00	2.5
CCB2		0.000	0.000	1.0	100	0.00	2.00	2.5
239991	2228	0.053	0.000	1.0	90.9	2.9	2.20	2.53
239992	2228	0.089	0.000	1.0	92.0	5.0	2.17	2.51
240275	2228	0.019	0.000	1.0	91.3	0.00	2.19	2.56
240276	2228	0.021	0.000	1.0	94.7	0.00	2.11	2.5
240277	2228	0.027	0.000	1.0	96.0	0.00	2.08	2.51
240278	2228	0.147	0.000	1.0	95.7	8.0	2.09	2.51
240279	2228	0.035	0.000	1.0	95.4	0.00	2.10	2.51
240280	2228	0.041	0.000	1.0	95.1	2.2	2.10	2.51
240281	2228	0.061	0.000	1.0	94.1	3.3	2.13	2.51
240282	2228	0.080	0.000	1.0	92.9	4.4	2.15	2.51
CCS3		0.408	0.000	1.0	100	0.54	2.00	2.5
CCB3		0.000	0.000	1.0	100	0.00	2.00	2.5
240283	2228	0.497	0.000	2.0	90.1	58.3	4.44	2.51
CCSF		0.408	0.000	1.0	100	0.54	2.00	2.5
CCBF		0.000	0.000	1.0	100	0.00	2.00	2.5

HEXAVALENT CHROMIUM SOIL CALCULATION (3060/7196A)

Date Extracted: 11/13/00 Date Analyzed: 11/13/00
Analyst: , Amanda Analyst: Harford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.99967
R Square	0.99934
Adjusted R S	0.99917
Standard Err	0.00906
Observations	6

ANOVA

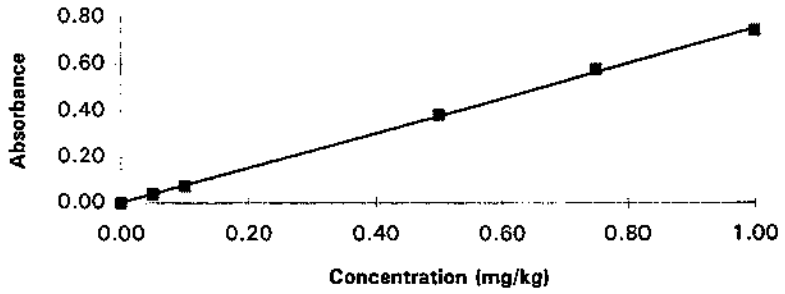
	df	*SS*	*MS*	*F*	*gnificance F*
Regression	1	0.49341	0.49341	6015.993	1.7E-07
Residual	4	0.00033	8.2E-05		
Total	5	0.49374			

	Coefficient	*andard Err*	*t Stat*	*P-value*	*ower 95*	*pper 95*	*wer 95.000*	*er 95.00*
Intercept	0.0004	0.00537	0.07373	0.944765	-0.0145	0.01531	-0.01451	0.015
X Variable 1	0.75526	0.00974	77.5628	1.66E-07	0.72822	0.7823	0.728225	0.782

Sample ID	QA Batch	Initial bsorbanc	BG Absorban	Dilution Factor	% Solids	Soil Conc. mg/kg	MDL mg/kg	Sample Wt (g)
0.00		0.000	0.000			0.00		
0.05		0.036	0.000			0.05		
0.10		0.070	0.000			0.09		
0.50		0.391	0.000			0.52		
0.75		0.572	0.000			0.76		
1.00		0.746	0.000			0.99		
CCV1		0.399	0.000	1.0	100	0.53	2.00	2.5
CCB1		0.000	0.000	1.0	100	0.00	2.00	2.5
PBS		0.000	0.000	1.0	100	0.00	2.00	2.5
LCS		0.186	0.000	1.0	100	0.246	2.00	2.5
240285DUP	2229	0.025	0.004	1.0	95.0	0.00	2.11	2.5
240285MSL	2229	0.380	0.005	1.0	95.0	20.8	2.11	2.51
240285MSH	2229	0.745	0.004	1.0	95.0	41.3	2.11	2.5
240285PS	2229	0.112	0.004	1.0	95.0	6.0	2.11	2.5
240285	2229	0.024	0.004	1.0	95.0	0.00	2.11	2.5
240284	2229	0.280	0.009	1.0	93.5	15.3	2.14	2.51
240286	2229	0.124	0.000	1.0	94.2	6.9	2.12	2.51
240287	2229	0.136	0.004	1.0	93.3	7.5	2.14	2.5
CCS2		0.393	0.000	1.0	100	0.52	2.00	2.5
CCB2		0.000	0.000	1.0	100	0.00	2.00	2.5
240288	2229	0.596	0.000	1.0	93.2	33.8	2.15	2.5
240289	2229	0.366	0.000	1.0	96.6	20.0	2.07	2.5
240290	2229	0.471	0.003	1.0	94.0	26.3	2.13	2.5
240291	2229	0.521	0.000	1.0	97.7	28.1	2.05	2.51
240292	2229	0.572	0.000	1.0	87.1	34.6	2.30	2.51
240293	2229	0.630	0.000	1.0	96.7	34.5	2.07	2.5
240294	2229	0.589	0.000	1.0	87.0	35.7	2.30	2.51
240295	2229	0.103	0.000	1.0	97.3	5.6	2.06	2.51
240296	2229	0.370	0.000	1.0	95.6	20.4	2.09	2.51
240297	2229	0.016	0.003	1.0	92.5	0.00	2.16	2.51
CCS3		0.394	0.000	1.0	100	0.52	2.00	2.5
CCB3		0.000	0.000	1.0	100	0.00	2.00	2.5
240298	2229	0.064	0.000	1.0	93.1	3.6	2.15	2.5
240299	2229	0.607	0.000	2.0	91.4	70.0	4.38	2.51
240300	2229	0.022	0.001	1.0	92.7	0.00	2.16	2.5
CCSF		0.399	0.000	1.0	100	0.53	2.00	2.5
CCBF		0.000	0.000	1.0	100	0.00	2.00	2.5

Hexavalent Chromium Calibration Curve

Date Run: 11/09/00 Saved as:



Correlation Coefficient: 0.999666

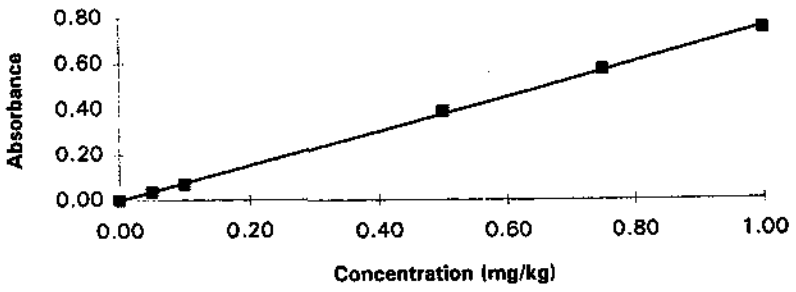
Calibration Slope: 0.749884

y-intercept: 0.002546

Calibration Check Standard Recovery Summary				
	True Value ppm	Value Obtained ppm	% Recovery	% Rec Limit
CCS1	0.50	0.51	102	90-110
CCS2	0.50	0.52	104	90-110
CCS3	0.50	0.54	108	90-110
CCSF	0.50	0.54	108	90-110

Hexavalent Chromium Calibration Curve

Date Run: 11/13/00 *Saved as:*



Correlation Coefficient: 0.999668

Calibration Slope: 0.75526

y-intercept: 0.000396

Calibration Check Standard Recovery Summary				
	True Value ppm	Value Obtained ppm	% Recovery	% Rec Limit
CCS1	0.50	0.53	106	90-110
CCS2	0.50	0.52	104	90-110
CCS3	0.50	0.52	104	90-110
CCSF	0.50	0.53	106	90-110

PROJECT Cr+6 Runlog

Notebook No. 01764

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PRO

BATCH 22216 Matrix: H2O Lot: F490, F514

SAMPLE	DIL	ABS	BG/Pot	Final pH	TpH/Trend	Results	Spk	%REC
0		.000		1.94	9:50/9:56			
10		.008		1.98				
50		.046		1.90				
75		.071		1.87				
100		.092		1.89				
200		.179		1.74	9:55/10:00			
CCS		.068		1.79	10:11/10:16	74.7	75	99.6%
CCB		-.001		1.82		ND		
PBD		.000		1.83		ND		
LCS(622)		.039		1.86	10:13/10:18	42.5	48.4	87.8%
240274 Dup		-.001		1.78	10:30/10:35	ND		
240274 MSL		.048		1.84		525	00	105%
240274 MSH		.186		1.87	10:32/10:37	206	200	103%
240274 MS		.013		1.85	10:45/10:50	13.6	15	90.7%
240274		.000		1.94	10:33/10:38	ND		
240480R		.000		1.91		ND		
CCS		.069		1.94		75.8	75	101%
CCB		.000		1.92	10:35/10:40	ND		

10 ppm Cr+6 1: 5337 10 ppm Cr+6 2: 5055

10% H2SO4: 5418 DPC 2nd: 5225

Continued on Page

Read and Understood By

Amanda Harford 11/9/00

Batch: 2227, 2228 Matrix: solid Job: F415, F490

SAMPLE	SAMPLE wt(g)	vol(ml)	color	init pH	pH Time	spike
0.00		100		7.84	10:50	
0.05				7.62		
0.10				7.79		
0.50				7.82		
0.75				7.54		
1.00				7.75	10:55	
CCS				7.85	11:35	0.50
PB				7.59		
LCS				7.66	11:37	0.242
239976dup	2.58		clear	7.54	12:01	
239976 MSL	2.56			7.78		0.50
239976 MSH	2.50			7.82		1.00
239976d	2.56			7.75		
239972d	2.56		yellow	7.77		
239973d	2.55			7.89		
239974d	2.50		clear	7.86	12:07	
239975d	2.51		yellow	7.81	12:35	
CCS				7.85		0.50
CCB				7.62		
239977d	2.56		yellow	7.66		
239978d	2.55		clear	7.73		
239979d	2.60		yellow	7.89		
239980d	2.60		pale yellow	7.99	12:42	
239981d	2.55		clear	7.82	1:03	
239982d	2.53			7.87		
239983d	2.50			7.78		
239984d	2.52		yellow	7.58		
239985d	2.52		dark yellow	7.62		
239986d	2.59			7.52	1:08	
CCS				7.59	2:10	0.50
CCB				7.42		
239987dup	2.60		clear	7.88		
239987 MSL	2.61			7.74	2:13	0.50

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Read and Understood By

Amanda Hartford 11/9/00

PROJECT Cr+6 Prep Log

Notebook No. 01645 53

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SAMPLE	SAMPLE wt(g)	vol(ml)	color	wet pH	pH Time	spike
239987MS/H	2.52	100	clear	7.69	2:41	1.00
239987d	2.56		↓	7.82	2:15	
239988d	2.60		pale yellow	7.84	2:43	
239989d	2.50		clear	7.91		
239990d	2.60		↓	7.56		
239991d	2.53		pale yellow	7.92		
239992d	2.51		clear	7.91		
240275d	2.56		↓	7.89 7.32	2:49 2:69	0.50
CCS 240276d	2.50		clear	7.53 7.89		
240277d	2.51		pale yellow	7.72		
240278d	2.51		clear	7.55		
240279d	2.51			7.91		
240280d	2.51			7.71	3:15	
240281d	2.51			7.56	3:36	
240282d	2.51		↓	7.51		
240283d	2.51		yellow	7.79		
CCS				7.54		0.50
CCB				7.63	3:40	

Start time: 10:26 @ 90.0°C temp after 30min 95.0°C

end time: 11:26 @ 95.0°C pH of digestion fluid: 13.52

Continued on Page

Read and Understood By

PROJECT Cr+6 Prep Log

Notebook No. 0645

Continued From Page

BATCH: 2229 Matrix: solid JOB: F490

SAMPLE	SAMPLE wt(g)	vol(ml)	color	init pH	pH Time	spike
0.00		100		7.82	10:35	
0.05				7.47		
0.10				7.63		
0.50				7.96		
0.75				7.66		
1.00				7.89	10:40	
CCS				7.70	12:04	0.50
PB				7.64		
LCS				7.61	12:06	0.242
240285 dup	2.50		yellow	7.51	12:24	
240285 MSL	2.57			7.50		0.50
240285 MSH	2.50			7.63		1.00
240285d	2.50			7.91		
240284d	2.57		dark yellow	7.89		
240286d	2.51		pale yellow	7.72	12:30	
240287d	2.50		dark yellow	7.83	1:02	
240288d	2.50		pale yellow	7.89		
CCS				7.98		0.50
CCB				7.54		
240289d	2.50		pale yellow	7.35		
240290d	2.50		yellow	7.83		
240291d	2.57		pale yellow	7.82	1:08	
240292d	2.57			7.56	1:31	
240293d	2.50			7.69		
240294d	2.9			7.88		
240295d	2.57		clear	7.84		
240296d	2.57		pale yellow	7.86		
240297d	2.57		yellow	7.52	1:37	
240298d	2.50		pale yellow	7.71	2:05	
CCS				7.79		0.50
CCB				7.61		
240299d	2.57		yellow	7.99		
240300d	2.50		dark yellow	7.70	2:09	

Continued on Page

start time: 10:50 @ 90.2°C temp after 30 min 95.0°C end time: 11:50 @ 95.0°C
pH of digestion fluid 13.47

Read and Understood By

Amanda Harbor 11/13/00

BATCH 2227, 2228 Matrix: Solid JOBS: F445, F490

SAMPLE	DIL	ABS	B6/B7 pH	Final pH	Tpt/TRad	% Solids	Results	spl	% R
0.00		0.00		1.98	11:01/11:06				
0.05		0.040		2.01					
0.10		0.074		1.85					
0.50		0.383		1.87					
0.75		0.577		1.83					
1.00		0.741		1.92	11:05/11:10				
CCS		0.385		1.97	11:43/11:48		0.51	0.50	102%
CCB		0.000		1.84			ND		
PB		0.000		1.83			ND		
LCS(621)		0.186		1.72	11:45/11:50		0.245	0.242	101%
239976 Dup		0.010	0.00/1.83	1.64	12:13/12:18	91.5	ND	23.8	109%
239976 MSL		0.401	0.00/1.83	1.99		91.5	24.3	24.7	112%
239976 MSH		0.824	0.00/1.85	1.72	12:15/12:20	91.5	47.9	87.5	214%
239976 PS			0.00/1.65	1.75	12:27/12:32	91.5	7.5	6.5	115%
239976d		0.008	0.00/1.78	1.83	12:15/12:21	91.5	ND		
239972d		0.028	0.011/1.82	1.86		92.7	ND		
239973a		0.029	0.011/1.87	1.72		92.0	ND		
239974d		0.012	0.00/1.64	1.82	12:18/12:24	93.8	ND		
CCS		0.402		1.91	12:47/12:53		0.53	0.50	107%
CCB		0.000		1.65			ND		
239975d		0.048	0.015/1.89	1.82		95.3	ND		
239977d		0.055	0.006/1.73	1.92		95.4	2.5	2.5	
239978d		0.017	0.00/1.91	1.69		92.4	ND		
239979d		0.018	0.005/1.85	1.67		95.6	ND		
239980d		0.211	0.00/1.79	1.84	12:52/12:58	94.4	11.3	11.3	
239981d		0.019	0.00/1.74	1.85	1:13/1:19	92.3	ND		
239982d		0.019	0.00/1.90	1.79		87.1	ND		
239983d		0.000	0.00/1.79	1.82		94.9	ND		
239984d		0.055	0.002/1.83	1.91		95.4	2.8		
239985d		0.256	0.013/1.65	2.04		90.7	14.0		
CCS		0.408		1.99			0.54	0.50	108%
CCB		0.000		1.87	1:18/1:24		ND		

Continued on Page 26

Read and Understood By

Amanda Hufford 11/9/00
Signed Date Signed Date

Notebook No. 01766 Continued From Page 25

PROJECT Cr+6 Runlog

SAMPLE	DIL	ABS	BG/BG pH	Final pH	TpH/Trnd	% Solids	Results	spk	% REC
[illegible]1d		0.271	0.000/1.75	2.03	1:26/1:31	94.0 94.9	15.8 14.4		
239987dup		0.583	0.000/1.84	1.90	2:2/2:26	95.4 95.4	32.6 31.2		
239987MSL 25/50		0.530		1.85		95.4 95.4	58.7	21.0	
239987MSH 25/50		0.662		1.73	2:23/2:28	95.4 95.4	73.8	84.2	
239987PS 125/50		0.485		1.77	2:33/2:38	95.4 95.4	165	64.4	113%
239987d		0.592	0.000/1.92	1.89	2:24/2:29	95.4 95.4	32.2		
239988d		0.018	0.000/1.84	1.84	2:56/3:03	96.2 95.6	ND		
239989d		0.019	0.000/1.73	1.95		93.5 92.7	ND		
239990d		0.011	0.000/1.94	1.99		96.8 96.2	ND		
239991d		0.053	0.000/1.71	1.89		99 96.9	3.8 2.9		
CCS		0.395		1.85			0.52	0.50	104%
CCB		0.000		1.91			ND		
239992d		0.089	0.000/1.89	1.96		92.0 92.0	5.0		
240275d		0.019	0.000/1.92	1.69	3:01/3:08	93 93.3	ND		
240276d		0.021	0.000/1.86	1.88	3:20/3:26	95.2 94.7	ND		
240277d		0.027	0.000/1.62	1.76		96.0 96.0	ND		
240278d		0.147	0.000/1.32	1.83		96.0 95.7	8.0		
[illegible]279d		0.035	0.000/1.97	1.86		95.4 95.4	ND		
240280d		0.041	0.000/1.95	1.88	3:24/3:29	95.0 95.1	2.2		
240281d		0.061	0.000/1.92	1.95	3:46/3:52	94.0 94.1	3.3		
240282d		0.080	0.000/1.99	1.93		92.9 92.9	4.4		
240283d 25/50		0.497		1.86		90.0 91	58.3		
CCS		0.408		1.74			0.54	0.50	108%
CCB		0.000		1.66	3:51/3:56		ND		

100 ppm Cr+6 (1) 5485 DI 2nd: 5225

100 ppm Cr+6 (2) 5054 10% H2SO4: 5418

Continued on Page

Read and Understood By

Amanda Harlock 11/9/00

Date

BATCH: 2229 Matrix Solid JOB: #490

SAMPLE	DIL	ABS	BG/BS	Final pH	TPH/Read	% Solids	Result	spk % rec
0.00		0000		1.95	10:59/11:05			
0.05		0.036		1.84				
0.10		0.070		1.66				
0.50		0.391		1.78				
0.75		0.572		.99				
1.00		0.746		.87	11:04/11:09			
CCS		0.399		1.84	12:11/12:16		0.53	0.50 106%
CCB		0.000		1.81			ND	
PB		0.000		1.72			ND	
LCS(621)		0.186		1.83	12:14/12:19		0.242	0.242 102%
240285dup		0.025	.004/1.96	1.69	12:35/12:40	95.0	ND	
240285MSL		0.380	.005/1.89	1.88		95.0	20.8	21.1 98%
240285MSH		0.745	.004/2.02	1.89	12:37/12:42	95.0	41.3	41.9 98%
240285PS		0.112	.004/2.00	1.74	12:52/12:57	95.0	6.0	6.3 95%
240285d		0.024	.004/1.84	1.91	12:38/12:44	95.0	ND	
240284d		0.280	.009/1.76	1.80		94.0 935	15.3	
240286d		0.124	.000/2.00	1.82	12:40/12:46	94.0 942	6.9	
240287d		0.136	.009/1.95	1.90	1:16/1:22	93.0 933	7.5	
CCS		0.393		1.93			0.52	0.50 104%
CCB		0.000		1.63			ND	
240288d		0.596	.000/1.86	1.96		93.0 932	33.8	
240289d		0.366	.000/1.98	1.87		95.6 946	20.0	
240290d		0.471	.004/1.88	1.63		94.0 940	26.3	
240291d		0.521	.009/2.04	1.82	1:21/1:27	95.0 927	28.1	
240292d		0.572	.004/2.09	1.86	1:43/1:49	87.0 871	34.6	
240293d		0.630	.002/2.11	1.84		97.0 87.7	34.5	
240294d		0.589	.000/1.66	1.86		87.0 870	35.7	
240295d		0.103	.009/1.90	1.85		95.0 893	5.6	
240296d		0.370	.009/1.94	1.93		94.0 95.6	20.4	
240297d		0.016	.003/1.99	1.99	1:48/1:53	95.0 925	ND	
CCS		0.394		1.94	2:17/2:22		0.52	0.50 104%
CCB		0.000		1.74	2:18/2:23		ND	

Continued on Page 29

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Amanda Hufford 11/13/00

PROJECT Cr+6 Run log

Notebook No. 01764

Continued From Page 27

SAMPLE	DIL	ABS	Pg/Pg	Final pH	TpH/Read	% Solids	Results	ppk	% REC
62298d		0.044	.000/1.89	1.65	2:19/2:25	93.1 931	3.16		
240299d	25/50	0.1007		1.66		91.4 914	~~70.0~~ 70.0		
24300d		0.022	.001/1.93	1.89		~~92.5~~ 927	ND		
CCS		0.399		1.73			0.53	0.50	106%
CCB		0.000		1.64	2:21/2:27		ND		

100ppm Cr+6 (1°) 5485 DPC Ind: 5225

100ppm Cr+6 (2°) 5054 10% H_2SO_4: 5418

Continued on Page

Read and Understood By

Amanda Harford 11/13/00

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: SOIL **QA Sample: 239987**
QA Batch No.: 2228 **QA Sample from Lab Job No.: F445**

Laboratory Blank	
Blank Conc Units: mg/kg	Quant Limit Units: mg/kg
0	2

Duplicate Sample			
Sample Conc Units: mg/kg	Duplicate Conc Units: mg/kg	RPD	RPD** Limit
32.2	31.2	3.2	20

Matrix Spike-Low				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSL Conc Units: mg/kg	% Rec	% Rec Limit
21.0	32.2	58.7	126	75-125

Matrix Spike-High				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSH Conc Units: mg/kg	% Rec	% Rec Limit
42.0	32.2	73.2	97.6	75-125

Post Spike					
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	Spike/ Sample	PS Conc Units: mg/kg	% Rec	% Rec Limit
64.4	32.2	2.0	105	113	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: mg/kg	Acceptable Range: mg/kg	Measured Value: mg/kg
ERA	621	0.242	0.201-0.283	0.245

** If sample/dup conc is less than 8.0ppm a control limit of +/- 2.0 ppm applies.

2/21/01
7:10 PM
001109SA.XLS

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: SOIL
QA Batch No.: 2229

QA Sample: 240285
QA Sample from Lab Job No.: F490

Laboratory Blank	
Blank Conc Units: mg/kg	Quant Limit Units: mg/kg
0	2

Duplicate Sample			
Sample Conc Units: mg/kg	Duplicate Conc Units: mg/kg	RPD	RPD** Limit
ND	ND	0.0	20

Matrix Spike-Low				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSL Conc Units: mg/kg	% Rec	% Rec Limit
21.1	ND	20.8	98.8	75-125

Matrix Spike-High				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSH Conc Units: mg/kg	% Rec	% Rec Limit
42.2	ND	41.3	97.9	75-125

Post Spike					
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	Spike/ Sample	PS Conc Units: mg/kg	% Rec	% Rec Limit
6.3	ND	NA	6.0	95.0	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: mg/kg	Acceptable Range: mg/kg	Measured Value: mg/kg
ERA	621	0.242	0.201-0.283	0.246

** If sample/dup conc is less than 8.0ppm a control limit of +/- 2.0 ppm applies.

2/22/01
8:51 AM
001113S.XLS

Percent Solids Log

Job Number	Sample Number	Bottle ID	Tare Weight (g)	Wet Weight (g)	Dry Weight (g)	Percent Solids (%)	Percent Moisture (%)
F490	240290	186	29.16	9.9	9.31	94	6
F490	240291	878	29	9.74	9.52	97.7	2.3
F490	240292	342	30.86	9.81	8.54	87.1	12.9
F490	240293	644	28.83	10.61	10.26	96.7	3.3
F490	240294	24	29.23	10.27	8.93	87	13
F490	240295	44	29.44	10.67	10.38	97.3	2.7
F490	240296	721	29.4	10.5	10.04	95.6	4.4
F490	240297	294	29.19	10.39	9.61	92.5	7.5
F490	240298	146	28.93	10.37	9.65	93.1	6.9
F490	240299	289	30.03	9.84	8.99	91.4	8.6
F490	240300	897	29.07	9.58	8.88	92.7	7.3
							100
F496	240334	340	29.23	9.64	9.29	96.4	3.6
F496	240335	64	31.08	9.88	9.6	97.2	2.8
F496	240336	81	30.15	10.65	10.36	97.3	2.7
F496	240337	8	29.44	10.52	9.86	93.7	6.3
F496	240338	516	29.56	10.12	9.54	94.3	5.7
F496	240339	196	29.12	9.85	8.97	91.1	8.9
F496	240340	274	29.39	10.72	10	93.3	6.7
F496	240341	532	29.6	9.75	8.75	89.7	10.3
F496	240342	652	29.13	9.34	8.35	89.4	10.6
F496	240343	54	29.22	9.65	8.64	89.5	10.5
F496	240344	151	29.88	10.24	9.24	90.2	9.8
F496	240345	674	30.26	10.81	9.36	86.6	13.4
F496	240346	27	29.11	10.57	7.66	72.5	27.5
F496	240347	14	29.44	9.73	8.81	90.5	9.5
F496	240348	849	29.33	9.41	8.57	91.1	8.9
F496	240349	287	29.82	10.23	9.51	93	7
F496	240350	46	30.42	9.97	8.9	89.3	10.7
F496	240351	635	30.22	10.11	8.1	80.1	19.9
F496	240352	25	29.55	9.23	7.73	83.7	16.3
F496	240353	308	30.08	9.85	7.77	78.9	21.1
F496	240354	131	29.56	9.67	7.7	79.6	20.4
F496	240355	161	29.76	9.68	8.07	83.4	16.6
	240355 dup	94	29.32	10.39	8.65	83.3	16.7
F526	240599	380	29.34	10.55	9.85	93.4	6.6
F526	240600	260	29.11	10.45	9.08	86.9	13.1
F526	240601	631	29.1	9.44	8.56	90.7	9.3
F526	240602	59	31.65	10.02	8.97	89.5	10.5
F526	240603	162	29.1	9.8	9.1	92.9	7.1
							100
F546	240769	710	29.33	9.3	8.55	91.9	8.1
F546	240770	121	29	10.78	9.81	91	9

Printed: 11/14/00

PS1113.XLS

Signed: MARKEL ELLIS Date: 11.14.00 Signed: _____ Date: _____

25 JO

HEARTLAND
ENVIRONMENTAL SERVICES, INC.

Data Validation Report

SDG#:	F490
Date:	December 21, 2000
Client Name:	TRC Environmental Corporation
Project/Site Name:	SMC Facility
Date Sampled:	November 7 - 8, 2000
Number of Samples:	26 Non-Aqueous Sample(s) with 1 MS/MSD(s) 1 Aqueous Sample(s) with 1 MS/MSD(s)
Laboratory:	STL Edison
Validation Guidance:	NJDEPE SOP No. 5.A.10
QA/QC Level:	NJDEPE Modified Methods
Method(s) Utilized:	SW846 Methods 3060/7196A, July 1992
Analytical Fractions:	Hexavalent Chromium

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. Scurfon
for Paul B. Humburg, President

12-22-00.
Date

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

SDG# F490

Samples and Fractions Reviewed

Sample Identifications Analytical Fraction

TRC ID	MATRIX	CR+6	
FB110800	WATER	X	
FB110800 MS	WATER	X	
FB110800 MSD	WATER	X	
SB7-17R	SOIL		X
SB7-18R	SOIL		X
SB7-19R	SOIL		X
SB7-11R	SOIL		X
SB7-12R	SOIL		X
SB7-25R	SOIL		X
SB7-24R	SOIL		X
SB7-14R	SOIL		X
B1-S1R	SOIL		X
B1-S2R	SOIL		X
B1-S3R	SOIL		X
B1-S3R MS	SOIL		X
B1-S3R MSD	SOIL		X
B1-S4R	SOIL		X
B2-S1R	SOIL		X
B2-S2R	SOIL		X
B2-S3R	SOIL		X
B2-S4R	SOIL		X
B3-S1R	SOIL		X
B3-S1RCF	SOIL		X
B3-S2R	SOIL		X
B3-S2RCF	SOIL		X
B3-S3R	SOIL		X
B3-S4R	SOIL		X
B5-S1R	SOIL		X
B5-S2R	SOIL		X
B5-S3R	SOIL		X
B5-S4R	SOIL		X
Total Billable Samples (Water/Soil)		3	28

CR+6= Hexavalent Chromium

DATA ASSESSMENT NARRATIVE
HEXAVALENT CHROMIUM

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 3060/7196A: the SOP No. 5.A.10 Standard Operating Procedure for Analytical Data Validation of Hexavalent Chromium in accordance with NJDEPE Modified Methods requirements, July 1992. 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 # F490

A validation was performed on the hexavalent chromium data from SDG F490. The data was evaluated based on the following parameters.

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

* - All criteria were met for this parameter.

Matrix Spike Recovery results

1. The high matrix spike recovery results for soil samples for Hexavalent Chromium (49%) for batches 2228 and 2229 were below the lower control limits (<75%). All positive and non-detect results are qualified as estimated, "J" or "UJ" with low bias.

* See attached sheets for individual qualifications of data.

TRENT SERVICES

Site: SMC SITE

Date Sampled: 11/8/00
Date Received: 11/8/00
Matrix: WATER

Lab Job No: F490

Date Extracted: 11/9/00
Date Analyzed: 11/9/00
QA Batch: 2226

CHROMIUM VI

STL Edison Sample #	Client ID	Dilution Factor	Analytical Result Units: ug/l
240274	FB110800	1.0	ND

Quantitation Limit for Chromium VI is 10.0 ug/l for an undiluted sample

12/22/00

STL Edison is a part of Severn Trent Laboratories, Inc.

SEVERN TRENT SERVICES

Site: SMC SITE

Lab Job No: F490

Date Sampled: 11/7/00-11/8/00
Date Received: 11/8/00
Matrix: SOIL

Date Extracted: 11/9/00
Date Analyzed: 11/9/00
QA Batch: 2228

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240275	SB7-17R	8.7	1.0	ND UJ1
240276	SB7-18R	5.3	1.0	ND UJ1
240277	SB7-19R	4.0	1.0	ND UJ1
240278	SB7-11R	4.3	1.0	8.0 J1
240279	SB7-12R	4.6	1.0	ND UJ1
240280	SB7-25R	4.9	1.0	2.2 J1
240281	SB7-24R	5.9	1.0	3.3 J1
240282	SB7-14R	7.1	1.0	4.4 J1
240283	B1-S1R	9.9	2.0	58.6 J1

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sampl

12/22/00

STL Edison is a part of Severn Trent Laboratories, Inc.

SEVERN TRENT SERVICES

Site: SMC SITE

Lab Job No: F490

Date Sampled: 11/7/00-11/8/00
Date Received: 11/8/00
Matrix: SOIL

Date Extracted: 11/13/00
Date Analyzed: 11/13/00
QA Batch: 2229

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240284	B1-S2R	6.5	1.0	15.2 J1
240285	B1-S3R	5.0	1.0	ND UJ1
240286	B1-S4R	5.8	1.0	7.0 J1
240287	B2-S1R	6.7	1.0	7.5 J1
240288	B2-S2R	6.8	1.0	33.9 J1
240289	B2-S3R	3.4	1.0	20.0 J1
240290	B2-S4R	6.0	1.0	26.3 J1
240291	B3-S1R	2.3	1.0	28.1 J1
240292	B3-S1RCF	12.9	1.0	34.8 J1
240293	B3-S2R	3.3	1.0	34.4 J1
240294	B3-S2RCF	13.0	1.0	35.8 J1
240295	B3-S3R	2.7	1.0	5.6 J1
240296	B3-S4R	4.4	1.0	20.4 J1

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sampl

PBH
12/22/00

STL Edison is a part of Severn Trent Laboratories, Inc.

SEVERN TRENT SERVICES

Site: SMC SITE

Lab Job No: F490

Date Sampled: 11/7/00-11/8/00
Date Received: 11/8/00
Matrix: SOIL

Date Extracted: 11/13/00
Date Analyzed: 11/13/00
QA Batch: 2229

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240297	B5-S1R	7.5	1.0	ND UJ1
240298	B5-S2R	6.9	1.0	3.6 J1
240299	B5-S3R	8.6	2.0	70.6 J1
240300	B5-S4R	7.3	1.0	ND UJ1

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample

12/22/00

HEXAVALENT CHROMIUM WATER CALCULATIONS (7196A)

Date Extracted: 11/9/00
Analyst: Harford, Amanda

Date Analyzed: 11/9/00
Analyst: arford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.9996328
R Square	0.9992657
Adjusted R Sq	0.9990821
Standard Error	0.0019908
Observations	6

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.021574146	0.021574146	5443.252423	2.02257E-07
Residual	4	1.58539E-05	3.96347E-06		
Total	5	0.02159			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.000%*	*Upper 95.000%*
Intercept	0.0008145	0.001200502	0.678482975	0.534689932	-0.00251861	0.004147654	-0.002518614	0.004147654
X Variable 1	0.0008991	1.21866E-05	73.77840079	2.02257E-07	0.000865274	0.000932946	0.000865274	0.000932946

Sample ID	QA Batch	Initial Absorbance	BG Absorbance	Dilution Factor	Conc. ug/l	MDL ug/l	SampleVol ml	
0.0		0.000	0.000		-0.91			
10.0		0.008	0.000		8.0			
50.0		0.046	0.000		50.3			
75.0		0.071	0.000		78.1			
100.0		0.092	0.000		101			
200.0		0.179	0.000		198			
CCS1		0.068	0.000	1.0	74.7	10.00	50	
CCB1		-0.001	0.000	1.0	-2.0	10.00	50	
PBW		0.000	0.000	1.0	-0.91	10.00	50	
LCS		0.039	0.000	1.0	42.5	10.00	50	
240274DUP	2226	-0.001	0.000	1.0	0.00	10.00	50	
240274MSL	2226	0.048	0.000	1.0	52.5	10.00	50	
240274MSH	2226	0.186	0.000	1.0	206	10.00	50	
240274PS	2226	0.013	0.000	1.0	13.6	10.00	50	
240274	2226	0.000	0.000	1.0	0.00	10.00	50	E01
240480	2226	0.000	0.000	1.0	0.00	10.00	50	E01
CCSF		0.069	0.000	1.0	75.8	10.00	50	
CCBF		0.000	0.000	1.0	0.00	10.00	50	

HEXAVALENT CHROMIUM SOIL CALCULATION (3060/7196A)

Date Extracted: 11/9/00
Analyst: Amanda

Date Analyzed: 11/09/00
Analyst: Harford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.99967
R Square	0.99933
Adjusted R S	0.99917
Standard Err	0.00901
Observations	6

ANOVA

	df	SS	MS	F	gnificance F
Regression	1	0.48641	0.48641	5986.828	1.7E-07
Residual	4	0.00032	8.1E-05		
Total	5	0.48674			

	Coefficient	andard Err	t Stat	P-value	ower 95	pper 95	wer 95.000	er 95.00
Intercept	0.00255	0.00535	0.47637	0.658662	-0.0123	0.01739	-0.01229	0.017
X Variable 1	0.74988	0.00969	77.3746	1.67E-07	0.72298	0.77679	0.722976	0.777

Sample ID	QA Batch	Initial Absorbance	BG Absorban	Dilution Factor	% Solids	Soil Conc, mg/kg	MDL mg/kg	Sample Wt (g)
0.00		0.000	0.000			0.00		
0.05		0.030	0.000			0.05		
0.10		0.074	0.000			0.10		
0.50		0.383	0.000			0.51		
0.75		0.577	0.000			0.77		
1.00		0.741	0.000			0.98		
CCV1		0.385	0.000	1.0	100	0.51	2.00	2.5
CCB1		0.000	0.000	1.0	100	0.00	2.00	2.5
PBS		0.000	0.000	1.0	100	0.00	2.00	2.5
LCS		0.186	0.000	1.0	100	0.245	2.00	2.5
239976DUP	2227	0.010	0.000	1.0	92.0	0.00	2.17	2.5
239976MSL	2227	0.421	0.000	1.0	92.0	24.3	2.17	2.5
239976MSH	2227	0.824	0.000	1.0	92.0	47.6	2.17	2.5
239976PS	2227	0.132	0.000	1.0	92.0	7.5	2.17	2.5
239976	2227	0.008	0.000	1.0	92.0	0.00	2.17	2.5
239972	2227	0.028	0.011	1.0	93.0	0.00	2.15	2.5
239973	2227	0.029	0.011	1.0	92.0	0.00	2.17	2.5
239974	2227	0.012	0.000	1.0	94.0	0.00	2.13	2.5
CCS2		0.402	0.000	1.0	100	0.53	2.00	2.5
CCB2		0.000	0.000	1.0	100	0.00	2.00	2.5
239975	2227	0.048	0.015	1.0	95.0	0.00	2.11	2.5
239977	2227	0.055	0.006	1.0	95.0	2.6	2.11	2.5
239978	2227	0.017	0.000	1.0	92.0	0.00	2.17	2.5
239979	2227	0.018	0.005	1.0	96.0	0.00	2.08	2.5
239980	2227	0.211	0.000	1.0	94.0	11.8	2.13	2.5
239981	2227	0.019	0.000	1.0	92.0	0.00	2.17	2.5
239982	2227	0.019	0.000	1.0	87.0	0.00	2.30	2.5
239983	2227	0.000	0.000	1.0	95.0	0.00	2.11	2.5
239984	2227	0.055	0.002	1.0	95.0	2.8	2.11	2.5
239985	2227	0.256	0.013	1.0	91.0	14.1	2.20	2.5
CCS3		0.408	0.000	1.0	100	0.54	2.00	2.5
CCB3		0.000	0.000	1.0	100	0.00	2.00	2.5
239986	2227	0.271	0.005	1.0	94.0	15.0	2.13	2.5
CCSF		0.395	0.000	1.0	100	0.52	2.00	2.5
CCBF		0.000	0.000	1.0	100	0.00	2.00	2.5

Date Extracted: 11/9/00 Date Analyzed: 11/09/00
Analyst: , Amanda Analyst: Harford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.99967
R Square	0.99933
Adjusted R S	0.99917
Standard Err	0.00901
Observations	6

ANOVA

	df	SS	MS	F	gnificance F
Regression	1	0.48641	0.48641	5986.828	1.7E-07
Residual	4	0.00032	8.1E-05		
Total	5	0.48674			

	Coefficient	andard Err	t Stat	P-value	ower 95	pper 95	wer 95.000	er 95.00
Intercept	0.00255	0.00535	0.47637	0.658662	-0.0123	0.01739	-0.01229	0.017
X Variable 1	0.74988	0.00969	77.3746	1.67E-07	0.72298	0.77679	0.722976	0.777

Sample ID	QA Batch	Initial bsorbanc	BG Absorban	Dilution Factor	% Solids	Soil Conc. mg/kg	MDL mg/kg	Sample Wt (g)
0.00		0.000	0.000			0.00		
0.05		0.030	0.000			0.05		
0.10		0.074	0.000			0.10		
0.50		0.383	0.000			0.51		
0.75		0.577	0.000			0.77		
1.00		0.741	0.000			0.98		
CCV1		0.385	0.000	1.0	100	0.51	2.00	2.5
CCB1		0.000	0.000	1.0	100	0.00	2.00	2.5
PBS		0.000	0.000	1.0	100	0.00	2.00	2.5
LCS		0.186	0.000	1.0	100	0.245	2.00	2.5
239987DUP	2228	0.583	0.000	1.0	95.0	32.6	2.11	2.5
239987MSL	2228	0.530	0.000	2.0	95.0	59.2	4.21	2.5
239987MSH	2228	0.662	0.000	2.0	95.0	74.1	4.21	2.5
239987PS	2228	0.485	0.000	4.0	95.0	108	8.42	2.5
239987	2228	0.592	0.000	1.0	95.0	33.1	2.11	2.5
239988	2228	0.018	0.000	1.0	96.0	0.00	2.08	2.5
239989	2228	0.019	0.000	1.0	93.0	0.00	2.15	2.5
239990	2228	0.011	0.000	1.0	96.0	0.00	2.08	2.5
CCS2		0.395	0.000	1.0	100	0.52	2.00	2.5
CCB2		0.000	0.000	1.0	100	0.00	2.00	2.5
239991	2228	0.053	0.000	1.0	91.0	3.0	2.20	2.5
239992	2228	0.089	0.000	1.0	92.0	5.0	2.17	2.5
240275	2228	0.019	0.000	1.0	91.0	0.00	2.20	2.5
240276	2228	0.021	0.000	1.0	95.0	0.00	2.11	2.5
240277	2228	0.027	0.000	1.0	96.0	0.00	2.08	2.5
240278	2228	0.147	0.000	1.0	96.0	8.0	2.08	2.5
240279	2228	0.035	0.000	1.0	95.0	0.00	2.11	2.5
240280	2228	0.041	0.000	1.0	95.0	2.2	2.11	2.5
240281	2228	0.061	0.000	1.0	94.0	3.3	2.13	2.5
240282	2228	0.080	0.000	1.0	93.0	4.4	2.15	2.5
CCS3		0.408	0.000	1.0	100	0.54	2.00	2.5
CCB3		0.000	0.000	1.0	100	0.00	2.00	2.5
240283	2228	0.497	0.000	2.0	90.0	58.6	4.44	2.5
CCSF		0.408	0.000	1.0	100	0.54	2.00	2.5
CCBF		0.000	0.000	1.0	100	0.00	2.00	2.5

HEXAVALENT CHROMIUM SOIL CALCULATION (3060/7196A)

Date Extracted: 11/13/00
Analyst: Amanda

Date Analyzed: 11/13/00
Analyst: Harford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.99967
R Square	0.99934
Adjusted R S	0.99917
Standard Err	0.00906
Observations	6

ANOVA

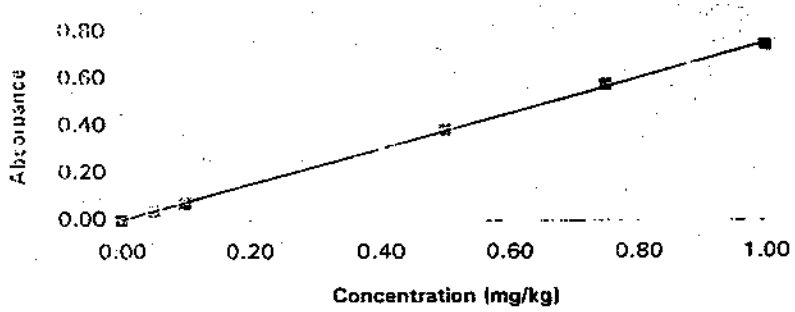
	df	*SS*	*MS*	*F*	*gnificance F*
Regression	1	0.49341	0.49341	6015.993	1.7E-07
Residual	4	0.00033	8.2E-05		
Total	5	0.49374			

	Coefficient	*andard Err*	*t Stat*	*P-value*	*ower 95*	*pper 95*	*wer 95.000*	*er 95.00*
Intercept	0.0004	0.00537	0.07373	0.944765	-0.0145	0.01531	-0.01451	0.015
X Variable 1	0.75526	0.00974	77.5628	1.66E-07	0.72822	0.7823	0.728225	0.782

Sample ID	QA Batch	Initial bsorbanc	BG Absorban	Dilution Factor	% Solids	Soil Conc, mg/kg	MDL mg/kg	Sample Wt (g)
0.00		0.000	0.000			0.00		
0.05		0.036	0.000			0.05		
0.10		0.070	0.000			0.09		
0.50		0.391	0.000			0.52		
0.75		0.572	0.000			0.76		
1.00		0.746	0.000			0.99		
CCV1		0.399	0.000	1.0	100	0.53	2.00	2.5
CCB1		0.000	0.000	1.0	100	0.00	2.00	2.5
PBS		0.000	0.000	1.0	100	0.00	2.00	2.5
LCS		0.186	0.000	1.0	100	0.246	2.00	2.5
240285DUP	2229	0.025	0.004	1.0	95.0	0.00	2.11	2.5
240285MSL	2229	0.380	0.005	1.0	95.0	20.9	2.11	2.5
240285MSH	2229	0.745	0.004	1.0	95.0	41.3	2.11	2.5
240285PS	2229	0.112	0.004	1.0	95.0	6.0	2.11	2.5
240285	2229	0.024	0.004	1.0	95.0	0.00	2.11	2.5
240284	2229	0.280	0.009	1.0	94.0	15.2	2.13	2.5
240286	2229	0.124	0.000	1.0	94.0	7.0	2.13	2.5
240287	2229	0.136	0.004	1.0	93.0	7.5	2.15	2.5
CCS2		0.393	0.000	1.0	100	0.52	2.00	2.5
CCB2		0.000	0.000	1.0	100	0.00	2.00	2.5
240288	2229	0.596	0.000	1.0	93.0	33.9	2.15	2.5
240289	2229	0.366	0.000	1.0	97.0	20.0	2.06	2.5
240290	2229	0.471	0.003	1.0	94.0	26.3	2.13	2.5
240291	2229	0.521	0.000	1.0	98.0	28.1	2.04	2.5
240292	2229	0.572	0.000	1.0	87.0	34.8	2.30	2.5
240293	2229	0.630	0.000	1.0	97.0	34.4	2.06	2.5
240294	2229	0.589	0.000	1.0	87.0	35.8	2.30	2.5
240295	2229	0.103	0.000	1.0	97.0	5.5	2.06	2.5
240296	2229	0.370	0.000	1.0	96.0	20.4	2.08	2.5
240297	2229	0.016	0.003	1.0	93.0	0.00	2.15	2.5
CCS3		0.394	0.000	1.0	100	0.52	2.00	2.5
CCB3		0.000	0.000	1.0	100	0.00	2.00	2.5
240298	2229	0.064	0.000	1.0	93.0	3.6	2.15	2.5
240299	2229	0.607	0.000	2.0	91.0	70.6	4.40	2.5
240300	2229	0.022	0.001	1.0	93.0	0.00	2.15	2.5
CCSF		0.399	0.000	1.0	100	0.53	2.00	2.5
CCBF		0.000	0.000	1.0	100	0.00	2.00	2.5

Hexavalent Chromium Calibration Curve

Date Run: 11/09/00 Saved as:



Correlation Coefficient: 0.999666

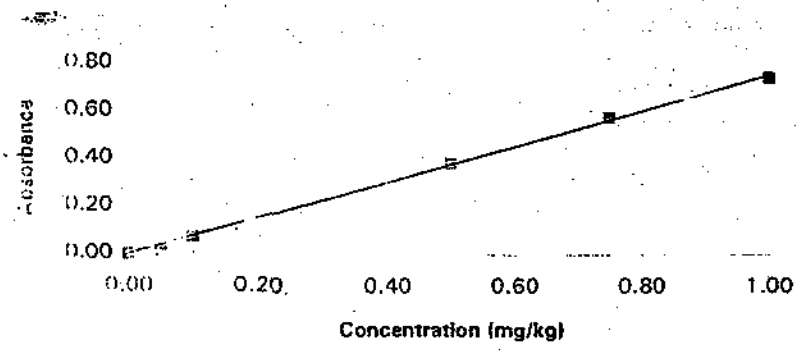
Calibration Slope: 0.749884

y-intercept: 0.002546

Calibration Check Standard Recovery Summary				
	True Value ppm	Value Obtained ppm	% Recovery	% Rec Limit
CCS1	0.50	0.51	102	90-110
CCS2	0.50	0.53	107	90-110
CCS3	0.50	0.54	108	90-110
CCSF	0.50	0.52	104	90-110

Hexavalent Chromium Calibration Curve

Date Run: 11/09/00 Saved as:



Correlation Coefficient: 0.999666

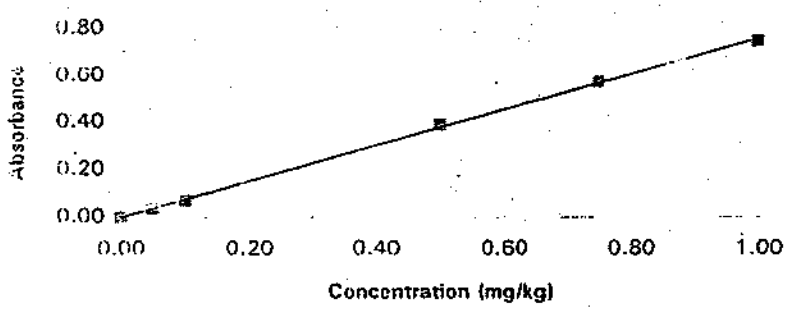
Calibration Slope: 0.749884

y-intercept: 0.002546

Calibration Check Standard Recovery Summary				
	True Value ppm	Value Obtained ppm	% Recovery	% Rec Limit
CCS1	0.50	0.51	102	90-110
CCS2	0.50	0.52	104	90-110
CCS3	0.50	0.54	108	90-110
CCSF	0.50	0.54	108	90-110

Hexavalent Chromium Calibration Curve

Date Run: 11/13/00 Saved as:



Correlation Coefficient: 0.999668

Calibration Slope: 0.75526

y-intercept: 0.000396

Calibration Check Standard Recovery Summary				
	True Value ppm	Value Obtained ppm	% Recovery	% Rec Limit
CCS1	0.50	0.53	106	90-110
CCS2	0.50	0.52	104	90-110
CCS3	0.50	0.52	104	90-110
CCSF	0.50	0.53	106	90-110

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: Water
QA Batch No.: 2226

QA Sample: 240274
QA Sample from Lab Job No.: F490

Laboratory Blank	
Blank Conc Units: ug/l	Quant Limit Units: ug/l
ND	10

Duplicate Sample			
Sample Conc Units: ug/l	Duplicate Conc Units: ug/l	RPD	RPD Limit
ND	ND	0.0	20

Matrix Spike - Low				
Spike Conc Units: ug/l	Sample Conc Units: ug/l	MSL Conc Units: ug/l	% Rec	% Rec Limit
50	ND	52.5	105	85-115

Matrix Spike - High				
Spike Conc Units: ug/l	Sample Conc Units: ug/l	MSH Conc Units: ug/l	% Rec	% Rec Limit
200	ND	206	103	85-115

Post Spike					
Spike Conc Units: ug/l	Sample Conc Units: ug/l	Spike/ Sample	PS Conc Units: ug/l	% Rec	% Rec Limit
15	ND	NA	13.6	90.7	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: ug/l	Acceptable Range: ug/l	Measured Value: ug/l
ERA	621	48.4	40.1-56.6	42.5

11/13/00
5:58 PM
001109W.XLS

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: SOIL **QA Sample: 239987**
QA Batch No.: 2228 **QA Sample from Lab Job No.: F445**

Laboratory Blank	
Blank Conc Units: mg/kg	Quant Limit Units: mg/kg
0	2

Duplicate Sample			
Sample Conc Units: mg/kg	Duplicate Conc Units: mg/kg	RPD	RPD** Limit
33.1	32.6	1,5	20

Matrix Spike-Low				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSL Conc Units: mg/kg	% Rec	% Rec Limit
21,1	33.1	59.2	124	75-125

Matrix Spike-High				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSH Conc Units: mg/kg	% Rec	% Rec Limit
84,2	33.1	74.1	48,7	75-125

Post Spike					
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	Spike/ Sample	PS Conc Units: mg/kg	% Rec	% Rec Limit
66,2	33.1	2,0	108	113	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: mg/kg	Acceptable Range: mg/kg	Measured Value: mg/kg
ERA	621	0,242	0.201-0.283	0,245

** If sample/dup conc is less than 8.0ppm a control limit of +/- 2.0 ppm applies.

30.11.00
9:23
001109sa

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: SOIL **QA Sample: 240285**
QA Batch No.: 2229 **QA Sample from Lab Job No.: F490**

Laboratory Blank	
Blank Conc Units: mg/kg	Quant Limit Units: mg/kg
0	2

Duplicate Sample			
Sample Conc Units: mg/kg	Duplicate Conc Units: mg/kg	RPD	RPD** Limit
ND	ND	0.0	20

Matrix Spike-Low				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSL Conc Units: mg/kg	% Rec	% Rec Limit
21.1	ND	20.9	99.3	75-125

Matrix Spike-High				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSH Conc Units: mg/kg	% Rec	% Rec Limit
84.2	ND	41.3	49.0	75-125

Post Spike					
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	Spike/ Sample	PS Conc Units: mg/kg	% Rec	% Rec Limit
6.3	ND	NA	6.0	95.0	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: mg/kg	Acceptable Range: mg/kg	Measured Value: mg/kg
ERA	621	0.242	0.201-0.283	0.246

** If sample/dup conc is less than 8.0ppm a control limit of +/- 2.0 ppm applies.

11/15/00
1:09 PM
001113S.XLS

SEVERN
TRENT
SERVICES

STL Edison
777 New Durham Road
Edison, NJ 08817

Tel: 732-549-3900
Fax: 732-549-3679
www.stl-inc.com

December 6, 2000

TRC Environmental Corporation
5 Waterside Crossing
Windsor, CT 06095

Attention: Mr. Larry Butlien

Re: F514 - SMC Site

Dear Mr. Butlien:

Enclosed are the results you requested for the following sample(s) received at our laboratory on November 09, 2000:

Lab No.	Client ID	Analysis Required
240471	B12-S1R	Chrome VI
240472	B12-SR2	Chrome VI
240473	B12-S6R	Chrome VI
240474	B12-S3R	Chrome VI
240475	B12-S4R	Chrome VI
240476	B12-S5R	Chrome VI
240477	SB8-12R	Chrome VI

SEVERN TRENT SERVICES

Lab No.	Client ID	Analysis Required
240478	SB8-21R	Chrome VI
240479	SB8-11R	Chrome VI
240480	FB110900	Chrome VI
240481	SB8-18R	Chrome VI
240482	SB8-17R	Chrome VI
240483	SB8-16R	Chrome VI
240484	SB8-22R	Chrome VI
240485	SB8-13R	Chrome VI
240486	SB8-14R	Chrome VI
240487	SB8-15R	Chrome VI
240488	SB8-10R	Chrome VI
240489	SB8-20R	Chrome VI

An invoice for our services is also enclosed. If you have any questions please contact your Project Manager, Dan Glenn, at (732) 549-3900.

Very truly yours,

Michael J. Urban
Laboratory Manager

SEVERN TRENT SERVICES

Site: SMC Site

Lab Job No: F514

Date Sampled: 11/8/00-11/9/00
Date Received: 11/9/00
Matrix: SOIL

Date Extracted: 11/14/00
Date Analyzed: 11/14/00
QA Batch: 2230

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240471	B12-S1R	3.2	1.0	5.3
240472	B12-SR2	9.2	1.0	13.3
240473	B12-S6R	8.6	1.0	12.4
240474	B12-S3R	2.7	1.0	ND
240475	B12-S4R	4.3	1.0	ND
240476	B12-S5R	4.5	1.0	ND
240477	SB8-12R	7.2	1.0	4.4
240478	SB8-21R	5.6	1.0	2.3
240479	SB8-11R	9.0	1.0	3.6
240481	SB8-18R	11.3	1.0	ND
240482	SB8-17R	11.3	1.0	4.6
240483	SB8-16R	8.2	1.0	ND
240484	SB8-22R	9.2	1.0	ND

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

SEVERN TRENT SERVICES

Site: SMC Site

Lab Job No: F514

Date Sampled: 11/8/00-11/9/00
Date Received: 11/9/00
Matrix: SOIL

Date Extracted: 11/14/00
Date Analyzed: 11/14/00
QA Batch: 2230

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240485	SB8-13R	7.8	1.0	ND
240486	SB8-14R	8.4	1.0	ND
240487	SB8-15R	6.6	1.0	5.6
240488	SB8-10R	8.0	1.0	3.7
240489	SB8-20R	9.6	1.0	4.2

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

STL Envirotech
777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

Name (for report and invoice): Larry Butlien	Samplers Name (Printed): Rukakoski, Bane	Site/Project Identification: Shieldalloy Metallurgical
Company: TRC Environmental	P.O. #: 26770	State (Location of site): NJ: ☒ NY: ☐ Other:
		Regulatory Program: Brownfield Program
Address: 5 Waterside Crossing	Analysis Turnaround Time: Standard ☒	
City: Windsor State: CT	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	
Phone: 860-298-6225 Fax: 860-298-6399		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No:
Job No: F514

Sample Identification	Date	Time	Matrix	No. of Cont.	Hex Chromium 7196A USEPA SW846	Hex Chromium 7199 7196A USEPA SW846	Sample Numbers
FB110900	11-9-00	0740	W	1		X	240480
SB8-18R		0750	S	1	X		240481
SB8-17R		0800		1	X		240482
SB8-16R		0807		1	X		240483
SB8-22R *		0817		3	X		240484
SB8-13R		0830		1	X		240485
SB8-14R		0840		1	X		240486
SB8-15R		0855		1	X		240487
SB8-10R		0935		1	X		240488
SB8-20R		0950		1	X		240489

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH
6 = Other _____, 7 = Other _____
Soil:
Water:

Special Instructions: * Complete MS + MSD on this sample.

Water Metals Filtered (Yes/No)? _____

Relinquished by	Company	Date / Time	Received by	Company
1) [signature]	TRC	11-9-00 1:10	1) [signature]	STL
2)			2)	
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

STL - Envirotech
777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

Name (for report and invoice): Larry Buthien	Samplers Name (Printed): Rukakoski, Rame	Site/Project Identification: Shieldalloy Metallurgical
Company: TRC Environmental	P.O. #: 26770	State (Location of site): NJ: ☒ NY: ☐ Other:
		Regulatory Program: Hazsite Program
Address: 5 Waterside Crossing	Analysis Turnaround Time: Standard ☒	
City: Windsor State: CT	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	
Phone: 860-298-6225 Fax: 860-298-6399		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No:
Job No: F574

Sample Identification	Date	Time	Matrix	No. of. Cont.	Hex. Chromium 3060A 7196A	Sample Numbers
B12 - S1R	11-8-00	1535	S	1	X	240471
B12 - S2R	↓	1545	↓	1	X	240472
B12 - S6R	↓	1551	↓	1	X	240473
B12 - S3R	↓	1558	↓	1	X	240474
B12 - S4R	↓	1610	↓	1	X	240475
B12 - S5R	↓	1620	↓	1	X	240476
SB8 - 12R	11-9-00	1000	↓	1	X	240477
SB8 - 21R	↓	1012	↓	1	X	240478
SB8 - 11R	↓	1030	↓	1	X	240479

Preservation Used: (1) = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH
6 = Other _____, 7 = Other _____
Soil:
Water:

Special Instructions

Water Metals Filtered (Yes/No)? _____

Relinquished by	Company	Date / Time	Received by	Company
1) [signature]	TRC	11-9-00 1:10	1) [signature]	STL
2)		/	2)	
3)		/	3)	
4)		/	4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

INTERNAL CUSTODY RECORD
AND
LABORATORY CHRONICLE
STL Edison

777 New Durham Road, Edison, New Jersey
08817

Job No: F514 **Site:** Shieldalloy Metallu

Client: TRC Environmental Corporation

WET CHEM

CHROME VI (3060/7196A)

Lab Sample ID	Date Sampled	Date Received	Preparation Date	Technician's Name	Analysis Date	Analyst's Name	QA Batch
SOLID							
240471	11/8/2000	11/09/2000	11-14-00	AH	11-14-00	AH	2230
240472	11/8/2000	11/09/2000					
240473	11/8/2000	11/09/2000					
240474	11/8/2000	11/09/2000					
240475	11/8/2000	11/09/2000					
240476	11/8/2000	11/09/2000					
240477	11/9/2000	11/09/2000					
240478	11/9/2000	11/09/2000					
240479	11/9/2000	11/09/2000					
240481	11/9/2000	11/09/2000					
240482	11/9/2000	11/09/2000					
240483	11/9/2000	11/09/2000					
240484	11/9/2000	11/09/2000					
240485	11/9/2000	11/09/2000					
240486	11/9/2000	11/09/2000					
240487	11/9/2000	11/09/2000					
240488	11/9/2000	11/09/2000					
240489	11/9/2000	11/09/2000					

INTERNAL CUSTODY RECORD
AND
LABORATORY CHRONICLE
STL Edison

777 New Durham Road, Edison, New Jersey
08817

Job No: F514 **Site:** Shieldalloy Metallu

Client: TRC Environmental Corporation

WET CHEM

CHROME VI (7196A)

Lab Sample ID	Date Sampled	Date Received	Preparation Date	Technician's Name	Analysis Date	Analyst's Name	QA Batch
WATER							
240480	11/9/2000	11/09/2000	11.9.00	AH	11.9.00	AH	2226

Analytical Methodology Summary

Volatile Organics:

Unless otherwise specified, water samples are analyzed for volatile organics by purge and trap GC/MS as specified in EPA Method 624. Drinking water samples are analyzed by EPA Method 524.2. Solid samples are analyzed for volatile organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8260B. Water samples are analyzed for volatile organics by purge and trap GC/PID and GC/ELCD as specified in EPA Methods 601 and 602. Solid samples are analyzed by GC/PID and GC/ELCD in accordance with SW-846, 3rd Edition Method 8021B.

Acid and Base/Neutral Extractable Organics:

Unless otherwise specified, water samples are analyzed for acid and/or base/neutral extractable organics by GC/MS in accordance with EPA Method 625. Solids are analyzed for acid and/or base/neutral extractable organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8270C.

GC/MS Nontarget Compound Analysis:

Analysis for nontarget compounds is conducted, upon request, in conjunction with GC/MS analyses by EPA Methods 624, 625, 8260B and 8270C. Nontarget compound analysis is conducted using a forward library search of the EPA/NIH/NBS mass spectral library of compounds at the greatest apparent concentration (10% or greater of the nearest internal standard) in each organic fraction (15 for volatile, 15 for base/neutrals and 10 for acid extractables).

Organochlorine Pesticides and PCBs:

Unless otherwise specified, water samples are analyzed for organochlorine pesticides and PCBs by dual column gas chromatography with electron capture detectors as specified in EPA Method 608. Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8081A for organochlorine pesticides and Method 8082 for PCBs.

Total Petroleum Hydrocarbons:

Water samples are analyzed for petroleum hydrocarbons by I.R. using EPA Method 418.1. Solid samples are prepared for analysis by soxhlet extraction consistent with the March 1990 N.J. DEP "Remedial Investigation Guide" Appendix A, page 52, and analyzed by U.S. EPA Method 418.1

Metals Analysis:

Metals analyses are performed by any of four techniques specified by a Method Code provided on each data report page, as follows:

P - Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP)

A - Flame Atomic Absorption

F - Furnace Atomic Absorption

CV - Manual Cold Vapor (Mercury)

Water samples are digested and analyzed using EPA methods provided in "Methods for Chemical Analysis of Water and Wastewater" (EPA 600/4-79-020). Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition); samples are digested according to Method 3050B "Acid Digestion of Soil, Sediments and Sludges."

Specific method references for ICP analyses are water Method 200.7 and solid Method 6010B. Mercury analyses are conducted by the manual cold vapor technique specified by water Method 245.1 and solid Method 7471A. Other specific Atomic Absorption method references are as follows:

Element	Water Test Method		Solid Test Method	
	Flame	Furnace	Flame	Furnace
Aluminum	202.1	202.2	7020	--
Antimony	204.1	204.2	7040	7041
Arsenic	--	206.2	--	7060
Barium	208.1	--	7080	--
Beryllium	210.1	210.2	7090	7091
Cadmium	213.1	213.2	7130	7131
Calcium	215.1	--	7140	--
Chromium, Total	218.1	218.2	7190	7191
Chromium, (+6)	218.4	218.5	7197	7195
Cobalt	219.1	219.2	7200	7201
Copper	220.1	220.2	7210	--
Iron	236.1	236.2	7380	--
Lead	239.1	239.2	7420	7421
Magnesium	242.1	--	7450	--
Manganese	243.1	243.2	7460	--
Nickel	249.1	249.2	7520	--
Potassium	258.1	--	7610	--
Selenium	--	270.2	--	7740
Silver	272.1	272.2	7760	--
Sodium	273.1	--	7770	--
Tin	283.1	283.2	7870	--
Thallium	279.1	279.2	7840	7841
Vanadium	286.1	286.2	7910	7911
Zinc	289.1	289.2	7950	--

Cyanide:

Water samples are analyzed for cyanide using EPA Method 335.3. Cyanide is determined in solid samples as specified in the EPA Contract Laboratory Program IFB dated July 1988, revised February 1989.

Phenols:

Water samples are analyzed for total phenols using EPA Method 420.2. Total phenols are determined in solid samples by preparing the sample as outlined in the EPA Contract Laboratory Program IFB for cyanide, followed by a phenols determination using EPA Method 420.1.

Cleanup of Semivolatile Extracts:

Upon request Method 3611B Alumina Column Cleanup and/or Method 3650B Acid-Base Partition Cleanup are performed to improve detection limits by the removal of saturated hydrocarbon interferences.

Hazardous Waste Characteristics:

Samples for hazardous waste characteristics are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition). Specific method references are as follows:

Ignitability	- Method 1020A
Corrosivity	- Water pH Method 9040B Soil pH Method 9045C
Reactivity	- Chapter 7, Section 7.3.3 and 7.3.4 respectively for hydrogen cyanide and hydrogen sulfide release
Toxicity	- TCLP Method 1311

Miscellaneous Parameters:

Additional analyses performed on both aqueous and solid samples are in accordance with methods published in the following references:

- Test Methods for Evaluating Solid Wastes, SW-846 3rd Edition, November 1986.
- Standard Methods for the Examination of Water and Wastewater, 17th Edition.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, 1979.

ORGANIC DATA REPORTING QUALIFIERS

ND - The compound was not detected at the indicated concentration.

J - Mass spectral data indicates the presence of a compound that meets the identification criteria. The result is less than the specified quantitation limit but greater than zero. The concentration given is an approximate value.

B - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

P - For dual column analysis, the percent difference between the quantitated concentrations on the two columns is greater than 40%.

* - For dual column analysis, the lowest quantitated concentration is being reported due to coeluting interference.

INORGANIC DATA REPORTING QUALIFIERS (SW-846 METHODS ONLY)

ND - The compound was not detected at the indicated concentration.

B - Reported value is less than the Method Detection Limit but greater than or equal to the Instrument Detection Limit.

E - The reported value is estimated because of the presence of interference. See explanatory note in the Nonconformance Summary if the problem applies to all of the samples or on the individual Inorganic Analysis Data Sheet if the problem is isolated.

M - Duplicate injection precision not met on the Furnace Atomic Absorption analysis.

N - The spiked sample recovery is not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

* - Duplicate Analysis is not within control limits.

W - Post digestion spike for Furnace Atomic Absorption analysis is out of control.

+ - Correlation coefficient for MSA is less than 0.995.

M Column - Method Qualifiers

P - Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP).

A - Flame Atomic Absorption Spectroscopy (FAA).

F - Graphite Furnace Atomic Absorption Spectroscopy (GFAA).

CV - Cold Vapor Atomic Absorption Spectroscopy.

NON-CONFORMANCE SUMMARY

STL Edison Job Number: F524

Volatile Organics Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

Base/Neutral and/or Acid Extractable Organics Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

PCBs and/or Organochlorine Pesticides Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

Non-conformance Summary, Page 2 of 2
STL Edison Job Number: F524

Metals Analysis:

includes Cr VI:

All data conforms with method requirements _____; or
Analysis was not requested _____; or
Non-conformance for the specific samples listed is as follows:
(Cr VI: QA Batch 2230: Soil): Recovery of MS-High is outside of QC limits (low). The MS-High, Post Spike and LCS meet QC limits.

See continuation page if checked ( )

Total Petroleum Hydrocarbons Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

General Chemistry/Disposal Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

Signature of
Laboratory Manager: [signature] Date: 12-7-00

Site: SMC Site

Lab Job No: F514

Date Sampled: 11/8/00-11/9/00
Date Received: 11/9/00
Matrix: SOIL

Date Extracted: 11/14/00
Date Analyzed: 11/14/00
QA Batch: 2230

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240471	B12-S1R	3.2	1.0	5.3
240472	B12-SR2	9.2	1.0	13.3
240473	B12-S6R	8.6	1.0	12.4
240474	B12-S3R	2.7	1.0	ND
240475	B12-S4R	4.3	1.0	ND
240476	B12-S5R	4.5	1.0	ND
240477	SB8-12R	7.2	1.0	4.4
240478	SB8-21R	5.6	1.0	2.3
240479	SB8-11R	9.0	1.0	3.6
240481	SB8-18R	11.3	1.0	ND
240482	SB8-17R	11.3	1.0	4.6
240483	SB8-16R	8.2	1.0	ND
240484	SB8-22R	9.2	1.0	ND

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

Site: SMC Site

Lab Job No: F514

Date Sampled: 11/8/00-11/9/00
Date Received: 11/9/00
Matrix: SOIL

Date Extracted: 11/14/00
Date Analyzed: 11/14/00
QA Batch: 2230

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240485	SB8-13R	7.8	1.0	ND
240486	SB8-14R	8.4	1.0	ND
240487	SB8-15R	6.6	1.0	5.6
240488	SB8-10R	8.0	1.0	3.7
240489	SB8-20R	9.6	1.0	4.2

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: SOIL
QA Batch No.: 2230

QA Sample: 240484
QA Sample from Lab Job No.: F514

Laboratory Blank	
Blank Conc Units: mg/kg	Quant Limit Units: mg/kg
0	2

Duplicate Sample			
Sample Conc Units: mg/kg	Duplicate Conc Units: mg/kg	RPD	RPD** Limit
ND	ND	0.0	20

Matrix Spike-Low				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSL Conc Units: mg/kg	% Rec	% Rec Limit
22.0	ND	19.8	89.9	75-125

Matrix Spike-High				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSH Conc Units: mg/kg	% Rec	% Rec Limit
44.0	ND	33.5	76.1	75-125

Post Spike					
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	Spike/ Sample	PS Conc Units: mg/kg	% Rec	% Rec Limit
6.6	ND	NA	6.4	96.9	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: mg/kg	Acceptable Range: mg/kg	Measured Value: mg/kg
ERA	621	0.242	0.201-0.283	0.229

** If sample/dup conc is less than 8.0ppm a control limit of +/- 2.0 ppm applies.

2/22/01
9:27 AM
001114S.XLS

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: Water
QA Batch No.: 2226

QA Sample: 240274
QA Sample from Lab Job No.: F490

Laboratory Blank	
Blank Conc Units: ug/l	Quant Limit Units: ug/l
ND	10

Duplicate Sample			
Sample Conc Units: ug/l	Duplicate Conc Units: ug/l	RPD	RPD Limit
ND	ND	0.0	20

Matrix Spike - Low				
Spike Conc Units: ug/l	Sample Conc Units: ug/l	MSL Conc Units: ug/l	% Rec	% Rec Limit
50	ND	52.5	105	85-115

Matrix Spike - High				
Spike Conc Units: ug/l	Sample Conc Units: ug/l	MSH Conc Units: ug/l	% Rec	% Rec Limit
200	ND	206	103	85-115

Post Spike					
Spike Conc Units: ug/l	Sample Conc Units: ug/l	Spike/ Sample	PS Conc Units: ug/l	% Rec	% Rec Limit
15	ND	NA	13.6	90.7	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: ug/l	Acceptable Range: ug/l	Measured Value: ug/l
ERA	621	48.4	40.1-56.6	42.5

12/7/00
10:27 AM
001109W.XLS

HEXAVALENT CHROMIUM WATER CALCULATIONS (7196A)

Date Extracted: 11/9/00
Analyst: Harford, Amanda

Date Analyzed: 11/9/00
Analyst: arford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.9996328
R Square	0.9992657
Adjusted R Sq	0.9990821
Standard Error	0.0019908
Observations	6

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.021574146	0.021574146	5443.252423	2.02257E-07
Residual	4	1.58539E-05	3.96347E-06		
Total	5	0.02159			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.000%*	*Upper 95.000%*
Intercept	0.0008145	0.001200502	0.678482975	0.534689932	-0.00251861	0.004147654	-0.002518614	0.004147654
X Variable 1	0.0008991	1.21866E-05	73.77840079	2.02257E-07	0.000865274	0.000932946	0.000865274	0.000932946

Sample ID	QA Batch	Initial Absorbance	BG Absorbance	Dilution Factor	Conc. ug/l	MDL ug/l	SampleVol ml	
0.0		0.000	0.000		-0.91			
10.0		0.008	0.000		8.0			
50.0		0.046	0.000		50.3			
75.0		0.071	0.000		78.1			
100.0		0.092	0.000		101			
200.0		0.179	0.000		198			
CCS1		0.068	0.000	1.0	74.7	10.00	50	
CCB1		-0.001	0.000	1.0	-2.0	10.00	50	
PBW		0.000	0.000	1.0	-0.91	10.00	50	
LCS		0.039	0.000	1.0	42.5	10.00	50	
240274DUP	2226	-0.001	0.000	1.0	0.00	10.00	50	
240274MSL	2226	0.048	0.000	1.0	52.5	10.00	50	
240274MSH	2226	0.186	0.000	1.0	206	10.00	50	
240274PS	2226	0.013	0.000	1.0	13.6	10.00	50	
240274	2226	0.000	0.000	1.0	0.00	10.00	50	E01
240480	2226	0.000	0.000	1.0	0.00	10.00	50	E01
CCSF		0.069	0.000	1.0	75.8	10.00	50	
CCBF		0.000	0.000	1.0	0.00	10.00	50	

HEXAVALENT CHROMIUM SOIL CALCULATION (3060/7196A)

Date Extracted: 11/14/00 Date Analyzed: 11/14/00
Analyst: , Amanda Analyst: Harford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.99975
R Square	0.9995
Adjusted R S	0.99938
Standard Err	0.00802
Observations	6

ANOVA

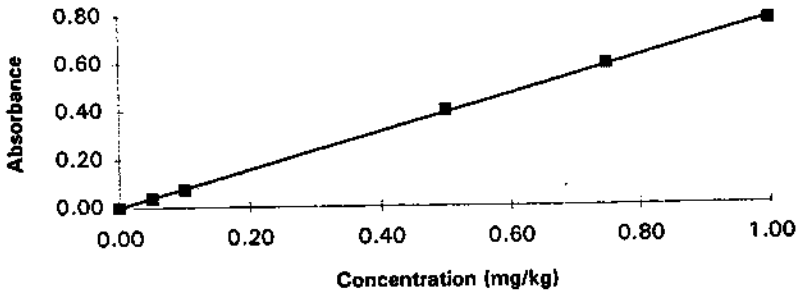
	df	*SS*	*MS*	*F*	*gnificance F*
Regression	1	0.51826	0.51826	8055.746	9.2E-08
Residual	4	0.00026	6.4E-05		
Total	5	0.51852			

	Coefficient	*andard Err*	*t Stat*	*P-value*	*ower 95*	*pper 95*	*wer 95.000*	*er 95.00*
Intercept	0.00138	0.00476	0.29046	0.785903	-0.0118	0.01459	-0.01182	0.015
X Variable 1	0.77405	0.00862	89.7538	9.24E-08	0.7501	0.79799	0.750102	0.798

Sample ID	QA Batch	Initial bsorbanc	BG Absorban	Dilution Factor	% Solids	Soil Conc, mg/kg	MDL mg/kg	Sample Wt (g)
0.00		0.000	0.000			0.00		
0.05		0.037	0.000			0.05		
0.10		0.076	0.000			0.10		
0.50		0.399	0.000			0.51		
0.75		0.588	0.000			0.76		
1.00		0.766	0.000			0.99		
ICV1		0.404	0.000	1.0	100	0.52	2.00	2.5
CCB1		0.000	0.000	1.0	100	0.00	2.00	2.5
PBS		0.000	0.000	1.0	100	0.00	2.00	2.5
LCS		0.179	0.000	1.0	100	0.229	2.00	2.5
240484DUP	2230	0.021	0.008	1.0	90.8	0.00	2.20	2.58
240484MSL	2230	0.361	0.007	1.0	90.8	19.8	2.20	2.54
240484MSH	2230	0.626	0.013	1.0	90.8	33.5	2.20	2.6
240484PS	2230	0.124	0.009	1.0	90.8	6.4	2.20	2.54
240484	2230	0.019	0.009	1.0	90.8	0.00	2.20	2.54
240471	2230	0.109	0.005	1.0	96.8	5.3	2.07	2.59
240472	2230	0.237	0.001	1.0	90.8	13.3	2.20	2.51
240473	2230	0.228	0.002	1.0	91.4	12.4	2.19	2.57
CCS2		0.405	0.000	1.0	100	0.52	2.00	2.5
CCB2		0.000	0.000	1.0	100	0.00	2.00	2.5
240474	2230	0.023	0.013	1.0	97.3	0.00	2.06	2.56
240475	2230	0.030	0.006	1.0	95.7	0.00	2.09	2.6
240476	2230	0.024	0.005	1.0	95.5	0.00	2.09	2.6
240477	2230	0.081	0.001	1.0	92.8	4.4	2.16	2.5
240478	2230	0.044	0.000	1.0	94.4	2.3	2.12	2.5
240479	2230	0.070	0.004	1.0	91.0	3.6	2.20	2.56
240481	2230	0.028	0.000	1.0	88.7	0.00	2.25	2.54
240482	2230	0.080	0.000	1.0	88.7	4.6	2.25	2.5
240483	2230	0.023	0.000	1.0	91.8	0.00	2.18	2.57
240485	2230	0.039	0.003	1.0	92.2	0.00	2.17	2.52
CCS3		0.404	0.000	1.0	100	0.52	2.00	2.5
CCB3		0.000	0.000	1.0	100	0.00	2.00	2.5
240486	2230	0.035	0.000	1.0	91.6	0.00	2.18	2.52
240487	2230	0.105	0.000	1.0	93.4	5.6	2.14	2.57
240488	2230	0.067	0.000	1.0	92.0	3.7	2.17	2.51
240489	2230	0.076	0.000	1.0	90.4	4.2	2.21	2.52
CCSF		0.405	0.000	1.0	100	0.52	2.00	2.5
CCBF		0.000	0.000	1.0	100	0.00	2.00	2.5

Hexavalent Chromium Calibration Curve

Date Run: 11/14/00 Saved as:



Correlation Coefficient: 0.999752

Calibration Slope: 0.774046

y-intercept: 0.001382

Calibration Check Standard Recovery Summary				
	True Value ppm	Value Obtained ppm	% Recovery	% Rec Limit
CCS1	0.50	0.52	104	90-110
CCS2	0.50	0.52	104	90-110
CCS3	0.50	0.52	104	90-110
CCSF	0.50	0.52	104	90-110

24 PROJECT Cr+6 Runlog

Notebook No. 01764

Continued From Page

PRO.

BATCH 22216 Matrix: H2O Lot: F490, F514

SAMPLE	DIL	ABS	BG/BG	Final pH	TpH/Read	Results	Spk	%REC
0		.000		1.94	9:50/9:56			
10		.008		1.98				
50		.046		1.90				
75		.071		1.87				
100		.092		1.89				
200		.179		1.74	9:55/10:00			
CCS		.0165		1.79	10:11/10:16	74.7	75	99.6%
CCB		-.001		1.82		ND		
PBD		.000		1.83		ND		
LCS(621)		.039		1.86	10:13/10:18	42.5	48.4	87.8%
240274 Dup		-.001		1.78	10:30/10:35	ND		
240274 MSL		.048		1.84		525	50	105%
240274 MSH		.186		1.87	10:32/10:37	206	200	103%
240274 RS		.013		1.85	10:45/10:50	13.6	15	90.7%
240274.		.000		1.94	10:33/10:38	ND		
240480c		.000		1.91		ND		
CCS		.069		1.94		75.8	75	101%
CCB		.000		1.82	10:35/10:40	ND		

10 ppm Cr+6 1: 5337 10 ppm Cr+6 2: 5055

10% H_2SO_4: 5248 DPC 2nd: 5225

Continued on Page

Read and Understood By

Amanda Harford 11/9/00

56 PROJECT Cr+6 Prep Log

Notebook No. 01645

Continued From Page

BATCH: 2230 Matrix: solid JOB: F514

SAMPLE	SAMPLE WT (g)	vol (ml)	color	initial pH	pH Time	spike
0.00		100		7.58	9:40	
0.05				7.57		
0.10				7.96		
0.50				7.81		
0.75				7.50		
1.00				7.33	9:45	
CCS				7.93	10:42	0.50
PB				7.76		
LCS				7.66	10:44	0.242
240484 bdup	2.58		dark yellow	7.51	11:08	
240484 MSL	2.54			7.98		0.50
240484 MSH	2.60			7.74		1.00
240484b	2.54			7.80		
240471a	2.59		pale yellow	7.85		
240472a	2.51			7.61	11:14	
240473a	2.57			7.95	11:43	
240474a	2.56		dark yellow	7.83		
CCS				7.80		0.50
CCB				7.64		
240475a	2.60		yellow	7.68		
240476a	2.60			7.97		
240477a	2.50		pale yellow	7.73	11:50	
240478a	2.50			7.84	12:05	
240479a	2.56			7.43		
240481a	2.54		clear	7.85		
240482a	2.50		pale yellow	7.92		
240483a	2.57			7.77		
240485a	2.52		dark yellow	7.57		
240486a	2.52		clear	7.83	12:12	
CCS				7.60	12:36	0.50
CCB				7.90		
240487a	2.57		clear	7.74		
240488a	2.51			7.76	12:39	

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Read and Understood By

SAMPLE	SAMPLE wt (g)	vol (ml)	color	init pH	pH time	sp
240489a	2.52	100	Clear	7.73	12:40	
CCS		↓		7.91	↓	0.50
CCB				7.87	12:42	

start time: 9:35 @ 90.0°C temp after 30 min 95.0°C

end time: 10:35 @ 95.5°C pH of digestion fluid: 13:45

Continued on Page

Read and Understood By

Amanda Harford 11/14/00

BATCH: 2230 Matrix: solid JOB: FS14

SAMPLE	DIL	ABS	BG/BG pH	Final pH	TpH/TRead	% Solids	Results	Spk	%REC
0.00		0.000		1.83	9:50/9:55				
0.05		0.037		1.92					
0.10		0.076		1.99					
0.50		0.399		1.87					
0.75		0.588		1.84					
1.00		0.766		1.64	9:54/9:59				
CCS		0.404		1.73	10:50/10:55		0.52	0.50	104%
CCB		0.000		1.91			ND		
PB		0.000		1.93			ND		
LCS(621)		0.179		1.64	10:53/10:58		0.239	0.242	94%
240484 dup		0.021	.008/1.66	1.89	11:20/11:25	90.8	ND		
240484 MSL		0.361	.007/1.89	1.92		90.8	22.0		
240484 MSH		0.626	.013/1.88	1.95	11:22/11:27	90.8			
240484 PS		0.124	.009/1.84	1.90	11:34/11:39	90.8	6.6		
240484b		0.019	.009/1.72	1.99	11:22/11:28	90.8	ND		
240471a		0.109	.005/1.83	1.84		96.8 96.8	5.3		
240472a		0.237	.001/1.65	1.89	11:24/11:30	90.8 90.8	13.3		
240473a		0.228	.002/1.93	1.72	11:54/12:00	91.4 91.4	12.4		
CCS		0.405		1.65			0.52	0.50	104%
CCB		0.000		1.77			ND		
240474a		0.023	.013/1.89	1.84		97.3 97.3	ND		
240475a		0.030	.006/1.87	1.86		95.7 95.7	ND		
240476a		0.024	.008/1.66	1.63		95.5 95.5	ND		
240477a		0.081	.001/1.69	1.69	12:00/12:05	92.8 92.8	4.4		
240478a		0.044	.000/1.88	1.67	12:17/12:22	94.4 94.4	2.3		
240479a		0.070	.004/1.89	1.68		91.0 91.0	3.6		
240480a		0.028	.000/2.00	1.68		88.7 88.7	ND		
240482a		0.080	.004/1.84	1.75		88.7 88.7	4.6		
240483a		0.023	.000/1.89	1.79		91.8 91.8	ND		
240485a		0.039	.003/1.72	1.64	12:21/12:26	92.2 92.2	ND		
CCS		0.404		1.62	12:27/12:32		0.52	0.50	104%
CCB		0.000		1.69	12:28/12:33		ND		

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Read and Understood By

Amanda Harbard 11/14/00

30 PROJECT Cr+6 Run log

Notebook No. 017664 29

Continued From Page

SAMPLE	DIL	ABS	B6/B8	Final pH	TPH/Read	% Solids	Results	Spk	% REC
240486a		0.035	001/1.84	1.95	12:29/12:34	~~97.5~~ 96	ND		
240487a		0.105	001/1.85	2.01	12:49/12:54	93.4 934	~~5.6~~ 5.6		
240488a		0.067	001/1.81	2.09		92.0 920	~~3.7~~ 3.7		
240489a		0.076	001/1.80	1.98		90.4 904	~~4.2~~ 4.2		
CCS		0.405		1.95			0.52	0.50	104%
CCB		0.000		1.99	12:53/12:58		ND		

100 ppm Cr+6 (1): 5485 DPC 2nd: 5225

100 ppm Cr+6 (2): 5054 10% H_2SO_4: 5418

Continued on Page

Read and Understood By

Amanda Harbold 11/14/00

Signed Date

Job Number	Sample Number	Bottle ID	Tare Weight (g)	Wet Weight (g)	Dry Weight (g)	Percent Solids (%)	Percent Moisture (%)
F522	240557	288	29.21	9.74	8.63	88.6	11.4
	240557 dup	259	30.1	10.57	9.32	88.2	11.8
F514	240472	94	29.29	7.6	6.9	90.8	9.2
F514	240473	227	29.81	6.39	5.84	91.4	8.6
F514	240474	151	29.88	8.83	8.59	97.3	2.7
F514	240475	161	29.76	9.31	8.91	95.7	4.3
F514	240476	59	31.65	9.04	8.63	95.5	4.5
F514	240477	637	30.1	5.67	5.26	92.8	7.2
F514	240478	166	29.47	7.66	7.23	94.4	5.6
F514	240479	213	29.09	7.24	6.59	91	9
F514	240481	631	29.23	5.73	5.08	88.7	11.3
F514	240482	380	29.35	6.45	5.72	88.7	11.3
F514	240483	148	30.05	7.43	6.82	91.8	8.2
F514	240484	25	29.54	10.13	9.2	90.8	9.2
F514	240485	206	30.21	5.93	5.47	92.2	7.8
F514	240486	284	29.17	7.99	7.32	91.6	8.4
F514	240487	86	29.68	6.98	6.52	93.4	6.6
F514	240488	655	29.22	5.66	5.21	92	8
F514	240489	76	28.7	4.98	4.5	90.4	9.6
							100
F458	240067	103	29.33	3.49	2.33	66.8	33.2
F458	240068	184	29.59	3.95	2.92	73.9	26.1
F458	240069	672	30.44	4.09	2.84	69.4	30.6
F458	240070	350	29.17	5.15	4.37	84.9	15.1
F458	240071	625	30.04	4.69	3.76	80.2	19.8
F458	240072	133	29.48	5.21	4.39	84.3	15.7
F458	240073	300	30.87	5.55	4.48	80.7	19.3
F458	240074	208	30.32	5.87	4.75	80.9	19.1
F458	240075	501	29.34	5.82	4.82	82.8	17.2
F458	240076	84	29.5	4.59	3.45	75.2	24.8
							100
F519	240512	127	29.17	10.41	8.82	84.7	15.3
F519	240513	274	29.41	9.69	7.88	81.3	18.7
							100
F492	240304	48	28.93	9.07	7.97	87.9	12.1
F492	240305	248	29.55	9.6	8.53	88.9	11.1
F492	240306	158	29.37	10.71	9.44	88.1	11.9
F492	240307	99	29.34	9.46	8.5	89.9	10.1
F492	240308	236	30.25	9.32	8.25	88.5	11.5
F492	240309	162	29.06	9.91	8.85	89.3	10.7
F492	240310	670	30.07	9.58	8.66	90.4	9.6
F492	240311	290	29.58	10.14	9.12	89.9	10.1
F492	240312	849	29.3	10.77	9.5	88.2	11.8

Printed: 11/11/00

PS1110.XLS

Signed: Mark Keen Date: 11-11-00 Signed: _____ Date: _____

18 JO

HEARTLAND
ENVIRONMENTAL SERVICES, INC.

Data Validation Report

SDG#:	F514
Date:	December 21, 2000
Client Name:	TRC Environmental Corporation
Project/Site Name:	SMC Facility
Date Sampled:	November 8 - 9, 2000
Number of Samples:	*18 Non-Aqueous Sample(s) with 1 MS/MSD(s)* 1 Aqueous Sample(s) with 0 MS/MSD(s)
Laboratory:	STL Edison
Validation Guidance:	NJDEPE SOP No. 5.A.10
QA/QC Level:	NJDEPE Modified Methods
Method(s) Utilized:	SW846 Methods 3060/7196A, July 1992
Analytical Fractions:	Hexavalent Chromium

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. Sexton
Paul B. Humburg, President

12-22-00
Date

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

SDG# F514

Samples and Fractions Reviewed

Sample Identifications Analytical Fraction

TRC ID	MATRIX	CR+6	
FB110900	WATER	X	
B12-S1R	SOIL		X
B12-SR2	SOIL		X
B12-S6R	SOIL		X
B12-S3R	SOIL		X
B12-S4R	SOIL		X
B12-S5R	SOIL		X
SB8-12R	SOIL		X
SB8-21R	SOIL		X
SB8-11R	SOIL		X
SB8-18R	SOIL		X
SB8-17R	SOIL		X
SB8-16R	SOIL		X
SB8-22R	SOIL		X
SB8-22R MS	SOIL		X
SB8-22R MSD	SOIL		X
SB8-13R	SOIL		X
SB8-14R	SOIL		X
SB8-15R	SOIL		X
SB8-10R	SOIL		X
SB8-20R	SOIL		X
Total Billable Samples (Water/Soil)		1	20

CR+6= Hexavalent Chromium

DATA ASSESSMENT NARRATIVE
HEXAVALENT CHROMIUM

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 3060/7196A: the SOP No. 5.A.10 Standard Operating Procedure for Analytical Data Validation of Hexavalent Chromium in accordance with NJDEPE Modified Methods requirements, July 1992. 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 # F514

A validation was performed on the hexavalent chromium data from SDG F514. The data was evaluated based on the following parameters.

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

* - All criteria were met for this parameter.

Matrix Spike Recovery results

1. The high matrix spike recovery results for soil samples for Hexavalent Chromium (40%) was below the lower control limits (<75%). All positive and non-detect results are qualified as estimated, "J" or "UJ" with low bias.

* See attached sheets for for individual qualifications of data.

Site: SMC Site

Lab Job No: F514

Date Sampled: 11/9/00
Date Received: 11/9/00
Matrix: WATER

Date Extracted: 11/9/00
Date Analyzed: 11/9/00
QA Batch: 2226

CHROMIUM VI

STL Edison Sample #	Client ID	Dilution Factor	Analytical Result Units: ug/l
240480	FB110900	1.0	ND

Quantitation Limit for Chromium VI is 10.0 ug/l for an undiluted sample.

RBG 12/22/00

Site: SMC Site

Lab Job No: F514

Date Sampled: 11/8/00-11/9/00
Date Received: 11/9/00
Matrix: SOIL

Date Extracted: 11/14/00
Date Analyzed: 11/14/00
QA Batch: 2230

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240471	B12-S1R	3.2	1.0	5.5 J1
240472	B12-SR2	9.2	1.0	13.3 J1
240473	B12-S6R	8.6	1.0	12.8 J1
240474	B12-S3R	2.7	1.0	ND UJ1
240475	B12-S4R	4.3	1.0	ND UJ1
240476	B12-S5R	4.5	1.0	ND UJ1
240477	SB8-12R	7.2	1.0	4.4 J1
240478	SB8-21R	5.6	1.0	2.3 J1
240479	SB8-11R	9.0	1.0	3.7 J1
240481	SB8-18R	11.3	1.0	ND UJ1
240482	SB8-17R	11.3	1.0	4.6 J1
240483	SB8-16R	8.2	1.0	ND UJ1
240484	SB8-22R	9.2	1.0	ND UJ1

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample

12/21/00

Site: SMC Site

Lab Job No: F514

Date Sampled: 11/8/00-11/9/00
Date Received: 11/9/00
Matrix: SOIL

Date Extracted: 11/14/00
Date Analyzed: 11/14/00
QA Batch: 2230

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240485	SB8-13R	7.8	1.0	ND UJ
240486	SB8-14R	8.4	1.0	ND UJ
240487	SB8-15R	6.6	1.0	5.8 J
240488	SB8-10R	8.0	1.0	3.7 J
240489	SB8-20R	9.6	1.0	4.3 J

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample

HEXAVALENT CHROMIUM WATER CALCULATIONS (7196A)

Date Extracted: 11/9/00
Analyst: Harford, Amanda

Date Analyzed: 11/9/00
Analyst: arford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.9996328
R Square	0.9992657
Adjusted R Sq	0.9990821
Standard Error	0.0019908
Observations	6

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.021574146	0.021574146	5443.252423	2.02257E-07
Residual	4	1.58539E-05	3.96347E-06		
Total	5	0.02159			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.000%*	*Upper 95.000%*
Intercept	0.0008145	0.001200502	0.678482975	0.534689932	-0.00251861	0.004147654	-0.002518614	0.004147654
X Variable 1	0.0008991	1.21866E-05	73.77840079	2.02257E-07	0.000865274	0.000932946	0.000865274	0.000932946

Sample ID	QA Batch	Initial Absorbance	BG Absorbance	Dilution Factor	Conc. ug/l	MDL ug/l	SampleVol ml	
0.0		0.000	0.000		-0.91			
10.0		0.008	0.000		8.0			
50.0		0.046	0.000		50.3			
75.0		0.071	0.000		78.1			
100.0		0.092	0.000		101			
200.0		0.179	0.000		198			
CCS1		0.068	0.000	1.0	74.7	10.00	50	
CCB1		-0.001	0.000	1.0	-2.0	10.00	50	
PBW		0.000	0.000	1.0	-0.91	10.00	50	
LCS		0.039	0.000	1.0	42.5	10.00	50	
240274DUP	2226	-0.001	0.000	1.0	0.00	10.00	50	
240274MSL	2226	0.048	0.000	1.0	52.5	10.00	50	
240274MSH	2226	0.186	0.000	1.0	206	10.00	50	
240274PS	2226	0.013	0.000	1.0	13.6	10.00	50	
240274	2226	0.000	0.000	1.0	0.00	10.00	50	E01
240480	2226	0.000	0.000	1.0	0.00	10.00	50	E01
CCSF		0.069	0.000	1.0	75.8	10.00	50	
CCBF		0.000	0.000	1.0	0.00	10.00	50	

HEXAVALENT CHROMIUM SOIL CALCULATION (3060/7196A)

Date Extracted: 11/14/00 Analyst: . Amanda

Date Analyzed: 11/14/00 Analyst: Harford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.99975
R Square	0.9995
Adjusted R S	0.99938
Standard Err	0.00802
Observations	6

ANOVA

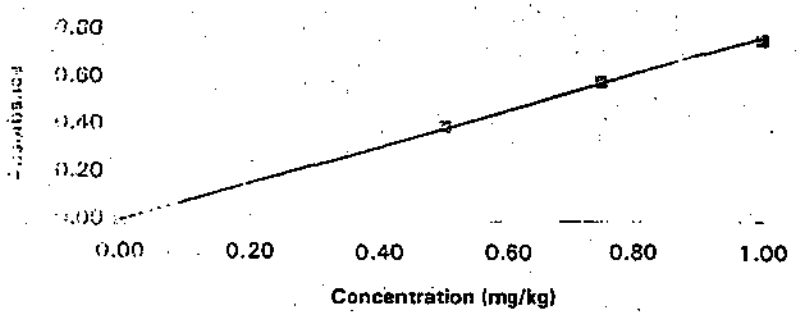
	df	*SS*	*MS*	*F*	*gnificance F*
Regression	1	0.51826	0.51826	8055.746	9.2E-08
Residual	4	0.00026	6.4E-05		
Total	5	0.51852			

	Coefficient	*andard Err*	*t Stat*	*P-value*	*ower 95*	*pper 95*	*wer 95.000*	*er 95.00*
Intercept	0.00138	0.00476	0.29046	0.785903	-0.0118	0.01459	-0.01182	0.015
X Variable 1	0.77405	0.00862	89.7538	9.24E-08	0.7501	0.79799	0.750102	0.798

Sample ID	QA Batch	Initial bsorbanc	BG Absorban	Dilution Factor	% Solids	Soil Conc, mg/kg	MDL mg/kg	Sample Wt (g)
0.00		0.000	0.000			0.00		
0.05		0.037	0.000			0.05		
0.10		0.076	0.000			0.10		
0.50		0.399	0.000			0.51		
0.75		0.588	0.000			0.76		
1.00		0.766	0.000			0.99		
CCV1		0.404	0.000	1.0	100	0.52	2.00	2.5
CCB1		0.000	0.000	1.0	100	0.00	2.00	2.5
PBS		0.000	0.000	1.0	100	0.00	2.00	2.5
LCS		0.179	0.000	1.0	100	0.229	2.00	2.5
240484DUP	2230	0.021	0.008	1.0	91.0	0.00	2.20	2.5
240484MSL	2230	0.361	0.007	1.0	91.0	20.0	2.20	2.5
240484MSH	2230	0.626	0.013	1.0	91.0	34.7	2.20	2.5
240484PS	2230	0.124	0.009	1.0	91.0	6.5	2.20	2.5
240484	2230	0.019	0.009	1.0	91.0	0.00	2.20	2.5
240471	2230	0.100	0.005	1.0	97.0	5.5	2.06	2.5
240472	2230	0.237	0.001	1.0	91.0	13.3	2.20	2.5
240473	2230	0.228	0.002	1.0	91.0	12.8	2.20	2.5
CCS2		0.405	0.000	1.0	100	0.52	2.00	2.5
CCB2		0.000	0.000	1.0	100	0.00	2.00	2.5
240474	2230	0.023	0.013	1.0	97.0	0.00	2.06	2.5
240475	2230	0.030	0.006	1.0	96.0	0.00	2.08	2.5
240476	2230	0.024	0.005	1.0	96.0	0.00	2.08	2.5
240477	2230	0.081	0.001	1.0	93.0	4.4	2.15	2.5
240478	2230	0.044	0.000	1.0	94.0	2.3	2.13	2.5
240479	2230	0.070	0.004	1.0	91.0	3.7	2.20	2.5
240481	2230	0.028	0.000	1.0	89.0	0.00	2.25	2.5
240482	2230	0.080	0.000	1.0	89.0	4.6	2.25	2.5
240483	2230	0.023	0.000	1.0	92.0	0.00	2.17	2.5
240485	2230	0.039	0.003	1.0	92.0	0.00	2.17	2.5
CCS3		0.404	0.000	1.0	100	0.52	2.00	2.5
CCB3		0.000	0.000	1.0	100	0.00	2.00	2.5
240486	2230	0.035	0.000	1.0	92.0	0.00	2.17	2.5
240487	2230	0.105	0.000	1.0	93.0	5.8	2.15	2.5
240488	2230	0.067	0.000	1.0	92.0	3.7	2.17	2.5
240489	2230	0.076	0.000	1.0	90.0	4.3	2.22	2.5
CCSF		0.405	0.000	1.0	100	0.52	2.00	2.5
CCBF		0.000	0.000	1.0	100	0.00	2.00	2.5
			0.000	1.0	100	0.00	2.00	2.5

Hexavalent Chromium Calibration Curve

Date Run: 11/14/00 Saved as:



Correlation Coefficient: 0.999752

Calibration Slope: 0.774046

Intercept: 0.001382

Calibration Check Standard Recovery Summary				
	True Value ppm	Value Obtained ppm	% Recovery	% Rec Limit
CCS1	0.50	0.52	104	90-110
CCS2	0.50	0.52	104	90-110
CCS3	0.50	0.52	104	90-110
CCSF	0.50	0.52	104	90-110

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: Water
QA Batch No.: 2226

QA Sample: 240274
QA Sample from Lab Job No.: F490

Laboratory Blank	
Blank Conc Units: ug/l	Quant Limit Units: ug/l
ND	10

Duplicate Sample			
Sample Conc Units: ug/l	Duplicate Conc Units: ug/l	RPD	RPD Limit
ND	ND	0.0	20

Matrix Spike - Low				
Spike Conc Units: ug/l	Sample Conc Units: ug/l	MSL Conc Units: ug/l	% Rec	% Rec Limit
50	ND	52.5	105	85-115

Matrix Spike - High				
Spike Conc Units: ug/l	Sample Conc Units: ug/l	MSH Conc Units: ug/l	% Rec	% Rec Limit
200	ND	206	103	85-115

Post Spike					
Spike Conc Units: ug/l	Sample Conc Units: ug/l	Spike/ Sample	PS Conc Units: ug/l	% Rec	% Rec Limit
15	ND	NA	13.6	90.7	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: ug/l	Acceptable Range: ug/l	Measured Value: ug/l
ERA	521	48.4	40.1-56.6	42.5

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: SOIL
QA Batch No.: 2230

QA Sample: 240484
QA Sample from Lab Job No.: F514

Laboratory Blank	
Blank Conc Units: mg/kg	Quant Limit Units: mg/kg
0	2

Duplicate Sample			
Sample Conc Units: mg/kg	Duplicate Conc Units: mg/kg	RPD	RPD** Limit
ND	ND	0.0	20

Matrix Spike-Low				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSL Conc Units: mg/kg	% Rec	% Rec Limit
22.0	ND	20.0	91.0	75-125

Matrix Spike-High				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSH Conc Units: mg/kg	% Rec	% Rec Limit
87.9	ND	34.7	39.5	75-125

Post Spike					
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	Spike/ Sample	PS Conc Units: mg/kg	% Rec	% Rec Limit
6.6	ND	NA	6.5	98.6	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: mg/kg	Acceptable Range: mg/kg	Measured Value: mg/kg
ERA	621	0.242	0.201-0.283	0.229

** If sample/dup conc is less than 8.0ppm a control limit of +/- 2.0 ppm applies.

11/15/00
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APPENDIX F

ADDENDUM TO CLOSURE REPORT, SURFACE IMPOUNDMENTS B6, B7 AND B8

FINAL SUPPLEMENTAL SOIL SAMPLING REPORT
FORMER LAGOONS B6, B7 AND B8

TRC

Customer-Focused Solutions

February 23, 2001

Ms. Donna L. Gaffigan, Case Manager
State of New Jersey
Department of Environmental Protection
Bureau of Federal Case Management
401 East State Street, 5th Floor, CN-028
Trenton, New Jersey 08625-0028

Re: Final Supplemental Soil Sampling Report
Former Lagoons B6, B7 & B8
Addendum to Lagoon Closure Report, B6, B7 & B8
Newfield, NJ Facility
TRC Project No.26770-0020

Dear Ms. Gaffigan:

On behalf of Shieldalloy Metallurgical Corporation (SMC), TRC Environmental Corporation (TRC) is pleased to submit the following letter report documenting the collection and analysis of supplemental soil samples from former lagoons B-6, B-7 and B-8 at the SMC Newfield, New Jersey facility. This letter report is to be inserted as Appendix F in Volume II of the Closure Report, Surface Impoundments B-6, B-7 and B-8, Liner and Contaminated Soil Removal And Disposal (TRC, revised June 2000). Based on discussions held between the New Jersey Department of Environmental Protection (NJDEP), SMC and TRC on February 6, 2001, this submittal supercedes TRC's previous submittal of January 17, 2001.

Introduction

Soil samples were originally collected beneath the liners of lagoons B-6, B-7 and B-8 as part of Phase II lagoon closure activities at the SMC facility in 1998, as described in Volume I of the Closure Report, Surface Impoundments B-6, B-7 and B-8, Liner and Contaminated Soil Removal And Disposal (TRC, revised June 2000). Prior to the liners being removed by the remediation contractor (Republic Environmental Systems, Inc.), they were visually inspected. The liners from lagoons B-6 and B-7 were found to contain tears and/or holes which were not the result of closure activities. No tears or holes were identified in the liner from lagoon B-8. The liners were removed, and soils exhibiting signs of staining or contamination (if any) were excavated and stockpiled for disposal as hazardous waste. Soil samples were then collected from the base and sidewalls of each lagoon. A total of nine soil samples were collected from the base of lagoons B-6 and B-8, with ten soil samples collected from the base of lagoon B-7. Each soil sample was analyzed for Target Analyte List (TAL) metals and hexavalent chromium. In addition, two samples per lagoon were also analyzed for Target

TRC Companies, Inc.
5 Waterside Crossing • Windsor, Connecticut 06095-1563
Telephone 860-298-9692 • Fax 860-298-6399

Compound List (TCL) volatile organic compounds (VOCs), boron, niobium, strontium, titanium and zirconium. The Closure Plan for these impoundments (TRC, 1997) indicated that soil which exceeded NJDEP soil cleanup criteria or site-specific lagoon closure criteria established for trivalent chromium (78,000 parts per million or ppm) and hexavalent chromium (10 ppm) would be removed and/or the contingent closure plan would be implemented (with the approval of NJDEP).

Additional soil excavation was warranted at some locations following receipt of the soil sample analyses, due to exceedances of the site-specific chromium cleanup criteria or NJDEP soil cleanup criteria guidelines. Following removal of any additional soils, confirmation samples were collected and analyzed for those parameters which exceeded the site-specific cleanup criteria. When concentrations still exceeded the cleanup criteria, the soil excavation/confirmation sampling cycle continued until cleanup criteria were achieved. For each sample location in each lagoon, the thickness of contaminated soil removed during the lagoon closure process is identified in Table 1.

Following excavation activities lagoons B-6, B-7 and B-8 were backfilled and graded. This was accomplished by leveling and grading the surrounding clean soil in the lagoon berms after the contaminated soil was removed. Clean soils excavated during the course of the project from above the water table along the sidewalls of lagoons B-6, B-7 and B-8 were stockpiled for this use. In addition, soils from the berm between lagoons B-6 and B-7 were used to backfill lagoon B-6. After the leveling and grading process was completed, additional fill was needed to complete the cover. Approximately 7,000 tons of soil from an off-site borrow source were included in the regraded lagoon area.

In NJDEP letters dated August 8, 2000 and September 22, 2000, all hexavalent chromium data from the Phase I and Phase II lagoon closure were rejected. In response to this issue, TRC prepared a Work Plan for the collection of supplemental soil samples in the area of former lagoons B-6, B-7 and B-8 which was submitted to NJDEP on October 3, 2000. The Work Plan was then revised in accordance with NJDEP comments, and re-submitted to NJDEP on October 18, 2000. The Work Plan was subsequently approved on November 6, 2000.

The Work Plan for the supplemental sampling effort described the collection of twelve samples from each lagoon. The new sample locations and depths were selected to be representative of the areal extent of the base of the lagoon, while targeting previous sampling locations, especially those which exhibited the greatest depths of visually impacted soils. Proposed sample depths were based on the original elevations of the bases of the lagoons, as determined by surrounding berm elevations measured prior to lagoon closure and the reported depths of the lagoons. Based on topographic data (James M. Stewart, 12/20/94), the berms surrounding lagoons B-6, B-7 and B-8 were constructed to elevations ranging from 105 (for lagoons B-6 and B-7) to 106 feet (for lagoon B-8) above mean sea level (AMSL). Based on lagoon depths of 13 feet for each of the three lagoons (see Closure Report), the elevations of the bases of lagoons B-6 and B-7 were 92 feet AMSL while the elevation

of the base of lagoon B-8 was 93 feet AMSL. The final sample collection depth was then determined in the field using the process described in the following section.

Supplemental Soil Sampling Summary

The soil sampling event was conducted between November 7 and November 9, 2000. Initially, the approximate locations of the original soil samples collected from the bases of the lagoons were triangulated in the field based on measurements made from surrounding site features (i.e., the corners of the concrete foundation/wall of former tank T-12 and the corners of Building D111 (pole barn)). Ground surface elevations for each sample location were then surveyed by using a nearby known vertical datum point (monitoring well SC-22S). The existing ground surface elevations of the sampling points in former lagoons B-6, B-7 and B-8 ranged from 97.44 to 100.78 feet AMSL. The final sample collection depth was determined based on the surveyed ground surface elevation, the calculated elevation of the base of the lagoon, and the reported depth of soil removal from the base of each lagoon. The new samples were collected from a depth interval of 1 foot below the elevation of the base of each lagoon or the reported maximum depth of soil removal from the base of the lagoon. Elevations of the samples collected are identified in Table 1. Final sample locations for the supplemental sampling effort are indicated in Figures 1 through 3 for lagoons B-6, B-7 and B-8, respectively.

To collect the new soil samples, a truck-mounted Geoprobe® was used to advance a 3-inch diameter drive point connected to 3-foot sections of 1-inch diameter threaded steel rods to the top elevation of the proposed sample interval indicated in Table 1. A soil sample was then collected by retracting the drive point and rods and attaching a 2-inch diameter, 4-foot long Macro-Corer® to the bottom of the rods. The Macro-Corer® and rods were then reinserted into the hole, with the corer pushed to the bottom of the borehole and then further advanced 1 foot for sample collection. The interior walls of the Macro-Corer® were lined with disposable acetate to prevent cross contamination and to ensure sample integrity. All sampling equipment (i.e., steel rods, Macro-Corer®, spoons, mixing bowls) was decontaminated in accordance with the NJDEP 8-step decontamination procedure described in the New Jersey Department of Environmental Protection and Energy Field Sampling Procedures Manual, May 1992.

The soil sample was geologically logged for grain size and texture, and physical observations (i.e., stains, odors, and moisture) of the soil were recorded in the field log book. Soil sample information is summarized in Table 2. None of the samples exhibited evidence of stains or odors. The contents of the Macro-Corer® were placed in a dedicated, stainless steel mixing bowl. The contents of the bowl were then homogenized with a decontaminated stainless steel spoon and placed directly into the appropriate sample container.

Seven of the soil samples were saturated. These samples were air-dried in bowls prior to placement into sample containers. Prior to air drying, duplicate soil samples were collected from three of the soil samples (SB6-15, SB6-23 and SB7-16) and placed into sample containers. These samples were centrifuged in the laboratory to decant off all liquid prior to sample digestion and analysis. All centrifuged soil samples were labeled with a "CF" designation (SB6-15 CF, SB6-23 CF and SB7-16 CF).

Each soil sample container was properly labeled and placed in an ice-filled cooler to preserve the samples at a temperature of 4°C. Samples were shipped via courier, under chain-of-custody, to Severn Trent Services (STL-Edison), a New Jersey-certified laboratory for analysis. Each soil sample was analyzed for hexavalent chromium using the NJDEP Modified Method for alkaline digestion per Method 3060A USEPA SW846, Third Edition.

Quality control (QC) samples were also collected during this sampling event. Two duplicate samples were collected, one at soil sample location SB6-21R (labeled SB6-26R), and one at sample location SB7-12R (labeled SB7-25R), for submittal to the laboratory as "blind duplicate" samples. Three field blanks (FB110700, FB110800 and FB110900) were collected by pouring laboratory-supplied, analyte-free deionized water over the decontaminated sample collection equipment (acetate liner, Macro-Corer®, spoons, mixing bowls) and into the appropriate sample containers. The QC samples were analyzed for hexavalent chromium (NJDEP Modified Method for alkaline digestion per Method 3060A USEPA SW846, Third Edition for the duplicate samples and Method 7196A USEPA SW846, Third Edition for the field blanks).

Following chemical analysis, a data validation firm, Heartland Environmental Services, Inc. (Heartland) of St. Charles, Missouri, reviewed the data packages. The data were screened to determine usability of results and to determine compliance relative to the analytical requirements and deliverables. Reported holding times, blank analysis results, matrix spike and laboratory control sample (LCS) recoveries, matrix duplications and calibration results were reviewed. All positive and non-detect analytical results were qualified as estimated ("J" or "UJ", respectively) with low bias due to high matrix spike recovery results (40% to 55%) which were below the lower control limits (75%).

Under the direction of the NJDEP's Quality Assurance Section, the data qualifiers were subsequently removed due to the fact that the low matrix spike recovery results (which are more applicable to the low-concentration results than the high matrix spike recovery results) were acceptable. Based on additional NJDEP review comments (see NJDEP memo included with the attached data packages), the laboratory also reissued the data packages with minor corrections (eliminating the rounding off of sample weights and percent moisture values in the original calculations of the hexavalent chromium results).

Analytical Results

The analytical results for the resampling effort are summarized in Tables 3, 4 and 5 for lagoons B-6, B-7 and B-8, respectively. Complete data packages corrected on the basis of NJDEP comments are attached, along with the data validation packages which are based on the original, uncorrected data.

The majority of sample results were less than the 10 ppm hexavalent chromium cleanup criterion. The only exceptions were two sample locations in lagoon B-6 and one sample location in lagoon B-7. In lagoon B-6, sample SB6-16R exhibited 11.3 ppm hexavalent chromium at a depth of 7.8 feet below ground surface (fbgs). One saturated sample location (air-dried sample SB6-23R and its duplicate centrifuged sample SB6-23R CF) exhibited 14.0/14.4 ppm hexavalent chromium at a depth of 7.0 fbgs. In lagoon B-7, sample SB7-23R exhibited 32.2 ppm hexavalent chromium at a depth of 7.5 fbgs.

As described in the Supplemental Soil Sampling Summary above, three saturated samples were allowed to air dry prior to analysis. However, in response to NJDEP comments on the original supplemental sampling plan, duplicates of the saturated samples (prior to air drying) were also submitted to the laboratory, where they were centrifuged prior to analysis. The hexavalent chromium levels in the air-dried and centrifuged samples were relatively comparable, although the moisture contents of two of the three centrifuged samples were greater than the air-dried samples.

Data Evaluation and Conclusions

Based on the results of the supplemental sampling effort, the site-specific hexavalent chromium cleanup criterion established in the 1997 Closure Plan was exceeded at a total of three sample locations within two of the three former lagoons. Given the relative infrequency of these exceedances (3 sample locations out of a total of 36 sample locations), the presence of the water table at one of these sample locations, and the overall levels of hexavalent chromium detected in the supplemental samples (32.2 ppm and less) which are not indicative of potential ground water contamination source areas, no additional sampling or remedial activities are recommended in these lagoons to demonstrate compliance with the lagoon closure plan.

If you should have any questions on the information presented herein, please do not hesitate to contact me at (860) 298-6229.

Very truly yours,

TRC ENVIRONMENTAL CORPORATION

Robert C. Smith /JMO

Robert C. Smith, P.E.
Program Manager

Enclosures

cc: T. Anderson, EPA (1 copy)
D. Smith, SMC (1 copy)
C. Harp, Archer & Greiner (1 copy)

TABLE 1

SUMMARY OF SAMPLE ELEVATIONS
FOR SUPPLEMENTAL SAMPLING PROGRAM
LAGOONS B-6, B-7 AND B-8
Shieldalloy Metallurgical Corporation
Newfield, New Jersey

Sample Location	Existing Surface Elevation (ft AMSL)	Thickness of Contaminated Soils Removed (ft)	Sample Elevation Interval (ft AMSL)	Depth of Soil Boring to Sample Elevation (ft)
Lagoon B-6				
SB6-7R	100.40	0.04	91-92	8.40
SB6-14R	99.79	0.04	91-92	7.79
SB6-15R	100.10	3	88-89	11.10
SB6-16R	99.80	0.04	91-92	7.80
SB6-17R	99.78	1	90-91	8.78
SB6-18R	99.64	0.04	91-92	7.64
SB6-19R	100.11	0.04	91-92	8.11
SB6-20R	99.87	1.5	89.5-90.5	9.37
SB6-21R	100.19	0.17	91-92	8.19
SB6-23R[2]	98.99	0	91-92	6.99
SB6-24R[2]	98.84	0	91-92	6.84
SB6-25R[2]	100.78	0	91-92	8.78
Lagoon B-7				
SB7-11R	99.91	< 0.33	91-92	7.91
SB7-12R	99.59	<0.33	91-92	7.59
SB7-13R	99.35	<0.33	91-92	7.35
SB7-14R	98.88	< 0.33	91-92	6.88
SB7-15R	98.94	1	90-91	7.94
SB7-16R	98.79	1	90-91	7.79

[1] Based on original sample depth interval, determined by 13-foot depth of lagoon and amount of visually contaminated soil (if any) removed prior to sample collection, as presented in 10/18/00 Modified Work Plan.
[2] New sample location not previously sampled.

TABLE 1 (continued)

SUMMARY OF SAMPLE ELEVATIONS
FOR SUPPLEMENTAL SAMPLING PROGRAM
LAGOONS B-6, B-7 AND B-8
Shieldalloy Metallurgical Corporation
Newfield, New Jersey

Sample Location	Existing Surface Elevation (ft AMSL	Thickness of Contaminated Soils Removed (ft)	Sample Elevation Interval (ft AMSL)	Depth of Soil Boring to Sample Elevation (ft)
Lag. B-7 (cont.)				
SB7-17R	99.24	1	90-91	8.24
SB7-18R	100.06	1	90-91	9.06
SB7-19R	99.68	<0.33	91-92	7.68
SB7-20R	99.03	<0.33	91-92	7.03
SB7-23R[2]	99.55	0	91-92	7.55
SB7-24R[2]	99.88	0	91-92	7.88
Lagoon B-8				
SB8-10R	97.52	0	91-92	5.52
SB8-11R	97.96	0	91-92	5.96
SB8-12R	98.81	0	91-92	6.81
SB8-13R	98.50	0	91-92	5.50
SB8-14R	97.44	0	91-92	5.44
SB8-15R	98.09	0	91-92	6.09
SB8-16R	99.39	0	91-92	7.39
SB8-17R	98.81	0	91-92	6.81
SB8-18R	98.18	0	91-92	6.18
SB8-20R[2]	98.86	0	91-92	6.86
SB8-21R[2]	98.95	0	91-92	6.95
SB8-22R[2]	99.17	0	91-92	7.17

[1] Based on original sample depth interval, determined by 13-foot depth of lagoon and amount of visually contaminated soil (if any) removed prior to sample collection, as presented in 10/18/00 Modified Work Plan.
[2] New sample location not previously sampled.

TABLE 2

SUPPLEMENTAL SOIL SAMPLE DESCRIPTIONS
LAGOONS B-6, B-7 AND B-8
Shieldalloy Metallurgical Corporation
Newfield, New Jersey

SAMPLE LOCATION	SOIL SAMPLE DESCRIPTION
Lagoon B-6	
SB6-7R	0-9" Reddish orange fine-to-medium sand, trace coarse sand, gravel and silt, moist.
SB6-14R	0-1" Gray/brown fine sand, little silt, trace coarse sand; 1-9" Orange fine sand, trace coarse sand, gravel and silt; 9-10" Orange medium sand, little fine sand, trace silt, wet.
SB6-15R	0-6" Orange/red fine sand, trace coarse sand and gravel, little silt; 6-12" Tan fine-to-medium sand, trace coarse sand and gravel, wet.
SB6-16R	0-3" Reddish light brown fine sand, little gravel, trace silt and coarse sand; 3-9" Reddish orange fine sand, little gravel, trace silt and coarse sand, moist.
SB6-17R	0-12" Orange and gray fine sand, little silt, trace coarse sand and gravel, moist. Gray material slightly more silty, no distinct boundary.
SB6-18R	0-10" Orange fine sand, trace silt, coarse sand and gravel; 10-12" Orangish red fine sand, little silt, trace coarse sand and gravel, moist.
SB6-19R	0-12" Reddish orange fine sand, trace gravel, trace silt, moist.
SB6-20R	0-12" Orange fine sand, little silt, trace coarse sand and gravel, moist.
SB6-21R	0-4" Gray fine sand, little silt; 4-7" Orange/brown fine sand, trace medium-to-coarse sand; 7-9" Grayish brown fine sand, trace medium-to-coarse sand, slightly moist.
SB6-23R	0-5" Gray fine sand, some silt, trace coarse sand and gravel; 5-10" Orange fine-to- medium sand, trace coarse sand and gravel, wet.
SB6-24R	0-1" Brown/gray fine sand and silt; 1-12" Orange/brown fine sand, trace silt, coarse sand and gravel, moist.
SB6-25R	0-12" Reddish orange fine sand, trace coarse sand and gravel, slightly moist; 2-5" Gray fine sand and silt, trace coarse sand and gravel.

TABLE 2 (continued)

SUPPLEMENTAL SOIL SAMPLE DESCRIPTIONS
LAGOONS B-6, B-7 AND B-8
Shieldalloy Metallurgical Corporation
Newfield, New Jersey

SAMPLE LOCATION	SOIL SAMPLE DESCRIPTION
Lagoon B-7	
SB7-11R	0-12" Orange fine-to-medium sand, little silt, trace coarse sand and gravel, moist.
SB7-12R	0-1" Light brown fine-to-medium sand, moist; 1-9" Orange/brown silt and fine sand, trace coarse sand and gravel, moist.
SB7-13R	0-5.5" Light orange fine to medium sand, trace coarse sand and gravel, moist.
SB7-14R	0-8" Light brown/orange fine to medium sand, trace coarse sand; 8-11" Orange fine sand and silt, trace medium-to-coarse sand and gravel; 11-12" Light brown/orange fine to medium sand, trace coarse sand, moist.
SB7-15R	0-3" Gray fine sand and silt, trace coarse sand and gravel; 3-10" Light orange fine sand, trace silt; 10-12" Light orange fine sand, wet.
SB7-16R	0-12" Light orange fine sand, trace medium-to-coarse sand, wet.
SB7-17R	0-1" Orange/brown fine sand, trace coarse sand and gravel; 1-9" Orange/brown fine sand, trace silt; 9-12" Orange/brown fine sand, trace medium-to-coarse sand, wet.
SB7-18R	0-6" Gray/brown fine sand, trace medium-to-coarse sand, wet.
SB7-19R	0-6" Light brown fine sand, trace medium sand, pocket of dark brown fine sand, trace silt and medium-to-coarse sand; 6-12" Light brown fine-to-medium sand trace coarse sand, moist.
SB7-20R	0-5" Light brown/orange find sand, trace coarse sand and gravel; 5-10" Reddish orange fine sand, moist.
SB7-23R	0-12" Orange fine sand, trace medium sand, moist/wet.
SB7-24R	0-9" Orange/brown fine sand and silt, trace coarse sand and gravel; 9-12" Orange fine-to-medium sand, trace coarse sand and silt, moist.

TABLE 2 (continued)

SUPPLEMENTAL SOIL SAMPLE DESCRIPTIONS
LAGOONS B-6, B-7 AND B-8
Shieldalloy Metallurgical Corporation
Newfield, New Jersey

SAMPLE LOCATION	SOIL SAMPLE DESCRIPTION
Lagoon B-8	
SB8-10R	0-1" Brown fine-to-medium sand, little silt; 1-6" Orange/brown fine sand and silt, trace coarse sand, moist.
SB8-11R	0-8" Orange fine sand and silt, trace coarse sand and clay; 8-12" Orange fine-to-medium sand, little silt, trace coarse sand, moist.
SB8-12R	0-2" Light brown fine-to-medium sand, trace silt and coarse sand; 2-12" Light brown/orange fine sand and silt, trace coarse sand and gravel, moist.
SB8-13R	0-6" Light brown/orange fine sand and silt, trace clay and gravel, moist.
SB8-14R	0-6" Orange fine sand and silt, trace coarse sand; 6-12" Orange/brown fine sand and silt, trace coarse sand and gravel, moist.
SB8-15R	0-4" Orange/brown fine sand, trace silt; 4-12" Orange/brown fine sand and silt, trace clay, moist.
SB8-16R	0-7" Light brown/orange fine sand, some silt, trace gravel, slightly moist.
SB8-17R	0-4" Light brown/orange fine sand, some silt, slightly moist.
SB8-18R	0-6" Light brown/orange fine sand, little silt, moist.
SB8-20R	0-12" Light brown/orange fine sand and silt, trace medium sand and clay, moist.
SB8-21R	0-1" Light brown fine sand, some silt, trace coarse sand and gravel; 1-7" Light brown/orange fine sand and silt, trace coarse sand, gravel and clay, moist.
SB8-22R	0-6" Brown/orange fine sand, some silt, little gravel, slightly moist; Blotches of black fine sand and silt.

TABLE 3

SUPPLEMENTAL SOIL SAMPLE RESULTS SUMMARY TABLE
LAGOON B-6

Shieldalloy Metallurgical Corporation
Newfield, New Jersey

Sample ID	Moisture Content (%)	Hexavalent Chromium Concentration (ppm)	Notes
Lagoon B-6			
SB6-7R	6.2	2.0 U	
SB6-14R	5.1	2.0 U	saturated/air-dried
SB6-15R	7.7	2.0 U	saturated/air-dried
SB6-15RCF	12.9	2.0 U	saturated/centrifuged
SB6-16R	5.6	**11.3**	
SB6-17R	4.4	2.0 U	
SB6-18R	7.6	2.0 U	
SB6-19R	8.5	2.0 U	
SB6-20R	4.6	2.5	
SB6-21R	7.3	2.0 U	
SB6-26R	8.0	2.0 U	dup. of SB6-21R
SB6-23R	9.3	**14.0**	new sample location; saturated/air-dried
SB6-23RCF	6.1	**14.4**	new sample location; saturated/centrifuged
SB6-24R	4.6	2.8	new sample location
SB6-25R	4.7	2.0 U	new sample location
FB110700	NA	10.0 U (ug/L)	field blank

U = Analyzed but not detected at listed concentration.
NA = not applicable
Bold print = value exceeds site-specific cleanup criterion of 10 ppm

TABLE 4

SUPPLEMENTAL SOIL SAMPLE RESULTS SUMMARY TABLE
LAGOON B-7

Shieldalloy Metallurgical Corporation
Newfield, New Jersey

Sample ID	Moisture Content (%)	Hexavalent Chromium Concentration (ppm)	Notes
Lagoon B-7			
SB7-11R	4.3	8.0	
SB7-12R	4.6	2.0 U	
SB7-25R	4.9	2.2	dup. of SB7-12R
SB7-13R	3.8	2.0 U	
SB7-14R	7.1	4.4	
SB7-15R	9.1	2.9	saturated/air-dried
SB7-16R	4.4	2.0 U	saturated/air-dried
SB7-16RCF	7.3	2.0 U	saturated/centrifuged
SB7-17R	8.7	2.0 U	saturated/air-dried
SB7-18R	5.3	2.0 U	saturated/air-dried
SB7-19R	4.0	2.0 U	
SB7-20R	8.0	5.0	
SB7-23R	4.6	**32.2**	new sample location
SB7-24R	5.9	3.3	new sample location
FB110800	NA	10.0 U (ug/L)	field blank

U = Analyzed but not detected at listed concentration.
NA = not applicable
Bold print = value exceeds site-specific cleanup criterion of 10 ppm

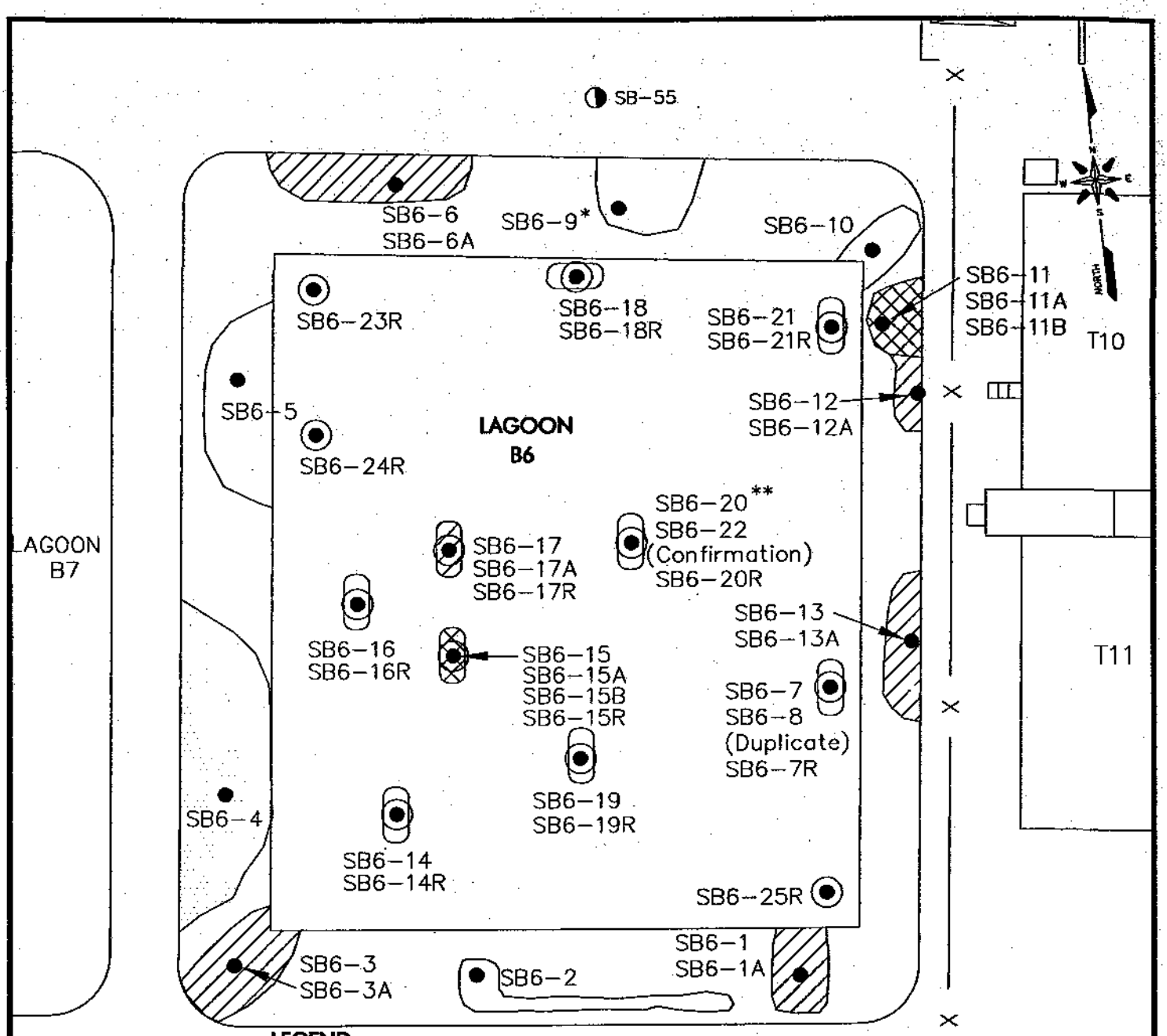
TABLE 5

SUPPLEMENTAL SOIL SAMPLE RESULTS SUMMARY TABLE
LAGOON B-8

Shieldalloy Metallurgical Corporation
Newfield, New Jersey

Sample ID	Moisture Content (%)	Hexavalent Chromium Concentration (ppm)	Notes
Lagoon B-8			
SB8-10R	8.0	3.7	
SB8-11R	9.0	3.6	
SB8-12R	7.2	4.4	
SB8-13R	7.8	2.0 U	
SB8-14R	8.4	2.0 U	
SB8-15R	6.6	5.6	
SB8-16R	8.2	2.0 U	
SB8-17R	11.3	4.6	
SB8-18R	11.3	2.0 U	
SB8-20R	9.6	4.2	new sample location
SB8-21R	5.6	2.3	new sample location
SB8-22R	9.2	2.0 U	new sample location
FB110900	NA	10.0 U (ug/L)	field blank

U = Analyzed but not detected at listed concentration.
NA = not applicable



LEGEND

SB6-2 ● ORIGINAL SOIL SAMPLE LOCATION

SB6-2R ◉ SUPPLEMENTAL SAMPLE LOCATION

SURFACE CONTAMINATION REMOVED. COMPOSITE SOIL SAMPLE COLLECTED FROM 0-1' BELOW THIS LAYER

SURFACE CONTAMINATION AND APPROX. 1 FOOT OF UNDERLYING SOIL REMOVED BEFORE SECONDARY SAMPLING (A). SOIL SAMPLE COLLECTED FROM 1'-2' BELOW VISUALLY CONTAMINATED SURFACE LAYER.

SURFACE CONTAMINATION AND APPROX. 2 FEET OF UNDERLYING SOIL REMOVED BEFORE SECONDARY SAMPLING (B). SOIL SAMPLE COLLECTED FROM 2'-3' BELOW VISUALLY CONTAMINATED SURFACE LAYER.

EXCAVATION OF ALL SOIL FROM THIS AREA FOR EQUIPMENT ACCESS.

* APPROXIMATELY 12" TO 14" OF SURFACE CONTAMINATION REMOVED BEFORE SAMPLING.

** APPROXIMATELY 18" OF SURFACE CONTAMINATION REMOVED BEFORE SAMPLING

DEPTH INTERVAL OVER WHICH LAGOON BOTTOM SAMPLES WERE COLLECTED VARIES FROM 0.5 TO 1.0 FEET, DUE TO PRESENCE OF WATER TABLE.

SB-61

0 30' 60'
GRAPHIC SCALE

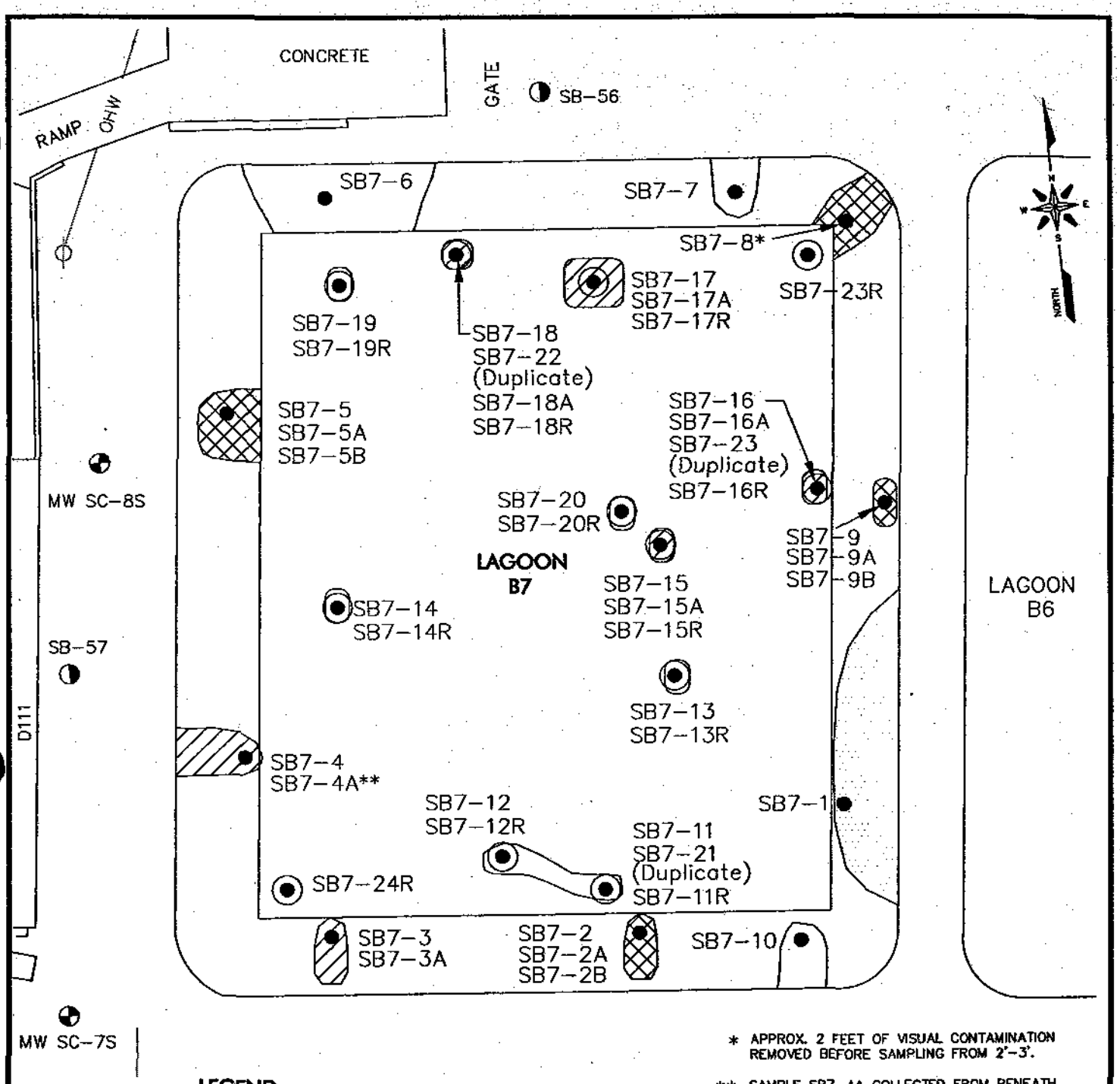
26770\0020\B\FIG-1B

TRC Environmental Corporation
5 Waterside Crossing
Windsor, CT 06095
(860) 289-8631

SHIELDALLOY METALLURGICAL CORPORATION
NEWFIELD, NEW JERSEY

FIGURE 1
SUPPLEMENTAL SAMPLE LOCATION PLAN
LAGOON B6

Date: 12/00 | Project No. 26770-0020-00000



* APPROX. 2 FEET OF VISUAL CONTAMINATION REMOVED BEFORE SAMPLING FROM 2'-3'.

** SAMPLE SB7-4A COLLECTED FROM BENEATH VISUALLY CONTAMINATED "PURPLE" MATERIAL

0 30' 60'

GRAPHIC SCALE

LEGEND

SB7-2 ● ORIGINAL SOIL SAMPLE LOCATION

SB7-2R ◉ SUPPLEMENTAL SAMPLE LOCATION

SURFACE CONTAMINATION REMOVED. SOIL SAMPLE COLLECTED FROM 0-1' BELOW THIS LAYER

SURFACE CONTAMINATION AND APPROX. 1 FOOT OF UNDERLYING SOIL REMOVED BEFORE SECONDARY SAMPLING (A). SOIL SAMPLE COLLECTED FROM 1'-2' BELOW VISUALLY CONTAMINATED SURFACE LAYER.

SURFACE CONTAMINATION AND APPROX. 2 FEET OF UNDERLYING SOIL REMOVED BEFORE SECONDARY SAMPLING (B). SOIL SAMPLE COLLECTED FROM 2'-3' BELOW VISUALLY CONTAMINATED SURFACE LAYER.

EXCAVATION OF ALL SOIL FROM THIS AREA FOR EQUIPMENT ACCESS.

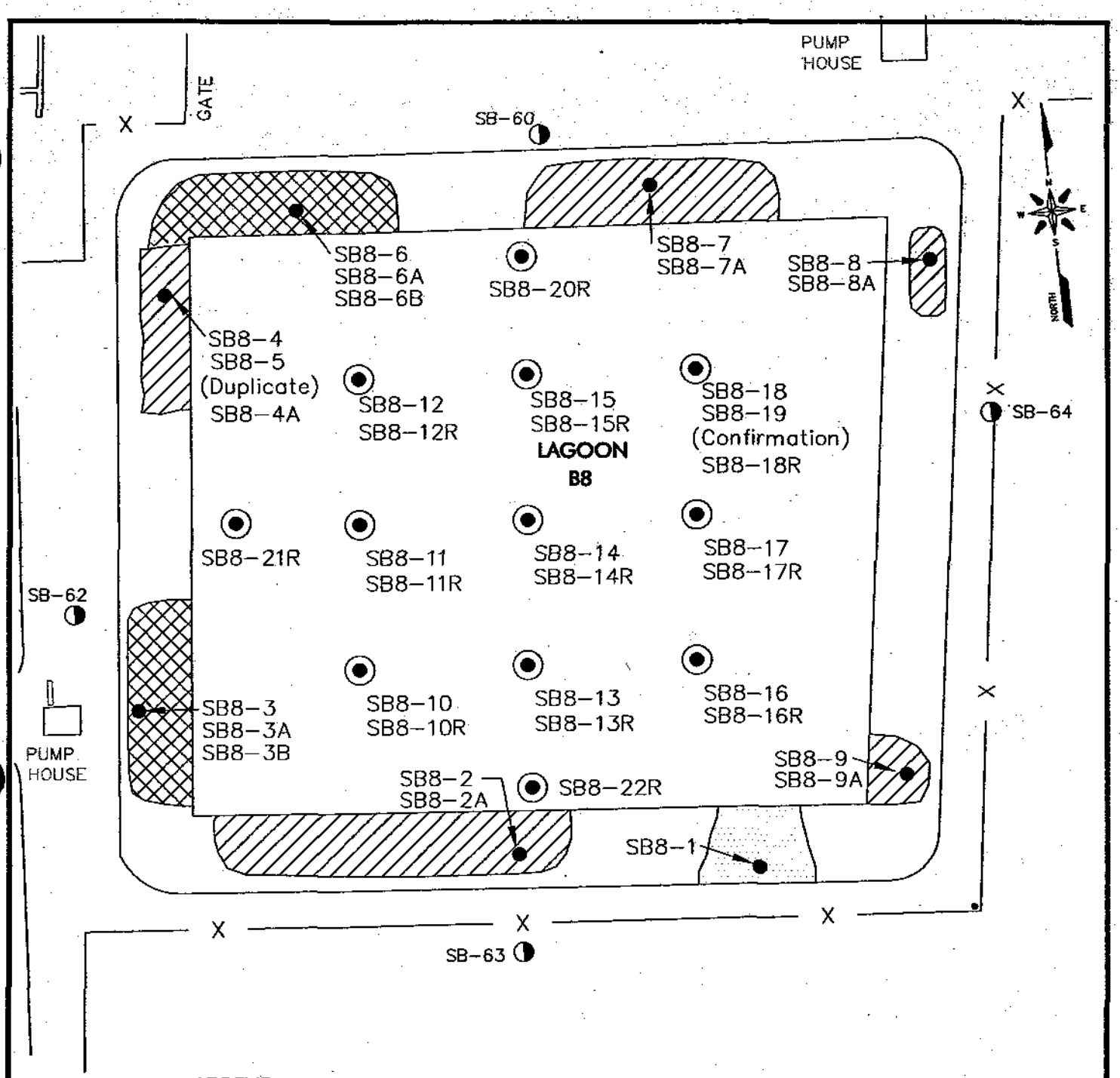
26770\0020\B\FIG-2B

TRC Environmental Corporation
5 Waterside Crossing
Windsor, CT 06095
(860) 289-8631

SHIELDALLOY METALLURGICAL CORPORATION
NEWFIELD, NEW JERSEY

FIGURE 2
SUPPLEMENTAL SAMPLE LOCATION PLAN
LAGOON B7

Date: 12/00 | Project No. 26770-0020-00000



LEGEND

SB8-2 ● SOIL SAMPLE LOCATION

SB8-2R ◉ SUPPLEMENTAL SAMPLE LOCATION

SURFACE CONTAMINATION AND APPROX. 1 FOOT OF UNDERLYING SOIL REMOVED BEFORE SECONDARY SAMPLING (A). SOIL SAMPLE COLLECTED FROM 1'–2' BELOW VISUALLY CONTAIMINATED SURFACE LAYER.

SURFACE CONTAMINATION AND APPROX. 2 FEET OF UNDERLYING SOIL REMOVED BEFORE SECONDARY SAMPLING (B). SOIL SAMPLE COLLECTED FROM 2'–3' BELOW VISUALLY CONTAMINATED SURFACE LAYER.

EXCAVATION OF ALL SOIL FROM THIS AREA FOR EQUIPMENT ACCESS.

0 30' 60'

GRAPHIC SCALE

TRC Environmental Corporation
5 Waterside Crossing
Windsor, CT 06095
(860) 289-8631

SHIELDALLOY METALLURGICAL CORPORATION
NEWFIELD, NEW JERSEY

FIGURE 3
SUPPLEMENTAL SAMPLE LOCATION PLAN
LAGOON B8

Date: 12/00 | Project No. 26770--0020-00000

26770\0020\B\FIG-3B

LABORATORY DATA PACKAGES AND ASSOCIATED DATA VALIDATION REPORTS

State of New Jersey

Christine Todd Whitman
Governor

Department of Environmental Protection

Robert C. Shinn, Jr.
Commissioner

MEMORANDUM

FEB 05 2001

TO: John Boyer, Technical Coordinator
Bureau of Environmental Evaluation & Risk Assessment

FROM: Joseph Sanguiliano JS 2/5/01
Quality Assurance Section
Bureau of Environmental Measurements and Quality Assurance

SUBJECT: Quality Assurance Review for the– **Shieldalloy Corporation, Newfield.** Sixty-eight samples from SDGs F445, F490 and F514 were reviewed for Hexavalent Chromium. The analysis was performed by Severn Trent Laboratory Edison.

The Quality Assurance Section, Bureau of Environmental Measurements and Quality Assurance, Division of Publicly Funded Site Remediation has reviewed the above referenced SDGs for hexavalent chromium. The requirements for full regulatory data deliverables are defined in the Technical Requirements for Site Remediation, N.J.A.C. 7:26E Appendix A. The quality assurance review of the data are summarized below.

The analysis was reviewed according to the NJDEP modified USEPA SW-846 Methods 3060 and 7196A. All sample results are acceptable. Please note the following deficiencies.

The laboratory failed to use the actual sample weight in their calculation. Instead, the laboratory utilized a sample weight of 2.5 g in their calculation. In addition, the laboratory rounded off the total solid result. Therefore, the laboratory must go back and recalculate all positive hexavalent chromium results.

The laboratory failed to supply a total solids worksheet. The laboratory only supplied the percent moisture results on the Sample Results form and the percent solids results on the Hexavalent Chromium Soil Calculation forms.

Should you have any questions regarding this review, please contact this office at 633-0752.

c. Donna Gaffigan, BCM

SDG F445

SEVERN
TRENT
SERVICES

STL Edison
777 New Durham Road
Edison, NJ 08817
Tel: 732-549-3900
Fax: 732-549-3679
www.stl-inc.com

November 28, 2000

TRC Environmental Corporation
5 Waterside Crossing
Windsor, Ct 06095

Attention: Mr. Larry Butlien

Re: F445 - SMC SITE

Dear Mr. Butlien:

Enclosed are the results you requested for the following sample(s) received at our laboratory on November 07, 2000:

Lab No.	Client ID	Analysis Required
239971	FB110700	Chrome VI
239972	SB6-21R	Chrome VI
239973	SB6-26R	Chrome VI
239974	SB6-7R	Chrome VI
239975	SB6-25R	Chrome VI
239976	SB6-19R	Chrome VI
239977	SB6-20R	Chrome VI

SEVERN TRENT SERVICES

Lab No.	Client ID	Analysis Required
239978	SB6-18R	Chrome VI
239979	SB6-17R	Chrome VI
239980	SB6-16R	Chrome VI
239981	SB6-15R	Chrome VI
239982	SB6-15RCF	Chrome VI
239983	SB6-14R	Chrome VI
239984	SB6-24R	Chrome VI
239985	SB6-23R	Chrome VI
239986	SB6-23RCF	Chrome VI
239987	SB7-23R	Chrome VI
239988	SB7-16R	Chrome VI
239989	SB7-16RCF	Chrome VI
239990	SB7-13R	Chrome VI
239991	SB7-15R	Chrome VI
239992	SB7-20R	Chrome VI

An invoice for our services is also enclosed. If you have any questions please contact your Project Manager, Dan Glenn, at (732) 549-3900.

Very truly yours,

Michael J. Urban
Laboratory Manager

SEVERN TRENT SERVICES

Site: SMC SITE

Lab Job No: F445

Date Sampled: 11/7/00
Date Received: 11/7/00
Matrix: SOIL

Date Extracted: 11/9/00
Date Analyzed: 11/9/00
QA Batch: 2227

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
239972	SB6-21R	7.3	1.0	ND
239973	SB6-26R	8.0	1.0	ND
239974	SB6-7R	6.2	1.0	ND
239975	SB6-25R	4.7	1.0	ND
239976	SB6-19R	8.5	1.0	ND
239977	SB6-20R	4.6	1.0	2.5
239978	SB6-18R	7.6	1.0	ND
239979	SB6-17R	4.4	1.0	ND
239980	SB6-16R	5.6	1.0	11.3
239981	SB6-15R	7.7	1.0	ND
239982	SB6-15RCF	12.9	1.0	ND
239983	SB6-14R	5.1	1.0	ND
239984	SB6-24R	4.6	1.0	2.8

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

SEVERN TRENT SERVICES

Site: SMC SITE

Lab Job No: F445

Date Sampled: 11/7/00
Date Received: 11/7/00
Matrix: SOIL

Date Extracted: 11/9/00
Date Analyzed: 11/9/00
QA Batch: 2228

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
239987	SB7-23R	4.6	1.0	32.2
239988	SB7-16R	4.4	1.0	ND
239989	SB7-16RCF	7.3	1.0	ND
239990	SB7-13R	3.8	1.0	ND
239991	SB7-15R	9.1	1.0	2.9
239992	SB7-20R	8.0	1.0	5.0

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

STL Envirotech
777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

Name (for report and invoice): Larry Butlien	Samplers Name (Printed): Rutkowski, Bane	Site/Project Identification: Shiddalloy Metallurgical (SMC)
Company: TRC Environmental Corp.	P.O. #: 26770	State (Location of site): NJ: [X] NY: [ ] Other:
		Regulatory Program: NJ Hazsite
Address: 5 Waterside Crossing	Analysis Turnaround Time: Standard [X]	
City: Windsor State: CT	Rush Charges Authorized For: 2 Week [ ] 1 Week [ ] Other [ ]	
Phone: 860-298-6225 Fax: 860-298-6399		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No:
Job No: F445

Sample Identification	Date	Time	Matrix	No. of Cont.	Hexavalent Chromium 3060A/USEPA SW846	Hexavalent Chromium 7196A USEPA SW846	Sample Numbers
FB110700	11/7/00	0832	W	1		X	239971
SB6-21R	↓	0925	S	1	X		239972
SB6-26R		0930	S	1	X		239973
SB6-7R		0937	S	1	X		239974
SB6-25R		0955	S	1	X		239975
SB6-19R		1010	S	1	X		239976
SB6-20R		1030	S	1	X		239977
SB6-18R		1105	S	1	X		239978
SB6-17R		1125	S	1	X		239979
SB6-16R	↓	1220	S	1	X		239980

Preservation Used: (1) = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH
6 = Other _____, 7 = Other _____
Soil:
Water:

Special Instructions

Water Metals Filtered (Yes/No)? _____

Relinquished by	Company	Date / Time	Received by	Company
1) [signature]	TRC	11/7/00 1600	1) [signature]	STL
2) [signature]	STL	11/7/00 1800	2) [signature]	STL ENVIROTECH HOWARD SCHULZE
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

STL - Envirotech
777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

Name (for report and invoice): Larry Butlien	Samplers Name (Printed): Rukakosto, BANE	Site/Project Identification: Shoddalloy Metallurgical (SMC)
Company: TRC Environmental Corp.	P.O. #: 26770	State (Location of site): NJ: ☑ NY: ☐ Other:
		Regulatory Program: Haz Site Program
Address: 5 Waterside Crossing	Analysis Turnaround Time: Standard ☑	
City: Windsor State: CT	Rush Charges Authorized For: 2 Week ☐	
Phone: 860-298-6225 Fax: 860-298-6399	1 Week ☐ Other ☐	

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No:
Job No: F445

Sample Identification	Date	Time	Matrix	No. of Cont.	Hexavalent Chromium 3060A, 7196A SW846	Sample Numbers
SB6-15R	11/7/00	1142	S	1	X	239981
SB6-15RCF *		1142	S	1	X	239982
SB6-14R		1205	S	1	X	239983
SB6-24R		1342	S	1	X	239984
SB6-23R		1355	S	1	X	239985
SB6-23RCF *		1355	S	1	X	239986
SB7-23R		1410	S	1	X	239987
SB7-16R		1425	S	1	X	239988
SB7-16R CF *		1425	S	1	X	239989
SB7-13R	↓	1440	S	1	X	239990

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH
6 = Other _____, 7 = Other _____
Soil:
Water:

Special Instructions: * Centrifuge Samples prior to analysis.
Water Metals Filtered (Yes/No)? _____

Relinquished by	Company	Date / Time	Received by	Company
1) [signature]	TRC	11/7/00 1600	1) [signature]	STL
2) [signature]	STL	11/7/00 1800	2) [signature]	ENVIROTECH
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

STL Envirotech
777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

Name (for report and invoice): Larry Butlion	Samplers Name (Printed): Rokakoski, Bone	Site/Project Identification: Shieldalloy Metallurgical (SMC)
Company: TRC Environmental Corp.	P.O. #: 26770	State (Location of site): NJ: [X] NY: [ ] Other:
		Regulatory Program: HazSite Program
Address: 5 Waterside Crossing	Analysis Turnaround Time: Standard [X]	
City: Windsor State: CT	Rush Charges Authorized For: 2 Week [ ] 1 Week [ ] Other [ ]	
Phone: 860-298-6225 Fax: 860-298-6399		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No:
Job No: F445

Sample Identification	Date	Time	Matrix	No. of Cont.	Hexavalent Chromium 3060A, USEPA SW846	Sample Numbers
SB7-15R	11/7/00	1455	S	1	X	239991
SB7-20R	11/7/00	1500	S	1	X	239992

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH
6 = Other _____, 7 = Other _____
Soil:
Water:

Special Instructions

Water Metals Filtered (Yes/No)?

Relinquished by	Company	Date / Time	Received by	Company
1) [signature]	TRC	11/7/00, 1600	1) [signature]	STL
2) [signature]	STL	11/7/00, 1800	2) [signature]	HOWARD SCHULZE
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

7

INTERNAL CUSTODY RECORD
AND
LABORATORY CHRONICLE
STL Edison

777 New Durham Road, Edison, New Jersey
08817

Job No: F445 **Site:** SMC SITE

Client: TRC Environmental Corporation

WET CHEM

CHROME VI (7196A)

Lab Sample ID	Date Sampled	Date Received	Preparation Date	Technician's Name	Analysis Date	Analyst's Name	QA Batch
WATER							
239971	11/7/2000	11/07/2000	11/8/00	AH	11/8/00	AH	2225

INTERNAL CUSTODY RECORD
AND
LABORATORY CHRONICLE
STL Edison

777 New Durham Road, Edison, New Jersey
08817

Job No: F445 **Site:** SMC SITE

Client: TRC Environmental Corporation

WET CHEM

CHROME VI (3060/7196A)

Lab Sample ID	Date Sampled	Date Received	Preparation Date	Technician's Name	Analysis Date	Analyst's Name	QA Batch
SOLID							
239972	11/7/2000	11/07/2000	11/9/00	AH	11/9/00	AH	2227
239973	11/7/2000	11/07/2000					
239974	11/7/2000	11/07/2000					
239975	11/7/2000	11/07/2000					
239976	11/7/2000	11/07/2000					
239977	11/7/2000	11/07/2000					
239978	11/7/2000	11/07/2000					
239979	11/7/2000	11/07/2000					
239980	11/7/2000	11/07/2000					
239981	11/7/2000	11/07/2000					
239982	11/7/2000	11/07/2000					
239983	11/7/2000	11/07/2000					
239984	11/7/2000	11/07/2000					
239985	11/7/2000	11/07/2000					
239986	11/7/2000	11/07/2000					
239987	11/7/2000	11/07/2000					2228
239988	11/7/2000	11/07/2000					
239989	11/7/2000	11/07/2000					
239990	11/7/2000	11/07/2000					
239991	11/7/2000	11/07/2000					
239992	11/7/2000	11/07/2000					

Analytical Methodology Summary

Volatile Organics:

Unless otherwise specified, water samples are analyzed for volatile organics by purge and trap GC/MS as specified in EPA Method 624. Drinking water samples are analyzed by EPA Method 524.2. Solid samples are analyzed for volatile organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8260B. Water samples are analyzed for volatile organics by purge and trap GC/PID and GC/ELCD as specified in EPA Methods 601 and 602. Solid samples are analyzed by GC/PID and GC/ELCD in accordance with SW-846, 3rd Edition Method 8021B.

Acid and Base/Neutral Extractable Organics:

Unless otherwise specified, water samples are analyzed for acid and/or base/neutral extractable organics by GC/MS in accordance with EPA Method 625. Solids are analyzed for acid and/or base/neutral extractable organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8270C.

GC/MS Nontarget Compound Analysis:

Analysis for nontarget compounds is conducted, upon request, in conjunction with GC/MS analyses by EPA Methods 624, 625, 8260B and 8270C. Nontarget compound analysis is conducted using a forward library search of the EPA/NIH/NBS mass spectral library of compounds at the greatest apparent concentration (10% or greater of the nearest internal standard) in each organic fraction (15 for volatile, 15 for base/neutrals and 10 for acid extractables).

Organochlorine Pesticides and PCBs:

Unless otherwise specified, water samples are analyzed for organochlorine pesticides and PCBs by dual column gas chromatography with electron capture detectors as specified in EPA Method 608. Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8081A for organochlorine pesticides and Method 8082 for PCBs.

Total Petroleum Hydrocarbons:

Water samples are analyzed for petroleum hydrocarbons by I.R. using EPA Method 418.1. Solid samples are prepared for analysis by soxhlet extraction consistent with the March 1990 N.J. DEP "Remedial Investigation Guide" Appendix A, page 52, and analyzed by U.S. EPA Method 418.1

Metals Analysis:

Metals analyses are performed by any of four techniques specified by a Method Code provided on each data report page, as follows:

P - Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP)

A - Flame Atomic Absorption

F - Furnace Atomic Absorption

CV - Manual Cold Vapor (Mercury)

Water samples are digested and analyzed using EPA methods provided in "Methods for Chemical Analysis of Water and Wastewater" (EPA 600/4-79-020). Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition); samples are digested according to Method 3050B "Acid Digestion of Soil, Sediments and Sludges."

Specific method references for ICP analyses are water Method 200.7 and solid Method 6010B. Mercury analyses are conducted by the manual cold vapor technique specified by water Method 245.1 and solid Method 7471A. Other specific Atomic Absorption method references are as follows:

Element	Water Test Method		Solid Test Method	
	Flame	Furnace	Flame	Furnace
Aluminum	202.1	202.2	7020	--
Antimony	204.1	204.2	7040	7041
Arsenic	--	206.2	--	7060
Barium	208.1	--	7080	--
Beryllium	210.1	210.2	7090	7091
Cadmium	213.1	213.2	7130	7131
Calcium	215.1	--	7140	--
Chromium, Total	218.1	218.2	7190	7191
Chromium, (+6)	218.4	218.5	7197	7195
Cobalt	219.1	219.2	7200	7201
Copper	220.1	220.2	7210	--
Iron	236.1	236.2	7380	--
Lead	239.1	239.2	7420	7421
Magnesium	242.1	--	7450	--
Manganese	243.1	243.2	7460	--
Nickel	249.1	249.2	7520	--
Potassium	258.1	--	7610	--
Selenium	--	270.2	--	7740
Silver	272.1	272.2	7760	--
Sodium	273.1	--	7770	--
Tin	283.1	283.2	7870	--
Thallium	279.1	279.2	7840	7841
Vanadium	286.1	286.2	7910	7911
Zinc	289.1	289.2	7950	--

Cyanide:

Water samples are analyzed for cyanide using EPA Method 335.3. Cyanide is determined in solid samples as specified in the EPA Contract Laboratory Program IFB dated July 1988, revised February 1989.

Phenols:

Water samples are analyzed for total phenols using EPA Method 420.2. Total phenols are determined in solid samples by preparing the sample as outlined in the EPA Contract Laboratory Program IFB for cyanide, followed by a phenols determination using EPA Method 420.1.

Cleanup of Semivolatile Extracts:

Upon request Method 3611B Alumina Column Cleanup and/or Method 3650B Acid-Base Partition Cleanup are performed to improve detection limits by the removal of saturated hydrocarbon interferences.

Hazardous Waste Characteristics:

Samples for hazardous waste characteristics are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition). Specific method references are as follows:

Ignitability	- Method 1020A
Corrosivity	- Water pH Method 9040B Soil pH Method 9045C
Reactivity	- Chapter 7, Section 7.3.3 and 7.3.4 respectively for hydrogen cyanide and hydrogen sulfide release
Toxicity	- TCLP Method 1311

Miscellaneous Parameters:

Additional analyses performed on both aqueous and solid samples are in accordance with methods published in the following references:

- Test Methods for Evaluating Solid Wastes, SW-846 3rd Edition, November 1986.
- Standard Methods for the Examination of Water and Wastewater, 17th Edition.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, 1979.

ORGANIC DATA REPORTING QUALIFIERS

ND - The compound was not detected at the indicated concentration.

J - Mass spectral data indicates the presence of a compound that meets the identification criteria. The result is less than the specified quantitation limit but greater than zero. The concentration given is an approximate value.

B - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

P - For dual column analysis, the percent difference between the quantitated concentrations on the two columns is greater than 40%.

* - For dual column analysis, the lowest quantitated concentration is being reported due to coeluting interference.

INORGANIC DATA REPORTING QUALIFIERS (SW-846 METHODS ONLY)

ND - The compound was not detected at the indicated concentration.

B - Reported value is less than the Method Detection Limit but greater than or equal to the Instrument Detection Limit.

E - The reported value is estimated because of the presence of interference. See explanatory note in the Nonconformance Summary if the problem applies to all of the samples or on the individual Inorganic Analysis Data Sheet if the problem is isolated.

M - Duplicate injection precision not met on the Furnace Atomic Absorption analysis.

N - The spiked sample recovery is not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

* - Duplicate Analysis is not within control limits.

W - Post digestion spike for Furnace Atomic Absorption analysis is out of control.

+ - Correlation coefficient for MSA is less than 0.995.

M Column - Method Qualifiers

P - Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP).

A - Flame Atomic Absorption Spectroscopy (FAA).

F - Graphite Furnace Atomic Absorption Spectroscopy (GFAA).

CV - Cold Vapor Atomic Absorption Spectroscopy.

NON-CONFORMANCE SUMMARY

STL Edison Job Number: F445

Volatile Organics Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

Base/Neutral and/or Acid Extractable Organics Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

PCBs and/or Organochlorine Pesticides Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

Non-conformance Summary, Page 2 of 2
STL Edison Job Number: F445

Metals Analysis:
includes CrVI:

All data conforms with method requirements _____; or
Analysis was not requested _____; or
Non-conformance for the specific samples listed is as follows:
(CrVI: QA Batch 2227): % recovery of MS-High is outside of QC limits (low)
(CrVI: QA Batch 2228): % recovery of MS-High is outside of QC limits (low).

See continuation page if checked ( )

Total Petroleum Hydrocarbons Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

General Chemistry/Disposal Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

Signature of
Laboratory Manager: [signature] Date: 11-28-00

Site: SMC SITE

Lab Job No: F445

Date Sampled: 11/7/00
Date Received: 11/7/00
Matrix: SOIL

Date Extracted: 11/9/00
Date Analyzed: 11/9/00
QA Batch: 2227

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
239972	SB6-21R	7.3	1.0	ND
239973	SB6-26R	8.0	1.0	ND
239974	SB6-7R	6.2	1.0	ND
239975	SB6-25R	4.7	1.0	ND
239976	SB6-19R	8.5	1.0	ND
239977	SB6-20R	4.6	1.0	2.5
239978	SB6-18R	7.6	1.0	ND
239979	SB6-17R	4.4	1.0	ND
239980	SB6-16R	5.6	1.0	11.3
239981	SB6-15R	7.7	1.0	ND
239982	SB6-15RCF	12.9	1.0	ND
239983	SB6-14R	5.1	1.0	ND
239984	SB6-24R	4.6	1.0	2.8

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

Site: SMC SITE

Lab Job No: F445

Date Sampled: 11/7/00
Date Received: 11/7/00
Matrix: SOIL

Date Extracted: 11/9/00
Date Analyzed: 11/9/00
QA Batch: 2228

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
239987	SB7-23R	4.6	1.0	32.2
239988	SB7-16R	4.4	1.0	ND
239989	SB7-16RCF	7.3	1.0	ND
239990	SB7-13R	3.8	1.0	ND
239991	SB7-15R	9.1	1.0	2.9
239992	SB7-20R	8.0	1.0	5.0

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: SOIL
QA Batch No.: 2227

QA Sample: 239976
QA Sample from Lab Job No.: F445

Laboratory Blank	
Blank Conc Units: mg/kg	Quant Limit Units: mg/kg
0	2

Duplicate Sample			
Sample Conc Units: mg/kg	Duplicate Conc Units: mg/kg	RPD	RPD** Limit
ND	ND	0.0	20

Matrix Spike-Low				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSL Conc Units: mg/kg	% Rec	% Rec Limit
21.9	ND	23.8	109	75-125

Matrix Spike-High				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSH Conc Units: mg/kg	% Rec	% Rec Limit
43.8	ND	47.9	109	75-125

Post Spike					
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	Spike/ Sample	PS Conc Units: mg/kg	% Rec	% Rec Limit
6.6	ND	NA	7.4	113	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: mg/kg	Acceptable Range: mg/kg	Measured Value: mg/kg
ERA	621	0.242	0.201-0.283	0.245

** If sample/dup conc is less than 8.0ppm a control limit of +/- 2.0 ppm applies.

2/22/01
9:20 AM
001109S.XLS

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: SOIL
QA Batch No.: 2228

QA Sample: 239987
QA Sample from Lab Job No.: F445

Laboratory Blank	
Blank Conc Units: mg/kg	Quant Limit Units: mg/kg
0	2

Duplicate Sample			
Sample Conc Units: mg/kg	Duplicate Conc Units: mg/kg	RPD	RPD** Limit
32.2	31.2	3.2	20

Matrix Spike-Low				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSL Conc Units: mg/kg	% Rec	% Rec Limit
21.0	32.2	58.7	126	75-125

Matrix Spike-High				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSH Conc Units: mg/kg	% Rec	% Rec Limit
42.0	32.2	73.2	97.6	75-125

Post Spike					
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	Spike/ Sample	PS Conc Units: mg/kg	% Rec	% Rec Limit
64.4	32.2	2.0	105	113	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: mg/kg	Acceptable Range: mg/kg	Measured Value: mg/kg
ERA	621	0.242	0.201-0.283	0.245

** If sample/dup conc is less than 8.0ppm a control limit of +/- 2.0 ppm applies.

2/21/01
7:10 PM
001109SA.XLS

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: Water
QA Batch No.: 2225

QA Sample: 239971
QA Sample from Lab Job No.: F445

Laboratory Blank	
Blank Conc Units: ug/l	Quant Limit Units: ug/l
ND	10

Duplicate Sample			
Sample Conc Units: ug/l	Duplicate Conc Units: ug/l	RPD	RPD Limit
ND	ND	0.0	20

Matrix Spike - Low				
Spike Conc Units: ug/l	Sample Conc Units: ug/l	MSL Conc Units: ug/l	% Rec	% Rec Limit
50	ND	57.4	115	85-115

Matrix Spike - High				
Spike Conc Units: ug/l	Sample Conc Units: ug/l	MSH Conc Units: ug/l	% Rec	% Rec Limit
200	ND	187	93.5	85-115

Post Spike					
Spike Conc Units: ug/l	Sample Conc Units: ug/l	Spike/ Sample	PS Conc Units: ug/l	% Rec	% Rec Limit
15	ND	NA	15.1	101	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: ug/l	Acceptable Range: ug/l	Measured Value: ug/l
ERA	621	48.4	40.1-56.6	42

11/13/00
5:48 PM
001108W.XLS

HEXAVALENT CHROMIUM WATER CALCULATIONS (7196A)

Date Extracted: 11/8/00
Analyst: Harford, Amanda

Date Analyzed: 11/8/00
Analyst: arford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.9995822
R Square	0.9991646
Adjusted R Sq	0.9989558
Standard Error	0.0024563
Observations	6

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.0288652	0.0288652	4784.287293	2.61765E-07
Residual	4	2.41333E-05	6.03333E-06		
Total	5	0.028889333			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.000%*	*Upper 95.000%*
Intercept	0.0002667	0.001481166	0.180038296	0.865875418	-0.00384572	0.004379052	-0.003845719	0.004379052
X Variable 1	0.00104	1.50357E-05	69.16854265	2.61765E-07	0.000998254	0.001081746	0.000998254	0.001081746

Sample ID	QA Batch	Initial Absorbance	BG Absorbance	Dilution Factor	Conc, ug/l	MDL ug/l	SampleVol ml	
0.0		0.000	0.000		-0.26			
10.0		0.012	0.000		11.3			
50.0		0.054	0.000		51.7			
75.0		0.074	0.000		70.9			
100.0		0.105	0.000		101			
200.0		0.209	0.000		201			
CCS1		0.073	0.000	1.0	69.9	10.00	50	
CCB1		0.001	0.000	1.0	0.71	10.00	50	
PBW		0.000	0.000	1.0	-0.26	10.00	50	
LCS		0.044	0.000	1.0	42.1	10.00	50	
239971DUP	2225	0.002	0.000	1.0	0.00	10.00	50	
239971MSL	2225	0.060	0.000	1.0	57.4	10.00	50	
239971MSH	2225	0.195	0.000	1.0	187	10.00	50	
239971PS	2225	0.016	0.000	1.0	15.1	10.00	50	
239971	2225	0.001	0.000	1.0	0.00	10.00	50	E01
CCSF		0.073	0.000	1.0	69.9	10.00	50	
CCBF		0.000	0.000	1.0	0.00	10.00	50	

HEXAVALENT CHROMIUM SOIL CALCULATION (3060/7196A)

Date Extracted: 11/9/00
Analyst: , Amanda

Date Analyzed: 11/09/00
Analyst: Harford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.99967
R Square	0.99933
Adjusted R S	0.99917
Standard Erro	0.00901
Observations	6

ANOVA

	df	*SS*	*MS*	*F*	*gnificance F*
Regression	1	0.48641	0.48641	5986.8285	1.7E-07
Residual	4	0.00032	8.1E-05		
Total	5	0.48674			

	Coefficient	*andard Err*	*t Stat*	*P-value*	*ower 95*	*Upper 95%*	*wer 95.000*	*er 95.00*
Intercept	0.00255	0.00535	0.47637	0.6586623	-0.0123	0.017387	-0.01229	0.017
X Variable 1	0.74968	0.00969	77.3746	1.672E-07	0.72298	0.776793	0.722976	0.777

Sample ID	QA Batch	Initial bsorbanc	BG Absorban	Dilution Factor	% Solids	Soil Conc, mg/kg	MDL mg/kg	Sample Wt (g)
0.00		0.000	0.000			0.00		
0.05		0.040	0.000			0.05		
0.10		0.074	0.000			0.10		
0.50		0.383	0.000			0.51		
0.75		0.577	0.000			0.77		
1.00		0.741	0.000			*0.98*		
CCV1		0.385	0.000	1.0	100	0.51	2.00	2.5
CCB1		0.000	0.000	1.0	100	0.00	2.00	2.5
PBS		0.000	0.000	1.0	100	0.00	2.00	2.5
LCS		0.186	0.000	1.0	100	0.245	2.00	2.5
239976DUP	2227	0.010	0.000	1.0	91.5	0.00	2.19	2.58
239976MSL	2227	0.421	0.000	1.0	91.5	23.8	2.19	2.56
239976MSH	2227	0.824	0.000	1.0	91.5	47.9	2.19	2.5
239976PS	2227	0.132	0.000	1.0	91.5	7.4	2.19	2.56
239976	2227	0.008	0.000	1.0	91.5	0.00	2.19	2.56
239972	2227	0.028	0.011	1.0	92.7	0.00	2.16	2.56
239973	2227	0.029	0.011	1.0	92.0	0.00	2.17	2.55
239974	2227	0.012	0.000	1.0	93.8	0.00	2.13	2.5
CCS2		0.402	0.000	1.0	100	0.53	2.00	2.5
CCB2		0.000	0.000	1.0	100	0.00	2.00	2.5
239975	2227	0.048	0.015	1.0	95.3	0.00	2.10	2.51
239977	2227	0.055	0.006	1.0	95.4	2.5	2.10	2.56
239978	2227	0.017	0.000	1.0	92.4	0.00	2.16	2.55
239979	2227	0.018	0.005	1.0	95.6	0.00	2.09	2.6
239980	2227	0.211	0.000	1.0	94.4	11.3	2.12	2.6
239981	2227	0.019	0.000	1.0	92.3	0.00	2.17	2.55
239982	2227	0.019	0.000	1.0	87.1	0.00	2.30	2.53
239983	2227	0.000	0.000	1.0	94.9	0.00	2.11	2.5
239984	2227	0.055	0.002	1.0	95.4	2.8	2.10	2.52
239985	2227	0.256	0.013	1.0	90.7	14.0	2.21	2.52
CCS3		0.408	0.000	1.0	100	0.54	2.00	2.5
CCB3		0.000	0.000	1.0	100	0.00	2.00	2.5
239986	2227	0.271	0.005	1.0	93.9	14.4	2.13	2.59
CCSF		0.395	0.000	1.0	100	0.52	2.00	2.5
CCBF		0.000	0.000	1.0	100	0.00	2.00	2.5

HEXAVALENT CHROMIUM SOIL CALCULATION (3060/7196A)

Date Extracted: 11/9/00 Date Analyzed: 11/09/00
Analyst: , Amanda Analyst: Harford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.99967
R Square	0.99933
Adjusted R S	0.99917
Standard Err	0.00901
Observations	6

ANOVA

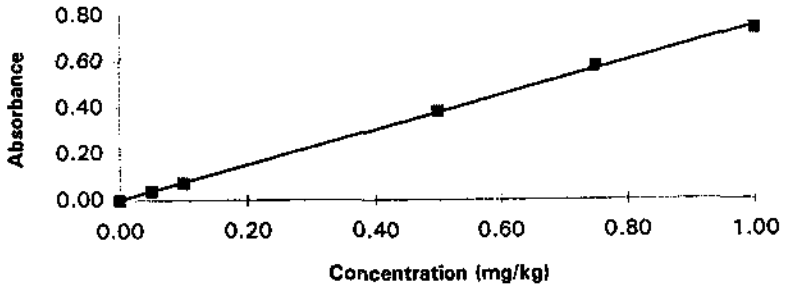
	df	*SS*	*MS*	*F*	*gnificance F*
Regression	1	0.48641	0.48641	5986.828	1.7E-07
Residual	4	0.00032	8.1E-05		
Total	5	0.48674			

	Coefficient	*andard Err*	*t Stat*	*P-value*	*ower 95*	*pper 95*	*wer 95.000*	*er 95.00*
Intercept	0.00255	0.00535	0.47637	0.658662	-0.0123	0.01739	-0.01229	0.017
X Variable 1	0.74988	0.00969	77.3746	1.67E-07	0.72298	0.77679	0.722976	0.777

Sample ID	QA Batch	Initial bsorbanc	BG Absorban	Dilution Factor	% Solids	Soil Conc, mg/kg	MDL mg/kg	Sample Wt (g)
0.00		0.000	0.000			0.00		
0.05		0.040	0.000			0.05		
0.10		0.074	0.000			0.10		
0.50		0.383	0.000			0.51		
0.75		0.577	0.000			0.77		
1.00		0.741	0.000			0.98		
CCV1		0.385	0.000	1.0	100	0.51	2.00	2.5
CCB1		0.000	0.000	1.0	100	0.00	2.00	2.5
PBS		0.000	0.000	1.0	100	0.00	2.00	2.5
LCS		0.186	0.000	1.0	100	0.245	2.00	2.5
239987DUP	2228	0.583	0.000	1.0	95.4	31.2	2.10	2.6
239987MSL	2228	0.530	0.000	2.0	95.4	58.7	4.19	2.51
239987MSH	2228	0.662	0.000	2.0	95.4	73.2	4.19	2.52
239987PS	2228	0.485	0.000	4.0	95.4	105	8.39	2.56
239987	2228	0.592	0.000	1.0	95.4	32.2	2.10	2.56
239988	2228	0.018	0.000	1.0	95.6	0.00	2.09	2.6
239989	2228	0.019	0.000	1.0	92.7	0.00	2.16	2.5
239990	2228	0.011	0.000	1.0	96.2	0.00	2.08	2.6
CCS2		0.395	0.000	1.0	100	0.52	2.00	2.5
CCB2		0.000	0.000	1.0	100	0.00	2.00	2.5
239991	2228	0.053	0.000	1.0	90.9	2.9	2.20	2.53
239992	2228	0.089	0.000	1.0	92.0	5.0	2.17	2.51
240275	2228	0.019	0.000	1.0	91.3	0.00	2.19	2.56
240276	2228	0.021	0.000	1.0	94.7	0.00	2.11	2.5
240277	2228	0.027	0.000	1.0	96.0	0.00	2.08	2.51
240278	2228	0.147	0.000	1.0	95.7	8.0	2.09	2.51
240279	2228	0.035	0.000	1.0	95.4	0.00	2.10	2.51
240280	2228	0.041	0.000	1.0	95.1	2.2	2.10	2.51
240281	2228	0.061	0.000	1.0	94.1	3.3	2.13	2.51
240282	2228	0.080	0.000	1.0	92.9	4.4	2.15	2.51
CCS3		0.408	0.000	1.0	100	0.54	2.00	2.5
CCB3		0.000	0.000	1.0	100	0.00	2.00	2.5
240283	2228	0.497	0.000	2.0	90.1	58.3	4.44	2.51
CCSF		0.408	0.000	1.0	100	0.54	2.00	2.5
CCBF		0.000	0.000	1.0	100	0.00	2.00	2.5

Hexavalent Chromium Calibration Curve

Date Run: 11/09/00 Saved as:



Correlation Coefficient: 0.999666

Calibration Slope: 0.749884

y-intercept: 0.002546

Calibration Check Standard Recovery Summary				
	True Value ppm	Value Obtained ppm	% Recovery	% Rec *Limit*
CCS1	0.50	0.51	102	90-110
CCS2	0.50	0.52	104	90-110
CCS3	0.50	0.54	108	90-110
CCSF	0.50	0.54	108	90-110

PROJECT Cr+6 Rushog Notebook No. 01766 23

Continued From Page

BATCH: 2225 Matrix: Water JOB: F445

SAMPLE	DIL	ABS	BG/BG cor	Final pH	TpH/Tread	Results	Spk	% REC
0		.000		1.92	1:05/1:10			
10		.012		1.88				
50		.054		1.72				
75		.074		1.83				
100		.105		1.85				
200		.209		1.89	1:09/1:14			
CCS		.073		1.75	1:25/1:30	69.9	75	93.2%
CCB		.001		1.82		ND		
PB		.000		1.88		ND		
LCS(621)		.044		1.87	1:28/1:33	42.1	48.4	87.0%
239971 dup		.002		1.86	1:48/1:53	ND		
239971 MSL		.060		1.92		57.4	50	15%
239971 MSH		.195		1.94	1:50/1:55	187	200	93.5%
239971 PS		.016		1.98	2:04/2:09	15.1	15	101%
239971a		.001		1.90	1:51/1:56	ND		
CCS		.073		1.84		69.9	75	93.2%
CCB		.000		1.83	1:52/1:57	ND		

10 ppm Cr+6 1°: 5337 10 ppm Cr+6 2°: 5055

10% H_2SO_4: 5418 DPC 2nd: 5225

Continued on Page

Read and Understood By

Amanda Hinland 11/18/03

Batch: 2227, 2228 Matrix: solid Job: F415, F490

SAMPLE	SAMPLE wt(g)	vol(ml)	color	init pH	pH Time	spike
0.00		100		7.84	10:50	
0.05				7.62		
0.10				7.79		
0.50				7.82		
0.75				7.54		
1.00				7.75	10:55	
CCS				7.85	11:35	0.50
PB				7.59		
LCS				7.66	11:37	0.242
239976dup	2.58		clear	7.54	12:01	
239976 MSL	2.56			7.78		0.50
239976 MSH	2.50			7.82		1.00
239976d	2.56			7.75		
239972d	2.56		yellow	7.77		
239973d	2.55			7.89		
239974d	2.50		clear	7.86	12:07	
239975d	2.51		yellow	7.81	12:35	
CCS				7.85		0.50
CCB				7.62		
239977d	2.56		yellow	7.66		
239978d	2.55		clear	7.73		
239979d	2.60		yellow	7.89		
239980d	2.60		pale yellow	7.99	12:42	
239981d	2.55		clear	7.82	1:03	
239982d	2.53			7.87		
239983d	2.50			7.78		
239984d	2.52		yellow	7.58		
239985d	2.52		dark yellow	7.62		
239986d	2.59			7.52	1:08	
CCS				7.59	2:10	0.50
CCB				7.42		
239987dup	2.60		clear	7.88		
239987 MSL	2.51			7.74	2:13	0.50

Continued on Page 54

Read and Understood By

Amanda Hartford 11/9/00

54

PROJECT Cr+6 Prep Log

Notebook No. 01645

Continued From Page 53

SAMPLE	SAMPLE wt (g)	vol (ml)	Color	pH	pH Time	spike
239987MSH	2.52	100	clear	7.69	2:41	1.00
239987d	2.56		↓	7.82	2:15	
239988d	2.60		pale yellow	7.84	2:43	
239989d	2.50		clear	7.91		
239990d	2.60		↓	7.56		
239991d	2.53		pale yellow	7.92		
239992d	2.51		clear	7.81		
240275d	2.56		↓	7.89 7.82	2:49 2:69	0.50
CCS 240276d	2.50		clear	7.53 7.69		
240277d	2.51		pale yellow	7.72		
240278d	2.51		clear	7.55		
240279d	2.51			7.91		
240280d	2.51			7.71	3:15	
240281d	2.51			7.56	3:36	
240282d	2.51		↓	7.51		
240283d	2.51		yellow	7.79		
CCS				7.54		0.50
CCB				7.63	3:40	

start time: 10:26 @ 90.0°C temp after 30min 95.0°C

end time: 11:26 @ 95.0°C pH of digestion fluid: 13.52

Continued on Page

Read and Understood By

PROJECT Cr+6 Run log

Notebook No. [illegible]

Continued From Page

BATCH 2227, 2228 Matrix: solid JOBS: F445, F490

SAMPLE	DIL	ABS	BG/pH	Final pH	TpH/TRead	% Solids	Results	spk	% REC
0.00		0.00		1.98	11:01/11:06				
0.05		0.040		2.01					
0.10		0.074		1.85					
0.50		0.383		1.87					
0.75		0.577		1.83					
1.00		0.741		1.92	11:05/11:10				
CCS		0.385		1.97	11:43/11:48		0.51	0.50	102%
CCB		0.000		1.84			ND		
PB		0.000		1.83			ND		
LCS(621)		0.186		1.72	11:45/11:50		0.245	0.242	101%
239976Dup		0.010	0.00/1.63	1.64	12:13/12:18	92 91.5	ND 23.8	21.9	109%
239976MSL		0.421	0.00/1.83	1.99		92 91.5	[illegible]	[illegible]	[illegible]
239976MSH		0.824	0.00/1.85	1.72	12:15/12:20	92 91.5	47.9 47.9	[illegible]	[illegible]
239976PS			0.00/1.65	1.75	12:27/12:32	92 91.5	7.5 7.9	6.5 6.6	113%
239976d		0.008	0.00/1.78	1.83	12:15/12:21	92 91.5	ND		
239972d		0.028	0.011/1.82	1.86		93 92.7	ND		
239973d		0.029	0.011/1.77	1.72		92.0 92.0	ND		
239974d		0.012	0.00/1.64	1.82	12:18/12:24	94 93.8	ND		
CCS		0.402		1.91	12:47/12:53		0.53	0.50	107%
CCB		0.000		1.65			ND		
239975d		0.048	0.015/1.89	1.82		95 95.3	ND		
239977d		0.055	0.006/1.73	1.92		95 95.4	2.5 2.5		
239978d		0.017	0.00/1.91	1.69		92 92.4	ND		
239979d		0.018	0.005/1.85	1.67		96 95.6	ND		
239980d		0.211	0.002/1.79	1.84	12:52/12:58	94 94.4	11.3 11.3		
239981d		0.019	0.000/1.74	1.85	1:13/1:19	92 92.3	ND		
239982d		0.019	0.000/1.90	1.79		87 87.1	ND		
239983d		0.000	0.000/1.79	1.82		95 94.9	ND		
239984d		0.055	0.002/1.83	1.91		95 95.4	2.8		
239985d		0.256	0.013/1.65	2.04		90 90.7	14.0		
CCS		0.408		1.99			0.54	0.50	108%
CCB		0.000		1.87	1:18/1:24		ND		

Continued on Page 26

Read and Understood By

Amanda Harford 11/9/00

Signed Date Signed Date

26 PROJECT Cr+6 Runlog

Notebook No. 01766 25

Continued From Page 25

SAMPLE	DIL	ABS	Blk/Blk	Final pH	TPH/TRend	% Solids	Results	spk	% REC
239986d		0.271	0.000/1.75	2.03	1:26/1:31	94.0 ad 89	15.0 ad 14.4		
239987 dup		0.583	0.000/1.84	1.90	2:21/2:26	95.0 954	32.0 31.2	21.0	
239987 MSL 25%		0.530		1.85	↓	95.0 954	58.7		
239987 MSH 75%		0.662		1.73	2:23/2:28	95.0 954	73.2		
239987 PS 125%		0.485		1.77	2:33/2:38	95.0 954	105	64.4	113%
239987d		0.592	0.000/1.92	1.89	2:24/2:29	95.0 954	32.2		
239988d		0.018	0.000/1.84	1.84	2:56/3:03	96.0 956	ND		
239989d		0.019	0.000/1.73	1.95		93.0 927	ND		
239990d		0.011	0.000/1.94	1.91		96.0 962	ND		
239991d		0.053	0.000/1.71	1.89		96.9 96.9	3.2 2.9		
CCS		0.395		1.85			0.52	0.50	104%
CCB		0.000		1.91			ND		
239992d		0.089	0.000/1.89	1.96	↓	92.0 920	5.0		
240275d		0.019	0.000/1.92	1.69	3:01/3:08	91.3 913	ND		
240276d		0.021	0.000/1.86	1.88	3:20/3:26	95.0 94.7	ND		
240277d		0.027	0.000/1.62	1.76		96.0 96.0	ND		
240278d		0.147	0.000/1.82	1.83		96.0 95.7	8.0		
240279d		0.035	0.000/1.97	1.86	↓	95.0 954	ND		
240280d		0.041	0.000/1.95	1.88	3:24/3:29	95.0 954	2.2		
240281d		0.061	0.000/1.92	1.95	3:46/3:52	94.0 941	3.3		
240282d		0.080	0.000/1.99	1.93		93.0 929	4.4		
240283d 25%		0.497		1.86		90.0 91	58.3		
CCS		0.408		1.74	↓		0.54	0.50	108%
CCB		0.000		1.66	3:51/3:56		ND		

100 ppm Cr+6 (1') 5485 DI Blnd: 5225

100 ppm Cr+6 (2') 5054 10% H_2SO_4: 5418

Continued on Page

Read and Understood By

Amanda Harlock 111 9/00

Percent Solids Log

Job Number	Sample Number	Bottle ID	Tare Weight (g)	Wet Weight (g)	Dry Weight (g)	Percent Solids (%)	Percent Moisture (%)
BLANK							100
F132	238000MS	57	1.01	10.18	8.36	82.1	17.9
F132	238000SD	814	1.01	10.72	8.72	81.3	18.7
							100
F342	239235	56	29.28	9.83	7.59	77.2	100
							100
F418	239781	121	28.97	10.92	9.69	88.7	11.3
F418	239783	166	29.49	9.71	8.76	90.2	9.8
F418	239784	110	30.2	9.71	8.81	90.7	9.3
							100
F425	239802	8	29.46	9.63	7.65	79.4	20.6
							100
F432	239832	59	31.65	9.73	8.5	87.4	12.6
F432	239833	610	30.01	9.73	8.41	86.4	13.6
							100
F433	239834	654	29.16	10.02	9.01	89.9	10.1
F433	239836	618	28.84	9.95	9.46	95.1	4.9
F433	239837	674	30.27	9.62	9.17	95.3	4.7
	239837 dup	47	30.01	9.65	9.24	95.8	4.2
F445	239972	878	28.98	9.94	9.21	92.7	7.3
F445	239973	659	30.13	9.74	8.96	92	8
F445	239974	27	29.11	10.42	9.77	93.8	6.2
F445	239975	64	31.09	9.73	9.27	95.3	4.7
F445	239976	226	31.22	10.7	9.79	91.5	8.5
F445	239977	649	29.15	10.58	10.09	95.4	4.6
F445	239978	162	29.13	10.36	9.57	92.4	7.6
F445	239979	39	29.6	10.85	10.37	95.6	4.4
F445	239980	236	30.3	9.06	8.55	94.4	5.6
F445	239981	23	28.46	9.58	8.84	92.3	7.7
F445	239982	118	30.08	10.24	8.92	87.1	12.9
F445	239983	149	29.86	9.41	8.93	94.9	5.1
F445	239984	6	29.63	9.37	8.94	95.4	4.6
F445	239985	721	29.38	10.43	9.46	90.7	9.3
F445	239986	161	29.77	10.09	9.47	93.9	6.1
F445	239987	38	29.32	9.55	9.11	95.4	4.6
F445	239988	114	30.14	9.81	9.38	95.6	4.4
F445	239989	325	29.2	9.18	8.51	92.7	7.3
F445	239990	714	30.18	10.97	10.55	96.2	3.8
F445	239991	652	29.14	10.48	9.53	90.9	9.1
F445	239992	516	29.58	9.94	9.14	92	8
							100
F473	240159	186	29.15	9.75	8.81	90.4	9.6
F473	240160	211	29.64	10.34	8.45	81.7	18.3

Printed: 11/15/00

PS1114.XLS

Signed: Marka Kuis Date: 11-15-00 Signed: _____ Date: _____

JO

HEARTLAND
ENVIRONMENTAL SERVICES, INC.

Data Validation Report

SDG#:	F445
Date:	December 21, 2000
Client Name:	TRC Environmental Corporation
Project/Site Name:	SMC Facility
Date Sampled:	November 7, 2000
Number of Samples:	21 Non-Aqueous Sample(s) with 2 MS/MSD(s) 1 Aqueous Sample(s) with 1 MS/MSD(s)
Laboratory:	STL Edison
Validation Guidance:	NJDEPE SOP No. 5.A.10
QA/QC Level:	NJDEPE Modified Methods
Method(s) Utilized:	SW846 Methods 3060/7196A, July 1992
Analytical Fractions:	Hexavalent Chromium

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. Surfus
for Paul B. Humburg, President

12-22-00
Date

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

SDG# F445

Samples and Fractions Reviewed

Sample Identifications Analytical Fraction

TRC ID	MATRIX	CR+6	
FB110700	WATER	X	
FB110700 MS	WATER	X	
FB110700 MSD	WATER	X	
SB6-21R	SOIL		X
SB6-26R	SOIL		X
SB6-7R	SOIL		X
SB6-25R	SOIL		X
SB6-19R	SOIL		X
SB6-19R MS	SOIL		X
SB6-19R MSD	SOIL		X
SB6-20R	SOIL		X
SB6-18R	SOIL		X
SB6-17R	SOIL		X
SB6-16R	SOIL		X
SB6-15R	SOIL		X
SB6-15RCF	SOIL		X
SB6-14R	SOIL		X
SB6-24R	SOIL		X
SB6-23R	SOIL		X
SB6-23RCF	SOIL		X
SB7-23R	SOIL		X
SB7-23R MS	SOIL		X
SB7-23R MSD	SOIL		X
SB7-16R	SOIL		X
SB7-16RCF	SOIL		X
SB7-13R	SOIL		X
SB7-15R	SOIL		X
SB7-20R	SOIL		X
Total Billable Samples (Water/Soil)		3	25

CR+6= Hexavalent Chromium

DATA ASSESSMENT NARRATIVE
HEXAVALENT CHROMIUM

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 3060/7196A: the SOP No. 5.A.10 Standard Operating Procedure for Analytical Data Validation of Hexavalent Chromium in accordance with NJDEPE Modified Methods requirements, July 1992. 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 # F445

A validation was performed on the hexavalent chromium data from SDG F445. The data was evaluated based on the following parameters.

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

* - All criteria were met for this parameter.

Matrix Spike Recovery results

1. The high matrix spike recovery results for soil samples for Hexavalent Chromium (49% and 55%) for batches 2228 and 2227 were below the lower control limits (<75%). All positive and non-detect results are qualified as estimated, "J" or "UJ" with low bias.

* See attached sheets for individual qualifications of data.

SEVERN TRENT SERVICES

Site: SMC SITE

Lab Job No: F445

Date Sampled: 11/7/00
Date Received: 11/7/00
Matrix: WATER

Date Extracted: 11/8/00
Date Analyzed: 11/8/00
QA Batch: 2225

CHROMIUM VI

STL Edison Sample #	Client ID	Dilution Factor	Analytical Result Units: ug/l
239971	FB110700	1.0	ND

Quantitation Limit for Chromium VI is 10.0 ug/l for an undiluted sample.

12/22/00

003

SEVERN TRENT SERVICES

Site: SMC SITE

Lab Job No: F445

Date Sampled: 11/7/00
Date Received: 11/7/00
Matrix: SOIL

Date Extracted: 11/9/00
Date Analyzed: 11/9/00
QA Batch: 2227

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
239972	SB6-21R	7.3	1.0	ND UJ1
239973	SB6-26R	8.0	1.0	ND UJ1
239974	SB6-7R	6.2	1.0	ND UJ1
239975	SB6-25R	4.7	1.0	ND UJ1
239976	SB6-19R	8.5	1.0	ND UJ1
239977	SB6-20R	4.6	1.0	2.6 J1
239978	SB6-18R	7.6	1.0	ND UJ1
239979	SB6-17R	4.4	1.0	ND UJ1
239980	SB6-16R	5.6	1.0	11.8 J1
239981	SB6-15R	7.7	1.0	ND UJ1
239982	SB6-15RCF	12.9	1.0	ND UJ1
239983	SB6-14R	5.1	1.0	ND UJ1
239984	SB6-24R	4.6	1.0	2.8 J1

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

12/22/00

004

SEVERN TRENT SERVICES

Site: SMC SITE

Lab Job No: F445

Date Sampled: 11/7/00
Date Received: 11/7/00
Matrix: SOIL

Date Extracted: 11/9/00
Date Analyzed: 11/9/00
QA Batch: 2227

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
239985	SB6-23R	9.3	1.0	14.1 J1
239986	SB6-23RCF	6.1	1.0	15.0 J1

PBL 12/22/00

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

005

SEVERN TRENT SERVICES

Site: SMC SITE

Lab Job No: F445

Date Sampled: 11/7/00
Date Received: 11/7/00
Matrix: SOIL

Date Extracted: 11/9/00
Date Analyzed: 11/9/00
QA Batch: 2228

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
239987	SB7-23R	4.6	1.0	33.1 J1
239988	SB7-16R	4.4	1.0	ND UJ1
239989	SB7-16RCF	7.3	1.0	ND UJ1
239990	SB7-13R	3.8	1.0	ND UJ1
239991	SB7-15R	9.1	1.0	3.0 J1
239992	SB7-20R	8.0	1.0	5.0 J1

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

12/22/00

006

HEXAVALENT CHROMIUM WATER CALCULATIONS (7196A)

Date Extracted: 11/8/00
Analyst: Harford, Amanda

Date Analyzed: 11/8/00
Analyst: arford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.9995822
R Square	0.9991646
Adjusted R Sq	0.9989558
Standard Error	0.0024563
Observations	6

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.0288652	0.0288652	4784.287293	2.61765E-07
Residual	4	2.41333E-05	6.03333E-06		
Total	5	0.028889333			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.000%*	*Upper 95.000%*
Intercept	0.0002667	0.001481166	0.180038296	0.865875418	-0.00384572	0.004379052	-0.003845719	0.004379052
X Variable 1	0.00104	1.50357E-05	69.16854265	2.61765E-07	0.000998254	0.001081746	0.000998254	0.001081746

Sample ID	QA Batch	Initial Absorbance	BG Absorbance	Dilution Factor	Conc. ug/l	MDL ug/l	SampleVol ml	
0.0		0.000	0.000		-0.26			
10.0		0.012	0.000		11.3			
50.0		0.054	0.000		51.7			
75.0		0.074	0.000		70.9			
100.0		0.105	0.000		101			
200.0		0.209	0.000		201			
CCS1		0.073	0.000	1.0	69.9	10.00	50	
CCB1		0.001	0.000	1.0	0.71	10.00	50	
PBW		0.000	0.000	1.0	-0.26	10.00	50	
LCS		0.044	0.000	1.0	42.1	10.00	50	
239971DUP	2225	0.002	0.000	1.0	0.00	10.00	50	
239971MSL	2225	0.060	0.000	1.0	57.4	10.00	50	
239971MSH	2225	0.195	0.000	1.0	187	10.00	50	
239971PS	2225	0.016	0.000	1.0	15.1	10.00	50	
239971	2225	0.001	0.000	1.0	0.00	10.00	50	E01
CCSF		0.073	0.000	1.0	69.9	10.00	50	
CCBF		0.000	0.000	1.0	0.00	10.00	50	

HEXAVALENT CHROMIUM SOIL CALCULATION (3060/7196A)

Date Extracted: 11/9/00
Analyst: , Amanda

Date Analyzed: 11/09/00
Analyst: Harford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.99967
R Square	0.99933
Adjusted R S	0.99917
Standard Err	0.00901
Observations	6

ANOVA

	df	*SS*	*MS*	*F*	*gnificance F*
Regression	1	0.48641	0.48641	5986.828	1.7E-07
Residual	4	0.00032	8.1E-05		
Total	5	0.48674			

	Coefficient	*andard Err*	*t Stat*	*P-value*	*ower 95*	*pper 95*	*wer 95.000*	*er 95.00*
Intercept	0.00255	0.00535	0.47637	0.658662	-0.0123	0.01739	-0.01229	0.017
X Variable 1	0.74988	0.00969	77.3746	1.67E-07	0.72298	0.77679	0.722976	0.777

Sample ID	QA Batch	Initial bsorbanc	BG Absorban	Dilution Factor	% Solids	Soil Conc, mg/kg	MDL mg/kg	Sample Wt (g)
0.00		0.000	0.000			0.00		
0.05		0.040	0.000			0.05		
0.10		0.074	0.000			0.10		
0.50		0.383	0.000			0.51		
0.75		0.577	0.000			0.77		
1.00		0.741	0.000			0.98		
CCV1		0.385	0.000	1.0	100	0.51	2.00	2.5
CCB1		0.000	0.000	1.0	100	0.00	2.00	2.5
PBS		0.000	0.000	1.0	100	0.00	2.00	2.5
LCS		0.186	0.000	1.0	100	0.245	2.00	2.5
239976DUP	2227	0.010	0.000	1.0	92.0	0.00	2.17	2.5
239976MSL	2227	0.421	0.000	1.0	92.0	24.3	2.17	2.5
239976MSH	2227	0.824	0.000	1.0	92.0	47.6	2.17	2.5
239976PS	2227	0.132	0.000	1.0	92.0	7.5	2.17	2.5
239976	2227	0.008	0.000	1.0	92.0	0.00	2.17	2.5
239972	2227	0.028	0.011	1.0	93.0	0.00	2.15	2.5
239973	2227	0.029	0.011	1.0	92.0	0.00	2.17	2.5
239974	2227	0.012	0.000	1.0	94.0	0.00	2.13	2.5
CCS2		0.402	0.000	1.0	100	0.53	2.00	2.5
CCB2		0.000	0.000	1.0	100	0.00	2.00	2.5
239975	2227	0.048	0.015	1.0	95.0	0.00	2.11	2.5
239977	2227	0.055	0.006	1.0	95.0	2.6	2.11	2.5
239978	2227	0.017	0.000	1.0	92.0	0.00	2.17	2.5
239979	2227	0.018	0.005	1.0	96.0	0.00	2.08	2.5
239980	2227	0.211	0.000	1.0	94.0	11.8	2.13	2.5
239981	2227	0.019	0.000	1.0	92.0	0.00	2.17	2.5
239982	2227	0.019	0.000	1.0	87.0	0.00	2.30	2.5
239983	2227	0.000	0.000	1.0	95.0	0.00	2.11	2.5
239984	2227	0.055	0.002	1.0	95.0	2.8	2.11	2.5
239985	2227	0.256	0.013	1.0	91.0	14.1	2.20	2.5
CCS3		0.408	0.000	1.0	100	0.54	2.00	2.5
CCB3		0.000	0.000	1.0	100	0.00	2.00	2.5
239986	2227	0.271	0.005	1.0	94.0	15.0	2.13	2.5
CCSF		0.395	0.000	1.0	100	0.52	2.00	2.5
CCBF		0.000	0.000	1.0	100	0.00	2.00	2.5

HEXAVALENT CHROMIUM SOIL CALCULATION (3060/7196A)

Date Extracted: 11/9/00
Analyst: , Amanda

Date Analyzed: 11/09/00
Analyst: Harford, Amanda

SUMMARY OUTPUT

Regression Statistics	
ultiple R	0.99967
R Square	0.99933
Adjusted R S	0.99917
Standard Err	0.00901
Observations	6

ANOVA

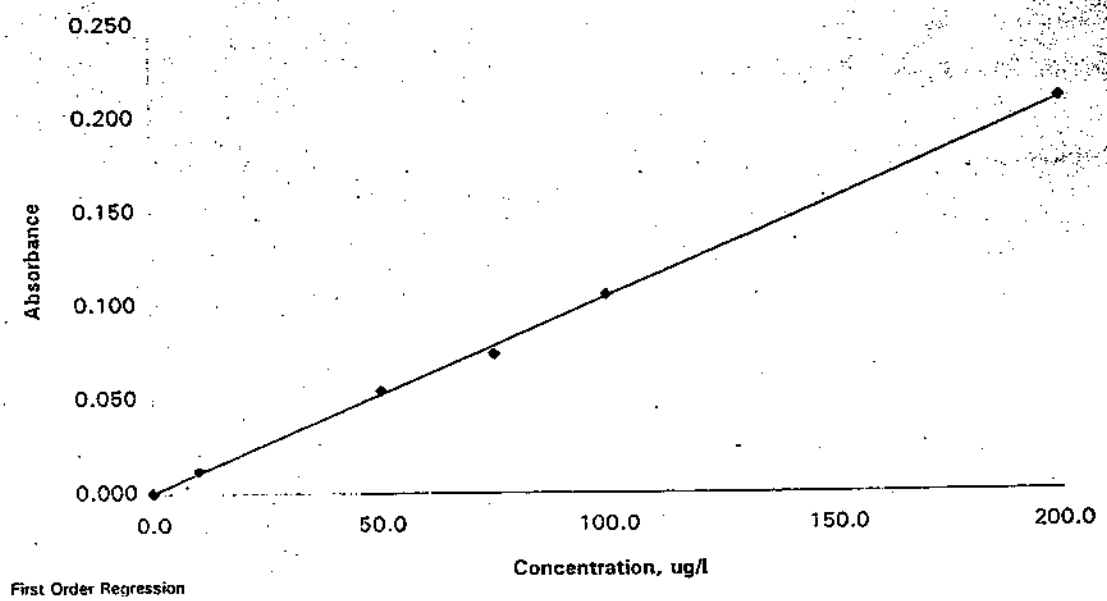
	df	*SS*	*MS*	*F*	*gnificance F*
Regression	1	0.48641	0.48641	5986.828	1.7E-07
Residual	4	0.00032	8.1E-05		
Total	5	0.48674			

	Coefficient	*andard Er*	*t Stat*	*P-value*	*ower 95*	*pper 95*	*wer 95.000*	*er 95.00*
Intercept	0.00255	0.00535	0.47637	0.658662	-0.0123	0.01739	-0.01229	0.017
X Variable 1	0.74988	0.00969	77.3746	1.67E-07	0.72298	0.77679	0.722976	0.777

Sample ID	QA Batch	Initial bsorbanc	BG Absorban	Dilution Factor	% Solids	Soil Conc, mg/kg	MDL mg/kg	Sample Wt (g)
0.00		0.000	0.000			0.00		
0.05		0.040	0.000			0.05		
0.10		0.074	0.000			0.10		
0.50		0.383	0.000			0.51		
0.75		0.577	0.000			0.77		
1.00		0.741	0.000			0.98		
CCV1		0.385	0.000	1.0	100	0.51	2.00	2.5
CCB1		0.000	0.000	1.0	100	0.00	2.00	2.5
PBS		0.000	0.000	1.0	100	0.00	2.00	2.5
LCS		0.186	0.000	1.0	100	0.245	2.00	2.5
239987DUP	2228	0.583	0.000	1.0	95.0	32.6	2.11	2.5
239987MSL	2228	0.530	0.000	2.0	95.0	59.2	4.21	2.5
239987MSH	2228	0.662	0.000	2.0	95.0	74.1	4.21	2.5
239987PS	2228	0.485	0.000	4.0	95.0	108	8.42	2.5
239987	2228	0.592	0.000	1.0	95.0	33.1	2.11	2.5
239988	2228	0.018	0.000	1.0	96.0	0.00	2.08	2.5
239989	2228	0.019	0.000	1.0	93.0	0.00	2.15	2.5
239990	2228	0.011	0.000	1.0	96.0	0.00	2.08	2.5
CCS2		0.395	0.000	1.0	100	0.52	2.00	2.5
CCB2		0.000	0.000	1.0	100	0.00	2.00	2.5
239991	2228	0.053	0.000	1.0	91.0	3.0	2.20	2.5
239992	2228	0.089	0.000	1.0	92.0	5.0	2.17	2.5
240275	2228	0.019	0.000	1.0	91.0	0.00	2.20	2.5
240276	2228	0.021	0.000	1.0	95.0	0.00	2.11	2.5
240277	2228	0.027	0.000	1.0	96.0	0.00	2.08	2.5
240278	2228	0.147	0.000	1.0	96.0	8.0	2.08	2.5
240279	2228	0.035	0.000	1.0	95.0	0.00	2.11	2.5
240280	2228	0.041	0.000	1.0	95.0	2.2	2.11	2.5
240281	2228	0.061	0.000	1.0	94.0	3.3	2.13	2.5
240282	2228	0.080	0.000	1.0	93.0	4.4	2.15	2.5
CCS3		0.408	0.000	1.0	100	0.54	2.00	2.5
CCB3		0.000	0.000	1.0	100	0.00	2.00	2.5
240283	2228	0.497	0.000	2.0	90.0	58.6	4.44	2.5
CCSF		0.408	0.000	1.0	100	0.54	2.00	2.5
CCBF		0.000	0.000	1.0	100	0.00	2.00	2.5

Hexavalent Chromium Calibration Curve

Date Run: 11/8/00 Saved As: 001108w.xls



First Order Regression

Correlation Coefficient: 0.999582

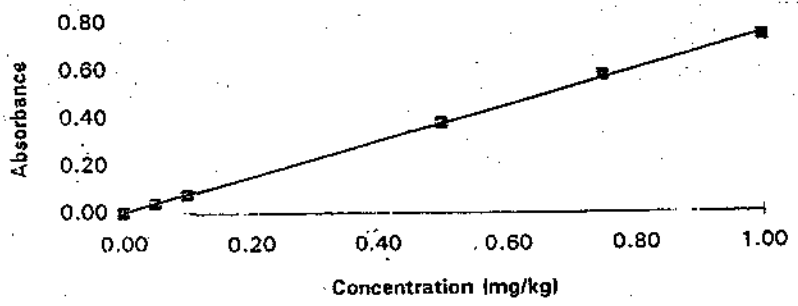
Calibration Slope: 0.00104

y-intercept: 0.000267

Calibration Check Standard Recovery Summary				
	True Value ppb	Value Obtained ppb	% Recovery	% Rec Limit
CCS1	75	69.9	93.2	90-110
CCSF	75	69.9	93.2	90-110

Hexavalent Chromium Calibration Curve

Date Run: 11/09/00 Saved as:



Correlation Coefficient: 0.999666

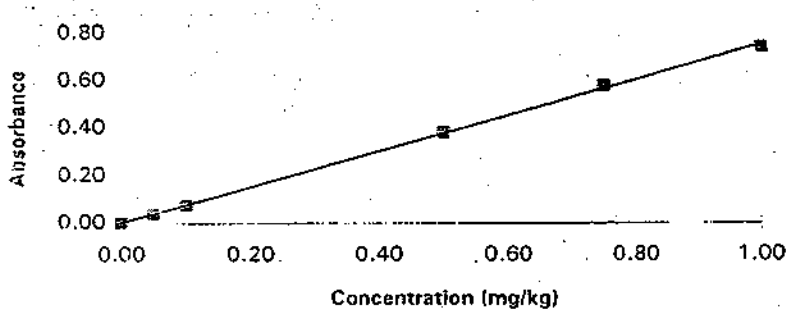
Calibration Slope: 0.749884

y-intercept: 0.002546

Calibration Check Standard Recovery Summary				
	True Value ppm	Value Obtained ppm	% Recovery	% Rec Limit
CCS1	0.50	0.51	102	90-110
CCS2	0.50	0.53	107	90-110
CCS3	0.50	0.54	108	90-110
CCSF	0.50	0.52	104	90-110

Hexavalent Chromium Calibration Curve

Date Run: 11/09/00 Saved as:



Correlation Coefficient: 0.999666

Calibration Slope: 0.749884

y-intercept: 0.002546

Calibration Check Standard Recovery Summary				
	True Value ppm	Value Obtained ppm	% Recovery	% Rec Limit
CCS1	0.50	0.51	102	90-110
CCS2	0.50	0.52	104	90-110
CCS3	0.50	0.54	108	90-110
CCSF	0.50	0.54	108	90-110

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: Water
QA Batch No.: 2225

QA Sample: 239971
QA Sample from Lab Job No.: F445

Laboratory Blank	
Blank Conc Units: ug/l	Quant Limit Units: ug/l
ND	10

Duplicate Sample			
Sample Conc Units: ug/l	Duplicate Conc Units: ug/l	RPD	RPD Limit
ND	ND	0.0	20

Matrix Spike - Low				
Spike Conc Units: ug/l	Sample Conc Units: ug/l	MSL Conc Units: ug/l	% Rec	% Rec Limit
50	ND	57.4	115	85-115

Matrix Spike - High				
Spike Conc Units: ug/l	Sample Conc Units: ug/l	MSH Conc Units: ug/l	% Rec	% Rec Limit
200	ND	187	93.5	85-115

Post Spike					
Spike Conc Units: ug/l	Sample Conc Units: ug/l	Spike/ Sample	PS Conc Units: ug/l	% Rec	% Rec Limit
15	ND	NA	15.1	101	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: ug/l	Acceptable Range: ug/l	Measured Value: ug/l
ERA	621	48.4	40.1-56.6	42

11/13/00
5:48 PM
001108W.XLS

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: SOIL
QA Batch No.: 2227

QA Sample: 239976
QA Sample from Lab Job No.: F445

Laboratory Blank	
Blank Conc Units: mg/kg	Quant Limit Units: mg/kg
0	2

Duplicate Sample			
Sample Conc Units: mg/kg	Duplicate Conc Units: mg/kg	RPD	RPD** Limit
ND	ND	0.0	20

Matrix Spike-Low				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSL Conc Units: mg/kg	% Rec	% Rec Limit
21.7	ND	24.3	112	75-125

Matrix Spike-High				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSH Conc Units: mg/kg	% Rec	% Rec Limit
87.0	0.00	47.6	54.7	75-125

Post Spike					
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	Spike/ Sample	PS Conc Units: mg/kg	% Rec	% Rec Limit
6.5	ND	NA	7.5	115	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: mg/kg	Acceptable Range: mg/kg	Measured Value: mg/kg
ERA	621	0.242	0.201-0.283	0.245

** If sample/dup conc is less than 8.0ppm a control limit of +/- 2.0 ppm applies.

11/15/00
11:38 AM
001109S.XLS

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: SOIL
QA Batch No.: 2228

QA Sample: 239987
QA Sample from Lab Job No.: F445

Laboratory Blank	
Blank Conc Units: mg/kg	Quant Limit Units: mg/kg
0	2

Duplicate Sample			
Sample Conc Units: mg/kg	Duplicate Conc Units: mg/kg	RPD	RPD** Limit
33.1	32.6	1.5	20

Matrix Spike-Low				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSL Conc Units: mg/kg	% Rec	% Rec Limit
21.1	33.1	59.2	124	75-125

Matrix Spike-High				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSH Conc Units: mg/kg	% Rec	% Rec Limit
84.2	33.1	74.1	48.7	75-125

Post Spike					
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	Spike/ Sample	PS Conc Units: mg/kg	% Rec	% Rec Limit
66.2	33.1	2.0	108	113	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: mg/kg	Acceptable Range: mg/kg	Measured Value: mg/kg
ERA	621	0.242	0.201-0.283	0.245

** If sample/dup conc is less than 8.0ppm a control limit of +/- 2.0 ppm applies.

11/15/00
12:21 PM
001109SA.XLS

SEVERN
TRENT
SERVICES

STL Edison
777 New Durham Road
Edison, NJ 08817
Tel: 732-549-3900
Fax: 732-549-3679
www.stl-inc.com

November 28, 2000

TRC Environmental Corporation
5 Waterside Crossing
Windsor, CT 06095

Attention: Mr. Larry Butlien

Re: F490 - SMC SITE

Dear Mr. Butlien:

Enclosed are the results you requested for the following sample(s) received at our laboratory on November 08, 2000:

Lab No.	Client ID	Analysis Required
240274	FB110800	Chrome VI
240275	SB7-17R	Chrome VI
240276	SB7-18R	Chrome VI
240277	SB7-19R	Chrome VI
240278	SB7-11R	Chrome VI
240279	SB7-12R	Chrome VI
240280	SB7-25R	Chrome VI
240281	SB7-24R	Chrome VI
240282	SB7-14R	Chrome VI
240283	B1-S1R	Chrome VI
240284	B1-S2R	Chrome VI

SEVERN TRENT SERVICES

Lab No.	Client ID	Analysis Required
240285	B1-S3R	Chrome VI
240286	B1-S4R	Chrome VI
240287	B2-S1R	Chrome VI
240288	B2-S2R	Chrome VI
240289	B2-S3R	Chrome VI
240290	B2-S4R	Chrome VI
240291	B3-S1R	Chrome VI
240292	B3-S1RCF	Chrome VI
240293	B3-S2R	Chrome VI
240294	B3-S2RCF	Chrome VI
240295	B3-S3R	Chrome VI
240296	B3-S4R	Chrome VI
240297	B5-S1R	Chrome VI
240298	B5-S2R	Chrome VI
240299	B5-S3R	Chrome VI
240300	B5-S4R	Chrome VI

An invoice for our services is also enclosed. If you have any questions please contact your Project Manager, Dan Glenn, at (732) 549-3900.

Very truly yours,

Michael J. Urban
Laboratory Manager

SEVERN TRENT SERVICES

Site: SMC SITE

Lab Job No: F490

Date Sampled: 11/7/00-11/8/00
Date Received: 11/8/00
Matrix: SOIL

Date Extracted: 11/9/00
Date Analyzed: 11/9/00
QA Batch: 2228

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240275	SB7-17R	8.7	1.0	ND
240276	SB7-18R	5.3	1.0	ND
240277	SB7-19R	4.0	1.0	ND
240278	SB7-11R	4.3	1.0	8.0
240279	SB7-12R	4.6	1.0	ND
240280	SB7-25R	4.9	1.0	2.2
240281	SB7-24R	5.9	1.0	3.3
240282	SB7-14R	7.1	1.0	4.4
240283	B1-S1R	9.9	2.0	58.3

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

SEVERN TRENT SERVICES

Site: SMC SITE

Lab Job No: F490

Date Sampled: 11/7/00-11/8/00
Date Received: 11/8/00
Matrix: SOIL

Date Extracted: 11/13/00
Date Analyzed: 11/13/00
QA Batch: 2229

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240284	B1-S2R	6.5	1.0	15.3
240285	B1-S3R	5.0	1.0	ND
240286	B1-S4R	5.8	1.0	6.9
240287	B2-S1R	6.7	1.0	7.5
240288	B2-S2R	6.8	1.0	33.8
240289	B2-S3R	3.4	1.0	20.0
240290	B2-S4R	6.0	1.0	26.3
240291	B3-S1R	2.3	1.0	28.1
240292	B3-S1RCF	12.9	1.0	34.6
240293	B3-S2R	3.3	1.0	34.5
240294	B3-S2RCF	13.0	1.0	35.7
240295	B3-S3R	2.7	1.0	5.6
240296	B3-S4R	4.4	1.0	20.4

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

SEVERN TRENT SERVICES

Site: SMC SITE

Lab Job No: F490

Date Sampled: 11/7/00-11/8/00
Date Received: 11/8/00
Matrix: SOIL

Date Extracted: 11/13/00
Date Analyzed: 11/13/00
QA Batch: 2229

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240297	B5-S1R	7.5	1.0	ND
240298	B5-S2R	6.9	1.0	3.6
240299	B5-S3R	8.6	2.0	70.0
240300	B5-S4R	7.3	1.0	ND

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

S[illegible] Envirotech
777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

Name (for report and invoice) Larry Butler	Samplers Name (Printed) Rokakoski, Bere	Site/Project Identification Stoeldelloy Metallurgical
Company TRC Environmental Corp	P.O. # 26770	State (Location of site): NJ: [X] NY: [ ] Other:
		Regulatory Program: HazSite Program
Address 5 Waterside Crossing	Analysis Turnaround Time: Standard [X]	
City Windsor State CT	Rush Charges Authorized For: 2 Week [ ] 1 Week [ ] Other [ ]	
Phone 860-298-6225 Fax 860-298-6399		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No:
Job No: F490

Sample Identification	Date	Time	Matrix	No. of Cont.	Hexavalent Chromium 7196A, 3060A, 3500B, SW846	Hex. Chromium 7196A, 3060A, 3500B, SW846	Sample Numbers
FB110800	11/8/00	0830	W	1		X	240274
SB7-17R	11/7/00	1601	S	1	X		240275
SB7-18R	11/7/00	1620	S	1	X		240276
SB7-19R	11/7/00	1640	S	1	X		240277
SB7-11R	11/8/00	0745	S	1	X		240278
SB7-12R	11/8/00	0800	S	1	X		240279
SB7-25R	11/8/00	0805	S	1	X		240280
SB7-24R	11/8/00	0810	S	1	X		240281
SB7-14R	11/8/00	0820	S	1	X		240282
B1-S1R	11/8/00	0910	S	1	X		240283

Preservation Used: (1) = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH
6 = Other _____, 7 = Other _____
Soil:
Water:

Special Instructions

Water Metals Filtered (Yes/No)? _____

Relinquished by	Company	Date / Time	Received by	Company
1) [signature]	TRC	11/8/00 1600	1) [signature]	STL
2) [signature]	STL	11/8/00 1800	2) [signature]	
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

STL - Envirotech
777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

Name (for report and invoice): Larry Butlien	Samplers Name (Printed): Rukukoski, Bance	Site/Project Identification: Shieldalloy Metallurgical
Company: TRC Environmental	P.O. #: 26770	State (Location of site): NJ: [X] NY: [ ] Other:
		Regulatory Program: Hazsite Program
Address: 5 Waterside Crossing	Analysis Turnaround Time: Standard [X]	ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)
City: Windsor State: CT	Rush Charges Authorized For: 2 Week [ ] 1 Week [ ] Other [ ]	LAB USE ONLY Project No:
Phone: 860-298-6225 Fax: 860-298-6399		Job No: F490

Sample Identification	Date	Time	Matrix	No. of Cont.	Hexavalent Chromium											Sample Numbers
B1-S2R	11/8/00	0930	S	1	X											240284
B1-S3R		0940		1	X											240285
B1-S4R		0955		1	X											240286
B2-S1R		1010		1	X											240287
B2-S2R		1030		1	X											240288
B2-S3R		1040		1	X											240289
B2-S4R		1140		1	X											240290
B3-S1R		1155		1	X											240291
B3-S1R CF *		1155		1	X											240292
B3-S2R		1310		1	X											240293

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH
6 = Other _____, 7 = Other _____
Soil: Water:

Special Instructions: * Centrifuge Sample Prior to Analysis

Water Metals Filtered (Yes/No)? _____

Relinquished by	Company	Date / Time	Received by	Company
1) [signature]	TRC	11/8/00, 1600	1) [signature]	STL
2) [signature]	STL	11/8/00, 1800	2) [signature]	
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

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Name (for report and invoice): Larry Bottien
Company: TRC Environmental
Address: 5 Waterside Crossing
City: Windsor State: CT
Phone: 860-298-6225 Fax: 860-298-6399

Samplers Name (Printed): Rukakoski, Bane
P.O. #: 26770
Analysis Turnaround Time: Standard [X]
Rush Charges Authorized For: 2 Week [ ] 1 Week [ ] Other [ ]

Site/Project Identification: Shieldalloy Metallurgical
State (Location of site): NJ: [X] NY: [ ] Other:
Regulatory Program: Hazsite Program

LAB USE ONLY
Project No:
Job No: F490

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

Sample Identification	Date	Time	Matrix	No. of. Cont.	Hex Chromium 7196A 0.02mg/L 3.5%										Sample Numbers
B3-S2R CF *	11/8/00	1310	S	1	X										240294
B3-S3R		1325		1	X										240295
B3-S4R		1340		1	X										240296
B5-S1R		1355		1	X										240297
B5-S2R		1405		1	X										240298
B5-S3R		1510		1	X										240299
B5-S4R		1520		1	X										240300

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH
6 = Other _____, 7 = Other _____
Soil:
Water:

Special Instructions: * Centrifuge Sample Prior to Analysis.
Water Metals Filtered (Yes/No)?

Relinquished by	Company	Date / Time	Received by	Company
1) [signature]	TRC	11/8/00 1600	1) [signature]	STL
2) [signature]	STL	11/8/00 1800	2) [signature]	
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

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INTERNAL CUSTODY RECORD
AND
LABORATORY CHRONICLE
STL Edison

777 New Durham Road, Edison, New Jersey
08817

Job No: F490 **Site:** SMC SITE

Client: TRC Environmental Corporation

WET CHEM

CHROME VI (3060/7196A)

Lab Sample ID	Date Sampled	Date Received	Preparation Date	Technician's Name	Analysis Date	Analyst's Name	QA Batch
SOLID							
240275	11/8/2000	11/08/2000	11/9/00	AH	11/9/00	AH	2228
240276	11/8/2000	11/08/2000					
240277	11/8/2000	11/08/2000					
240278	11/8/2000	11/08/2000					
240279	11/8/2000	11/08/2000					
240280	11/8/2000	11/08/2000					
240281	11/8/2000	11/08/2000					
240282	11/8/2000	11/08/2000					
240283	11/8/2000	11/08/2000	11/13/00 cc		11/13/00 cc		2229 cc
240284	11/8/2000	11/08/2000	11/13/00		11/13/00		2229
240285	11/8/2000	11/08/2000					
240286	11/8/2000	11/08/2000					
240287	11/8/2000	11/08/2000					
240288	11/8/2000	11/08/2000					
240289	11/8/2000	11/08/2000					
240290	11/8/2000	11/08/2000					
240291	11/8/2000	11/08/2000					
240292	11/8/2000	11/08/2000					
240293	11/8/2000	11/08/2000					
240294	11/8/2000	11/08/2000					
240295	11/8/2000	11/08/2000					
240296	11/8/2000	11/08/2000					
240297	11/8/2000	11/08/2000					
240298	11/8/2000	11/08/2000					
240299	11/8/2000	11/08/2000					

INTERNAL CUSTODY RECORD
AND
LABORATORY CHRONICLE
STL Edison

777 New Durham Road, Edison, New Jersey
08817

Job No: F490 **Site:** SMC SITE

Client: TRC Environmental Corporation

WET CHEM

CHROME VI (3060/7196A)

Lab Sample ID	Date Sampled	Date Received	Preparation Date	Technician's Name	Analysis Date	Analyst's Name	QA Batch
SOLID							
240300	11/8/2000	11/08/2000	11/13/00	AH	11/13/00	AH	2229

CHROME VI (7196A)

Lab Sample ID	Date Sampled	Date Received	Preparation Date	Technician's Name	Analysis Date	Analyst's Name	QA Batch
WATER							
240274	11/8/2000	11/08/2000	11/9/00	AH	11/9/00	AH	2226

Analytical Methodology Summary

Volatile Organics:

Unless otherwise specified, water samples are analyzed for volatile organics by purge and trap GC/MS as specified in EPA Method 624. Drinking water samples are analyzed by EPA Method 524.2. Solid samples are analyzed for volatile organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8260B. Water samples are analyzed for volatile organics by purge and trap GC/PID and GC/ELCD as specified in EPA Methods 601 and 602. Solid samples are analyzed by GC/PID and GC/ELCD in accordance with SW-846, 3rd Edition Method 8021B.

Acid and Base/Neutral Extractable Organics:

Unless otherwise specified, water samples are analyzed for acid and/or base/neutral extractable organics by GC/MS in accordance with EPA Method 625. Solids are analyzed for acid and/or base/neutral extractable organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8270C.

GC/MS Nontarget Compound Analysis:

Analysis for nontarget compounds is conducted, upon request, in conjunction with GC/MS analyses by EPA Methods 624, 625, 8260B and 8270C. Nontarget compound analysis is conducted using a forward library search of the EPA/NIH/NBS mass spectral library of compounds at the greatest apparent concentration (10% or greater of the nearest internal standard) in each organic fraction (15 for volatile, 15 for base/neutrals and 10 for acid extractables).

Organochlorine Pesticides and PCBs:

Unless otherwise specified, water samples are analyzed for organochlorine pesticides and PCBs by dual column gas chromatography with electron capture detectors as specified in EPA Method 608. Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8081A for organochlorine pesticides and Method 8082 for PCBs.

Total Petroleum Hydrocarbons:

Water samples are analyzed for petroleum hydrocarbons by I.R. using EPA Method 418.1. Solid samples are prepared for analysis by soxhlet extraction consistent with the March 1990 N.J. DEP "Remedial Investigation Guide" Appendix A, page 52, and analyzed by U.S. EPA Method 418.1

Metals Analysis:

Metals analyses are performed by any of four techniques specified by a Method Code provided on each data report page, as follows:

P - Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP)

A - Flame Atomic Absorption

F - Furnace Atomic Absorption

CV - Manual Cold Vapor (Mercury)

Water samples are digested and analyzed using EPA methods provided in "Methods for Chemical Analysis of Water and Wastewater" (EPA 600/4-79-020). Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition); samples are digested according to Method 3050B "Acid Digestion of Soil, Sediments and Sludges."

Specific method references for ICP analyses are water Method 200.7 and solid Method 6010B. Mercury analyses are conducted by the manual cold vapor technique specified by water Method 245.1 and solid Method 7471A. Other specific Atomic Absorption method references are as follows:

	Water Test Method		Solid Test Method	
Element	Flame	Furnace	Flame	Furnace
Aluminum	202.1	202.2	7020	--
Antimony	204.1	204.2	7040	7041
Arsenic	--	206.2	--	7060
Barium	208.1	--	7080	--
Beryllium	210.1	210.2	7090	7091
Cadmium	213.1	213.2	7130	7131
Calcium	215.1	--	7140	--
Chromium, Total	218.1	218.2	7190	7191
Chromium, (+6)	218.4	218.5	7197	7195
Cobalt	219.1	219.2	7200	7201
Copper	220.1	220.2	7210	--
Iron	236.1	236.2	7380	--
Lead	239.1	239.2	7420	7421
Magnesium	242.1	--	7450	--
Manganese	243.1	243.2	7460	--
Nickel	249.1	249.2	7520	--
Potassium	258.1	--	7610	--
Selenium	--	270.2	--	7740
Silver	272.1	272.2	7760	--
Sodium	273.1	--	7770	--
Tin	283.1	283.2	7870	--
Thallium	279.1	279.2	7840	7841
Vanadium	286.1	286.2	7910	7911
Zinc	289.1	289.2	7950	--

Cyanide:

Water samples are analyzed for cyanide using EPA Method 335.3. Cyanide is determined in solid samples as specified in the EPA Contract Laboratory Program IFB dated July 1988, revised February 1989.

Phenols:

Water samples are analyzed for total phenols using EPA Method 420.2. Total phenols are determined in solid samples by preparing the sample as outlined in the EPA Contract Laboratory Program IFB for cyanide, followed by a phenols determination using EPA Method 420.1.

Cleanup of Semivolatile Extracts:

Upon request Method 3611B Alumina Column Cleanup and/or Method 3650B Acid-Base Partition Cleanup are performed to improve detection limits by the removal of saturated hydrocarbon interferences.

Hazardous Waste Characteristics:

Samples for hazardous waste characteristics are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition). Specific method references are as follows:

Ignitability	- Method 1020A
Corrosivity	- Water pH Method 9040B Soil pH Method 9045C
Reactivity	- Chapter 7, Section 7.3.3 and 7.3.4 respectively for hydrogen cyanide and hydrogen sulfide release
Toxicity	- TCLP Method 1311

Miscellaneous Parameters:

Additional analyses performed on both aqueous and solid samples are in accordance with methods published in the following references:

- Test Methods for Evaluating Solid Wastes, SW-846 3rd Edition, November 1986.
- Standard Methods for the Examination of Water and Wastewater, 17th Edition.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, 1979.

ORGANIC DATA REPORTING QUALIFIERS

ND - The compound was not detected at the indicated concentration.

J - Mass spectral data indicates the presence of a compound that meets the identification criteria. The result is less than the specified quantitation limit but greater than zero. The concentration given is an approximate value.

B - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

P - For dual column analysis, the percent difference between the quantitated concentrations on the two columns is greater than 40%.

* - For dual column analysis, the lowest quantitated concentration is being reported due to coeluting interference.

INORGANIC DATA REPORTING QUALIFIERS (SW-846 METHODS ONLY)

ND - The compound was not detected at the indicated concentration.

B - Reported value is less than the Method Detection Limit but greater than or equal to the Instrument Detection Limit.

E - The reported value is estimated because of the presence of interference. See explanatory note in the Nonconformance Summary if the problem applies to all of the samples or on the individual Inorganic Analysis Data Sheet if the problem is isolated.

M - Duplicate injection precision not met on the Furnace Atomic Absorption analysis.

N - The spiked sample recovery is not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

* - Duplicate Analysis is not within control limits.

W - Post digestion spike for Furnace Atomic Absorption analysis is out of control.

\+ - Correlation coefficient for MSA is less than 0.995.

M Column - Method Qualifiers

P - Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP).

A - Flame Atomic Absorption Spectroscopy (FAA).

F - Graphite Furnace Atomic Absorption Spectroscopy (GFAA).

CV - Cold Vapor Atomic Absorption Spectroscopy.

NON-CONFORMANCE SUMMARY

STL Edison Job Number: F490

Volatile Organics Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

Base/Neutral and/or Acid Extractable Organics Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

PCBs and/or Organochlorine Pesticides Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

Non-conformance Summary, Page 2 of 2
STL Edison Job Number: F4190

Metals Analysis:
includes Cr VI:
All data conforms with method requirements _____; or
Analysis was not requested _____; or
Non-conformance for the specific samples listed is as follows:
(Cr VI: QA Batch 2228): Recovery of MS-High is outside of QC limits (low)
(Cr VI: QA Batch 2229): Recovery of MS-High is outside of QC limits (low)

See continuation page if checked ( )

Total Petroleum Hydrocarbons Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

General Chemistry/Disposal Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

Signature of
Laboratory Manager: [signature] Date: 11-30-00

Site: SMC SITE

Lab Job No: F490

Date Sampled: 11/7/00-11/8/00
Date Received: 11/8/00
Matrix: SOIL

Date Extracted: 11/9/00
Date Analyzed: 11/9/00
QA Batch: 2228

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240275	SB7-17R	8.7	1.0	ND
240276	SB7-18R	5.3	1.0	ND
240277	SB7-19R	4.0	1.0	ND
240278	SB7-11R	4.3	1.0	8.0
240279	SB7-12R	4.6	1.0	ND
240280	SB7-25R	4.9	1.0	2.2
240281	SB7-24R	5.9	1.0	3.3
240282	SB7-14R	7.1	1.0	4.4
240283	B1-S1R	9.9	2.0	58.3

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

Site: SMC SITE

Lab Job No: F490

Date Sampled: 11/7/00-11/8/00
Date Received: 11/8/00
Matrix: SOIL

Date Extracted: 11/13/00
Date Analyzed: 11/13/00
QA Batch: 2229

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240284	B1-S2R	6.5	1.0	15.3
240285	B1-S3R	5.0	1.0	ND
240286	B1-S4R	5.8	1.0	6.9
240287	B2-S1R	6.7	1.0	7.5
240288	B2-S2R	6.8	1.0	33.8
240289	B2-S3R	3.4	1.0	20.0
240290	B2-S4R	6.0	1.0	26.3
240291	B3-S1R	2.3	1.0	28.1
240292	B3-S1RCF	12.9	1.0	34.6
240293	B3-S2R	3.3	1.0	34.5
240294	B3-S2RCF	13.0	1.0	35.7
240295	B3-S3R	2.7	1.0	5.6
240296	B3-S4R	4.4	1.0	20.4

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

Site: SMC SITE

Lab Job No: F490

Date Sampled: 11/7/00-11/8/00
Date Received: 11/8/00
Matrix: SOIL

Date Extracted: 11/13/00
Date Analyzed: 11/13/00
QA Batch: 2229

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240297	B5-S1R	7.5	1.0	ND
240298	B5-S2R	6.9	1.0	3.6
240299	B5-S3R	8.6	2.0	70.0
240300	B5-S4R	7.3	1.0	ND

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: SOIL
QA Batch No.: 2228

QA Sample: 239987
QA Sample from Lab Job No.: F445

Laboratory Blank	
Blank Conc Units: mg/kg	Quant Limit Units: mg/kg
0	2

Duplicate Sample			
Sample Conc Units: mg/kg	Duplicate Conc Units: mg/kg	RPD	RPD** Limit
32.3	31.3	3.1	20

Matrix Spike-Low				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSL Conc Units: mg/kg	% Rec	% Rec Limit
21.1	32.3	59.0	127	75-125

Matrix Spike-High				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSH Conc Units: mg/kg	% Rec	% Rec Limit
42.2	32.3	73.5	97.6	75-125

Post Spike					
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	Spike/ Sample	PS Conc Units: mg/kg	% Rec	% Rec Limit
66.2	32.3	2.0	106	111	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: mg/kg	Acceptable Range: mg/kg	Measured Value: mg/kg
ERA	621	0.242	0.201-0.283	0.245

** If sample/dup conc is less than 8.0ppm a control limit of +/- 2.0 ppm applies.

2/8/01
11:11 AM
001109SA.XLS

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: SOIL
QA Batch No.: 2229

QA Sample: 240285
QA Sample from Lab Job No.: F490

Laboratory Blank	
Blank Conc Units: mg/kg	Quant Limit Units: mg/kg
0	2

Duplicate Sample			
Sample Conc Units: mg/kg	Duplicate Conc Units: mg/kg	RPD	RPD** Limit
ND	ND	0.0	20

Matrix Spike-Low				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSL Conc Units: mg/kg	% Rec	% Rec Limit
21.1	ND	20.8	98.8	75-125

Matrix Spike-High				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSH Conc Units: mg/kg	% Rec	% Rec Limit
42.2	ND	41.3	97.9	75-125

Post Spike					
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	Spike/ Sample	PS Conc Units: mg/kg	% Rec	% Rec Limit
6.3	ND	NA	6.0	95.0	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: mg/kg	Acceptable Range: mg/kg	Measured Value: mg/kg
ERA	621	0.242	0.201-0.283	0.246

** If sample/dup conc is less than 8.0ppm a control limit of +/- 2.0 ppm applies.

2/22/01
8:51 AM
001113S.XLS

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: Water
QA Batch No.: 2226

QA Sample: 240274
QA Sample from Lab Job No.: F490

Laboratory Blank	
Blank Conc Units: ug/l	Quant Limit Units: ug/l
ND	10

Duplicate Sample			
Sample Conc Units: ug/l	Duplicate Conc Units: ug/l	RPD	RPD Limit
ND	ND	0.0	20

Matrix Spike - Low				
Spike Conc Units: ug/l	Sample Conc Units: ug/l	MSL Conc Units: ug/l	% Rec	% Rec Limit
50	ND	52.5	105	85-115

Matrix Spike - High				
Spike Conc Units: ug/l	Sample Conc Units: ug/l	MSH Conc Units: ug/l	% Rec	% Rec Limit
200	ND	206	103	85-115

Post Spike					
Spike Conc Units: ug/l	Sample Conc Units: ug/l	Spike/ Sample	PS Conc Units: ug/l	% Rec	% Rec Limit
15	ND	NA	13.6	90.7	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: ug/l	Acceptable Range: ug/l	Measured Value: ug/l
ERA	621	48.4	40.1-56.6	42.5

11/13/00
5:58 PM
001109W.XLS

HEXAVALENT CHROMIUM WATER CALCULATIONS (7196A)

Date Extracted: 11/9/00
Analyst: Hartford, Amanda

Date Analyzed: 11/9/00
Analyst: arford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.9996328
R Square	0.9992657
Adjusted R Sq	0.9990821
Standard Error	0.0019908
Observations	6

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.021574146	0.021574146	5443.252423	2.02257E-07
Residual	4	1.58539E-05	3.96347E-06		
Total	5	0.02159			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.000%*	*Upper 95.000%*
Intercept	0.0008145	0.001200502	0.678482975	0.534689932	-0.00251861	0.004147654	-0.002518614	0.004147654
X Variable 1	0.0008991	1.21866E-05	73.77840079	2.02257E-07	0.000865274	0.000932946	0.000865274	0.000932946

Sample ID	QA Batch	Initial Absorbance	BG Absorbance	Dilution Factor	Conc. ug/l	MDL ug/l	SampleVol ml	
0.0		0.000	0.000		-0.91			
10.0		0.008	0.000		8.0			
50.0		0.046	0.000		50.3			
75.0		0.071	0.000		78.1			
100.0		0.092	0.000		101			
200.0		0.179	0.000		198			
CCS1		0.068	0.000	1.0	74.7	10.00	50	
CCB1		-0.001	0.000	1.0	-2.0	10.00	50	
PBW		0.000	0.000	1.0	-0.91	10.00	50	
LCS		0.039	0.000	1.0	42.5	10.00	50	
240274DUP	2226	-0.001	0.000	1.0	0.00	10.00	50	
240274MSL	2226	0.048	0.000	1.0	52.5	10.00	50	
240274MSH	2226	0.186	0.000	1.0	206	10.00	50	
240274PS	2226	0.013	0.000	1.0	13.6	10.00	50	
240274	2226	0.000	0.000	1.0	0.00	10.00	50	E01
240480	2226	0.000	0.000	1.0	0.00	10.00	50	E01
CCSF		0.069	0.000	1.0	75.8	10.00	50	
CCBF		0.000	0.000	1.0	0.00	10.00	50	

HEXAVALENT CHROMIUM SOIL CALCULATION (3060/7196A)

Date Extracted: 11/9/00
Analyst: , Amanda

Date Analyzed: 11/09/00
Analyst: Harford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.99967
R Square	0.99933
Adjusted R S	0.99917
Standard Err	0.00901
Observations	6

ANOVA

	df	*SS*	*MS*	*F*	*gnificance F*
Regression	1	0.48641	0.48641	5986.828	1.7E-07
Residual	4	0.00032	8.1E-05		
Total	5	0.48674			

	Coefficient	*andard Err*	*t Stat*	*P-value*	*ower 95*	*pper 95*	*wer 95.000*	*er 95.00*
Intercept	0.00255	0.00535	0.47637	0.658662	-0.0123	0.01739	-0.01229	0.017
X Variable 1	0.74988	0.00969	77.3746	1.67E-07	0.72298	0.77679	0.722976	0.777

Sample ID	QA Batch	Initial bsorbanc	BG Absorban	Dilution Factor	% Solids	Soil Conc, mg/kg	MDL mg/kg	Sample Wt (g)
0.00		0.000	0.000			0.00		
0.05		0.040	0.000			0.05		
0.10		0.074	0.000			0.10		
0.50		0.383	0.000			0.51		
0.75		0.577	0.000			0.77		
1.00		0.741	0.000			0.98		
CCV1		0.385	0.000	1.0	100	0.51	2.00	2.5
CCB1		0.000	0.000	1.0	100	0.00	2.00	2.5
PBS		0.000	0.000	1.0	100	0.00	2.00	2.5
LCS		0.186	0.000	1.0	100	0.245	2.00	2.5
239987DUP	2228	0.583	0.000	1.0	95.4	31.2	2.10	2.6
239987MSL	2228	0.530	0.000	2.0	95.4	58.7	4.19	2.51
239987MSH	2228	0.662	0.000	2.0	95.4	73.2	4.19	2.52
239987PS	2228	0.485	0.000	4.0	95.4	105	8.39	2.56
239987	2228	0.592	0.000	1.0	95.4	32.2	2.10	2.56
239988	2228	0.018	0.000	1.0	95.6	0.00	2.09	2.6
239989	2228	0.019	0.000	1.0	92.7	0.00	2.16	2.5
239990	2228	0.011	0.000	1.0	96.2	0.00	2.08	2.6
CCS2		0.395	0.000	1.0	100	0.52	2.00	2.5
CCB2		0.000	0.000	1.0	100	0.00	2.00	2.5
239991	2228	0.053	0.000	1.0	90.9	2.9	2.20	2.53
239992	2228	0.089	0.000	1.0	92.0	5.0	2.17	2.51
240275	2228	0.019	0.000	1.0	91.3	0.00	2.19	2.56
240276	2228	0.021	0.000	1.0	94.7	0.00	2.11	2.5
240277	2228	0.027	0.000	1.0	96.0	0.00	2.08	2.51
240278	2228	0.147	0.000	1.0	95.7	8.0	2.09	2.51
240279	2228	0.035	0.000	1.0	95.4	0.00	2.10	2.51
240280	2228	0.041	0.000	1.0	95.1	2.2	2.10	2.51
240281	2228	0.061	0.000	1.0	94.1	3.3	2.13	2.51
240282	2228	0.080	0.000	1.0	92.9	4.4	2.15	2.51
CCS3		0.408	0.000	1.0	100	0.54	2.00	2.5
CCB3		0.000	0.000	1.0	100	0.00	2.00	2.5
240283	2228	0.497	0.000	2.0	90.1	58.3	4.44	2.51
CCSF		0.408	0.000	1.0	100	0.54	2.00	2.5
CCBF		0.000	0.000	1.0	100	0.00	2.00	2.5

HEXAVALENT CHROMIUM SOIL CALCULATION (3060/7196A)

Date Extracted: 11/13/00
Analyst: , Amanda

Date Analyzed: 11/13/00
Analyst: Harford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.99967
R Square	0.99934
Adjusted R S	0.99917
Standard Err	0.00906
Observations	6

ANOVA

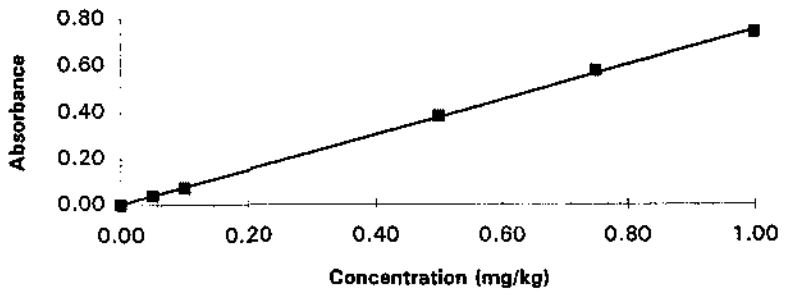
	df	*SS*	*MS*	*F*	*gnificance F*
Regression	1	0.49341	0.49341	6015.993	1.7E-07
Residual	4	0.00033	8.2E-05		
Total	5	0.49374			

	Coefficient	*andard Err*	*t Stat*	*P-value*	*ower 95*	*pper 95*	*wer 95.000*	*er 95.00*
Intercept	0.0004	0.00537	0.07373	0.944765	-0.0145	0.01531	-0.01451	0.015
X Variable 1	0.75526	0.00974	77.5628	1.66E-07	0.72822	0.7823	0.728225	0.782

Sample ID	QA Batch	Initial bsorbanc	BG Absorban	Dilution Factor	% Solids	Soil Conc. mg/kg	MDL mg/kg	Sample Wt (g)
0.00		0.000	0.000			0.00		
0.05		0.036	0.000			0.05		
0.10		0.070	0.000			0.09		
0.50		0.391	0.000			0.52		
0.75		0.572	0.000			0.76		
1.00		0.746	0.000			0.99		
CCV1		0.399	0.000	1.0	100	0.53	2.00	2.5
CCB1		0.000	0.000	1.0	100	0.00	2.00	2.5
PBS		0.000	0.000	1.0	100	0.00	2.00	2.5
LCS		0.186	0.000	1.0	100	0.246	2.00	2.5
240285DUP	2229	0.025	0.004	1.0	95.0	0.00	2.11	2.5
240285MSL	2229	0.380	0.005	1.0	95.0	20.8	2.11	2.51
240285MSH	2229	0.745	0.004	1.0	95.0	41.3	2.11	2.5
240285PS	2229	0.112	0.004	1.0	95.0	6.0	2.11	2.5
240285	2229	0.024	0.004	1.0	95.0	0.00	2.11	2.5
240284	2229	0.280	0.009	1.0	93.5	15.3	2.14	2.51
240286	2229	0.124	0.000	1.0	94.2	6.9	2.12	2.51
240287	2229	0.136	0.004	1.0	93.3	7.5	2.14	2.5
CCS2		0.393	0.000	1.0	100	0.52	2.00	2.5
CCB2		0.000	0.000	1.0	100	0.00	2.00	2.5
240288	2229	0.596	0.000	1.0	93.2	33.8	2.15	2.5
240289	2229	0.366	0.000	1.0	96.6	20.0	2.07	2.5
240290	2229	0.471	0.003	1.0	94.0	26.3	2.13	2.5
240291	2229	0.521	0.000	1.0	97.7	28.1	2.05	2.51
240292	2229	0.572	0.000	1.0	87.1	34.6	2.30	2.51
240293	2229	0.630	0.000	1.0	96.7	34.5	2.07	2.5
240294	2229	0.589	0.000	1.0	87.0	35.7	2.30	2.51
240295	2229	0.103	0.000	1.0	97.3	5.6	2.06	2.51
240296	2229	0.370	0.000	1.0	95.6	20.4	2.09	2.51
240297	2229	0.016	0.003	1.0	92.5	0.00	2.16	2.51
CCS3		0.394	0.000	1.0	100	0.52	2.00	2.5
CCB3		0.000	0.000	1.0	100	0.00	2.00	2.5
240298	2229	0.064	0.000	1.0	93.1	3.6	2.15	2.5
240299	2229	0.607	0.000	2.0	91.4	70.0	4.38	2.51
240300	2229	0.022	0.001	1.0	92.7	0.00	2.16	2.5
CCSF		0.399	0.000	1.0	100	0.53	2.00	2.5
CCBF		0.000	0.000	1.0	100	0.00	2.00	2.5

Hexavalent Chromium Calibration Curve

Date Run: 11/09/00 Saved as:



Correlation Coefficient: 0.999666

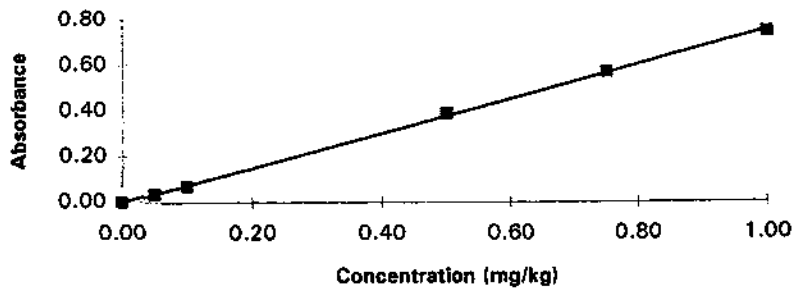
Calibration Slope: 0.749884

y-intercept: 0.002546

Calibration Check Standard Recovery Summary				
	True Value ppm	Value Obtained ppm	% Recovery	% Rec Limit
CCS1	0.50	0.51	102	90-110
CCS2	0.50	0.52	104	90-110
CCS3	0.50	0.54	108	90-110
CCSF	0.50	0.54	108	90-110

Hexavalent Chromium Calibration Curve

Date Run: 11/13/00 Saved as:



Correlation Coefficient: 0.999668

Calibration Slope: 0.75526

y-intercept: 0.000396

Calibration Check Standard Recovery Summary				
	True Value ppm	Value Obtained ppm	% Recovery	% Rec Limit
CCS1	0.50	0.53	106	90-110
CCS2	0.50	0.52	104	90-110
CCS3	0.50	0.52	104	90-110
CCSF	0.50	0.53	106	90-110

PROJECT Cr+6 Runlog

Notebook No. 01764

Continued From Page

BATCH 22246 Matrix: H_2O Lot: F490, F514

SAMPLE	DIL	ABS	BG/BG	Final pH	Tot/Tread	Results	Spk	%REC
0		.000		1.94	9:50/9:56			
10		.008		1.98				
50		.046		1.90				
75		.071		1.87				
100		.092		1.89				
200		.179		1.74	9:55/10:00			
CCS		.068		1.79	10:11/10:16	74.7	75	99.6%
CCB		-.001		1.82		ND		
PBD		.000		1.83		ND		
LCS(622)		.039		1.86	10:13/10:18	42.5	48.4	87.8%
240274 Dup		-.001		1.78	10:30/10:35	ND		
240274 MSL		.048		1.84		525	50	105%
240274 MSH		.186		1.87	10:32/10:37	206	200	103%
240274 PS		.013		1.85	10:45/10:50	13.6	15	90.7%
240274		.000		1.94	10:33/10:38	ND		
240480R		.000		1.91		ND		
CCS		.069		1.94		75.8	75	101%
CCB		.000		1.82	10:35/10:40	ND		

10 ppm Cr^{+6} 1: 5337 10 ppm Cr^{+6} 2: 5055

10% H_2SO_4: 5418 DPC 2nd: 5225

Continued on Page

Read and Understood By

Amanda Harford 11/9/00

Batch: 2227, 2228 Matrix: solid Job: F415, F490

SAMPLE	SAMPLE wt(g)	vol(ml)	color	init pH	pH Time	spike
0.00		100		7.84	10:50	
0.05				7.62		
0.10				7.79		
0.50				7.82		
0.75				7.54		
1.00				7.75	10:55	
CCS				7.85	11:35	0.50
PB				7.59		
LCS				7.66	11:37	0.242
239976dup	2.58		clear	7.54	12:01	
239976 MSL	2.56			7.78		0.50
239976 MSH	2.50			7.82		1.00
239976d	2.56			7.75		
239972d	2.56		yellow	7.77		
239973d	2.55			7.89		
239974d	2.50		clear	7.86	12:07	
239975d	2.51		yellow	7.81	12:35	
CCS				7.85		0.50
CCB				7.62		
239977d	2.56		yellow	7.66		
239978d	2.55		clear	7.73		
239979d	2.60		yellow	7.89		
239980d	2.60		pale yellow	7.99	12:42	
239981d	2.55		clear	7.82	1:03	
239982d	2.53			7.87		
239983d	2.50			7.78		
239984d	2.52		yellow	7.58		
239985d	2.52		dark yellow	7.62		
239986d	2.59			7.52	1:08	
CCS				7.59	2:10	0.50
CCB				7.42		
239987dup	2.60		clear	7.88		
239987 MSL	2.51			7.74	2:13	0.50

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Read and Understood By

Amanda Harford 11/9/00

Notebook No. 01645 53

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PROJECT Cr+6 Prep Log

SAMPLE	SAMPLE wt(g)	vol(ml)	Color	wet pH	pH Time	spike
239987MSH	2.52	100	clear	7.69	2:41	1.00
239987d	2.56		↓	7.82	2:15	
239988d	2.60		pale yellow	7.84	2:43	
239989d	2.50		clear	7.91		
239990d	2.60		↓	7.56		
239991d	2.53		pale yellow	7.92		
239992d	2.51		clear	7.81		
240275d	2.56		↓	7.89 7.82	2:49 3:09	0.50
CCS 240276d	2.50		clear	7.53 7.89		
240277d	2.51		pale yellow	7.72		
240278d	2.51		clear	7.55		
240279d	2.51			7.91		
240280d	2.51			7.71	3:15	
240281d	2.51			7.56	3:36	
240282d	2.51			7.51		
240283d	2.51		yellow	7.79		
CCS				7.54		0.50
CCB				7.63	3:40	

Start time: 10:26 @ 90.0°C temp after 30min 95.0°C

end time: 11:26 @ 95.0°C pH of digestion fluid: 13.52

Continued on Page

Read and Understood By

PROJECT G-16 Prep Log

Notebook No. 0645

Continued From Page

BATCH: 2229 Matrix: solid JOB: F490

SAMPLE	SAMPLE wt(g)	vol(ml)	color	init pH	pH Time	spike
0.00		100		7.82	10:35	
0.05				7.47		
0.10				7.63		
0.50				7.96		
0.75				7.66		
1.00				7.89	10:40	
CCS				7.70	12:04	0.50
PB				7.64		
LCS				7.61	12:06	0.242
240285 dup	2.50		yellow	7.51	12:24	
240285 MSL	2.57			7.50		0.50
240285 MSH	2.50			7.63		1.00
240285d	2.50			7.91		
240284d	2.57		dark yellow	7.89		
240286d	2.51		pale yellow	7.72	12:30	
240287d	2.50		dark yellow	7.83	1:02	
240288d	2.50		pale yellow	7.89		
CCS				7.98		0.50
CCB				7.54		
240289d	2.50		pale yellow	7.35		
240290d	2.50		yellow	7.83		
240291d	2.57		pale yellow	7.82	1:08	
240292d	2.57			7.56	1:31	
240293d	2.50			7.69		
240294d	2.9			7.88		
240295d	2.57		clear	7.84		
240296d	2.57		pale yellow	7.86		
240297d	2.57		yellow	7.52	1:37	
240298d	2.50		pale yellow	7.71	2:05	
CCS				7.79		0.50
CCB				7.61		
240299d	2.57		yellow	7.99		
240300d	2.50		dark yellow	7.70	2:09	

Continued on Page

start time: 10:50 @ 90.2°C temp after 30 min 95.0°C end time: 11:50 @ 95.0°C
pH of digestion fluid 13.47

Read and Understood By

Amanda Harbord 11/13/00

BATCH 2227, 2228 Matrix: Solid JOBS: F445, F490

SAMPLE	DIL	ABS	BG/BG pH	Final pH	TpH/TRead	% Solids	Results	spk	% R
0.00		0.000		1.98	11:01/11:06				
0.05		0.040		2.01					
0.10		0.074		1.85					
0.50		0.383		1.87					
0.75		0.577		1.83					
1.00		0.741		1.92	11:05/11:10				
CCS		0.385		1.97	11:43/11:48		0.51	0.50	102%
CCB		0.000		1.84			ND		
PB		0.000		1.83			ND		
LCS(621)		0.186		1.72	11:45/11:50		0.245	0.242	101%
239976Dup		0.010	0.000/1.63	1.64	12:13/12:18	91.5	ND	23.8 21.9	109%
239976MSL		0.421	0.000/1.73	1.92		91.5	23.8	21.7	112%
239976MSH		0.824	0.000/1.85	1.72	12:15/12:20	91.5	47.9	47.9	100%
239976PS			0.000/1.65	1.75	12:27/12:32	91.5	7.4	6.5	113%
239976d		0.008	0.000/1.78	1.83	12:15/12:21	91.5	ND		
239972d		0.028	0.011/1.82	1.86		92.9	ND		
239973a		0.029	0.011/1.77	1.72		92.0	ND		
239974d		0.012	0.000/1.64	1.82	12:18/12:24	93.8	ND		
CCS		0.402		1.91	12:47/12:53		0.53	0.50	107%
CCB		0.000		1.65			ND		
239975d		0.048	0.015/1.89	1.82		95.3	ND		
239977d		0.055	0.006/1.73	1.92		95.4	2.5		
239978d		0.017	0.000/1.91	1.69		92.4	ND		
239979d		0.018	0.005/1.85	1.67		95.6	ND		
239980d		0.211	0.002/1.79	1.84	12:52/12:58	94.4	11.3		
239981d		0.019	0.000/1.74	1.85	1:13/1:19	92.3	ND		
239982d		0.019	0.000/1.90	1.79		87.1	ND		
239983d		0.000	0.000/1.79	1.82		94.9	ND		
239984d		0.055	0.002/1.83	1.91		95.4	2.8		
239985d		0.256	0.013/1.65	2.04		90.7	14.0		
CCS		0.408		1.99			0.54	0.50	108%
CCB		0.000		1.87	1:18/1:24		ND		

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Read and Understood By

Amanda Hufford 11/9/00
Signed Date Signed Date

Notebook No. 01766 25
Continued From Page

PROJECT Cr+6 Runlog

SAMPLE	DIL	ABS	Rd/Rd pH	Final pH	TPH/Trend	% Solids	Results	spk	% REC
[illegible]Rd		0.271	0.000/1.75	2.03	2:26/2:31	94.0 ch 93.9	15.8 ch 14.4		
239987dup		0.583	0.000/1.84	1.90	2:21/2:26	95.4 95.4	32.6 31.2	21.0	
239987MS	25/50	0.530		1.85		95.4 95.4	59.2 ch 58.7	59.2 ch 116	120%
239987MSD	25/50	0.662		1.73	2:23/2:28	95.4 95.4	74.2 ch 73.8	84.2 ch 92.0	92.7%
239987PS	25/50	0.485		1.77	2:33/2:38	95.4 95.4	65 ch 64.5	60.2 ch 64.4	113%
239987d		0.592	0.000/1.92	1.89	2:24/2:29	95.4 95.4	32.2		
239988d		0.018	0.000/1.84	1.84	2:56/3:03	96.2 95.6	ND		
239989d		0.019	0.000/1.73	1.95		93.5 92.7	ND		
239990d		0.011	0.000/1.94	1.99		96.0 96.2	ND		
239991d		0.053	0.000/1.71	1.89		93.9 92.9	3.5 2.9		
CCS		0.395		1.85			0.52	0.50	104%
CCB		0.000		1.91			ND		
239992d		0.089	0.000/1.89	1.96		92.0 92.0	5.0		
240275d		0.019	0.000/1.92	1.69	3:01/3:08	91.3 91.3	ND		
240276d		0.021	0.000/1.86	1.88	3:20/3:26	95.2 94.7	ND		
240277d		0.027	0.000/1.62	1.76		96.0 96.0	ND		
240278d		0.147	0.000/1.82	1.83		96.0 ch 95.7	8.0		
[illegible]279d		0.035	0.000/1.97	1.86		95.4 95.4	ND		
240280d		0.041	0.000/1.95	1.88	3:24/3:29	95.4 95.4	2.2		
240281d		0.061	0.000/1.92	1.95	3:46/3:52	94.4 94.1	3.3		
240282d		0.080	0.000/1.99	1.93		92.9 92.9	4.4		
240283d	25/50	0.497		1.86		90.4 91	58.2 ch 58.3		
CCS		0.408		1.74		ch 0.0	0.54	0.50	108%
CCB		0.000		1.66	3:51/3:56		ND		

100 ppm Cr+6 (1) 5485 DR 2nd: 5225

100 ppm Cr+6 (2) 5054 10% H2SO4: 5418

Continued on Page

Read and Understood By

Amanda Harford 11/9/00

BATCH: 2229 Matrix Solid JOB: F490

SAMPLE	DIL	ABS	BG/BG	Final pH	TPH/Read	% Solids	Results	spk %
0.00		0.000		1.95	10:59/11:05			
0.05		0.036		1.84				
0.10		0.070		1.66				
0.50		0.391		1.73				
0.75		0.572		1.99				
1.00		0.746		1.87	11:04/11:09			
CCS		0.399		1.84	12:11/12:16		0.53	0.50 106%
CCB		0.000		1.81			ND	
PB		0.000		1.72			ND	
LCS(621)		0.186		1.83	12:14/12:19		0.246	0.242 102%
240285dup		0.025	.004/1.95	1.69	12:35/12:40	95.0	ND	
240285MSL		0.380	.005/1.99	1.88		95.0	20.8	21.1 98%
240285MSH		0.745	.004/2.02	1.89	12:37/12:42	95.0	41.3	41.3 99%
240285PS		0.112	.004/2.00	1.74	12:52/12:57	95.0	6.0	6.3 0.50%
240285d		0.024	.004/1.84	1.9	12:38/12:44	95.0	ND	
240284d		0.280	.009/1.76	1.80		95.0	15.3	
240286d		0.124	.000/2.00	1.82	12:40/12:46	94.0	6.9	
240287d		0.136	.009/1.95	1.90	1:16/1:22	93.0	7.5	
CCS		0.393		1.93			0.52	0.50 104%
CCB		0.000		1.63			ND	
240288d		0.596	.000/1.96	1.96		93.0	33.8	
240289d		0.366	.000/1.98	1.87		96.6	20.0	
240290d		0.471	.003/1.88	1.63		94.0	26.3	
240291d		0.521	.004/2.04	1.82	1:21/1:27	95.0	28.1	
240292d		0.572	.002/2.09	1.86	1:43/1:49	87.0	34.6	
240293d		0.630	.002/2.11	1.84		97.0	34.5	
240294d		0.589	.000/1.66	1.86		87.0	35.7	
240295d		0.103	.000/1.90	1.85		97.0	5.6	
240296d		0.370	.000/1.94	1.93		95.0	20.4	
240297d		0.016	.003/1.99	1.99	1:48/1:53	95.0	ND	
CCS		0.394		1.94	2:17/2:22		0.52	0.50 104%
CCB		0.000		1.74	2:18/2:23		ND	

Continued on Page 28

Read and Understood By

Amanda Hufford 11/13/00

28 PROJECT Cr+6 Run log

Notebook No. 01764

Continued From Page 27

PR

SAMPLE	DIL	ABS	BG/BG2	Final pH	TPH/Read	% Solids	Results	spk	% REC
02980d		0.044	.000/1.89	1.65	2:19/2:25	93.1 93.1	3.6		
02990d	25/50	0.607		1.66		91.4 91.4	~~70.0~~ 70.0		
24300d		0.022	.001/1.93	1.89		~~92.7~~ 92.7	ND		
CCS		0.399		1.73			0.53	0.50	106%
CCB		0.000		1.64	2:21/2:27		ND		

100ppm Cr+6 (1°) 5485 DPC Ind: 5225

100ppm Cr+6 (2°) 5054 10% H_2SO_4: 5418

Continued on Page

Read and Understood By

Amanda Harkrd 11/13/00

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: SOIL **QA Sample: 239987**
QA Batch No.: 2228 **QA Sample from Lab Job No.: F445**

Laboratory Blank	
Blank Conc Units: mg/kg	Quant Limit Units: mg/kg
0	2

Duplicate Sample			
Sample Conc Units: mg/kg	Duplicate Conc Units: mg/kg	RPD	RPD** Limit
32.2	31.2	3.2	20

Matrix Spike-Low				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSL Conc Units: mg/kg	% Rec	% Rec Limit
21.0	32.2	58.7	126	75-125

Matrix Spike-High				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSH Conc Units: mg/kg	% Rec	% Rec Limit
42.0	32.2	73.2	97.6	75-125

Post Spike					
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	Spike/ Sample	PS Conc Units: mg/kg	% Rec	% Rec Limit
64.4	32.2	2.0	105	113	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: mg/kg	Acceptable Range: mg/kg	Measured Value: mg/kg
ERA	621	0.242	0.201-0.283	0.245

** If sample/dup conc is less than 8.0ppm a control limit of +/- 2.0 ppm applies.

2/21/01
7:10 PM
001109SA.XLS

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: SOIL
QA Batch No.: 2229

QA Sample: 240285
QA Sample from Lab Job No.: F490

Laboratory Blank	
Blank Conc Units: mg/kg	Quant Limit Units: mg/kg
0	2

Duplicate Sample			
Sample Conc Units: mg/kg	Duplicate Conc Units: mg/kg	RPD	RPD** Limit
ND	ND	0.0	20

Matrix Spike-Low				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSL Conc Units: mg/kg	% Rec	% Rec Limit
21.1	ND	20.8	98.8	75-125

Matrix Spike-High				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSH Conc Units: mg/kg	% Rec	% Rec Limit
42.2	ND	41.3	97.9	75-125

Post Spike					
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	Spike/ Sample	PS Conc Units: mg/kg	% Rec	% Rec Limit
6.3	ND	NA	6.0	95.0	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: mg/kg	Acceptable Range: mg/kg	Measured Value: mg/kg
ERA	621	0.242	0.201-0.283	0.246

** If sample/dup conc is less than 8.0ppm a control limit of +/- 2.0 ppm applies.

2/22/01
8:51 AM
001113S.XLS

Percent Solids Log

Job Number	Sample Number	Bottle ID	Tare Weight (g)	Wet Weight (g)	Dry Weight (g)	Percent Solids (%)	Percent Moisture (%)
F490	240290	186	29.16	9.9	9.31	94	6
F490	240291	878	29	9.74	9.52	97.7	2.3
F490	240292	342	30.86	9.81	8.54	87.1	12.9
F490	240293	644	28.83	10.61	10.26	96.7	3.3
F490	240294	24	29.23	10.27	8.93	87	13
F490	240295	44	29.44	10.67	10.38	97.3	2.7
F490	240296	721	29.4	10.5	10.04	95.6	4.4
F490	240297	294	29.19	10.39	9.61	92.5	7.5
F490	240298	146	28.93	10.37	9.65	93.1	6.9
F490	240299	289	30.03	9.84	8.99	91.4	8.6
F490	240300	897	29.07	9.58	8.88	92.7	7.3
							100
F496	240334	340	29.23	9.64	9.29	96.4	3.6
F496	240335	64	31.08	9.88	9.6	97.2	2.8
F496	240336	81	30.15	10.65	10.36	97.3	2.7
F496	240337	8	29.44	10.52	9.86	93.7	6.3
F496	240338	516	29.56	10.12	9.54	94.3	5.7
F496	240339	196	29.12	9.85	8.97	91.1	8.9
F496	240340	274	29.39	10.72	10	93.3	6.7
F496	240341	532	29.6	9.75	8.75	89.7	10.3
F496	240342	652	29.13	9.34	8.35	89.4	10.6
F496	240343	54	29.22	9.65	8.64	89.5	10.5
F496	240344	151	29.88	10.24	9.24	90.2	9.8
F496	240345	674	30.26	10.81	9.36	86.6	13.4
F496	240346	27	29.11	10.57	7.66	72.5	27.5
F496	240347	14	29.44	9.73	8.81	90.5	9.5
F496	240348	849	29.33	9.41	8.57	91.1	8.9
F496	240349	287	29.82	10.23	9.51	93	7
F496	240350	46	30.42	9.97	8.9	89.3	10.7
F496	240351	635	30.22	10.11	8.1	80.1	19.9
F496	240352	25	29.55	9.23	7.73	83.7	16.3
F496	240353	308	30.08	9.85	7.77	78.9	21.1
F496	240354	131	29.56	9.67	7.7	79.6	20.4
F496	240355	161	29.76	9.68	8.07	83.4	16.6
	240355 dup	94	29.32	10.39	8.65	83.3	16.7
F526	240599	380	29.34	10.55	9.85	93.4	6.6
F526	240600	260	29.11	10.45	9.08	86.9	13.1
F526	240601	631	29.1	9.44	8.56	90.7	9.3
F526	240602	59	31.65	10.02	8.97	89.5	10.5
F526	240603	162	29.1	9.8	9.1	92.9	7.1
							100
F546	240769	710	29.33	9.3	8.55	91.9	8.1
F546	240770	121	29	10.78	9.81	91	9

Printed: 11/14/00

PS1113.XLS

Signed: Marke Ellis Date: 11.14.00 Signed: _____ Date: _____

25 JO

HEARTLAND
ENVIRONMENTAL SERVICES, INC.

Data Validation Report

SDG#:	F490
Date:	December 21, 2000
Client Name:	TRC Environmental Corporation
Project/Site Name:	SMC Facility
Date Sampled:	November 7 - 8, 2000
Number of Samples:	26 Non-Aqueous Sample(s) with 1 MS/MSD(s) 1 Aqueous Sample(s) with 1 MS/MSD(s)
Laboratory:	STL Edison
Validation Guidance:	NJDEPE SOP No. 5.A.10
QA/QC Level:	NJDEPE Modified Methods
Method(s) Utilized:	SW846 Methods 3060/7196A, July 1992
Analytical Fractions:	Hexavalent Chromium

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. Scorfon
for Paul B. Humburg, President

12-22-00.
Date

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

SDG# F490

Samples and Fractions Reviewed

Sample Identifications Analytical Fraction

TRC ID	MATRIX	CR+6	
FB110800	WATER	X	
FB110800 MS	WATER	X	
FB110800 MSD	WATER	X	
SB7-17R	SOIL		X
SB7-18R	SOIL		X
SB7-19R	SOIL		X
SB7-11R	SOIL		X
SB7-12R	SOIL		X
SB7-25R	SOIL		X
SB7-24R	SOIL		X
SB7-14R	SOIL		X
B1-S1R	SOIL		X
B1-S2R	SOIL		X
B1-S3R	SOIL		X
B1-S3R MS	SOIL		X
B1-S3R MSD	SOIL		X
B1-S4R	SOIL		X
B2-S1R	SOIL		X
B2-S2R	SOIL		X
B2-S3R	SOIL		X
B2-S4R	SOIL		X
B3-S1R	SOIL		X
B3-S1RCF	SOIL		X
B3-S2R	SOIL		X
B3-S2RCF	SOIL		X
B3-S3R	SOIL		X
B3-S4R	SOIL		X
B5-S1R	SOIL		X
B5-S2R	SOIL		X
B5-S3R	SOIL		X
B5-S4R	SOIL		X
Total Billable Samples (Water/Soil)		3	28

CR+6= Hexavalent Chromium

DATA ASSESSMENT NARRATIVE
HEXAVALENT CHROMIUM

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 3060/7196A: the SOP No. 5.A.10 Standard Operating Procedure for Analytical Data Validation of Hexavalent Chromium in accordance with NJDEPE Modified Methods requirements, July 1992. 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 # F490

A validation was performed on the hexavalent chromium data from SDG F490. The data was evaluated based on the following parameters.

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

* - All criteria were met for this parameter.

Matrix Spike Recovery results

1. The high matrix spike recovery results for soil samples for Hexavalent Chromium (49%) for batches 2228 and 2229 were below the lower control limits (<75%). All positive and non-detect results are qualified as estimated, "J" or "UJ" with low bias.

* See attached sheets for individual qualifications of data.

Site: SMC SITE

Date Sampled: 11/8/00
Date Received: 11/8/00
Matrix: WATER

Lab Job No: F490

Date Extracted: 11/9/00
Date Analyzed: 11/9/00
QA Batch: 2226

CHROMIUM VI

STL Edison Sample #	Client ID	Dilution Factor	Analytical Result Units: ug/l
240274	FB110800	1.0	ND

Quantitation Limit for Chromium VI is 10.0 ug/l for an undiluted sample

12/22/00

SEVERN TRENT SERVICES

Site: SMC SITE

Lab Job No: F490

Date Sampled: 11/7/00-11/8/00
Date Received: 11/8/00
Matrix: SOIL

Date Extracted: 11/9/00
Date Analyzed: 11/9/00
QA Batch: 2228

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240275	SB7-17R	8.7	1.0	ND UJ1
240276	SB7-18R	5.3	1.0	ND UJ1
240277	SB7-19R	4.0	1.0	ND UJ1
240278	SB7-11R	4.3	1.0	8.0 J1
240279	SB7-12R	4.6	1.0	ND UJ1
240280	SB7-25R	4.9	1.0	2.2 J1
240281	SB7-24R	5.9	1.0	3.3 J1
240282	SB7-14R	7.1	1.0	4.4 J
240283	B1-S1R	9.9	2.0	58.6 J1

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sampl

12/22/00

STL Edison is a part of Severn Trent Laboratories, Inc.

SEVERN TRENT SERVICES

Site: SMC SITE

Lab Job No: F490

Date Sampled: 11/7/00-11/8/00
Date Received: 11/8/00
Matrix: SOIL

Date Extracted: 11/13/00
Date Analyzed: 11/13/00
QA Batch: 2229

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240284	B1-S2R	6.5	1.0	15.2 J1
240285	B1-S3R	5.0	1.0	ND UJ1
240286	B1-S4R	5.8	1.0	7.0 J1
240287	B2-S1R	6.7	1.0	7.5 J1
240288	B2-S2R	6.8	1.0	33.9 J1
240289	B2-S3R	3.4	1.0	20.0 J1
240290	B2-S4R	6.0	1.0	26.3 J1
240291	B3-S1R	2.3	1.0	28.1 J1
240292	B3-S1RCF	12.9	1.0	34.8 J1
240293	B3-S2R	3.3	1.0	34.4 J1
240294	B3-S2RCF	13.0	1.0	35.8 J1
240295	B3-S3R	2.7	1.0	5.6 J1
240296	B3-S4R	4.4	1.0	20.4 J1

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sampl

PBH
12/22/00

STL Edison is a part of Severn Trent Laboratories, Inc.

SEVERN TRENT SERVICES

Site: SMC SITE

Lab Job No: F490

Date Sampled: 11/7/00-11/8/00
Date Received: 11/8/00
Matrix: SOIL

Date Extracted: 11/13/00
Date Analyzed: 11/13/00
QA Batch: 2229

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240297	B5-S1R	7.5	1.0	ND UJ1
240298	B5-S2R	6.9	1.0	3.6 J1
240299	B5-S3R	8.6	2.0	70.6 J1
240300	B5-S4R	7.3	1.0	ND UJ1

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample

12/22/00

HEXAVALENT CHROMIUM WATER CALCULATIONS (7196A)

Date Extracted: 11/9/00
Analyst: Harford, Amanda

Date Analyzed: 11/9/00
Analyst: arford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.9996328
R Square	0.9992657
Adjusted R Sq	0.9990821
Standard Error	0.0019908
Observations	6

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.021574146	0.021574146	5443.252423	2.02257E-07
Residual	4	1.58539E-05	3.96347E-06		
Total	5	0.02159			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.000%*	*Upper 95.000%*
Intercept	0.0008145	0.001200502	0.678482975	0.534689932	-0.00251861	0.004147654	-0.002518614	0.004147654
X Variable 1	0.0008991	1.21866E-05	73.77840079	2.02257E-07	0.000865274	0.000932946	0.000865274	0.000932946

Sample ID	QA Batch	Initial Absorbance	BG Absorbance	Dilution Factor	Conc. *ug/l*	MDL *ug/l*	SampleVol *ml*	
0.0		0.000	0.000		-0.91			
10.0		0.008	0.000		8.0			
50.0		0.046	0.000		50.3			
75.0		0.071	0.000		78.1			
100.0		0.092	0.000		101			
200.0		0.179	0.000		198			
CCS1		0.068	0.000	1.0	74.7	10.00	50	
CCB1		-0.001	0.000	1.0	-2.0	10.00	50	
PBW		0.000	0.000	1.0	-0.91	10.00	50	
LCS		0.039	0.000	1.0	42.5	10.00	50	
240274DUP	2226	-0.001	0.000	1.0	0.00	10.00	50	
240274MSL	2226	0.048	0.000	1.0	52.5	10.00	50	
240274MSH	2226	0.186	0.000	1.0	206	10.00	50	
240274PS	2226	0.013	0.000	1.0	13.6	10.00	50	
240274	2226	0.000	0.000	1.0	0.00	10.00	50	E01
240460	2226	0.000	0.000	1.0	0.00	10.00	50	E01
CCSF		0.069	0.000	1.0	75.8	10.00	50	
CCBF		0.000	0.000	1.0	0.00	10.00	50	

HEXAVALENT CHROMIUM SOIL CALCULATION (3060/7196A)

Date Extracted: 11/9/00
Analyst: Amanda

Date Analyzed: 11/09/00
Analyst: Harford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.99967
R Square	0.99933
Adjusted R S	0.99917
Standard Err	0.00901
Observations	6

ANOVA

	df	SS	MS	F	gnificance F
Regression	1	0.48641	0.48641	5986.828	1.7E-07
Residual	4	0.00032	8.1E-05		
Total	5	0.48674			

	Coefficient	andard Err	t Stat	P-value	ower 95	pper 95	wer 95.000	er 95.00
Intercept	0.00255	0.00535	0.47637	0.658662	-0.0123	0.01739	-0.01229	0.017
X Variable 1	0.74988	0.00969	77.3746	1.67E-07	0.72298	0.77679	0.722976	0.777

Sample ID	QA Batch	Initial Absorbance	BG Absorbance	Dilution Factor	% Solids	Soil Conc, mg/kg	MDL mg/kg	Sample Wt (g)
0.00		0.000	0.000			0.00		
0.05		0.040	0.000			0.05		
0.10		0.074	0.000			0.10		
0.50		0.3831	0.000			0.51		
0.75		0.577	0.000			0.77		
1.00		0.741	0.000			0.98		
CCV1		0.385	0.000	1.0	100	0.51	2.00	2.5
CCB1		0.000	0.000	1.0	100	0.00	2.00	2.5
PBS		0.000	0.000	1.0	100	0.00	2.00	2.5
LCS		0.186	0.000	1.0	100	0.245	2.00	2.5
239976DUP	2227	0.010	0.000	1.0	92.0	0.00	2.17	2.5
239976MSL	2227	0.421	0.000	1.0	92.0	24.3	2.17	2.5
239976MSH	2227	0.824	0.000	1.0	92.0	47.6	2.17	2.5
239976PS	2227	0.132	0.000	1.0	92.0	7.5	2.17	2.5
239976	2227	0.008	0.000	1.0	92.0	0.00	2.17	2.5
239972	2227	0.028	0.011	1.0	93.0	0.00	2.15	2.5
239973	2227	0.029	0.011	1.0	92.0	0.00	2.17	2.5
239974	2227	0.012	0.000	1.0	94.0	0.00	2.13	2.5
CCS2		0.402	0.000	1.0	100	0.53	2.00	2.5
CCB2		0.000	0.000	1.0	100	0.00	2.00	2.5
239975	2227	0.048	0.015	1.0	95.0	0.00	2.11	2.5
239977	2227	0.055	0.006	1.0	95.0	2.6	2.11	2.5
239978	2227	0.017	0.000	1.0	92.0	0.00	2.17	2.5
239979	2227	0.018	0.005	1.0	96.0	0.00	2.08	2.5
239980	2227	0.211	0.000	1.0	94.0	11.8	2.13	2.5
239981	2227	0.019	0.000	1.0	92.0	0.00	2.17	2.5
239982	2227	0.019	0.000	1.0	87.0	0.00	2.30	2.5
239983	2227	0.000	0.000	1.0	95.0	0.00	2.11	2.5
239984	2227	0.055	0.002	1.0	95.0	2.8	2.11	2.5
239985	2227	0.256	0.013	1.0	91.0	14.1	2.20	2.5
CCS3		0.408	0.000	1.0	100	0.54	2.00	2.5
CCB3		0.000	0.000	1.0	100	0.00	2.00	2.5
239986	2227	0.271	0.005	1.0	94.0	15.0	2.13	2.5
CCSF		0.395	0.000	1.0	100	0.52	2.00	2.5
CCBF		0.000	0.000	1.0	100	0.00	2.00	2.5

HEXAVALENT CHROMIUM SOIL CALCULATION (3060/7196A)

Date Extracted: 11/9/00
Analyst: , Amanda

Date Analyzed: 11/09/00
Analyst: Harford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.99967
R Square	0.99933
Adjusted R S	0.99917
Standard Err	0.00901
Observations	6

ANOVA

	df	*SS*	*MS*	*F*	*gnificance F*
Regression	1	0.48641	0.48641	5986.828	1.7E-07
Residual	4	0.00032	8.1E-05		
Total	5	0.48674			

	Coefficient	*andard Err*	*t Stat*	*P-value*	*ower 95*	*pper 95*	*wer 95.000*	*er 95.00*
Intercept	0.00255	0.00535	0.47637	0.658662	-0.0123	0.01739	-0.01229	0.017
X Variable 1	0.74988	0.00969	77.3746	1.67E-07	0.72298	0.77679	0.722976	0.777

Sample ID	QA Batch	Initial bsorbanc	BG Absorban	Dilution Factor	% Solids	Soil Conc, mg/kg	MDL mg/kg	Sample Wt (g)
0.00		0.000	0.000			0.00		
0.05		0.030	0.000			0.05		
0.10		0.074	0.000			0.10		
0.50		0.383	0.000			0.51		
0.75		0.577	0.000			0.77		
1.00		0.741	0.000			0.98		
CCV1		0.385	0.000	1.0	100	0.51	2.00	2.5
CCB1		0.000	0.000	1.0	100	0.00	2.00	2.5
PBS		0.000	0.000	1.0	100	0.00	2.00	2.5
LCS		0.186	0.000	1.0	100	0.245	2.00	2.5
239987DUP	2228	0.583	0.000	1.0	95.0	32.6	2.11	2.5
239987MSL	2228	0.530	0.000	2.0	95.0	59.2	4.21	2.5
239987MSH	2228	0.662	0.000	2.0	95.0	74.1	4.21	2.5
239987PS	2228	0.485	0.000	4.0	95.0	108	8.42	2.5
239987	2228	0.592	0.000	1.0	95.0	33.1	2.11	2.5
239988	2228	0.018	0.000	1.0	96.0	0.00	2.08	2.5
239989	2228	0.019	0.000	1.0	93.0	0.00	2.15	2.5
239990	2228	0.011	0.000	1.0	96.0	0.00	2.08	2.5
CCS2		0.395	0.000	1.0	100	0.52	2.00	2.5
CCB2		0.000	0.000	1.0	100	0.00	2.00	2.5
239991	2228	0.053	0.000	1.0	91.0	3.0	2.20	2.5
239992	2228	0.089	0.000	1.0	92.0	5.0	2.17	2.5
240275	2228	0.019	0.000	1.0	91.0	0.00	2.20	2.5
240276	2228	0.021	0.000	1.0	95.0	0.00	2.11	2.5
240277	2228	0.027	0.000	1.0	96.0	0.00	2.08	2.5
240278	2228	0.147	0.000	1.0	96.0	8.0	2.08	2.5
240279	2228	0.035	0.000	1.0	95.0	0.00	2.11	2.5
240280	2228	0.041	0.000	1.0	95.0	2.2	2.11	2.5
240281	2228	0.061	0.000	1.0	94.0	3.3	2.13	2.5
240282	2228	0.080	0.000	1.0	93.0	4.4	2.15	2.5
CCS3		0.408	0.000	1.0	100	0.54	2.00	2.5
CCB3		0.000	0.000	1.0	100	0.00	2.00	2.5
240283	2228	0.497	0.000	2.0	90.0	58.6	4.44	2.5
CCSF		0.408	0.000	1.0	100	0.54	2.00	2.5
CCBF		0.000	0.000	1.0	100	0.00	2.00	2.5

HEXAVALENT CHROMIUM SOIL CALCULATION (3060/7196A)

Date Extracted: 11/13/00 — Analyst: Amanda

Date Analyzed: 11/13/00 — Analyst: Harford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R:	0.99967
R Square	0.99934
Adjusted R S	0.99917
Standard Err	0.00906
Observations	6

ANOVA

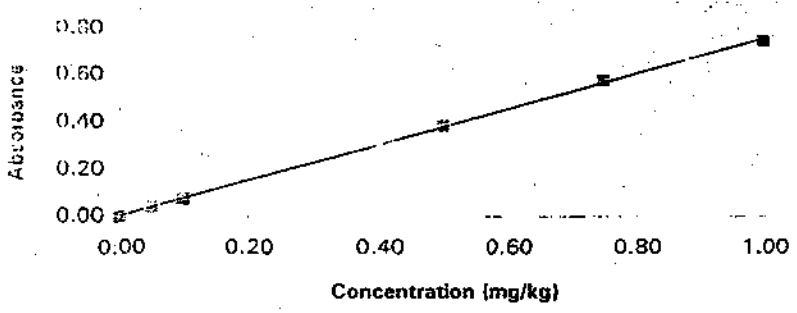
	df	*SS*	*MS*	*F*	*gnificance F*
Regression	1	0.49341	0.49341	6015.993	1.7E-07
Residual	4	0.00033	8.2E-05		
Total	5	0.49374			

	Coefficient	*andard Err*	*t Stat*	*P-value*	*ower 95*	*pper 95*	*wer 95.000*	*er 95.00*
Intercept	0.0004	0.00537	0.07373	0.944765	-0.0145	0.01531	-0.01451	0.015
X Variable 1	0.75526	0.00974	77.5628	1.66E-07	0.72822	0.7823	0.728225	0.782

Sample ID	QA Batch	Initial bsorbanc	BG Absorban	Dilution Factor	% Solids	Soil Conc, mg/kg	MDL mg/kg	Sample Wt (g)
0.00		0.000	0.000			0.00		
0.05		0.036	0.000			0.05		
0.10		0.070	0.000			0.09		
0.50		0.391	0.000			0.52		
0.75		0.572	0.000			0.76		
1.00		0.746	0.000			0.99		
CCV1		0.399	0.000	1.0	100	0.53	2.00	2.5
CCB1		0.000	0.000	1.0	100	0.00	2.00	2.5
PBS		0.000	0.000	1.0	100	0.00	2.00	2.5
LCS		0.186	0.000	1.0	100	0.246	2.00	2.5
240285DUP	2229	0.025	0.004	1.0	95.0	0.00	2.11	2.5
240285MSL	2229	0.380	0.005	1.0	95.0	20.9	2.11	2.5
240285MSH	2229	0.745	0.004	1.0	95.0	41.3	2.11	2.5
240285PS	2229	0.112	0.004	1.0	95.0	6.0	2.11	2.5
240285	2229	0.024	0.004	1.0	95.0	0.00	2.11	2.5
240284	2229	0.280	0.009	1.0	94.0	15.2	2.13	2.5
240286	2229	0.124	0.000	1.0	94.0	7.0	2.13	2.5
240287	2229	0.136	0.004	1.0	93.0	7.5	2.15	2.5
CCS2		0.393	0.000	1.0	100	0.52	2.00	2.5
CCB2		0.000	0.000	1.0	100	0.00	2.00	2.5
240288	2229	0.596	0.000	1.0	93.0	33.9	2.15	2.5
240289	2229	0.366	0.000	1.0	97.0	20.0	2.06	2.5
240290	2229	0.471	0.003	1.0	94.0	26.3	2.13	2.5
240291	2229	0.521	0.000	1.0	98.0	28.1	2.04	2.5
240292	2229	0.572	0.000	1.0	87.0	34.8	2.30	2.5
240293	2229	0.630	0.000	1.0	97.0	34.4	2.06	2.5
240294	2229	0.589	0.000	1.0	87.0	35.8	2.30	2.5
240295	2229	0.103	0.000	1.0	97.0	5.6	2.06	2.5
240296	2229	0.370	0.000	1.0	96.0	20.4	2.08	2.5
240297	2229	0.016	0.003	1.0	93.0	0.00	2.15	2.5
CCS3		0.394	0.000	1.0	100	0.52	2.00	2.5
CCB3		0.000	0.000	1.0	100	0.00	2.00	2.5
240298	2229	0.064	0.000	1.0	93.0	3.6	2.15	2.5
240299	2229	0.607	0.000	2.0	91.0	70.6	4.40	2.5
240300	2229	0.022	0.001	1.0	93.0	0.00	2.15	2.5
CCSF		0.399	0.000	1.0	100	0.53	2.00	2.5
CCBF		0.000	0.000	1.0	100	0.00	2.00	2.5

Hexavalent Chromium Calibration Curve

Date Run: 11/09/00 Saved as:



Correlation Coefficient: 0.999666

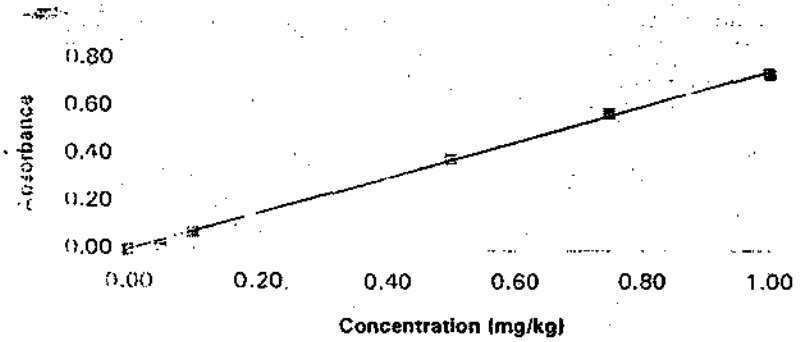
Calibration Slope: 0.749884

y-intercept: 0.002546

Calibration Check Standard Recovery Summary				
	True Value ppm	Value Obtained ppm	% Recovery	% Rec Limit
CCS1	0.50	0.51	102	90-110
CCS2	0.50	0.53	107	90-110
CCS3	0.50	0.54	108	90-110
CCSF	0.50	0.52	104	90-110

Hexavalent Chromium Calibration Curve

Date Run: 11/09/00 Saved as:



Correlation Coefficient: 0.999666

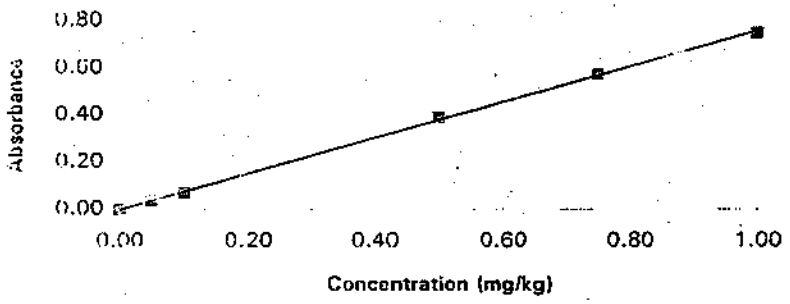
Calibration Slope: 0.749884

y-intercept: 0.002546

Calibration Check Standard Recovery Summary				
	True Value ppm	Value Obtained ppm	% Recovery	% Rec Limit
CCS1	0.50	0.51	102	90-110
CCS2	0.50	0.52	104	90-110
CCS3	0.50	0.54	108	90-110
CCSF	0.50	0.54	108	90-110

Hexavalent Chromium Calibration Curve

Date Run: 11/13/00 Saved as:



Correlation Coefficient: 0.999668

Calibration Slope: 0.75526

y-intercept: 0.000396

Calibration Check Standard Recovery Summary				
	True Value ppm	Value Obtained ppm	% Recovery	% Rec Limit
CCS1	0.50	0.53	106	90-110
CCS2	0.50	0.52	104	90-110
CCS3	0.50	0.52	104	90-110
CCSF	0.50	0.53	106	90-110

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: Water
QA Batch No.: 2226

QA Sample: 240274
QA Sample from Lab Job No.: F490

Laboratory Blank	
Blank Conc Units: ug/l	Quant Limit Units: ug/l
ND	10

Duplicate Sample			
Sample Conc Units: ug/l	Duplicate Conc Units: ug/l	RPD	RPD Limit
ND	ND	0.0	20

Matrix Spike - Low				
Spike Conc Units: ug/l	Sample Conc Units: ug/l	MSL Conc Units: ug/l	% Rec	% Rec Limit
50	ND	52.5	105	85-115

Matrix Spike - High				
Spike Conc Units: ug/l	Sample Conc Units: ug/l	MSH Conc Units: ug/l	% Rec	% Rec Limit
200	ND	206	103	85-115

Post Spike					
Spike Conc Units: ug/l	Sample Conc Units: ug/l	Spike/ Sample	PS Conc Units: ug/l	% Rec	% Rec Limit
15	ND	NA	13.6	90.7	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: ug/l	Acceptable Range: ug/l	Measured Value: ug/l
ERA	621	48.4	40.1-56.6	42.5

11/13/00
5:58 PM
001109W.XLS

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: SOIL **QA Sample: 239987**
QA Batch No.: 2228 **QA Sample from Lab Job No.: F445**

Laboratory Blank	
Blank Conc Units: mg/kg	Quant Limit Units: mg/kg
0	2

Duplicate Sample			
Sample Conc Units: mg/kg	Duplicate Conc Units: mg/kg	RPD	RPD** Limit
33.1	32.6	1,5	20

Matrix Spike-Low				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSL Conc Units: mg/kg	% Rec	% Rec Limit
21,1	33.1	59.2	124	75-125

Matrix Spike-High				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSH Conc Units: mg/kg	% Rec	% Rec Limit
84,2	33.1	74.1	48,7	75-125

Post Spike					
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	Spike/ Sample	PS Conc Units: mg/kg	% Rec	% Rec Limit
66,2	33.1	2,0	108	113	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: mg/kg	Acceptable Range: mg/kg	Measured Value: mg/kg
ERA	621	0,242	0.201-0.283	0,245

** If sample/dup conc is less than 8.0ppm a control limit of +/- 2.0 ppm applies.

30.11.00
9:23
001109sa

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: SOIL
QA Batch No.: 2229

QA Sample: 240285
QA Sample from Lab Job No.: F490

Laboratory Blank	
Blank Conc Units: mg/kg	Quant Limit Units: mg/kg
0	2

Duplicate Sample			
Sample Conc Units: mg/kg	Duplicate Conc Units: mg/kg	RPD	RPD** Limit
ND	ND	0.0	20

Matrix Spike-Low				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSL Conc Units: mg/kg	% Rec	% Rec Limit
21.1	ND	20.9	99.3	75-125

Matrix Spike-High				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSH Conc Units: mg/kg	% Rec	% Rec Limit
84.2	ND	41.3	49.0	75-125

Post Spike					
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	Spike/ Sample	PS Conc Units: mg/kg	% Rec	% Rec Limit
6.3	ND	NA	6.0	95.0	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: mg/kg	Acceptable Range: mg/kg	Measured Value: mg/kg
ERA	621	0.242	0.201-0.283	0.246

** If sample/dup conc is less than 8.0ppm a control limit of +/- 2.0 ppm applies.

11/15/00
1:09 PM
001113S.XLS

SEVERN
TRENT
SERVICES

STL Edison
777 New Durham Road
Edison, NJ 08817

Tel: 732-549-3900
Fax: 732-549-3679
www.stl-inc.com

December 6, 2000

TRC Environmental Corporation
5 Waterside Crossing
Windsor, CT 06095

Attention: Mr. Larry Butlien

Re: F514 - SMC Site

Dear Mr. Butlien:

Enclosed are the results you requested for the following sample(s) received at our laboratory on November 09, 2000:

Lab No.	Client ID	Analysis Required
240471	B12-S1R	Chrome VI
240472	B12-SR2	Chrome VI
240473	B12-S6R	Chrome VI
240474	B12-S3R	Chrome VI
240475	B12-S4R	Chrome VI
240476	B12-S5R	Chrome VI
240477	SB8-12R	Chrome VI

SEVERN TRENT SERVICES

Lab No.	Client ID	Analysis Required
240478	SB8-21R	Chrome VI
240479	SB8-11R	Chrome VI
240480	FB110900	Chrome VI
240481	SB8-18R	Chrome VI
240482	SB8-17R	Chrome VI
240483	SB8-16R	Chrome VI
240484	SB8-22R	Chrome VI
240485	SB8-13R	Chrome VI
240486	SB8-14R	Chrome VI
240487	SB8-15R	Chrome VI
240488	SB8-10R	Chrome VI
240489	SB8-20R	Chrome VI

An invoice for our services is also enclosed. If you have any questions please contact your Project Manager, Dan Glenn, at (732) 549-3900.

Very truly yours,

Michael J. Urban
Laboratory Manager

SEVERN TRENT SERVICES

Site: SMC Site

Lab Job No: F514

Date Sampled: 11/8/00-11/9/00
Date Received: 11/9/00
Matrix: SOIL

Date Extracted: 11/14/00
Date Analyzed: 11/14/00
QA Batch: 2230

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240471	B12-S1R	3.2	1.0	5.3
240472	B12-SR2	9.2	1.0	13.3
240473	B12-S6R	8.6	1.0	12.4
240474	B12-S3R	2.7	1.0	ND
240475	B12-S4R	4.3	1.0	ND
240476	B12-S5R	4.5	1.0	ND
240477	SB8-12R	7.2	1.0	4.4
240478	SB8-21R	5.6	1.0	2.3
240479	SB8-11R	9.0	1.0	3.6
240481	SB8-18R	11.3	1.0	ND
240482	SB8-17R	11.3	1.0	4.6
240483	SB8-16R	8.2	1.0	ND
240484	SB8-22R	9.2	1.0	ND

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

SEVERN TRENT SERVICES

Site: SMC Site

Lab Job No: F514

Date Sampled: 11/8/00-11/9/00
Date Received: 11/9/00
Matrix: SOIL

Date Extracted: 11/14/00
Date Analyzed: 11/14/00
QA Batch: 2230

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240485	SB8-13R	7.8	1.0	ND
240486	SB8-14R	8.4	1.0	ND
240487	SB8-15R	6.6	1.0	5.6
240488	SB8-10R	8.0	1.0	3.7
240489	SB8-20R	9.6	1.0	4.2

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

S[illegible]- Envirotech
777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

Name (for report and invoice): Larry Butlien	Samplers Name (Printed): Rukakoski, Bane	Site/Project Identification: Shieldalloy Metallurgical
Company: TRC Environmental	P.O. #: 26770	State (Location of site): NJ: ☑ NY: ☐ Other:
Address: 5 Waterside Crossing	Analysis Turnaround Time: Standard ☒	Regulatory Program: Brownfield Program
City: Windsor State: CT	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	
Phone: 860-298-6225 Fax: 860-298-6399		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No:
Job No: F514

Sample Identification	Date	Time	Matrix	No. of. Cont.	Hex Chromium 7196/8 USEPA SW846	Hex Chromium 7196 USEPA SW846	Sample Numbers
FB110900	11-9-00	0740	W	1		X	240480
SB8-18R		0750	S	1	X		240481
SB8-17R		0800		1	X		240482
SB8-16R		0807		1	X		240483
SB8-22R *		0817		3	X		240484
SB8-13R		0830		1	X		240485
SB8-14R		0840		1	X		240486
SB8-15R		0855		1	X		240487
SB8-10R		0935		1	X		240488
SB8-20R		0950		1	X		240489

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH, 6 = Other _____, 7 = Other _____ Soil: Water:

Special Instructions * Complete MS + MSD on this sample.

Water Metals Filtered (Yes/No)? _____

Relinquished by	Company	Date / Time	Received by	Company
1) [signature]	TRC	11-9-00 1:10	1) [signature]	STL
2)			2)	
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

STL - Envirotech
777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

Name (for report and invoice): Larry Butlien	Samplers Name (Printed): Rukakoski, Rame	Site/Project Identification: Shieldalloy Metallurgical
Company: TRC Environmental	P.O. #: 26770	State (Location of site): NJ: ☒ NY: ☐ Other:
Address: 5 Waterside Crossing	Analysis Turnaround Time: Standard ☒	Regulatory Program: Hazsite Program
City: Windsor State: CT	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	
Phone: 860-298-6225 Fax: 860-298-6399		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)

LAB USE ONLY
Project No:
Job No: F574

Sample Identification	Date	Time	Matrix	No. of Cont.	Hex. Chromium 3060A USEPA SW846	Sample Numbers
B12 - S1R	11-8-00	1535	S	1	X	240471
B12 - S2R	↓	1545	↓	1	X	240472
B12 - S6R	↓	1551	↓	1	X	240473
B12 - S3R	↓	1558	↓	1	X	240474
B12 - S4R	↓	1610	↓	1	X	240475
B12 - S5R	↓	1620	↓	1	X	240476
SB8 - 12R	11-9-00	1000	↓	1	X	240477
SB8 - 21R	↓	1012	↓	1	X	240478
SB8 - 11R	↓	1030	↓	1	X	240479

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH
6 = Other _____, 7 = Other _____
Soil:
Water:

Special Instructions

Water Metals Filtered (Yes/No)? _____

Relinquished by	Company	Date / Time	Received by	Company
1) [signature]	TRC	11-9-00 1:10	1) [signature]	STL
2)			2)	
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

INTERNAL CUSTODY RECORD
AND
LABORATORY CHRONICLE
STL Edison

777 New Durham Road, Edison, New Jersey
08817

Job No: F514 **Site:** Shieldalloy Metallu

Client: TRC Environmental Corporation

WET CHEM

CHROME VI (3060/7196A)

Lab Sample ID	Date Sampled	Date Received	Preparation Date	Technician's Name	Analysis Date	Analyst's Name	QA Batch
SOLID							
240471	11/8/2000	11/09/2000	11-14.00	AH	11-14.00	AH	2230
240472	11/8/2000	11/09/2000					
240473	11/8/2000	11/09/2000					
240474	11/8/2000	11/09/2000					
240475	11/8/2000	11/09/2000					
240476	11/8/2000	11/09/2000					
240477	11/9/2000	11/09/2000					
240478	11/9/2000	11/09/2000					
240479	11/9/2000	11/09/2000					
240481	11/9/2000	11/09/2000					
240482	11/9/2000	11/09/2000					
240483	11/9/2000	11/09/2000					
240484	11/9/2000	11/09/2000					
240485	11/9/2000	11/09/2000					
240486	11/9/2000	11/09/2000					
240487	11/9/2000	11/09/2000					
240488	11/9/2000	11/09/2000					
240489	11/9/2000	11/09/2000					

INTERNAL CUSTODY RECORD
AND
LABORATORY CHRONICLE
STL Edison

777 New Durham Road, Edison, New Jersey
08817

Job No: F514 **Site:** Shieldalloy Metallu

Client: TRC Environmental Corporation

WET CHEM

CHROME VI (7196A)

Lab Sample ID	Date Sampled	Date Received	Preparation Date	Technician's Name	Analysis Date	Analyst's Name	QA Batch
WATER							
240480	11/9/2000	11/09/2000	11.9.00	AH	11.9.00	AH	2226

Analytical Methodology Summary

Volatile Organics:

Unless otherwise specified, water samples are analyzed for volatile organics by purge and trap GC/MS as specified in EPA Method 624. Drinking water samples are analyzed by EPA Method 524.2. Solid samples are analyzed for volatile organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8260B. Water samples are analyzed for volatile organics by purge and trap GC/PID and GC/ELCD as specified in EPA Methods 601 and 602. Solid samples are analyzed by GC/PID and GC/ELCD in accordance with SW-846, 3rd Edition Method 8021B.

Acid and Base/Neutral Extractable Organics:

Unless otherwise specified, water samples are analyzed for acid and/or base/neutral extractable organics by GC/MS in accordance with EPA Method 625. Solids are analyzed for acid and/or base/neutral extractable organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8270C.

GC/MS Nontarget Compound Analysis:

Analysis for nontarget compounds is conducted, upon request, in conjunction with GC/MS analyses by EPA Methods 624, 625, 8260B and 8270C. Nontarget compound analysis is conducted using a forward library search of the EPA/NIH/NBS mass spectral library of compounds at the greatest apparent concentration (10% or greater of the nearest internal standard) in each organic fraction (15 for volatile, 15 for base/neutrals and 10 for acid extractables).

Organochlorine Pesticides and PCBs:

Unless otherwise specified, water samples are analyzed for organochlorine pesticides and PCBs by dual column gas chromatography with electron capture detectors as specified in EPA Method 608. Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8081A for organochlorine pesticides and Method 8082 for PCBs.

Total Petroleum Hydrocarbons:

Water samples are analyzed for petroleum hydrocarbons by I.R. using EPA Method 418.1. Solid samples are prepared for analysis by soxhlet extraction consistent with the March 1990 N.J. DEP "Remedial Investigation Guide" Appendix A, page 52, and analyzed by U.S. EPA Method 418.1

Metals Analysis:

Metals analyses are performed by any of four techniques specified by a Method Code provided on each data report page, as follows:

P - Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP)

A - Flame Atomic Absorption

F - Furnace Atomic Absorption

CV - Manual Cold Vapor (Mercury)

Water samples are digested and analyzed using EPA methods provided in "Methods for Chemical Analysis of Water and Wastewater" (EPA 600/4-79-020). Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition); samples are digested according to Method 3050B "Acid Digestion of Soil, Sediments and Sludges."

Specific method references for ICP analyses are water Method 200.7 and solid Method 6010B. Mercury analyses are conducted by the manual cold vapor technique specified by water Method 245.1 and solid Method 7471A. Other specific Atomic Absorption method references are as follows:

Element	Water Test Method		Solid Test Method	
	Flame	Furnace	Flame	Furnace
Aluminum	202.1	202.2	7020	--
Antimony	204.1	204.2	7040	7041
Arsenic	--	206.2	--	7060
Barium	208.1	--	7080	--
Beryllium	210.1	210.2	7090	7091
Cadmium	213.1	213.2	7130	7131
Calcium	215.1	--	7140	--
Chromium, Total	218.1	218.2	7190	7191
Chromium, (+6)	218.4	218.5	7197	7195
Cobalt	219.1	219.2	7200	7201
Copper	220.1	220.2	7210	--
Iron	236.1	236.2	7380	--
Lead	239.1	239.2	7420	7421
Magnesium	242.1	--	7450	--
Manganese	243.1	243.2	7460	--
Nickel	249.1	249.2	7520	--
Potassium	258.1	--	7610	--
Selenium	--	270.2	--	7740
Silver	272.1	272.2	7760	--
Sodium	273.1	--	7770	--
Tin	283.1	283.2	7870	--
Thallium	279.1	279.2	7840	7841
Vanadium	286.1	286.2	7910	7911
Zinc	289.1	289.2	7950	--

Cyanide:

Water samples are analyzed for cyanide using EPA Method 335.3. Cyanide is determined in solid samples as specified in the EPA Contract Laboratory Program IFB dated July 1988, revised February 1989.

Phenols:

Water samples are analyzed for total phenols using EPA Method 420.2. Total phenols are determined in solid samples by preparing the sample as outlined in the EPA Contract Laboratory Program IFB for cyanide, followed by a phenols determination using EPA Method 420.1.

Cleanup of Semivolatile Extracts:

Upon request Method 3611B Alumina Column Cleanup and/or Method 3650B Acid-Base Partition Cleanup are performed to improve detection limits by the removal of saturated hydrocarbon interferences.

Hazardous Waste Characteristics:

Samples for hazardous waste characteristics are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition). Specific method references are as follows:

Ignitability	- Method 1020A
Corrosivity	- Water pH Method 9040B Soil pH Method 9045C
Reactivity	- Chapter 7, Section 7.3.3 and 7.3.4 respectively for hydrogen cyanide and hydrogen sulfide release
Toxicity	- TCLP Method 1311

Miscellaneous Parameters:

Additional analyses performed on both aqueous and solid samples are in accordance with methods published in the following references:

- Test Methods for Evaluating Solid Wastes, SW-846 3rd Edition, November 1986.
- Standard Methods for the Examination of Water and Wastewater, 17th Edition.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, 1979.

ORGANIC DATA REPORTING QUALIFIERS

ND - The compound was not detected at the indicated concentration.

J - Mass spectral data indicates the presence of a compound that meets the identification criteria. The result is less than the specified quantitation limit but greater than zero. The concentration given is an approximate value.

B - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

P - For dual column analysis, the percent difference between the quantitated concentrations on the two columns is greater than 40%.

* - For dual column analysis, the lowest quantitated concentration is being reported due to coeluting interference.

INORGANIC DATA REPORTING QUALIFIERS (SW-846 METHODS ONLY)

ND - The compound was not detected at the indicated concentration.

B - Reported value is less than the Method Detection Limit but greater than or equal to the Instrument Detection Limit.

E - The reported value is estimated because of the presence of interference. See explanatory note in the Nonconformance Summary if the problem applies to all of the samples or on the individual Inorganic Analysis Data Sheet if the problem is isolated.

M - Duplicate injection precision not met on the Furnace Atomic Absorption analysis.

N - The spiked sample recovery is not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

* - Duplicate Analysis is not within control limits.

W - Post digestion spike for Furnace Atomic Absorption analysis is out of control.

+ - Correlation coefficient for MSA is less than 0.995.

M Column - Method Qualifiers

P - Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP).

A - Flame Atomic Absorption Spectroscopy (FAA).

F - Graphite Furnace Atomic Absorption Spectroscopy (GFAA).

CV - Cold Vapor Atomic Absorption Spectroscopy.

NON-CONFORMANCE SUMMARY

STL Edison Job Number: F524

Volatile Organics Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

Base/Neutral and/or Acid Extractable Organics Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

PCBs and/or Organochlorine Pesticides Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

Non-conformance Summary, Page 2 of 2
STL Edison Job Number: F524

Metals Analysis:

includes Cr VI:

All data conforms with method requirements _____; or
Analysis was not requested _____; or
Non-conformance for the specific samples listed is as follows:
(Cr VI: QA Batch 2230: Soil): Recovery of MS-High is outside of QC limits (low). The MS-High, Post Spike and LCS meet QC limits.

See continuation page if checked ( )

Total Petroleum Hydrocarbons Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

General Chemistry/Disposal Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

Signature of
Laboratory Manager: [signature] Date: 12-7-00

Site: SMC Site

Lab Job No: F514

Date Sampled: 11/8/00-11/9/00
Date Received: 11/9/00
Matrix: SOIL

Date Extracted: 11/14/00
Date Analyzed: 11/14/00
QA Batch: 2230

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240471	B12-S1R	3.2	1.0	5.3
240472	B12-SR2	9.2	1.0	13.3
240473	B12-S6R	8.6	1.0	12.4
240474	B12-S3R	2.7	1.0	ND
240475	B12-S4R	4.3	1.0	ND
240476	B12-S5R	4.5	1.0	ND
240477	SB8-12R	7.2	1.0	4.4
240478	SB8-21R	5.6	1.0	2.3
240479	SB8-11R	9.0	1.0	3.6
240481	SB8-18R	11.3	1.0	ND
240482	SB8-17R	11.3	1.0	4.6
240483	SB8-16R	8.2	1.0	ND
240484	SB8-22R	9.2	1.0	ND

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

Site: SMC Site

Lab Job No: F514

Date Sampled: 11/8/00-11/9/00
Date Received: 11/9/00
Matrix: SOIL

Date Extracted: 11/14/00
Date Analyzed: 11/14/00
QA Batch: 2230

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240485	SB8-13R	7.8	1.0	ND
240486	SB8-14R	8.4	1.0	ND
240487	SB8-15R	6.6	1.0	5.6
240488	SB8-10R	8.0	1.0	3.7
240489	SB8-20R	9.6	1.0	4.2

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample.

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: SOIL
QA Batch No.: 2230

QA Sample: 240484
QA Sample from Lab Job No.: F514

Laboratory Blank	
Blank Conc Units: mg/kg	Quant Limit Units: mg/kg
0	2

Duplicate Sample			
Sample Conc Units: mg/kg	Duplicate Conc Units: mg/kg	RPD	RPD** Limit
ND	ND	0.0	20

Matrix Spike-Low				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSL Conc Units: mg/kg	% Rec	% Rec Limit
22.0	ND	19.8	89.9	75-125

Matrix Spike-High				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSH Conc Units: mg/kg	% Rec	% Rec Limit
44.0	ND	33.5	76.1	75-125

Post Spike					
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	Spike/ Sample	PS Conc Units: mg/kg	% Rec	% Rec Limit
6.6	ND	NA	6.4	96.9	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: mg/kg	Acceptable Range: mg/kg	Measured Value: mg/kg
ERA	621	0.242	0.201-0.283	0.229

** If sample/dup conc is less than 8.0ppm a control limit of +/- 2.0 ppm applies.

2/22/01
9:27 AM
001114S.XLS

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: Water
QA Batch No.: 2226

QA Sample: 240274
QA Sample from Lab Job No.: F490

Laboratory Blank	
Blank Conc Units: ug/l	Quant Limit Units: ug/l
ND	10

Duplicate Sample			
Sample Conc Units: ug/l	Duplicate Conc Units: ug/l	RPD	RPD Limit
ND	ND	0.0	20

Matrix Spike - Low				
Spike Conc Units: ug/l	Sample Conc Units: ug/l	MSL Conc Units: ug/l	% Rec	% Rec Limit
50	ND	52.5	105	85-115

Matrix Spike - High				
Spike Conc Units: ug/l	Sample Conc Units: ug/l	MSH Conc Units: ug/l	% Rec	% Rec Limit
200	ND	206	103	85-115

Post Spike					
Spike Conc Units: ug/l	Sample Conc Units: ug/l	Spike/ Sample	PS Conc Units: ug/l	% Rec	% Rec Limit
15	ND	NA	13.6	90.7	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: ug/l	Acceptable Range: ug/l	Measured Value: ug/l
ERA	621	48.4	40.1-56.6	42.5

12/7/00
10:27 AM
001109W.XLS

HEXAVALENT CHROMIUM WATER CALCULATIONS (7196A)

Date Extracted: 11/9/00
Analyst: Harford, Amanda

Date Analyzed: 11/9/00
Analyst: arford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.9996328
R Square	0.9992657
Adjusted R Sq	0.9990821
Standard Error	0.0019908
Observations	6

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.021574146	0.021574146	5443.252423	2.02257E-07
Residual	4	1.58539E-05	3.96347E-06		
Total	5	0.02159			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.000%*	*Upper 95.000%*
Intercept	0.0008145	0.001200502	0.678482975	0.534689932	-0.00251861	0.004147654	-0.002518614	0.004147654
X Variable 1	0.0008991	1.21866E-05	73.77840079	2.02257E-07	0.000865274	0.000932946	0.000865274	0.000932946

Sample ID	QA Batch	Initial Absorbance	BG Absorbance	Dilution Factor	Conc. ug/l	MDL ug/l	SampleVol ml	
0.0		0.000	0.000		-0.91			
10.0		0.008	0.000		8.0			
50.0		0.046	0.000		50.3			
75.0		0.071	0.000		78.1			
100.0		0.092	0.000		101			
200.0		0.179	0.000		198			
CCS1		0.068	0.000	1.0	74.7	10.00	50	
CCB1		-0.001	0.000	1.0	-2.0	10.00	50	
PBW		0.000	0.000	1.0	-0.91	10.00	50	
LCS		0.039	0.000	1.0	42.5	10.00	50	
240274DUP	2226	-0.001	0.000	1.0	0.00	10.00	50	
240274MSL	2226	0.048	0.000	1.0	52.5	10.00	50	
240274MSH	2226	0.186	0.000	1.0	206	10.00	50	
240274PS	2226	0.013	0.000	1.0	13.6	10.00	50	
240274	2226	0.000	0.000	1.0	0.00	10.00	50	E01
240480	2226	0.000	0.000	1.0	0.00	10.00	50	E01
CCSF		0.069	0.000	1.0	75.8	10.00	50	
CCBF		0.000	0.000	1.0	0.00	10.00	50	

HEXAVALENT CHROMIUM SOIL CALCULATION (3060/7196A)

Date Extracted: 11/14/00
Analyst: , Amanda

Date Analyzed: 11/14/00
Analyst: Harford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.99975
R Square	0.9995
Adjusted R S	0.99938
Standard Err	0.00802
Observations	6

ANOVA

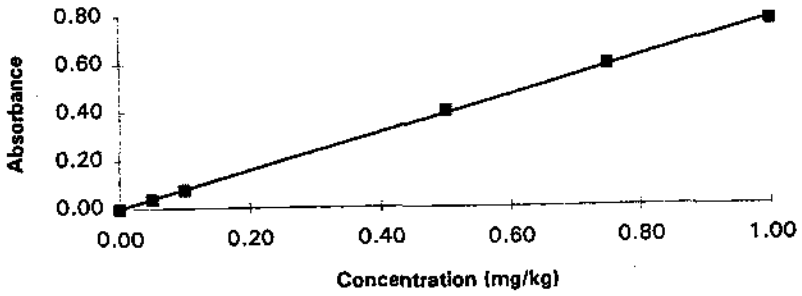
	df	*SS*	*MS*	*F*	*gnificance F*
Regression	1	0.51826	0.51826	8055.746	9.2E-08
Residual	4	0.00026	6.4E-05		
Total	5	0.51852			

	Coefficient	*andard Err*	*t Stat*	*P-value*	*ower 95*	*pper 95*	*wer 95.000*	*er 95.00*
Intercept	0.00138	0.00476	0.29046	0.785903	-0.0118	0.01459	-0.01182	0.015
X Variable 1	0.77405	0.00862	89.7538	9.24E-08	0.7501	0.79799	0.750102	0.798

Sample ID	QA Batch	Initial bsorbanc	BG Absorban	Dilution Factor	% Solids	*Soil Conc, mg/kg*	*MDL mg/kg*	*Sample Wt (g)*
0.00		0.000	0.000			0.00		
0.05		0.037	0.000			0.05		
0.10		0.076	0.000			0.10		
0.50		0.399	0.000			0.51		
0.75		0.588	0.000			0.76		
1.00		0.766	0.000			0.99		
CV1		0.404	0.000	1.0	100	0.52	2.00	2.5
CCB1		0.000	0.000	1.0	100	0.00	2.00	2.5
PBS		0.000	0.000	1.0	100	0.00	2.00	2.5
LCS		0.179	0.000	1.0	100	0.229	2.00	2.5
240484DUP	2230	0.021	0.008	1.0	90.8	0.00	2.20	2.58
240484MSL	2230	0.361	0.007	1.0	90.8	19.8	2.20	2.54
240484MSH	2230	0.626	0.013	1.0	90.8	33.5	2.20	2.6
240484PS	2230	0.124	0.009	1.0	90.8	6.4	2.20	2.54
240484	2230	0.019	0.009	1.0	90.8	0.00	2.20	2.54
240471	2230	0.109	0.005	1.0	96.8	5.3	2.07	2.59
240472	2230	0.237	0.001	1.0	90.8	13.3	2.20	2.51
240473	2230	0.228	0.002	1.0	91.4	12.4	2.19	2.57
CCS2		0.405	0.000	1.0	100	0.52	2.00	2.5
CCB2		0.000	0.000	1.0	100	0.00	2.00	2.5
240474	2230	0.023	0.013	1.0	97.3	0.00	2.06	2.56
240475	2230	0.030	0.006	1.0	95.7	0.00	2.09	2.6
240476	2230	0.024	0.005	1.0	95.5	0.00	2.09	2.6
240477	2230	0.081	0.001	1.0	92.8	4.4	2.16	2.5
240478	2230	0.044	0.000	1.0	94.4	2.3	2.12	2.5
240479	2230	0.070	0.004	1.0	91.0	3.6	2.20	2.56
240481	2230	0.028	0.000	1.0	88.7	0.00	2.25	2.54
240482	2230	0.080	0.000	1.0	88.7	4.6	2.25	2.5
240483	2230	0.023	0.000	1.0	91.8	0.00	2.18	2.57
240485	2230	0.039	0.003	1.0	92.2	0.00	2.17	2.52
CCS3		0.404	0.000	1.0	100	0.52	2.00	2.5
CCB3		0.000	0.000	1.0	100	0.00	2.00	2.5
240486	2230	0.035	0.000	1.0	91.6	0.00	2.18	2.52
240487	2230	0.105	0.000	1.0	93.4	5.6	2.14	2.57
240488	2230	0.067	0.000	1.0	92.0	3.7	2.17	2.51
240489	2230	0.076	0.000	1.0	90.4	4.2	2.21	2.52
CCSF		0.405	0.000	1.0	100	0.52	2.00	2.5
CCBF		0.000	0.000	1.0	100	0.00	2.00	2.5

Hexavalent Chromium Calibration Curve

Date Run: 11/14/00 Saved as:



Correlation Coefficient: *0.999752*

Calibration Slope: 0.774046

y-intercept: 0.001382

Calibration Check Standard Recovery Summary				
	True Value ppm	Value Obtained ppm	% Recovery	% Rec Limit
CCS1	0.50	0.52	104	90-110
CCS2	0.50	0.52	104	90-110
CCS3	0.50	0.52	104	90-110
CCSF	0.50	0.52	104	90-110

PROJECT Cr+6 Runlog

Notebook No. 01764

Continued From Page

PRO.

BATCH 22246 Matrix: H_2O Lot: F490, F514

SAMPLE	DIL	ABS	BG/DT	Final pH	TpH/Tread	Results	spk	%REC
0		.000		1.94	9:50/9:56			
10		.008		1.98				
50		.046		1.90				
75		.071		1.87				
100		.092		1.89				
200		.179		1.74	9:55/10:00			
CCS		.068		1.79	10:11/10:16	74.7	75	99.6%
CCB		-.001		1.82		ND		
PBW		.000		1.83		ND		
LCS (1024)		.039		1.86	10:13/10:18	42.5	48.4	87.8%
240274 Dup		-.001		1.78	10:30/10:35	ND		
240274 MSL		.048		1.84		525	50	105%
240274 MSH		.186		1.87	10:32/10:37	206	200	103%
240274 PS		.013		1.85	10:45/10:50	13.6	15	90.7%
240274		.000		1.94	10:33/10:38	ND		
240480R		.000		1.91		ND		
CCS		.069		1.94		75.8	75	101%
CCB		.000		1.82	10:35/10:40	ND		

10 ppm Cr^{+6} 1°: 5337 10 ppm Cr^{+6} 2°: 5055

10% H_2SO_4: 5248 DPC 2nd: 5225

Continued on Page

Read and Understood By

Amanda Harford 11/9/00

56 PROJECT Cr+6 Prep Log

Notebook No. 01645

Continued From Page

BATCH: 2230 Matrix: solid JOB: FS14

SAMPLE	SAMPLE WT(g)	Vol(ml)	color	mg/L	pH Time	Spike
0.00		100		7.58	9:40	
0.05				7.57		
0.10				7.96		
0.50				7.81		
0.75				7.50		
1.00				7.33	9:45	
CCS				7.93	10:42	0.50
PB				7.76		
LCS				7.66	10:44	0.242
240484 bdup	2.58		dark yellow	7.51	11:08	
240484 MSL	2.54			7.98		0.50
240484 MSH	2.60			7.74		1.00
240484b	2.54			7.80		
240471a	2.59		pale yellow	7.85		
240472a	2.51			7.61	11:14	
240473a	2.57			7.95	11:43	
240474a	2.56		dark yellow	7.83		
CCS				7.80		0.50
CCB				7.64		
240475a	2.60		yellow	7.63		
240476a	2.60			7.97		
240477a	2.50		pale yellow	7.73	11:50	
240478a	2.50			7.84	12:05	
240479a	2.56			7.43		
240481a	2.54		clear	7.75		
240482a	2.50		pale yellow	7.92		
240483a	2.57			7.77		
240485a	2.52		dark yellow	7.57		
240486a	2.52		clear	7.83	12:12	
CCS				7.60	12:36	0.50
CCB				7.90		
240487a	2.57		clear	7.74		
240488a	2.51			7.76	12:39	

Continued on Page 57

Read and Understood By

SAMPLE	SAMPLE wt (g)	vol (ml)	color	init pH	pH time	spk
240489a	2.52	100	clear	7.73	12:40	
CCS		↓		7.91	↓	0.50
CCB		↓		7.87	12:42	

start time: 9:35 @ 90.0°C temp after 30 min 95.0°C

end time: 10:35 @ 95.5°C pH of digestion fluid: 13:45

Continued on Page

Read and Understood By

Amanda Hartford 11/14/00

BATCH: 22230 Matrix: solid JOB: FS14

SAMPLE	DIL	ABS	BG/pH	Final pH	TpH/TRead	% Solids	Results	Spx	%REC
0.00		0.000		1.83	9:50/9:55				
0.05		0.037		1.92					
0.10		0.076		1.99					
0.50		0.399		1.87					
0.75		0.588		1.84					
1.00		0.766		1.64	9:54/9:59				
CCS		0.404		1.73	10:50/10:55		0.52	0.50	104%
CCB		0.000		1.91			ND		
PB		0.000		1.93			ND		
LCS(621)		0.179		1.64	10:53/10:58		0.239	0.242	94.6%
240484 dup		0.021	.008/1.66	1.89	11:20/11:25	90.8	ND		
240484 MSL		0.361	.007/1.89	1.92		90.8	22.0		
240484 MSH		0.626	.013/1.88	1.95	11:22/11:27	90.8			
240484 PS		0.124	.009/1.54	1.90	11:34/11:39	90.8	6.6		99.9%
240484b		0.019	.009/1.72	1.99	11:22/11:28	90.8	ND		
240471a		0.109	.005/1.83	1.84		90.8 90.8	5.3		
240472a		0.237	.001/1.65	1.89	11:24/11:30	90.8 90.8	13.3		
240473a		0.228	.002/1.93	1.72	11:54/12:00	91.4 91.4	12.4		
CCS		0.405		1.65			0.52	0.50	104%
CCB		0.000		1.77			ND		
240474a		0.023	.013/1.89	1.84		97.3 97.3	ND		
240475a		0.030	.006/1.87	1.86		95.9 95.7	ND		
240476a		0.024	.009/1.66	1.63		95.5 95.5	ND		
240477a		0.081	.001/1.69	1.69	12:00/12:05	92.8 92.8	4.4		
240478a		0.044	.000/1.88	1.67	12:17/12:22	94.4 94.4	2.3		
240479a		0.070	.004/1.89	1.68		91.0 91.0	3.6		
240480a		0.028	.002/2.00	1.68		88.7 88.7	ND		
240482a		0.080	.009/1.84	1.75		88.7 88.7	4.6		
240483a		0.023	.002/1.89	1.79		91.8 91.8	ND		
240485a		0.039	.003/1.72	1.84	12:21/12:26	92.2 92.2	ND		
CCS		0.404		1.62	12:27/12:32		0.52	0.50	104%
CCB		0.000		1.69	12:28/12:33		ND		

Continued on Page 30

Read and Understood By

Amanda Harford 11/14/00

30
PROJECT Cr+6 Run log

Notebook No. 017664 29
Continued From Page 29

SAMPLE	DIL	ABS	Pb/Pb	Final pH	TPH/TRead	% Solids	Results	Spk	% REC
240486a		0.035	001/1.84	1.95	12:29/12:34	~~97.5~~ 96	ND		
240487a		0.105	001/1.85	2.01	12:40/12:59	93.4 934	~~5.8~~ 5.6		
240488a		0.067	001/1.81	2.09		92.0 920	~~3.7~~ 3.7		
240489a		0.076	001/1.80	1.98		90.9 904	~~4.2~~ 4.2		
CCS		0.405		1.95			0.52	0.50	104%
CCB		0.000		1.99	12:53/12:58		ND		

100 ppm Cr+6 (1): 5485 DPC 2nd: 5225

100 ppm Cr+6 (2): 5054 10% H_2SO_4: 5418

Continued on Page

Read and Understood By

Amanda Harford 11/14/00

Signed Date

Job Number	Sample Number	Bottle ID	Tare Weight (g)	Wet Weight (g)	Dry Weight (g)	Percent Solids (%)	Percent Moisture (%)
F522	240557	288	29.21	9.74	8.63	88.6	11.4
	240557 dup	259	30.1	10.57	9.32	88.2	11.8
F514	240472	94	29.29	7.6	6.9	90.8	9.2
F514	240473	227	29.81	6.39	5.84	91.4	8.6
F514	240474	151	29.88	8.83	8.59	97.3	2.7
F514	240475	161	29.76	9.31	8.91	95.7	4.3
F514	240476	59	31.65	9.04	8.63	95.5	4.5
F514	240477	637	30.1	5.67	5.26	92.8	7.2
F514	240478	166	29.47	7.66	7.23	94.4	5.6
F514	240479	213	29.09	7.24	6.59	91	9
F514	240481	631	29.23	5.73	5.08	88.7	11.3
F514	240482	380	29.35	6.45	5.72	88.7	11.3
F514	240483	148	30.05	7.43	6.82	91.8	8.2
F514	240484	25	29.54	10.13	9.2	90.8	9.2
F514	240485	206	30.21	5.93	5.47	92.2	7.8
F514	240486	284	29.17	7.99	7.32	91.6	8.4
F514	240487	86	29.68	6.98	6.52	93.4	6.6
F514	240488	655	29.22	5.66	5.21	92	8
F514	240489	76	28.7	4.98	4.5	90.4	9.6
							100
F458	240067	103	29.33	3.49	2.33	66.8	33.2
F458	240068	184	29.59	3.95	2.92	73.9	26.1
F458	240069	672	30.44	4.09	2.84	69.4	30.6
F458	240070	350	29.17	5.15	4.37	84.9	15.1
F458	240071	625	30.04	4.69	3.76	80.2	19.8
F458	240072	133	29.48	5.21	4.39	84.3	15.7
F458	240073	300	30.87	5.55	4.48	80.7	19.3
F458	240074	208	30.32	5.87	4.75	80.9	19.1
F458	240075	501	29.34	5.82	4.82	82.8	17.2
F458	240076	84	29.5	4.59	3.45	75.2	24.8
							100
F519	240512	127	29.17	10.41	8.82	84.7	15.3
F519	240513	274	29.41	9.69	7.88	81.3	18.7
							100
F492	240304	48	28.93	9.07	7.97	87.9	12.1
F492	240305	248	29.55	9.6	8.53	88.9	11.1
F492	240306	158	29.37	10.71	9.44	88.1	11.9
F492	240307	99	29.34	9.46	8.5	89.9	10.1
F492	240308	236	30.25	9.32	8.25	88.5	11.5
F492	240309	162	29.06	9.91	8.85	89.3	10.7
F492	240310	670	30.07	9.58	8.66	90.4	9.6
F492	240311	290	29.58	10.14	9.12	89.9	10.1
F492	240312	849	29.3	10.77	9.5	88.2	11.8

Printed: 11/11/00

PS1110.XLS

Signed: Mark Okeen Date: 11-11-00 Signed: _____ Date: _____

18 .TO

HEARTLAND
ENVIRONMENTAL SERVICES, INC.

Data Validation Report

SDG#:	F514
Date:	December 21, 2000
Client Name:	TRC Environmental Corporation
Project/Site Name:	SMC Facility
Date Sampled:	November 8 - 9, 2000
Number of Samples:	18 Non-Aqueous Sample(s) with 1 MS/MSD(s) 1 Aqueous Sample(s) with 0 MS/MSD(s)
Laboratory:	STL Edison
Validation Guidance:	NJDEPE SOP No. 5.A.10
QA/QC Level:	NJDEPE Modified Methods
Method(s) Utilized:	SW846 Methods 3060/7196A, July 1992
Analytical Fractions:	Hexavalent Chromium

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. Sayler
Paul B. Humburg, President

12-22-00
Date

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

SDG# F514

Samples and Fractions Reviewed

Sample Identifications Analytical Fraction

TRC ID	MATRIX	CR+6	
FB110900	WATER	X	
B12-S1R	SOIL		X
B12-SR2	SOIL		X
B12-S6R	SOIL		X
B12-S3R	SOIL		X
B12-S4R	SOIL		X
B12-S5R	SOIL		X
SB8-12R	SOIL		X
SB8-21R	SOIL		X
SB8-11R	SOIL		X
SB8-18R	SOIL		X
SB8-17R	SOIL		X
SB8-16R	SOIL		X
SB8-22R	SOIL		X
SB8-22R MS	SOIL		X
SB8-22R MSD	SOIL		X
SB8-13R	SOIL		X
SB8-14R	SOIL		X
SB8-15R	SOIL		X
SB8-10R	SOIL		X
SB8-20R	SOIL		X
Total Billable Samples (Water/Soil)		1	20

CR+6= Hexavalent Chromium

DATA ASSESSMENT NARRATIVE
HEXAVALENT CHROMIUM

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 3060/7196A: the SOP No. 5.A.10 Standard Operating Procedure for Analytical Data Validation of Hexavalent Chromium in accordance with NJDEPE Modified Methods requirements, July 1992. 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 # F514

A validation was performed on the hexavalent chromium data from SDG F514. The data was evaluated based on the following parameters.

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

* - All criteria were met for this parameter.

Matrix Spike Recovery results

1. The high matrix spike recovery results for soil samples for Hexavalent Chromium (40%) was below the lower control limits (<75%). All positive and non-detect results are qualified as estimated, "J" or "UJ" with low bias.

* See attached sheets for for individual qualifications of data.

Site: SMC Site

Lab Job No: F514

Date Sampled: 11/9/00
Date Received: 11/9/00
Matrix: WATER

Date Extracted: 11/9/00
Date Analyzed: 11/9/00
QA Batch: 2226

CHROMIUM VI

STL Edison Sample #	Client ID	Dilution Factor	Analytical Result Units: ug/l
240480	FB110900	1.0	ND

Quantitation Limit for Chromium VI is 10.0 ug/l for an undiluted sample.

RBG 12/22/00

Site: SMC Site

Lab Job No: F514

Date Sampled: 11/8/00-11/9/00
Date Received: 11/9/00
Matrix: SOIL

Date Extracted: 11/14/00
Date Analyzed: 11/14/00
QA Batch: 2230

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240471	B12-S1R	3.2	1.0	5.5 J1
240472	B12-SR2	9.2	1.0	13.3 J1
240473	B12-S6R	8.6	1.0	12.8 J1
240474	B12-S3R	2.7	1.0	ND UJ1
240475	B12-S4R	4.3	1.0	ND UJ1
240476	B12-S5R	4.5	1.0	ND UJ1
240477	SB8-12R	7.2	1.0	4.4 J1
240478	SB8-21R	5.6	1.0	2.3 J1
240479	SB8-11R	9.0	1.0	3.7 J1
240481	SB8-18R	11.3	1.0	ND UJ1
240482	SB8-17R	11.3	1.0	4.6 J1
240483	SB8-16R	8.2	1.0	ND UJ1
240484	SB8-22R	9.2	1.0	ND UJ1

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample

12/21/00

Site: SMC Site

Lab Job No: F514

Date Sampled: 11/8/00-11/9/00
Date Received: 11/9/00
Matrix: SOIL

Date Extracted: 11/14/00
Date Analyzed: 11/14/00
QA Batch: 2230

CHROMIUM VI

STL Edison Sample #	Client ID	% Moisture	Dilution Factor	Analytical Result mg/kg (Dry Wt.)
240485	SB8-13R	7.8	1.0	ND UJ1
240486	SB8-14R	8.4	1.0	ND UJ1
240487	SB8-15R	6.6	1.0	5.8 J1
240488	SB8-10R	8.0	1.0	3.7 J1
240489	SB8-20R	9.6	1.0	4.3 J1

Quantitation Limit for Chromium VI is 2.0 mg/kg for an undiluted sample

.IEXAVALENT CHROMIUM WATER CALCULATIONS (7196A)

Date Extracted: 11/9/00
Analyst: Hatford, Amanda

Date Analyzed: 11/9/00
Analyst: arford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.9996328
R Square	0.9992657
Adjusted R Sq	0.9990821
Standard Error	0.0019908
Observations	6

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.021574146	0.021574146	5443.252423	2.02257E-07
Residual	4	1.58539E-05	3.96347E-06		
Total	5	0.02159			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.000%*	*Upper 95.000%*
Intercept	0.0008145	0.001200502	0.678482975	0.534689932	-0.00251861	0.004147654	-0.002518614	0.004147654
X Variable 1	0.0008991	1.21866E-05	73.77840079	2.02257E-07	0.000865274	0.000932946	0.000865274	0.000932946

Sample ID	QA Batch	Initial Absorbance	BG Absorbance	Dilution Factor	Conc. ug/l	MDL ug/l	SampleVol ml	
0.0		0.000	0.000		-0.91			
10.0		0.008	0.000		8.0			
50.0		0.046	0.000		50.3			
75.0		0.071	0.000		78.1			
100.0		0.092	0.000		101			
200.0		0.179	0.000		198			
CCS1		0.068	0.000	1.0	74.7	10.00	50	
CCB1		-0.001	0.000	1.0	-2.0	10.00	50	
PBW		0.000	0.000	1.0	-0.91	10.00	50	
LCS		0.039	0.000	1.0	42.5	10.00	50	
240274DUP	2226	-0.001	0.000	1.0	0.00	10.00	50	
240274MSL	2226	0.048	0.000	1.0	52.5	10.00	50	
240274MSH	2226	0.186	0.000	1.0	206	10.00	50	
240274PS	2226	0.013	0.000	1.0	13.6	10.00	50	
240274	2226	0.000	0.000	1.0	0.00	10.00	50	E01
240480	2226	0.000	0.000	1.0	0.00	10.00	50	E01
CCSF		0.069	0.000	1.0	75.8	10.00	50	
CCBF		0.000	0.000	1.0	0.00	10.00	50	

HEXAVALENT CHROMIUM SOIL CALCULATION (3060/7196A)

Date Extracted: 11/14/00 Date Analyzed: 11/14/00
Analyst: Amanda Analyst: Harford, Amanda

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.99975
R Square	0.9995
Adjusted R S	0.99938
Standard Err	0.00802
Observations	6

ANOVA

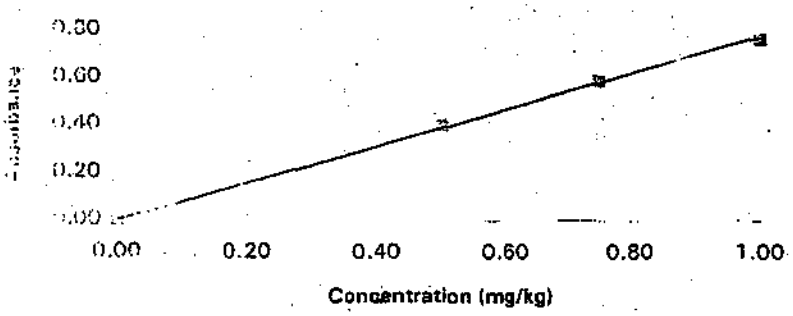
	df	SS	MS	F	gnificance F
Regression	1	0.51826	0.51826	8055.746	9.2E-08
Residual	4	0.00026	6.4E-05		
Total	5	0.51852			

	Coefficient	andard Err	t Stat	P-value	ower 95	pper 95	wer 95.000	er 95.00
Intercept	0.00138	0.00476	0.29046	0.785903	-0.0118	0.01459	-0.01182	0.015
X Variable 1	0.77405	0.00862	89.7538	9.24E-08	0.7501	0.79799	0.750102	0.798

Sample ID	QA Batch	Initial bsorbanc	BG Absorban	Dilution Factor	% Solids	Soil Conc, mg/kg	MDL mg/kg	Sample Wt (g)
0.00		0.000	0.000			0.00		
0.05		0.037	0.000			0.05		
0.10		0.076	0.000			0.10		
0.50		0.399	0.000			0.51		
0.75		0.588	0.000			0.76		
1.00		0.766	0.000			0.99		
CCV1		0.404	0.000	1.0	100	0.52	2.00	2.5
CCB1		0.000	0.000	1.0	100	0.00	2.00	2.5
PBS		0.000	0.000	1.0	100	0.00	2.00	2.5
LCS		0.179	0.000	1.0	100	0.229	2.00	2.5
240484DUP	2230	0.021	0.008	1.0	91.0	0.00	2.20	2.5
240484MSL	2230	0.361	0.007	1.0	91.0	20.0	2.20	2.5
240484MSH	2230	0.626	0.013	1.0	91.0	34.7	2.20	2.5
240484PS	2230	0.124	0.009	1.0	91.0	6.5	2.20	2.5
240484	2230	0.019	0.009	1.0	91.0	0.00	2.20	2.5
240471	2230	0.100	0.005	1.0	97.0	5.5	2.06	2.5
240472	2230	0.237	0.001	1.0	91.0	13.3	2.20	2.5
240473	2230	0.228	0.002	1.0	91.0	12.8	2.20	2.5
CCS2		0.405	0.000	1.0	100	0.52	2.00	2.5
CCB2		0.000	0.000	1.0	100	0.00	2.00	2.5
240474	2230	0.023	0.013	1.0	97.0	0.00	2.06	2.5
240475	2230	0.030	0.006	1.0	96.0	0.00	2.08	2.5
240476	2230	0.024	0.005	1.0	96.0	0.00	2.08	2.5
240477	2230	0.081	0.001	1.0	93.0	4.4	2.15	2.5
240478	2230	0.044	0.000	1.0	94.0	2.3	2.13	2.5
240479	2230	0.070	0.004	1.0	91.0	3.7	2.20	2.5
240481	2230	0.028	0.000	1.0	89.0	0.00	2.25	2.5
240482	2230	0.080	0.000	1.0	89.0	4.6	2.25	2.5
240483	2230	0.023	0.000	1.0	92.0	0.00	2.17	2.5
240485	2230	0.030	0.003	1.0	92.0	0.00	2.17	2.5
CCS3		0.404	0.000	1.0	100	0.52	2.00	2.5
CCB3		0.000	0.000	1.0	100	0.00	2.00	2.5
240486	2230	0.035	0.000	1.0	92.0	0.00	2.17	2.5
240487	2230	0.105	0.000	1.0	93.0	5.8	2.15	2.5
240488	2230	0.067	0.000	1.0	92.0	3.7	2.17	2.5
240489	2230	0.076	0.000	1.0	90.0	4.3	2.22	2.5
CCSF		0.405	0.000	1.0	100	0.52	2.00	2.5
CCBF		0.000	0.000	1.0	100	0.00	2.00	2.5
			0.000	1.0	100	0.00	2.00	2.5

Hexavalent Chromium Calibration Curve

Date Run: 11/14/00 Saved as:



Correlation Coefficient: 0.999752

Calibration Slope: 0.774046

Intercept: 0.001382

Calibration Check Standard Recovery Summary				
	True Value ppm	Value Obtained ppm	% Recovery	% Rec Limit
CCS1	0.50	0.52	104	90-110
CCS2	0.50	0.52	104	90-110
CCS3	0.50	0.52	104	90-110
CCS5	0.50	0.52	104	90-110

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: Water
QA Batch No.: 2226

QA Sample: 240274
QA Sample from Lab Job No.: F490

Laboratory Blank	
Blank Conc Units: ug/l	Quant Limit Units: ug/l
ND	10

Duplicate Sample			
Sample Conc Units: ug/l	Duplicate Conc Units: ug/l	RPD	RPD Limit
ND	ND	0.0	20

Matrix Spike - Low				
Spike Conc Units: ug/l	Sample Conc Units: ug/l	MSL Conc Units: ug/l	% Rec	% Rec Limit
50	ND	52.5	105	85-115

Matrix Spike - High				
Spike Conc Units: ug/l	Sample Conc Units: ug/l	MSH Conc Units: ug/l	% Rec	% Rec Limit
200	ND	206	103	85-115

Post Spike					
Spike Conc Units: ug/l	Sample Conc Units: ug/l	Spike/ Sample	PS Conc Units: ug/l	% Rec	% Rec Limit
15	ND	NA	13.6	90.7	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: ug/l	Acceptable Range: ug/l	Measured Value: ug/l
ERA	521	48.4	40.1-56.6	42.5

12/7/00
10:27 AM
001109WQL

HEXAVALENT CHROMIUM QUALITY ASSURANCE SUMMARY

Matrix: SOIL
QA Batch No.: 2230

QA Sample: 240484
QA Sample from Lab Job No.: F514

Laboratory Blank	
Blank Conc Units: mg/kg	Quant Limit Units: mg/kg
0	2

Duplicate Sample			
Sample Conc Units: mg/kg	Duplicate Conc Units: mg/kg	RPD	RPD** Limit
ND	ND	0.0	20

Matrix Spike-Low				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSL Conc Units: mg/kg	% Rec	% Rec Limit
22.0	ND	20.0	91.0	75-125

Matrix Spike-High				
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	MSH Conc Units: mg/kg	% Rec	% Rec Limit
87.9	ND	34.7	39.5	75-125

Post Spike					
Spike Conc Units: mg/kg	Sample Conc Units: mg/kg	Spike/ Sample	PS Conc Units: mg/kg	% Rec	% Rec Limit
6.6	ND	NA	6.5	98.6	85-115

Laboratory Control Sample				
Vendor	Lot #	True Value Units: mg/kg	Acceptable Range: mg/kg	Measured Value: mg/kg
ERA	621	0.242	0.201-0.283	0.229

** If sample/dup conc is less than 8.0ppm a control limit of +/- 2.0 ppm applies.

11/15/00
1:56 PM
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