

DATA PACKAGE

METALS

PROJECT NAME : FT MEADE TIPTON AIRFIELD PARCEL RI - PO 0111169

WESTON SOLUTIONS

1400 Weston Way

PO Box 2653

West Chester, PA - 19380

Phone No: 610-701-7400

ORDER ID : P4986

ATTENTION : Nathan Fretz



Laboratory Certification ID # 20012



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Cover Page

Order ID : P4986

Project ID : Ft Meade Tipton Airfield Parcel RI - PO 0111169

Client : Weston Solutions

Lab Sample Number

P4986-01
P4986-02

Client Sample Number

TAPIAL1-SB04D-9-112224-00-T1
TAPIAL1-SB04D-4-112224-00-T1

I certify that the data package is in compliance with the terms and conditions of the contract, 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 his designee, as verified by the following signature.

Signature : _____

Date: 12/12/2024

NYDOH CERTIFICATION NO - 11376

NJDEP CERTIFICATION NO - 20012



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CASE NARRATIVE

Weston Solutions

Project Name: Ft Meade Tipton Airfield Parcel RI - PO 0111169

Project # N/A

Chemtech Project # P4986

Test Name: Mercury

A. Number of Samples and Date of Receipt:

2 Solid samples were received on 11/23/2024.

B. Parameters:

According to the Chain of Custody document, the following analyses were requested: Anions Group1, Mercury, pH and TOC. This data package contains results for Mercury.

C. Analytical Techniques:

The analysis of Mercury was based on method 7471B and digestion was based on method 7471B (soils).

D. QA/ QC Samples:

The Holding Times were met for all analysis.

The Blank Spike met requirements for all samples.

The Duplicate analysis met criteria for all samples.

The Matrix Spike analysis met criteria for all samples.

The Matrix Spike Duplicate analysis met criteria for all samples.

The Blank analysis did not indicate the presence of lab contamination.

The Calibration met the requirements.

The Serial Dilution met the acceptable requirements.

E. Calculation for Hg Soil Sample:

Conversion of Results from $\mu\text{g/L}$ or ppb to mg/kg :

$$\text{Concentration (mg/kg)} = \frac{C \times V_f \times DF}{W \times S} \times 1000$$

Where,

C = Instrument response in $\mu\text{g/L}$ from the calibration curve.

Vf = Final prepared (absorbing solution) volume (mL)

W = Initial aliquot amount (g) (Fraction of Sample amount taken in prep)

S = % Solids / 100 (Fraction of Percent Solids)

DF = Dilution Factor



F. Additional Comments:

I certify that the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. The laboratory manager or his designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Signature_____

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DATA REPORTING QUALIFIERS- INORGANIC

For reporting results, the following “ Results Qualifiers” are used:

J	Indicates the reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL), but greater than or equal to the Instrument Detection Limit (IDL).
U	Indicates the analyte was analyzed for, but not detected.
ND	Indicates the analyte was analyzed for, but not detected
E	Indicates the reported value is estimated because of the presence of interference
M	Indicates Duplicate injection precision not met.
N	Indicates the spiked sample recovery is not within control limits.
S	Indicates the reported value was determined by the Method of Standard Addition (MSA).
*	Indicates that the duplicate analysis is not within control limits.
+	Indicates the correlation coefficient for the MSA is less than 0.995.
D	Indicates the reported value is from a secondary analysis with a dilution factor. The original analysis exceeded the calibration range.
M	Method qualifiers “P” for ICP instrument “PM” for ICP when Microwave Digestion is used “CV” for Manual Cold Vapor AA “AV” for automated Cold Vapor AA “CA” for MIDI-Distillation Spectrophotometric “AS” for Semi -Automated Spectrophotometric “C” for Manual Spectrophotometric “T” for Titrimetric “NR” for analyte not required to be analyzed
OR	Indicates the analyte’s concentration exceeds the calibrated range of the instrument for that specific analysis.
Q	Indicates the LCS did not meet the control limits requirements
H	Sample Analysis Out Of Hold Time

METALS CONFORMANCE/NON-CONFORMANCE SUMMARY

CHEMTECH PROJECT NUMBER: P4986

MATRIX: Solid

METHOD: 7471B

	NA	NO	YES
1. Calibration Summary met criteria.			✓
2. ICP Interference Check Sample Results Summary Submitted.			✓
3. Serial Dilution Summary (if applicable) Submitted.			✓
4. Laboratory Control Sample Summary (if applicable) Submitted.			✓
5. Blank Contamination - If yes, list compounds and concentrations in each blank:		✓	
6. Matrix Spike/Matrix Spike Duplicate Recoveries Met Criteria If not met, list those compounds and their recoveries which fall outside the acceptable range.			✓
7. Sample Duplicate Analysis Met QC Criteria If not met, list those compounds and their recoveries which fall outside the acceptable range.			✓
8. Digestion Holding Time Met If not met, list number of days exceeded for each sample:			✓
9. Analysis Holding Time Met If not met, list those compounds and their recoveries which fall outside the acceptable range.			✓

ADDITIONAL COMMENTS:

QA REVIEW

Date

APPENDIX A

QA REVIEW GENERAL DOCUMENTATION

Project #: P4986

Completed

For thorough review, the report must have the following:

GENERAL:

Are all original paperwork present (chain of custody, record of communication,airbill, sample management lab chronicle, login page)

✓

Check chain-of-custody for proper relinquish/return of samples

✓

Is the chain of custody signed and complete

✓

Check internal chain-of-custody for proper relinquish/return of samples /sample extracts

✓

Collect information for each project id from server. Were all requirements followed

✓

COVER PAGE:

Do numbers of samples correspond to the number of samples in the Chain of Custody on login page

✓

Do lab numbers and client Ids on cover page agree with the Chain of Custody

✓

CHAIN OF CUSTODY:

Do requested analyses on Chain of Custody agree with form I results

✓

Do requested analyses on Chain of Custody agree with the log-in page

✓

Were the correct method log-in for analysis according to the Analytical Request and Chain of Custody

✓

Were the samples received within hold time

✓

Were any problems found with the samples at arrival recorded in the Sample Management Laboratory Chronicle

✓

ANALYTICAL:

Was method requirement followed?

✓

Was client requirement followed?

✓

Does the case narrative summarize all QC failure?

✓

All runlogs and manual integration are reviewed for requirements

✓

All manual calculations and /or hand notations verified

✓

QA Review Signature: SOHIL JODHANI

Date: 12/12/2024

LAB CHRONICLE

OrderID:	P4986	OrderDate:	11/25/2024 10:06:13 AM
Client:	Weston Solutions	Project:	Ft Meade Tipton Airfield Parcel RI - PO 0111169
Contact:	Nathan Fretz	Location:	L51

LabID	ClientID	Matrix	Test	Method	Sample Date	Prep Date	Anal Date	Received
P4986-01	TAPIAL1-SB04D-9-11 2224-00-T1	SOIL			11/22/24			11/23/24
			Mercury	7471B		11/27/24	11/27/24	
P4986-02	TAPIAL1-SB04D-4-11 2224-00-T1	SOIL			11/22/24			11/23/24
			Mercury	7471B		11/27/24	11/27/24	



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Hit Summary Sheet
SW-846

SDG No.: P4986

Order ID: P4986

Client: Weston Solutions

Project ID: Ft Meade Tipton Airfield Parcel RI - PO 01

Sample ID	Client ID	Matrix	Parameter	Concentration	C	MDL	LOD	RDL	Units
Client ID :									



SAMPLE DATA

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Report of Analysis

Client:	Weston Solutions	Date Collected:	11/22/24
Project:	Ft Meade Tipton Airfield Parcel RI - PO 0111169	Date Received:	11/23/24
Client Sample ID:	TAPIAL1-SB04D-9-112224-00-T1	SDG No.:	P4986
Lab Sample ID:	P4986-01	Matrix:	SOIL
Level (low/med):	low	% Solid:	93.9

Cas	Parameter	Conc.	Qua.	DF	MDL	LOD	LOQ / CRQL	Units(Dry Weight)	Prep Date	Date Ana.	Ana Met.	Prep Met.
7439-97-6	Mercury	0.010	U	1	0.0060	0.010	0.013	mg/Kg	11/27/24 08:15	11/27/24 12:57	SW7471B	

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments: METALS-TAL

U = Not Detected

LOQ = Limit of Quantitation

MDL = Method Detection Limit

LOD = Limit of Detection

D = Dilution

Q = indicates LCS control criteria did not meet requirements

J = Estimated Value

B = Analyte Found in Associated Method Blank

* = indicates the duplicate analysis is not within control limits.

E = Indicates the reported value is estimated because of the presence of interference.

OR = Over Range

N =Spiked sample recovery not within control limits

Report of Analysis

Client:	Weston Solutions	Date Collected:	11/22/24
Project:	Ft Meade Tipton Airfield Parcel RI - PO 0111169	Date Received:	11/23/24
Client Sample ID:	TAPIAL1-SB04D-4-112224-00-T1	SDG No.:	P4986
Lab Sample ID:	P4986-02	Matrix:	SOIL
Level (low/med):	low	% Solid:	92.8

Cas	Parameter	Conc.	Qua.	DF	MDL	LOD	LOQ / CRQL	Units(Dry Weight)	Prep Date	Date Ana.	Ana Met.	Prep Met.
7439-97-6	Mercury	0.010	U	1	0.0060	0.010	0.013	mg/Kg	11/27/24 08:15	11/27/24 13:11	SW7471B	

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments: METALS-TAL

U = Not Detected

LOQ = Limit of Quantitation

MDL = Method Detection Limit

LOD = Limit of Detection

D = Dilution

Q = indicates LCS control criteria did not meet requirements

J = Estimated Value

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* = indicates the duplicate analysis is not within control limits.

E = Indicates the reported value is estimated because of the presence of interference.

OR = Over Range

N =Spiked sample recovery not within control limits



METAL CALIBRATION DATA

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Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Weston Solutions **SDG No.:** P4986
Contract: WEST04 **Lab Code:** CHEM **Case No.:** P4986 **SAS No.:** P4986
Initial Calibration Source: EPA
Continuing Calibration Source: PLASMA-PURE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
ICV104	Mercury	4.15	4.0	104	90 - 110	CV	11/27/2024	12:27	LB133657

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Weston Solutions **SDG No.:** P4986
Contract: WEST04 **Lab Code:** CHEM **Case No.:** P4986 **SAS No.:** P4986
Initial Calibration Source: EPA
Continuing Calibration Source: PLASMA-PURE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV59	Mercury	4.88	5.0	98	90 - 110	CV	11/27/2024	12:31	LB133657
CCV60	Mercury	4.92	5.0	98	90 - 110	CV	11/27/2024	13:04	LB133657
CCV61	Mercury	5.04	5.0	101	90 - 110	CV	11/27/2024	13:27	LB133657



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Metals

- 2b -

CRDL STANDARD FOR AA & ICP

Client: Weston Solutions **SDG No.:** P4986
Contract: WEST04 **Lab Code:** CHEM **Case No.:** P4986 **SAS No.:** P4986
Initial Calibration Source: _____
Continuing Calibration Source: _____

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CRA	Mercury	0.19	0.2	95	40 - 160	CV	11/27/2024	12:39	LB133657



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Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client:	Weston Solutions				SDG No.:	P4986				
Contract:	WEST04		Lab Code:	CHEM		Case No.:	P4986		SAS No.:	P4986
Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	LOD	CRQL	M	Analysis Date	Analysis Time	Run Number
ICB104	Mercury	0.20	+/-0.20	U	0.16	0.20	CV	11/27/2024	12:29	LB133657

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Weston Solutions **SDG No.:** P4986
Contract: WEST04 **Lab Code:** CHEM **Case No.:** P4986 **SAS No.:** P4986

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	LOD	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB59	Mercury	0.20	+/-0.20	U	0.16	0.20	CV	11/27/2024	12:36	LB133657
CCB60	Mercury	0.20	+/-0.20	U	0.16	0.20	CV	11/27/2024	13:07	LB133657
CCB61	Mercury	0.20	+/-0.20	U	0.16	0.20	CV	11/27/2024	13:29	LB133657

Metals
- 3b -
PREPARATION BLANK SUMMARY

Client: Weston Solutions

SDG No.: P4986

Instrument: CV1

Sample ID	Analyte	Result (mg/Kg)	Acceptance Limit	Conc Qual	LOD mg/Kg	CRQL mg/Kg	M	Analysis Date	Analysis Time	Run
PB165303BL		SOLID		Batch Number:		PB165303		Prep Date:	11/27/2024	
	Mercury	0.012	<0.012	U	0.010	0.012	CV	11/27/2024	12:48	LB133657



METAL QC DATA

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metals
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MATRIX SPIKE SUMMARY

client: <u>Weston Solutions</u>	level: <u>low</u>	sdg no.: <u>P4986</u>
contract: <u>WEST04</u>	lab code: <u>CHEM</u>	case no.: <u>P4986</u> sas no.: <u>P4986</u>
matrix: <u>Solid</u>	sample id: <u>P4986-01</u>	client id: <u>TAPIAL1-SB04D-9-112224-00-T1MS</u>
Percent Solids for Sample: 93.9	Spiked ID: P4986-01MS	Percent Solids for Spike Sample: 93.9

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/Kg	80 - 124	0.30		0.013	U	0.27	110		CV

metals
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MATRIX SPIKE DUPLICATE SUMMARY

client: <u>Weston Solutions</u>	level: <u>low</u>	sdg no.: <u>P4986</u>
contract: <u>WEST04</u>	lab code: <u>CHEM</u>	case no.: <u>P4986</u> sas no.: <u>P4986</u>
matrix: <u>Solid</u>	sample id: <u>P4986-01</u>	client id: <u>TAPIAL1-SB04D-9-112224-00-T1MSD</u>
Percent Solids for Sample: 93.9	Spiked ID: P4986-01MSD	Percent Solids for Spike Sample: 93.9

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	mg/Kg	80 - 124	0.30		0.013	U	0.28	105		CV

Metals
- 5b -

Client: Weston Solutions **SDG No.:** P4986
Contract: WEST04 **Lab Code:** CHEM **Case No.:** P4986 **SAS No.:** P4986
Matrix: **Level:** LOW **Client ID:**
Sample ID: **Spiked ID:**

Analyte	Units	Acceptance Limit %R	C	Sample Result	C	Spike Added	% Recovery	Qual	M
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Metals

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DUPLICATE SAMPLE SUMMARY

Client: <u>Weston Solutions</u>	Level: <u>LOW</u>	SDG No.: <u>P4986</u>
Contract: <u>WEST04</u>	Lab Code: <u>CHEM</u>	Case No.: <u>P4986</u> SAS No.: <u>P4986</u>
Matrix: <u>Solid</u>	Sample ID: <u>P4986-01</u>	Client ID: <u>TAPIAL1-SB04D-9-112224-00-T1DUP</u>
Percent Solids for Sample: 93.9	Duplicate ID P4986-01DUP	Percent Solids for Spike Sample: 93.9

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Mercury	mg/Kg	20	0.013	U	0.010	J	200.0		CV

“A control limit of $\pm 20\%$ RPD for each matrix applies for sample values greater than 10 times Detection Limit”

Metals

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DUPLICATE SAMPLE SUMMARY

Client: <u>Weston Solutions</u>	Level: <u>LOW</u>	SDG No.: <u>P4986</u>
Contract: <u>WEST04</u>	Lab Code: <u>CHEM</u>	Case No.: <u>P4986</u> SAS No.: <u>P4986</u>
Matrix: <u>Solid</u>	Sample ID: <u>P4986-01MS</u>	Client ID: <u>TAPIAL1-SB04D-9-112224-00-T1MSD</u>
Percent Solids for Sample: 93.9	Duplicate ID P4986-01MSD	Percent Solids for Spike Sample: 93.9

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Mercury	mg/Kg	20	0.30		0.30		0		CV

“A control limit of $\pm 20\%$ RPD for each matrix applies for sample values greater than 10 times Detection Limit”

Metals

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LABORATORY CONTROL SAMPLE SUMMARY

Client: Weston Solutions **SDG No.:** P4986
Contract: WEST04 **Lab Code:** CHEM **Case No.:** P4986 **SAS No.:** P4986

Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limits	M
PB165303BS Mercury	mg/Kg	0.25	0.27		107	80 - 124	CV

Metals
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ICP SERIAL DILUTIONS

SAMPLE NO.

TAPIAL1-SB04D-9-112224-00-T1L

Lab Name: Chemtech Consulting Group **Contract:** WEST04
Lab Code: CHEM **Lb No.:** lb133657 **Lab Sample ID :** P4986-01L **SDG No.:** P4986
Matrix (soil/water): Solid **Level (low/med):** LOW
Concentration Units: mg/Kg

Analyte	Initial Sample Result (I)		Serial Dilution Result (S)		% Differ- ence	Q	M
Mercury	0.013	U	0.065	U			CV



METAL PREPARATION & INSTRUMENT DATA

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METAL PREPARATION & ANALYICAL SUMMARY

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SAMPLE PREPARATION SUMMARY

Client:	<u>Weston Solutions</u>	SDG No.:	<u>P4986</u>
Contract:	<u>WEST04</u>	Lab Code:	<u>CHEM</u>
		Method:	<u></u>
		Case No.:	<u>P4986</u>
		SAS No.:	<u>P4986</u>

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(g)	Final Sample Volume (mL)	Percent Solids
Batch Number: PB165303							
P4986-01	TAPIAL1-SB04D-9-112224-00-T1	SAM	SOLID	11/27/2024	0.57	35.0	93.90
P4986-01DUP	TAPIAL1-SB04D-9-112224-00-T1DUP	DUP	SOLID	11/27/2024	0.55	35.0	93.90
P4986-01MS	TAPIAL1-SB04D-9-112224-00-T1MS	MS	SOLID	11/27/2024	0.55	35.0	93.90
P4986-01MSD	TAPIAL1-SB04D-9-112224-00-T1MSD	MSD	SOLID	11/27/2024	0.54	35.0	93.90
P4986-02	TAPIAL1-SB04D-4-112224-00-T1	SAM	SOLID	11/27/2024	0.59	35.0	92.80
PB165303BL	PB165303BL	MB	SOLID	11/27/2024	0.57	35.0	100.00
PB165303BS	PB165303BS	LCS	SOLID	11/27/2024	0.55	35.0	100.00

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ANALYSIS RUN LOG

Client: Weston Solutions **Contract:** WEST04

Lab code: CHEM **Case no.:** P4986 **Sas no.:** P4986 **Sdg no.:** P4986

Instrument id number: **Method:** **Run number:** LB133657

Start date: 11/27/2024 **End date:** 11/27/2024

Lab sample id.	Client Sample Id	d/f	Time	Parameter list
S0	S0	1	1204	HG
S0.2	S0.2	1	1207	HG
S2.5	S2.5	1	1209	HG
S5	S5	1	1211	HG
S7.5	S7.5	1	1222	HG
S10	S10	1	1224	HG
ICV104	ICV104	1	1227	HG
ICB104	ICB104	1	1229	HG
CCV59	CCV59	1	1231	HG
CCB59	CCB59	1	1236	HG
CRA	CRA	1	1239	HG
PB165303BL	PB165303BL	1	1248	HG
PB165303BS	PB165303BS	1	1251	HG
P4986-01	TAPIAL1-SB04D-9-112224-00-	1	1257	HG
P4986-01DUP	TAPIAL1-SB04D-9-112224-00-	1	1300	HG
P4986-01MS	TAPIAL1-SB04D-9-112224-00-	1	1302	HG
CCV60	CCV60	1	1304	HG
CCB60	CCB60	1	1307	HG
P4986-01MSD	TAPIAL1-SB04D-9-112224-00-	1	1309	HG
P4986-02	TAPIAL1-SB04D-4-112224-00-	1	1311	HG
P4986-01L	TAPIAL1-SB04D-9-112224-00-	5	1323	HG
CCV61	CCV61	1	1327	HG
CCB61	CCB61	1	1329	HG



METAL RAW DATA

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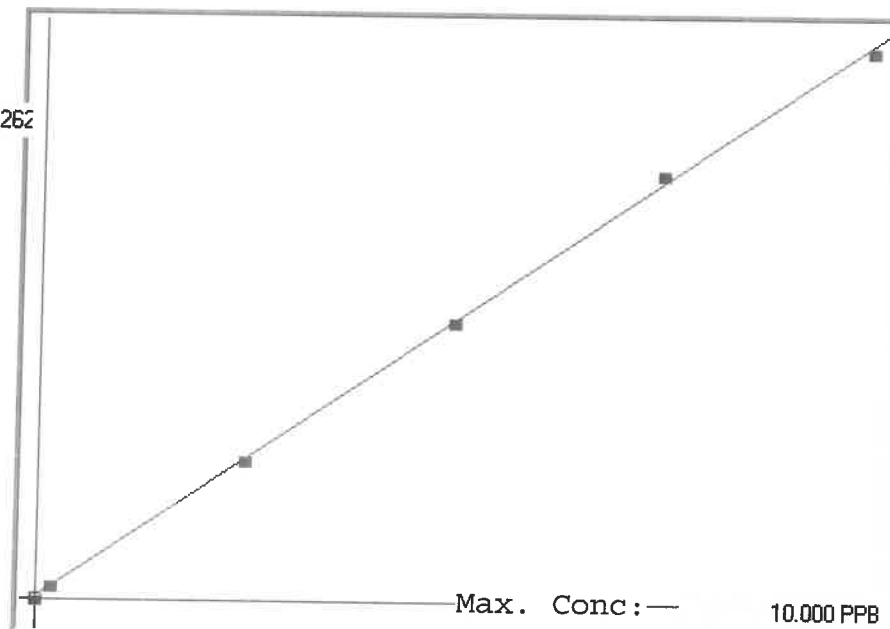
LB133657

7471B

INSTRUMENT ID: CV1

μ Abs.:

45262



Linear

A= 0.0000e+000

B= 2.1952e-004

C= -4.8275e-002

Rho= 0.9997522

Accept=Accepted

Std ID	Conc.	Calc.	Dev.	Mean	SD or %RSD	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	%D
0.0	0.000	-0.019	-0.019	133	0.000	133					1
0.2	0.200	0.205	0.005	1152	0.0 %	1152					2
2.5	2.500	2.484	-0.016	11537	0.0 %	11537					1
5.0	5.000	4.979	-0.021	22901	0.0 %	22901					0
7.5	7.500	7.664	0.164	35131	0.0 %	35131					2
10.0	10.000	9.888	-0.112	45262	0.0 %	45262					1

LB133657 INSTRUMENT ID : CV1

Method: 7471B

Operator: Admin

Date of Analysis: 27 Nov 2024 11:38:46

Sample ID	Extended ID	μ Abs	Conc	Std Conc	Method	Units	Date	Type	Type
0.0 - 1	50	133	-	0.0000	7471B	PPB	27 Nov 2024 12:04:54	S	Std
0.2 - 1	50.2	1152	-	0.2000	7471B	PPB	27 Nov 2024 12:07:11	S	Std
2.5 - 1	52.5	11537	-	2.5000	7471B	PPB	27 Nov 2024 12:09:28	S	Std
5.0 - 1	55	22901	-	5.0000	7471B	PPB	27 Nov 2024 12:11:45	S	Std
7.5 - 1	57.5	35131	-	7.5000	7471B	PPB	27 Nov 2024 12:22:07	S	Std
10.0 - 1	510	45262	-	10.0000	7471B	PPB	27 Nov 2024 12:24:24	S	Std
ICV104 - 1	ICV104	19122	4.1494	-	7471B	PPB	27 Nov 2024 12:27:26	U	SMPL
ICB104 - 1	ICB104	-177	-0.0871	-	7471B	PPB	27 Nov 2024 12:29:41	U	SMPL
CCV59 - 1	CCV59	22443	4.8784	-	7471B	PPB	27 Nov 2024 12:31:59	U	SMPL
CCB59 - 1	CCB59	48	-0.0377	-	7471B	PPB	27 Nov 2024 12:36:53	U	SMPL
CRA - 1	CRA	1086	0.1901	-	7471B	PPB	27 Nov 2024 12:39:08	U	SMPL
HighStd - 1	HighStd	45481	9.9357	-	7471B	PPB	27 Nov 2024 12:41:22	U	SMPL
ChkStd - 1	ChkStd	32181	7.0161	-	7471B	PPB	27 Nov 2024 12:43:37	U	SMPL
PB165303BL - 1	PB165303BL	68	-0.0333	-	7471B	PPB	27 Nov 2024 12:48:48	U	SMPL
PB165303BS - 1	PB165303BS	19341	4.1974	-	7471B	PPB	27 Nov 2024 12:51:03	U	SMPL
P4985-01 - 1	MH-756-WC	633	0.0907	-	7471B	PPB	27 Nov 2024 12:53:19	U	SMPL
P4985-05 - 1	MH-740-WC	2029	0.3971	-	7471B	PPB	27 Nov 2024 12:55:37	U	SMPL
P4986-01 - 1	TAPIAL1-SB04D-9-112224-00-T1	487	0.0586	-	7471B	PPB	27 Nov 2024 12:57:56	U	SMPL
P4986-01DUP - 1	TAPIAL1-SB04D-9-112224-00-T1DUP	872	0.1431	-	7471B	PPB	27 Nov 2024 13:00:15	U	SMPL
P4986-01MS - 1	TAPIAL1-SB04D-9-112224-00-T1MS	20130	4.3706	-	7471B	PPB	27 Nov 2024 13:02:29	U	SMPL
CCV60 - 1	CCV60	22617	4.9166	-	7471B	PPB	27 Nov 2024 13:04:46	U	SMPL
CCB60 - 1	CCB60	-226	-0.0979	-	7471B	PPB	27 Nov 2024 13:07:04	U	SMPL
P4986-01MSD - 1	TAPIAL1-SB04D-9-112224-00-T1MSD	19680	4.2675	-	7471B	PPB	27 Nov 2024 13:09:22	U	SMPL
P4986-02 - 1	TAPIAL1-SB04D-4-112224-00-T1	510	0.0637	-	7471B	PPB	27 Nov 2024 13:11:37	U	SMPL
P5000-01 - 1	MH-745	511	0.0639	-	7471B	PPB	27 Nov 2024 13:13:59	U	SMPL
P5000-05 - 1	MH-733	11241	2.4193	-	7471B	PPB	27 Nov 2024 13:16:15	U	SMPL
P5005-01 - 1	STOCK-PILE	432	0.0466	-	7471B	PPB	27 Nov 2024 13:18:31	U	SMPL
P5019-01 - 1	EO-02-11262024	5294	1.1139	-	7471B	PPB	27 Nov 2024 13:20:49	U	SMPL
P4986-01LX5 - 1		-101	-0.0704	-	7471B	PPB	27 Nov 2024 13:23:06	U	SMPL
P4986-01A - 1		19842	4.3074	-	7471B	PPB	27 Nov 2024 13:25:24	U	SMPL
CCV61 - 1	CCV61	23198	5.0441	-	7471B	PPB	27 Nov 2024 13:27:41	U	SMPL
CCB61 - 1	CCB61	-163	-0.0841	-	7471B	PPB	27 Nov 2024 13:29:58	U	SMPL

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SOP ID : M7471B-Mercury-18

SDG No : N/A

Matrix : SOIL

Pipette ID: HG A

Balance ID : M SC-3

Filter paper ID : NA

pH Strip ID : NA

Hood ID : #1

Block ID: 1. HG HOT BLOCK#3 2. N/A

Start Digest Date: 11/27/2024 Time : 08:15 ~~16:00~~ Temp : 95 °C

End Digest Date: 11/27/2024 Time : 16:30 ~~16:30~~ 09:30 Temp : 94 °C

Digestion tube ID: M5041

Block thermometer ID: HG-DIG#3

Dig Technician Signature: *[Signature]*

Supervisor Signature: *[Signature]*

Temp : 1. 95°C 2. N/A

Standardized Name	MLS USED	STD REF. # FROM LOG
ICV	30mL	MP83400
CCV	30mL	MP83402
CRA	30mL	MP83405
Blank Spike	0.48mL	MP83393
Matrix Spike	0.48mL	MP83393

Chemical Used	ML/SAMPLE USED	Lot Number
AQUA REGIA	1.5mL	MP83407
KMnO4 (5%)	4.5mL	MP83208
Hydroxylamine HCL (12%)	2.0mL	MP83210
PTFE Boiling Stones	-----	M4583
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

LAB SAMPLE ID	CLIENT SAMPLE ID	Wt(g)/Vol(ml)	Comment
0.0 ppb	S0	30mL	MP83394
0.05 ppb	S0.05	N/A	N/A
0.2 ppb	S0.2	30mL	MP83395
2.5 ppb	S2.5	30mL	MP83396
5.0 ppb	S5.0	30mL	MP83397
7.5 ppb	S7.5	30mL	MP83398
10.0 ppb	S10.0	30mL	MP83399
ICV	ICV	30mL	MP83400
ICB	ICB	30mL	MP83401
CCV	CCV	30mL	MP83403
CCB	CCB	30mL	MP83404
CRI	CRI	30mL	MP83405
CHK STD	CHK STD	30mL	MP83406

Extraction Conformance/Non-Conformance Comments:

N/A		
Date / Time	Prepped Sample Relinquished By/Location	Received By/Location
11/27/2024 10:00 10:15	<i>MS - M7. Lab</i>	<i>MS - metal Lab</i>
	Preparation Group	Analysis Group

Lab Sample ID	Client Sample ID	Initial Weight (g)	Final Vol (ml)	pH	Comment	Prep Pos
P4985-01	MH-756-WC	0.59	35	NA	N/A	3-1
P4985-05	MH-740-WC	0.58	35	NA	N/A	2
P4986-01	TAPIAL1-SB04D-9-112224-00-T1	0.57	35	NA	N/A	3
P4986-01DUP	TAPIAL1-SB04D-9-112224-00-T1DUP	0.55	35	NA	N/A	4
P4986-01MS	TAPIAL1-SB04D-9-112224-00-T1MS	0.55	35	NA	MP83393	5
P4986-01MSD	TAPIAL1-SB04D-9-112224-00-T1MSD	0.54	35	NA	MP83393	6
P4986-02	TAPIAL1-SB04D-4-112224-00-T1	0.59	35	NA	N/A	7
P5000-01	MH-745	0.53	35	NA	N/A	8
P5000-05	MH-733	0.50	35	NA	N/A	9
P5005-01	STOCK-PILE	0.55	35	NA	N/A	10
P5019-01	EO-02-11262024	0.55	35	NA	N/A	11
PB165303BL	PBS303	0.57	35	NA	N/A	12
PB165303BS	LCS303	0.55	35	NA	MP83393	13

WORKLIST(Hardcopy Internal Chain)

WorkList Name : 112624_7471 WorkList ID : 185809 Department : Digestion Date : 11-26-2024 15:34:07

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
P4986-01	TAPIAL1-SB04D-9-112224-00-1	Solid	Mercury	Cool 4 deg C	WEST04	L51	11/22/2024	7471B
P4986-02	TAPIAL1-SB04D-4-112224-00-1	Solid	Mercury	Cool 4 deg C	WEST04	L51	11/22/2024	7471B
P4985-01	MH-756-WC	Solid	Mercury	Cool 4 deg C	PSEG03	L61	11/23/2024	7471B
P4985-05	MH-740-WC	Solid	Mercury	Cool 4 deg C	PSEG03	L61	11/23/2024	7471B
P5000-01	MH-745	Solid	Mercury	Cool 4 deg C	PSEG03	L61	11/25/2024	7471B
P5000-05	MH-733	Solid	Mercury	Cool 4 deg C	PSEG03	L61	11/25/2024	7471B
P5005-01	STOCK-PILE	Solid	Mercury	Cool 4 deg C	PSEG03	L51	11/26/2024	7471B
P5019-01	EO-02-11262024	Solid	Mercury	Cool 4 deg C	PSEG05	L61	11/26/2024	7471B

Date/Time 08:00 11/27/24 15:34:07
 Raw Sample Received by: MB MB
 Raw Sample Relinquished by: MB MB

Date/Time 10:00 11/27/24 15:34:07
 Raw Sample Received by: MB MB
 Raw Sample Relinquished by: MB MB

PERCENT SOLID

Supervisor: Iwona
Analyst: jignesh
Date: 11/26/2024

OVENTEMP IN Celsius(°C): 107
Time IN: 16:45
In Date: 11/25/2024
Weight Check 1.0g: 1.00
Weight Check 10g: 10.00
OvenID: M OVEN#1

OVENTEMP OUT Celsius(°C): 103
Time OUT: 08:15
Out Date: 11/26/2024
Weight Check 1.0g: 1.00
Weight Check 10g: 10.00
BalanceID: M SC-4
Thermometer ID: % SOLID- OVEN

QC:LB133600

Lab ID	Client SampleID	Dish #	Dish Wt(g) (A)	Sample Wt(g)	Dish + Sample Wt(g) (B)	Dish+Dry Sample Wt(g) (C)	% Solid	Comments
P4985-01	MH-756-WC	1	1.16	8.80	9.96	8.91	88.1	
P4985-02	MH-756-EPH	2	1.18	8.50	9.68	8.66	88.0	
P4985-03	MH-756-VOC	3	1.15	8.82	9.97	9.15	90.7	
P4985-05	MH-740-WC	4	1.12	8.74	9.86	8.93	89.4	
P4985-06	MH-740-EPH	5	1.16	8.74	9.9	8.99	89.6	
P4985-07	MH-740-VOC	6	1.15	8.84	9.99	9.02	89.0	
P4986-01	TAPIAL1-SB04D-9-112224-00-T1	7	1.19	8.62	9.81	9.28	93.9	
P4986-02	TAPIAL1-SB04D-4-112224-00-T1	8	1.17	8.70	9.87	9.24	92.8	
P4994-01	33218	9	1.00	1.00	2.00	2.00	100.0	debris
P4998-01	FCA546C-1-1	10	1.00	1.00	2.00	2.00	100.0	oilc
P4998-02	FCA546C-1-2	11	1.00	1.00	2.00	2.00	100.0	oilc
P4998-03	CABLE-1-1	12	1.00	1.00	2.00	2.00	100.0	oilc
P4998-04	CABLE-1-2	13	1.00	1.00	2.00	2.00	100.0	oilc
P4999-01	Y2309-0009-1-1	14	1.00	1.00	2.00	2.00	100.0	oilc
P4999-02	Y2309-0009-1-2	15	1.00	1.00	2.00	2.00	100.0	oilc
P4999-03	Y2308-0012-1-1	16	1.00	1.00	2.00	2.00	100.0	oilc
P4999-04	Y2308-0012-1-2	17	1.00	1.00	2.00	2.00	100.0	oilc
P4999-05	HIH407T-1-1	18	1.00	1.00	2.00	2.00	100.0	oilc
P4999-06	HIH407T-1-2	19	1.00	1.00	2.00	2.00	100.0	oilc
P4999-07	EDA834Y-1-1	20	1.00	1.00	2.00	2.00	100.0	oilc
P4999-08	EDA834Y-1-2	21	1.00	1.00	2.00	2.00	100.0	oilc
P4999-09	HEC991Z-1-1	22	1.00	1.00	2.00	2.00	100.0	oilc
P4999-10	HEC991Z-1-1	23	1.00	1.00	2.00	2.00	100.0	oilc
P5000-01	MH-745	24	1.15	8.63	9.78	8.29	82.7	
P5000-02	MH-745-EPH	25	1.11	8.68	9.79	8.43	84.3	
P5000-03	MH-745-VOC	26	1.16	8.48	9.64	8.15	82.4	
P5000-05	MH-733	27	1.18	8.58	9.76	8.68	87.4	



PERCENT SOLID

Supervisor: Iwona
Analyst: jignesh
Date: 11/26/2024

OVENTEMP IN Celsius(°C): 107
Time IN: 16:45
In Date: 11/25/2024
Weight Check 1.0g: 1.00
Weight Check 10g: 10.00
OvenID: M OVEN#1

OVENTEMP OUT Celsius(°C): 103
Time OUT: 08:15
Out Date: 11/26/2024
Weight Check 1.0g: 1.00
Weight Check 10g: 10.00
BalanceID: M SC-4
Thermometer ID: % SOLID- OVEN

QC:LB133600

Lab ID	Client SampleID	Dish #	Dish Wt (g) (A)	Sample Wt (g)	Dish + Sample Wt (g) (B)	Dish+Dry Sample Wt (g) (C)	% Solid	Comments
P5000-06	MH-733-EPH	28	1.18	8.52	9.7	8.54	86.4	
P5000-07	MH-733-VOC	29	1.15	8.84	9.99	9.1	89.9	
P5002-01	EX-7-TPH-1	30	1.18	8.81	9.99	8.63	84.6	

$$\% \text{ Solid} = \frac{(C-A) * 100}{(B-A)}$$

WORKLIST(Hardcopy Internal Chain)

193600

WorkList Name : %1-112524

WorkList ID : 185724

Department : Wet-Chemistry

Date : 11-25-2024 08:13:31

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
P4985-01	MH-756-WC	Solid	Percent Solids	Cool 4 deg C	PSEG03	L61	11/23/2024	Chemtech -SO
P4985-02	MH-756-EPH	Solid	Percent Solids	Cool 4 deg C	PSEG03	L61	11/23/2024	Chemtech -SO
P4985-03	MH-756-VOC	Solid	Percent Solids	Cool 4 deg C	PSEG03	L61	11/23/2024	Chemtech -SO
P4985-05	MH-740-WC	Solid	Percent Solids	Cool 4 deg C	PSEG03	L61	11/23/2024	Chemtech -SO
P4985-06	MH-740-EPH	Solid	Percent Solids	Cool 4 deg C	PSEG03	L61	11/23/2024	Chemtech -SO
P4985-07	MH-740-VOC	Solid	Percent Solids	Cool 4 deg C	PSEG03	L61	11/23/2024	Chemtech -SO
P4986-01	TAPIAL1-SB04D-9-112224-00-1	Solid	Percent Solids	Cool 4 deg C	WEST04	L51	11/22/2024	Chemtech -SO
P4986-02	TAPIAL1-SB04D-4-112224-00-1	Solid	Percent Solids	Cool 4 deg C	WEST04	L51	11/22/2024	Chemtech -SO
P4994-01	33218	Solid	Percent Solids	Cool 4 deg C	PSEG03	L51	11/25/2024	Chemtech -SO
P4998-01	FCA546C-1-1	Solid	Percent Solids	Cool 4 deg C	PSEG03	L41	11/25/2024	Chemtech -SO
P4998-02	FCA546C-1-2	Solid	Percent Solids	Cool 4 deg C	PSEG03	L41	11/25/2024	Chemtech -SO
P4998-03	CABLE-1-1	Solid	Percent Solids	Cool 4 deg C	PSEG03	L41	11/25/2024	Chemtech -SO
P4998-04	CABLE-1-2	Solid	Percent Solids	Cool 4 deg C	PSEG03	L41	11/25/2024	Chemtech -SO
P4999-01	Y2309-0009-1-1	Solid	Percent Solids	Cool 4 deg C	PSEG03	L11	11/25/2024	Chemtech -SO
P4999-02	Y2309-0009-1-2	Solid	Percent Solids	Cool 4 deg C	PSEG03	L11	11/25/2024	Chemtech -SO
P4999-03	Y2308-0012-1-1	Solid	Percent Solids	Cool 4 deg C	PSEG03	L11	11/25/2024	Chemtech -SO
P4999-04	Y2308-0012-1-2	Solid	Percent Solids	Cool 4 deg C	PSEG03	L11	11/25/2024	Chemtech -SO
P4999-05	HIH407T-1-1	Solid	Percent Solids	Cool 4 deg C	PSEG03	L11	11/25/2024	Chemtech -SO
P4999-06	HIH407T-1-2	Solid	Percent Solids	Cool 4 deg C	PSEG03	L11	11/25/2024	Chemtech -SO
P4999-07	EDA834Y-1-1	Solid	Percent Solids	Cool 4 deg C	PSEG03	L11	11/25/2024	Chemtech -SO
P4999-08	EDA834Y-1-2	Solid	Percent Solids	Cool 4 deg C	PSEG03	L11	11/25/2024	Chemtech -SO

Date/Time

11-25-24 15:30

Raw Sample Received by:

78 WLC

Raw Sample Relinquished by:

EJG

Date/Time

11-25-24

Raw Sample Received by:

EJG

Raw Sample Relinquished by:

78 WLC

133600

WORKLIST(Hardcopy Internal Chain)

WorkList Name : %1-112524 WorkList ID : 185724 Department : Wet-Chemistry Date : 11-25-2024 08:13:31

Sample	Customer Sample	Matrix	Test	Preservative	Customer	Raw Sample Storage Location	Collect Date	Method
P4999-09	HEC991Z-1-1	Solid	Percent Solids	Cool 4 deg C	PSEG03	L11	11/25/2024	Chemtech -SO
P4999-10	HEC991Z-1-1	Solid	Percent Solids	Cool 4 deg C	PSEG03	L11	11/25/2024	Chemtech -SO
P5000-01	MH-745	Solid	Percent Solids	Cool 4 deg C	PSEG03	L61	11/25/2024	Chemtech -SO
P5000-02	MH-745-EPH	Solid	Percent Solids	Cool 4 deg C	PSEG03	L61	11/25/2024	Chemtech -SO
P5000-03	MH-745-VOC	Solid	Percent Solids	Cool 4 deg C	PSEG03	L61	11/25/2024	Chemtech -SO
P5000-05	MH-733	Solid	Percent Solids	Cool 4 deg C	PSEG03	L61	11/25/2024	Chemtech -SO
P5000-06	MH-733-EPH	Solid	Percent Solids	Cool 4 deg C	PSEG03	L61	11/25/2024	Chemtech -SO
P5000-07	MH-733-VOC	Solid	Percent Solids	Cool 4 deg C	PSEG03	L61	11/25/2024	Chemtech -SO
P5002-01	EX-7-TPH-1	Solid	Percent Solids	Cool 4 deg C	ENTA05	L61	11/25/2024	Chemtech -SO

Date/Time 11/25/24 15:30
Raw Sample Received by: JH WWC
Raw Sample Relinquished by: JH WWC

Instrument ID: CV1

Daily Analysis Runlog For Sequence/QC Batch ID # LB133657

Review By	jaswal	Review On	11/27/2024 10:30:19 PM
Supervise By	mohan	Supervise On	11/27/2024 10:30:57 PM

STD. NAME	STD REF.#
ICAL Standard	MP83378,MP83379,MP83380,MP83381,MP83382,MP83383
ICV Standard	MP83384
CCV Standard	MP83386
ICSA Standard	
CRI Standard	MP83388
LCS Standard	
Chk Standard	MP83385,MP83387,MP83389,MP83408

Sr#	SampleId	ClientID	QcType	Date	Comment	Operator	Status
1	S0	S0	CAL1	11/27/24 12:04		Mohan	OK
2	S0.2	S0.2	CAL2	11/27/24 12:07		Mohan	OK
3	S2.5	S2.5	CAL3	11/27/24 12:09		Mohan	OK
4	S5	S5	CAL4	11/27/24 12:11		Mohan	OK
5	S7.5	S7.5	CAL5	11/27/24 12:22		Mohan	OK
6	S10	S10	CAL6	11/27/24 12:24		Mohan	OK
7	ICV104	ICV104	ICV	11/27/24 12:27		Mohan	OK
8	ICB104	ICB104	ICB	11/27/24 12:29		Mohan	OK
9	CCV59	CCV59	CCV	11/27/24 12:31		Mohan	OK
10	CCB59	CCB59	CCB	11/27/24 12:36		Mohan	OK
11	CRA	CRA	CRDL	11/27/24 12:39		Mohan	OK
12	HighStd	HighStd	HIGH STD	11/27/24 12:41		Mohan	OK
13	ChkStd	ChkStd	SAM	11/27/24 12:43		Mohan	OK
14	PB165303BL	PB165303BL	MB	11/27/24 12:48		Mohan	OK
15	PB165303BS	PB165303BS	LCS	11/27/24 12:51		Mohan	OK
16	P4985-01	MH-756-WC	SAM	11/27/24 12:53		Mohan	OK
17	P4985-05	MH-740-WC	SAM	11/27/24 12:55		Mohan	OK
18	P4986-01	TAPIAL1-SB04D-9-11	SAM	11/27/24 12:57		Mohan	OK

Instrument ID: CV1

Daily Analysis Runlog For Sequence/QC Batch ID # LB133657

Review By	jaswal	Review On	11/27/2024 10:30:19 PM
Supervise By	mohan	Supervise On	11/27/2024 10:30:57 PM

STD. NAME	STD REF.#
ICAL Standard	MP83378,MP83379,MP83380,MP83381,MP83382,MP83383
ICV Standard	MP83384
CCV Standard	MP83386
ICSA Standard	
CRI Standard	MP83388
LCS Standard	
Chk Standard	MP83385,MP83387,MP83389,MP83408

19	P4986-01DUP	TAPIAL1-SB04D-9-11	DUP	11/27/24 13:00		Mohan	OK
20	P4986-01MS	TAPIAL1-SB04D-9-11	MS	11/27/24 13:02		Mohan	OK
21	CCV60	CCV60	CCV	11/27/24 13:04		Mohan	OK
22	CCB60	CCB60	CCB	11/27/24 13:07		Mohan	OK
23	P4986-01MSD	TAPIAL1-SB04D-9-11	MSD	11/27/24 13:09		Mohan	OK
24	P4986-02	TAPIAL1-SB04D-4-11	SAM	11/27/24 13:11		Mohan	OK
25	P5000-01	MH-745	SAM	11/27/24 13:13		Mohan	OK
26	P5000-05	MH-733	SAM	11/27/24 13:16		Mohan	OK
27	P5005-01	STOCK-PILE	SAM	11/27/24 13:18		Mohan	OK
28	P5019-01	EO-02-11262024	SAM	11/27/24 13:20		Mohan	OK
29	P4986-01L	TAPIAL1-SB04D-9-11	SD	11/27/24 13:23		Mohan	OK
30	P4986-01A	TAPIAL1-SB04D-9-11	PS	11/27/24 13:25		Mohan	OK
31	CCV61	CCV61	CCV	11/27/24 13:27		Mohan	OK
32	CCB61	CCB61	CCB	11/27/24 13:29		Mohan	OK

Prep Standard - Chemical Standard Summary

Order ID : P4986

Test : Mercury

Prepbatch ID : PB165303,

Sequence ID/Qc Batch ID: LB133657,

Standard ID :

MP83377,MP83378,MP83379,MP83380,MP83381,MP83382,MP83383,MP83384,MP83385,MP83386,MP83387,MP83388,MP83389,MP83408,

Chemical ID :

M5062,M5882,M5953,M6121,M6124,W3112,

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
871	MERCURY INTERMEDIATE B 250PPB WORKING STD.	MP83377	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIP ETTE_5 (HG A)	Sarabjit Jaswal 11/27/2024

FROM 1.00000ml of M6124 + 2.50000ml of M5062 + 96.50000ml of W3112 = Final Quantity: 100.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1340	Hg 0.00 PPB STD	MP83378	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIP ETTE_5 (HG A)	Sarabjit Jaswal 11/27/2024

FROM 2.50000ml of M6124 + 247.50000ml of W3112 = Final Quantity: 250.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1341	Hg 0.2 PPB STD	MP83379	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 11/27/2024
FROM 2.50000ml of M6124 + 247.30000ml of W3112 + 0.20000ml of MP83377 = Final Quantity: 250.000 ml								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1342	Hg 2.5 PPB STD	MP83380	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 11/27/2024
FROM 2.50000ml of M6124 + 245.00000ml of W3112 + 2.50000ml of MP83377 = Final Quantity: 250.000 ml								

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1343	Hg 5.0 PPB STD	MP83381	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 11/27/2024
FROM 2.50000ml of M6124 + 242.50000ml of W3112 + 5.00000ml of MP83377 = Final Quantity: 250.000 ml								

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1344	Hg 7.5 PPB STD	MP83382	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 11/27/2024
FROM 2.50000ml of M6124 + 240.00000ml of W3112 + 7.50000ml of MP83377 = Final Quantity: 250.000 ml								

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1345	Hg 10.0 PPB STD	MP83383	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIPETTE_5 (HG A)	Sarabjit Jaswal 11/27/2024

FROM 2.50000ml of M6124 + 237.50000ml of W3112 + 10.00000ml of MP83377 = Final Quantity: 250.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1346	Hg ICV SOLUTION	MP83384	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIPETTE_5 (HG A)	Sarabjit Jaswal 11/27/2024

FROM 2.50000ml of M5953 + 2.50000ml of M6124 + 245.00000ml of W3112 = Final Quantity: 250.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1351	ICB (Hg 0.00 PPB SOLUTION)	MP83385	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 11/27/2024

FROM 2.50000ml of M6124 + 247.50000ml of W3112 = Final Quantity: 250.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1358	CCV (Hg 5.0 PPB SOLUTION)	MP83386	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 11/27/2024

FROM 485.00000ml of W3112 + 5.00000ml of M6124 + 10.00000ml of MP83377 = Final Quantity: 500.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1352	CCB (Hg 0.00 PPB SOLUTION)	MP83387	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIPETTE_5 (HG A)	Sarabjit Jaswal 11/27/2024

FROM 495.00000ml of W3112 + 5.00000ml of M6124 = Final Quantity: 500.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1349	CRA/CRI (Hg 0.2 PPB SOLUTION)	MP83388	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIPETTE_5 (HG A)	Sarabjit Jaswal 11/27/2024

FROM 2.50000ml of M6124 + 247.30000ml of W3112 + 0.20000ml of MP83377 = Final Quantity: 250.000 ml

Metals STANDARD PREPARATION LOG

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
1350	CHK STD (Hg 7.0 PPB SOLUTION)	MP83389	11/26/2024	11/27/2024	Mohan Bera	None	METALS_PIPETTE_5 (HGA)	Sarabjit Jaswal 11/27/2024

FROM 2.50000ml of M6124 + 240.50000ml of W3112 + 7.00000ml of MP83377 = Final Quantity: 250.000 ml

<u>Recipe ID</u>	<u>NAME</u>	<u>NO.</u>	<u>Prep Date</u>	<u>Expiration Date</u>	<u>Prepared By</u>	<u>ScaleID</u>	<u>PipetteID</u>	<u>Supervised By</u>
68	STANNOUS CHLORIDE SOLUTION	MP83408	11/27/2024	11/28/2024	Mohan Bera	METALS_SCALE_3 (M SC-3)	None	Sarabjit Jaswal 11/27/2024

FROM 450.00000ml of W3112 + 50.00000gram of M5882 + 50.00000ml of M6121 = Final Quantity: 500.000 ml

CHEMICAL RECEIPT LOG BOOK

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Inorganic Ventures	MSHG-10PPM / MERCURY HCl 125mL 10ug/mL	S2-HG709270	09/22/2026	05/28/2022 / mohan	01/27/2022 / mohan	M5062

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-3980-01 / Stannous Chloride (cs/4x500g)	232820	08/31/2028	04/30/2024 / mohan	04/25/2024 / mohan	M5882

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
EPA	ICV-5 / ICV (HG) STOCK SOLN	ICV5-0415	01/01/2025	07/01/2024 / mohan	03/30/2023 / mohan	M5953

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9530-33 / Hydrochloric Acid, Instra-Analyzed (cs/6x2.5L)	0000275677	05/13/2025	11/13/2024 / Eman	10/13/2024 / Eman	M6121

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	BA-9598-34 / Nitric Acid, Instra-Analyzed (cs/4x2.5L)	24D1062002	05/22/2025	11/22/2024 / Janvi	10/22/2024 / Janvi	M6124

Supplier	ItemCode / ItemName	Lot #	Expiration Date	Date Opened / Opened By	Received Date / Received By	Chemtech Lot #
Seidler Chemical	DIW / DI Water	Daily Lab-Certified	07/03/2029	07/03/2024 / lwona	07/03/2024 / lwona	W3112

M5882
 M3

Certificate of Analysis

1 Reagent Lane
 Fair Lawn, NJ 07410
 201.796.7100 tel
 201.796.1329 fax

Thermo Fisher Scientific's Quality System has been found to conform to Quality Management System
 Standard ISO9001:2015 by SAI Global Certificate Number CERT – 0120633

This is to certify that units of the lot number below were tested and found to comply with the specifications of the grade listed. Certain data have been supplied by third parties. Thermo Fisher Scientific expressly disclaims all warranties, expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose. Products are for research use or further manufacturing. Not for direct administration to humans or animals. It is the responsibility of the final formulator and end user to determine suitability based upon the intended use of the end product. Products are tested to meet the analytical requirements of the noted grade. The following information is the actual analytical results obtained.

Catalog Number	T142	Quality Test / Release Date	08/17/2023
Lot Number	232820		
Description	STANNOUS CHLORIDE, DIHYDRATE CERTIFIED ACS (Suitable for Mercury Determination)		
Country of Origin	United States	Suggested Retest Date	Aug/2028
Chemical Origin	Inorganic-non animal		
BSE/TSE Comment	No animal products are used as starting raw material ingredients, or used in processing, including lubricants, processing aids, or any other material that might migrate to the finished product.		

N/A			
Result Name	Units	Specifications	Test Value
APPEARANCE		REPORT	Clear crystals
ASSAY	%	Inclusive Between 98 - 103	100.65
CALCIUM	%	<= 0.005	0.0017
IDENTIFICATION	PASS/FAIL	= PASS TEST	PASS TEST
IRON (Fe)	%	<= 0.003	0.0011
LEAD (Pb)	%	<= 0.01	0.0006
MERCURY (Hg)	ppm	<= 0.05	<0.05
POTASSIUM (K)	%	<= 0.005	0.0001
SODIUM (Na)	%	<= 0.01	<0.01
SOLUBILITY IN HCL	PASS/FAIL	= PASS TEST	PASS TEST
SULFATE (SO4)	PASS/FAIL	= P.T. (ABOUT 0.003%)	P.T. (ABOUT 0.003%)



Harout Sahagian - Quality Control Supervisor - Fair Lawn

Note: The data listed is valid for all package sizes of this lot of this product, expressed as an extension of this catalog number listed above.

If there are any questions with this certificate, please call at (800) 227-6701.

*Based on suggested storage condition.

MS062
MS063
MB

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).



2.0 PRODUCT DESCRIPTION

Product Code: Single Analyte Mass Spec Solution
Catalog Number: MSHG-10PPM
Lot Number: S2-HG709270
Matrix: 10% (v/v) HCl
Value / Analyte(s): 10 µg/mL ea:
Mercury
Starting Material: Hg metal
Starting Material Lot#: 1959
Starting Material Purity: 99.9994%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10.001 ± 0.053 µg/mL
Density: 1.020 g/mL (measured at 20 ± 4 °C)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Hg	ICP Assay	3133	160921
Hg	EDTA	928	928
Hg	Calculated		See Sec. 4.2

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$$X_{CRM/RM} = \sum (w_i) (X_i)$$

X_i = mean of Assay Method i with standard uncertainty $u_{char i}$
 w_i = the weighting factors for each method calculated using the inverse square of the variance.
 $w_i = (1/u_{char i}^2) / (\sum (1/u_{char i}^2))$

$$CRM/RM \text{ Expanded Uncertainty } (\pm) = U_{CRM/RM} = k (u_{char}^2 + u_{bb}^2 + u_{lts}^2 + u_{ts}^2)^{1/2}$$

k = coverage factor = 2

$u_{char} = [\sum ((w_i)^2 (u_{char i})^2)]^{1/2}$ where $u_{char i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$$X_{CRM/RM} = (X_a) (u_{char a})$$

X_a = mean of Assay Method A with

$u_{char a}$ = the standard uncertainty of characterization Method A

$$CRM/RM \text{ Expanded Uncertainty } (\pm) = U_{CRM/RM} = k (u_{char a}^2 + u_{bb}^2 + u_{lts}^2 + u_{ts}^2)^{1/2}$$

k = coverage factor = 2

$u_{char a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

O	Ag	0.000011	M	Eu	<	0.000201	O	Na	0.000004	M	Se	<	0.015915	O	Zn	<	0.001510
O	Al	0.000001	O	Fe	0.000001	M	Nb	<	0.000201	O	Si	0.000005	M	Zr	<	0.000201	
M	As	<	0.000402	M	Ga	<	0.000201	M	Nd	<	0.000201	M	Sm	<	0.000201		
M	Au	<	0.003631	M	Gd	<	0.000201	M	Ni	<	0.000402	M	Sn	<	0.001007		
M	B	<	0.001208	M	Ge	<	0.000201	M	Os	<	0.000605	M	Sr	<	0.000201		
M	Ba	<	0.000201	M	Hf	<	0.000201	O	P	<	0.032370	M	Ta	<	0.000201		
M	Be	<	0.000201	s	Hg	<		M	Pb	<	0.000201	M	Tb	<	0.000201		
M	Bi	<	0.000201	M	Ho	<	0.000201	M	Pd	<	0.000403	M	Te	<	0.002216		
O	Ca	0.000007	M	In	<	0.000201	M	Pr	<	0.000201	M	Th	<	0.000201			
M	Cd	<	0.000201	M	Ir	<	0.000201	M	Pt	<	0.000402	M	Ti	<	0.000402		
M	Ce	<	0.000201	O	K	0.000020	M	Rb	<	0.000201	O	Tl	<	0.016508			
M	Co	<	0.000201	M	La	<	0.000201	M	Re	<	0.000201	M	Tm	<	0.000201		
O	Cr	<	0.003021	O	Li	<	0.000107	M	Rh	<	0.000201	M	U	<	0.008058		
M	Cs	<	0.001208	M	Lu	<	0.000201	M	Ru	<	0.000201	M	V	<	0.000201		
M	Cu	<	0.000402	O	Mg	0.000001	O	S	<	0.053950	M	W	<	0.000604			
M	Dy	<	0.000201	M	Mn	<	0.000604	M	Sb	<	0.001208	M	Y	<	0.000201		
M	Er	<	0.000201	M	Mo	0.000009	M	Sc	<	0.000201	M	Yb	<	0.000201			

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit www.inorganicventures.com/TCT

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 200.59 +2 4 Hg(OH)(aq) 1+

Chemical Compatibility - Stable in HNO₃. Avoid basic media forming insoluble carbonate. The sulfide, basic carbonate, oxalate, phosphate, arsenite, arsenate and iodide are insoluble in water.

Stability - 2-100 ppb levels not stable in 1% HNO₃ / LDPE container, stable in 10% HNO₃ packaged in borosilicate glass. 1-100 ppm levels stable in 7% HNO₃ packaged in borosilicate glass. 1000-10,000 ppm solutions are chemically stable for years in 5-10% HNO₃ / LDPE container.

Hg Containing Samples (Preparation and Solution) - Metal (soluble in HNO₃); Oxide (Soluble in HNO₃); Ores and Organic based (The literature has more references to the preparation of Hg containing samples than any other element. Please consult the literature for your specific sample type, since such preparations are prone to error. Or e-mail our technical staff and we will contact you to discuss your particular sample preparation questions in further detail.).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	Estimated D.L.	Order	Interferences (underlined indicates severe)
ICP-MS 202 amu	9 ppt	n/a	186W16O
ICP-OES 184.950 nm	0.03 / 0.005 µg/mL	1	
ICP-OES 194.227 nm	0.03 / 0.005 µg/mL	1	V
ICP-OES 253.652 nm	0.1 / 0.03 µg/mL	1	Ta, Co, Th ,Rh , Fe, U

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va, 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

September 22, 2021

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **September 22, 2026**

- The date after which this CRM/RM should not be used.
- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____
- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Supervisor, Product Documentation



Certificate Approved By:

Michael Booth
Director, Quality Control



Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director





QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
"An ISO 9001:2015 Certified Program"

Instructions for QATS Reference Material: *Inorganic ICV Solutions*

QATS LABORATORY INORGANIC REFERENCE MATERIAL
INITIAL CALIBRATION VERIFICATION SOLUTIONS
(ICV1, ICV5, AND ICV6)

NOTE: These instructions are for advisory purposes only. If any apparent conflict exists between these instructions and the analytical protocol or your contract, disregard these instructions.

APPLICATION: For use with the CLP SFAM01.0 SOW and revisions.

CAUTION: Read instructions carefully before opening bottle(s) and proceeding with the analyses.



M5528-32
M5953
3/30/23

(A) **SAMPLE DESCRIPTION**

Enclosed is a set of one (1) or more Aqueous Inorganic Reference Materials containing various analyte concentrations. ICV1 and ICV5 are in a matrix of dilute nitric acid. ICV6 is in a matrix of dilute basic solution. **For the reference material source in reporting ICVs use "USEPA". For the reference material lot number for the ICV1, ICV5, and ICV6 solutions use "ICV1-1014", "ICV5-0415", and "ICV6-0400", respectively.**

(B) **BREAKAGE OR MISSING ITEMS**

Check the contents of the shipment carefully for any broken, leaking, or missing items. Check that the seal is intact on each bottle. Refer to the enclosed chain of custody record. Report any problems to Mr. Keith Strout, APTIM Federal Services, LLC, at (702) 895-8722. If requested, return the chain-of-custody record with appropriate annotations and signatures to the address provided below.

QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
APTIM Federal Services, LLC
2700 Chandler Avenue - Building C
Las Vegas, NV 89120

(C) **ANALYSIS OF SAMPLES**

The Initial Calibration Verification Solutions (ICVs) are to be used to evaluate the accuracy of the initial calibrations of ICP, AA, and Cyanide colorimetric instruments, and are to be used with the CLP SOWs and revisions. The values for each element in the ICVs are listed below in µg/L (ppb) for the resulting solution(s) after the dilution of the concentrate(s) according to the following instructions. Use Class 'A' glassware to prepare the solution(s).

ICV1-1014 For ICP-AES analysis, use a 10-fold dilution by pipetting 10 mL of the ICV1 concentrate into a 100 mL volumetric flask and dilute to volume with 2% (v/v) nitric acid.





QUALITY ASSURANCE TECHNICAL SUPPORT LABORATORY
"An ISO 9001:2015 Certified Program"

Instructions for QATS Reference Material: Inorganic ICV Solutions

ICV1-1014

For ICP-MS analysis, use a 50-fold dilution by pipetting 2 mL of the ICV1 concentrate into a 100 mL volumetric flask and dilute to volume with 1% (v/v) nitric acid.

ICV5-0415

For the cold vapor analysis of mercury by AA, use a 100-fold dilution by pipetting 1 mL of the ICV5 concentrate into a 100 mL volumetric flask and dilute to volume with 2% (v/v) nitric acid. The ICV5 concentrate is prepared in 0.05% (w/v) $K_2Cr_2O_7$ and 5% (v/v) nitric acid.

ICV6-0400

For the analysis of cyanide, use a 100-fold dilution by pipetting 1 mL of the ICV6 concentrate into a 100 mL volumetric flask and dilute to volume with Type II water. Distill this solution along with the samples before analysis. The cyanide concentrate is prepared from $K_3Fe(CN)_6$, Type II water, and 0.1 % sodium hydroxide, and will decompose rapidly if exposed to light.

NOTE: USE TYPE II WATER AND HIGH-PURITY ACIDS FOR ALL DILUTIONS.

(D) CERTIFIED CONCENTRATIONS OF QATS ICV1, ICV5, AND ICV6 SOLUTIONS

ICV1-1014		
Element	Concentration (µg/L) (after 10-fold dilution)	Concentration (µg/L) (after 50-fold dilution)
Al	2500	500
Sb	1000	200
As	1000	200
Ba	520	100
Be	510	100
Cd	510	100
Ca	10000	100
Cr	520	2000
Co	520	100
Cu	510	100
Fe	10000	100
Pb	1000	2000
Mg	6000	200
Mn	520	1200
Ni	530	100
K	9900	110
Se	1000	2000
Ag	250	200
Na	10000	50
Tl	1000	2000
V	500	210
Zn	1000	100
		200

ICV5-0415		ICV6-0400	
Element	Concentration (µg/L) (after 100-fold dilution)	Analyte	Concentration (µg/L) (after 100-fold dilution)
Hg	4.0	CN ⁻	99

Hydrochloric Acid, 36.5-38.0%
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis



R → 16/13/24
Met dig

M 6121

Material No.: 9530-33
Batch No.: 0000275677
Manufactured Date: 2020/12/16
Retest Date: 2025/12/15
Revision No: 1

Certificate of Analysis

Test	Specification	Result
ACS - Assay (as HCl) (by acid-base titrn)	36.5 - 38.0 %	37.6
ACS - Color (APHA)	<= 10	5
ACS - Residue after Ignition	<= 3 ppm	1
ACS - Specific Gravity at 60°/60°F	1.185 - 1.192	1.190
ACS - Bromide (Br)	<= 0.005 %	< 0.005
ACS - Extractable Organic Substances	<= 5 ppm	1
ACS - Free Chlorine (as Cl ₂)	<= 0.5 ppm	< 0.5
Phosphate (PO ₄)	<= 0.05 ppm	< 0.03
Sulfate (SO ₄)	<= 0.5 ppm	< 0.3
Sulfite (SO ₃)	<= 0.8 ppm	0.3
Ammonium (NH ₄)	<= 3 ppm	< 1
Trace Impurities - Arsenic (As)	<= 0.010 ppm	< 0.003
Trace Impurities - Aluminum (Al)	<= 10.0 ppb	< 0.2
Arsenic and Antimony (as As)	<= 5 ppb	< 3
Trace Impurities - Barium (Ba)	<= 1.0 ppb	< 0.2
Trace Impurities - Beryllium (Be)	<= 1.0 ppb	< 0.2
Trace Impurities - Bismuth (Bi)	<= 10.0 ppb	< 1.0
Trace Impurities - Boron (B)	<= 20.0 ppb	< 5.0
Trace Impurities - Cadmium (Cd)	<= 1.0 ppb	< 0.3
Trace Impurities - Calcium (Ca)	<= 50.0 ppb	29.7
Trace Impurities - Chromium (Cr)	<= 1.0 ppb	< 0.4
Trace Impurities - Cobalt (Co)	<= 1.0 ppb	< 0.3
Trace Impurities - Copper (Cu)	<= 1.0 ppb	< 0.1
Trace Impurities - Gallium (Ga)	<= 1.0 ppb	< 0.2

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700

Avantor Performance Materials, LLC

100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone: 610.386.1700

Test	Specification	Result
Trace Impurities – Germanium (Ge)	<= 3.0 ppb	< 2.0
Trace Impurities – Gold (Au)	<= 4.0 ppb	< 0.2
Heavy Metals (as Pb)	<= 100 ppb	< 50
Trace Impurities – Iron (Fe)	<= 15.0 ppb	< 1
Trace Impurities – Lead (Pb)	<= 1.0 ppb	< 0.5
Trace Impurities – Lithium (Li)	<= 1.0 ppb	0.2
Trace Impurities – Magnesium (Mg)	<= 10.0 ppb	0.4
Trace Impurities – Manganese (Mn)	<= 1.0 ppb	< 0.4
Trace Impurities – Mercury (Hg)	<= 0.5 ppb	0.1
Trace Impurities – Molybdenum (Mo)	<= 10.0 ppb	< 5.0
Trace Impurities – Nickel (Ni)	<= 4.0 ppb	< 0.3
Trace Impurities – Niobium (Nb)	<= 1.0 ppb	< 0.2
Trace Impurities – Potassium (K)	<= 9.0 ppb	< 2.0
Trace Impurities – Selenium (Se), For Information Only	ppb	1.0
Trace Impurities – Silicon (Si)	<= 100.0 ppb	< 10.0
Trace Impurities – Silver (Ag)	<= 1.0 ppb	< 0.3
Trace Impurities – Sodium (Na)	<= 100.0 ppb	< 5.0
Trace Impurities – Strontium (Sr)	<= 1.0 ppb	< 0.2
Trace Impurities – Tantalum (Ta)	<= 1.0 ppb	< 0.9
Trace Impurities – Thallium (Tl)	<= 5.0 ppb	< 2.0
Trace Impurities – Tin (Sn)	<= 5.0 ppb	< 0.8
Trace Impurities – Titanium (Ti)	<= 1.0 ppb	0.2
Trace Impurities – Vanadium (V)	<= 1.0 ppb	< 0.2
Trace Impurities – Zinc (Zn)	<= 5.0 ppb	0.3
Trace Impurities – Zirconium (Zr)	<= 1.0 ppb	< 0.1

For Laboratory, Research or Manufacturing Use
Product Information (not specifications):
Appearance (clear, fuming liquid)
Meets ACS Specifications

Country of Origin: US
Packaging Site: Phillipsburg Mfg Ctr & DC

James Ethier
Jamie Ethier
Vice President Global Quality

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700

Avantor Performance Materials, LLC

100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone: 610.386.1700

Nitric Acid 69%
CMOS

avantor™



R:- 10/22/24

M6124

Material No.: 9606-03
Batch No.: 24D1062002
Manufactured Date: 2024-03-26
Retest Date: 2029-03-25
Revision No.: 0

Certificate of Analysis

Test	Specification	Result
Assay (HNO ₃)	69.0 – 70.0 %	69.7 %
Appearance	Passes Test	Passes Test
Color (APHA)	≤ 10	5
Residue after Ignition	≤ 2 ppm	1 ppm
Chloride (Cl)	≤ 0.08 ppm	< 0.03 ppm
Phosphate (PO ₄)	≤ 0.10 ppm	< 0.03 ppm
Sulfate (SO ₄)	≤ 0.2 ppm	< 0.2 ppm
Trace Impurities – Aluminum (Al)	≤ 40.0 ppb	< 1.0 ppb
Arsenic and Antimony (as As)	≤ 5.0 ppb	< 2.0 ppb
Trace Impurities – Barium (Ba)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Beryllium (Be)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Bismuth (Bi)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities – Boron (B)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Cadmium (Cd)	≤ 50 ppb	< 1 ppb
Trace Impurities – Calcium (Ca)	≤ 50.0 ppb	2.3 ppb
Trace Impurities – Chromium (Cr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities – Cobalt (Co)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Copper (Cu)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Gallium (Ga)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Germanium (Ge)	≤ 20 ppb	< 10 ppb
Trace Impurities – Gold (Au)	≤ 20 ppb	< 5 ppb
Heavy Metals (as Pb)	≤ 100 ppb	100 ppb
Trace Impurities – Iron (Fe)	≤ 40.0 ppb	< 1.0 ppb
Trace Impurities – Lead (Pb)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities – Lithium (Li)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Magnesium (Mg)	≤ 20 ppb	< 1 ppb
Trace Impurities – Manganese (Mn)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Nickel (Ni)	≤ 20.0 ppb	< 5.0 ppb

>>> Continued on page 2 >>>

Nitric Acid 69%
CMOS

 **avantors[™]**



Material No.: 9606-03
Batch No.: 24D1062002

Test	Specification	Result
Trace Impurities – Niobium (Nb)	≤ 50.0 ppb	< 1.0 ppb
Trace Impurities – Potassium (K)	≤ 50 ppb	16 ppb
Trace Impurities – Silicon (Si)	≤ 50 ppb	< 10 ppb
Trace Impurities – Silver (Ag)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Sodium (Na)	≤ 150.0 ppb	< 5.0 ppb
Trace Impurities – Strontium (Sr)	≤ 30.0 ppb	< 1.0 ppb
Trace Impurities – Tantalum (Ta)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Thallium (Tl)	≤ 10.0 ppb	< 5.0 ppb
Trace Impurities – Tin (Sn)	≤ 20.0 ppb	< 10.0 ppb
Trace Impurities – Titanium (Ti)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Vanadium (V)	≤ 10.0 ppb	< 1.0 ppb
Trace Impurities – Zinc (Zn)	≤ 20.0 ppb	< 1.0 ppb
Trace Impurities – Zirconium (Zr)	≤ 10.0 ppb	< 1.0 ppb
Particle Count – 0.5 µm and greater	≤ 60 par/ml	10 par/ml
Particle Count – 1.0 µm and greater	≤ 10 par/ml	3 par/ml

>>> Continued on page 3 >>>

Nitric Acid 69%
CMOS

 **avantorsTM**



Material No.: 9606-03
Batch No.: 24D1062002

Test	Specification	Result
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For Microelectronic Use

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC



Jamie Croak
Director Quality Operations, Bioscience Production



SHIPPING DOCUMENTS

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P4986



Weston COC ID
Weston_20241122_1439

Chain of Custody Record/Lab Work Request

Client:	Weston Solutions, Inc.		
Project Manager:	David Sembrot		
Street Address:	1400 Weston Way	City:	West Chester
Phone:	610-314-5456	ST, ZIP:	PA, 19038
e-mail:	david.sembrot@westonsolutions.com		
Sampled By:	Cheyenne Harrington		

Project Name:	Fort Meade RI	Project POC:	Nathan Fretz
PO Number	0111169	Phone:	484-524-5665
W.O. #:		POC e-mail:	nathan.fretz@westonsolutions.com
Lab:	Chemtech	Lab POC:	Jordan Hedvat
TAT (days):	21	Lab Phone:	908-728-3148
Lab Address:	284 Sheffield Street Mountainside, NJ 07092		

Matrix Codes	
SB - Soil	
SE - Sediment	
SO - Solid	
SL - Sludge	
GW - Groundwater	
W - Water	
O - Oil	
A - Air	
DS - Drum Solids	
DL - Drum Liquids	
L - EP/TCLP Leachate	
WI - Wipe	
X - Other	
F - Fish	

Lab Use Only		
Temperature of cooler when received (°C)		
COC Tape was present and unbroken on outer package?	Y	N
Samples received in good condition?	Y	N
Labels indicate properly preserved?	Y	N
Received within holding times?	Y	N
Discrepancies between sample labels and COC record?	Y	N

Analyses Requested:	TAL Metals by EPA 8020B/7471B	pH by EPA 9045D	Anions by EPA 9056A	TOC by EPA 9060A													
	Container Type:	Glass	Glass	Glass	Glass												
	Container Size:	8 oz	8 oz	8 oz	8 oz												
	Preservative:	Ice to 0-6	Ice to 0-6	Ice to 0-6	Ice to 0-6												

#	Sample ID	G/C	Matrix	# Cont	MS/MSD	Date Collected	Time Collected											Special Instructions/Comments
1	TAPIAL1-SB04D-9-112224-00-T1	g	SB		no	11/22/2024	11:35	X	X	X	X							TOL pH in 1 8oz jar 7/12
2	TAPIAL1-SB04I-4-112224-00-T1	g	SB		no	11/22/2024	12:50	X	X		X							TOC pH in 1 8oz jar 7/12
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		

Shipping Airbill Number: 7701 6148 1829					Cooler Number: of				
Relinquished By	Date	Time	Received By	Date	Time	Additional Comments			
1.) [Signature]	11/28/24	1620	[Signature]	11/23/24	10-00	QSM 6.0 Compliant			
2.)					1-3 rd	Deliverable Requirements: DoD Level IV report, EnviroData EDD, and ERIS-compatible EDD			
3.)									

From: Harrington, Cheyenne <Cheyenne.Harrington@WestonSolutions.com>
Sent: Saturday, November 23, 2024 3:49 PM
To: Jordan Hedvat; ProjectManagers@chemtech.net
Cc: Sembrot, David; Sollenberger, Christopher; Fretz, Nathan
Subject: Ft Meade Sample Shipment 11.22.24
Attachments: 11.22.24 COC.pdf

Hi there,

We shipped one sample cooler yesterday via FedEx that was delivered this morning. Please correct the sample ID for sample number 2 on all three chains to TAPIAL1-SB04D-4-112224-00-T1. Note that the sample container column was accidentally left blank on all chains, but the sample containers will be clearly labeled. A copy of the COCs is attached.

Please confirm this sample cooler was received.

Thank you,
Cheyenne

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From: Budnovitch, Joe <Joe.Budnovitch@WestonSolutions.com>
Sent: Friday, November 22, 2024 5:15:16 PM
To: Harrington, Cheyenne <Cheyenne.Harrington@WestonSolutions.com>
Subject: 11.22.24 Shipping Docs

Attached is the shipping label, receipt, and COCs.

Joe

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Laboratory Certification

Certified By	License No.
CAS EPA CLP Contract	68HERH20D0011
Connecticut	PH-0830
DOD ELAP (ANAB)	L2219
Maine	2024021
Maryland	296
New Hampshire	255424 Rev 1
New Jersey	20012
New York	11376
Pennsylvania	68-00548
Soil Permit	525-24-234-08441
Texas	T104704488