

RECEIVED JUNE 3, 2008

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FLUOR

Memorandum

M4W41-SLF-08-586

To: H. Hampt E6-35 Date: June 2, 2008

From: S. L. Fitzgerald, Manager
WSCF Analytical Lab 

cc: w/Attachments

T. F. Dale	S3-30	P. D. Mix	S3-30
D. Felmy (PNNL)	K6-75	J. E. Trechter	S3-30
A. J. Kopriva	S3-30	S. J. Trent	E6-35
H. K. Meznarich	S3-30	File/LB	

Subject: FINAL RESULTS FOR SAMPLE DELIVERY GROUP WSCF20081050

Reference: 1) Letter of Instruction for Analytical Services for the Groundwater Performance Assessment Project and Analytical Laboratory Transition Plan, FH-0602422, September 19, 2006

2) HNF-SD-CD-QAPP-017, Rev. 8, Waste Sampling & Characterization Facility Quality Assurance Plan

This transmittal contains the following information for sample delivery group WSCF20081050:

- Cover Sheet (Attachment 1)
- Narrative (Attachment 2)
- Analytical Results (Attachment 3)
- Sample Receipt Information (Attachment 4)

SLF/grf

Attachments 4

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M4W41-SLF-08-586

ATTACHMENT 1

COVER SHEET

Consisting of 2 pages
Including cover page

WSCF SAF NUMBER CROSS REFERENCE

Group#: WSCF20081050
Data Deliverable Date: 05-jun-2008
Data Deliverable: Cover Sheet

SAF#	Sample ID	WSCF#	Matrix
I08-035	B1V5H6	W08P002564	WATER
	B1V5H7	W08P002563	WATER
	B1V5J2	W08P002571	WATER
	B1V5J4	W08P002570	WATER
	B1V5J6	W08P002569	WATER
	B1V5P9	W08P002560	WATER
	B1V5R0	W08P002562	WATER
	B1V5R1	W08P002561	WATER
	B1V5R4	W08P002572	WATER
	B1V5R6	W08P002567	WATER
	B1V5R7	W08P002568	WATER
	B1V646	W08P002565	WATER
	I08-039	B1V731	W08P002566
S08-005	B1V7J1	W08P002558	WATER
	B1V7J2	W08P002559	WATER
	B1V7J3	W08P002557	WATER

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ATTACHMENT 2

NARRATIVE

Consisting of 2 pages
Including cover page

Introduction

Sixteen (16) groundwater samples were received at the WSCF Laboratory on May 22, 2008. Samples were analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Groundwater Remediation Program – Letter of Instruction*, referenced in the cover letter.

The narrative (Attachment 2) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 3) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information as applicable. Copies of the chain of custody and sample receipt documentation are included as Attachment 4.

It should be noted that the attached chain of custody was stamped "ICED" by the WSCF Laboratory Sample Custodian during sample receiving, indicating the presence of ice in the sample container.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report*, page 9, for a complete listing of approved analytical methods.

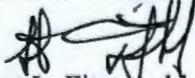
Inorganic Comments

Hexavalent Chromium – The hold time requirement for this analysis was met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group per the GRP Letter of Instruction. See page 26 for QC details. Analytical Note(s):

- Sample results were D flagged if dilution(s) were required.

All QC controls are within the established limits.

I certify that this data package is in compliance with the LOI, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manager and Client Services as verified by the following signatures.


Scot L. Fitzgerald
WSCF Analytical Laboratory Manager


Pauline D. Mix
WSCF Client Services

M4W41-SLF-08-586

ATTACHMENT 3

ANALYTICAL RESULTS

**Consisting of 21 pages
Including cover page**

WSCF
ANALYTICAL RESULTS REPORT

for

GPAP
Richland, WA 99352

Attention: Steve Trent E6-35

Analytical:

S. Fitzgerald 6/2/08

Client Services:

P.O. Mix 6/2/2008

All results are reported on an "as received" basis unless otherwise noted in the comment section.

This information is intended for the use of the addressee only. If the reader of this report is not the intended recipient or is not authorized by the recipient to receive the report, you are hereby notified that any dissemination, distribution or copying of this report is strictly prohibited. If you have received this report in error, please notify WSCF Laboratory immediately by telephone at (509) 373-7020 or (509) 531-8004. Information designation of this report is the responsibility of the customer.

Report#: WSCF20081050
Report Date: 2-jun-2008
Report WGPP/ver. 5.2
GPAP

Department: Inorganic

W13q Worklist/Batch/QC Report for Group# WSCF20081050

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
36467	2	36880	41257	BLANK		Hexavalent chromium
36467	3	36880	41257	LCS		Hexavalent chromium
36467	14	36880	41257	SAMPLE	W08P002557	Hexavalent chromium
36467	15	36880	41257	SAMPLE	W08P002558	Hexavalent chromium
36467	16	36880	41257	SAMPLE	W08P002559	Hexavalent chromium
36467	5	36880	41257	DUP	W08P002560	Hexavalent chromium
36467	6	36880	41257	MS	W08P002560	Hexavalent chromium
36467	7	36880	41257	MSD	W08P002560	Hexavalent chromium
36467	4	36880	41257	SAMPLE	W08P002560	Hexavalent chromium
36467	7	36880	41257	SPK-RPD	W08P002560	Hexavalent chromium
36467	17	36880	41257	SAMPLE	W08P002561	Hexavalent chromium
36467	18	36880	41257	SAMPLE	W08P002562	Hexavalent chromium
36467	19	36880	41257	SAMPLE	W08P002563	Hexavalent chromium
36467	21	36880	41257	SAMPLE	W08P002564	Hexavalent chromium
36467	22	36880	41257	SAMPLE	W08P002565	Hexavalent chromium
36467	23	36880	41257	SAMPLE	W08P002566	Hexavalent chromium
36467	24	36880	41257	SAMPLE	W08P002567	Hexavalent chromium
36467	25	36880	41257	SAMPLE	W08P002568	Hexavalent chromium
36467	26	36880	41257	SAMPLE	W08P002569	Hexavalent chromium
36467	28	36880	41257	DUP	W08P002570	Hexavalent chromium
36467	29	36880	41257	MS	W08P002570	Hexavalent chromium
36467	30	36880	41257	MSD	W08P002570	Hexavalent chromium
36467	27	36880	41257	SAMPLE	W08P002570	Hexavalent chromium
36467	30	36880	41257	SPK-RPD	W08P002570	Hexavalent chromium
36467	31	36880	41257	SAMPLE	W08P002571	Hexavalent chromium
36467	32	36880	41257	SAMPLE	W08P002572	Hexavalent chromium

WSCF METHOD REFERENCES REPORT

Department: Inorganic

The results provided in this report were generated using the following WSCF Laboratory procedures. For your convenience, this table provides a listing of the regulatory or industry methods that are referenced by each of these WSCF procedures. Please note that the most recent version of the regulatory or industry method is listed here even though the WSCF procedure may reference an older version of the method. Also, a reference to a regulatory or industry method here does not necessarily indicate a verbatim implementation of that method.

LA-265-403	LA-265-403: Hexavalent Chromium analysis by Spectrophotometer
EPA SW-846 7196A	HEXAVALENT CHROMIUM
HEIS 7196_CR6	Hexavalent Chromium

Note: A complete list of WSCF analytical procedures and referenced regulatory or industry methods is available online at <http://www2.rl.gov/phmc/as-dol>.

Report Date: 2-jun-2008
Report #: WSCF20081050
Report WGPPM/5.2

Page 1

WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: S08-005
Sample # W08P002557
Client ID: B1V7J3

PNNL
 WSCF

Matrix: WATER

Group #: WSCF20081050
Department: Inorganic
Sampled: 05/22/08
Received: 05/22/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date.
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-265-403		0.127	mg/L			1.00	2.0e-03		05/23/08

MDL = Minimum Detection Limit D - Analyte was identified at a secondary dilution factor (inorg)

RQ = Result Qualifier

TP Err = Total Propagated Error

DF = Dilution Factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

Report WGPP/ver. 5.2

GPAP

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WSCF ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: S08-005
Sample # W08P002558
Client ID: B1V7J1

PNNL
 WSCF

Matrix: WATER

Group #: WSCF20081050
Department: Inorganic
Sampled: 05/22/08
Received: 05/22/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-265-403		0.203	mg/L			1.00	2.0e-03		05/23/08

MDL = Minimum Detection Limit D - Analyte was identified at a secondary dilution factor (inorg)
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor

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Report WGPP/ver. 5.2
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WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: S08-005
Sample # W08P002559
Client ID: B1V7J2

PNNL
 WSCF

Matrix: WATER

Group #: WSCF20081050
Department: Inorganic
Sampled: 05/22/08
Received: 05/22/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-265-403		0.132	mg/L			1.00	2.0e-03		05/23/08

MDL=Minimum Detection Limit D - Analyte was identified at a secondary dilution factor(Inorg)

RQ=Result Qualifier

TP Err=Total Propagated Error

DF=Dilution Factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

Report WGPP/ver. 5.2

GPAP

WSCF ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: 108-035

Sample # W08P002560

Client ID: B1V5P9 PNNL
WSCF

Matrix: WATER

Group #: WSCF20081050

Department: Inorganic

Sampled: 05/22/08

Received: 05/22/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-265-403		0.257	mg/L			1.00	2.0e-03		05/23/08

MDL = Minimum Detection Limit D - Analyte was identified at a secondary dilution factor (inorg)

RQ = Result Qualifier

TP Err = Total Propagated Error

DF = Dilution Factor

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Report WGPP/ver. 5.2

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WSCF ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-035
Sample # W08P002561
Client ID: B1V5R1

Group #: WSCF20081050
Department: Inorganic
Sampled: 05/22/08
Received: 05/22/08

PNNL
WSCF

Matrix: WATER

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-265-403	D	5.86	mg/L			18.60	0.037		05/23/08

MDL=Minimum Detection Limit D - Analyte was identified at a secondary dilution factor(inorg)

RQ=Result Qualifier

TP Err=Total Propagated Error

DF=Dilution Factor

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Report WGPP/ver. 5.2

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WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: I08-035

Sample # W08P002562

Client ID: B1V5R0

PNNL
WSCF

Matrix: WATER

Group #: WSCF20081050

Department: Inorganic

Sampled: 05/22/08

Received: 05/22/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-265-403	D	5.74	mg/L			18.60	0.037		05/23/08

MDL=Minimum Detection Limit D - Analyte was identified at a secondary dilution factor(inorg)

RQ=Result Qualifier

TP Err=Total Propagated Error

DF=Dilution Factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

Report WGPP/ver. 5.2

GPAP

WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-035
Sample # W08P002563
Client ID: B1V5H7

Group #: WSCF20081050
Department: Inorganic
Sampled: 05/22/08
Received: 05/22/08

Matrix: WATER
 PNNL
 WSCF

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-285-403		0.0146	mg/L			1.00	2.0e-03		05/23/08

MDL=Minimum Detection Limit D - Analyte was identified at a secondary dilution factor(inorg)

RQ=Result Qualifier

TP Err=Total Propagated Error

DF=Dilution Factor

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Report WGPP/ver. 5.2

GPAP

WSCF ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-035
Sample # W08P002564
Client ID: B1V5H6

Group #: WSCF20081050
Department: Inorganic
Sampled: 05/22/08
Received: 05/22/08

PNNL
WSCF

Matrix: WATER

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-265-403		8.30e-03	mg/L			1.00	2.0e-03		05/23/08

MDL=Minimum Detection Limit D - Analyte was identified at a secondary dilution factor(inorg)

RQ=Result Qualifier

TP Err=Total Propagated Error

DF=Dilution Factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

Report WGPP/ver. 5.2

GPAP

WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-035
Sample # W08P002565
Client ID: B1V646

PNNL
 WSCF

Matrix: WATER

Group #: WSCF20081050
Department: Inorganic
Sampled: 05/22/08
Received: 05/22/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date.
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-265-403		0.0121	mg/L			1.00	2.0e-03		05/23/08

MDL=Minimum Detection Limit D - Analyte was identified at a secondary dilution factor(Inorg)

RQ=Result Qualifier

TP Err=Total Propagated Error

DF=Dilution Factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

Report WGPP/ver. 5.2

GPAP

WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-039
Sample # W08P002566
Client ID: B1V731

PNNL
WSCF

Matrix: WATER

Group #: WSCF20081050
Department: Inorganic
Sampled: 05/22/08
Received: 05/22/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-285-403	D	0.601	mg/L			18.60	0.037		05/23/08

MDL=Minimum Detection Limit D - Analyte was identified at a secondary dilution factor(inorg)

RQ=Result Qualifier

TP Err=Total Propagated Error

DF=Dilution Factor

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Report WGPP/ver. 5.2

GPAP

WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: 108-035
Sample # W08P002567
Client ID: B1V5R6

Group #: WSCF20081050
Department: Inorganic
Sampled: 05/22/08
Received: 05/22/08

PNNL
WSCF

Matrix: WATER

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-265-403		0.239	mg/L			1.00	2.0e-03		05/23/08

MDL=Minimum Detection Limit D - Analyte was identified at a secondary dilution factor(inorg)

RQ=Result Qualifier

TP Err=Total Propagated Error

DF=Dilution Factor

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Report WGPP/ver. 5.2

GPAP

WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35

SAF Number: I08-035

Sample # W08P002568

Client ID: B1V5R7 PNNL
WSCF

Matrix: WATER

Group #: WSCF20081050

Department: Inorganic

Sampled: 05/22/08

Received: 05/22/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date.
Hexavalent Chromium	18540-29-9	LA-285-403		0.242	mg/L			1.00	2.0e-03		05/23/08

MDL = Minimum Detection Limit D - Analyte was identified at a secondary dilution factor (inorg)

RQ = Result Qualifier

TP Err = Total Propagated Error

DF = Dilution Factor

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Report WGPP/ver. 5.2

GPAP

WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-035
Sample # W08P002569
Client ID: B1V5J6

Group #: WSCF20081050
Department: Inorganic
Sampled: 05/22/08
Received: 05/22/08

Matrix: WATER
 PNNL
 WSCF

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-265-403		0.198	mg/L			1.00	2.0e-03		05/23/08

MDL=Minimum Detection Limit D - Analyte was identified at a secondary dilution factor(inorg)

RQ=Result Qualifier

TP Err=Total Propagated Error

DF=Dilution Factor

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Report WGPP/ver. 5.2

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WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-035
Sample # W08P002570
Client ID: B1V5J4

Group #: WSCF20081050
Department: Inorganic
Sampled: 05/22/08
Received: 05/22/08

PNNL
WSCF

Matrix: WATER

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date.
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-265-403		0.0840	mg/L			1.00	2.0e-03		05/23/08

MDL=Minimum Detection Limit D - Analyte was identified at a secondary dilution factor(inorg)

RQ=Result Qualifier

TP Err=Total Propagated Error

DF=Dilution Factor

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Report WGPP/ver. 5.2

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WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-035
Sample # W08P002571
Client ID: B1V5J2

PNNL
 WSCF

Matrix: WATER

Group #: WSCF20081050
Department: Inorganic
Sampled: 05/22/08
Received: 05/22/08

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-265-403		0.0210	mg/L			1.00	2.0e-03		05/23/08

MDL = Minimum Detection Limit D - Analyte was identified at a secondary dilution factor (inorg)

RQ = Result Qualifier

TP Err = Total Propagated Error

DF = Dilution Factor

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Report WGPP/ver. 5.2

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WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent E6-35
SAF Number: I08-035
Sample # W08P002572
Client ID: B1V5R4

Group #: WSCF20081050
Department: Inorganic
Sampled: 05/22/08
Received: 05/22/08

PNNL
WSCF

Matrix: WATER

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date-
Hexavalent Chromium											
Hexavalent Chromium	18540-29-9	LA-265-403		0.0109	mg/L			1.00	2.0e-03		05/23/08

MDL = Minimum Detection Limit D - Analyte was identified at a secondary dilution factor(Inorg)

RQ = Result Qualifier

TP Err = Total Propagated Error

DF = Dilution Factor

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Report WGPP/ver. 5.2

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WSCF ANALYTICAL LABORATORY QC REPORT

Department: Inorganic

SDG Number: WSCF20081050
 Matrix: WATER
 Test: Hexavalent chromium

Sample Date: 05/22/08
 Receive Date: 05/22/08

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
Lab ID: W08P002560											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Hexavalent chromium	18540-29-9	0.259		RPD			0.775	15.000		05/23/08
MS	Hexavalent chromium	18540-29-9	0.0505	94.216	% Recov	85.000	115.000				05/23/08
MSD	Hexavalent chromium	18540-29-9	0.0492	91.791	% Recov	85.000	115.000				05/23/08
SPK-RPD	Hexavalent chromium	18540-29-9	91.791		RPD			2.607	20.000		05/23/08
Lab ID: W08P002570											
BATCH QC ASSOCIATED WITH SAMPLE											
DUP	Hexavalent chromium	18540-29-9	0.0840		RPD			0.000	15.000		05/23/08
MS	Hexavalent chromium	18540-29-9	0.0517	96.455	% Recov	85.000	115.000				05/23/08
MSD	Hexavalent chromium	18540-29-9	0.0517	96.455	% Recov	85.000	115.000				05/23/08
SPK-RPD	Hexavalent chromium	18540-29-9	96.455		RPD			0.000	20.000		05/23/08
BATCH QC											
BLANK	Hexavalent chromium	18540-29-9	<0.002	n/a	mg/L	0.000	2.000			U	05/23/08
LCS	Hexavalent chromium	18540-29-9	0.0538	106.746	% Recov	80.000	120.000				05/23/08

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ATTACHMENT 4

SAMPLE RECEIPT INFORMATION

Consisting of 19 pages
Including cover page