Analytical Data Package Prepared For

CH2M Hill Plateau Remediation

Radiochemical Analysis By

TestAmerica Inc TARL

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

Data Package Contains _____ Pages

Report Nbr: 59940

SDG Nbr	ORDER Nbr	CLIENT ID NUMBER	LOT Nbr	WORK ORDER	RPT DB ID	BATCH
W06653A	S14-001	B2TYW3	J4D170416-1	M3H5E1AA	9M3H5E10	4107052

Comments:

APRIL 30, 2014

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

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

April 30, 2014

Attention: Scot Fitzgerald

SAF Number	:	S14-001
Date SDG Closed	:	April 16, 2014
Number of Samples	:	One (1)
Sample Type	:	Water
SDG Number	:	W06653A
Data Deliverable	:	15 Day / Summary

CASE NARRATIVE

On April 16, 2014 a request for reanalysis (Order Number: 140416TARL-R8164) of one water sample was received at TestAmerica for radiochemical analysis. Upon receipt, the sample was assigned the following laboratory ID numbers to correspond with the CH2M specific IDs:

CH2M ID#	TARL ID#	MATRIX	DATE OF RECEIPT
B2TYW3	M3H5E (M2WQE)	WATER	4/16/14

II. Sample Receipt

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

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.

The requested analyses were:

Liquid Scintillation Counting
Selenium-79 by method RL-LSC-012

CH2M Hill Plateau Remediation Company
April 30, 2014

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
Selenium-79 by method RL-LSC-012:
All the samples included on RDR Order Number 140416TARL-R8164 was reanalyzed in one batch (4107052). The client gave TARL permission to do this on 4/17/14.

There is no LCS for selenium-79.

The reanalysis results are not within RER acceptance criteria.

Except as noted, batch blank, samples and sample duplicate (B2V0D0) 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 = constants * f(x,y,z,...). 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/?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

Action Lev	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.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or TestAmerica.
Count Error (#s)	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.
Total Uncert (#s) ***u_c – Combined Uncertainty.***	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, ***u_c the combined uncertainty.*** The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	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)
Lc	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 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * 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.
Lot-Sample No	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.
MDC|MDA	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 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	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.
Rst/MDC	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.
Rst/TotUcert	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.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the **Work Order** Number.
RER	The equation Replicate Error Ratio = (S-D)/[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.
SDG	Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	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.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

4/30/2014 1:34:53 PM

TestAmerica Inc Report

Lab Code: TARL

FormNbr: R **FormatType:** FEAD **Version:** 05 **Rpt Nbr:** 59940 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W06653A.Edd, h:\Reportdb\edd\FeadIV\Rad\59940.E

Lab Sample Id:	Client Id:	Test User	Contract Nbr	SAF Nbr	Sdg Nbr:	QC Type:	Moisture/ Solids%*:	Distilled Volume	Sample On Date:	Collection Date:
9M3H5E10	B2TYW3		MW6-SBB-A1	S14-001	W06653A					01/21/2014 10:40

Batch	Analyte	CAS#	Result	Unit	CntU 2S	TotU 2S	Qual	MDA	TrcYield	Method	Alq Size	Unit	Analy Date/Time	Act
4107052	Se-79	15758-45-9	5.02E+00	pCi/L	4.0E+00	4.8E+00	U	9.27E+00	84.3	SE79_SEP_IE_LS	2.025E-01	L	04/25/2014 15:29	I

APRIL 30, 2014

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.

Wednesday, April 30, 2014

TestAmerica Inc QC Blank Report

Lab Code: TARL

FormNbr: R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W06653A.Edd, h:\Reportdb\edd\FeadIV\Rad\59940.E

Lab Sample Id:	M3H501AB	**Sdg/Rept Nbr:**	W06646A 59940	**Collection Date:**	01/06/2014 14:00
Client Id:	NA	**Matrix:**	WATER WATER	**Sample On Date:**	
Moisture/Solids%*:		**QC Type:**	BLK	**Received Date:**	04/16/2014

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp
	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
4107052	Se-79	4.83E+00	pCi/L	5.2E+00	U	1.01E+01	78.5		SE79_SEP_IE	2.00E-01	04/25/2014				D
BLK	15758-45-9			4.3E+00						L	17:35				

APRIL 30, 2014

TestAmerica Inc

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.

1

Wednesday, April 30, 2014

TestAmerica Inc QC Duplicate Report

Lab Code: TARL

FormNbr: R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W06653A.Edd, h:\Reportdb\edd\FeadIV\Rad\59940.E

Lab Sample Id:	M3H5D1CR	**Sdg/Rept Nbr:**	W06646A 59940	**Collection Date:**	01/06/2014 14:00
Client Id:	B2V0D0	**Matrix:**	WATER WATER	**Sample On Date:**	
Moisture/Solids%*:		**QC Type:**	DUP	**Received Date:**	04/16/2014

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp
S14-001	MW6-SBB-A19981								AC	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
4107052	Se-79	3.16E+00	pCi/L	5.1E+00	U	1.01E+01	76.4		SE79_SEP_IE	2.043E-01	04/25/2014	36.6	0.4		D
DUP	15758-45-9	4.57E+00		4.3E+00						L	14:26	20.0	3		

APRIL 30, 2014

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.

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Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

4/29/2014 2:45:23 PM

Lot No., Due Date: J4D170415,J4D170416,J4D170417; 05/01/2014
Client, Site: 384868; A210440HANFORD HANFORD
QC Batch No., Method Test: 4107052; RSE79 Se-79 by LSC
SDG, Matrix: W06646A,W06653A,W06656A; WATER

1.0 COC

1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions? Yes ✓ No N/A

2.0 QC Batch

2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet? Yes ✓ No N/A

2.2 Are the QC appropriate for the analysis included in the batch? Yes ✓ No N/A

2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc? Yes ✓ No N/A

2.4 Does the Worksheets include a Tracer Vial label for each sample? Yes ✓ No N/A

3.0 QC & Samples

3.1 Is the blank results, yield, and MDA within contract limits? Yes ✓ No N/A

3.2 Is the LCS result, yield, and MDA within contract limits? Yes No N/A ✓

3.3 Are the MS/MSD results, yields, and MDA within contract limits? Yes No N/A ✓

3.4 Are the duplicate result, yields, and MDAs within contract limits? Yes ✓ No N/A

3.5 Are the sample yields and MDAs within contract limits? Yes ✓ No N/A

4.0 Raw Data

4.1 Were results calculated in the correct units? Yes ✓ No N/A

4.2 Were analysis volumes entered correctly? Yes ✓ No N/A

4.3 Were Yields entered correctly? Yes ✓ No N/A

4.4 Were spectra reviewed/meet contractual requirements? Yes No N/A ✓

4.5 Were raw counts reviewed for anomalies? Yes ✓ No N/A

5.0 Other

5.1 Are all nonconformances included and noted? Yes No N/A ✓

5.2 Are all required forms filled out? Yes ✓ No N/A

5.3 Was the correct methodology used? Yes ✓ No N/A

5.4 Was transcription checked? Yes ✓ No N/A

5.5 Were all calculations checked at a minimum frequency? Yes No N/A ✓

5.6 Are worksheet entries complete and correct? Yes ✓ No N/A

6.0 Comments on any No response:

First Level Lisa Anderson Date 4/29/14

TestAmerica Richland
QAS_RADCALCv4.8.68.1

Page 1

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

Batch Number: 4107052

Review Item	Yes (√)	No (√)	NA (√)
A. Sample Analysis			
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. QC Samples			
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?	✓		
C. Other			
1. Are all Nonconformances (NCM) included and noted?			✓
2. Was the correct methodology used?	✓		
3. Were units checked?	✓		

Comments on any "No" response: _____

Second Level Review: Sandra Leger Date: 4-30-14

DR-001, Rev. 01, 10/30/2013

APRIL 30, 2014

04/16/2014

Order Number: **140416TARL-R8164**

TestAmerica Incorporated, Richland
2800 George Washington Way
Richland, WA 99354

WO 6653A
Rcv'd 4-16-14
15 DAY TAT
Due 5-1-14

Sample Delivery Group:W06646
Sample(s):
Method Name:SE79_SEP_IE_LSC

Sample#: B2V0D0 Sample Date:1/6/2014 2:00:00 PM SAF #:S14-001

Lab Sample ID	RDR Action Start Date	Constituent	Action	TAT (Hardcopy/EDD)
9M2RXH10	4/16/2014 3:21:12 PM	Selenium-79	REANALYZE	15 Days / 15 Days

Special Instructions: Data out of expected trend. SLF 04/16/2014

Sample Delivery Group:W06653
Sample(s):
Method Name:SE79_SEP_IE_LSC

Sample#: B2TYW3 Sample Date:1/21/2014 10:40:00 AM SAF #:S14-001

Lab Sample ID	RDR Action Start Date	Constituent	Action	TAT (Hardcopy/EDD)
9M2WQE10	4/16/2014 3:21:12 PM	Selenium-79	REANALYZE	15 Days / 15 Days

Special Instructions: Data out of expected trend. SLF 04/16/2014

Sample Delivery Group:W06656
Sample(s):
Method Name:SE79_SEP_IE_LSC

Sample#: B2V0H0 Sample Date:1/27/2014 2:01:00 PM SAF #:S14-001

Lab Sample ID	RDR Action Start Date	Constituent	Action	TAT (Hardcopy/EDD)
9M2XRF10	4/16/2014 3:21:12 PM	Selenium-79	REANALYZE	15 Days / 15 Days

Special Instructions: Data out of expected trend. SLF 04/16/2014

m3HSE

Deliver Report Results to:CHPRC
P.O. Box 1600
Richland, WA 99352
C/O Mr.Scot Fitzgerald

J4D170416
Due 5-1-14

J4D170416

Seger, Sandra

From: Fitzgerald, Scot L [Scot_L_Fitzgerald@rl.gov]
Sent: Wednesday, April 16, 2014 3:21 PM
To: Seger, Sandra
Cc: Ayres, Doris E; Douglas, James G (Jim); Evans, Robert T; Faught, William R; Fitzgerald, Scot L; Todak, David; Trent, Stephen J; Waters-husted, Karen S
Subject: Request for Recheck, or Reanalysis Order / R8164 SAF S14-001
Attachments: RDR8164_LabOrder.rtf

See Attachment

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # S14-001-088 Page 1 of 1

Collector	John Fulton	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAF No.	S14-001	Sampling Origin	Hanford Site	Purchase Order/Charge Code	300071ES20
Project Title	SURV, JANUARY 2014	Logbook No.	HNF-N-506 61 / 52	Ice Chest No.	N/A
Shipped To (Lab)	TestAmerica Incorporated, Richland	Method of Shipment	GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.	N/A
Protocol	SURV	Priority:	30 Days PRIORITY	Offsite Property No.	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
** ** 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.

SPECIAL INSTRUCTIONS Hold Time
Site Wide Generator Knowledge Information Form applies.
The CACN for analytical work at WSCF is 401647.

Total Activity Exemption: Yes ☑ No ☐

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2TYW3	N	W	1-21-14	1040	1x20-mL P	Activity Scan	6 Months	None
B2TYW3	N	W	↓	↓	2x4-L G/P	I129LL_SEP_LEPS_GS_LL: COMMON	6 Months	None
B2TYW3	N	W	↓	↓	2x1-L G/P	SE79_SEP_IE_LSC: COMMON M2WQE	6 Months	HNO3 to pH <2

J4A220445
W06653

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
John Fulton			JAN 2 1 2014 1200	KA Shepard			JAN 2 1 2014 1200
KA Shepard			1/21/14 1330	J. Bock	J. Bock	TALR	1-21-14 1330

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

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

PRINTED O 11/26/2013

A-6004-842 (REV 2)

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Sample Check-in List

Date/Time Received: 1-21-14 | 1350 Container GM Screen Result: (Airlock) 60 cpm Initials [ ]
Sample GM Screen Result (Sample Receiving) 30 cpm Initials [ ]

Client: PGW SDG #: W06653 SAF #: S14-001 NA [ ]

Lot Number: J4A220445

Chain of Custody # S14-001-087; 088; 091; 092; 093

Shipping Container ID or Air Bill Number : Hand de Liv NA [SKS]

Samples received inside shipping container/cooler/box Yes [ ] 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 [ ]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [ ]
3. Cooler temperature: _____ °C NA [ ]
4. Vermiculite/packing materials is NA [ ] Wet [ ] Dry [ ]

Item 5 through 16 for samples. Initial appropriate response.

5. Chain of Custody record present? Yes [ ] No [ ]
6. Number of samples received (Each sample may contain multiple bottles): 5
7. Containers received: 5 x Vial 20; 4 x Lp; 10 x 4Lp
8. Sample holding times exceeded? NA [ ] Yes [ ] No [ ]
9. Samples have: ____tape ____hazard labels SKS custody seals [ ] appropriate sample labels
10. Matrix: ____A (FLT, Wipe, Solid, Soil) [ ] I (Water) ____S (Air, Niosh 7400) ____T (Biological, Ni-63)
11. Samples:
    [ ] 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 [ ] No [ ] NA [ ]
    (If acidification is necessary go to pH area & document sample ID, initial pH, amount of HNO_3 added and pH after addition on table)
13. Were any anomalies identified in sample receipt? Yes [ ] No [ ]
14. Description of anomalies (include sample numbers): NA [ ] _____
15. Sample Location, Sample Collector Listed on COC? * Yes [ ] No [ ]
    *For documentation only. No corrective action needed.
16. Additional Information: N/A

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

Sample Check-in List completed by Sample Custodian:
Signature: [signature] Date: 1-21-14

Client Notification needed? Yes [ ] No [SKS] Date: _____
By: _____
Person contacted: _____

[SKS] No action necessary; process as is

Project Manager [signature] Date 1-23-14

LS-023 Rev. 17, 05/13 Page 1 of 1

4/21/2014 9:37:49 AM

Sample Preparation/Analysis

Balance Id:1120403183,,

384868, CH2M Hill Plateau Remediation Company
, Pacific Northwest National Lab

CY Se-79 Prp PRP004, Sep LSC012
TM Selenium-79 by Liquid Scint
5I CLIENT: HANFORD

Pipet #: _____

AnalyDueDate: 05/01/2014

Sep1 DT/Tm Tech:

Batch: 4107052 WATER pCi/L

PM, Quote: SS , 57671

Sep2 DT/Tm Tech:

SEQ Batch, Test: None All Tests: 4107052 CYTM,

Prep Tech: ,RichardsonB

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:
1 M3H5D-1-AA J4D170415-1-SAMP 01/06/2014 14:00			204.40g,in AmtRec: 2XLP	204.40g	SETA1092 03/27/14 #Containers: 2				50 Scr:		Alpha:		Beta:
2 M3H5D-1-AC-X J4D170415-1-DUP 01/06/2014 14:00			204.30g,in AmtRec: 2XLP	204.30g	SETA1093 03/27/14 #Containers: 2				Scr:		Alpha:		Beta:
3 M3H5E-1-AA J4D170416-1-SAMP 01/21/2014 10:40			202.50g,in AmtRec: 2XLP	202.50g	SETA1094 03/27/14 #Containers: 2				Scr:		Alpha:		Beta:
4 M3H5F-1-AA J4D170417-1-SAMP 01/27/2014 14:01			202.40g,in AmtRec: 2XLP	202.40g	SETA1095 03/27/14 #Containers: 2				Scr:		Alpha:		Beta:
5 M3H50-1-AA-B J4D170000-52-BLK 04/21/2014 09:37 pd			200.00g,in AmtRec:	200.00g	SETA1096 03/27/14 #Containers: 1				Scr:		Alpha:		Beta:
6 M3H50-1-AC-BN J4D170000-52-IBLK 04/17/2014 15:49 pd			AmtRec:		#Containers: 1				Scr:		Alpha:		Beta:

TestAmerica Richland Wa.

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

ISV - Insufficient Volume for Analysis

WO Cnt: 6
Prep_SamplePrep v4.8.69

APRIL 30, 2014

4/21/2014 9:37:49 AM

Sample Preparation/Analysis

CY Se-79 Prp PRP004, Sep LSC012
TM Selenium-79 by Liquid Scint
5I CLIENT: HANFORD

Balance Id:,,

Pipet #: _____

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech:

AnalyDueDate: 05/01/2014

Batch: 4107052 pCi/L
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:

Comments: M3H50-BLK CommentsP-14-00192,s-12-00228

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

M3H5D1AA-SAMP Constituent List:
  Se-79        RDL:3.00E+01    pCi/L     LCL:        UCL:        RPD:
M3H501AA-BLK:
  Se-79        RDL:3.00E+01    pCi/L     LCL:        UCL:        RPD:
M3H501AC-IBLK:
  Se-79        RDL:3.00E+01    pCi/L     LCL:        UCL:        RPD:

M3H5D1AA-SAMP Calc Info:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M3H501AA-BLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M3H501AC-IBLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
```


APRIL 30, 2014

4/30/2014 10:30:30 AM

ICOC Fraction Transfer/Status Report

ByDate: 4/30/2013, 5/5/2014, Batch: '4107052', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			SOPs,Reagents,Comments
4107052						
AC		Rev1C	RichardsonB	4/21/2014 9:27:23		
SC			CampbellSC	IsBatched	4/17/2014 3:50:16 PM	ICOC_RADCALC v4.8.49
SC			RichardsonB	InPrep	4/21/2014 9:27:23 AM	RL-PRP-004 REVISION 2
SC			DawkinsO	InCnt1	4/24/2014 5:03:03 PM	RL-CI-005 REVISION 3
SC			BullJ	CalcC	4/29/2014 12:12:47 PM	RL-CI-005 REVISION 3
SC			AntonsonL	Rev1C	4/29/2014 2:44:06 PM	RL-DR-001 Rev 5
AC			DawkinsO	4/24/2014 5:03:03 PM		
AC			BullJ	4/29/2014 12:12:47		
AC			AntonsonL	4/29/2014 2:44:06 PM		

AC: Accepting Entry; SC: Status Change

TestAmerica Richland

Richland Wa.

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Grp Rec Cnt: 4

ICOCFractions