July 29, 2016

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Richland
2800 George Washington Way
Richland, WA 99352
Tel: (509)375-3131

TestAmerica Job ID: 300-3547-1
TestAmerica Sample Delivery Group: WC1285
Client Project/Site: F16-042

For:
CH2M Hill Plateau Remediation Company
PO BOX 1600
Mail Stop R3-50
Richland, Washington 99352

Attn: CPP Sample Management

*Authorized for release by:*
*7/29/2016 4:35:23 PM*
Steven Campbell, Project Mgmt. Assistant
steven.campbell@testamericainc.com

Designee for

Whitney Ritari, Project Manager I
(509)375-3131 ext164
whitney.ritari@testamericainc.com

*I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this package. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a desingee as verified by the attached signature.*

*The laboratory is accredited to EPA 7196A in Solid and Chemical Materials, per Washington State Department of Ecology this is approved for non-discharge water samples. The sample/ sample duplicate RPD agreement is not applicable if one or both results are less than five times the MDL.*

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

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# Definitions/Glossary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-042

TestAmerica Job ID: 300-3547-1
SDG: WC1285



## Qualifiers

### HPLC/IC

| Qualifier | Qualifier Description |
|---|---|
| D | The reported value is from a dilution. |
| U | Analyzed for but not detected. |

### General Chemistry

| Qualifier | Qualifier Description |
|---|---|
| B | Estimated result. Result is less than the RL, but greater than MDL |
| U | Analyzed for but not detected. |

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ¤ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CNF | Contains no Free Liquid |
| DER | Duplicate error ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision level concentration |
| MDA | Minimum detectable activity |
| EDL | Estimated Detection Limit |
| MDC | Minimum detectable concentration |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| NC | Not Calculated |
| ND | Not detected at the reporting limit (or MDL or EDL if shown) |
| PQL | Practical Quantitation Limit |
| QC | Quality Control |
| RER | Relative error ratio |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |

## Job ID: 300-3547-1

### Laboratory: TestAmerica Richland

**Narrative**

**Job Narrative**
**300-3547-1**

**Comments**
No additional comments.

**Receipt**
The samples were received on 7/21/2016 1:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 6.4º C.

**HPLC/IC**
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

**General Chemistry**
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

| CH2MHill Plateau Remediation Company | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | F16-042-062 | PAGE 1 OF 1 |
|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| COLLECTOR<br>Curt Hoffman<br>CHPRC | COMPANY CONTACT<br>TODAK, D | TELEPHONE NO.<br>376-6427 | PROJECT COORDINATOR<br>TODAK, D | PRICE CODE 7H<br>AIR QUALITY ☐ |
| SAMPLING LOCATION<br>C9401, POST DEVELOPMENT | PROJECT DESIGNATION<br>100-NR-2 Drilling - Water | | SAF NO.<br>F16-042 | DATA TURNAROUND<br>30 Days / 30 Days |
| ICE CHEST NO. | FIELD LOGBOOK NO.<br>HNF-N-645-5/9 | ACTUAL SAMPLE DEPTH<br>96.50 FC | COA<br>304070 | METHOD OF SHIPMENT<br>GOVERNMENT VEHICLE |
| SHIPPED TO<br>TestAmerica Incorporated, Richland | OFFSITE PROPERTY NO. | | BILL OF LADING/AIR BILL NO. | ORIGINAL |

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

**POSSIBLE SAMPLE HAZARDS/ REMARKS**
*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. NA

**SPECIAL HANDLING AND/OR STORAGE**

| | |
|---|---|
| PRESERVATION | Cool <=6C |
| HOLDING TIME | 24 Hours |
| TYPE OF CONTAINER | aG |
| NO. OF CONTAINER(S) | 1 |
| VOLUME | 60mL |
| SAMPLE ANALYSIS | 7196_CR6: COMMON; |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B35VV7 | WATER | JUL 21 2016 | 0850 | ✓ |

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| CHAIN OF POSSESSION | SIGN/ PRINT NAMES | SPECIAL INSTRUCTIONS |
|---|---|---|
| RELINQUISHED BY/REMOVED FROM: Curt Hoffman CHPRC — DATE/TIME: JUL 21 2016 1130 | RECEIVED BY/STORED IN: Troy Bacon CHPRC — DATE/TIME: JUL 21 2016 1130 | FILTER |
| RELINQUISHED BY/REMOVED FROM: Troy Bacon CHPRC — DATE/TIME: JUL 21 2016 1345 | RECEIVED BY/STORED IN: J. Bock, TARL — DATE/TIME: JUL 21 2016 1345 | |
| RELINQUISHED BY/REMOVED FROM — DATE/TIME | RECEIVED BY/STORED IN — DATE/TIME | |
| RELINQUISHED BY/REMOVED FROM — DATE/TIME | RECEIVED BY/STORED IN — DATE/TIME | |
| RELINQUISHED BY/REMOVED FROM — DATE/TIME | RECEIVED BY/STORED IN — DATE/TIME | |
| RELINQUISHED BY/REMOVED FROM — DATE/TIME | RECEIVED BY/STORED IN — DATE/TIME | |
| RELINQUISHED BY/REMOVED FROM — DATE/TIME | RECEIVED BY/STORED IN — DATE/TIME | |

| | | | | |
|---|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME | |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME | |

PRINTED ON 5/24/2016 FSR ID = FSR32678 TRVL NUM = TRVL-16-153 A-6003-618 (REV 2)

| CH2MHill Plateau Remediation Company | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | F16-042-057 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Curt Hoffman, CHPRC | COMPANY CONTACT: TODAK, D | TELEPHONE NO.: 376-6427 | PROJECT COORDINATOR: TODAK, D | PRICE CODE: 7H | DATA TURNAROUND: 30 Days / 30 Days |
| SAMPLING LOCATION: C9401, POST DEVELOPMENT | PROJECT DESIGNATION: 100-NR-2 Drilling - Water | | SAF NO.: F16-042 | AIR QUALITY: ☐ | |
| ICE CHEST NO. | FIELD LOGBOOK NO.: HNFN-645-5 /4 | ACTUAL SAMPLE DEPTH: 96.50 Ft | COA: 304070 | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: TestAmerica Incorporated, Richland | OFFSITE PROPERTY NO. | | BILL OF LADING/AIR BILL NO. | | |

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

**POSSIBLE SAMPLE HAZARDS/ REMARKS**
*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. NA

**SPECIAL HANDLING AND/OR STORAGE**

| | |
|---|---|
| PRESERVATION | Cool <=6C |
| HOLDING TIME | 24 Hours |
| TYPE OF CONTAINER | aG |
| NO. OF CONTAINER(S) | 1 |
| VOLUME | 60mL |
| SAMPLE ANALYSIS | 7196_CR6: COMMON; |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B35VV2 | WATER | JUL 21 2016 | 0850 | ✓ |

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| CHAIN OF POSSESSION | SIGN/ PRINT NAMES | SPECIAL INSTRUCTIONS |
|---|---|---|
| RELINQUISHED BY/REMOVED FROM: Curt Hoffman, CHPRC — DATE/TIME: JUL 21 2016 1130 | RECEIVED BY/STORED IN: Troy Bacon, CHPRC — DATE/TIME: JUL 21 2016 1130 | |
| RELINQUISHED BY/REMOVED FROM: Troy Bacon, CHPRC — DATE/TIME: JUL 21 2016 1345 | RECEIVED BY/STORED IN: J. Bock, TARA — DATE/TIME: JUL 21 2016 1345 | |
| RELINQUISHED BY/REMOVED FROM — DATE/TIME | RECEIVED BY/STORED IN — DATE/TIME | |
| RELINQUISHED BY/REMOVED FROM — DATE/TIME | RECEIVED BY/STORED IN — DATE/TIME | |
| RELINQUISHED BY/REMOVED FROM — DATE/TIME | RECEIVED BY/STORED IN — DATE/TIME | |
| RELINQUISHED BY/REMOVED FROM — DATE/TIME | RECEIVED BY/STORED IN — DATE/TIME | |
| RELINQUISHED BY/REMOVED FROM — DATE/TIME | RECEIVED BY/STORED IN — DATE/TIME | |

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 5/24/2016 FSR ID = FSR32678 TRVL NUM = TRVL-16-153 A-6003-618 (REV 2)

| CH2MHill Plateau Remediation Company | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | F16-042-058 | PAGE 1 OF 1 |
|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| COLLECTOR: Curt Hoffman CHPRC | COMPANY CONTACT: TODAK, D | TELEPHONE NO.: 376-6427 | PROJECT COORDINATOR: TODAK, D | PRICE CODE: 7H; AIR QUALITY: ☐ | DATA TURNAROUND: 30 Days / 30 Days |
| SAMPLING LOCATION: C9401, POST DEVELOPMENT | PROJECT DESIGNATION: 100-NR-2 Drilling - Water | | SAF NO.: F16-042 | | |
| ICE CHEST NO. | FIELD LOGBOOK NO.: HNF N-645-5/9 | ACTUAL SAMPLE DEPTH: 96.50 FT | COA: 304070 | METHOD OF SHIPMENT: GOVERNMENT VEHICLE | ORIGINAL |
| SHIPPED TO: TestAmerica Incorporated, Richland | OFFSITE PROPERTY NO. | | BILL OF LADING/AIR BILL NO. | | |

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

**POSSIBLE SAMPLE HAZARDS/ REMARKS**
*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. NA

**SPECIAL HANDLING AND/OR STORAGE**

| | |
|---|---|
| PRESERVATION | Cool <=6C |
| HOLDING TIME | 48 Hours |
| TYPE OF CONTAINER | P |
| NO. OF CONTAINER(S) | 1 |
| VOLUME | 500mL |
| SAMPLE ANALYSIS | SEE ITEM (1) IN SPECIAL INSTRUCTIONS |

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| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B35VV3 | WATER | JUL 21 2016 | 0850 | ✓ |

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| CHAIN OF POSSESSION | SIGN/ PRINT NAMES | | | SPECIAL INSTRUCTIONS |
|---|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME | (1) 300.0_ANIONS_IC: COMMON {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate}; 300.0_ANIONS_IC: COMMON (Add-on) {Phosphorus in phosphate}; |
| Curt Hoffman CHPRC | JUL 21 2016 1130 | Troy Bacon CHPRC | JUL 21 2016 1130 | |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME | |
| Troy Bacon CHPRC | JUL 21 2016 1345 | J. Bock, TARL | JUL 21 2016 1345 | |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME | |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME | |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME | |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME | |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME | |

| | | | |
|---|---|---|---|
| LABORATORY SECTION | RECEIVED BY | TITLE | DATE/TIME |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

# Detection Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-042

TestAmerica Job ID: 300-3547-1
SDG: WC1285

## Client Sample ID: B35VV7 — Lab Sample ID: 300-3547-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | 0.0035 | B | 0.0040 | 0.0015 | mg/L | 1 | | 7196A | Total/NA |

## Client Sample ID: B35VV2 — Lab Sample ID: 300-3547-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | 0.0031 | B | 0.0040 | 0.0015 | mg/L | 1 | | 7196A | Total/NA |

## Client Sample ID: B35VV3 — Lab Sample ID: 300-3547-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | 25 | D | 0.40 | 0.20 | mg/L | 2 | | 300.0 | Total/NA |
| Nitrate as N | 5.9 | D | 0.056 | 0.028 | mg/L | 2 | | 300.0 | Total/NA |
| Fluoride | 0.45 | D | 0.10 | 0.050 | mg/L | 2 | | 300.0 | Total/NA |
| Sulfate | 110 | D | 2.5 | 1.3 | mg/L | 10 | | 300.0 | Total/NA |

This Detection Summary does not include radiochemical test results.

# Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-042

TestAmerica Job ID: 300-3547-1
SDG: WC1285

## Client Sample ID: B35VV7

**Lab Sample ID: 300-3547-1**
**Date Collected: 07/21/16 08:50**
**Matrix: Water**
**Date Received: 07/21/16 13:45**

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | 0.0035 | B | 0.0040 | 0.0015 | mg/L | | | 07/21/16 16:04 | 1 |

## Client Sample ID: B35VV2

**Lab Sample ID: 300-3547-2**
**Date Collected: 07/21/16 08:50**
**Matrix: Water**
**Date Received: 07/21/16 13:45**

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | 0.0031 | B | 0.0040 | 0.0015 | mg/L | | | 07/21/16 16:05 | 1 |

## Client Sample ID: B35VV3

**Lab Sample ID: 300-3547-3**
**Date Collected: 07/21/16 08:50**
**Matrix: Water**
**Date Received: 07/21/16 13:45**

### Method: 300.0 - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | 25 | D | 0.40 | 0.20 | mg/L | | | 07/21/16 20:28 | 2 |
| Nitrate as N | 5.9 | D | 0.056 | 0.028 | mg/L | | | 07/21/16 20:28 | 2 |
| Fluoride | 0.45 | D | 0.10 | 0.050 | mg/L | | | 07/21/16 20:28 | 2 |
| Nitrite as N | 0.038 | U D | 0.076 | 0.038 | mg/L | | | 07/21/16 20:28 | 2 |
| Orthophosphate as P | 0.082 | U D | 0.16 | 0.082 | mg/L | | | 07/21/16 20:28 | 2 |
| Sulfate | 110 | D | 2.5 | 1.3 | mg/L | | | 07/21/16 21:29 | 10 |

## Method: 300.0 - Anions, Ion Chromatography

**Lab Sample ID: MB 300-4991/17** — **Client Sample ID: Method Blank**
**Matrix: Water** — **Prep Type: Total/NA**
**Analysis Batch: 4991**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Nitrate as N | 0.014 | U | 0.028 | 0.014 | mg/L | | | 07/21/16 19:58 | 1 |
| Nitrite as N | 0.019 | U | 0.038 | 0.019 | mg/L | | | 07/21/16 19:58 | 1 |
| Orthophosphate as P | 0.041 | U | 0.082 | 0.041 | mg/L | | | 07/21/16 19:58 | 1 |

**Lab Sample ID: LCS 300-4991/18** — **Client Sample ID: Lab Control Sample**
**Matrix: Water** — **Prep Type: Total/NA**
**Analysis Batch: 4991**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Nitrate as N | 2.26 | 2.33 | | mg/L | | 103 | 80 - 120 |
| Nitrite as N | 3.04 | 3.17 | | mg/L | | 104 | 80 - 120 |
| Orthophosphate as P | 6.53 | 6.72 | | mg/L | | 103 | 80 - 120 |

**Lab Sample ID: 300-3547-3 MS** — **Client Sample ID: B35VV3**
**Matrix: Water** — **Prep Type: Total/NA**
**Analysis Batch: 4991**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Nitrate as N | 5.9 | D | 0.452 | 6.30 | D | mg/L | | 94 | 75 - 125 |
| Nitrite as N | 0.038 | U D | 0.609 | 0.529 | D | mg/L | | 87 | 75 - 125 |
| Orthophosphate as P | 0.082 | U D | 1.31 | 1.13 | D | mg/L | | 86 | 75 - 125 |

**Lab Sample ID: 300-3547-3 DU** — **Client Sample ID: B35VV3**
**Matrix: Water** — **Prep Type: Total/NA**
**Analysis Batch: 4991**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Nitrate as N | 5.9 | D | 5.81 | D | mg/L | | 1 | 20 |
| Nitrite as N | 0.038 | U D | 0.038 | U D | mg/L | | NC | 20 |
| Orthophosphate as P | 0.082 | U D | 0.082 | U D | mg/L | | NC | 20 |

**Lab Sample ID: MB 300-4992/17** — **Client Sample ID: Method Blank**
**Matrix: Water** — **Prep Type: Total/NA**
**Analysis Batch: 4992**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | 0.10 | U | 0.20 | 0.10 | mg/L | | | 07/21/16 19:58 | 1 |
| Fluoride | 0.025 | U | 0.050 | 0.025 | mg/L | | | 07/21/16 19:58 | 1 |
| Sulfate | 0.13 | U | 0.25 | 0.13 | mg/L | | | 07/21/16 19:58 | 1 |

**Lab Sample ID: LCS 300-4992/18** — **Client Sample ID: Lab Control Sample**
**Matrix: Water** — **Prep Type: Total/NA**
**Analysis Batch: 4992**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Chloride | 16.0 | 16.3 | | mg/L | | 102 | 80 - 120 |
| Fluoride | 4.00 | 4.09 | | mg/L | | 102 | 80 - 120 |
| Sulfate | 20.0 | 20.4 | | mg/L | | 102 | 80 - 120 |

## Method: 300.0 - Anions, Ion Chromatography (Continued)

**Lab Sample ID: 300-3547-3 MS** — **Client Sample ID: B35VV3**
**Matrix: Water** — **Prep Type: Total/NA**
**Analysis Batch: 4992**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | 25 | D | 3.20 | 28.3 | D | mg/L | | 95 | 75 - 125 |
| Fluoride | 0.45 | D | 0.800 | 1.23 | D | mg/L | | 97 | 75 - 125 |

**Lab Sample ID: 300-3547-3 MS** — **Client Sample ID: B35VV3**
**Matrix: Water** — **Prep Type: Total/NA**
**Analysis Batch: 4992**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 110 | D | 20.0 | 126 | D | mg/L | | 104 | 75 - 125 |

**Lab Sample ID: 300-3547-3 DU** — **Client Sample ID: B35VV3**
**Matrix: Water** — **Prep Type: Total/NA**
**Analysis Batch: 4992**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Chloride | 25 | D | 25.0 | D | mg/L | | 1 | 20 |
| Fluoride | 0.45 | D | 0.441 | D | mg/L | | 1 | 20 |

**Lab Sample ID: 300-3547-3 DU** — **Client Sample ID: B35VV3**
**Matrix: Water** — **Prep Type: Total/NA**
**Analysis Batch: 4992**

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Sulfate | 110 | D | 105 | D | mg/L | | 0.2 | 20 |

## Method: 7196A - Chromium, Hexavalent

**Lab Sample ID: MB 300-5015/3** — **Client Sample ID: Method Blank**
**Matrix: Water** — **Prep Type: Total/NA**
**Analysis Batch: 5015**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | 0.0015 | U | 0.0040 | 0.0015 | mg/L | | | 07/21/16 16:01 | 1 |

**Lab Sample ID: LCS 300-5015/4** — **Client Sample ID: Lab Control Sample**
**Matrix: Water** — **Prep Type: Total/NA**
**Analysis Batch: 5015**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Cr (VI) | 0.250 | 0.253 | | mg/L | | 101 | 80 - 120 |

**Lab Sample ID: 300-3547-1 MS** — **Client Sample ID: B35VV7**
**Matrix: Water** — **Prep Type: Total/NA**
**Analysis Batch: 5015**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | 0.0035 | B | 0.0500 | 0.0542 | | mg/L | | 101 | 75 - 125 |

# QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-042

TestAmerica Job ID: 300-3547-1
SDG: WC1285

## Method: 7196A - Chromium, Hexavalent (Continued)

**Lab Sample ID: 300-3547-1 DU**
**Matrix: Water**
**Analysis Batch: 5015**

**Client Sample ID: B35VV7**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | | DU Result | DU Qualifier | Unit | D | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cr (VI) | 0.0035 | B | | 0.00350 | B | mg/L | | | | 0 | 20 |

# QC Association Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-042

TestAmerica Job ID: 300-3547-1
SDG: WC1285

## HPLC/IC

### Analysis Batch: 4991

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 300-3547-3 | B35VV3 | Total/NA | Water | 300.0 | |
| MB 300-4991/17 | Method Blank | Total/NA | Water | 300.0 | |
| LCS 300-4991/18 | Lab Control Sample | Total/NA | Water | 300.0 | |
| 300-3547-3 MS | B35VV3 | Total/NA | Water | 300.0 | |
| 300-3547-3 DU | B35VV3 | Total/NA | Water | 300.0 | |

### Analysis Batch: 4992

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 300-3547-3 | B35VV3 | Total/NA | Water | 300.0 | |
| 300-3547-3 | B35VV3 | Total/NA | Water | 300.0 | |
| MB 300-4992/17 | Method Blank | Total/NA | Water | 300.0 | |
| LCS 300-4992/18 | Lab Control Sample | Total/NA | Water | 300.0 | |
| 300-3547-3 MS | B35VV3 | Total/NA | Water | 300.0 | |
| 300-3547-3 MS | B35VV3 | Total/NA | Water | 300.0 | |
| 300-3547-3 DU | B35VV3 | Total/NA | Water | 300.0 | |
| 300-3547-3 DU | B35VV3 | Total/NA | Water | 300.0 | |

## General Chemistry

### Analysis Batch: 5015

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 300-3547-1 | B35VV7 | Total/NA | Water | 7196A | |
| 300-3547-2 | B35VV2 | Total/NA | Water | 7196A | |
| MB 300-5015/3 | Method Blank | Total/NA | Water | 7196A | |
| LCS 300-5015/4 | Lab Control Sample | Total/NA | Water | 7196A | |
| 300-3547-1 MS | B35VV7 | Total/NA | Water | 7196A | |
| 300-3547-1 DU | B35VV7 | Total/NA | Water | 7196A | |

# Lab Chronicle

Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-042

TestAmerica Job ID: 300-3547-1
SDG: WC1285



## Client Sample ID: B35VV7 — Lab Sample ID: 300-3547-1

**Date Collected: 07/21/16 08:50** — **Matrix: Water**
**Date Received: 07/21/16 13:45**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 7196A | | 1 | | | 5015 | 07/21/16 16:04 | RLC | TAL RCH |

## Client Sample ID: B35VV2 — Lab Sample ID: 300-3547-2

**Date Collected: 07/21/16 08:50** — **Matrix: Water**
**Date Received: 07/21/16 13:45**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 7196A | | 1 | | | 5015 | 07/21/16 16:05 | RLC | TAL RCH |

## Client Sample ID: B35VV3 — Lab Sample ID: 300-3547-3

**Date Collected: 07/21/16 08:50** — **Matrix: Water**
**Date Received: 07/21/16 13:45**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 300.0 | | 2 | | | 4991 | 07/21/16 20:28 | CPM | TAL RCH |
| Total/NA | Analysis | 300.0 | | 2 | | | 4992 | 07/21/16 20:28 | CPM | TAL RCH |
| Total/NA | Analysis | 300.0 | | 10 | | | 4992 | 07/21/16 21:29 | CPM | TAL RCH |

## Client Sample ID: Method Blank — Lab Sample ID: MB 300-4991/17

**Date Collected: N/A** — **Matrix: Water**
**Date Received: N/A**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 300.0 | | 1 | | | 4991 | 07/21/16 19:58 | CPM | TAL RCH |

## Client Sample ID: Method Blank — Lab Sample ID: MB 300-4992/17

**Date Collected: N/A** — **Matrix: Water**
**Date Received: N/A**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 300.0 | | 1 | | | 4992 | 07/21/16 19:58 | CPM | TAL RCH |

## Client Sample ID: Method Blank — Lab Sample ID: MB 300-5015/3

**Date Collected: N/A** — **Matrix: Water**
**Date Received: N/A**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 7196A | | 1 | | | 5015 | 07/21/16 16:01 | RLC | TAL RCH |

Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-042

TestAmerica Job ID: 300-3547-1
SDG: WC1285

## Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 300-4991/18

**Date Collected: N/A** — **Matrix: Water**
**Date Received: N/A**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 300.0 | | 1 | | | 4991 | 07/21/16 20:13 | CPM | TAL RCH |

## Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 300-4992/18

**Date Collected: N/A** — **Matrix: Water**
**Date Received: N/A**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 300.0 | | 1 | | | 4992 | 07/21/16 20:13 | CPM | TAL RCH |

## Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 300-5015/4

**Date Collected: N/A** — **Matrix: Water**
**Date Received: N/A**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 7196A | | 1 | | | 5015 | 07/21/16 16:01 | RLC | TAL RCH |

## Client Sample ID: B35VV7 — Lab Sample ID: 300-3547-1 MS

**Date Collected: 07/21/16 08:50** — **Matrix: Water**
**Date Received: 07/21/16 13:45**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 7196A | | 1 | | | 5015 | 07/21/16 16:02 | RLC | TAL RCH |

## Client Sample ID: B35VV3 — Lab Sample ID: 300-3547-3 MS

**Date Collected: 07/21/16 08:50** — **Matrix: Water**
**Date Received: 07/21/16 13:45**

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 300.0 | | 2 | | | 4991 | 07/21/16 20:44 | CPM | TAL RCH |
| Total/NA | Analysis | 300.0 | | 2 | | | 4992 | 07/21/16 20:44 | CPM | TAL RCH |
| Total/NA | Analysis | 300.0 | | 10 | | | 4992 | 07/21/16 21:45 | CPM | TAL RCH |

**Laboratory References:**

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

# Method Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-042

TestAmerica Job ID: 300-3547-1
SDG: WC1285

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| 300.0 | Anions, Ion Chromatography | MCAWW | TAL RCH |
| 7196A | Chromium, Hexavalent | SW846 | TAL RCH |

**Protocol References:**

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

# Sample Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F16-042

TestAmerica Job ID: 300-3547-1
SDG: WC1285

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| 300-3547-1 | B35VV7 | Water | 07/21/16 08:50 | 07/21/16 13:45 |
| 300-3547-2 | B35VV2 | Water | 07/21/16 08:50 | 07/21/16 13:45 |
| 300-3547-3 | B35VV3 | Water | 07/21/16 08:50 | 07/21/16 13:45 |

# Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 300-3547-1
SDG Number: WC1285

**Login Number: 3547**
**List Number: 1**
**Creator: Bock, Julie A**

**List Source: TestAmerica Richland**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | True | |
| The cooler's custody seal, if present, is intact. | N/A | |
| Sample custody seals, if present, are intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | N/A | |
| Multiphasic samples are not present. | N/A | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |