

SOUTHWEST RESEARCH INSTITUTE®

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CHEMISTRY AND CHEMICAL ENGINEERING DIVISION
DEPARTMENT OF ANALYTICAL AND ENVIRONMENTAL CHEMISTRY

July 10, 2017

CH2M Hill Plateau Remediation Company
2420 Stevens Center Place
Mail Stop H8-41
Richland, WA 99352

Attn: Ms. Karen Waters-Husted

Subject:	SAF No:	W17-006
	SDG Number:	616707
	SwRI Project Number:	20859.01.00X
	SwRI Task Order Number:	170615-6
	SwRI Sample Receipt Number:	59886
	Samples Received	06-15-2017
	Fraction:	Wetchem TOC-SW846 9060A

Dear Ms. Waters-Husted:

Please find the enclosed results for the four (04) overall water samples received on the above referenced date. If you should have any questions, please do not hesitate to call me at (210) 522-3242, or at radonna.spies@swri.org.

Sincerely,

Radonna Spies
Principal Scientist

APPROVED:

Michael J. Dammann
Director

RPS: mg
Encl



Benefiting government, industry and the public through innovative science and technology

SOUTHWEST RESEARCH INSTITUTE
CLIENT: CH2M Hill Plateau Remediation Company
SwRI ROJECT#: 20859.01.00X
SwRI TASK ORDER: 170615-6
SwRI SRR: 59886
SDG: 616707
CASE: W17-006
VTSR: 06.15.2017

CHAIN-OF-CUSTODY & SAMPLE RECEIPT PAPERWORK

Total Page Count:	
Fraction: ^{TOC} SW-946	Pages: 010001-
9060A	010026

57165

07/10/2017

010002

C.O.C. #

REV.0

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

W17-006-220

Page 1 of 1

Collector Roger Friesz Jr. /CHPRC	Contact/Requester Karen Waters-Husted	Telephone No. 509-376-4650
SAF No. W17-006	Sampling Origin Hanford Site	Purchase Order/Charge Code 300071
Project Title RCRA, JUNE 2017	Logbook No. HNF-N-506 <u>88181</u>	Ice Chest No. <u>6 WS 605</u>
Shipped To (Lab) Southwest Research Institute	Method of Shipment Commercial Carrier	Bill of Lading/Air Bill No. <u>7794 01705527</u>
Protocol RCRA	Priority: 15 Days PRIORITY	Offsite Property No. <u>8040</u>

POSSIBLE SAMPLE HAZARDS/REMARKS

*** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS

N/A

Hold Time

Total Activity Exemption: Yes No

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3BCT4	N	W	6-14-17	0902	1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B3BCT3	N	W			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B3BCT6	N	W			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C
B3BCT5	N	W	6-14-17	0902	1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool <=6C

CHPRC
SRR # 59886

SwRI Prjct # 20859.01.00X
TO: 170615-6

SDG # 616707



Relinquished By Roger Friesz Jr. /CHPRC	Print <i>[Signature]</i>	Sign	Date/Time JUN 14 2017 1047	Received By Janelle Zunker CHPRC	Print <i>[Signature]</i>	Sign	Date/Time JUN 14 2017 1047	<p>Matrix *</p> <p>S = Soil DS = Drum Solids</p> <p>SE = Sediment DL = Drum Liquids</p> <p>SO = Solid T = Tissue</p> <p>SL = Sludge WI = Wipe</p> <p>W = Water L = Liquid</p> <p>O = Oil V = Vegetation</p> <p>A = Air X = Other</p>
Relinquished By Janelle Zunker CHPRC	<i>[Signature]</i>		Date/Time JUN 14 2017 1400	Received By FEDEX			Date/Time	
Relinquished By FEDEX			Date/Time	Received By David Garcia	<i>[Signature]</i>		Date/Time 06-15-17 08:30	
Relinquished By			Date/Time	Received By			Date/Time	
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Disposed By			Date/Time	

Southwest Research Institute

Laboratory Task Order

TO #: 170615-6 Revision: 1

Project(s): 20859.01.00X
Manager(s): SPIES, RADONNA
To Client: 06/29/17

SDG: 616707
VTSR: 06/15/17
SAF: W17-006

SRR #'s: 59886
Client(s): CH2M Hill Plateau Remediation Company

Instructions

CH2MHill Plateau Remediation Company. 300071
SAF No. W17-006

SDG 616557 is open until 06/17/17

15-day TAT.
FINAL DATA/HARDCOPY IS DUE TO THE CLIENT ON 06/30/2017.

6 overall samples (7 containers) were received on 06/15/2017
OUT of the 6 samples, ONLY the 4 samples that require TOC are listed here.

Sample Analysis REQUIRED
9060_TOC: Common

DATA DELIVERABLE _ Summary (Narrative / Results only)
REQUESTER _ Karen Waters-Husted

ATTACHMENT C - QC Requirements for Chemical and Radiochemical Analysis
Section 7.2.2 Sample Data Packages
Section 7.2.3 Hard Copy Deliverable format
Section 7.2.4 Final Data Package Requirements
Section 8.8 CHPRC Electronic Address

Electronic copies of all sample receipt information, COCs, priority data packages, final data packages, corrected/revised data packages, closure reports, status reports, invoices, etc. shall be sent to: mailto:CPP_Sample_Management@rl.gov
REVISION 1, DRmz 07/10/17: Task Order revised to clarify the instructions.

Documents Related to this task order: 223578[COC for SRR 59886], 223579[Paperwork for SRR 59886]

Deliverables --> Hard Copy: no EDD: -YES- PDF: -YES-

Test: TOC_9060
Section: WETCHEM

Holding: 28 days from CED

TOC by 9060

Cnt: 4

System ID	Type	Cont	Matrix	Customer ID	CED	Method Date
616707		1	Water	B3BCT3	14 Jun 17	12 Jul 17
616708		1	Water	B3BCT4	14 Jun 17	12 Jul 17
616709		1	Water	B3BCT5	14 Jun 17	12 Jul 17
616710		1	Water	B3BCT6	14 Jun 17	12 Jul 17



Sample Receipt

Southwest Research Institute

VTSR: 06/15/17

Time: 08:30:00

Project: 20859.01.00X

Sample Receipt Number: 59886

Manager: SPIES, RADONNA

Case #: I17-008

Logged in by: DXGARCIA

Client: CH2M Hill Plateau Remediation Company

Creation Date: 06/15/17

Notes

Samples were received intact.

Fed Ex Tracking #(s):

7794 0170 5527- 2.0° C (wet ice)

Ice Chest No.:

GWS-605

pH Test Paper 0.0 to 3.0

lot - 230315

Exp: 10/30/2018

Test requirements located on the applicable Task Order.

Background CPM: <150 cpm Container Wipe CPM: <150 cpm Total CPM: <150

System ID	Customer ID	CED	Matrix	Containers	Special Reqs.
616705	B39VK9	06/13/17	Water	2	
616706	B39VL0	06/13/17	Water	1	
616707	B3BCT3	06/14/17	Water	1	
616708	B3BCT4	06/14/17	Water	1	
616709	B3BCT5	06/14/17	Water	1	
616710	B3BCT6	06/14/17	Water	1	

Containers: 7

Samples: 6

These documents are associated with this receipt: 223578[COC for SRR 59886], 223579[Paperwork for SRR 59886]

Thermometer: 021055 Temperature: 2.0

59886 CH2M Hill Plateau Remediation

Southwest Research Institute

Traffic Report

Sample Custodian Signature:

David Garcia



- 1. Custody Seal Present
- 2. Chain of Custody Present
- 3. Sample Tags Not Present
- Sample Tag Numbers Not on COC
- 4. SMO Forms Not Present

N/A

Client: CH2M Hill Plateau Remediation Company

Project: 20859.01.00X

Case: I17-008 / SDG: *SEE TO*

Sample Receipt: 59886

Airbill: 7794 0170 5527

Custody Seal #(s): N/A

Date Received	Time Received	COC Record	SMO Sample #	Corresponding		Traffic Rpt, Tags, COC Agree	Sample Condition
				Sample Tag #	SwRI #		
06/15/17	08:30:00	I17-008-298	B39VK9	N/A	616705	YES	Intact
06/15/17	08:30:00	I17-008-297	B39VLO	N/A	616706	YES	Intact
06/15/17	08:30:00	W17-006-220	B3BCT3	N/A	616707	YES	Intact
06/15/17	08:30:00	W17-006-220	B3BCT4	N/A	616708	YES	Intact
06/15/17	08:30:00	W17-006-220	B3BCT5	N/A	616709	YES	Intact
06/15/17	08:30:00	W17-006-220	B3BCT6	N/A	616710	YES	Intact

Lab Name Southwest Research Institute			Page 1 of 1	
Received By (Print Name) DAVID GARCIA			Log-in Date 06/15/2017	
Received By (Signature) <i>David Garcia</i>				
Case Number I17-008		Sample Delivery Group No. N/A		SAS Number N/A
Remarks: 20859.01.00X				Remarks: Condition of Sample Shipment, etc
		EPA Sample #	Sample Tag #	Assigned Lab #
1. Custody Seal(s)	Present Absent* Intact Broken	B39VK9	N/A	616705
2. Custody Seal Nos.	N/A	B39VL0	N/A	616706
		B3BCT3	N/A	616707
3. Chain-of-Custody Records	Present Absent*	B3BCT4	N/A	616708
4. Traffic Reports or Packing Lists	Present Absent	B3BCT5	N/A	616709
5. Airbill	Airbill/Sticker Present Absent*	B3BCT6	N/A	616710
6. Airbill No.	7794 0170 5527			
7. Sample Tags	Present Absent N/A			
Sample Tag Numbers	Listed Not listed on Chain of Custody			
8. Sample Condition	Intact Broken*/Leaking			
9. Cooler Temperature	2.0C			
10. Does Information on custody records, traffic reports, and sample tags agree?	Yes No*			
11. Date Received at Lab	06/15/2017			
12. Time Received	08:30:00			
Sample Transfer				
Fraction	<i>INORG</i>	Fraction		
Area #	<i>R.13</i>	Area #		
By	DAVID GARCIA	By		
On	06/15/2017	On		

* Contact SMO and attach record of resolution

Reviewed By <i>David Garcia</i>	Logbook No.	Sample Receipt (59886)
Date 6.15.17	Logbook Page No.	9852 SEC 30R9

SOUTHWEST RESEARCH INSTITUTE
CLIENT: CH2M Hill Plateau Remediation Company
SwRI PROJECT#: 20859.01.00X
SwRI TASK ORDER: 170615-6
SwRI SRR: 59886
SDG: 616707
CASE: W17-006
VTSR: 06.15.2017

TOC- SW846 9060A
pH REPORT

SwRI

pH Preservation Report

Sample Receipt: 59886

Customer: CH2M Hill Plateau Remediation

Project: 20859.01.00X

Case: I17-008

Received: 06/15/2017

Samples Logged in by: DXGARCIA

SwRI #	Customer ID	Container ID	Initial pH	Login			Lab				
				Adjustment	Final pH	Paper Lot	Adjustment	Final pH	Paper lot	Adjusted	Lab Staff ID
616705 1	B39VK9	9310	<2								
616705 2	B39VK9	SRISO	<2								
616706 1	B39VL0		<2								
616707 1	B3BCT3		<2								
616708 1	B3BCT4		<2								
616709 1	B3BCT5		<2								
616710 1	B3BCT6		<2								

SOUTHWEST RESEARCH INSTITUTE
CLIENT: CH2M Hill Plateau Remediation Company
SwRI PROJECT#: 20859.01.00X
SwRI TASK ORDER: 170615-6
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CASE: W17-006
VTSR: 06.15.2017

TOC-SW846 9060A
CASE NARRATIVE

CLIENT: CH2M Hill Plateau Remediation Company

SDG: 616707

SwRI Project Number: 20859.01.00X

SwRI Sample Receipt Number: 59886

Page#: 1

SwRI CASE NARRATIVE

1. Four (04) samples were received for Wetchem TOC-SW846 9060A:

SwRI ID	Customer ID	Matrix
616707	B3BCT3	Water
616708	B3BCT4	Water
616709	B3BCT5	Water
616710	B3BCT6	Water

Client: CH2M Hill Plateau Remediation Company
SDG: 616707
SwRI Project Number: 20859.01.00X
SwRI Task Order Number(s): 170615-6

WETCHEM ANALYSIS

The following analyses were performed for this sample delivery group (SDG):

Total Organic Carbon (TOC) – SW-846 9060A

TOC ANALYSIS

Samples were analyzed for TOC according to TAP 01-0406-159 on the Phoenix 8000 TOC analyzer. The calibration range was limited to 0.2 – 10 mg/L for linearity purposes. All four samples were received at a pH < 2. Samples were analyzed in quadruplicate with both the average and range being reported. Since all sample results were below the reporting limit of 0.2 mg/L the range for each sample was < 0.2 mg/L. A sample spike and spike duplicate was performed on sample 616707.

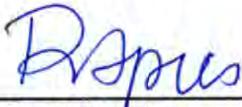
Holding Times:

All holding times were met.

QC:

All ICB's and CCB's were less than the reporting limit. All ICV's and CCV's were within 90-110% recovery. The ICB was used as the procedure blank and the ICV was used as the LCS. The spike duplicates had an RPD of less than 20%. All matrix spike recoveries were within their specified criteria.

“I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the laboratory manager or his/her designee, as verified by the following signature. This report shall not be reproduced except in full without the written approval of SwRI.”



Principal Scientist



Date

SOUTHWEST RESEARCH INSTITUTE
CLIENT: CH2M Hill Plateau Remediation Company
SwRI PROJECT#: 20859.01.00X
SwRI TASK ORDER: 170615-6
SwRI SRR: 59886
SDG: 616707
CASE: W17-006
VTSR: 06.15.2017

TOTAL ORGANIC CARBON (TOC)
SW846 9060A ANALYSIS

SOUTHWEST RESEARCH INSTITUTE
CLIENT: CH2M Hill Plateau Remediation Company
SwRI PROJECT#: 20859.01.00X
SwRI TASK ORDER: 170615-6
SwRI SRR: 59886
SDG: 616707
CASE: W17-006
VTSR: 06.15.2017

TOC- SW846 9060A

SAMPLE RESULTS

07/10/2017

010014

REV.0

SOUTHWEST RESEARCH INSTITUTE
WetChem Report
Cover Page

Client: CH2M Hill Plateau Remediation Company
Task Order: 170615-6

SDG: 616707
SRR: 59886

Case: I17-008
Project: 20859.01.00X

Client Sample ID	Lab Sample ID
B3BCT3	616707
B3BCT4	616708
B3BCT5	616709
B3BCT6	616710

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and the electronic data submitted has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: 
Date: 7/10/17

Name: Radonna Spies
Title: Principal Scientist

Cover Page

07/10/2017
SOUTHWEST RESEARCH INSTITUTE 010015
 WetChem Report - Form I
 Certificate of Analysis

REV.0
 Client Sample ID
B3BCT3
Type: Unknown

Client: CH2M Hill Plateau Remediation Company
 Task Order: 170615-6
 Lab ID: 616707
 Result Units: mg/L

SDG: 616707
 SRR: 59886
 Matrix: Water
 % Solids: NA

Case: I17-008
 Project: 20859.01.00X
 Receipt Date: 06/15/2017
 Collection Date: 06/14/2017

CAS No.	Analyte	Result	Qual	M	RL	DF	Prep Batch	Analysis Date/Time
NA	TOC	0.200	U	Pnx	0.200	1	NA	07/03/2017 15:30

Range: All replicates were below the RL. Rangs is < 0.2 mg/L.

Data Reporting Qualifiers (Qual)	Columns	Instruments/Methods (M)
U - Result is less than the SwRI Reporting Limit (RL) N - Matrix spike and/or matrix spike duplicate criteria was not met X - Analytical spike criteria was not met E - Result is estimated due to interferences D - Result is reported from a dilution * - Duplicate criteria was not met	RL - SwRI Reporting Limit DF - Dilution Factor M - Instrument	Pnx - Pheonix 8000 TOC analyzer/TOC 9060 NA - Not Applicable

Form I-IN

07/10/2017
SOUTHWEST RESEARCH INSTITUTE 010016
 WetChem Report - Form I
 Certificate of Analysis

REV.0
 Client Sample ID
B3BCT4
Type: Unknown

Client: CH2M Hill Plateau Remediation Company
 Task Order: 170615-6
 Lab ID: 616708
 Result Units: mg/L

SDG: 616707
 SRR: 59886
 Matrix: Water
 % Solids: NA

Case: I17-008
 Project: 20859.01.00X
 Receipt Date: 06/15/2017
 Collection Date: 06/14/2017

CAS No.	Analyte	Result	Qual	M	RL	DF	Prep Batch	Analysis Date/Time
NA	TOC	0.200	U	Pnx	0.200	1	NA	07/03/2017 18:47

Range: All replicates were below the RL. Rangs is < 0.2 mg/L.

Data Reporting Qualifiers (Qual)	Columns	Instruments/Methods (M)
U - Result is less than the SwRI Reporting Limit (RL) N - Matrix spike and/or matrix spike duplicate criteria was not met X - Analytical spike criteria was not met E - Result is estimated due to interferences D - Result is reported from a dilution * - Duplicate criteria was not met	RL - SwRI Reporting Limit DF - Dilution Factor M - Instrument	Pnx - Pheonix 8000 TOC analyzer/TOC 9060 NA - Not Applicable

07/10/2017
SOUTHWEST RESEARCH INSTITUTE 010017
 WetChem Report - Form I
 Certificate of Analysis

REV.0
 Client Sample ID

B3BCT5

Type: Unknown

Client: CH2M Hill Plateau Remediation Company
 Task Order: 170615-6
 Lab ID: 616709
 Result Units: mg/L

SDG: 616707
 SRR: 59886
 Matrix: Water
 % Solids: NA

Case: I17-008
 Project: 20859.01.00X
 Receipt Date: 06/15/2017
 Collection Date: 06/14/2017

CAS No.	Analyte	Result	Qual	M	RL	DF	Prep Batch	Analysis Date/Time
NA	TOC	0.200	U	Pnx	0.200	1	NA	07/03/2017 17:02

Range: All replicates were below the RL. Rangs is < 0.2 mg/L.

Data Reporting Qualifiers (Qual)	Columns	Instruments/Methods (M)
U - Result is less than the SwRI Reporting Limit (RL) N - Matrix spike and/or matrix spike duplicate criteria was not met X - Analytical spike criteria was not met E - Result is estimated due to interferences D - Result is reported from a dilution * - Duplicate criteria was not met	RL - SwRI Reporting Limit DF - Dilution Factor M - Instrument	Pnx - Pheonix 8000 TOC analyzer/TOC 9060 NA - Not Applicable

Form I-IN

07/10/2017
SOUTHWEST RESEARCH INSTITUTE 010018
 WetChem Report - Form I
 Certificate of Analysis

REV.0
 Client Sample ID
B3BCT6
Type: Unknown

Client: CH2M Hill Plateau Remediation Company
 Task Order: 170615-6
 Lab ID: 616710
 Result Units: mg/L

SDG: 616707
 SRR: 59886
 Matrix: Water
 % Solids: NA

Case: I17-008
 Project: 20859.01.00X
 Receipt Date: 06/15/2017
 Collection Date: 06/14/2017

CAS No.	Analyte	Result	Qual	M	RL	DF	Prep Batch	Analysis Date/Time
NA	TOC	0.200	U	Pnx	0.200	1	NA	07/03/2017 17:42

Range: All replicates were below the RL. Rangs is < 0.2 mg/L.

Data Reporting Qualifiers (Qual)	Columns	Instruments/Methods (M)
U - Result is less than the SwRI Reporting Limit (RL) N - Matrix spike and/or matrix spike duplicate criteria was not met X - Analytical spike criteria was not met E - Result is estimated due to interferences D - Result is reported from a dilution * - Duplicate criteria was not met	RL - SwRI Reporting Limit DF - Dilution Factor M - Instrument	Pnx - Pheonix 8000 TOC analyzer/TOC 9060 NA - Not Applicable

Form I-IN

07/10/2017
SOUTHWEST RESEARCH INSTITUTE 010019
 WetChem Report - Form I
 Certificate of Analysis

REV.0
 SwRI ID
 ICB

Type: ICB/Blank

Client: CH2M Hill Plateau Remediation Company
 Task Order: 170615-6
 Lab ID: ICB
 Result Units: mg/L

SDG: 616707
 SRR: 59886
 Matrix:
 % Solids: NA

Case: I17-008
 Project: 20859.01.00X
 Receipt Date: NA
 Collection Date: NA

CAS No.	Analyte	Result	Qual	M	RL	DF	Prep Batch	Analysis Date/Time
NA	TOC	0.200	U	Pnx	0.200	1	NA	07/03/2017 14:37

Data Reporting Qualifiers (Qual)	Columns	Instruments/Methods (M)
U - Result is less than the SwRI Reporting Limit (RL) N - Matrix spike and/or matrix spike duplicate criteria was not met X - Analytical spike criteria was not met E - Result is estimated due to interferences D - Result is reported from a dilution * - Duplicate criteria was not met	RL - SwRI Reporting Limit DF - Dilution Factor M - Instrument	Pnx - Pheonix 8000 TOC analyzer/TOC 9060 NA - Not Applicable

Form I-IN

Initial and Continuing Calibration Verification

Client: CH2M Hill Plateau Remediation Company
 Task Order: 170615-6
 Result Units: mg/L
 Associated Analytical Batches: 20170710-A001

SDG: 616707
 SRR: 59886
 Initial Calibration Source: ERA
 Continuing Calibration Source: ERA

Case: I17-008
 Project: 20859.01.00X

Analyte	Initial Calibration Verification				Continuing Calibration Verification						
	True	Found	%Rec	Limit	True	Found1	%Rec	Found2	%Rec	Limit	M
TOC	79.0	77.8	98.5%	90%-110%	79.0	76.8	97.2%	77.0	97.5%	90%-110%	Pnx

Instruments/Methods (M)
Pnx - Pheonix 8000 TOC analyzer/TOC 9060 NA - Not Applicable

Form IIA-IN

Initial and Continuing Calibration Verification

Client: CH2M Hill Plateau Remediation Company
 Task Order: 170615-6
 Result Units: mg/L
 Associated Analytical Batches: 20170710-A001

SDG: 616707
 SRR: 59886
 Initial Calibration Source: ERA
 Continuing Calibration Source: ERA

Case: I17-008
 Project: 20859.01.00X

Continuing Calibration Verification					
Analyte	True	Found3	%Rec	Limit	M
TOC	79.0	76.8	97.2%	90%-110%	Pnx

<i>Instruments/Methods (M)</i>
Pnx - Pheonix 8000 TOC analyzer/TOC 9060 NA - Not Applicable

Form IIA-IN

Blanks

Client: CH2M Hill Plateau Remediation Company
 Task Order: 170615-6
 Preparation Blank Result Units: mg/L
 Initial/Continuing Blank Result Units: mg/L

SDG: 616707
 SRR: 59886
 Preparation Blank Matrix: Water
 Associated Prep Batches: NA

Case: I17-008
 Project: 20859.01.00X
 Associated Analytical Batches: 20170710-A001

Analyte	Preparation Blank		Initial Calibration Blank		Continuing Calibration Blank						M
	Result	Qual	Found	Qual	Found1	Qual	Found2	Qual	Found3	Qual	
TOC	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	Pnx

Data Reporting Qualifiers (Qual)	Instruments/Methods (M)
U - Result is less than the SwRI Reporting Limit (RL) N - Matrix spike and/or matrix spike duplicate criteria was not met X - Analytical spike criteria was not met E - Result is estimated due to interferences D - Result is reported from a dilution * - Duplicate criteria was not met	Pnx - Pheonix 8000 TOC analyzer/TOC 9060 NA - Not Applicable

Matrix Spike/Matrix Spike Duplicate Sample Recovery

Client: CH2M Hill Plateau Remediation Company
 Task Order: 170615-6
 Lab ID: 616707S
 Result Units: mg/L

SDG: 616707
 SRR: 59886
 Matrix: Water
 % Solids: NA

Case: 117-008
 Project: 20859.01.00X

Analyte	Parent Sample Result	Qual	MS Result	MS Spike Added	MS %Rec	MSD Result	MSD Spike Added	MSD %Rec	%RPD	Control Limit %Rec	Control Limit %RPD	M	Note
TOC	0.200	U	1.08	1.00	108.0%	1.14	1.00	114.0%	5.4%	80%-120%	20%	Pnx	

Data Reporting Qualifiers (Qual)	Columns	Instruments/Methods (M)
U - Result is less than the SwRI Reporting Limit (RL) N - Matrix spike and/or matrix spike duplicate criteria was not met X - Analytical spike criteria was not met E - Result is estimated due to interferences D - Result is reported from a dilution * - Duplicate criteria was not met	M - Instrument MS - Matrix Spike MSD - Matrix Spike Duplicate Q - Qualifier RPD - Relative Percent Difference	Pnx - Pheonix 8000 TOC analyzer/TOC 9060 NA - Not Applicable

07/10/2017
SOUTHWEST RESEARCH INSTITUTE 010024
 WetChem Report - Form VII
 Laboratory Control Sample

REV.0
SwRI ID
 ICV

Client: CH2M Hill Plateau Remediation Company
 Task Order: 170615-6
 Lab ID: ICV
 Result Units: mg/L

SDG: 616707
 SRR: 59886
 Matrix: Water
 Associated Prep Batches: NA

Case: 117-008
 Project: 20859.01.00X
 LCS Source:

Analyte	True	Found	Qual	%Rec.	Limit	M	Analysis Date/Time
TOC	79.0	77.8	D	98.5%	90%-110%	Pnx	07/03/2017 14:31

Instruments/Methods (M)
Pnx - Pheonix 8000 TOC analyzer/TOC 9060 NA - Not Applicable

Form VII-IN

Detection Limits

Client: CH2M Hill Plateau Remediation Company
Task Order: 170615-6
Result Units: mg/L

SDG: 616707
SRR: 59886
Instrument: Pheonix 8000 TOC analyzer

Case: 117-008
Project: 20859.01.00X

Analyte	Wavelength	RL	CRDL
TOC	NA	0.200	0.200

Columns
RL - SwRI Reporting Limit
CRDL - Contract Req. Det. Limit

07/10/2017
SOUTHWEST RESEARCH INSTITUTE 010026
 WetChem Report - Form XII
 Analysis Run Log

REV.0

Client: CH2M Hill Plateau Remediation Company
 Task Order: 170615-6
 Analytical Batch: 20170710-A001
 Analysis Method: TOC 9060

SDG: 616707
 SRR: 59886
 Instrument: Pheonix 8000 TOC analyzer

Case: 117-008
 Project: 20859.01.00X
 Start Date: 07/03/2017
 End Date: 07/03/2017

Lab Sample ID	Client Sample ID	Time	DF	TOC
ICV	NA	14:31	20	X
ICB	NA	14:37	1	X
LOD	NA	14:44	1	X
LOQ1	NA	14:50	1	X
LOQ2	NA	14:57	1	X
LOQ3	NA	15:03	1	X
616707	B3BCT3	15:30	1	X
616707S	B3BCT3MS	15:37	1	X
616707SD	B3BCT3MSD	15:54	1	X
CCV	CCV	16:04	20	X
CCB	CCB	16:10	1	X
616708	B3BCT4	16:36	1	
616709	B3BCT5	17:02	1	X
CCV2	CCV2	17:23	20	X
CCB2	CCB2	17:29	1	X
616710	B3BCT6	17:42	1	X
616708	B3BCT4	18:47	1	X
CCV3	CCV3	18:54	20	X
CCB3	CCB3	19:01	1	X