



Friday, December 14, 2018

Karen Waters-Husted
CH2M HILL Plateau Remediation Company
825 Jadwin Avenue
Richland, WA 99352

Re: ALS Workorder: 1811484
Project Name: CERCLA, NOVEMBER 2018
Project Number: I19-004

Dear Ms. Waters-Husted:

One water sample was received from CH2M HILL Plateau Remediation Company, on 11/28/2018. The sample was scheduled for the following analysis:

Technetium-99

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the method employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Katie M. O'Brien
Project Manager

We certify that this data package is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, any and all deviations, from either the analyses requested or the case narrative requested. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manager (or designee) and the laboratory's client services representative as verified by their signatures on this report.

Kathleen OBrien

From: Waters-husted, Karen S <karen_s_waters-husted@rl.gov>
Sent: Tuesday, November 27, 2018 3:10 PM
To: Allen, Kristine; Ashley Worthy (Ashley.Worthy@testamericainc.com); Awalt, Jayna; Bandy, Darlene; Calixto, Siobhan E; Heather Shaffer (heather.shaffer@gel.com); Jamie McKinney; Julie Ellingson; Kathleen OBrien; Medley, Heather A; Nancy Mattern; Redonna Spies (rspies@SWRI.org); Waters-husted, Karen S
Subject: I19-004 Revised
Attachments: I19-004_V1.pdf

A 15-day TAT was added to the SAF per SIR request.

Please let me know if you have any questions or concerns.
Thank you.

Karen Waters-Husted

CH2M Plateau Remediation Company
Sample Management and Reporting
Groundwater Project Coordinator
200 East / MO-277 / A-105
509-376-4650
Karen_S_Waters-husted@rl.gov

SAMPLE ISSUE RESOLUTION (SIR) REPORT	SIR Number: SIR19-0462 Rev. Number: 0 Date Initiated: 01/18/2019
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SAMPLE EVENT INFORMATION

SAF NUM(S): I19-004
LABORATORY: ALS

SAMPLING INFORMATION

NUMBER OF SAMPLES: 1
SAMPLE NUMBERS: B3LTV0
SAMPLE MATRIX: WATER
SDG NUM(S): ALS1811484

ISSUE BACKGROUND

CLASS: Chain of Custody Issue (Field)
TYPE: No/Illegible Relinquisher/Receiver Listed on COC
DESCRIPTION: On COC I19-004-034, sample B3LTV0, there is a signature missing in the first "received by" line.

RESOLUTION

PROPOSED RESOLUTION: Document and close.

FINAL RESOLUTION: Document and close.

SUBMITTED BY:

GETCHELL, LD

01/18/2019

ACCEPTED BY:

CUTSFORTH, EC

01/18/2019

ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 1811484
Client Name: CH2M HILL Plateau Remediation Company
Client Project Name: CERCLA, NOVEMBER 2018
Client Project Number: I19-004
Client PO Number: BOA 54854

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B3LTV0	1811484-1		WATER	27-Nov-18	10:17



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: CHPRC Workorder No: 1811484
Project Manager: KO Initials: KG Date: 11/28/18

1. Are airbills / shipping documents present and/or removable?	DROP OFF	<input checked="" type="radio"/> YES	<input type="radio"/> NO
2. Are custody seals on shipping containers intact?	NONE	<input checked="" type="radio"/> YES	<input type="radio"/> NO
3. Are custody seals on sample containers intact?	NONE	<input checked="" type="radio"/> YES	<input type="radio"/> NO
4. Is there a COC (chain-of-custody) present?		<input checked="" type="radio"/> YES	<input type="radio"/> NO
5. Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)		<input checked="" type="radio"/> YES	<input type="radio"/> NO
6. Are short-hold samples present?		YES	<input checked="" type="radio"/> NO
7. Are all samples within holding times for the requested analyses?		<input checked="" type="radio"/> YES	<input type="radio"/> NO
8. Were all sample containers received intact? (not broken or leaking)		<input checked="" type="radio"/> YES	<input type="radio"/> NO
9. Is there sufficient sample for the requested analyses?		<input checked="" type="radio"/> YES	<input type="radio"/> NO
10. Are all samples in the proper containers for the requested analyses?		<input checked="" type="radio"/> YES	<input type="radio"/> NO
11. Are all aqueous samples preserved correctly, if required? (excluding volatiles)	N/A	<input checked="" type="radio"/> YES	<input type="radio"/> NO
12. Are all aqueous non-preserved samples pH 4-9?	N/A	YES	<input type="radio"/> NO
13. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) free of bubbles > 6 mm (1/4 inch) diameter? (i.e. size of green pea)	N/A	YES	<input type="radio"/> NO
14. Were the samples shipped on ice?		YES	<input checked="" type="radio"/> NO
15. Were cooler temperatures measured at 0.1-6.0°C?	IR gun used* #1 #3 #4	RAD ONLY	YES <input checked="" type="radio"/> NO
Cooler #: <u>1</u>			
Temperature (°C): <u>Amb</u>			
No. of custody seals on cooler: <u>2</u>			
External µR/hr reading: <u>10</u>			
Background µR/hr reading: <u>11</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO / NA (If no, see Form 008.)			

Additional Information: Please provide details here for any NO responses to gray-shaded boxes above, or any other issues noted:

we received only a 125 ml poly for Tc 99 OK

All client bottle ID's vs ALS lab ID's double-checked by: KG

If applicable, was the client contacted? YES / NO / NA Contact: _____ Date/Time: _____

Project Manager Signature / Date: [Signature] 11/28/18

1811484

ORIGIN ID: PSCA (509) 528-4426
LESLEY WALL
CH2M
6287 LATAH ST.
6289 LATAH ST.
RICHLAND WA 99354
UNITED STATES US

SHIP DATE: 27NOV18
ACTWGT: 33.00 LB
CAD: 10708605/IN/ET/4040

BILL THIRD PARTY

TO JULIE ELLINGSON
ALS GLOBAL
225 COMMERCE DRIVE

18-2
AMB

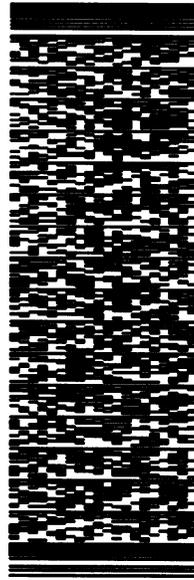
552.12/E4/DCA5

FORT COLLINS CO 80524

REF: PTR#10313000LEBWS:684

PO: NV (970) 480-1511

DEPT:

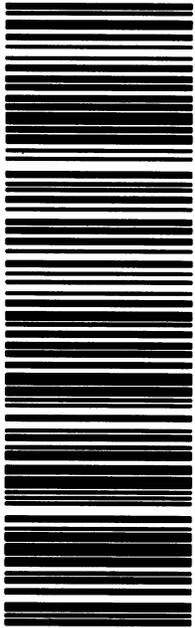


TRK# 7738 1960 6499
0201

WED - 28 NOV 10:30A
PRIORITY OVERNIGHT

XH FTCA

DSR 80524
co-us DEN



After printing this label:

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
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Technetium-99

Case Narrative

CH2M HILL Plateau Remediation Company

CERCLA, NOVEMBER 2018 – I19-004

Work Order Number: 1811484

1. The sample was prepared according to the current revision of SOP 755, with procedure modifications outlined in QASS 378635 and 378636.
2. The sample was analyzed for the presence of ⁹⁹Tc according to the current revision of SOP 704. The analysis was completed on 12/10/2018.
3. The analysis results for the sample are reported in units of pCi/L. The sample was not filtered prior to analysis.
4. The duplicate of sample 1811349-1 is shared for this work order. The duplicate was performed on a CH2M HILL Plateau Remediation Company sample and the results are acceptable. The results can be found in the following report.
5. In accordance with project specific instructions, the evaluation threshold for Relative Percent Difference (RPD) has been set at 20%. RPD is defined as:

$$RPD = \frac{|S - D|}{(S + D)/2} * 100$$

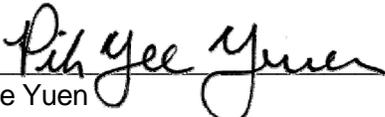
Where: S = sample activity result and D = duplicate activity result. RPD is not evaluated for sample/duplicate pairs where the reported activity for either is less than 5 times the sample specific MDC. These samples are identified with an "NC" flag on the Duplicate Sample Results (RPD) page.

6. The requested MDC was not met for sample 1811484-1. The reported activity exceeds the achieved MDC. Results are submitted without further qualification. The results are flagged with an "X" flag on the final report.



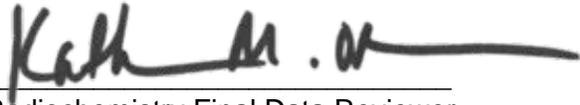
7. The calculated yield, as determined by gamma spectrometric analysis of the ^{99m}Tc tracer, for shared QC sample 1811349-1 fell between 100% and 110%. To minimize the potential for low bias, results have been calculated conservatively assuming quantitative chemical yield (100%). The magnitude of the low bias is estimated to be less than 10% of the reported value and is acceptable according to the ALS LQAP.
8. No further anomalous situations were encountered during the preparation or analysis of this sample. All quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.



Pik Yee Yuen
Radiochemistry Primary Data Reviewer

12/13/18
Date



Radiochemistry Final Data Reviewer

12/14/18
Date

Technetium-99 by Liquid Scintillation

PAI 704_Tc99 Rev 11

Method Blank Results

Lab Name: ALS -- Fort Collins
Work Order Number: 1811484
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: CERCLA, NOVEMBER 2018 I19-004

Lab ID: TC181204-1MB	Sample Matrix: WATER	Prep Batch: TC181204-1	Final Aliquot: 250 ml
	Prep SOP: PAI 755 Rev 12	QCBatchID: TC181204-1-2	Result Units: pCi/l
	Date Collected: 04-Dec-18	Run ID: TC181204-1A	File Name: B60_12_121001
	Date Prepared: 04-Dec-18	Count Time: 30 minutes	
	Date Analyzed: 10-Dec-18		

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
14133-76-7	Tc-99	6.83E-01 +/- 5.95E+00	9.99E+00	2.00E+01	NA	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Tc-99m	4.190E+03	4.00E+03	Pci	95.3	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.
Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
Y2 - Chemical Yield outside default limits.

Abbreviations:

TPU - Total Propagated Uncertainty
MDC - Sample specific Minimum Detectable Concentration
BDL - Below Detection Limit

M - Requested MDC not met.
B - Analyte concentration greater than MDC.
B3 - Analyte concentration greater than MDC but less than Requested MDC.
DL - Decision Level

Data Package ID: TC1811484-1

Technetium-99 by Liquid Scintillation

PAI 704_Tc99 Rev 11

Laboratory Control Sample(s)

Lab Name: ALS -- Fort Collins
Work Order Number: 1811484
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: CERCLA, NOVEMBER 2018 I19-004

Lab ID: TC181204-1LCS	Sample Matrix: WATER	Prep Batch: TC181204-1	Final Aliquot: 250 ml
	Prep SOP: PAI 755 Rev 12	QCBatchID: TC181204-1-2	Result Units: pCi/l
	Date Collected: 04-Dec-18	Run ID: TC181204-1A	File Name: B60_12_121001
	Date Prepared: 04-Dec-18	Count Time: 30 minutes	
	Date Analyzed: 10-Dec-18		

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
14133-76-7	Tc-99	9.32E+02 +/- 1.50E+02	9.98E+00	9.110E+02	102	75 - 125	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Tc-99m	4.190E+03	4.03E+03	Pci	96.1	40 - 110 %	

Comments:

Qualifiers/Flags:

- U - Result is less than the sample specific MDC.
- Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 - Chemical Yield outside default limits.
- L - LCS Recovery below lower control limit.
- H - LCS Recovery above upper control limit.
- P - LCS Recovery within control limits.
- M - The requested MDC was not met.
- M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

- TPU - Total Propagated Uncertainty
- MDC - Minimum Detectable Concentration

Data Package ID: TC1811484-1

Technetium-99 by Liquid Scintillation

PAI 704_Tc99 Rev 11

Duplicate Sample Results (DER)

Lab Name: ALS -- Fort Collins
Work Order Number: 1811484
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: CERCLA, NOVEMBER 2018 119-004

Field ID:	Shared QC
Lab ID:	1811349-1DUP

Sample Matrix: WATER	Prep Batch: TC181204-1	Final Aliquot: 250 ml
Prep SOP: PAI 755 Rev 12	QCBatchID: TC181204-1-2	Prep Basis: Unfiltered
Date Collected: 16-Nov-18	Run ID: TC181204-1A	Moisture(%): NA
Date Prepared: 04-Dec-18	Count Time: 30 minutes	Result Units: pCi/l
Date Analyzed: 10-Dec-18	Report Basis: Unfiltered	File Name: B60_12_121001

CASNO	Analyte	Sample				Duplicate				DER	DER Lim
		Result +/-	2 s TPU	MDC	Flags	Result +/-	2 s TPU	MDC	Flags		
14133-76-7	Tc-99	4.00E+01 +/-	9.30E+00	9.59E+00		5.15E+01 +/-	1.14E+01	1.10E+01		1.57	3

Comments:

Duplicate Qualifiers/Flags:

- U - Result is less than the sample specific MDC.
- Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 - Chemical Yield outside default limits.
- D - DER is greater than Control Limit of 3
- LT - Result is less than Request MDC, greater than sample specific MDC
- M - Requested MDC not met.
- M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
- L - LCS Recovery below lower control limit.
- H - LCS Recovery above upper control limit.
- P - LCS, Matrix Spike Recovery within control limits.
- N - Matrix Spike Recovery outside control limits

Abbreviations:

- TPU - Total Propagated Uncertainty
- DER - Duplicate Error Ratio
- BDL - Below Detection Limit
- NR - Not Reported

Data Package ID: TC1811484-1

Technetium-99 by Liquid Scintillation

PAI 704_Tc99 Rev 11

Duplicate Sample Results (RPD)

Lab Name: ALS -- Fort Collins
Work Order Number: 1811484
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: CERCLA, NOVEMBER 2018 119-004

Field ID:	Shared QC
Lab ID:	1811349-1DUP

Sample Matrix: WATER	Prep Batch: TC181204-1	Final Aliquot: 250 ml
Prep SOP: PAI 755 Rev 12	QCBatchID: TC181204-1-2	Prep Basis: Unfiltered
Date Collected: 16-Nov-18	Run ID: TC181204-1A	Moisture(%): NA
Date Prepared: 04-Dec-18	Count Time: 30 minutes	Result Units: pCi/l
Date Analyzed: 10-Dec-18	Report Basis: Unfiltered	File Name: B60_12_121001

CASNO	Analyte	Sample				Duplicate				RPD	RPD Lim
		Result +/-	2 s TPU	MDC	Flags	Result +/-	2 s TPU	MDC	Flags		
14133-76-7	Tc-99	4.00E+01 +/-	9.30E+00	9.59E+00		5.15E+01 +/-	1.14E+01	1.10E+01		NC	20

Comments:

Qualifiers/Flags:

- + - Duplicate RPD not within limits.
- U - Result is less than the sample specific MDC.
- Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 - Chemical Yield outside default limits.
- M - Requested MDC not met.
- M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
- L - LCS Recovery below lower control limit.
- H - LCS Recovery above upper control limit.
- P - LCS, Matrix Spike Recovery within control limits.
- N - Matrix Spike Recovery outside control limits
- NC - Not Calculated for duplicate results less than 5 times MDC

Abbreviations:

- TPU - Total Propagated Uncertainty
- BDL - Below Detection Limit
- NR - Not Reported

Data Package ID: TC1811484-1

Technetium-99 by Liquid Scintillation

PAI 704_Tc99 Rev 11

Sample Results

Lab Name: ALS -- Fort Collins
Work Order Number: 1811484
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: CERCLA, NOVEMBER 2018 I19-004

Field ID:	Shared QC
Lab ID:	1811349-1

Sample Matrix: WATER	Prep Batch: TC181204-1	Final Aliquot: 250 ml
Prep SOP: PAI 755 Rev 12	QCBatchID: TC181204-1-2	Prep Basis: Unfiltered
Date Collected: 16-Nov-18	Run ID: TC181204-1A	Moisture(%): NA
Date Prepared: 04-Dec-18	Count Time: 30 minutes	Result Units: pCi/l
Date Analyzed: 10-Dec-18	Report Basis: Unfiltered	File Name: B60_12_121001

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
14133-76-7	Tc-99	4.00E+01 +/- 9.30E+00	9.59E+00	2E+01	NA	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Tc-99m	4.190E+03	4.23E+03	Pci	101	40 - 110 %	

Comments:

Qualifiers/Flags:

- U - Result is less than the sample specific MDC.
- Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 - Chemical Yield outside default limits.
- M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M - The requested MDC was not met.

Abbreviations:

- TPU - Total Propagated Uncertainty
- MDC - Sample specific Minimum Detectable Concentration
- BDL - Below Detection Limit
- DL - Decision Level

Data Package ID: TC1811484-1

Technetium-99 by Liquid Scintillation

PAI 704_Tc99 Rev 11

Sample Duplicate Results

Lab Name: ALS -- Fort Collins
Work Order Number: 1811484
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: CERCLA, NOVEMBER 2018 119-004

Field ID: Shared QC	Sample Matrix: WATER	Prep Batch: TC181204-1	Final Aliquot: 250 ml
Lab ID: 1811349-1DUP	Prep SOP: PAI 755 Rev 12	QCBatchID: TC181204-1-2	Prep Basis: Unfiltered
	Date Collected: 16-Nov-18	Run ID: TC181204-1A	Moisture(%): NA
	Date Prepared: 04-Dec-18	Count Time: 30 minutes	Result Units: pCi/l
	Date Analyzed: 10-Dec-18	Report Basis: Unfiltered	File Name: B60_12_121001

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
14133-76-7	Tc-99	5.15E+01 +/- 1.14E+01	1.10E+01	2E+01	NA	

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Tc-99m	4.190E+03	3.72E+03	Pci	88.9	40 - 110 %	

Comments:

Qualifiers/Flags:

- U - Result is less than the sample specific MDC.
- Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 - Chemical Yield outside default limits.
- M - The requested MDC was not met.
- M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

- D - DER is greater than Control Limit of 3

Abbreviations:

- TPU - Total Propagated Uncertainty
- MDC - Sample specific Minimum Detectable Concentration
- BDL - Below Detection Limit
- DL - Decision Level

Data Package ID: TC1811484-1

Date Printed:

Friday, December 14, 2018

ALS -- Fort Collins

LIMS Version: 6.887

Page 1 of 1

Technetium-99 by Liquid Scintillation

PAI 704_Tc99 Rev 11

Sample Results

Lab Name: ALS -- Fort Collins
Work Order Number: 1811484
Client Name: CH2M HILL Plateau Remediation Company
ClientProject ID: CERCLA, NOVEMBER 2018 I19-004

Field ID: B3LTV0	Sample Matrix: WATER	Prep Batch: TC181204-1	Final Aliquot: 100 ml
Lab ID: 1811484-1	Prep SOP: PAI 755 Rev 12	QCBatchID: TC181204-1-2	Prep Basis: Unfiltered
	Date Collected: 27-Nov-18	Run ID: TC181204-1A	Moisture(%): NA
	Date Prepared: 04-Dec-18	Count Time: 10.25 minutes	Result Units: pCi/l
Analysis ReqCode: TC99_SEP_LSC	Date Analyzed: 10-Dec-18	Report Basis: Unfiltered	File Name: B60_12_121001

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
14133-76-7	Tc-99	1.27E+04 +/- 2.03E+03	4.74E+01	2E+01	NA	X

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
Tc-99m	4.190E+03	3.66E+03	Pci	87.3	40 - 110 %	

Comments:

Qualifiers/Flags:

- U - Result is less than the sample specific MDC.
- Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.
- Y2 - Chemical Yield outside default limits.
- M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
- M - The requested MDC was not met.

Abbreviations:

- TPU - Total Propagated Uncertainty
- MDC - Sample specific Minimum Detectable Concentration
- BDL - Below Detection Limit
- DL - Decision Level

Data Package ID: TC1811484-1

Prep Batch ID: TC181204-1

Start Date: 12/04/18	End Date: 12/04/18	Concentration Method: NONE	Batch Created By: trs
Start Time: 10:26	End Time: 10:26	Extract Method: PAI 75512	Date Created: 12/04/18
Prep Analyst: Tyler R. Secor		Initial Volume Units: ml	Time Created: 10:29
Comments:		Final Volume Units: ml	Validated By: trs
<div style="border: 1px solid black; height: 30px; width: 100%;"></div>			Date Validated: 12/06/18
			Time Validated: 11:21

QC Batch ID: TC181204-1-2

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
TC181204-1	MB	XXXXXX	WATER	XXXXXX	250	250	NONE	1	1811349
TC181204-1CB1	MB	XXXXXX	WATER	XXXXXX	250	250	NONE	1	1811349
TC181204-1CB2	MB	XXXXXX	WATER	XXXXXX	250	250	NONE	1	1811349
TC181204-1CB3	MB	XXXXXX	WATER	XXXXXX	250	250	NONE	1	1811349
TC181204-1	LCS	XXXXXX	WATER	XXXXXX	250	250	NONE	1	1811349
1811349-1	DUP	XXXXXX	WATER	XXXXXX	250	250	NONE	1	1811349
1811349-1	SMP	XXXXXX	WATER	XXXXXX	250	250	NONE	1	1811349
1811349-2	SMP	XXXXXX	WATER	XXXXXX	250	250	NONE	1	1811349
1811349-3	SMP	XXXXXX	WATER	XXXXXX	250	250	NONE	1	1811349
1811349-4	SMP	XXXXXX	WATER	XXXXXX	250	250	NONE	1	1811349
1811350-1	SMP	XXXXXX	WATER	XXXXXX	250	250	NONE	1	1811350
1811484-1	SMP	B3LTV0	WATER	11/27/2018	100	100	NONE	1	1811484
1811532-2	SMP	XXXXXX	WATER	XXXXXX	250	250	NONE	1	1811532
1811532-5	SMP	XXXXXX	WATER	XXXXXX	250	250	NONE	1	1811532
1812003-9	SMP	XXXXXX	WATER	XXXXXX	110	110	NONE	1	1812003

QC Types

CAR	Carrier reference sample	DUP	Laboratory Duplicate
LCS	Laboratory Control Sample	LCSD	Laboratory Control Sample Duplicat
MB	Method Blank	MS	Laboratory Matrix Spike
MSD	Laboratory Matrix Spike Duplicate	REP	Sample replicate
RVS	Reporting Level Verification Standar	SMP	Field Sample
SYS	Sample Yield Spike		

QUALITY ASSURANCE SUMMARY SHEET

PAR W.O. # / BATCH General
 TEST Tc99
 METHOD Prep
 SOP/REV (PREP) 755
 SOP/REV (ANAL) _____

Briefly document any QA or other problems or deviations associated with the analysis of samples. Problems could result from: log-in, color, odor, dilution, consistency, scheduling, equipment, or instrumentation, or may include documentation of minor deviations necessary due to unique DQO's or sample characteristics.

CLS 8/12/09

Tc99^m 711.2613.17 was used as a tracer for this batch. It has a half-life of 6 hours and therefore must be delivered the day of prep and diluted to a working level solution. The procedure noted below is standard for all Tc99^m dilutions.

1. Open the Pb shielded container and carefully remove the vial containing the Tc99^m primary standard.
2. Withdraw a 1 mL aliquot of the Tc99^m primary standard from the vial using a 10 mL syringe fitted with a hypodermic needle. Dispense the aliquot into a disposable beaker that contains ~100 mL of DI water. Cap and mix well. This intermediate solution is a 1/100x dilution of the primary standard.
3. Using a 10 mL syringe, transfer 10 mL of the intermediate solution prepared in step 2 into a disposable beaker that contains ~70 mL of DI water. Cap and mix well. This working standard solution is a 1/800x dilution of the primary standard.

CLS 8/12/09

CLS 8/12/09

Attach vendor label on the right side of page →

CLS 8/12/09

Cardinal Health
 CARDINAL HEALTH 414, LLC
 DENVER
 10400 48TH AVE, STE B
 DENVER CO 80238
 303.373.0579

Rx# 689920
 Date Ordered : 04Dec2018
 Date/Time Prepared : 06Dec2018 03:08 MT
ALS LABORATORY GROUP
 225 COMMERCE DR
 FORT COLLINS CO 80524 - 2762
10359 Fort Collins
 Patient : **For Physician Order**



SAFETRAC
 CH102864

Product : Tc-99m **Sodium Pertechnetate Unit Dose mCi**
 Disp Amt : **0.54 mCi**
 Calibration: **06Dec2018 10:00 MT**

Not for Human Use For Calibration Use Only
 Indication : **Calibration**
 Dispense Date : **06Dec2018** Lot# : **E18340-0048** Price(est) : **N/A**
 Use By : **07Dec2018 03:08 MT** Physician : **Charles Orchard, RSO** NPT :
 Notes NDC : RPh : **S.Sulfrian**

Ordered Amount : 0.50 mCi
 Volume : 10.00 mL
 Conc : 0.05 mCi/mL



RADIOACTIVE MATERIALS



Caution: Federal law prohibits dispensing without a prescription - Rx only All Tc-99m synges are below 0.15 uCi of Mo-99mCl of Tc-99m at BUD

TECHNICIAN/ANALYST Crystal Sheaffer

DATE 8/12/09

DEPARTMENT MANAGER Jeffery Z

DATE 8/12/09

378636

FORM 302r6.doc (4/22/04)

QUALITY ASSURANCE SUMMARY SHEET

PAR W.O. # / BATCH Generic
 TEST Tc99
 METHOD Prep
 SOP/REV (PREP) 755
 SOP/REV (ANAL) _____

Briefly document any QA or other problems or deviations associated with the analysis of samples. Problems could result from: log-in, color, odor, dilution, consistency, scheduling, equipment, or instrumentation, or may include documentation of minor deviations necessary due to unique DQO's or sample characteristics.

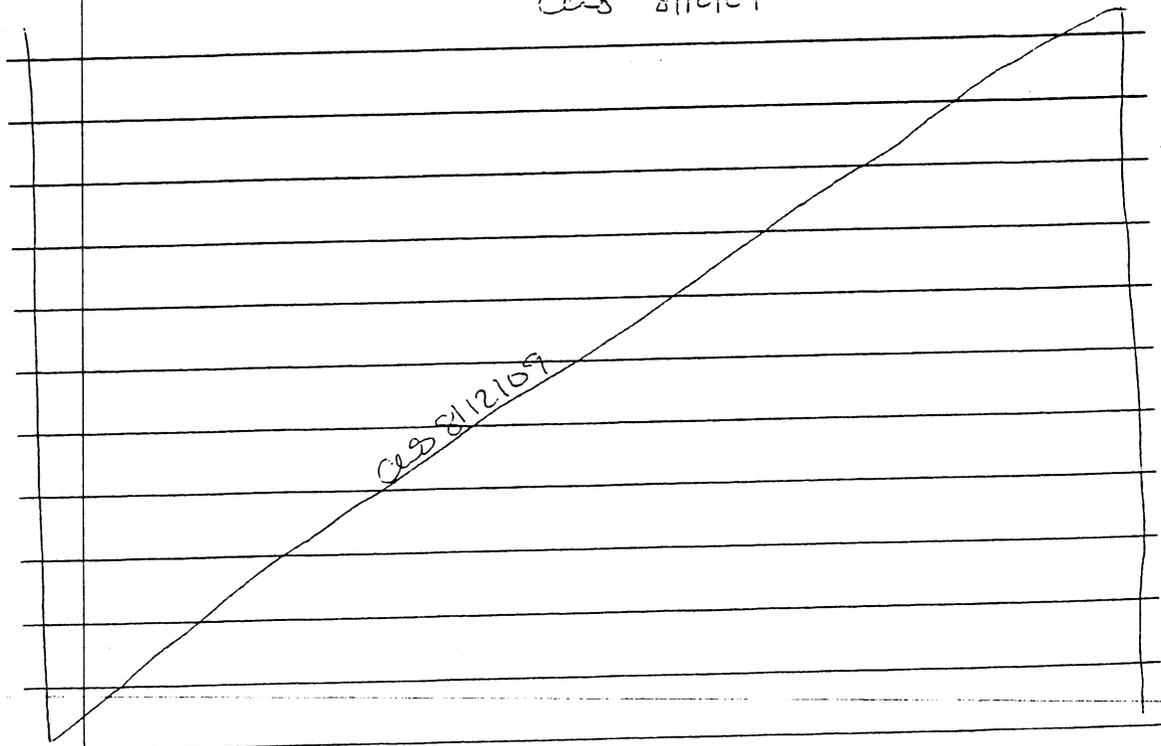
ces 8/12/09

ces 8/12/09

Due to possible matrix interference, a ferric hydroxide precipitation was performed on all samples per SOP 755, section 8.2.10

ces 8/12/09

ces 8/12/09



TECHNICIAN/ANALYST *Crystal Sheeffer*

DATE 8/12/09

DEPARTMENT MANAGER *[Signature]*

DATE 8/12/09