

Analytical Data Package Prepared For

# CH2M Hill Plateau Remediation

Radiochemical Analysis By

TestAmerica TARL

2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.

Data Package Contains \_\_\_\_\_ Pages

Report Nbr: 55660

SDG Nbr	ORDER Nbr	CLIENT ID NUMBER	LOT Nbr	WORK ORDER	RPT DB ID	BATCH
W06560	P13-004	B2P563	J3E070424-1	M0RN61AA	9M0RN610	3128024

Comments:



THE LEADER IN ENVIRONMENTAL TESTING

### Certificate of Analysis

CH2M Hill Plateau Remediation Company  
P.O. Box 1600  
Mail Stop – R3-60  
Richland, WA 99352

TestAmerica Laboratories, Inc.

May 31, 2013

Attention: Scot Fitzgerald

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SAF Number	:	P13-004
Date SDG Closed	:	May 7, 2013
Number of Samples	:	One (1)
Sample Type	:	Water
SDG Number	:	W06560
Data Deliverable	:	30-Day / Summary

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### CASE NARRATIVE

#### I. Introduction

One May 7, 2013, one water sample was received at TestAmerica (TARL). Upon receipt, the sample was assigned the following laboratory ID numbers to correspond with the CH2M specific IDs:

<u>CH2M ID#</u>	<u>TARL ID#</u>	<u>DATE OF RECEIPT</u>	<u>MATRIX</u>
B2P563	MORN6	5/07/13	WATER

#### II. Sample Receipt

The sample was received in good condition and no anomalies were noted during check-in.

During the bi-weekly phone call on January 9, 2013 TARL was notified that all groundwater samples received after January 1, 2013 will have a 30 day turnaround time regardless if the chain of custodies have a turn around time that is greater than 30 days.

#### III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

CH2M Hill Plateau Remediation Company  
May 31, 2013

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The requested analyses were:

**Liquid Scintillation Counting**  
Mid Level Tritium by method RL-LSC-005

**IV. Quality Control**

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

**V. Comments**

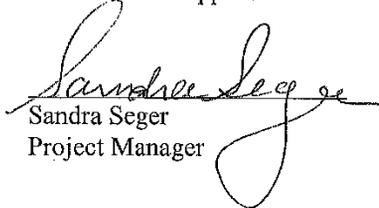
**Liquid Scintillation Counting**

Mid Level Tritium by method RL-LSC-005:

The LCS, batch blank, samples and sample duplicate (B2P563) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, 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 Manager, or a designee as verified by the following signature.

Reviewed and approved:

  
Sandra Seger  
Project Manager

**Drinking Water Method Cross References**

DRINKING WATER ASTM METHOD CROSS REFERENCES		
Referenced Method	Isotope(s)	TestAmerica Richland's SOP No.
EPA 901.1	Cs-134, I-131	RL-GAM-001
EPA 900.0	Alpha & Beta	RL-GPC-001
EPA 00-02	Gross Alpha (Coprecipitation)	RL-GPC-002
EPA 903.0	Total Alpha Radium (Ra-226)	RL-RA-002
EPA 903.1	Ra-226	RL-RA-001
EPA 904.0	Ra-228	RL-RA-001
EPA 905.0	Sr-89/90	RL-GPC-003
ASTM D5174	Uranium	RL-KPA-003
EPA 906.0	Tritium	RL-LSC-005

**Results in this report relate only to the sample(s) analyzed.**

**Uncertainty Estimation**

TestAmerica Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship,  $R = \text{constants} * f(x,y,z,\dots)$ . The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties ( $u_i$ ) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty ( $u_c$ ) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value ( $S/\sqrt{n}$ ), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

## Report Definitions

<b>Action Lev</b>	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
<b>Batch</b>	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
<b>Bias</b>	Defined by the equation $(\text{Result}/\text{Expected})-1$ as defined by ANSI N13.30.
<b>COC No</b>	Chain of Custody Number assigned by the Client or TestAmerica.
<b>Count Error (#s)</b>	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
<b>Total Uncert (#s) <i>u<sub>c</sub></i> - Combined Uncertainty.</b>	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, <i>u<sub>c</sub></i> the combined uncertainty. The uncertainty is absolute and in the same units as the result.
<b>(#s), Coverage Factor</b>	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
<b>CRDL (RL)</b>	Contractual Required Detection Limit as defined in the Client's Statement Of Work or TestAmerica "default" nominal detection limit. Often referred to the reporting level (RL)
<b>Lc</b>	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. $Lc = (1.645 * \text{Sqrt}(2 * (\text{BkgndCnt}/\text{BkgndCntMin})/\text{SCntMin})) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol})) * \text{IngrFct}$ . For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
<b>Lot-Sample No</b>	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
<b>MDC MDA</b>	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. $MDC = (4.65 * \text{Sqrt}((\text{BkgndCnt}/\text{BkgndCntMin})/\text{SCntMin}) + 2.71/\text{SCntMin}) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol})) * \text{IngrFct}$ . For LSC methods the batch blank is used as a measure of the background variability.
<b>Primary Detector</b>	The instrument identifier associated with the analysis of the sample aliquot.
<b>Ratio U-234/U-238</b>	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
<b>Rst/MDC</b>	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
<b>Rst/TotUcert</b>	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
<b>Report DB No</b>	Sample Identifier used by the report system. The number is based upon the first five digits of the <b>Work Order</b> Number.
<b>RER</b>	The equation Replicate Error Ratio = $(S-D)/[\text{sqrt}(TPUs^2 + TPUD^2)]$ as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUD is the total uncertainty of the duplicate sample.
<b>SDG</b>	Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt.
<b>Sum Rpt Alpha Spec Rst(s)</b>	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
<b>Work Order</b>	The LIMS software assign test specific identifier.
<b>Yield</b>	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

5/31/2013 8:54:10 AM

**TestAmerica Report**

Lab Code: TARL

FormNbr: R    FormatType: FEAD    Version: 05    Rpt Nbr: 55660    File Name: h:\Reportdb\edd\Feed\Rad\W06560.Edd, h:\Reportdb\edd\Feed\Rad\W06560.Edd

Lab Sample Id:	Client Id:	Test User	Contract Nbr	SAF Nbr	Sdg Nbr:	QC Type:	Moisture/Solids%*	Distilled Volume	Sample On Date:	Collection Date:				
9MORN610	B2P563		MW6-SBB-A1	P13-004	W06560					05/06/2013 11:09				
Batch 3128024	Analyte H-3	CAS# 10028-17-8	Result -1.97E+01	Unit pCi/L	CntU 2S 1.1E+01	TotU 2S 2.3E+01	Qual U	MDA 2.43E+01	TrcYield 100.0	Method 906.0ML_H3_LSC	Alq Size 1.0034E-02	Unit L	Analy Date/Time 05/15/2013 09:54	Act I

TestAmerica  
 rptFeedRadSummaryEdd v3.48  
 U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.  
 J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).  
 B Qual- Analyte was found in the associated laboratory blank above the MDC.

Friday, May 31, 2013

### TestAmerica QC Blank Report

Lab Code: TARL

FormNbr: R    FormatType: FEAD    VersionNbr: 05    File Name: h:\Reportdb\edd\FeadIVRad\W06560.Edd, h:\Reportdb\edd\FeadIVRad\55660.Ed

**Lab Sample Id:** MORTX1AB    **Sdg/Rept Nbr:** W06560    **Collection Date:** 05/06/2013 11:09  
**Client Id:** NA    **Matrix:** WATER    **Decant:** 55660    **Sample On Date:**  
**Moisture/Solids%\*:**    **QC Type:** BLK    **Received Date:** 05/07/2013

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RType
	MW6-SBB-A19981								AC	H

Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert.2S	Qu- al	MDC	Tracer Yield	Spk Concl/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
3128024	H-3	1.15E+01	pCi/L	2.4E+01	U	2.82E+01	100.0		906.0ML_H3_L	1.0001E-02	05/15/2013				D
BLK	10028-17-8			1.2E+01						L	09:54				

TestAmerica  
rptFeadRadEdd v3.68

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.  
 J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).  
 B Qual - Analyte was found in the associated laboratory blank above the MDC.

Friday, May 31, 2013

### TestAmerica QC Control Sample Report

Lab Code: TARL

FormNbr: R    FormatType: FEAD    VersionNbr: 05    File Name: h:\Report\b\edd\Fead\VARad\W06560.Edd, h:\Report\b\edd\Fead\VARad\55660.Ed

**Lab Sample Id:** MORTX1CS    **Sdg/Rept Nbr:** W06560    **Collection Date:** 05/06/2013 11:09  
**Client Id:** NA    **Matrix:** WATER    **Decant:** WATER    **Sample On Date:**  
**Moisture/Solids%\*:**    **QC Type:** BS    **Received Date:** 05/07/2013

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Distilled Volume	File Id	F Suffix	R Typ
	MW6-SBB-A19981							AD	H

Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu- al	MDC	Tracer Yield	Spk Concl/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
3128024	H-3	8.21E+03	pCi/L	9.4E+02		2.73E+01	100.0	9.08E+03	906.0ML_H3_L	1.002E-02	05/15/2013			70	D
BS	10028-17-8			6.4E+01				90.4		L	09:54			130	

TestAmerica  
rptFeadRadEdd v3.68

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.  
 J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).  
 B Qual- Analyte was found in the associated laboratory blank above the MDC.

Friday, May 31, 2013

### TestAmerica QC Duplicate Report

Lab Code: TARL

FormNbr: R      FormatType: FEAD      VersionNbr: 05      File Name: h:\Reportdb\edd\FeadIVRad\W06560.Edd, h:\Reportdb\edd\FeadIVRad\55660.Ed

**Lab Sample Id:** MORN61CR      **Sdg/Rept Nbr:** W06560      **Collection Date:** 05/06/2013 11:09  
**Client Id:** B2P563      **Matrix:** WATER      **Sample On Date:**  
**Moisture/Solids%\*:**      **QC Type:** DUP      **Received Date:** 05/07/2013

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RType
P13-004	MW6-SBB-A19981								AB	H

Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu- al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
3128024	H-3	-1.97E+01	pCi/L	2.3E+01	U	2.48E+01	100.0		906.0ML_H3_L	1.001E-02	05/15/2013 09:54	0.0	0.		D
<b>DUP</b>	10028-17-8	-1.97E+01		1.1E+01						L		20.0	3		

TestAmerica  
rptFeadRadEdd v3.68

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.  
 J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).  
 B Qual- Analyte was found in the associated laboratory blank above the MDC.

Lot No., Due Date: J3E070424; 06/07/2013  
 Client, Site: 384868; A210440HANFORD HANFORD  
 QC Batch No., Method Test: 3128024; RTRITIUM Midlevel Tritium  
 SDG, Matrix: W06560; WATER

<b>1.0 COC</b>		
1.1	Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?	Yes No N/A <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>2.0 QC Batch</b>		
2.1	Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	Yes No N/A <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
2.2	Are the QC appropriate for the analysis included in the batch?	Yes No N/A <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
2.3	Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?	Yes No N/A <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
2.4	Does the Worksheets include a Tracer Vial label for each sample?	Yes No N/A <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>
<b>3.0 QC &amp; Samples</b>		
3.1	Is the blank results, yield, and MDA within contract limits?	Yes No N/A <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
3.2	Is the LCS result, yield, and MDA within contract limits?	Yes No N/A <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
3.3	Are the MS/MSD results, yields, and MDA within contract limits?	Yes No N/A <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>
3.4	Are the duplicate result, yields, and MDAs within contract limits?	Yes No N/A <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
3.5	Are the sample yields and MDAs within contract limits?	Yes No N/A <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>4.0 Raw Data</b>		
4.1	Were results calculated in the correct units?	Yes No N/A <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4.2	Were analysis volumes entered correctly?	Yes No N/A <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4.3	Were Yields entered correctly?	Yes No N/A <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>
4.4	Were spectra reviewed/meet contractual requirements?	Yes No N/A <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>
4.5	Were raw counts reviewed for anomalies?	Yes No N/A <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>5.0 Other</b>		
5.1	Are all nonconformances included and noted?	Yes No N/A <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>
5.2	Are all required forms filled out?	Yes No N/A <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
5.3	Was the correct methodology used?	Yes No N/A <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
5.4	Was transcription checked?	Yes No N/A <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
5.5	Were all calculations checked at a minimum frequency?	Yes No N/A <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>
5.6	Are worksheet entries complete and correct?	Yes No N/A <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
6.0	Comments on any No response:	

*Thomas DME*  
 First Level \_\_\_\_\_ Date 5/31/13



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**Data Review Checklist**  
**RADIOCHEMISTRY**  
 Second Level Review

Batch Number: 3128024

Review Item	Yes (✓)	No (✓)	NA (✓)
<b>A. Sample Analysis</b>			
1. Are the sample yields within acceptance criteria?			✓
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
<b>B. QC Samples</b>			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery within contract acceptance criteria?	✓		
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
7. Do the MS/MSD results and yields meet acceptance criteria?			✓
8. Do the duplicate sample results and yields meet acceptance criteria?	✓		
<b>C. Other</b>			
1. Are all Non-conformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Second Level Review: *Landra Legner* Date: 5-31-13

<b>CH2M Hill Plateau Remediation Company</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>		C.O.C.# <b>P13-004-002</b>	
Collector <b>F.M. Hall</b>		Contact/Requester <b>WATERS-HUSTED, K</b>	Telephone No. <b>376-4650</b>	Page 1 of 1	
SAF No. <b>P13-004</b>		Sampling Origin <b>299-W7-3</b>	Purchase Order/Charge Code <b>300025CA40</b>		
Project Title <b>SALDS, MAY 2013</b>		Logbook No. <b>HNF-N-5065472</b>	Ice Chest No. <b>N/A</b>		
Shipped To (Lab) <b>TestAmerica Incorporated, Richland</b>		Method of Shipment <b>GOVERNMENT VEHICLE</b>	Bill of Lading/Air Bill No. <b>N/A</b>		
Protocol <b>Permit Monitoring</b>		Priority: <b>30 Days</b>	Offsite Property No. <b>N/A</b>		
<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b>		<b>SPECIAL INSTRUCTIONS</b>		Total Activity Exemption: Yes <input type="checkbox"/> No <input type="checkbox"/>	
**Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.**		Hold Time			
Sample No.	Filter	* Date	Time	No./Type Container	Sample Analysis
B2P563	N	W 5/6/13	1109	1x1-L P	906.0MIL_H3_LSC: Mid-level Tritium (1)
B2P563	N	W	↓	1x20-mL P	Activity Scan
					<i>mobile</i>
					6 Months
					6 Months
					Preservative
					None
					None

*J36070424*  
*w06560*  
*Du*



Relinquished By <b>F.M. Hall</b>	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time <b>MAY 06 2013 1433</b>	Received By <i>SSU #1</i>	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time <b>MAY 06 2013 1433</b>	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquids SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By <i>SSU #1</i>	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time <b>5-7-13 0800</b>	Received By <i>Ed Kavon Elshaban</i>	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time <b>5-7-13 0800</b>	
Relinquished By <i>Ed Kavon Elshaban</i>	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time <b>5-7-13 1610</b>	Received By <i>J. Bouly</i>	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time <b>5-7-13 1010</b>	
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	
<b>FINAL SAMPLE DISPOSITION</b>		Disposal Method (e.g., Return to customer, per lab procedure, used in process)		Disposed By		Date/Time		

MAY 31, 2013

TestAmerica

Sample Check-in List

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Date/Time Received: 5-7-13/1010 Container GM Screen Result: (Airlock) .4 Initials [B]
Sample GM Screen Result (Sample Receiving) .2 Initials [B]

Client: Plw SDG #: W06560 SAF #: P13-004 NA [ ]

Lot Number: 336070424

Chain of Custody # P13-004-002

Shipping Container ID or Air Bill Number: Handwritten ID NA [S/S]

Samples received inside shipping container/cooler/box Yes [B] Continue with 1 through 4. Initial appropriate response. No [ ] Go to 5, add comment to #16.

- 1. Custody Seals on shipping container intact? Yes [ ] No [ ] No Custody Seal [B]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [B]
3. Cooler temperature: \_\_\_\_\_ °C NA [B]
4. Vermiculite/packing materials is NA [B] Wet [ ] Dry [ ]

- Item 5 through 16 for samples. Initial appropriate response.
5. Chain of Custody record present? Yes [B] No [ ]
6. Number of samples received (Each sample may contain multiple bottles): 1
7. Containers received: 1x vial 20, 1x LP

- 8. Sample holding times exceeded? NA [ ] Yes [ ] No [B]
9. Samples have: \_\_\_\_\_ tape \_\_\_\_\_ hazard labels [B] custody seals [B] appropriate sample labels
10. Matrix: \_\_\_\_\_ A (FLT, Wipe, Solid, Soil) [B] I (Water) \_\_\_\_\_ S (Air, Niosh 7400) \_\_\_\_\_ T (Biological, Ni-63)
11. Samples: [B] are in good condition \_\_\_\_\_ are leaking \_\_\_\_\_ are broken
\_\_\_\_\_ have air bubbles (Only for samples requiring no head space) Other \_\_\_\_\_

- 12. Sample pH appropriate for analysis requested Yes [B] No [ ] NA [ ]
(If acidification is necessary go to 17, then document sample ID, initial pH, amount of HNO3 added and pH after addition on table)
13. Were any anomalies identified in sample receipt? Yes [ ] No [B]
14. Description of anomalies (include sample numbers): NA [B]

- 15. Sample Location, Sample Collector Listed on COC? \* Yes [B] No [ ]
\*For documentation only. No corrective action needed.
16. Additional Information: N/A

[ ] Client/Courier denied temperature check. [S/S] Client/Courier unpack cooler.

Sample Check-in List completed by Sample Custodian:
Signature: [Handwritten Signature] Date: 5-7-13

Client Notification needed? Yes [ ] No [S/S] Date: \_\_\_\_\_
By: \_\_\_\_\_
Person contacted: \_\_\_\_\_
[No action necessary, process as is]
Project Manager: [Handwritten Signature] Date: 5-8-13

15

**5/8/2013 11:28:56 AM**

**Sample Preparation/Analysis**

384868, CH2M Hill Plateau Remediation Company  
Pacific Northwest National Lab

AR H-3 Prp/Sep LSC005  
T0 Tritium - Midlevel, by Liquid Scint  
5I CLIENT: HANFORD

**Analyte/Date: 06/07/2013**

**Batch: 3128024 WATER** pCi/L  
SEQ. Batch, Test: None All Tests: 3128024 ART0, PM, Quote: SS, 57671

Work Ord, Lot, Sample Date	Total Amt/Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj. Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Mfn	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
<b>1 MORNG-1-AA</b>													
J3E070424-1-SAMP													
05/06/2013 11:09													
AmtRec: 1XVIAL20;1XLP #Containers: 2													
<b>2 MORNG-1-AC-X</b>													
J3E070424-1-DUP													
05/06/2013 11:09													
AmtRec: 1XVIAL20;1XLP #Containers: 2													
<b>3 MORTX-1-AA-B</b>													
J3E080000-24-BLK													
05/08/2013 11:28 pd													
AmtRec: #Containers: 1													
<b>4 MORTX-1-AC-C</b>													
J3E080000-24-LCS													
05/08/2013 11:28 pd													
AmtRec: #Containers: 1													
<b>5 MORTX-1-AD-BN</b>													
J3E080000-24-IBLK													
05/08/2013 11:28 pd													
AmtRec: #Containers: 1													

**Comments:**

All Clients for Batch:  
384868, CH2M Hill Plateau Remediation Company Pacific Northwest National Lab, SS, 57671

MORNG1AA-SAMP Constituent List:  
E-3 RDL:400 pCi/L LCL:70 UCL:130 RPD:20

TestAmerica Key: in - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 Page 1  
Richland Wa. pd - Prep Dt, dc - Date Chg, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added

ISV - Insufficient Volume for Analysis

WO Cnt: 5  
ICOC v4.8.49

Sample Preparation/Analysis													
5/8/2013 11:28:56 AM		Balance Id:		Pipet #:		Sep1 DT/Tm Tech:		Sep2 DT/Tm Tech:		Prep Tech:			
AR H-3 Prp/Sep LSC005													
T0 Tritium - Midlevel, by Liquid Scint													
51 CLIENT: HANFORD													
AnalytDueDate: 06/07/2013		pCi/L											
Batch: 3128024		SEQ Batch, Test: None											
Work Ord. Lot, Sample Date	Total Amt/Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
MORTX1AA-BLK:													
MORTX1AC-LCS:													
MORTX1AD-IBLK:													
MORN61AA-SAMP Calc Info:													
Uncert Level (#s): 2			Decay to Sadt: Y	Blk Subst.: N	Sci. Not.: Y								ODRs: B
MORTX1AA-BLK:													
Uncert Level (#s): 2			Decay to Sadt: Y	Blk Subst.: N	Sci. Not.: Y								ODRs: B
MORTX1AC-LCS:													
Uncert Level (#s): 2			Decay to Sadt: Y	Blk Subst.: N	Sci. Not.: Y								ODRs: B
MORTX1AD-IBLK:													
Uncert Level (#s): 2			Decay to Sadt: Y	Blk Subst.: N	Sci. Not.: Y								ODRs: B

5/31/2013 7:15:15 AM

# ICOC Fraction Transfer/Status Report

ByDate: 5/31/2012, 6/5/2013, Batch: '3128024', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
<b>3128024</b>				
AC	Rev1C	NortonP	5/15/2013 3:23:29 PM	
SC		NortonP	Sep1C 5/15/2013 3:23:29 PM	RL-LSC-005 REVISION 2
SC		DawkinsO	InCnt1 5/15/2013 4:13:02 PM	RL-CI-005 REV. 2
SC		ClarkR	CalcC 5/29/2013 3:31:35 PM	RL-CI-005 REVISION 4
SC		mcginnist	Rev1C 5/31/2013 6:58:39 AM	RL-DR-001 Rev 2
AC		DawkinsO	5/15/2013 4:13:02 PM	
AC		ClarkR	5/29/2013 3:31:35 PM	
AC		mcginnist	5/31/2013 6:58:39	

AC: Accepting Entry; SC: Status Change

TestAmerica Richland  
Richland Wa.