

The order of this data package is as follows:

1. Chain-of-Custody/Lab Request
2. Copies of field COCs
3. Validation Report
4. Laboratory analysis

Comments:

2018-523		TEST - Explosives		YES	NO
Samples collected from a WFO area?					X
Field Test for Explosives Results				YES	NO NA
Spot test shows presence of explosives residues. If YES - Do not ship.				X	

TEST - Chemical Preservation		YES	NO
Samples are chemically preserved?			X
Field Team Member Statement		YES	NO NA
Chemical preservation exceeds limits given 40 CFR 136, Table II - Required Containers, Preservation Techniques and Holding Times (footnote 3). If YES - Do not ship.			X

TEST - Field Screen			YES	NO
The sample has field screening measurements of alpha activity and beta activity?				X
Sample Activity (dpm/100cm ²)	Shipment Activity (dpm*g/100cm ²)	Sampled Location	YES	NO NA
Alpha detectable	Alpha >160,000	TA-1 and adjacent hillsides, TA-21, Acid Canyon, MDA C at TA-50, Area G at TA-54, TA-48, or TA-49		X
Alpha > 125	Alpha >1,250,000	other locations		
Beta > 1,500	Beta >15,000,000	any location		
The sample Alpha >16,000,000 dpm*g/100cm ² or Beta > 160,000,000 dpm*g/100cm ² . If YES - Do not ship.				
On the external surface of the sample container, alpha activity ≥ 24 dpm/cm ² , beta activity ≥ 240 dpm/cm ² , or surface activity ≥ 0.5 mR/hr. If YES - Do not ship.				
The sample is tentatively identified as DOT Hazard Class 7 (Radioactive). The shipment is labeled Radioactive Material, Excepted Package - Limited Quantity of Material - UN2910, based on field screening measurements of alpha and beta activity.				

TEST - Location		YES	NO
Prior analytical measurements of radioactive isotopes are available?		X	
Sample Activity (pCi/g)	Shipment Activity (pCi)	YES	NO NA
<ul style="list-style-type: none"> Am-241 > 27 Cs-137 > 270 Pu-238 > 27 Pu-239/240 > 27 Th-228 > 27 U-234 > 270 U-238 > 270 H-3 > 27,000,000 	<ul style="list-style-type: none"> Am-241 > 270,000 Cs-137 > 270,000 Pu-238 > 270,000 Pu-239/240 > 270,000 Th-228 > 270,000 U-234 > 1,600,000,000 U-238 > unlimited H-3 > 27,000,000,000 		X
Am-241, Pu-238, Pu-239/240, or Th 228 > 27,000,000 pCi; or Cs-137 > 270,000,000 pCi or U-234 ≥ 160,000,000 pCi; or H-3 ≥ 1 Ci. If YES - Do not ship.			X
The sample is tentatively identified as DOT Hazard Class 7 (Radioactive). The shipment is labeled Radioactive Material, Excepted Package - Limited Quantity of Material - UN2910, based on prior analytical measurements of radioactive isotopes.			X

TEST - AK	YES	NO	NA
The shippers documented knowledge of the sample positively identifies appropriate labeling.			X
The sample is tentatively identified as DOT Hazard Class 7 (Radioactive). The shipment is labeled Radioactive Material, Excepted Package - Limited Quantity of Material - UN2910, and the sample is submitted to ARS or RP for hazard classification analysis.			X

HOLD SAMPLES FOR ANALYSIS
The samples are held per ER-SOP-10094, Rev. 1, 5.2.2 [7]

These samples do not meet the criteria for classification in any hazard class according to regulation OSHA 29 CFR 1910.1200. The sample(s) contained in this shipment have been assigned a tentative proper DOT shipping name, hazard class, identification number, and packing group, based on the shipper's knowledge of the sample:

Hazard Assessment Completed By:	Date/Time
(Printed Name) Melissa Montoya	10/19/17
(Signature)	3:00

Hazard Assessment Reviewed By:	Date/Time
(Printed Name) S. Sherwood	10/19/17
(Signature) S. Sherwood	3:00

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11508

EVENT NAME: Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1

SAMPLE ID: CAMO-18-147684

WORK ORDER:

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
Date Collected (MM/DD/YYYY):	<u>10/17/2017</u>	<u>ok</u>	FIELD MATRIX:	<u>WG</u>	<u>y</u>
TIME COLLECTED (HH:MM):	<u>1254</u>	<u>ok</u>	MEDIA:		
PRS ID:	<u>NA</u>		SAMPLE TECH CODE:	<u>CSP</u>	
LOCATION ID:	<u>R-55 S1</u>		FIELD PREP:	<u>UF</u>	
LOCATION TYPE:	<u>NA</u>		FIELD QC TYPE:	<u>FD</u>	
TOP DEPTH:	<u>↓</u>	<u>↓</u>	SAMPLE USAGE:	<u>QC</u>	<u>↓</u>
BOTTOM DEPTH:			EXCAVATED:		YES / NO / <u>NA</u>

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
<u>NA</u>	MSGP-Hg	500 ML POLY	1	HNO3	<u>y</u>	<u>NA</u>
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	<u>↓</u>	<u>↓</u>
	WSP-8270C-SVOA	1 LITER AMBER GLASS	2	ICE	<u>↓</u>	<u>↓</u>
	WSP-CN(T)	250 ML POLY	1	NAOH	<u>↓</u>	<u>↓</u>
	WSP-GrossA/B	1 LITER POLY	1	HNO3	<u>↓</u>	<u>↓</u>
	WSP-LL-H-3	1 LITER POLY	1	NONE	<u>↓</u>	<u>↓</u>
	WSP-RAD	1 GAL POLY	1	HNO3	<u>↓</u>	<u>↓</u>
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	<u>↓</u>	<u>↓</u>

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM _____ Dissolved Oxygen _____ Flow (in gpm) _____
 Oxidation-Reduction Potential _____ pH _____ Specific Conductance _____
 Temperature _____ Turbidity _____

COLLECTED BY (PRINT): T. Benton A. Stanfield

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**EVENT ID:** 11508**EVENT NAME:** Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1**SAMPLE ID:** CAMO-18-147684**WORK ORDER:**

RELINQUISHED BY (Printed Name) <i>Daniel Sandoz</i> (Signature) <i>[Signature]</i>	Date/Time <i>10/17/17</i> <i>1600</i>	RECEIVED BY <i>S Sherwood</i> (Printed Name) <i>[Signature]</i> (Signature) <i>Sherwood</i>	Date/Time <i>10/17/17</i> <i>1600</i>
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 10/05/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11508

EVENT NAME: Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1

SAMPLE ID: CAPA-18-147586

WORK ORDER:

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
Date Collected (MM/DD/YYYY):	<u>10/18/2017</u>	<u>OK</u>	FIELD MATRIX:	<u>WG</u>	<u>OK</u>
TIME COLLECTED (HH:MM):	<u>1225</u>	<u>OK</u>	MEDIA:		
PRS ID:	<u>NA</u>		SAMPLE TECH CODE:	<u>CSP</u>	
LOCATION ID:	<u>R-49 S1</u>		FIELD PREP:	<u>UF</u>	
LOCATION TYPE:	<u>NA</u>		FIELD QC TYPE:	<u>REG</u>	
TOP DEPTH:			SAMPLE USAGE:	<u>INV</u>	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / <u>NA</u>

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
<u>NA</u>	MSGP-Hg	500 ML POLY	1	HNO3	<u>Y</u>	<u>NA</u>
	WSP-8260B- VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C- SVOA	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-GrossA/B	1 LITER POLY	1	HNO3		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

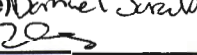
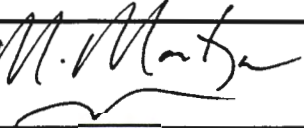
SAMPLE COMMENTS: NoneLOCATION COMMENTS: Sampled 50 ft from running diesel generator.

FIELD PARAMETERS:

Sample Time	<u>NA</u>	HH:MM	Dissolved Oxygen	<u>3.80</u>	Flow (in gpm)	<u>1.54</u>
Oxidation-Reduction Potential	<u>162.3</u>		pH	<u>8.00</u>	Specific Conductance	<u>150.</u>
Temperature	<u>22.4</u>		Turbidity	<u>6.71</u>		

COLLECTED BY (PRINT): A. G. Gil D. Hughes

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**EVENT ID:** 11508**EVENT NAME:** Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1**SAMPLE ID:** CAPA-18-147586**WORK ORDER:**

RELINQUISHED BY (Printed Name) Daniel Soriano (Signature) 	Date/Time 1548 10/18/17	RECEIVED BY (Printed Name) M. Martinez (Signature) 	Date/Time 10/18/17 1548
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 10/05/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11508

EVENT NAME: Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1

SAMPLE ID: CAPA-18-147587

WORK ORDER:

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
Date Collected (MM/DD/YYYY):	<u>10/18/17</u>	<u>dk</u>	FIELD MATRIX:	<u>WG</u>	<u>dk</u>
TIME COLLECTED (HH:MM):	<u>1439</u>	<u>dk</u>	MEDIA:		
PRS ID:	<u>NA</u>		SAMPLE TECH CODE:	<u>GSP</u>	
LOCATION ID:	<u>R-49 S2</u>		FIELD PREP:	<u>UF</u>	
LOCATION TYPE:	<u>M</u>		FIELD QC TYPE:	<u>REG</u>	
TOP DEPTH:	<u>↓</u>		SAMPLE USAGE:	<u>INV</u>	<u>↓</u>
BOTTOM DEPTH:	<u>↓</u>	<u>↓</u>	EXCAVATED:		YES / NO / <u>NA</u>

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
<u>NA</u>	MSGP-Hg	500 ML POLY	1	HNO3	<u>Y</u>	<u>NA</u>
<u>↓</u>	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	<u>↓</u>	<u>↓</u>
	WSP-8270C-SVOA	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-GrossA/B	1 LITER POLY	1	HNO3		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP-RAD	1 GAL POLY	1	HNO3		
<u>↓</u>	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	<u>↓</u>	<u>↓</u>

SAMPLE COMMENTS: NoneLOCATION COMMENTS: Sampled SD at Sen running dosil sampler

FIELD PARAMETERS:

Sample Time	<u>NA</u>	HH:MM	Dissolved Oxygen	<u>6.53</u>	Flow (in gpm)	<u>2.47</u>
Oxidation-Reduction Potential	<u>223.4</u>		pH	<u>8.00</u>	Specific Conductance	<u>141.5</u>
Temperature	<u>22.5</u>		Turbidity	<u>0.31</u>		

COLLECTED BY (PRINT): D. Hughes, A. Visil

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**EVENT ID:** 11508**EVENT NAME:** Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1**SAMPLE ID:** CAPA-18-147587**WORK ORDER:**

RELINQUISHED BY (Printed Name) <i>Danae Jant</i> (Signature) <i>[Signature]</i>	Date/Time <i>10/18/17</i> <i>1548</i>	RECEIVED BY <i>M. Martin</i> (Printed Name) <i>[Signature]</i> (Signature)	Date/Time <i>10/18/17</i> <i>1548</i>
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 10/05/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11508

EVENT NAME: Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1

SAMPLE ID: CAPA-18-147589

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	10-18-17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1039		MEDIA:		
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-51 S2		FIELD PREP:	UF	
LOCATION TYPE:	NA		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	500 ML POLY	1	HNO3	Y	NA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-GrossA/B	1 LITER POLY	1	HNO3		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: Sampled with running diesel generator ~30 ft. away

LOCATION COMMENTS: none

FIELD PARAMETERS:

Sample Time	1039	HH:MM	Dissolved Oxygen	6.35 mg/L	Flow (in gpm)	3.75
Oxidation-Reduction Potential	187.3 mV		pH	8.09	Specific Conductance	121.2 μ S/cm
Temperature	21.4°C		Turbidity	0.26 NTU		

COLLECTED BY (PRINT): A. Stanfield, T. Bonham

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**EVENT ID:** 11508**EVENT NAME:** Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1**SAMPLE ID:** CAPA-18-147589**WORK ORDER:**

RELINQUISHED BY (Printed Name) Tanya Vander Vliet (Signature) <i>Tanya Vander Vliet</i>	Date/Time 10-18-13 1305	RECEIVED BY (Printed Name) S. Sherwood (Signature) <i>S. Sherwood</i>	Date/Time 10/18/17 1305
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 10/05/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11508

EVENT NAME: Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1

SAMPLE ID: CAPA-18-147588

WORK ORDER:

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
Date Collected (MM/DD/YYYY):	10-18-17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1211		MEDIA:		
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-51 S1		FIELD PREP:	UF	
LOCATION TYPE:	NA		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	500 ML POLY	1	HNO3	Y	NA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-GrossA/B	1 LITER POLY	1	HNO3		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: Sampled with running diesel generator ~30ft. away.
Breezy while sampling.

LOCATION COMMENTS: none.

FIELD PARAMETERS:

Sample Time	1211	HH:MM	Dissolved Oxygen	7.22 mg/L	Flow (in gpm)	3.80
Oxidation-Reduction Potential	194.9mV		pH	7.93	Specific Conductance	118.8 $\mu S/cm$
Temperature	20.8°C		Turbidity	0.53 NTU		

COLLECTED BY (PRINT): A. Stanfield, T. Bonham

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**EVENT ID:** 11508**EVENT NAME:** Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1**SAMPLE ID:** CAPA-18-147588**WORK ORDER:**

RELINQUISHED BY (Printed Name) Tanya Vander Vis (Signature) <i>Tanya Vander Vis</i>	Date/Time 10-18-17 1305	RECEIVED BY <i>S. Sherwood</i> (Printed Name) S. Sherwood (Signature) <i>S. Sherwood</i>	Date/Time 10/18/17 1305
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 10/05/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11508

EVENT NAME: Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1

SAMPLE ID: CAMO-18-147660

WORK ORDER:

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
Date Collected (MM/DD/YYYY):	<u>10/17/17</u>	<u>OK</u>	FIELD MATRIX:	<u>WG</u>	<u>OK</u>
TIME COLLECTED (HH:MM):	<u>1500</u>	<u>OK</u>	MEDIA:		
PRS ID:	<u>nt</u>		SAMPLE TECH CODE:	<u>GSP</u>	
LOCATION ID:	<u>R-55 S2</u>		FIELD PREP:	<u>UF</u>	
LOCATION TYPE:	<u>nt</u>		FIELD QC TYPE:	<u>REG</u>	
TOP DEPTH:	<u>↓</u>		SAMPLE USAGE:	<u>INV</u>	<u>↓</u>
BOTTOM DEPTH:	<u>↓</u>	<u>↓</u>	EXCAVATED:		YES / NO / <u>NA</u>

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
<u>NA</u>	MSGP-Hg	500 ML POLY	1	HNO3	<u>Y</u>	<u>nt</u>
<u>↓</u>	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	<u>↓</u>	<u>↓</u>
<u>↓</u>	WSP-8270C-SVOA	1 LITER AMBER GLASS	2	ICE	<u>↓</u>	<u>↓</u>
<u>↓</u>	WSP-CN(T)	250 ML POLY	1	NAOH	<u>↓</u>	<u>↓</u>
<u>↓</u>	WSP-GrossA/B	1 LITER POLY	1	HNO3	<u>↓</u>	<u>↓</u>
<u>↓</u>	WSP-LL-H-3	1 LITER POLY	1	NONE	<u>↓</u>	<u>↓</u>
<u>↓</u>	WSP-RAD	1 GAL POLY	1	HNO3	<u>↓</u>	<u>↓</u>
<u>↓</u>	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	<u>↓</u>	<u>↓</u>

SAMPLE COMMENTS:

LOCATION COMMENTS: Sample 50 ft from running diesel generator

FIELD PARAMETERS:

Sample Time	<u>NA</u>	HH:MM	Dissolved Oxygen	<u>5.84</u>	Flow (in gpm)	<u>2.77</u>
Oxidation-Reduction Potential	<u>209.6</u>		pH	<u>8.35</u>	Specific Conductance	<u>175.6</u>
Temperature	<u>23.0</u>		Turbidity	<u>0.10</u>		

COLLECTED BY (PRINT): T. Barker, A. Stanfield

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11508

EVENT NAME: Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1

SAMPLE ID: CAMO-18-147660

WORK ORDER:

RELINQUISHED BY (Printed Name) <i>Daniel Jaramila</i> (Signature) <i>[Signature]</i>	Date/Time <i>10/17/17</i> <i>1600</i>	RECEIVED BY (Printed Name) <i>G. Sherwood</i> (Signature) <i>[Signature]</i>	Date/Time <i>10/17/17</i> <i>16:00</i>
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 10/05/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11508

EVENT NAME: Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1

SAMPLE ID: CAMO-18-147659

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	10/17/2017	ck	FIELD MATRIX:	WG	Y
TIME COLLECTED (HH:MM):	1254	ck	MEDIA:		
PRS ID:	W2		SAMPLE TECH CODE:	GS	
LOCATION ID:	R-55 S1		FIELD PREP:	UF	
LOCATION TYPE:	NP		FIELD QC TYPE:	REG	
TOP DEPTH:	↓		SAMPLE USAGE:	INV	↓
BOTTOM DEPTH:	↓	↓	EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	500 ML POLY	1	HNO3	Y	NA
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
	WSP-8270C-SVOA	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-GrossA/B	1 LITER POLY	1	HNO3		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP-RAD	1 GAL POLY	1	HNO3		
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:

LOCATION COMMENTS: Sampled SCFF Fan running diesel generator

FIELD PARAMETERS:

Sample Time	NA	HH:MM	Dissolved Oxygen	6.30	Flow (in gpm)	2.85
Oxidation-Reduction Potential	227.7		pH	8.13	Specific Conductance	176.1
Temperature	22.6		Turbidity	0.11		

COLLECTED BY (PRINT): T Barker, Astenfield

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**EVENT ID:** 11508**EVENT NAME:** Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1**SAMPLE ID:** CAMO-18-147659**WORK ORDER:**

RELINQUISHED BY (Printed Name) <i>Donna S. Smith</i> (Signature) <i>[Signature]</i>	Date/Time <i>10/17/17</i> <i>1600</i>	RECEIVED BY (Printed Name) <i>S. Sherwood</i> (Signature) <i>[Signature]</i>	Date/Time <i>10/17/17</i> <i>1600</i>
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 10/05/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11508

EVENT NAME: Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1

SAMPLE ID: CAPA-18-147590

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	10-17-17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1139		MEDIA:		
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-52 S1		FIELD PREP:	UF	
LOCATION TYPE:	NA		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO (NA)

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	500 ML POLY	1	HNO3	Y	NA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-GrossA/B	1 LITER POLY	1	HNO3		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: sampled running diesel generator ~35 ft. away

LOCATION COMMENTS:

none

FIELD PARAMETERS:

Sample Time	1139	HH:MM	Dissolved Oxygen	7.21 mg/l	Flow (in gpm)	3.33
Oxidation-Reduction Potential	173.3mV		pH	7.90	Specific Conductance	140.0 μ S/cm
Temperature	21.2°C		Turbidity	1.64 NTU		

COLLECTED BY (PRINT):

A. Vigil, D. Hughes

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**EVENT ID:** 11508**EVENT NAME:** Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1**SAMPLE ID:** CAPA-18-147590**WORK ORDER:**

RELINQUISHED BY (Printed Name) Tanya VanderVis (Signature) <i>Tanya VanderVis</i>	Date/Time 10-17-17 1430	RECEIVED BY MAT ENGLERT (Printed Name) (Signature) <i>M. Englert</i>	Date/Time 10-17-17 1430
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 10/05/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11508

EVENT NAME: Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1

SAMPLE ID: CAPA-18-147686

WORK ORDER:

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
Date Collected (MM/DD/YYYY):	10/17/17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	0845		MEDIA:	10/17/17 DEOK	
PRS ID:	OK		SAMPLE TECH CODE:	DC	
LOCATION ID:	R-52 S2		FIELD PREP:	UF	
LOCATION TYPE:	OK		FIELD QC TYPE:	PEB	
TOP DEPTH:			SAMPLE USAGE:	QC	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / (NA)

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8082-PCB	1 LITER AMBER GLASS	2 2A 10/17/17	ICE	Y	NA
	WSP-8260B- VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C- SVOA	1 LITER AMBER GLASS	2	ICE		
	WSP-8290-D/F	1 LITER AMBER GLASS	2	ICE		
	WSP-8330B-NMED HEXP	1 LITER AMBER GLASS	2 2A 10/17/17	ICE		
	WSP-All Metals	1 LITER POLY	1	HNO3 ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP- GENINORG+PerChlorat e	1 LITER POLY	1	ICE		
	WSP-GrossA/B	1 LITER POLY	1	HNO3		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP- NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**EVENT ID:** 11508**EVENT NAME:** Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1**SAMPLE ID:** CAPA-18-147686**WORK ORDER:****SAMPLE COMMENTS:****LOCATION COMMENTS:****FIELD PARAMETERS:**

Sample Time _____ HH:MM _____ Dissolved Oxygen _____ Flow (in gpm) _____
Oxidation-Reduction _____ pH _____ Specific _____
Potential _____ Conductance _____
Temperature _____ Turbidity _____

COLLECTED BY (PRINT): A. Stanfield, T. Bonham

RELINQUISHED BY (Printed Name) Allisyn Stanfield (Signature) <i>Allisyn Stanfield</i>	Date/Time 10/17/17 1430	RECEIVED BY (Printed Name) S. Sherwood (Signature) <i>S. Sherwood</i>	Date/Time 10/17/17 1430
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 10/05/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11508

EVENT NAME: Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1

SAMPLE ID: CAPA-18-147591

WORK ORDER:

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
Date Collected (MM/DD/YYYY):	10-17-17 <u>1323</u> TV 10-17-17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	<u>1323</u>		MEDIA:		
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-52 S2		FIELD PREP:	UF	
LOCATION TYPE:	NA		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / <u>NA</u>

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	500 ML POLY	1	HNO3	Y	NA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-GrossA/B	1 LITER POLY	1	HNO3		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: Sampled with running diesel generator ~30 ft. away

LOCATION COMMENTS: none

FIELD PARAMETERS:

Sample Time	<u>1323</u>	HH:MM	Dissolved Oxygen	<u>6.71</u> mg/l	Flow (in gpm)	<u>3.33</u>
Oxidation-Reduction Potential	<u>182.3</u> mV		pH	<u>7.86</u>	Specific Conductance	<u>1240</u> μ S/cm
Temperature	<u>21.1</u> °C		Turbidity	<u>0.09</u> NTU		

COLLECTED BY (PRINT): A. Vigil, D. Hughes

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**EVENT ID:** 11508**EVENT NAME:** Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1**SAMPLE ID:** CAPA-18-147591**WORK ORDER:**

RELINQUISHED BY (Printed Name) Tanya VanderVort (Signature) <i>Tanya VanderVort</i>	Date/Time 10-17-17 1430	RECEIVED BY <i>Sherwood</i> (Printed Name) (Signature) <i>Sherwood</i>	Date/Time 10/17/17 1430
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 10/05/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11508

EVENT NAME: Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1

SAMPLE ID: CAMO-18-147649

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	10/16/17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1340		MEDIA:	OK	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-21		FIELD PREP:	UF	
LOCATION TYPE:	OK		FIELD QC TYPE:	REG	
TOP DEPTH:	↓	↓	SAMPLE USAGE:	INV	↓
BOTTOM DEPTH:	↓	↓	EXCAVATED:		YES / NO / <u>NA</u>

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	500 ML POLY	1	HNO3	Y	NA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-GrossA/B	1 LITER POLY	1	HNO3		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP-RAD	1 GAL POLY	1	HNO3		
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NMED split samples

LOCATION COMMENTS: None

FIELD PARAMETERS:

Sample Time	1340	HH:MM	Dissolved Oxygen	6.29	Flow (in gpm)	3.19
Oxidation-Reduction Potential	260.4		pH	8.01	Specific Conductance	124.7
Temperature	20.8		Turbidity	0.28		

COLLECTED BY (PRINT):

D. Hughes

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**EVENT ID:** 11508**EVENT NAME:** Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1**SAMPLE ID:** CAMO-18-147649**WORK ORDER:**

RELINQUISHED BY (Printed Name) <i>Dan Hughes</i> (Signature) <i>[Signature]</i>	Date/Time <i>10/16/17</i> <i>1450</i>	RECEIVED BY <i>S. Sherwood</i> (Printed Name) <i>[Signature]</i> (Signature) <i>[Signature]</i>	Date/Time <i>10/16/17</i> <i>1450</i>
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 10/05/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11508

EVENT NAME: Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1

SAMPLE ID: CAMO-18-147652

WORK ORDER:

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
Date Collected (MM/DD/YYYY):	10/16/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1322		MEDIA:	OK	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-38		FIELD PREP:	UF	
LOCATION TYPE:	OK		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / <u>NO</u> / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
MA	MSGP-Hg	500 ML POLY	1	HNO3	Y	MA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	2	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-GrossA/B	1 LITER POLY	1	HNO3		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: Sampled 50 ft. from running diesel generator

LOCATION COMMENTS: MA

FIELD PARAMETERS:

Sample Time	1322	HH:MM	Dissolved Oxygen	6.41	Flow (in gpm)	2.65
Oxidation-Reduction Potential	195.9		pH	7.14	Specific Conductance	138.6
Temperature	18.8		Turbidity	0.32		

COLLECTED BY (PRINT): T. Bonham

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**EVENT ID:** 11508**EVENT NAME:** Pajarito (TA-54) & Chromium October
Monthly MY2018 Q1**SAMPLE ID:** CAMO-18-147652**WORK ORDER:**

RELINQUISHED BY (Printed Name) <i>Tanner Bonham</i> (Signature) <i>[Signature]</i>	Date/Time <i>10/16/2017</i> <i>1425</i>	RECEIVED BY <i>Sherwood</i> (Printed Name) (Signature) <i>[Signature]</i>	Date/Time <i>10/16/17</i> <i>1425</i>
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 10/05/2017

DATA VALIDATION REPORT

Chain Of Custody No. 2018-523

1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
ARS1-17-03130	Generic:Low_Level_Tritium	2				
ARS1-17-03130	Generic:Low_Level_Tritium	4	1			
ARS1-17-03130	Generic:Low_Level_Tritium	4				

SDG	Analytical Method	Analysis Lot ID	Prep Lot ID	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks	Method Blanks	Matrix Spikes	Matrix Spike Dups	Analytical Spikes	Post-Digestion Spikes	Lab Control Samples	Lab Control Sample Dups	Blank Spike	Blank Spike Dups	Lab Duplicates	Storage Blanks	Preparation Blanks	Reagent Blanks
ARS1-17-03130	Generic:Low_Level_Tritium	ARS1-B17-	ARS1-B17-	10	1				1					1	1						

2. Distribution Of Analytes In EDD.

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
Generic:Low_Level_Tritium	RAD	CAMO-18-147649	ARS1-B17-02399-04	REG	1	0	0	0
Generic:Low_Level_Tritium	RAD	CAMO-18-147652	ARS1-B17-02399-05	REG	1	0	0	0
Generic:Low_Level_Tritium	RAD	CAMO-18-147659	ARS1-B17-02399-13	REG	1	0	0	0
Generic:Low_Level_Tritium	RAD	CAMO-18-147660	ARS1-B17-02399-15	REG	1	0	0	0
Generic:Low_Level_Tritium	RAD	CAMO-18-147684	ARS1-B17-02399-14	FD	1	0	0	0
Generic:Low_Level_Tritium	RAD	CAPA-18-147586	ARS1-B17-02399-06	REG	1	0	0	0
Generic:Low_Level_Tritium	RAD	CAPA-18-147587	ARS1-B17-02399-07	REG	1	0	0	0
Generic:Low_Level_Tritium	RAD	CAPA-18-147588	ARS1-B17-02399-08	REG	1	0	0	0
Generic:Low_Level_Tritium	RAD	CAPA-18-147589	ARS1-B17-02399-09	REG	1	0	0	0
Generic:Low_Level_Tritium	RAD	CAPA-18-147590	ARS1-B17-02399-10	REG	1	0	0	0
Generic:Low_Level_Tritium	RAD	CAPA-18-147591	ARS1-B17-02399-11	REG	1	0	0	0
Generic:Low_Level_Tritium	RAD	CAPA-18-147686	ARS1-B17-02399-12	PEB	1	0	0	0
Generic:Low_Level_Tritium	RAD	LCS	ARS1-B17-02399-01	LCS	0	0	1	0
Generic:Low_Level_Tritium	RAD	LCSD	ARS1-B17-02399-02	LCSD	0	0	1	0
Generic:Low_Level_Tritium	RAD	MB	ARS1-B17-02399-03	MB	1	0	0	0

3. Are any analytes missing?

DATA VALIDATION REPORT

No.

4. Were any holding times exceeded?

No.

5. Any contaminants in blanks?

No.

6. Any surrogate recoveries outside the control limits?

No.

7. Any MS/MSD recoveries or RPDs outside the control limits?

No.

8. Any LCS/LCSD or BS/BSD recoveries or RPDs outside the control limits?

No.

9. Any Field Duplicate RPDs outside the desired limits?

No.

10. Any Lab Duplicate RPDs outside the desired limits?

No.

11. Any required reporting limits exceeded?

DATA VALIDATION REPORT

No.

12. Additional Validator's Comments.

13. Display Flagged Data.

Location ID	COC Number	Field Sample ID	Sample Purpose	Analysis Type Code	Analytical Suite	Analytical Method	Paramter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detect Flag	Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent	Analysis Lot ID	Validation Status Code	Use Flag
R-21	2018-523	CAMO-18-147649	REG	INIT	RAD	Generic:Low_Level_Tritium	Tritium	U	U	R5	N	-5.719	pCi/L	-5.719	pCi/L	3.855	1.365	W	10/16/2017		ARS1-B17-02399		Y
R-38	2018-523	CAMO-18-147652	REG	INIT	RAD	Generic:Low_Level_Tritium	Tritium	U	U	R5	N	-6.640	pCi/L	-6.640	pCi/L	3.357	1.342	W	10/16/2017		ARS1-B17-02399		Y
R-55 S1	2018-523	CAMO-18-147659	REG	INIT	RAD	Generic:Low_Level_Tritium	Tritium	U	U	R5	N	-9.196	pCi/L	-9.196	pCi/L	3.935	1.722	W	10/17/2017		ARS1-B17-02399		Y
R-55 S2	2018-523	CAMO-18-147660	REG	INIT	RAD	Generic:Low_Level_Tritium	Tritium	U	U	R5	N	-7.774	pCi/L	-7.774	pCi/L	3.585	1.504	W	10/17/2017		ARS1-B17-02399		Y
R-49 S1	2018-523	CAPA-18-147586	REG	INIT	RAD	Generic:Low_Level_Tritium	Tritium	U	U	R5	N	-6.780	pCi/L	-6.780	pCi/L	3.593	1.403	W	10/18/2017		ARS1-B17-02399		Y
R-49 S2	2018-523	CAPA-18-147587	REG	INIT	RAD	Generic:Low_Level_Tritium	Tritium	U	U	R5	N	-7.959	pCi/L	-7.959	pCi/L	3.796	1.563	W	10/18/2017		ARS1-B17-02399		Y
R-51 S1	2018-523	CAPA-18-147588	REG	INIT	RAD	Generic:Low_Level_Tritium	Tritium	U	U	R5	N	-7.380	pCi/L	-7.380	pCi/L	3.883	1.522	W	10/18/2017		ARS1-B17-02399		Y
R-51 S2	2018-523	CAPA-18-147589	REG	INIT	RAD	Generic:Low_Level_Tritium	Tritium	U	U	R5	N	-2.604	pCi/L	-2.604	pCi/L	3.961	1.205	W	10/18/2017		ARS1-B17-02399		Y
R-52 S1	2018-523	CAPA-18-147590	REG	INIT	RAD	Generic:Low_Level_Tritium	Tritium	U	U	R5	N	-7.372	pCi/L	-7.372	pCi/L	3.754	1.495	W	10/17/2017		ARS1-B17-02399		Y
R-52 S2	2018-523	CAPA-18-147591	REG	INIT	RAD	Generic:Low_Level_Tritium	Tritium	U	U	R5	N	-6.330	pCi/L	-6.330	pCi/L	3.047	1.249	W	10/17/2017		ARS1-B17-02399		Y
R-52 S2	2018-523	CAPA-18-147686	PEB	INIT	RAD	Generic:Low_Level_Tritium	Tritium	U	U	R5	N	-10.056	pCi/L	-10.056	pCi/L	3.836	1.803	W	10/17/2017		ARS1-B17-02399		Y

Reason Code

Description

- NQ The analytical laboratory did not qualify the analyte as not detected and/or any other standard qualify. The analyte is detected in the sample.
- R5 Analyte is not detected because the amount reported is less than the MDC.

14. Usable Result Count.

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAMO-18-147649	R-21	REG	Generic:Low_Level_Tritium	0	1
CAMO-18-147652	R-38	REG	Generic:Low_Level_Tritium	0	1
CAMO-18-147659	R-55 S1	REG	Generic:Low_Level_Tritium	0	1
CAMO-18-147660	R-55 S2	REG	Generic:Low_Level_Tritium	0	1
CAMO-18-147684	R-55 S1	FD	Generic:Low_Level_Tritium	0	1
CAPA-18-147586	R-49 S1	REG	Generic:Low_Level_Tritium	0	1

DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAPA-18-147587	R-49 S2	REG	Generic:Low_Level_Tritium	0	1
CAPA-18-147588	R-51 S1	REG	Generic:Low_Level_Tritium	0	1
CAPA-18-147589	R-51 S2	REG	Generic:Low_Level_Tritium	0	1
CAPA-18-147590	R-52 S1	REG	Generic:Low_Level_Tritium	0	1
CAPA-18-147591	R-52 S2	REG	Generic:Low_Level_Tritium	0	1
CAPA-18-147686	R-52 S2	PEB	Generic:Low_Level_Tritium	0	1



ARS International, LLC

Laboratory Analysis Report

ARS1-17-03130

Prepared for:

Los Alamos National Laboratory

**Nita Patel
P.O. Box 1663
MS M992
Los Alamos, NM 87545**

**npatel@lanl.gov
sherwoods@lanl.gov**

**Phone: 505-665-9273
Fax: 505-665-9972**

A handwritten signature in black ink, appearing to read "Susan Seese", is written over a horizontal line.

Project Manager Review

Notes: ARS International, LLC assumes no liability for the use or the interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the client.

Contact Person: Questions regarding this analytical report should be addressed to:

**Project Manager
ProjectManagers@amrad.com**

**Phone: 225.381.2991
Fax: 225.381.2996**



2609 North River Road • Port Allen, Louisiana 70767

1 (800) 401-4277 • Fax (225) 381-2996

December 12, 2017

Nita Patel
Sherri Sherwood
Los Alamos National Laboratory
505-665-9273
npatel@lanl.gov

ARS SDG: **ARS1-17-03130**
Project Description: **RN 2018-523**
Charge Code: **ADEP**

Dear Nita Patel,

On October 20, 2017, ARS International received twelve (12) samples to be analyzed for Enriched H-3.

The samples were processed and counted using the appropriate equipment and techniques for these types of analyses. Results of all the analyses are attached in the data package.

The client and QA/QC samples were counted with a count time sufficient to meet quality control parameters for counting equipment and were within acceptance criteria and statistical sound detection limits.

If you have any questions, please do not hesitate to call at 255.381.2991 or email ProjectManagers@amrad.com.

Sincerely,

Susan Leese
Project Management
ARS International



**PROJECT SAMPLE IDENTIFICATION
CROSS-REFERENCE
TO ARS SAMPLE LABORATORY IDs**

Client Sample ID NUMBER	American Radiation Services SAMPLE ID NUMBER(S)
CAMO-18-147649	ARS1-17-03130-001
CAMO-18-147652	ARS1-17-03130-002
CAPA-18-147586	ARS1-17-03130-003
CAPA-18-147587	ARS1-17-03130-004
CAPA-18-147588	ARS1-17-03130-005
CAPA-18-147589	ARS1-17-03130-006
CAPA-18-147590	ARS1-17-03130-007
CAPA-18-147591	ARS1-17-03130-008
CAPA-18-147686	ARS1-17-03130-009
CAMO-18-147659	ARS1-17-03130-010
CAMO-18-147684	ARS1-17-03130-011
CAMO-18-147660	ARS1-17-03130-012

SAMPLE RECEIPT/PREP

The samples arrived in good condition. The samples were screened for radioactive contamination as per procedure ARS-062 "Sample Receiving". Turnaround time was set at 40 calendar days.

ANALYTICAL METHODS

Enriched H-3 analysis was performed using ARS-040, "Tritium Assay in Water Samples Using Electrolytic Enrichment".

H-3 screening analysis was performed using ARS-054, "Tritium in Water (EPA 906.0)".

ANALYTICAL RESULTS

MDCs were marginally elevated for fractions -001 thru-007, -009, -010 and -012. All other QC criteria were met.

American Radiation Services Laboratory Management's Comments:


"I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this sample data package and the computer-readable EDD, as applicable, submitted on diskette or by modem, has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature."



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"I certify that this electronic image and all hardcopies produced from this image accurately represent the data and is in compliance with client specific requirements, both technically and for completeness, other than the conditions detailed above or in the sample data package narrative. Release, by submission through email, the data contained in this electronic image and the computer-readable EDD (as applicable), has been authorized by the laboratory Manager/Technical Director or the Manager's designee."


Signature

Laboratory Management, ARS International
Title

12-12-17
Date



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1 (800) 401-4277 • FAX (225) 381-2996

ARS Sample Delivery Group: ARS1-17-03130

Client Sample ID: CAMO-18-147649

Sample Collection Date: 10/16/17

Sample Matrix: Aqueous

Percent Solids: N/A

Request or PO Number: 2018-523

ARS Sample ID: ARS1-17-03130-001

Date Received: 10/20/17

Report Date: 12/11/17

Radiochemistry

Analysis Description	Analysis Results	CSU +/-1s	MDC	DLC	CRDL	Qual	Analysis Units	Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Enriched H-3	-5.719	1.365	3.855	1.884	3.221	U	pCi/L	ARS-040/	12/08/17 0:00	MMORGAN	N/A

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ARS Sample Delivery Group: ARS1-17-03130

Client Sample ID: CAMO-18-147652

Sample Collection Date: 10/16/17

Sample Matrix: Aqueous

Percent Solids: N/A

Request or PO Number: 2018-523

ARS Sample ID: ARS1-17-03130-002

Date Received: 10/20/17

Report Date: 12/11/17

Radiochemistry

Analysis Description	Analysis Results	CSU +/-1s	MDC	DLC	CRDL	Qual	Analysis Units	Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Enriched H-3	-6.640	1.342	3.357	1.640	3.221	U	pCi/L	ARS-040/	12/08/17 5:43	MMORGAN	N/A

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ARS Sample Delivery Group: ARS1-17-03130

Client Sample ID: CAPA-18-147586

Sample Collection Date: 10/18/17

Sample Matrix: Aqueous

Percent Solids: N/A

Request or PO Number: 2018-523

ARS Sample ID: ARS1-17-03130-003

Date Received: 10/20/17

Report Date: 12/11/17

Radiochemistry

Analysis Description	Analysis Results	CSU +/-1s	MDC	DLC	CRDL	Qual	Analysis Units	Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Enriched H-3	-6.780	1.403	3.593	1.756	3.221	U	pCi/L	ARS-040/	12/08/17 11:26	MMORGAN	N/A

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ARS Sample Delivery Group: ARS1-17-03130

Client Sample ID: CAPA-18-147587

Sample Collection Date: 10/18/17

Sample Matrix: Aqueous

Percent Solids: N/A

Request or PO Number: 2018-523

ARS Sample ID: ARS1-17-03130-004

Date Received: 10/20/17

Report Date: 12/11/17

Radiochemistry

Analysis Description	Analysis Results	CSU +/-1s	MDC	DLC	CRDL	Qual	Analysis Units	Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Enriched H-3	-7.959	1.563	3.796	1.855	3.221	U	pCi/L	ARS-040/	12/08/17 17:09	MMORGAN	N/A

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ARS Sample Delivery Group: ARS1-17-03130

Client Sample ID: CAPA-18-147588

Sample Collection Date: 10/18/17

Sample Matrix: Aqueous

Percent Solids: N/A

Request or PO Number: 2018-523

ARS Sample ID: ARS1-17-03130-005

Date Received: 10/20/17

Report Date: 12/11/17

Radiochemistry

Analysis Description	Analysis Results	CSU +/-1s	MDC	DLC	CRDL	Qual	Analysis Units	Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Enriched H-3	-7.380	1.522	3.883	1.898	3.221	U	pCi/L	ARS-040/	12/08/17 22:51	MMORGAN	N/A

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ARS Sample Delivery Group: ARS1-17-03130

Client Sample ID: CAPA-18-147589

Sample Collection Date: 10/18/17

Sample Matrix: Aqueous

Percent Solids: N/A

Request or PO Number: 2018-523

ARS Sample ID: ARS1-17-03130-006

Date Received: 10/20/17

Report Date: 12/11/17

Radiochemistry

Analysis Description	Analysis Results	CSU +/-1s	MDC	DLC	CRDL	Qual	Analysis Units	Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Enriched H-3	-2.604	1.205	3.961	1.936	3.221	U	pCi/L	ARS-040/	12/09/17 4:34	MMORGAN	N/A

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ARS Sample Delivery Group: ARS1-17-03130

Client Sample ID: CAPA-18-147590

Sample Collection Date: 10/17/17

Sample Matrix: Aqueous

Percent Solids: N/A

Request or PO Number: 2018-523

ARS Sample ID: ARS1-17-03130-007

Date Received: 10/20/17

Report Date: 12/11/17

Radiochemistry

Analysis Description	Analysis Results	CSU +/-1s	MDC	DLC	CRDL	Qual	Analysis Units	Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Enriched H-3	-7.372	1.495	3.754	1.834	3.221	U	pCi/L	ARS-040/	12/09/17 10:16	MMORGAN	N/A

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ARS Sample Delivery Group: ARS1-17-03130

Client Sample ID: CAPA-18-147591

Sample Collection Date: 10/17/17

Sample Matrix: Aqueous

Percent Solids: N/A

Request or PO Number: 2018-523

ARS Sample ID: ARS1-17-03130-008

Date Received: 10/20/17

Report Date: 12/11/17

Radiochemistry

Analysis Description	Analysis Results	CSU +/-1s	MDC	DLC	CRDL	Qual	Analysis Units	Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Enriched H-3	-6.330	1.249	3.047	1.489	3.221	U	pCi/L	ARS-040/	12/09/17 15:59	MMORGAN	N/A

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ARS Sample Delivery Group: ARS1-17-03130

Client Sample ID: CAPA-18-147686

Sample Collection Date: 10/17/17

Sample Matrix: Aqueous

Percent Solids: N/A

Request or PO Number: 2018-523

ARS Sample ID: ARS1-17-03130-009

Date Received: 10/20/17

Report Date: 12/11/17

Radiochemistry

Analysis Description	Analysis Results	CSU +/-1s	MDC	DLC	CRDL	Qual	Analysis Units	Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Enriched H-3	-10.056	1.803	3.836	1.874	3.221	U	pCi/L	ARS-040/	12/09/17 21:37	MMORGAN	N/A

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ARS Sample Delivery Group: ARS1-17-03130

Client Sample ID: CAMO-18-147659

Sample Collection Date: 10/17/17

Sample Matrix: Aqueous

Percent Solids: N/A

Request or PO Number: 2018-523

ARS Sample ID: ARS1-17-03130-010

Date Received: 10/20/17

Report Date: 12/11/17

Radiochemistry

Analysis Description	Analysis Results	CSU +/-1s	MDC	DLC	CRDL	Qual	Analysis Units	Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Enriched H-3	-9.196	1.722	3.935	1.923	3.221	U	pCi/L	ARS-040/	12/10/17 3:19	MMORGAN	N/A

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ARS Sample Delivery Group: ARS1-17-03130

Client Sample ID: CAMO-18-147684

Sample Collection Date: 10/17/17

Sample Matrix: Aqueous

Percent Solids: N/A

Request or PO Number: 2018-523

ARS Sample ID: ARS1-17-03130-011

Date Received: 10/20/17

Report Date: 12/11/17

Radiochemistry

Analysis Description	Analysis Results	CSU +/-1s	MDC	DLC	CRDL	Qual	Analysis Units	Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Enriched H-3	5.286	1.541	4.206	2.055	3.221		pCi/L	ARS-040/	12/10/17 9:02	MMORGAN	N/A

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ARS Sample Delivery Group: ARS1-17-03130

Client Sample ID: CAMO-18-147660

Sample Collection Date: 10/17/17

Sample Matrix: Aqueous

Percent Solids: N/A

Request or PO Number: 2018-523

ARS Sample ID: ARS1-17-03130-012

Date Received: 10/20/17

Report Date: 12/11/17

Radiochemistry

Analysis Description	Analysis Results	CSU +/-1s	MDC	DLC	CRDL	Qual	Analysis Units	Method	Analysis Date/Time	Analysis Technician	Tracer/Chem Recovery
Enriched H-3	-7.774	1.504	3.585	1.752	3.221	U	pCi/L	ARS-040/	12/10/17 14:45	MMORGAN	N/A

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QC Results per Analytical Batch

Analytical Batch	ARS1-B17-02399
SDG	ARS1-17-03130
Analysis	Low Level Tritium by Electrolytic Enrichment
Analysis Test Method	ARS-040/
Analysis Code	LSC-LLH3-AQ
Report Units	pCi/L

Acceptable QC Performance Ranges

QC Sample Type	Performance Items and Ranges		
Laboratory Control Sample	Recovery (%):	> 80	< 120
Matrix Spike	Recovery (%):	> 60	< 140
Duplicate	Replicate Error Ratio (RER):	< 1	
	Duplicate Error Ratio (DER):	< 3	
	Relative Percent Difference (RPD %):	≤ 25	

Laboratory Control Sample			Analysis Date	12/07/17 06:51	Analysis Technician	MMORGAN	
Analysis Batch Sample ID	QC Type	Analyte	Results	CSU (1s)	Expected Value	LCS Rec (%)	MDC
ARS1-B17-02399-01	LCS	ENRICHED H-3	26.595	4.292	32.741	81.2	4.213

Duplicate RER/DER/RPD			Analysis Date	12/07/17 12:34	Analysis Technician	MMORGAN	
Analyte	Results LCS	CSU LCS (1s)	Results LCSD	CSU LCSD (1s)	RER	DER	RPD
ENRICHED H-3	26.595	4.292	29.859	4.679	0.364	0.514	11.6

Method Blank			Analysis Date	12/07/17 18:17	Analysis Technician	MMORGAN	
Analysis Batch Sample ID	QC Type	Analyte	Results	CSU (1s)	MDC	Qual	
ARS1-B17-02399-03	MBL	ENRICHED H-3	-4.591	1.102	3.124	U	

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Notes (Case Narrative):

General Comments:

- 1.0) Soil and Sludge analysis are reported on a wet basis or an as received basis unless otherwise indicated.
- 2.0) Modified analysis procedures are procedures that are modified to meet the certain specifications. An example may be the use of a water method to analyze a solid matrix due to the lack of an officially recognized procedure for the analysis of the solid matrix. Modified analyses are indicated by the subsequent addition of "m" to the procedure number (i.e. 900.0M).

Radiochemistry Comments:

- 1.0) All MDA/MDC values are calculated on a sample specific basis.
- 2.0) Data in this report are within the limits of uncertainty specified in the reference method unless otherwise specified.
- 3.0) Total activity is actually total gamma activity and is determined utilizing the prominent gamma emitters from the naturally occurring radioactive decay chains and other prominent radioactive nuclides. Total activity may be lower than the actual total activity due to the extent of secular equilibrium achieved in the various decay chains at the time of analysis. The total activity is not representative of nuclides that emit solely alpha or beta particles.
- 4.0) Ra-228 is determined via secular equilibrium with its daughter, Actinium 228 (Gamma Spectroscopy only).
- 5.0) U-238 is determined via secular equilibrium with its daughter, Thorium 234 (Gamma Spectroscopy only).
- 6.0) All gamma spectroscopy was performed utilizing high purity germanium detectors (HPGe).
- 7.0) ARS makes every attempt to match sample density to calibrated density; however, in some cases, it is not practical or possible to do so and data results may be affected (Gamma Spectroscopy only).
- 8.0) Gamma spectroscopy results are calculated values based on the ORTEC® GammaVision ENV32 Analysis Engine.
- 9.0) ACLASS DOD and ISO 17025 certification applies only to the following analytes and methods: Gross Alpha and Gross Beta (EPA 900, SM7110B&C, SW846 9310); Radium 226 (EPA 903, EPA 903.1, SM 7500 Ra-B, SW846 9315); Radium 228 (EPA 904, SM 7500 Ra-B SW846 9320); Iodine-131(EPA 901.1); Uranium by ICPMS (EPA 200.8); Strontium 89/90 (EPA 905, Eichrom SRW01, HASL 300 Sr-03-RC); Tritium (EPA 906, EPA 906M); Gamma Emitters (EPA 901.1, SM7120B, HASL 300 Ga-01-R); Americium-241, Curium 242/244, Plutonium 239/240 and 241, Thorium 228/230/232, Uranium 234/233 and 238 (Eichrom ACW03 VBS); Lead 210 (HASL 300 Pb-01-RC, Eichrom OTW01); Polonium 210 (HASL 300 Po-01-RC, HASL 300 Po-02-RC); Technetium-99 (Eichrom TCW02, Eichrom TCS01M).

Definitions:

CRDL	Contract Required Detection Limit
CSU	Combined Standard Uncertainty
DLC	Decision Level Concentration (ANSI N42.23) or critical level
DO	Duplicate Original
DUP	Method Duplicate
LCS/LCSD	Laboratory Control Sample/Laboratory Control Sample Duplicate
MDA	Minimum Detectable Activity
MDC	(Minimum Detectable Concentration) minimum concentration of the analyte that ARS can detect utilizing the specific analysis
MBL	Method Blank
MS/MSD	Matrix Spike/Matrix Spike Duplicate
N/A	Not Applicable
NP	Not Provided
NR	Not Referenced
LOD	Limit of Detection
LOQ	Limit of Quantitation

Data Qualifiers:

B	The analyte is found in both the associated method blank and the sample. This flag indicates probable blank contamination.
D	Sample analysis accomplished through dilution.
J	The reported result is an estimated value above the limit of detection but outside of quantitation range (e.g., matrix interference was observed).
Q	One or more quality control criteria failed (e.g., LCS recovery, surrogate spike recovery, or CCV recovery).
U	Activity is below the MDC, MDA, MDL, or LOD
N	The analyte is a tentatively identified compound using mass spectrometry or any non-customer requested compounds that are tentatively identified.
*	LCS/LCSD or MS/MSD fails RPD criteria.
S	Spike
SC	Subcontracted out to another qualified laboratory
H	Holding time exceeded

[illegible]