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EDMC

Analytical Data Package Prepared For

Fluor Hanford

Radiochemical Analysis By

STL Richland

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

Assigned Laboratory Code: STLRL

Data Package Contains _____ Pages

Report No.: 33415

| SDG No. | Order No. | Client Sample ID (List Order) | Lot-Sa No. | Work Order | Report DB ID | Batch No. |
|---------|-----------|-------------------------------|-------------|------------|--------------|-----------|
| W05004 | R06-013 | B1KB53 | J6I110179-1 | JD35G2AA | 9JD35G20 | 6263405 |
| | | B1KB54 | J6I110179-2 | JD35M2AA | 9JD35M20 | 6263405 |
| | | B1KJ40 | J6I110179-3 | JD35R2AA | 9JD35R20 | 6263405 |
| | | B1KJ42 | J6I110179-4 | JD35V2AA | 9JD35V20 | 6263405 |
| | | B1KJ43 | J6I110179-5 | JD35X2AA | 9JD35X20 | 6263405 |



STL Richland
2800 George Washington Way
Richland, WA 99354

Tel: 509 375 3131 Fax: 509 375 5590
www.stl-inc.com

Certificate of Analysis

Fluor Hanford
P.O. Box 1000, T6-03
Richland, WA 99352

October 3, 2006

Attention: John Trechter

| | | |
|-------------------|---|---------------------|
| SAF Number | : | R06-013 |
| Date SDG Closed | : | September 11, 2006 |
| Number of Samples | : | Five (5) |
| Sample Type | : | Soil |
| SDG Number | : | W05004 |
| Data Deliverable | : | 15 / 15-Day Summary |



CASE NARRATIVE

I. Introduction

On September 11, 2006, five other solid samples were received at STL Richland (STLR) for radiochemical analysis. Upon receipt, the samples were assigned to lot J6I110179 and assigned the following laboratory ID number to correspond with the Fluor Hanford (FH) specific ID:

| <u>FH ID#</u> | <u>STLR ID#</u> | <u>MATRIX</u> | <u>DATE OF RECEIPT</u> |
|---------------|-----------------|---------------|------------------------|
| B1KB53 | JD35G | SOIL | 9/11/06 |
| B1KB54 | JD35M | SOIL | 9/11/06 |
| B1KJ40 | JD35R | SOIL | 9/11/06 |
| B1KJ42 | JD35V | SOIL | 9/11/06 |
| B1KJ43 | JD35X | SOIL | 9/11/06 |

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.

Fluor Hanford
October 3, 2006

The requested analyses were:

Liquid Scintillation Counting
Selenium-79 by method RICH-RC-5043

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

Gas Proportional Counting
Selenium-79 by method RICH-RC-5043

The blank failed on the first analysis. The samples were reanalyzed and were acceptable. There is currently not an available standard for Selenium 79 and an LCS was not analyzed. Except as note, the batch blank, sample and sample duplicate (B1KB53) 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:

Sherryl Adam
for Sherryl Adam
Project Manager

Drinking Water Method Cross References

| DRINKING WATER ASTM METHOD CROSS REFERENCES | | |
|--|---------------|---------------------------|
| Referenced Method | Isotope(s) | STL Richland's SOP number |
| EPA 901.1 | Cs-134, I-131 | RICH-RC-5017 |
| EPA 900.0 | Alpha & Beta | RICH-RC-5014 |
| EPA 903.1 | Ra-226 | RICH-RC-5005 |
| EPA 904.0 | Ra-228 | RICH-RC-5005 |
| EPA 905.0 | Sr89/90 | RICH-RC-5006 |
| ASTM D2460 | Total Radium | RICH-RC-5027 |
| Standard Method 7500-U-C & ASTM D5174 | Uranium | RICH-RC-5058 |
| EPA 906.0 | Tritium | RICH-RC-5007 |
| | | |
| | | |
| | | |
| | | |
| NOTE: | | |
| The Gross Alpha LCS is prepared with Am-241 (unless otherwise specified in the case narrative) | | |
| The Gross Beta LCS is prepared with Sr/Y-90 (unless otherwise specified in the case narrative) | | |

Uncertainty Estimation

STL 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

| | |
|---|---|
| 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 $(\text{Result}/\text{Expected})-1$ as defined by ANSI N13.30. |
| COC No | Chain of Custody Number assigned by the Client or STL Richland. |
| 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 STL Richland "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%. $Lc = (1.645 * \text{Sqrt}(2 * (\text{BkgndCnt}/\text{BkgndCntMin})/\text{SCntMin})) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol}) * \text{IngrFct})$. 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. |
| 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%. $MDC = (4.65 * \text{Sqrt}((\text{BkgndCnt}/\text{BkgndCntMin})/\text{SCntMin}) + 2.71/\text{SCntMin}) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol}) * \text{IngrFct})$. For LSC methods the batch blank is used as a measure of the background variability. |
| 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 = $(S-D)/[\text{sqrt}(\text{TPUs}^2 + \text{TPUd}^2)]$ 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 STL Richland 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. |

Sample Results Summary

Date: 03-Oct-06

STL Richland STLRL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 33415

SDG No: W05004

| Batch | Client Id Work Order | Parameter | Result +- Uncertainty (2s) | Qual | Units | Yield | MDC or MDA | CRDL | RPD |
|---------|-------------------------|-----------|-----------------------------|------|-------|-------|---------------|----------|-------|
| 6263405 | SE79_SEP_IE_LSC | | | | | | | | |
| | B1KB53 | | | | | | | | |
| | JD35G2AA | SE-79 | 1.06E+00 +- 1.04E+00 | U | pCi/g | 46% | 1.92E+00 | 1.00E+01 | |
| | B1KB53 DUP | | | | | | | | |
| | JD35G2AC | SE-79 | 3.55E-01 +- 5.95E-01 | U | pCi/g | 75% | 1.12E+00 | 1.00E+01 | 100.0 |
| | B1KB54 | | | | | | | | |
| | JD35M2AA | SE-79 | 4.27E-01 +- 5.45E-01 | U | pCi/g | 82% | 1.02E+00 | 1.00E+01 | |
| | B1KJ40 | | | | | | | | |
| | JD35R2AA | SE-79 | 8.50E-01 +- 5.72E-01 | U | pCi/g | 80% | 1.04E+00 | 1.00E+01 | |
| | B1KJ42 | | | | | | | | |
| | JD35V2AA | SE-79 | -2.42E-01 +- 9.41E-01 | U | pCi/g | 47% | 1.84E+00 | 1.00E+01 | |
| | B1KJ43 | | | | | | | | |
| | JD35X2AA | SE-79 | 5.08E-01 +- 1.17E+00 | U | pCi/g | 39% | 2.23E+00 | 1.00E+01 | |

No. of Results: 6

STL Richland

RPD - Relative Percent Difference.

rptSTL.RchSaSummary2 V5.0.1
A2002

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

QC Results Summary

Date: 03-Oct-06

STL Richland STLRL

Ordered by Method, Batch No, QC Type,.

Report No. : 33415

SDG No.: W05004

| Batch | Work Order | Parameter | Result +- Uncertainty (2s) | Qual | Units | Yield | Recovery | Bias | MDC MDA |
|-----------------|------------|-----------|-----------------------------|------|-------|-------|----------|------|----------|
| SE79_SEP_IE_LSC | 6263405 | BLANK QC | | | | | | | |
| | JENQP1AA | SE-79 | -5.31E-01 +- 1.08E+00 | U | pCi/g | 41% | | | 2.13E+00 |
| No. of Results: | | 1 | | | | | | | |

STL Richland Bias $-(\text{Result/Expected})-1$ as defined by ANSI N13.30.

rptSTLRchQcSummary V5.0.1 A2002 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I
SAMPLE RESULTS

Date: 03-Oct-06

Lab Name: STL Richland

SDG: W05004

Collection Date: 9/10/2006 2:15:00 PM

Lot-Sample No.: J6I110179-1

Report No.: 33415

Received Date: 9/11/2006 2:10:00 PM

Client Sample ID: B1KB53

COC No.: R06-013-024

Matrix: SOIL SOLID

Ordered by Client Sample ID, Batch No.

| Parameter | Result | Count Error (2 s) | Total Uncert(2 s) | MDC MDA, Action Lev | Rpt Unit, Lc | Yield CRDL(RL) | Rst/MDC, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Allquot Size | Primary Detector |
|----------------|-------------------|-----------------------|-----------------------|------------------------|-----------------|------------------------|--------------------------|------------------------|------------------|-----------------|---------------------|
| Batch: 6263405 | SE79_SEP_IE_LSC | | | Work Order: JD35G2AA | | Report DB ID: 9JD35G20 | | | | | |
| SE-79 | 1.06E+00 U | 8.3E-01 | 1.0E+00 | 1.92E+00 | pCi/g | 46% | 0.55 | 9/29/06 08:15 a | | 2.0 | LSC3 |
| | | | | | | 9.24E-01 | 1.00E+01 | (2.1) | | G | |

No. of Results: 1

Comments:

STL Richland
rptSTLRchSample
V5.0.1 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

Date: 03-Oct-06

SAMPLE RESULTS

Lab Name: STL Richland

SDG: W05004

Collection Date: 9/10/2006 2:15:00 PM

Lot-Sample No.: J6I110179-2

Report No.: 33415

Received Date: 9/11/2006 2:10:00 PM

Client Sample ID: B1KB54

COC No.: R06-013-024

Matrix: SOIL SOLID

Ordered by Client Sample ID, Batch No.

| Parameter | Result | Qual | Count Error (2 s) | Total Uncert(2 s) | MDC MDA, Action Lev | Rpt Unit, Lc | Yield CRDL(RL) | Rst/MDC, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Aliquot Size | Primary Detector |
|----------------|-----------------|------|-----------------------|-----------------------|------------------------|-----------------|------------------------|--------------------------|------------------------|------------------|-----------------|---------------------|
| Batch: 6263405 | SE79_SEP_IE_LSC | | | | Work Order: JD35M2AA | | Report DB ID: 9JD35M20 | | | | | |
| SE-79 | 4.27E-01 | U | 4.4E-01 | 5.4E-01 | 1.02E+00 | pCi/g | 82% | 0.42 | 9/29/06 10:00 a | | 2.1 | LSC3 |
| | | | | | | 4.91E-01 | 1.00E+01 | (1.6) | | | G | |

No. of Results: 1

Comments:

FORM I
SAMPLE RESULTS

Date: 03-Oct-06

Lab Name: STL Richland

SDG: W05004

Collection Date: 9/10/2006 2:15:00 PM

Lot-Sample No.: J6I110179-3

Report No.: 33415

Received Date: 9/11/2006 2:10:00 PM

Client Sample ID: B1KJ40

COC No.: R06-013-024

Matrix: SOIL SOLID

Ordered by Client Sample ID, Batch No.

| Parameter | Result | Count Error (2 s) | Total Uncert(2 s) | MDC MDA, Action Lev | Rpt Unit, Lc | Yield CRDL(RL) | Rst/MDC, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Aliquot Size | Primary Detector |
|----------------|-------------------|-----------------------|-----------------------|------------------------|-----------------|------------------------|--------------------------|------------------------|------------------|-----------------|---------------------|
| Batch: 6263405 | SE79_SEP_IE_LSC | | | Work Order: JD35R2AA | | Report DB ID: 9JD35R20 | | | | | |
| SE-79 | 8.50E-01 U | 4.6E-01 | 5.7E-01 | 1.04E+00 | pCi/g | 80% | 0.82 | 9/29/06 10:53 a | | 2.13 | LSC3 |
| | | | | | 4.99E-01 | 1.00E+01 | (3.) | | | G | |

No. of Results: 1 Comments:

FORM I

Date: 03-Oct-06

SAMPLE RESULTS

Lab Name: STL Richland

SDG: W05004

Collection Date: 9/10/2006 2:15:00 PM

Lot-Sample No.: J6I110179-4

Report No.: 33415

Received Date: 9/11/2006 2:10:00 PM

Client Sample ID: B1KJ42

COC No.: R06-013-024

Matrix: SOIL SOLID

Ordered by Client Sample ID, Batch No.

| Parameter | Result | Qual | Count Error (2 s) | Total Uncert(2 s) | MDC MDA, Action Lev | Rpt Unit, Lc | Yield CRDL(RL) | Rst/MDC, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Aliquot Size | Primary Detector |
|----------------|-----------------|------|-----------------------|-----------------------|------------------------|-----------------|------------------------|--------------------------|------------------------|------------------|-----------------|---------------------|
| Batch: 6263405 | SE79_SEP_IE_LSC | | | | Work Order: JD35V2AA | | Report DB ID: 9JD35V20 | | | | | |
| SE-79 | -2.42E-01 | U | 7.5E-01 | 9.4E-01 | 1.84E+00 | pCi/g | 47% | -0.13 | 9/29/06 11:45 a | | 2.06 | LSC3 |
| | | | | | | 8.84E-01 | 1.00E+01 | -0.51 | | | G | |

No. of Results: 1

Comments:

STL Richland

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

rptSTLRchSample
V5.0.1 A2002

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I
SAMPLE RESULTS

Date: 03-Oct-06

Lab Name: STL Richland

SDG: W05004

Collection Date: 9/10/2006 2:15:00 PM

Lot-Sample No.: J6I110179-5

Report No.: 33415

Received Date: 9/11/2006 2:10:00 PM

Client Sample ID: B1KJ43

COC No.: R06-013-024

Matrix: SOIL SOLID

Ordered by Client Sample ID, Batch No.

| Parameter | Result | Qual | Count Error (2 s) | Total Uncert(2 s) | MDC MDA, Action Lev | Rpt Unit, Lc | Yield CRDL(RL) | Rst/MDC, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Aliquot Size | Primary Detector |
|----------------|-----------------|------|-----------------------|-----------------------|------------------------|-----------------|------------------------|--------------------------|------------------------|------------------|-----------------|---------------------|
| Batch: 6263405 | SE79_SEP_IE_LSC | | | | Work Order: JD35X2AA | | Report DB ID: 9JD35X20 | | | | | |
| SE-79 | 5.08E-01 | U | 9.4E-01 | 1.2E+00 | 2.23E+00 | pCi/g | 39% | 0.23 | 9/29/06 12:38 p | | 2.05 | LSC3 |
| | | | | | | 1.07E+00 | 1.00E+01 | 0.87 | | | G | |

No. of Results: 1 Comments:

FORM II

Date: 03-Oct-06

DUPLICATE RESULTS

Lab Name: STL Richland

SDG: W05004

Collection Date: 9/10/2006 2:15:00 PM

Lot-Sample No.: J61110179-1

Report No.: 33415

Received Date: 9/11/2006 2:10:00 PM

Client Sample ID: B1KB53 DUP

COC No.: R06-013-024

Matrix: SOIL SOLID

| Parameter | Result, Orig Rst | Qual | Count Error (2 s) | Total Uncert(2 s) | MDC MDA, Action Lev | Rpt Unit, CRDL | Yield | Rst/MDC, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Alliquot Size | Primary Detector |
|----------------|---------------------|------|-----------------------|-----------------------|------------------------|------------------------|-------|--------------------------|-------------------------|------------------|------------------|---------------------|
| Batch: 6263405 | SE79_SEP_IE_LSC | | | | Work Order: JD35G2AC | Report DB ID: JD35G2CR | | | Orig Sa DB ID: 9JD35G20 | | | |
| SE-79 | 3.55E-01 | U | 4.8E-01 | 6.0E-01 | 1.12E+00 | pCi/g | 75% | 0.32 | 9/29/06 09:08 a | | 2.11 | LSC3 |
| | 1.06E+00 | U | RPD 100.0 | | | 1.00E+01 | | (1.2) | | | G | |

No. of Results: 1 Comments:

STL Richland

RPD - Relative Percent Difference.

rptSTLRchDupV5.0

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

.1 A2002 U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM II
BLANK RESULTS

Date: 03-Oct-06

Lab Name: STL Richland

SDG: W05004

Matrix: SOIL

Report No. : 33415

| Parameter | Result | Qual | Count Error (2 s) | Total Uncert(2 s) | MDC MDA , | Rpt Unit, CRDL | Yield | Rst/MDC, Rst/TotUcert | Analysis, Prep Date | Total Sa Size | Aliquot Size | Primary Detector |
|----------------|-----------------|------|----------------------|-----------------------|----------------------|------------------------|-------|--------------------------|------------------------|------------------|-----------------|---------------------|
| Batch: 6263405 | SE79_SEP_IE_LSC | | | | Work Order: JENQP1AA | Report DB ID: JENQP1AB | | | | | | |
| SE-79 | -5.31E-01 | U | 8.6E-01 | 1.1E+00 | 2.13E+00 | pCi/g | 41% | -0.25 | 9/29/06 01:30 p | | 2.0 | LSC3 |
| | | | | | 1.03E+00 | 1.00E+01 | | -0.98 | | | G | |

No. of Results: 1 Comments:

Lot No., Due Date: J61110179; 09/26/2006
 Client, Site: 108302; RUS TEDF HANFORD
 QC Batch No., Method Test: 6263405; RSE79 Se-79 by LSC
 SDG, Matrix: W05004; SOIL

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:

10-08769

First Level Review Pam Anderson

Date 10-1-06

**SEVERN
TRENT**

STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number:

6263405
W05004

| Review Item | Yes (✓) | No (✓) | N/A (✓) |
|---|---------|--------|---------|
| 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 with contract acceptance criteria? | / | | |
| 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? | / | | |
| 8. Do the MS/MSD results and yields meet acceptance criteria? | | | / |
| 9. Do the duplicate sample results and yields meet acceptance criteria? | / | | |
| C. Other | | | |
| 1. Are all Nonconformances 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:

See NCM

Second Level Review:

Sheryl A. Adams

Date:

10-2-06

Clouseau Nonconformance Memo

SEVERN
TRENT
SERVICES

| | |
|--|--|
| NCM #: 10-08769 | Classification: Anomaly |
| NCM Initiated By: Pam Anderson | Status: GLREVIEW |
| Date Opened: 10/02/2006 | Production Area: Environmental - Sep |
| Date Closed: | Tests: Se-79 by LSC |
| | Lot #'s (Sample #'s): J61110179 (1,2,3,4,5), J61200000 (405), |
| | QC Batches: 6263405 |
| Nonconformance: Other (describe in detail) | |
| Subcategory: Other (explanation required) | |

Problem Description / Root Cause

| <u>Name</u> | <u>Date</u> | <u>Description</u> |
|--------------|-------------|---|
| Pam Anderson | 10/02/2006 | On the first analysis of this soil sample for Se-79 the blank yield failed. The batch was reanalyzed. Reanalysis is good. |

Corrective Action

| <u>Name</u> | <u>Date</u> | <u>Corrective Action</u> |
|--------------|-------------|------------------------------------|
| Pam Anderson | 10/02/2006 | The tech has had further training. |

Client Notification Summary

| <u>Client</u> | <u>Project Manager</u> | <u>Notified</u> | <u>Response</u> | <u>How Notified</u> | <u>Note</u> |
|---------------|------------------------|----------------------|-----------------|---------------------|-------------|
| | <u>Response</u> | <u>Response Note</u> | | | |

Quality Assurance Verification

| <u>Verified By</u> | <u>Due Date</u> | <u>Status</u> | <u>Notes</u> |
|--------------------|-----------------|---------------------------------------|--------------|
| | | This section not yet completed by QA. | |

Approval History

| <u>Date Approved</u> | <u>Approved By</u> | <u>Position</u> |
|----------------------|--------------------|-----------------|
|----------------------|--------------------|-----------------|

Fluor Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

R06-013-024

PAGE 1 OF 1

COLLECTOR
HOGAN, JG
SAMPLING LOCATION
200-W-42
ICE CHEST NO.
SML 595

JLI110179
W05004
Due 9-26-06

COMPANY CONTACT
TRECHTER, JE
PROJECT DESIGNATION
200-UW-1 Operable Unit, Soil from Trench between 216-U-8 and 216-U-12
FIELD LOGBOOK NO.
DTS-SAWS-H112

TELEPHONE NO.
373-7046
COA
121600ES20

PROJECT COORDINATOR
TRECHTER, JE
SAF NO.
R06-013
METHOD OF SHIPMENT
GOVERNMENT VEHICLE

PRICE CODE 8C
AIR QUALITY

DATA TURNAROUND
15 Days / 15 Days

SHIPPED TO
Severn Trent Incorporated, Richland

OFFSITE PROPERTY NO.
N/A

BILL OF LADING/AIR BILL NO.
N/A

MATRIX*
OL = OTHER LIQUID
OS = OTHER SOLID
S = SOIL
W = WATER

SPECIAL HANDLING AND/OR STORAGE

POSSIBLE SAMPLE HAZARDS/ REMARKS

Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)

| SAMPLE NO. | LAB ID | MATRIX* | SAMPLE DATE | SAMPLE TIME | NO./TYPE CONTAINER(S) | ANALYSIS | PRESERVATION |
|------------|--------|---------|-------------|-------------|--------------------------------|----------|--------------|
| B1KB53 | | S | 9-10-06 | 1415 | 4X60mL G/P Selenium-79 {Se-79} | JD35G | None |
| B1KB54 | | S | | | 4X60mL G/P Selenium-79 {Se-79} | JD35M | None |
| B1KJ40 | | S | | | 4X60mL G/P Selenium-79 {Se-79} | JD35R | None |
| B1KJ42 | | S | | | 4X60mL G/P Selenium-79 {Se-79} | JD35V | None |
| B1KJ43 | | S | | | 4X60mL G/P Selenium-79 {Se-79} | JD35X | None |

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM
DURATEK
J.G. HOGAN
RELINQUISHED BY/REMOVED FROM
D.R. Brewster

1300 SIGN/ PRINT NAMES
DATE/TIME RECEIVED BY/STORED IN
SEP 11 2006 D.R. Brewster
DATE/TIME RECEIVED BY/STORED IN
9-11-06 S. Smith

1300
DATE/TIME
DATE/TIME
DATE/TIME

SPECIAL INSTRUCTIONS

Reporting format the same as GPP, including QC. All samples, except VOAs, have been taken using the multiple-increment sampling program. This requires the entire sample provided in each bottle to be used in analysis. VOAs will be analyzed as usual.

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



STL

Sample Check-in List

Date/Time Received: 9-11-06 14:10
 Client: TEDF SDG #: W05064 NA SAF #: R06-013 NA
 Work Order Number: J6I110179 Chain of Custody # R06-013-024
 Shipping Container ID: N/A Air Bill # N/A

1. Custody Seals on shipping container intact? NA Yes No
2. Custody Seals dated and signed? NA Yes No
3. Chain of Custody record present? Yes No
4. Cooler temperature: _____ NA Vermiculite/packing materials is NA Wet Dry
6. Number of samples in shipping container: 5
7. Sample holding times exceeded? NA Yes No
8. Samples have:
 _____ tape
 _____ custody seals
 _____ hazard labels
 _____ appropriate samples labels
9. Samples are:
 _____ in good condition
 _____ broken
 _____ leaking
 _____ have air bubbles
 (Only for samples requiring head space)
10. Sample pH taken? Soil NA pH < 2 pH > 2 adjusted pH
11. Sample Location, Sample Collector Listed? * Yes No
 *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes No
13. Description of anomalies (include sample numbers): _____

Sample Custodian: S. Smith Date: 9-11-06 14:10

| Client Sample ID | Analysis Requested | Condition | Comments/Action |
|------------------|--------------------|-----------|-----------------|
| | | | |
| | | | |

Client Informed on _____ by _____ Person contacted _____

No action necessary; process as is.

Project Manager _____ Date _____

**SEVERN
TRENT** **STL**

*** RE-ANALYSIS REQUEST ***

DUE DATE 9-26-06

CUSTOMER ^{PA} ~~P~~ Fluor

ANALYSIS Sc-79

MATRIX soil

LOT NUMBER J6I 110 179

SAMPLE DELIVERY GROUP 4.05009

OLD BATCH NUMBER 4255192

NEW BATCH NUMBER 42~~55~~⁶³405

| LAB SAMPLE ID | REASON FOR REQUEST & ANALYSIS COMMENTS |
|---------------|--|
| 1) <u>All</u> | <u>blank fails - 3 samples fail</u> |
| 2) | |
| 3) | |
| 4) | |
| 5) | |
| 6) | |
| 7) | |
| 8) | |
| 9) | |
| 10) | |
| 11) | |
| 12) | |
| 13) | |
| 14) | |
| 15) | |
| 16) | |
| 17) | |
| 18) | |
| 19) | |
| 20) | |
| LAB QC ID | Assigned with new batch. |

STL RICHLAND

9/21/2006 11:12:03 AM

Sample Preparation/Analysis

Balance Id:1120373922

108302, Fluor Hanford Inc
Management Federal Servi

, Waste

CW Se-79 PrpRC5013, SepRC5043
TM Selenium-79 by Liquid Scint
5I CLIENT: HANFORD

Pipet #:

AnalyDueDate: 09/26/2006

Sep1 DT/Tm Tech:

Batch: 6263405 SOIL pCi/g
SEQ Batch, Test: None All Tests: 6255192 CWTM, 6263405 CWTM,

PM, Quote: SA , 27045

Sep2 DT/Tm Tech:

Prep Tech: ,HansenM

| Work Order, Lot, Sample Date/Time | Total Amt/Unit | Initial Aliquot Amt/Unit | QC Tracer Prep Date | Tracer Yield | Count Time Min | Detector Id | Count On Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|---|-------------------|-----------------------------|------------------------|-----------------|-------------------|----------------|---------------------------------|--------------------------|-----------|
| 1 JD35G-2-AA J6110179-1-SAMP [REDACTED] 09/10/2006 14:15 | | 2.00g,in | SETA0175 09/21/06 | | | | | | |
| | | AmtRec: 4X60ML | #Containers: 4 | | | | Scr: Alpha: Beta: | | |
| 2 JD35G-2-AC-X J6110179-1-DUP [REDACTED] 09/10/2006 14:15 | | 2.11g,in | SETA0176 09/21/06 | | | | | | |
| | | AmtRec: 4X60ML | #Containers: 4 | | | | Scr: Alpha: Beta: | | |
| 3 JD35M-2-AA J6110179-2-SAMP [REDACTED] 09/10/2006 14:15 | | 2.10g,in | SETA0177 09/21/06 | | | | | | |
| | | AmtRec: 4X60ML | #Containers: 4 | | | | Scr: Alpha: Beta: | | |
| 4 JD35R-2-AA J6110179-3-SAMP [REDACTED] 09/10/2006 14:15 | | 2.13g,in | SETA0178 09/21/06 | | | | | | |
| | | AmtRec: 4X60ML | #Containers: 4 | | | | Scr: Alpha: Beta: | | |
| 5 JD35V-2-AA J6110179-4-SAMP [REDACTED] 09/10/2006 14:15 | | 2.06g,in | SETA0179 09/21/06 | | | | | | |
| | | AmtRec: 4X60ML | #Containers: 4 | | | | Scr: Alpha: Beta: | | |
| 6 JD35X-2-AA J6110179-5-SAMP [REDACTED] 09/10/2006 14:15 | | 2.05g,in | SETA0180 09/21/06 | | | | | | |
| | | AmtRec: 4X60ML | #Containers: 4 | | | | Scr: Alpha: Beta: | | |
| 7 JENQP-1-AA-B J61200000-405-BLK [REDACTED] 09/10/2006 14:15 | | 2.00g,in | SETA0181 09/21/06 | | | | | | |
| | | AmtRec: | #Containers: 1 | | | | Scr: Alpha: Beta: | | |

STL RICHLAND

9/21/2006 11:12:05 AM

Sample Preparation/Analysis

Balance Id:

CW Se-79 PrpRC5013, SepRC5043
 TM Selenium-79 by Liquid Scint
 5I CLIENT: HANFORD

Pipet #:

AnalyDueDate: 09/26/2006

Sep1 DT/Tm Tech:

Batch: 6263405 pCi/g
 SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech:

| Work Order, Lot, Sample Date/Time | Total Amt/Unit | Initial Aliquot Amt/Unit | QC Tracer Prep Date | Tracer Yield | Count Time Min | Detector Id | Count On Off (24hr) Circle | CR Analyst, Init/Date | Comments: |
|--------------------------------------|-------------------|-----------------------------|------------------------|-----------------|-------------------|----------------|---------------------------------|--------------------------|-----------|
|--------------------------------------|-------------------|-----------------------------|------------------------|-----------------|-------------------|----------------|---------------------------------|--------------------------|-----------|

8 JENQP-1-AC-BN

J6I200000-405-IBLK

09/10/2006 14:15

AmtRec:

#Containers: 1

Scr:

Alpha:

Beta:

Comments:

All Clients for Batch:

108302, Fluor Hanford Inc

Waste Management Federal Servi, SA, 27045

JD35G2AA-SAMP Constituent List:

| Se-79 | RDL:10 | pCi/g | LCL: | UCL: | RPD: |
|----------------|--------|-------|------|------|------|
| JENQP1AA-BLK: | | | | | |
| Se-79 | RDL:10 | pCi/g | LCL: | UCL: | RPD: |
| JENQP1AC-IBLK: | | | | | |
| Se-79 | RDL:10 | pCi/g | LCL: | UCL: | RPD: |

JD35G2AA-SAMP Calc Info:

| | | | | | |
|----------------|----------------------|------------------|--------------|-------------|---------|
| JENQP1AA-BLK: | Uncert Level (#s): 2 | Decay to SaDt: Y | Blk Subt.: N | Sci.Not.: Y | ODRs: B |
| JENQP1AC-IBLK: | Uncert Level (#s): 2 | Decay to SaDt: Y | Blk Subt.: N | Sci.Not.: Y | ODRs: B |
| JENQP1AC-IBLK: | Uncert Level (#s): 2 | Decay to SaDt: Y | Blk Subt.: N | Sci.Not.: Y | ODRs: B |

Approved By _____

Date: _____

9/30/2006 11:00:25 AM

ICOC Fraction Transfer/Status Report

ByDate: 9/30/2005, 10/5/2006, Batch: '6263405', User: *ALL Order By DateTimeAccepting

| Q | Batch | Work Ord | CurStatus | Accepting | Comments |
|----------------|-------|--------------|-----------------|--------------------------------|-------------------------|
| 6263405 | | | | | |
| AC | | CalcC | HansenM | 9/21/2006 11:47:24 | |
| SC | | | andersonp | IsBatched 9/20/2006 2:14:55 PM | ICOC_RADCALC v4.8.24 |
| SC | | | HansenM | InPrep2 9/21/2006 11:47:24 AM | RICH-RC-5013 REVISION 5 |
| SC | | | HansenM | Prep2C 9/22/2006 8:55:33 AM | RICH-RC-5013 REVISION 5 |
| SC | | | ManisD | Sep1C 9/28/2006 3:19:30 PM | RICH-RC-5043 REVISION 2 |
| SC | | | DAWKINSO | InCnt1 9/28/2006 3:39:18 PM | RICH-RD-0001 REVISION 3 |
| SC | | | BlackCL | CalcC 9/30/2006 7:07:32 AM | RICH-RD-0001 REVISION 3 |
| AC | | | HansenM | 9/22/2006 8:55:33 | |
| AC | | | ManisD | 9/28/2006 3:19:30 PM | |
| AC | | | DAWKINSO | 9/28/2006 3:39:18 PM | |
| AC | | | BlackCL | 9/30/2006 7:07:32 | |

AC: Accepting Entry; SC: Status Change

STL Richland
Richland Wa.