SSSB
Survey Results
MARSAME Survey Package
SSSB-006
Wing Tank 9 Starboard

Revision 0

February 8, 2022

Prepared by: _____

Michael A. Carr, CHP
Project Radiation Safety Officer

Approved by: _____

Rick Greene, CHP
Project Certified Health Physicist

Record of Revisions

Revision No.	Description of Revision	Date
0	Survey Results – MARSAME Survey Package SSSB-006	February 8, 2022

1.0 Objective

The objective of this survey data package is to justify the unrestricted release of the Surface Ship Support Barge (SSSB) Wing Tank 9 Starboard (9S) with no additional controls.

2.0 Background

Wing Tank 9S is part of the SSSB ballast system, located between Frames 47 and 50 of the vessel. Water for filling the ballast tanks was normally taken from a dockside supply of fresh water via the port or starboard saltwater circulating system shore connection. Tank 9S is accessed by a single 48-inch-diameter hatch located on the aft, starboard weather deck. The No. 9 tanks are separated from the Wet Pit by the No. 8 tanks and are physically isolated from the contaminated drain collecting systems. Diagrams showing the location of Wing Tank 9S and its access point are provided on Figure 2-1 through Figure 2-4.

Wing Tank 9S is a permit-required confined space. The tank is approximately 40.5 feet deep by 12.5 feet wide with a series of vertical ladders and small platforms for entry into the tank. There are several baffles of various sizes and height/depth throughout the tank to minimize the movement of ballast water within the tank. In order to provide full access throughout the sections of the tank, small areas of the larger baffling were cut and removed.

The tank has a cutout or isolation valve with a reach rod for operation of the valve from the upper deck. The handwheel for operating the cutout valve is located on the starboard weather deck, aft of Frame 50.

The access ladder, platforms, and the temporary ventilation trunk are shown in Photograph 2-1. The internal support structure within the tank is shown in Photograph 2-2.

Figure 2-1
Location of Ballast Wing Tank 9S

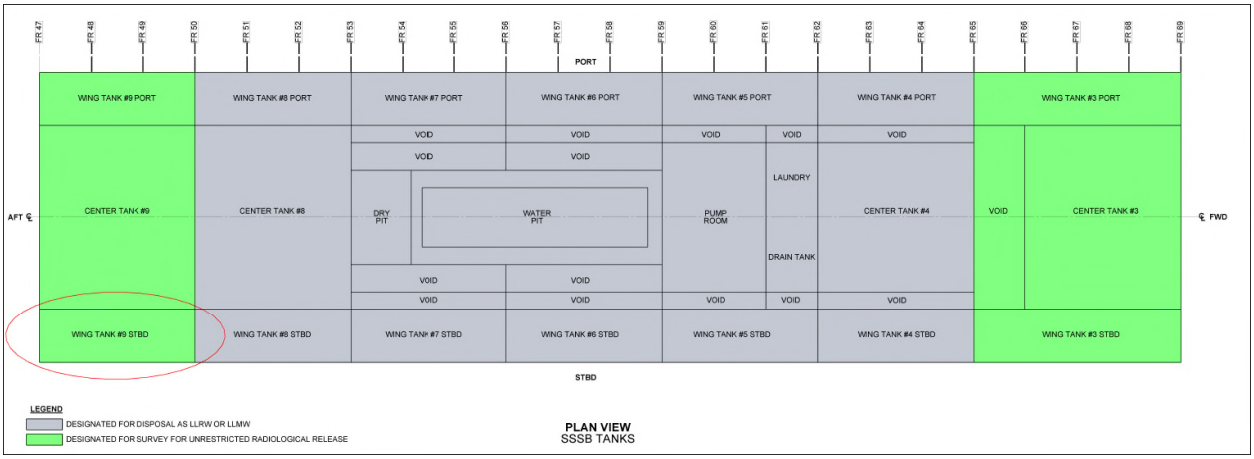


Figure 2-2
3-D Diagram of Wing Tank 9S

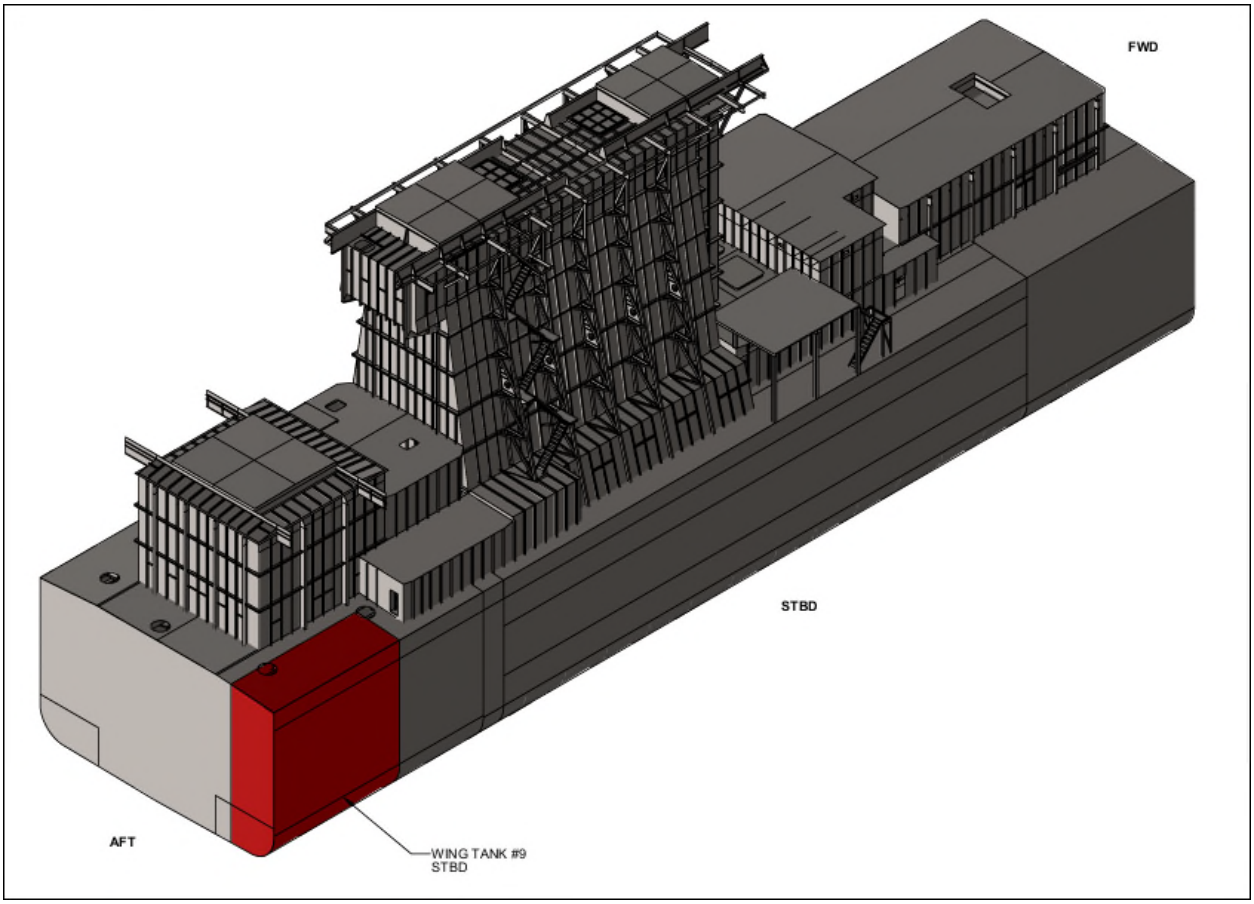


Figure 2-3
3-D Diagram of Wing Tank 9S

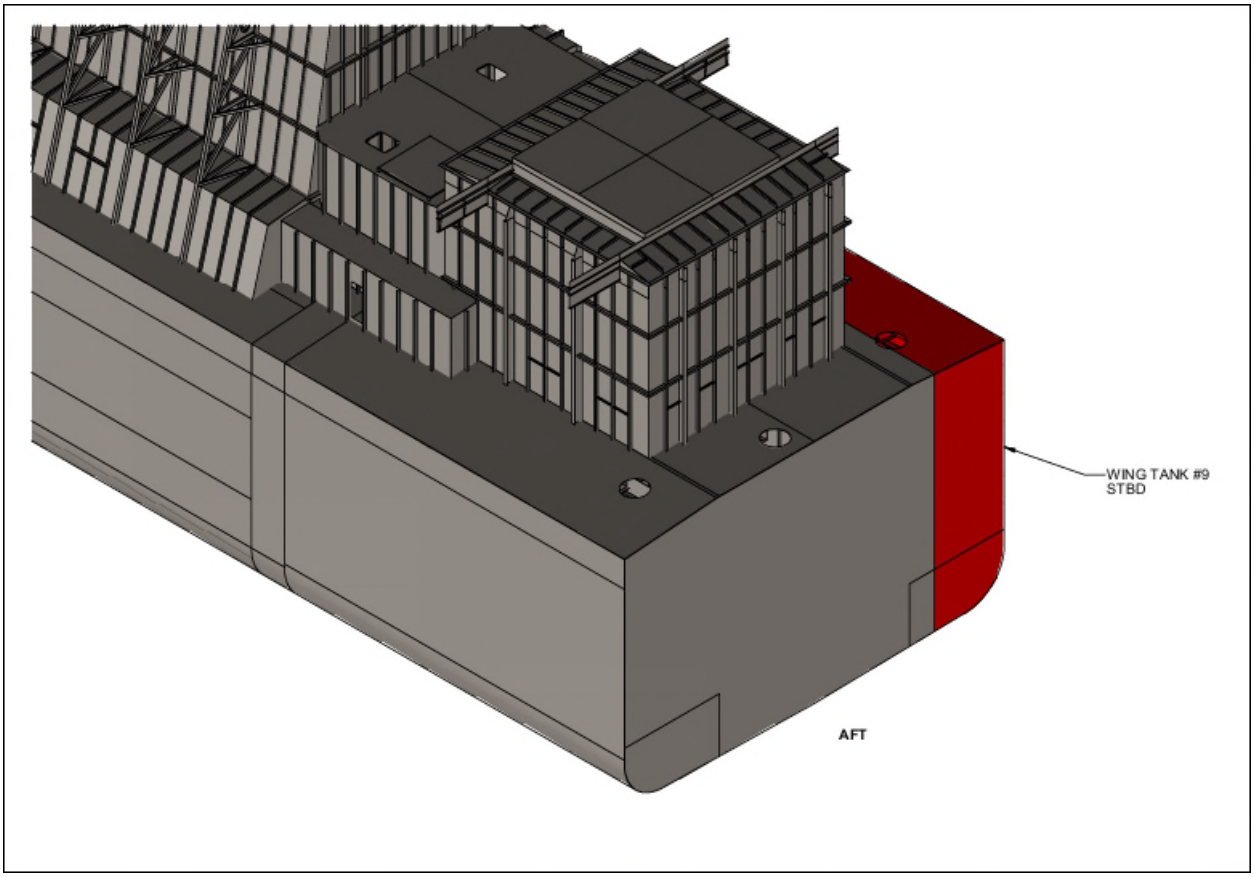
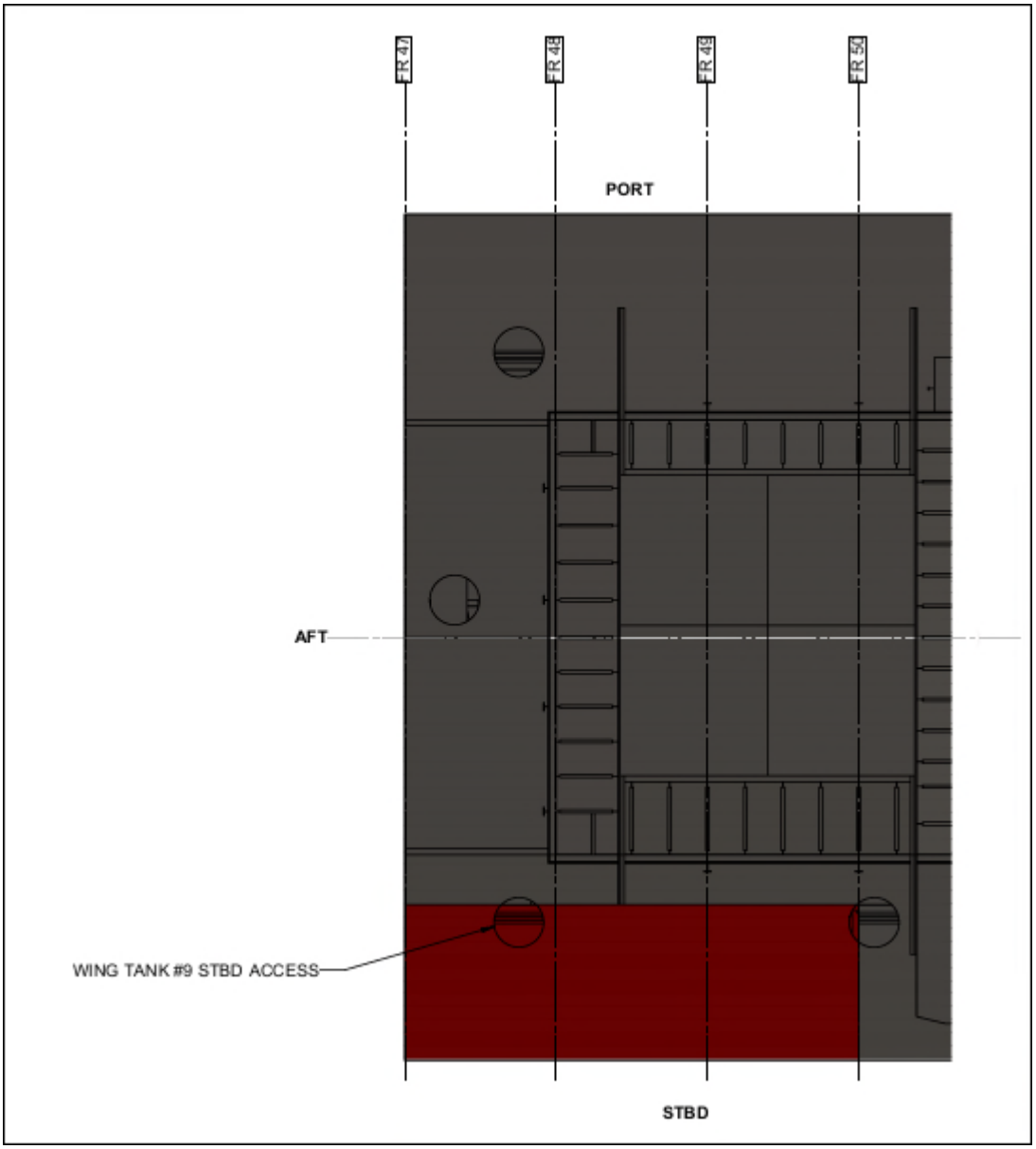


Figure 2-4
Wing Tank 9S Access



Photograph 2-1
Access Ladder, Platforms, and Ventilation Trunk

Photograph 2-2
Internal Support Structure

3.0 Initial Assessment

3.1 Categorization

Based on prior assessments and the historical records, Tank 9S is considered an impacted area. This tank was decontaminated during vessel refurbishment in 1983/1984 and released by the Naval Sea Systems Command (NAVSEA) for unrestricted use and has not been used to store radioactive liquids subsequent to refurbishment. According to the Facility System Status Report (FSSR) (NAVSEA, 2015), the status of Tank 9S was listed as "No radiological controls" and it stated that the tank was used to store ballast water. However, since this tank had previously come into direct contact with radioactive materials and had not been released to current regulatory standards, it is considered impacted.

3.2 Classification

Considering the tank was previously decontaminated and refurbished, the potential for residual radioactivity at detectable levels is low as defined in the SSSB project Materials Categorization, Survey, and Release Plan (MCSRP) (Aptim Federal Services, LLC [APTIM], 2021a). Tank 9S is classified as a Multi-Agency Radiation Survey and Assessment of Materials and Equipment (MARSAME) (U.S. Nuclear Regulatory Commission [NRC], 2009) Class 2 survey unit.

3.3 Disposition Options

The disposition option being considered for the Tank 9S materials and equipment (M&E) is release for unrestricted use.

4.0 Decision Inputs

The decision inputs for the surveys included the radiological contaminants of potential concern (RCOPC), the parameters of interest (total direct and removable activity and sample analyses), and the action or decision levels as specified within the following sections. This allowed the decision rules to be evaluated and the proper determinations made for the unrestricted release of the tank with no additional controls.

4.1 Null Hypothesis

The null hypothesis for the surveys was based on MARSAME Scenario A. Scenario "A" states that the contamination levels within the M&E survey unit are equal to or exceed the action levels (AL). If the activity levels on the M&E are determined to be equal to or exceed an AL, the null hypothesis is accepted and the M&E may not be free released. If all measurements are below the

ALs, then the null hypothesis is rejected and the M&E may be released with no radiological controls.

4.2 Radionuclides of Potential Concern

The RCOPCs were listed in Table 4-1 of the Decommissioning Work Plan (APTIM, 2021b) and have since been revised based on characterization surveys and sampling (APTIM, 2021c) as summarized in Table 4-1 below.

Table 4-1
Radionuclides of Potential Concern

Radionuclide	Radiation Emitted	Field Detectability
Tritium (H-3)	Low-energy beta	HTD
Cobalt-60 (Co-60)	Beta-Gamma	Yes
Nickel-63 (Ni-63)	Low-energy beta	HTD

The primary detectable RCOPCs is Co-60 which is an activation/corrosion product. In addition, the hard-to-detect (HTD) radionuclides of concern were evaluated using the results of removable contamination smears as analyzed in a liquid scintillation counter.

4.3 Action Levels

For the SSSB project, the ALs are based on no detectable activity per NRC I&E Notice 81-07 (NRC, 1981) expressed as:

- No detectable total surface beta activity during scans or static measurements with a minimum detectable concentration (MDC) not greater than 5,000 dpm/100 cm^2 as measured by a thin-window (0.8 milligrams per square centimeter [mg/cm^2]) gas flow proportional counter or detector of approximate equivalent sensitivity.
- Removable contamination less than 1,000 dpm/100 cm^2.
- No detectable Co-60 activity in paint samples with a minimum detectable activity (MDA) less than or equal to 3.0 picocuries per gram (pCi/g).

4.4 Decision Rules

The specific decision rules are as follows:

- If any surface beta activity is discernable above background during scans or static measurements with an MDC not greater than 5,000 dpm/100 cm^2 as measured by a thin-window (0.8 mg/cm^2) gas flow proportional counter or detector of approximate

equivalent sensitivity, the null hypothesis cannot be rejected and the M&E may not be released for unrestricted use.

- If any removable contamination is detected above 1,000 dpm/100 cm^2, the null hypothesis cannot be rejected and the M&E may not be released for unrestricted use.
- If Co-60 activity is detected in paint samples with an MDA less than or equal to 3.0 pCi/g, then the null hypothesis cannot be rejected and the M&E may not be released for unrestricted use.

If the decision rules are all rejected (i.e., all measurements and surface scans are below the applicable ALs), the M&E may be released for unrestricted use. If any decision rule is not rejected, the M&E will not be released for unrestricted use.

5.0 Survey Design

5.1 Survey Unit

Wing Tank 9S is an individual open tank with an area of approximately 990 square meters. As a result, the tank was considered a single Class 2 survey unit.

5.2 Survey Boundaries

The survey unit was limited to the interior surfaces of the tank and its contents. The vessel exterior is considered non-impacted and was not included in the survey.

5.3 Design

The survey included the following requirements in accordance with the MCSRP and MARSAME Survey Package SSSB-006 (APTIM, 2021d):

- At least 25% cumulative beta scan of accessible structural surfaces (tank interior walls, deck, baffles, and overhead).
- Minimum of 15 direct static measurements for beta activity taken on a systematic grid with a random starting point on the deck, walls, overheads, and internal walls.
- Smears for gross beta analysis at each direct static measurement location.
- Smears for H-3 and Ni-63 at each direct static measurement location.
- Volumetric paint samples for isotopic analysis at each direct static location.
- Additional measurements as required by the Radiological Control Supervisor (RCS) and approved by the Project Radiation Safety Officer (PRSO).

All measurement locations were marked and documented.

5.4 Survey Map

The tank shell was gridded using a one-square-meter grid starting at an established reference point. There were an estimated 480 square meters for the tank shell (floor, walls, and ceiling) excluding the internal structure such as the forward/aft stiffeners, bulkhead stiffeners, baffles and platform. A systematic grid with a random starting location was generated using a triangular grid to locate the 16 direct measurement and sampling locations. The tank structures, including the stiffeners, baffles and platforms, were inventoried, numbered, and 25% randomly selected for survey.

A copy of the Tank 9S survey map showing the one-square-meter grid overlay, grids scanned, and the systematic measurement/sample locations as well as the internal structures surveyed is included as Attachment 1.

6.0 Survey Results

The following sections summarize the data from the surveys performed within Tank 9S. A data tracking/cover sheet was used to provide survey instructions and to ensure the required survey data were collected. A copy of the MARSAME survey data tracking/cover sheet is provided as Attachment 2.

6.1 Background Assessment

Background measurements were collected prior to and during the performance of the surveys throughout the tank using a background plate covering the detector to measure the ambient background. The average background as measured within the tank was applied during all activity calculations.

Based on the background measurements, the detection sensitivities were validated to ensure they met the data quality objectives and the measured detection sensitivities are provided as part of the survey documentation.

6.2 Beta Surface Scans

Beta surface scans were performed using a Ludlum Model 2360 with Model 43-93 scintillation detector while listening to the instrument’s audible response to identify any elevated measurement areas using a scan speed not exceeding two detector widths per second. The scan data were recorded by documenting the maximum observed scan result for each square meter

surveyed. A total of 137 randomly selected grids out of 480 on the tank shell (i.e., floor, walls, and ceiling) were scanned for an approximately 28.5% scan coverage. Additionally, a minimum of 25% of the forward/aft stiffeners, bulkhead stiffeners, and the baffle and platform surfaces were randomly selected and scanned. A total of nine out of 35 forward/aft stiffeners (25.7%), three of six bulkhead stiffeners (50%), one of four baffle sides (25%), and one of four platform surfaces (25%) were surveyed. This was performed to ensure the 25% scan requirement was met.

Each beta scan measurement was converted to surface activity using the average tank background and instrument efficiencies using the following equation:

$$Surface\ Activity = \frac{(R_S - R_B)}{\left(\varepsilon_i\ \varepsilon_S\ \frac{A}{100}\right)}$$

Where:
- R_S = Maximum observed count rate (counts per minute [cpm]) per grid or component
- R_B = Average ambient background count rate (cpm) in the tank
- ε_i = Instrument efficiency (2π)
- ε_S = Surface efficiency (25%)
- A = Detector surface area (cm^2)

All scan measurements were less than the MDCs, which ranged from approximately 3,154 to 4,531 dpm/100 cm^2, using a maximum scan speed of two detector widths per second which was less than the 5,000 dpm/100 cm^2 requirement.

The beta scan results are summarized in Attachment 3.

6.3 Direct Beta Measurements

Each measurement location consisted of a one-minute scalar count for total surface beta activity using the Ludlum Model 2360 with a Model 43-93 scintillation detector. A total of 16 systematic grid measurements for direct beta surface activity were performed. The approximate direct beta measurement locations were recorded as part of the survey documentation.

The direct measurements for total beta surface activity were recorded in cpm and converted to surface activity using the same equation provided in Section 6.2 above. All direct beta measurements were less than the critical value (see Section 7.4.1) based on the average measured

background. This indicated that all 16 measurements were indistinguishable from background with MDCs ranging from approximately 713 to 799 dpm/100 cm^2.

The direct beta measurements are summarized in Attachment 4.

6.4 Removable Beta Surface Activity

Smears for removable beta surface activity were collected at each of the 16 direct measurement locations and analyzed on-site. The removable beta surface activity results were recorded in cpm and converted to surface activity using the following equation:

$$Surface\ Activity = \frac{(R_S - R_B)}{\left(\varepsilon_i \frac{A}{100}\right)}$$

Where:
- R_S = Sample count rate (cpm)
- R_B = Ambient background count rate (cpm)
- ε_i = Instrument efficiency (4π)
- A = Size of area smeared (~100 cm^2)

All smear results for removable beta surface activity were less than the MDA of 93 dpm/100 cm^2.

The removable beta surface activity measurements are summarized in Attachment 5.

6.5 Removable Low-Energy Beta Surface Activity

Smears for removable low-energy beta (LEB) surface activity were collected at each of the 16 direct measurement locations for both H-3 and Ni-63 and shipped for off-site laboratory analysis. All measurements were less than the AL of 1,000 dpm/100 cm^2.

The LEB smear results are summarized in Attachment 6 and a copy of the off-site laboratory analytical report(s) is provided in Attachment 7.

6.6 Paint Samples

A paint sample was collected from a 12-inch by 12-inch area at each of the 16 direct measurement locations and shipped for off-site laboratory analysis for the RCOPCs as defined in the updated RCOPC list. All sample results were reported as less than the MDAs, specifically for Co-60 with an MDA not exceeding 3.0 pCi/g. No detectable activity was identified in any of the 16 paint samples, including Co-60, Ni-63, H-3, and C-14.

The volumetric isotopic results are summarized in Attachment 8 and a copy of the off-site laboratory analytical reports is provided as Attachment 9.

6.7 Supplemental Data

No supplemental data were collected during the surveys because no elevated readings were identified during surface scans.

7.0 Quality Assurance

7.1 Daily Instrument Source Checks

Upon instrument receipt, each instrument was inspected and set up to establish baseline instrument response criteria and control charts in accordance with standard operating procedure. All instruments and detectors were subsequently inspected, verified to have current calibration, and source checked daily when in use to verify proper operation.

7.2 Decision Errors

- Type I: During scanning, the consequence of making a Type I decision error is clearing the M&E for re-use or recycle when the activity levels exceed the release criteria. A Type I decision error rate of 5% was selected for the scanning survey.

- Type II: The consequence of this decision error may include the need to perform an investigation to determine the reason for the elevated reading, or the added time and expense of decontamination and resurvey activities. For this reason, a Type II decision error rate of 5% was selected for the scanning.

7.3 Measurement Uncertainty

As specified in the MCSRP, all measurements include uncertainty and must be considered when the measurement results are used in the decision-making process. However, considering the ALs as established for the SSSB were no detectable activity for direct beta surface activity and no detectable activity greater than 1,000 dpm/100 cm^2 for removable beta, the measurement uncertainty was not determined or evaluated with the exception of the values as reported by the off-site laboratory and as summarized in Attachments 6 through 9.

7.4 Detection Capability

The measurement detection capability was assessed by two measurement values: the critical value and the MDC. The critical value is the minimum measured value for a specified probability that a positive (non-zero) amount of activity is actually present (i.e., distinguishable from

background). The MDC, on the other hand, is the minimum detectable activity or concentration for a measurement that can be measured with confidence.

7.4.1 Fixed-Point Measurements

For static fixed-point measurements, the critical value is determined using Equation 1 in Table 7.5 of MARSAME:

$$S_c = Z_{1-\alpha}\sqrt{N_B \frac{t_S}{t_B}\left(1+\frac{t_S}{t_B}\right)}$$

Where:
- S_C = critical value, counts
- N_B = average background counts
- t_B = background count time (10 minutes)
- t_s = sample count time (one minute)
- $Z_{1-\alpha}$ = Type 1 decision error (set as 1.645)

A net count for a fixed-point measurement that exceeds the S_c value will indicate the presence of residual radioactivity. The MDC can then be determined as follows:

$$MDC = \frac{S_c + \frac{Z_{1-\beta}^2}{2} + Z_{1-\beta}\sqrt{\frac{Z_{1-\beta}^2}{4} + S_c + N_B \frac{t_S}{t_B}\left(1+\frac{t_s}{t_B}\right)}}{t_S\, \varepsilon_i\, \varepsilon_S\, \frac{A}{100\ cm^2}}$$

Where:
- S_C = critical value, counts
- N_B = average background counts
- t_B = background count time
- t_s = sample count time
- $Z_{1-\beta}$ = Type 2 decision error (set as 1.645)
- ε_i = instrument 2π efficiency
- ε_s = surface efficiency
- A = detector area

Based on the instrumentation utilized (Ludlum Model 2360 with Model 43-93 scintillation probe) and the counting parameters that were established for the surveys, the maximum MDC for the fixed beta measurements was 799 dpm/100 cm^2. This was based on the established sample

count time of one minute, ambient background count time of 10 minutes, average ambient background count rate of 72.2 cpm, instrument efficiency (2π) of 16.0%, surface efficiency of 25%, and a detector area of 100 cm^2.

7.4.2 Scan Sensitivity

The minimum detectable count rate (MDCR) was determined for the Ludlum Model 43-93 detector using Equation 6-9 in MARSSIM:

$$MDCR = d'\sqrt{b_i}\left(\frac{60}{i}\right)$$

Where:
- MDCR = minimum detectable count rate in cpm
- b_i = average number of background counts in the observation interval
- i = observation interval (0.5 seconds for a maximum scan speed of two detector widths per second)
- d' = detectability index from Table 6.1 of NUREG-1507; a value of 1.38 was selected, which represents a true-positive detection rate of 95% and a false-positive detection rate of 60%.

The scan MDC was determined using Equation 6-10 in MARSSIM:

$$Scan\ MDC = \frac{MDCR}{\sqrt{p}\ \varepsilon_i\ \varepsilon_s\ \frac{probe\ area}{100\ cm^2}}$$

Where:
- MDCR = minimum detectable count rate (cpm)
- p = efficiency of a less-than-ideal surveyor, range of 0.5 to 0.75 from NUREG-1507; a value of 0.5 was chosen as a conservative value
- A = detector area (100 cm^2 for 43-93 detector)
- ε_i = instrument 2π efficiency
- ε_s = surface efficiency

Based on the instrumentation utilized (Ludlum Model 2360 with a Model 43-93 scintillation detector) and the counting parameters that were established for the survey(s), the maximum calculated beta scan sensitivity was approximately 4,531 dpm/100 cm^2. This was based on an established scan speed not to exceed two detector widths per second (~5.4 inches/second),

average ambient background count rate of 72.2 cpm, instrument efficiency (2π) of 16%, and a surface efficiency of 25%.

7.5 Duplicate / Replicate Measurements

Duplicate measurements and smear samples were collected at a minimum rate of 5% (i.e., one for every 20 measurements or samples). This included surface scans and measurements for total direct beta surface activity, removable LEB activity, and removable beta activity.

7.5.1 Beta Surface Scans

A total of 16 additional one-square-meter grids were scanned as presented in Attachment 3. Considering the total surface area of the tank is approximately 990 square meters (see Section 5.1) and an estimated scan coverage was 25% (~247 square meters), this constituted an approximate 6.5% survey for quality control (QC) for beta surface scans. The QC scan measurement results are provided as part of Attachment 3 and were all less than the MDA, consistent with the initial beta surface scan results.

7.5.2 Direct Beta Measurements

One additional direct beta measurement was collected for QC purposes, as presented in Attachment 4. This resulted in an approximate 6.3% QC for direct beta measurements (i.e., one for 16 total measurements). The QC measurement was less than the MDA and consistent with the systematic measurement results. Although the direct beta result for the QC measurement was greater than the critical value, it was still less than the MDA. Additionally, the original direct measurement was less than the critical value and all other indicators (smears and paint samples) were less than MDAs/MDCs. Based on this evaluation, it was determined that the QC measurement was a statistical outlier and there is no activity above background present.

7.5.3 Removable Beta Surface Activity

One additional smear for removable beta surface activity was collected for QC purposes, as presented in Attachment 5. This resulted in an approximate 6.3% QC for removable beta activity (i.e., one for 16 total smears). The QC measurement was less than the MDA and consistent with the systematic smear results.

7.5.4 Removable Low-Energy Beta Surface Activity

One additional smear each for removable LEB surface activity (H-3 and Ni-63) was collected for QC purposes, as presented in Attachment 6. This resulted in an approximate 6.3% QC for LEB

surface activity (i.e., one for 16 smears each for H-3 and Ni-63). The QC measurement results were less than the MDAs and consistent with the systematic smear results.

In addition to the QC smears collected during the survey, the off-site laboratory performed a laboratory duplicate analysis on one of the smears. The laboratory duplicate results were all less than MDAs and consistent with the systematic smear results.

7.5.5 Paint Samples

No duplicate paint samples were collected during the survey; however, the off-site laboratory performed a laboratory duplicate analysis on one of the samples. This constituted an approximate 6.3% QC (i.e., one for 16 total samples). The laboratory duplicate analysis results are presented in Attachment 8 and were all less than the MDAs.

8.0 Data Evaluation

The survey and sampling data were determined to meet the minimum survey design requirements as stipulated in MARSAME Survey Package SSSB-006, Wing Tank 9S. All survey data were then evaluated against the applicable ALs and decision rules as specified in Section 4.4. These results are summarized as follows based on the survey results presented in Section 6.0:

- All beta surface scan results were less than the scan MDC with the MDC not to exceed 5,000 cpm/100 cm^2.
- All direct beta measurements were below the MDC and the Critical Value (Lc) with the MDC not to exceed 5,000 cpm/100 cm^2.
- All gross beta and LEB smear results were less than 1,000 dpm/100 cm^2.
- All paint sample results were less than the MDA with a Co-60 MDA less than 3.0 pCi/g.

9.0 Decision/Conclusion

Based upon the survey results and the data evaluation (i.e., all measurements were less than the specified ALs), the Null Hypothesis has been rejected and Tank 9S may be released for unrestricted release with no additional radiological controls.

10.0 References

Aptim Federal Services LLC (APTIM), 2021a, ***Materials Categorization, Survey, and Release Plan, Surface Ship Support Barge Dismantlement and Disposal***, Rev. 0, March (or most recent revision).

Aptim Federal Services LLC (APTIM), 2021b, ***Decommissioning Work Plan, Surface Ship Support Barge Dismantlement and Disposal,*** Rev. 1, April (or most recent revision).

Aptim Federal Services LLC (APTIM), 2021c, Surface Ship Support Barge Contract Number N00024-20-C-4139; Revised Radiological Constituents of Potential Concern (RCOPCs); Notification of Initiating Waste Shipment, APTIM-501513-0018, September 22, 2021.

Aptim Federal Services LLC (APTIM), 2021d, ***MARSAME Survey Package SSSB-006, Wing Tank 9S, Surface Ship Support Barge Dismantlement and Disposal,*** Rev. 1, November (or most recent revision).

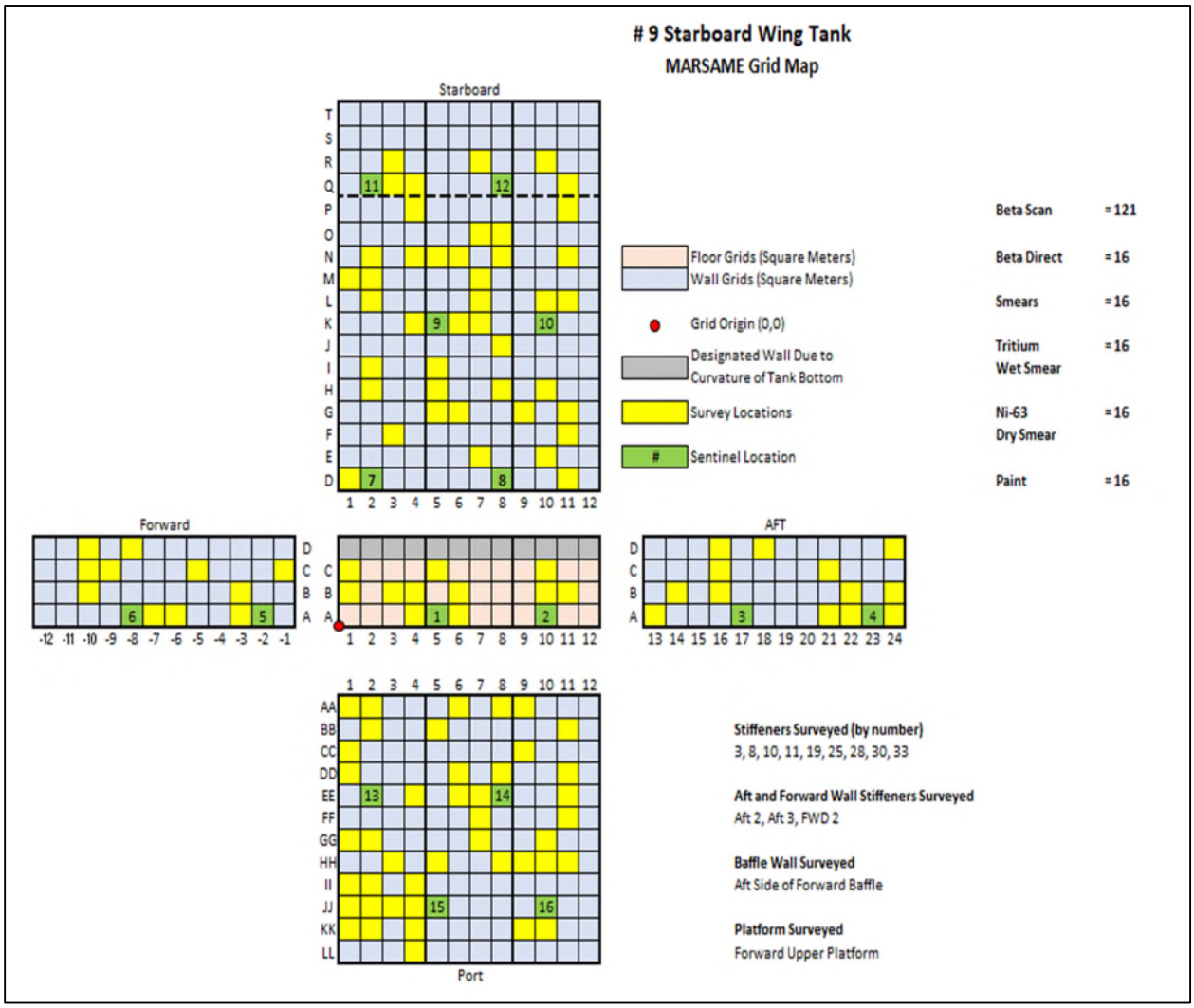
Naval Sea Systems Command (NAVSEA), 2015, ***Facility System Status Report (FSSR), Surface Ship Support Barge***, Rev. A-12, April 29.

U.S. Nuclear Regulatory Commission (NRC), 2009, ***Multi-Agency Radiation Survey and Assessment of Materials and Equipment Manual (MARSAME),*** NUREG-1575, Supp. 1; EPA-402-R-09-001; DOE/HS-0004; January.

U.S. Nuclear Regulatory Commission (NRC), 1981, ***Control of Radioactively Contaminated Material***, I&E Circular No. 81-07, May.

ATTACHMENT 1

SURVEY AND SAMPLE LOCATION MAP



The total number of beta scans was 137, which included the 121 randomly selected grids and the 16 grids where direct measurements were collected.

ATTACHMENT 2

MARSAME DATA TRACKING SHEET

MARSAME SURVEY PACKAGE **SSSB-006**

Wing Tank 9S

Survey Requirement	Completion (Signature and Date)
Wing Tank 9S	
25% cumulative beta scan of tank deck, walls, baffles, and overhead. Identify grids that were scan surveyed as applicable (minimum of 250 square meters of coverage).	12/7/2021 Σ.
At least 15 direct beta static measurements (see attached map) taken on a systematic grid with a random starting point on the deck, walls, overheads, and internal walls/baffles.	12/9/2021 Σ.
Gross beta smear per direct measurement location.	12/9/2021 Σ.
H-3 and Ni-63 smears per direct measurement location.	12/9/2021 Σ.
Volumetric paint samples for isotopic analysis at each direct static location	12/14/2021 Σ.
One QC measurement for each 20 measurements performed.	

Reviewed By: Bryon Rogers

Approved By:

ATTACHMENT 3

BETA SCAN SURVEY RESULTS SUMMARY

Count Times (min)		Detector		Item	Qty	Surveyed	% Coverage
Sample	1	Width (cm)	6.9	Grids	480	137	28.5%
Bkgd	10	Area (cm2)	100	F/A Stiffiners	35	9	25.7%
Speed (w/sec)	2			Bulk Stiffiners	6	3	50.0%
				Baffle Sides	4	1	25.0%
				Platforms	4	1	25.0%

		Sample	Background	Efficiency		Activity	MDCR	MDA	Results			
		cpm	cpm	2Pi	Surface	dpm/100 cm2		dpm/100 cm2		Survey	Surface	137
Loc	Grid											
	A-4	70	80.1	18.60%	25%	-216.5	135.3	4,113.9	< MDA	ASY-20211202-SSSB-0511	Floor	1
1	A-5	90	77.8	18.60%	25%	262.4	133.3	4,055.3	< MDA	ASY-20211209-SSSB-0549	Floor	1
	A-6	70	81.3	21.50%	25%	-209.6	136.3	3,585.6	< MDA	ASY-20211202-SSSB-0511	Floor	1
2	A-10	70	77.8	18.60%	25%	-167.7	133.3	4,055.3	< MDA	ASY-20211209-SSSB-0549	Floor	1
	B-1	70	80.1	18.60%	25%	-216.5	135.3	4,113.9	< MDA	ASY-20211202-SSSB-0511	Floor	1
	B-3	80	80.1	18.60%	25%	-1.4	135.3	4,113.9	< MDA	ASY-20211202-SSSB-0511	Floor	1
	B-4	70	80.1	18.60%	25%	-216.5	135.3	4,113.9	< MDA	ASY-20211202-SSSB-0511	Floor	1
	B-6	60	81.3	21.50%	25%	-395.7	136.3	3,585.6	< MDA	ASY-20211202-SSSB-0511	Floor	1
	B-10	80	80.1	18.60%	25%	-1.4	135.3	4,113.9	< MDA	ASY-20211202-SSSB-0511	Floor	1
	B-11	80	80.1	18.60%	25%	-1.4	135.3	4,113.9	< MDA	ASY-20211202-SSSB-0511	Floor	1
	C-1	70	80.1	18.60%	25%	-216.5	135.3	4,113.9	< MDA	ASY-20211202-SSSB-0511	Floor	1
	C-5	70	81.3	21.50%	25%	-209.6	136.3	3,585.6	< MDA	ASY-20211202-SSSB-0511	Floor	1
	C-10	80	80.1	18.60%	25%	-1.4	135.3	4,113.9	< MDA	ASY-20211202-SSSB-0511	Floor	1
5	A-(-2)	80	77.8	18.60%	25%	47.3	133.3	4,055.3	< MDA	ASY-20211209-SSSB-0549	Forward Wall	1
	A-(-3)	60	82.3	22.80%	25%	-390.6	137.1	3,401.9	< MDA	ASY-20211202-SSSB-0511	Forward Wall	1
	A-(-6)	80	80.1	18.60%	25%	-1.4	135.3	4,113.9	< MDA	ASY-20211202-SSSB-0511	Forward Wall	1
	A-(-7)	80	83.7	21.50%	25%	-68.8	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519	Forward Wall	1
6	A-(-8)	70	77.8	18.60%	25%	-167.7	133.3	4,055.3	< MDA	ASY-20211209-SSSB-0549	Forward Wall	1
	B-(-3)	60	82.3	22.80%	25%	-390.6	137.1	3,401.9	< MDA	ASY-20211202-SSSB-0511	Forward Wall	1
	B-(-10)	80	67.5	18.60%	25%	268.8	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527	Forward Wall	1
	C-(-1)	60	80.1	18.60%	25%	-431.5	135.3	4,113.9	< MDA	ASY-20211202-SSSB-0511	Forward Wall	1
	C-(-5)	80	81.3	21.50%	25%	-23.6	136.3	3,585.6	< MDA	ASY-20211202-SSSB-0511	Forward Wall	1
	C-(-9)	90	67.5	18.60%	25%	483.9	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527	Forward Wall	1
	C-(-10)	80	67.5	18.60%	25%	268.8	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527	Forward Wall	1
	D-(-8)	70	83.7	21.50%	25%	-254.9	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519	Forward Wall	1
	D-(-10)	90	67.5	18.60%	25%	483.9	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527	Forward Wall	1
	A-13	80	80.1	18.60%	25%	-1.4	135.3	4,113.9	< MDA	ASY-20211202-SSSB-0511	Aft Wall	1
3	A-17	70	77.8	18.60%	25%	-167.7	133.3	4,055.3	< MDA	ASY-20211209-SSSB-0549	Aft Wall	1
	A-21	90	67.5	18.60%	25%	483.9	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527	Aft Wall	1
	A-22	80	67.5	18.60%	25%	268.8	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527	Aft Wall	1
4	A-23	70	77.8	18.60%	25%	-167.7	133.3	4,055.3	< MDA	ASY-20211209-SSSB-0549	Aft Wall	1
	A-24	80	67.5	18.60%	25%	268.8	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527	Aft Wall	1

Loc	Grid	Sample cpm	Background cpm	Efficiency 2Pi	Efficiency Surface	Activity dpm/100 cm2	MDCR	MDA dpm/100 cm2	Results	Survey	Surface	137
	B-14	60	81.3	21.50%	25%	-395.7	136.3	3,585.6	< MDA	ASY-20211202-SSSB-0511	Aft Wall	1
	B-16	80	82.3	22.80%	25%	-39.8	137.1	3,401.9	< MDA	ASY-20211202-SSSB-0511	Aft Wall	1
	B-22	90	67.5	18.60%	25%	483.9	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527	Aft Wall	1
	B-24	90	67.5	18.60%	25%	483.9	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527	Aft Wall	1
	C-16	80	82.3	22.80%	25%	-39.8	137.1	3,401.9	< MDA	ASY-20211202-SSSB-0511	Aft Wall	1
	C-21	70	67.5	18.60%	25%	53.8	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527	Aft Wall	1
	D-16	60	81.3	21.50%	25%	-395.7	136.3	3,585.6	< MDA	ASY-20211202-SSSB-0511	Aft Wall	1
	D-18	80	81.3	21.50%	25%	-23.6	136.3	3,585.6	< MDA	ASY-20211202-SSSB-0511	Aft Wall	1
	D-24	80	67.5	18.60%	25%	268.8	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527	Aft Wall	1
	D-1	80	82.3	22.80%	25%	-39.8	137.1	3,401.9	< MDA	ASY-20211202-SSSB-0511	Starboard Wall	1
7	D-2	80	77.8	18.60%	25%	47.3	133.3	4,055.3	< MDA	ASY-20211209-SSSB-0549	Starboard Wall	1
8	D-8	70	77.8	18.60%	25%	-167.7	133.3	4,055.3	< MDA	ASY-20211209-SSSB-0549	Starboard Wall	1
	D-11	70	80.1	18.60%	25%	-216.5	135.3	4,113.9	< MDA	ASY-20211202-SSSB-0511	Starboard Wall	1
	E-7	80	81.3	21.50%	25%	-23.6	136.3	3,585.6	< MDA	ASY-20211202-SSSB-0511	Starboard Wall	1
	E-10	70	80.1	18.60%	25%	-216.5	135.3	4,113.9	< MDA	ASY-20211202-SSSB-0511	Starboard Wall	1
	F-3	70	81.3	21.50%	25%	-209.6	136.3	3,585.6	< MDA	ASY-20211202-SSSB-0511	Starboard Wall	1
	F-11	90	82.3	22.80%	25%	135.7	137.1	3,401.9	< MDA	ASY-20211202-SSSB-0511	Starboard Wall	1
	G-5	70	81.3	21.50%	25%	-209.6	136.3	3,585.6	< MDA	ASY-20211202-SSSB-0511	Starboard Wall	1
	G-6	70	81.3	21.50%	25%	-209.6	136.3	3,585.6	< MDA	ASY-20211202-SSSB-0511	Starboard Wall	1
	G-9	70	80.1	18.60%	25%	-216.5	135.3	4,113.9	< MDA	ASY-20211202-SSSB-0511	Starboard Wall	1
	G-11	80	80.1	18.60%	25%	-1.4	135.3	4,113.9	< MDA	ASY-20211202-SSSB-0511	Starboard Wall	1
	H-2	70	80.1	18.60%	25%	-216.5	135.3	4,113.9	< MDA	ASY-20211202-SSSB-0511	Starboard Wall	1
	H-5	70	82.3	22.80%	25%	-215.2	137.1	3,401.9	< MDA	ASY-20211202-SSSB-0511	Starboard Wall	1
	H-8	60	82.3	22.80%	25%	-390.6	137.1	3,401.9	< MDA	ASY-20211202-SSSB-0511	Starboard Wall	1
	H-10	80	67.5	18.60%	25%	268.8	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527	Starboard Wall	1
	I-2	70	80.1	18.60%	25%	-216.5	135.3	4,113.9	< MDA	ASY-20211202-SSSB-0511	Starboard Wall	1
	I-5	70	82.3	22.80%	25%	-215.2	137.1	3,401.9	< MDA	ASY-20211202-SSSB-0511	Starboard Wall	1
	J-8	90	69.1	18.60%	25%	449.5	125.7	3,821.8	< MDA	ASY-20211203-SSSB-0519	Starboard Wall	1
	K-4	90	83.7	21.50%	25%	117.2	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519	Starboard Wall	1
9	K-5	80	77.8	18.60%	25%	47.3	133.3	4,055.3	< MDA	ASY-20211209-SSSB-0549	Starboard Wall	1
	K-6	80	69.1	18.60%	25%	234.4	125.7	3,821.8	< MDA	ASY-20211203-SSSB-0519	Starboard Wall	1
	K-7	90	69.1	18.60%	25%	449.5	125.7	3,821.8	< MDA	ASY-20211203-SSSB-0519	Starboard Wall	1
10	K-10	80	77.8	18.60%	25%	47.3	133.3	4,055.3	< MDA	ASY-20211209-SSSB-0549	Starboard Wall	1
	L-2	100	69.1	18.60%	25%	664.5	125.7	3,821.8	< MDA	ASY-20211203-SSSB-0519	Starboard Wall	1
	L-7	90	69.1	18.60%	25%	449.5	125.7	3,821.8	< MDA	ASY-20211203-SSSB-0519	Starboard Wall	1
	L-10	80	69.1	18.60%	25%	234.4	125.7	3,821.8	< MDA	ASY-20211203-SSSB-0519	Starboard Wall	1
	L-11	80	83.7	21.50%	25%	-68.8	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519	Starboard Wall	1
	M-1	90	83.7	21.50%	25%	117.2	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519	Starboard Wall	1
	M-2	80	83.7	21.50%	25%	-68.8	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519	Starboard Wall	1
	M-7	90	83.7	21.50%	25%	117.2	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519	Starboard Wall	1

Loc	Grid	Sample cpm	Background cpm	Efficiency 2Pi	Efficiency Surface	Activity dpm/100 cm2	MDCR	MDA dpm/100 cm2	Results	Survey	Surface	137
	N-2	100	69.1	18.60%	25%	664.5	125.7	3,821.8	< MDA	ASY-20211203-SSSB-0519	Starboard Wall	1
	N-4	90	69.1	18.60%	25%	449.5	125.7	3,821.8	< MDA	ASY-20211203-SSSB-0519	Starboard Wall	1
	N-5	90	83.7	21.50%	25%	117.2	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519	Starboard Wall	1
	N-6	90	83.7	21.50%	25%	117.2	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519	Starboard Wall	1
	N-8	100	83.7	21.50%	25%	303.3	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519	Starboard Wall	1
	N-11	80	83.7	21.50%	25%	-68.8	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519	Starboard Wall	1
	O-7	80	83.7	21.50%	25%	-68.8	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519	Starboard Wall	1
	O-8	90	83.7	21.50%	25%	117.2	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519	Starboard Wall	1
	P-4	90	83.7	21.50%	25%	117.2	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519	Starboard Wall	1
	P-11	90	69.1	18.60%	25%	449.5	125.7	3,821.8	< MDA	ASY-20211203-SSSB-0519	Starboard Wall	1
11	Q-2	90	77.8	18.60%	25%	262.4	133.3	4,055.3	< MDA	ASY-20211209-SSSB-0549	Ceiling	1
	Q-3	80	69.1	18.60%	25%	234.4	125.7	3,821.8	< MDA	ASY-20211203-SSSB-0519	Ceiling	1
	Q-4	100	69.1	18.60%	25%	664.5	125.7	3,821.8	< MDA	ASY-20211203-SSSB-0519	Ceiling	1
12	Q-8	90	77.8	18.60%	25%	262.4	133.3	4,055.3	< MDA	ASY-20211209-SSSB-0549	Ceiling	1
	Q-11	100	69.1	18.60%	25%	664.5	125.7	3,821.8	< MDA	ASY-20211203-SSSB-0519	Ceiling	1
	R-3	80	69.1	18.60%	25%	234.4	125.7	3,821.8	< MDA	ASY-20211203-SSSB-0519	Ceiling	1
	R-7	90	69.1	18.60%	25%	449.5	125.7	3,821.8	< MDA	ASY-20211203-SSSB-0519	Ceiling	1
	R-10	90	69.1	18.60%	25%	449.5	125.7	3,821.8	< MDA	ASY-20211203-SSSB-0519	Ceiling	1
	AA-1	70	82.3	22.80%	25%	-215.2	137.1	3,401.9	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	AA-2	80	82.3	22.80%	25%	-39.8	137.1	3,401.9	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	AA-6	80	81.3	21.50%	25%	-23.6	136.3	3,585.6	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	AA-8	80	81.3	21.50%	25%	-23.6	136.3	3,585.6	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	AA-9	80	80.1	18.60%	25%	-1.4	135.3	4,113.9	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	BB-2	80	82.3	22.80%	25%	-39.8	137.1	3,401.9	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	BB-5	70	81.3	21.50%	25%	-209.6	136.3	3,585.6	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	BB-11	80	80.1	18.60%	25%	-1.4	135.3	4,113.9	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	CC-1	80	81.3	21.50%	25%	-23.6	136.3	3,585.6	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	CC-9	70	82.3	22.80%	25%	-215.2	137.1	3,401.9	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	DD-1	70	81.3	21.50%	25%	-209.6	136.3	3,585.6	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	DD-6	70	82.3	22.80%	25%	-215.2	137.1	3,401.9	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	DD-8	80	82.3	22.80%	25%	-39.8	137.1	3,401.9	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	DD-11	80	82.3	22.80%	25%	-39.8	137.1	3,401.9	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
13	EE-2	90	77.8	18.60%	25%	262.4	133.3	4,055.3	< MDA	ASY-20211209-SSSB-0549	Port Wall	1
	EE-4	80	81.3	21.50%	25%	-23.6	136.3	3,585.6	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	EE-6	80	82.3	22.80%	25%	-39.8	137.1	3,401.9	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	EE-7	80	82.3	22.80%	25%	-39.8	137.1	3,401.9	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
14	EE-8	70	77.8	18.60%	25%	-167.7	133.3	4,055.3	< MDA	ASY-20211209-SSSB-0549	Port Wall	1
	EE-11	60	82.3	22.80%	25%	-390.6	137.1	3,401.9	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	FF-7	80	82.3	22.80%	25%	-39.8	137.1	3,401.9	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	FF-11	80	67.5	18.60%	25%	268.8	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527	Port Wall	1

Loc	Grid	Sample cpm	Background cpm	Efficiency 2Pi	Efficiency Surface	Activity dpm/100 cm2	MDCR	MDA dpm/100 cm2	Results	Survey	Surface	137
	GG-1	80	80.1	18.60%	25%	-1.4	135.3	4,113.9	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	GG-2	90	80.1	18.60%	25%	213.6	135.3	4,113.9	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	GG-7	80	82.3	22.80%	25%	-39.8	137.1	3,401.9	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	GG-10	80	81.3	21.50%	25%	-23.6	136.3	3,585.6	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	HH-3	90	80.1	18.60%	25%	213.6	135.3	4,113.9	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	HH-5	80	82.3	22.80%	25%	-39.8	137.1	3,401.9	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	HH-8	80	81.3	21.50%	25%	-23.6	136.3	3,585.6	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	HH-9	80	81.3	21.50%	25%	-23.6	136.3	3,585.6	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	HH-10	70	81.3	21.50%	25%	-209.6	136.3	3,585.6	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	HH-11	70	81.3	21.50%	25%	-209.6	136.3	3,585.6	< MDA	ASY-20211202-SSSB-0511	Port Wall	1
	II-1	100	83.7	21.50%	25%	303.3	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519	Port Wall	1
	II-2	100	83.7	21.50%	25%	303.3	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519	Port Wall	1
	II-4	90	69.1	18.60%	25%	449.5	125.7	3,821.8	< MDA	ASY-20211203-SSSB-0519	Port Wall	1
	JJ-1	90	83.7	21.50%	25%	117.2	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519	Port Wall	1
	JJ-2	100	83.7	21.50%	25%	303.3	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519	Port Wall	1
	JJ-3	90	83.7	21.50%	25%	117.2	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519	Port Wall	1
	JJ-4	90	83.7	21.50%	25%	117.2	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519	Port Wall	1
15	JJ-5	80	77.8	18.60%	25%	47.3	133.3	4,055.3	< MDA	ASY-20211209-SSSB-0549	Port Wall	1
16	JJ-10	90	77.8	18.60%	25%	262.4	133.3	4,055.3	< MDA	ASY-20211209-SSSB-0549	Port Wall	1
	KK-1	100	83.7	21.50%	25%	303.3	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519	Port Wall	1
	KK-2	80	69.1	18.60%	25%	234.4	125.7	3,821.8	< MDA	ASY-20211203-SSSB-0519	Port Wall	1
	KK-4	90	69.1	18.60%	25%	449.5	125.7	3,821.8	< MDA	ASY-20211203-SSSB-0519	Port Wall	1
	KK-9	90	69.1	18.60%	25%	449.5	125.7	3,821.8	< MDA	ASY-20211203-SSSB-0519	Port Wall	1
	KK-10	90	69.1	18.60%	25%	449.5	125.7	3,821.8	< MDA	ASY-20211203-SSSB-0519	Port Wall	1
	LL-4	90	69.1	18.60%	25%	449.5	125.7	3,821.8	< MDA	ASY-20211203-SSSB-0519	Port Wall	1
A/F Stiff	3	90	67.5	18.60%	25%	483.9	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527		1
	8	70	67.5	18.60%	25%	53.8	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527		1
	10	80	67.5	18.60%	25%	268.8	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527		1
	11	100	67.5	18.60%	25%	698.9	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527		1
	19	80	67.5	18.60%	25%	268.8	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527		1
	25	80	67.5	18.60%	25%	268.8	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527		1
	28	80	72.5	23.08%	25%	130.0	128.7	3,154.3	< MDA	ASY-20211213-SSSB-0569		1
	30	80	67.5	18.60%	25%	268.8	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527		1
	33	80	67.5	18.60%	25%	268.8	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527		1
Bulk Stiff	Aft 2	90	67.5	18.60%	25%	483.9	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527		1
	Aft 3	100	67.5	18.60%	25%	698.9	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527		1
	Fwd 2	80	67.5	18.60%	25%	268.8	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527		1

Loc	Grid	Sample cpm	Background cpm	Efficiency 2Pi	Efficiency Surface	Activity dpm/100 cm2	MDCR	MDA dpm/100 cm2	Results	Survey	Surface	137
Baffle	Aft of Fwd	80	67.5	18.60%	25%	268.8	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527		1
Platform	Fwd Upper	70	67.5	18.60%	25%	53.8	124.2	3,777.3	< MDA	ASY-20211207-SSSB-0527		1
QC	I-2	80	83.7	21.50%	25%	-68.8	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519		
	K-4	90	83.7	21.50%	25%	117.2	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519		
	HH-3	80	83.7	21.50%	25%	-68.8	138.3	3,638.9	< MDA	ASY-20211203-SSSB-0519		
	B-1	90	72.2	16.04%	25%	444.0	128.5	4,530.9	< MDA	ASY-20211212-SSSB-0688		
	C-1	100	72.2	16.04%	25%	693.4	128.5	4,530.9	< MDA	ASY-20211212-SSSB-0688		
	A-4	90	72.2	16.04%	25%	444.0	128.5	4,530.9	< MDA	ASY-20211212-SSSB-0688		
	B-4	100	72.2	16.04%	25%	693.4	128.5	4,530.9	< MDA	ASY-20211212-SSSB-0688		
	B-3	110	72.2	16.04%	25%	942.8	128.5	4,530.9	< MDA	ASY-20211212-SSSB-0688		
	A-6	80	72.2	16.04%	25%	194.5	128.5	4,530.9	< MDA	ASY-20211212-SSSB-0688		
	B-6	100	72.2	16.04%	25%	693.4	128.5	4,530.9	< MDA	ASY-20211212-SSSB-0688		
	B-10	90	72.2	16.04%	25%	444.0	128.5	4,530.9	< MDA	ASY-20211212-SSSB-0688		
	B-11	100	72.2	16.04%	25%	693.4	128.5	4,530.9	< MDA	ASY-20211212-SSSB-0688		
	C-10	100	72.2	16.04%	25%	693.4	128.5	4,530.9	< MDA	ASY-20211212-SSSB-0688		
	AA-1	100	72.2	16.04%	25%	693.4	128.5	4,530.9	< MDA	ASY-20211212-SSSB-0688		
	AA-2	90	72.2	16.04%	25%	444.0	128.5	4,530.9	< MDA	ASY-20211212-SSSB-0688		
	BB-2	100	72.2	16.04%	25%	693.4	128.5	4,530.9	< MDA	ASY-20211212-SSSB-0688		

ATTACHMENT 4

DIRECT BETA MEASUREMENT RESULTS SUMMARY

Count Times (min)		Detector	
Sample	1	Width (cm)	6.9
Bkgd	10	Area (cm2)	100

Loc	Grid	Sample cpm	Background cpm	Efficiency 2Pi	Efficiency Surface	Activity dpm/100 cm2	Lc Counts	Results	MDA dpm/100 cm2	Results	Survey
1	A-5	87	77.8	18.60%	25%	197.8	93.0	< Lc	712.8	< MDA	ASY-20211209-SSSB-0549
2	A-10	81	77.8	18.60%	25%	68.8	93.0	< Lc	712.8	< MDA	ASY-20211209-SSSB-0549
3	A-17	62	77.8	18.60%	25%	-339.8	93.0	< Lc	712.8	< MDA	ASY-20211209-SSSB-0549
4	A-23	74	77.8	18.60%	25%	-81.7	93.0	< Lc	712.8	< MDA	ASY-20211209-SSSB-0549
5	A-(-2)	61	77.8	18.60%	25%	-361.3	93.0	< Lc	712.8	< MDA	ASY-20211209-SSSB-0549
6	A-(-8)	79	77.8	18.60%	25%	25.8	93.0	< Lc	712.8	< MDA	ASY-20211209-SSSB-0549
7	D-2	92	77.8	18.60%	25%	305.4	93.0	< Lc	712.8	< MDA	ASY-20211209-SSSB-0549
8	D-8	71	77.8	18.60%	25%	-146.2	93.0	< Lc	712.8	< MDA	ASY-20211209-SSSB-0549
9	K-5	64	77.8	18.60%	25%	-296.8	93.0	< Lc	712.8	< MDA	ASY-20211209-SSSB-0549
10	K-9/10	64	77.8	18.60%	25%	-296.8	93.0	< Lc	712.8	< MDA	ASY-20211209-SSSB-0549
11	Q-2	79	77.8	18.60%	25%	25.8	93.0	< Lc	712.8	< MDA	ASY-20211209-SSSB-0549
12	Q-8	89	77.8	18.60%	25%	240.9	93.0	< Lc	712.8	< MDA	ASY-20211209-SSSB-0549
13	EE-2	77	77.8	18.60%	25%	-17.2	93.0	< Lc	712.8	< MDA	ASY-20211209-SSSB-0549
14	EE-8/9	77	77.8	18.60%	25%	-17.2	93.0	< Lc	712.8	< MDA	ASY-20211209-SSSB-0549
15	JJ-5	62	77.8	18.60%	25%	-339.8	93.0	< Lc	712.8	< MDA	ASY-20211209-SSSB-0549
16	JJ-10	75	77.8	18.60%	25%	-60.2	93.0	< Lc	712.8	< MDA	ASY-20211209-SSSB-0549
QC											
1	A-5	90	72.2	16.04%	25%	444.0	86.9	> Bkgd	798.9	< MDA	ASY-20211212-SSSB-0688

Although the QC measurement was greater than the Lc, the measurement was less than MDA. Considering all other indicators (smears and paint samples) were less than MDA and the original measurement at the same location was less than Lc, it was determined that the QC measurement was a statistical outlier relative to background and that no activity above background is present.

ATTACHMENT 5

REMOVABLE BETA SURVEY RESULTS SUMMARY

Count Times (min)	
Sample	1
Bkgd	10

Loc	Grid	Sample cpm	Background cpm	Efficiency	Activity dpm/100 cm2	1σ Uncertainty dpm/100 cm2	MDA dpm/100 cm2	Results	Survey
1	A-5	27	26.1	21.8%	4.1	25.0	93.3	< **MDA**	ASY-20211209-SSSB-0549
2	A-10	34	26.1	21.8%	36.2	27.8	93.3	< **MDA**	ASY-20211209-SSSB-0549
3	A-17	30	26.1	21.8%	17.9	26.2	93.3	< **MDA**	ASY-20211209-SSSB-0549
4	A-23	25	26.1	21.8%	-5.0	24.1	93.3	< **MDA**	ASY-20211209-SSSB-0549
5	A-(-2)	37	26.1	21.8%	50.0	28.9	93.3	< **MDA**	ASY-20211209-SSSB-0549
6	A-(-8)	46	26.1	21.8%	91.3	32.0	93.3	< **MDA**	ASY-20211209-SSSB-0549
7	D-2	31	26.1	21.8%	22.5	26.6	93.3	< **MDA**	ASY-20211209-SSSB-0549
8	D-8	34	26.1	21.8%	36.2	27.8	93.3	< **MDA**	ASY-20211209-SSSB-0549
9	K-5	30	26.1	21.8%	17.9	26.2	93.3	< **MDA**	ASY-20211209-SSSB-0549
10	K-9/10	32	26.1	21.8%	27.1	27.0	93.3	< **MDA**	ASY-20211209-SSSB-0549
11	Q-2	39	26.1	21.8%	59.2	29.6	93.3	< **MDA**	ASY-20211209-SSSB-0549
12	Q-8	26	26.1	21.8%	-0.5	24.5	93.3	< **MDA**	ASY-20211209-SSSB-0549
13	EE-2	34	26.1	21.8%	36.2	27.8	93.3	< **MDA**	ASY-20211209-SSSB-0549
14	EE-8/9	26	26.1	21.8%	-0.5	24.5	93.3	< **MDA**	ASY-20211209-SSSB-0549
15	JJ-5	21	26.1	21.8%	-23.4	22.3	93.3	< **MDA**	ASY-20211209-SSSB-0549
16	JJ-10	28	26.1	21.8%	8.7	25.4	93.3	< **MDA**	ASY-20211209-SSSB-0549
QC									
16D	JJ-10	29	26.1	21.8%	13.3	25.8	93.3	< **MDA**	ASY-20211209-SSSB-0549

ATTACHMENT 6

REMOVABLE LOW-ENERGY BETA SURVEY RESULTS SUMMARY

		Tritium H-3						Nickel-63 Ni-63							
Systematic	Loc	Result pCi/100cm2	2s Error pCi/100cm2	MDA pCi/100cm2	Result dpm/100 cm2	2s Error dpm/100 cm2	MDA dpm/100 cm2	Result pCi/100cm2	2s Error pCi/100cm2	MDA pCi/100cm2	Result dpm/100 cm2	2s Error dpm/100 cm2	MDA dpm/100 cm2	Report	Limit dpm/100 cm2
501513-9S-SM-01	1	*-2.06*	8.81	15.43	*-4.58*	19.57	34.26	*1.45*	3.50	5.96	*3.21*	7.77	13.23	EB-21-12052	1,000
501513-9S-SM-02	2	*3.85*	5.25	8.86	*8.55*	11.65	19.68	*0.00*	1.74	3.00	*0.00*	3.86	6.65	EB-21-12052	1,000
501513-9S-SM-03	3	*0.19*	3.28	5.68	*0.42*	7.29	12.62	*0.79*	1.72	2.93	*1.75*	3.82	6.50	EB-21-12052	1,000
501513-9S-SM-04	4	*-1.19*	3.38	5.95	*-2.65*	7.51	13.20	*0.56*	1.73	2.96	*1.24*	3.85	6.57	EB-21-12052	1,000
501513-9S-SM-05	5	*0.20*	3.39	5.88	*0.44*	7.53	13.05	*-0.16*	1.68	2.91	*-0.35*	3.74	6.46	EB-21-12052	1,000
501513-9S-SM-06	6	*-1.90*	3.56	6.31	*-4.21*	7.91	14.00	*0.39*	1.70	2.92	*0.87*	3.78	6.47	EB-21-12052	1,000
501513-9S-SM-07	7	*1.61*	4.02	6.87	*3.57*	8.92	15.25	*1.53*	1.78	2.99	*3.40*	3.95	6.64	EB-21-12052	1,000
501513-9S-SM-08	8	*1.32*	3.85	6.60	*2.94*	8.55	14.65	*0.00*	1.79	3.08	*0.00*	3.97	6.84	EB-21-12052	1,000
501513-9S-SM-09	9	*0.39*	3.35	5.79	*0.86*	7.44	12.85	*0.39*	1.69	2.90	*0.87*	3.76	6.44	EB-21-12052	1,000
501513-9S-SM-10	10	*-1.64*	3.47	6.13	*-3.64*	7.70	13.60	*1.26*	1.73	2.91	*2.79*	3.83	6.46	EB-21-12052	1,000
501513-9S-SM-11	11	*-0.77*	3.28	5.74	*-1.70*	7.27	12.73	*0.78*	1.71	2.90	*1.74*	3.79	6.45	EB-21-12052	1,000
501513-9S-SM-12	12	*-2.43*	3.40	6.06	*-5.40*	7.55	13.45	*0.70*	1.69	2.88	*1.55*	3.75	6.39	EB-21-12052	1,000
501513-9S-SM-13	13	*-1.09*	3.73	6.55	*-2.43*	8.29	14.54	*-0.63*	1.68	2.92	*-1.40*	3.72	6.49	EB-21-12052	1,000
501513-9S-SM-14	14	*-1.76*	3.30	5.84	*-3.90*	7.32	12.96	*-0.31*	1.67	2.90	*-0.69*	3.71	6.44	EB-21-12052	1,000
501513-9S-SM-15	15	*-2.25*	3.14	5.60	*-4.98*	6.97	12.43	*0.00*	1.68	2.90	*0.00*	3.73	6.43	EB-21-12052	1,000
501513-9S-SM-16	16	*-1.86*	3.50	6.19	*-4.13*	7.76	13.74	*-0.24*	1.68	2.92	*-0.52*	3.74	6.47	EB-21-12052	1,000
Average		*-0.59*		6.84	*-1.30*		15.19	*0.41*		3.12	*0.90*		6.84		
Std Dev		1.73			3.85			0.65			1.44				
Min		*-2.43*		5.60	*-5.40*		12.43	*-0.63*		2.88	*-1.40*		5.60		
Max		*3.85*		15.43	*8.55*		34.26	*1.53*		5.96	*3.40*		15.43		
QC Data															
501513-9S-SM-01	L-DUP	*0.50*	8.66	15.00	*1.11*	19.22	33.29	*1.41*	3.41	5.80	*3.12*	7.56	12.88	EB-21-12052	1,000
501513-9S-SM-16D	FD	*0.75*	3.27	5.63	*1.67*	7.26	12.49	*0.30*	1.62	2.79	*0.67*	3.61	6.18	EB-21-12052	1,000

Italics :han MDA/MDC
Bold Greater than or Equal to MDA/MDC

ATTACHMENT 7

LABORATORY ANALYTICAL REPORT – REMOVABLE LOW-ENERGY BETA SMEARS

APTIM FEDERAL SERVICES LLC

PO: 208345
Project: 501513 SSSB Decommissioning

LEVEL II
REPORT OF ANALYSIS

WORK ORDER #21-12052-OR

January 12, 2022

EBERLINE ANALYTICAL/OAK RIDGE LABORATORY
OAK RIDGE, TN

EBERLINE ANALYTICAL

EBERLINE ANALYTICAL CORPORATION
601 SCARBORO ROAD
OAK RIDGE, TENNESSEE 37830
PHONE (865) 481-0683
FAX (865) 483-4621

EBS-OR-49233

January 12, 2022

Guy Gallello, Jr.
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

CASE NARRATIVE
Work Order # 21-12052-OR

SAMPLE RECEIPT

This work order contains seventeen smear samples received 12/16/2021. Samples were analyzed for Tritium and Nickel-63.

CLIENT ID	LAB ID	CLIENT ID	LAB ID
501513-9S-SM-01	21-12052-04	501513-9S-SM-10	21-12052-13
501513-9S-SM-02	21-12052-05	501513-9S-SM-11	21-12052-14
501513-9S-SM-03	21-12052-06	501513-9S-SM-12	21-12052-15
501513-9S-SM-04	21-12052-07	501513-9S-SM-13	21-12052-16
501513-9S-SM-05	21-12052-08	501513-9S-SM-14	21-12052-17
501513-9S-SM-06	21-12052-09	501513-9S-SM-15	21-12052-18
501513-9S-SM-07	21-12052-10	501513-9S-SM-16	21-12052-19
501513-9S-SM-08	21-12052-11	501513-9S-SM-16D	21-12052-20
501513-9S-SM-09	21-12052-12		

ANALYTICAL METHODS

Tritium was performed using Method LANL ER-210 Modified. Nickel-63 was performed using Method ASTM 3500-Ni Modified.

ANALYTICAL RESULTS

Combined Standard Uncertainty is reported at 1-sigma value.

Minimum Detectable Activity (MDA) values for data represented in this report are sample-specific. MDA measurements are determined based on factors and conditions including instrument settings, aliquot size, and matrix type.

TRITIUM

Smears were received from client equilibrated in deionized water. Equilibrates were placed in liquid scintillation vials and smears were subsequently rinsed with Tritium free water which was added to scintillation vials. Scintillation cocktail was added. Samples were counted by beta liquid scintillation.

ANALYTICAL RESULTS CONTINUED

TRITIUM CONTINUED

Samples demonstrated acceptable results for all Tritium analyses. The Tritium method blank demonstrated an acceptable result. Results for the Tritium replicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Tritium laboratory control sample demonstrated an acceptable percent recovery.

NICKEL-63

Smears were leached in 1.0 molar Nitric acid and placed into scintillation vials. Acid was neutralized with Sodium Hydroxide. Scintillation cocktail was added, and Nickel-63 activity was determined by energy window specific beta liquid scintillation.

Samples demonstrated acceptable results for all Nickel-63 analyses. The Nickel-63 method blank demonstrated an acceptable result. Results for the Nickel-63 replicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Nickel-63 laboratory control sample demonstrated an acceptable percent recovery.

CERTIFICATION OF ACCURACY

I certify that this data report complies with the terms and conditions of the Purchase Order, 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 cognizant project manager or his/her designee to be accurate as verified by the following signature.

M.R. McDougall
Laboratory Manager

Date: 1/12/2022

Eberline Analytical wants and encourages your feedback regarding our performance providing radioanalytical services. Please visit http://eberlineanalytical.com/ to provide us with feedback on our services.

Eberline Analytical
Final Report of Analysis

Report To:	Work Order Details:	
Guy Gallello, Jr	*SDG:*	**21-12052**
APTIM	*Purchase Order:*	208345
16406 US Route 224 E, Annex	*Analysis Category:*	ENVIRONMENTAL
Findlay, OH 45840	*Sample Matrix:*	SM

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12052-01	LCS	KNOWN	12/16/21 00:00	12/16/2021	12/28/2021	21-12052	Tritium	LANL ER-210 Modified	1.82E+02	6.54E+00			pCi/s
21-12052-01	LCS	SPIKE	12/16/21 00:00	12/16/2021	12/28/2021	21-12052	Tritium	LANL ER-210 Modified	1.79E+02	7.28E+00	1.24E+01	5.57E+00	pCi/s
21-12052-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/28/2021	21-12052	Tritium	LANL ER-210 Modified	-1.32E+00	3.20E+00	3.20E+00	5.64E+00	pCi/s
21-12052-03	DUP	501513-9S-SM-01	12/08/21 09:31	12/16/2021	12/29/2021	21-12052	Tritium	LANL ER-210 Modified	5.01E-01	8.66E+00	8.66E+00	1.50E+01	pCi/s
21-12052-04	DO	501513-9S-SM-01	12/08/21 09:31	12/16/2021	12/29/2021	21-12052	Tritium	LANL ER-210 Modified	-2.06E+00	8.81E+00	8.82E+00	1.54E+01	pCi/s
21-12052-05	TRG	501513-9S-SM-02	12/08/21 09:39	12/16/2021	12/29/2021	21-12052	Tritium	LANL ER-210 Modified	3.85E+00	5.25E+00	5.25E+00	8.86E+00	pCi/s
21-12052-06	TRG	501513-9S-SM-03	12/08/21 10:17	12/16/2021	12/29/2021	21-12052	Tritium	LANL ER-210 Modified	1.90E-01	3.28E+00	3.28E+00	5.68E+00	pCi/s
21-12052-07	TRG	501513-9S-SM-04	12/09/21 09:43	12/16/2021	12/29/2021	21-12052	Tritium	LANL ER-210 Modified	-1.19E+00	3.38E+00	3.38E+00	5.95E+00	pCi/s
21-12052-08	TRG	501513-9S-SM-05	12/08/21 09:47	12/16/2021	12/29/2021	21-12052	Tritium	LANL ER-210 Modified	1.96E-01	3.39E+00	3.39E+00	5.88E+00	pCi/s
21-12052-09	TRG	501513-9S-SM-06	12/09/21 09:50	12/16/2021	12/29/2021	21-12052	Tritium	LANL ER-210 Modified	-1.90E+00	3.56E+00	3.56E+00	6.31E+00	pCi/s
21-12052-10	TRG	501513-9S-SM-07	12/08/21 09:54	12/16/2021	12/29/2021	21-12052	Tritium	LANL ER-210 Modified	1.61E+00	4.02E+00	4.02E+00	6.87E+00	pCi/s
21-12052-11	TRG	501513-9S-SM-08	12/08/21 10:02	12/16/2021	12/29/2021	21-12052	Tritium	LANL ER-210 Modified	1.32E+00	3.85E+00	3.85E+00	6.60E+00	pCi/s
21-12052-12	TRG	501513-9S-SM-09	12/09/21 09:28	12/16/2021	12/29/2021	21-12052	Tritium	LANL ER-210 Modified	3.87E-01	3.35E+00	3.35E+00	5.79E+00	pCi/s
21-12052-13	TRG	501513-9S-SM-10	12/08/21 13:51	12/16/2021	12/29/2021	21-12052	Tritium	LANL ER-210 Modified	-1.64E+00	3.47E+00	3.47E+00	6.13E+00	pCi/s
21-12052-14	TRG	501513-9S-SM-11	12/09/21 10:53	12/16/2021	12/29/2021	21-12052	Tritium	LANL ER-210 Modified	-7.67E-01	3.28E+00	3.28E+00	5.74E+00	pCi/s
21-12052-15	TRG	501513-9S-SM-12	12/09/21 11:01	12/16/2021	12/29/2021	21-12052	Tritium	LANL ER-210 Modified	-2.43E+00	3.40E+00	3.40E+00	6.06E+00	pCi/s
21-12052-16	TRG	501513-9S-SM-13	12/08/21 10:31	12/16/2021	12/29/2021	21-12052	Tritium	LANL ER-210 Modified	-1.09E+00	3.73E+00	3.73E+00	6.55E+00	pCi/s
21-12052-17	TRG	501513-9S-SM-14	12/08/21 10:25	12/16/2021	12/29/2021	21-12052	Tritium	LANL ER-210 Modified	-1.76E+00	3.30E+00	3.30E+00	5.84E+00	pCi/s
21-12052-18	TRG	501513-9S-SM-15	12/08/21 13:37	12/16/2021	12/29/2021	21-12052	Tritium	LANL ER-210 Modified	-2.25E+00	3.14E+00	3.14E+00	5.60E+00	pCi/s
21-12052-19	TRG	501513-9S-SM-16	12/09/21 09:36	12/16/2021	12/29/2021	21-12052	Tritium	LANL ER-210 Modified	-1.86E+00	3.50E+00	3.50E+00	6.19E+00	pCi/s
21-12052-20	TRG	501513-9S-SM-16D	12/09/21 09:37	12/16/2021	12/29/2021	21-12052	Tritium	LANL ER-210 Modified	7.52E-01	3.27E+00	3.27E+00	5.63E+00	pCi/s

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:
SDG: 21-12052
Purchase Order: 208345
Analysis Category: ENVIRONMENTAL
Sample Matrix: SM

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12052-01	LCS	KNOWN	12/16/21 00:00	12/16/2021	12/21/2021	21-12052	Nickel-63	ASTM 3500-Ni Modified	1.45E+03	4.35E+01			pCi/s
21-12052-01	LCS	SPIKE	12/16/21 00:00	12/16/2021	12/21/2021	21-12052	Nickel-63	ASTM 3500-Ni Modified	1.46E+03	1.23E+01	8.67E+01	2.93E+00	pCi/s
21-12052-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/21/2021	21-12052	Nickel-63	ASTM 3500-Ni Modified	7.78E-02	1.68E+00	1.68E+00	2.89E+00	pCi/s
21-12052-03	DUP	501513-9S-SM-01	12/08/21 09:31	12/16/2021	12/21/2021	21-12052	Nickel-63	ASTM 3500-Ni Modified	1.41E+00	3.41E+00	3.41E+00	5.80E+00	pCi/s
21-12052-04	DO	501513-9S-SM-01	12/08/21 09:31	12/16/2021	12/21/2021	21-12052	Nickel-63	ASTM 3500-Ni Modified	1.45E+00	3.50E+00	3.50E+00	5.96E+00	pCi/s
21-12052-05	TRG	501513-9S-SM-02	12/08/21 09:39	12/16/2021	12/21/2021	21-12052	Nickel-63	ASTM 3500-Ni Modified	0.00E+00	1.74E+00	1.74E+00	3.00E+00	pCi/s
21-12052-06	TRG	501513-9S-SM-03	12/08/21 10:17	12/16/2021	12/21/2021	21-12052	Nickel-63	ASTM 3500-Ni Modified	7.89E-01	1.72E+00	1.72E+00	2.93E+00	pCi/s
21-12052-07	TRG	501513-9S-SM-04	12/09/21 09:43	12/16/2021	12/21/2021	21-12052	Nickel-63	ASTM 3500-Ni Modified	5.58E-01	1.73E+00	1.73E+00	2.96E+00	pCi/s
21-12052-08	TRG	501513-9S-SM-05	12/08/21 09:47	12/16/2021	12/21/2021	21-12052	Nickel-63	ASTM 3500-Ni Modified	-1.57E-01	1.68E+00	1.68E+00	2.91E+00	pCi/s
21-12052-09	TRG	501513-9S-SM-06	12/09/21 09:50	12/16/2021	12/21/2021	21-12052	Nickel-63	ASTM 3500-Ni Modified	3.93E-01	1.70E+00	1.70E+00	2.92E+00	pCi/s
21-12052-10	TRG	501513-9S-SM-07	12/08/21 09:54	12/16/2021	12/21/2021	21-12052	Nickel-63	ASTM 3500-Ni Modified	1.53E+00	1.78E+00	1.78E+00	2.99E+00	pCi/s
21-12052-11	TRG	501513-9S-SM-08	12/08/21 10:02	12/16/2021	12/21/2021	21-12052	Nickel-63	ASTM 3500-Ni Modified	0.00E+00	1.79E+00	1.79E+00	3.08E+00	pCi/s
21-12052-12	TRG	501513-9S-SM-09	12/09/21 09:28	12/16/2021	12/21/2021	21-12052	Nickel-63	ASTM 3500-Ni Modified	3.91E-01	1.69E+00	1.69E+00	2.90E+00	pCi/s
21-12052-13	TRG	501513-9S-SM-10	12/08/21 13:51	12/16/2021	12/21/2021	21-12052	Nickel-63	ASTM 3500-Ni Modified	1.26E+00	1.73E+00	1.73E+00	2.91E+00	pCi/s
21-12052-14	TRG	501513-9S-SM-11	12/09/21 10:53	12/16/2021	12/21/2021	21-12052	Nickel-63	ASTM 3500-Ni Modified	7.82E-01	1.71E+00	1.71E+00	2.90E+00	pCi/s
21-12052-15	TRG	501513-9S-SM-12	12/09/21 11:01	12/16/2021	12/21/2021	21-12052	Nickel-63	ASTM 3500-Ni Modified	6.98E-01	1.69E+00	1.69E+00	2.88E+00	pCi/s
21-12052-16	TRG	501513-9S-SM-13	12/08/21 10:31	12/16/2021	12/21/2021	21-12052	Nickel-63	ASTM 3500-Ni Modified	-6.30E-01	1.68E+00	1.68E+00	2.92E+00	pCi/s
21-12052-17	TRG	501513-9S-SM-14	12/08/21 10:25	12/16/2021	12/21/2021	21-12052	Nickel-63	ASTM 3500-Ni Modified	-3.13E-01	1.67E+00	1.67E+00	2.90E+00	pCi/s
21-12052-18	TRG	501513-9S-SM-15	12/08/21 13:37	12/16/2021	12/21/2021	21-12052	Nickel-63	ASTM 3500-Ni Modified	0.00E+00	1.68E+00	1.68E+00	2.90E+00	pCi/s
21-12052-19	TRG	501513-9S-SM-16	12/09/21 09:36	12/16/2021	12/21/2021	21-12052	Nickel-63	ASTM 3500-Ni Modified	-2.36E-01	1.68E+00	1.68E+00	2.92E+00	pCi/s
21-12052-20	TRG	501513-9S-SM-16D	12/09/21 09:37	12/16/2021	12/21/2021	21-12052	Nickel-63	ASTM 3500-Ni Modified	3.00E-01	1.62E+00	1.62E+00	2.79E+00	pCi/s

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

CHAIN OF CUSTODY

APTIM

REC'D DEC 16 2021

Ref. Document # 5010513-COC-031

Page 1 of 4

Project Number: 501513
Project Name / Location: SSSB Decomisioning
Purchase Order #: 208345

Project Contact: Michael Carr (Name & phone #)
Send Report To: Guy Gallello
Phone/Fax Number: guy.gallello@aptim.com
Address:
City:

Shipment Date: 12/14/2021
Waybill/Airbill Number: 7754-9600-6974
Lab Destination: Eberline-Oakridge
Lab Contact Name / ph. #: Mike McDougall 865-481-0863 ext 128

Sampler's Name(s): EC, DH

9-12/16/21

Sample ID Number	Sample Description	Collection Information: Date	Time	G/C	Matrix	# of containers	Container type	Preservative: HCL	NaOH	HNO_3	H_2SO_4	Ice		Analyses Requested: Gross Alpha / Beta	Tritium (H3)	Nickel-63 (Ni-63)	Gamma Spectroscopy	Carbon-14 (C-14)					Turn Around Time Requested
																21-12052							
4 501513-9S-SM-01	MARSAME Wipe; Tank 9S #1	12-8-21	0931	G	WP	1	Vial								X								21-BD
4S 501513-9S-SM-01	MARSAME Wipe; Tank 9S #1	12-8-21	0931	G	WP	1	Vial									X							21-BD
501513-9S-PA-01	MARSAME Paint Sample; Tank 9S #1	12-10-21	1105	C	CP	1	Bag								X	X	X	X					21-BD
5 501513-9S-SM-02	MARSAME Wipe; Tank 9S #2	12-8-21	0939	G	WP	1	Vial								X								21-BD
5T 501513-9S-SM-02	MARSAME Wipe; Tank 9P #2	12-8-21	0939	G	WP	1	Vial									X							21-BD
501513-9S-PA-02	MARSAME Paint Sample; Tank 9S #2	12-10-21	1145	C	CP	1	Bag								X	X	X	X					21-BD
6 501513-9S-SM-03	MARSAME Wipe; Tank 9S #3	12-8-21	1017	G	WP	1	Vial								X								21-BD
6 501513-9S-SM-03	MARSAME Wipe; Tank 9S #3	12-8-21	1017	G	WP	1	Vial									X							21-BD
501513-9S-PA-03	MARSAME Paint Sample; Tank 9S #3	12-9-21	1307	C	CP	1	Bag								X	X	X	X					21-BD

Special Instructions: Air Sample volumes provided in sample description. For paint chip samples 501513-9P-PA-07, 14, 15 and 16 please save and return sample material so it can be fowarded to an independent third party for further analysis.

QC/Data Package Level Required: I II III IV/Project Specific:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
E. Carter	12/14/21	0905	Locked Storage	12/14/21	0905
Locked Storage	12/14/21	1200	Bryon Rogers	12/14/21	1200
Bryon Rogers	12-14-21	1630	Ronald Spencer	12/16/21	1400

G/C Codes

C = Composite G = Grab

Matrix Codes

DW = Drinking Water SC =Soil
GW = Ground Water SL = Sludge
WW = Waste Water CP = Chip Samples
SW = Surface Water WP = Wipe Samples
LIQ = Other Liquid SOL = Other Solid
AS = Air Sample SED = Sediment

APTIM

COC Continuation Page

COC Ref. Document # 5010513-COC-031 Page 2 of 4

Project Number: 501513 Shipment Date: 12/14/2021

Project Name / Location: SSSB Mobile, AL

REC'D DEC 16 2021

21-12052

	Sample ID Number	Sample Description	Collection Information Date	Time	G/C	Matrix	# of containers	Container type	Preservative HCL	NaOH	HNO_3	H_2SO_4	Ice		Analyses Requested Gross Alpha / Beta	Tritium (H3)	Nickel-63 (Ni-63)	Gamma Spectroscopy	Carbon-14 (C-14)						Turn Around Time Requested
7	501513-9S-SM-04	MARSAME Wipe; Tank 9S #4	12-9-21	0943	G	WP	1	Vial								X									21-BD
7	501513-9S-SM-04	MARSAME Wipe; Tank 9S #4	12-9-21	0943	G	WP	1	Vial									X								21-BD
	501513-9S-PA-04	MARSAME Paint Sample; Tank 9S #4	12-13-21	0910	C	CP	1	Bag								X	X	X	X						21-BD
8	501513-9S-SM-05	MARSAME Wipe; Tank 9S #5	12-8-21	0947	G	WP	1	Vial								X									21-BD
8	501513-9S-SM-05	MARSAME Wipe; Tank 9S #5	12-8-21	0947	G	WP	1	Vial									X								21-BD
	501513-9S-PA-05	MARSAME Paint Sample; Tank 9S #5	12-10-21	1535	C	CP	1	Bag								X	X	X	X						21-BD
9	501513-9S-SM-06	MARSAME Wipe; Tank 9S #6	12-9-21	0950	G	WP	1	Vial								X									21-BD
9	501513-9S-SM-06	MARSAME Wipe; Tank 9S #6	12-9-21	0950	G	WP	1	Vial									X								21-BD
	501513-9S-PA-06	MARSAME Paint Sample; Tank 9S #6	12-13-21	1435	C	CP	1	Bag								X	X	X	X						21-BD
10	501513-9S-SM-07	MARSAME Wipe; Tank 9S #7	12-8-21	0954	G	WP	1	Vial								X									21-BD
10	501513-9S-SM-07	MARSAME Wipe; Tank 9S #7	12-8-21	0954	G	WP	1	Vial									X								21-BD
	501513-9S-PA-07	MARSAME Paint Sample; Tank 9S #7	12-9-21	1405	C	CP	1	Bag								X	X	X	X						21-BD
11	501513-9S-SM-08	MARSAME Wipe; Tank 9S #8	12-9-21	1002	G	WP	1	Vial								X									21-BD
11	501513-9S-SM-08	MARSAME Wipe; Tank 9S #8	12-8-21	1002	G	WP	1	Vial									X								21-BD
	501513-9S-PA-08	MARSAME Paint Sample; Tank 9S #8	12-10-21	1038	C	CP	1	Bag								X	X	X	X						21-BD
12	501513-9S-SM-09	MARSAME Wipe; Tank 9S #9	12-9-21	0928	G	WP	1	Vial								X									21-BD
12	501513-9S-SM-09	MARSAME Wipe; Tank 9S #9	12-9-21	0928	G	WP	1	Vial									X								21-BD
	501513-9S-PA-09	MARSAME Paint Sample; Tank 9S #9	12-13-21	1045	C	CP	1	Bag								X	X	X	X						21-BD

Rec BB 12-16-21 @ 1400

APTIM

COC Continuation Page

COC Ref. Document # 5010513-COC-031 Page 3 of 4

Project Number: 501513 **Shipment Date:** 12/14/2021

Project Name / Location: SSSB Mobile, AL

REC'D DEC 16 2021

21-12052

	Sample ID Number	Sample Description	Collection Information: Date	Time	G/C	Matrix	# of containers	Container type	Preservative: HCL	NaOH	HNO_3	H_2SO_4	Ice		Analyses Requested: Gross Alpha / Beta	Tritium (H3)	Nickel-63 (Ni-63)	Gamma Spectroscopy	Carbon-14 (C-14)						Turn Around Time Requested
13	501513-9S-SM-10	MARSAME Wipe; Tank 9S #10	12-8-21	1351	G	WP	1	Vial								X									21-BD
13	501513-9S-SM-10	MARSAME Wipe; Tank 9S #10	12-8-21	1351	G	WP	1	Vial									X								21-BD
	501513-9S-PA-10	MARSAME Paint Sample; Tank 9S #10	12-10-21	1602	C	CP	1	Bag								X	X	X	X						21-BD
14	501513-9S-SM-11	MARSAME Wipe; Tank 9S #11	12-9-21	1053	G	WP	1	Vial								X									21-BD
14	501513-9S-SM-11	MARSAME Wipe; Tank 9S #11	12-9-21	1053	G	WP	1	Vial									X								21-BD
	501513-9S-PA-11	MARSAME Paint Sample; Tank 9S #11	12-14-21	0905	C	CP	1	Bag								X	X	X	X						21-BD
15	501513-9S-SM-12	MARSAME Wipe; Tank 9S #12	12-9-21	1101	G	WP	1	Vial								X									21-BD
15	501513-9S-SM-12	MARSAME Wipe; Tank 9S #12	12-9-21	1101	G	WP	1	Vial									X								21-BD
	501513-9S-PA-12	MARSAME Paint Sample; Tank 9S #12	12-13-21	1635	C	CP	1	Bag								X	X	X	X						21-BD
16	501513-9S-SM-13	MARSAME Wipe; Tank 9S #13	12-8-21	1031	G	WP	1	Vial								X									21-BD
16	501513-9S-SM-13	MARSAME Wipe; Tank 9S #13	12-8-21	1031	G	WP	1	Vial									X								21-BD
	501513-9S-PA-13	MARSAME Paint Sample; Tank 9S #13	12-13-21	1548	C	CP	1	Bag								X	X	X	X						21-BD
17	501513-9S-SM-14	MARSAME Wipe; Tank 9S #14	12-8-21	1025	G	WP	1	Vial								X									21-BD
17	501513-9S-SM-14	MARSAME Wipe; Tank 9S #14	12-8-21	1025	G	WP	1	Vial									X								21-BD
	501513-9S-PA-14	MARSAME Paint Sample; Tank 9S #14	12-10-21	1425	C	CP	1	Bag								X	X	X	X						21-BD
18	501513-9S-SM-15	MARSAME Wipe; Tank 9S #15	12-8-21	1337	G	WP	1	Vial								X									21-BD
18	501513-9S-SM-15	MARSAME Wipe; Tank 9S #15	12-8-21	1337	G	WP	1	Vial									X								21-BD
	501513-9S-PA-15	MARSAME Paint Sample; Tank 9S #15	12-13-21	1035	C	CP	1	Bag								X	X	X	X						21-BD

Rec BB 12-16-21 @ 1400

APTIM

COC Continuation Page

COC Ref. Document # 5010513-COC-031 Page 4 of 4

Project Number: 501513 Shipment Date: 12/14/2021

Project Name / Location: SSSB Mobile, AL

RECD DEC 16 2021

21-12052

Sample ID Number	Sample Description	Collection Information			Matrix	# of containers	Container type	Preservative						Analyses Requested									Turn Around Time Requested
		Date	Time	G/C				HCL	NaOH	HNO_3	H_2SO_4	Ice		Gross Alpha / Beta	Tritium (H3)	Nickel-63 (Ni-63)	Gamma Spectroscopy	Carbon-14 (C-14)					
19 501513-9S-SM-16	MARSAME Wipe; Tank 9S #16	12-9-21	0936	G	WP	1	Vial								X								21-BD
19 501513-9S-SM-16	MARSAME Wipe; Tank 9S #16	12-9-21	0936	G	WP	1	Vial									X							21-BD
501513-9S-PA-16	MARSAME Paint Sample; Tank 9S #16	12-13-21	1001	C	CP	1	Bag								X	X	X	X					21-BD
20 501513-9S-SM-16D	MARSAME Wipe; Tank 9S #16 Dup	12-9-21	0937	G	WP	1	Vial								X								21-BD
20 501513-9S-SM-16D	MARSAME Wipe; Tank 9S #16 Dup	12-9-21	0937	G	WP	1	Vial									X							21-BD
					W	A																	

REC'D 12-16-21 1402

Client Name	Contract/PO	Project Type	Date Received	Required Turnaround Days	Eberline Services Work Order
APTIM Federal Services LLC	208345	Environmental	12/16/2021	21	21-12052
Project Name	**Client WO**	**Sample Disp**	**Lab Deadline**	**Internal Deadline**	**Client Deadline**
501513	SSSB DECOMMISSIONING	H	01/04/2022	01/10/2022	01/11/2022

Internal ID	Client ID	Sample Date	Matrix	Storage	H0003	Ni063																						Ttl
01	LCS	12/16/21	SM	R1.3	X	X																						2
02	BLANK	12/16/21	SM	R1.3	X	X																						2
03	DUP	12/16/21	SM	R1.3	X	X																						2
04	501513-9S-SM-01	12/08/21 09:31	SM	R1.3	X	X																						2
05	501513-9S-SM-02	12/08/21 09:39	SM	R1.3	X	X																						2
06	501513-9S-SM-03	12/08/21 10:17	SM	R1.3	X	X																						2
07	501513-9S-SM-04	12/09/21 09:43	SM	R1.3	X	X																						2
08	501513-9S-SM-05	12/08/21 09:47	SM	R1.3	X	X																						2
09	501513-9S-SM-06	12/09/21 09:50	SM	R1.3	X	X																						2
10	501513-9S-SM-07	12/08/21 09:54	SM	R1.3	X	X																						2
11	501513-9S-SM-08	12/08/21 10:02	SM	R1.3	X	X																						2
12	501513-9S-SM-09	12/09/21 09:28	SM	R1.3	X	X																						2
13	501513-9S-SM-10	12/08/21 13:51	SM	R1.3	X	X																						2
14	501513-9S-SM-11	12/09/21 10:53	SM	R1.3	X	X																						2
15	501513-9S-SM-12	12/09/21 11:01	SM	R1.3	X	X																						2
16	501513-9S-SM-13	12/08/21 10:31	SM	R1.3	X	X																						2
17	501513-9S-SM-14	12/08/21 10:25	SM	R1.3	X	X																						2
18	501513-9S-SM-15	12/08/21 13:37	SM	R1.3	X	X																						2
19	501513-9S-SM-16	12/09/21 09:36	SM	R1.3	X	X																						2
20	501513-9S-SM-16D	12/09/21 09:37	SM	R1.3	X	X																						2
	Totals Per Analysis (non QA samples)				17	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

EBERLINE SERVICES

Sample Log In Report

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830

Voice: (865) 481-0683
Fax: (865) 483-4621

Invoice	
	Accounts Payable
	APTIM Federal Services LLC
	4171 Essen Lane
	Baton Rouge, LA 70809
Voice	
Fax	

Contact	
	Guy Gallello, Jr
Voice	419-348-5828
Fax	

Report Data	
	Guy Gallello, Jr
	APTIM
	16406 US Route 224 E, Annex
	Findlay, OH 45840
Voice	419-348-5828
Fax	

Printed: 12/16/2021 3:28 PM

Eberline Services – Oak Ridge Laboratory

SAMPLE RECEIPT CHECKLIST
MP-001-2

WORK ORDER # 21-12052

SAMPLE MATRIX/MATRICES: (CIRCLE ONE OR BOTH)

AQUEOUS (NON-AQUEOUS)

(CIRCLE EITHER YES, NO, OR N/A)

WERE SAMPLES:

Received in good condition?	(Y)	N	
If aqueous, properly preserved	Y	N	(N/A)

WERE CHAIN OF CUSTODY SEALS:

Present on outside of package?	(Y)	N
Unbroken on outside of package?	(Y)	N
Present on samples?	(Y)	N
Unbroken on samples?	(Y)	N
Was chain of custody present upon sample receipt?	(Y)	N

IF THE RESPONSE TO ANY OF THE ABOVE IS **NO**, A DISCREPANT SAMPLE RECEIPT REPORT (DSR) HAS BEEN ISSUED.

REMARKS: _____

SIGNATURE: Ronald R Spencer DATE: 12-16-21

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12052	H0003	1	pCi	s	APTIM Federal Services LLC

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
H-3		98.72%	6.92%	100.00%	3.60%	1.82E+02	6.54E+00	1.79E+02	1.24E+01	H-5a	4.00E+03	3.60E+00	1.01E-01

Matrix Spike

Analyte	*Normalized Difference*	*MS Actual % Rec*	*Expected MS Result*	*Expected MS Uncert*	*Actual MS Result*	*Actual MS CSU*	*Sample Result*	*Sample CSU*	*Sample Aliquot*	*Standard ID*	*Standard ACT (dpm)*	*Standard Error %*	*Standard Added (g)*

Replicate Sample

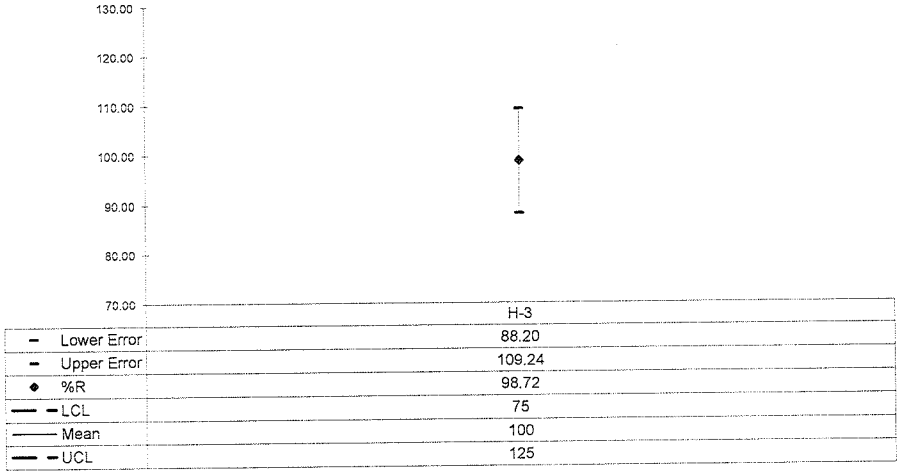
Analyte	*Normalized Difference*	*RPD*	*Original Result*	*Original CSU*	*Replicate Result*	*Replicate CSU*
H-3	0.41	328.35	-2.06E+00	8.82E+00	5.01E-01	8.66E+00

QC Summary

LCS Relative Bias	*LCS % R*		*MS % R*	*MS ND*	*Rep RPD*	*Rep ND*
0.99	OK				NA	OK

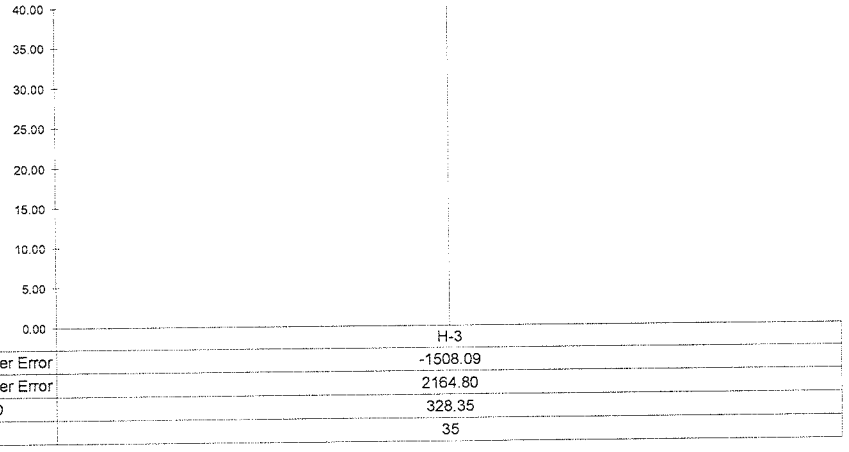
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12052	H0003	1	pCi	s	APTIM Federal Services LLC

LCS % Recovery



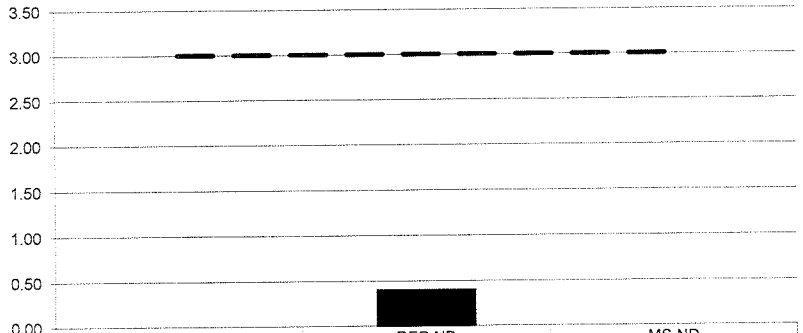
	H-3
Lower Error	88.20
Upper Error	109.24
%R	98.72
LCL	75
Mean	100
UCL	125

Replicate Sample RPD



	H-3
Lower Error	-1508.09
Upper Error	2164.80
RPD	328.35
CL	35

Normalized Difference



	LCS ND	REP ND	MS ND
H-3	0.00	0.41	0.00
UCL	3	3	3

No Matrix Spike

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12052	Ni063	1	pCi	s	APTIM Federal Services LLC

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
NI-63		100.74%	5.94%	100.00%	3.00%	1.45E+03	4.35E+01	1.46E+03	8.67E+01	Ni-3	2.11E+04	3.00E+00	1.53E-01

Matrix Spike

Analyte	*Normalized Difference*	*MS Actual % Rec*	*Expected MS Result*	*Expected MS Uncert*	*Actual MS Result*	*Actual MS CSU*	*Sample Result*	*Sample CSU*	*Sample Aliquot*	*Standard ID*	*Standard ACT (dpm)*	*Standard Error %*	*Standard Added (g)*

Replicate Sample

Analyte	*Normalized Difference*	*RPD*	*Original Result*	*Original CSU*	*Replicate Result*	*Replicate CSU*
NI-63	0.02	2.67	1.45E+00	3.50E+00	1.41E+00	3.41E+00

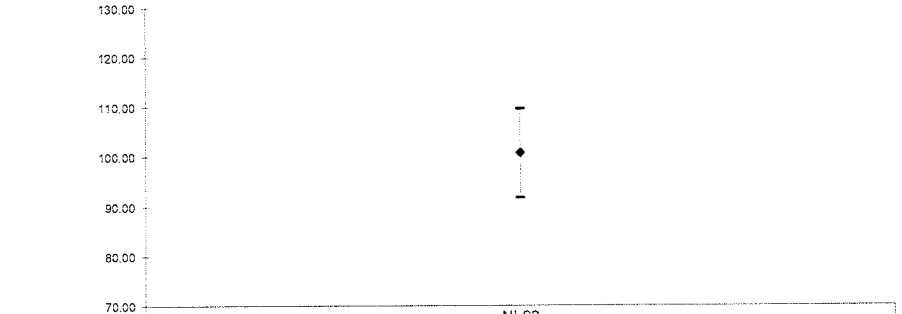
QC Summary

LCS Relative Bias	*LCS % R*		*MS % R*	*MS ND*	*Rep RPD*	*Rep ND*
1.01	OK				NA	OK

Version

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12052	Ni063	1	pCi	s	APTIM Federal Services LLC

LCS % Recovery

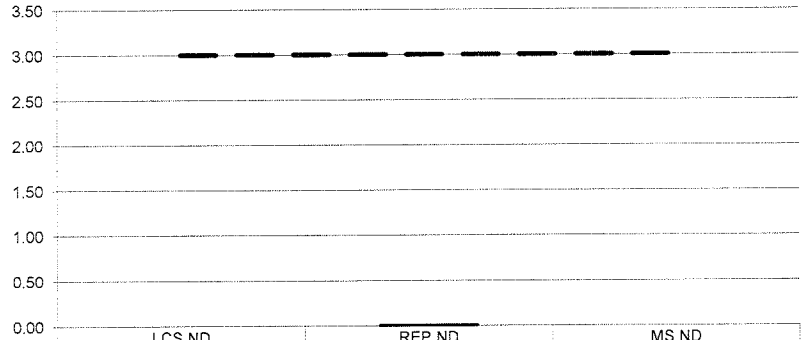


	Ni-63
Lower Error	91.80
Upper Error	109.68
%R	100.74
LCL	75
Mean	100
UCL	125

Replicate Sample RPD

	Ni-63
Lower Error	5.91
Upper Error	-0.56
RPD	2.67
CL	35

Normalized Difference



	LCS ND	REP ND	MS ND
Ni-63	0.00	0.02	0.00
UCL	3	3	3

No Matrix Spike

Version

ATTACHMENT 8

PAINT SAMPLE RESULTS SUMMARY

		Cobalt-60 Co-60			Nickel-63 Ni-63			Tritium H-3			Carbon-14 C-14			
Systematic	Loc	Result pCi/g	2s Error pCi/g	MDA pCi/g	Result pCi/g	2s Error pCi/g	MDA pCi/g	Result pCi/g	2s Error pCi/g	MDA pCi/g	Result pCi/g	2s Error pCi/g	MDA pCi/g	Report
501513-9S-PA-01	1	*0.08*	0.16	0.29	*-3.44*	1.89	3.44	*22.89*	30.15	50.88	*-6.69*	6.29	11.15	EB-21-12053
501513-9S-PA-02	2	*-0.08*	0.16	0.24	*-10.95*	2.93	5.62	*14.49*	30.68	52.35	*-4.73*	5.66	9.97	EB-21-12053
501513-9S-PA-03	3	*0.02*	0.09	0.16	*-7.40*	2.37	4.46	*14.55*	30.81	52.57	*-2.72*	6.25	10.88	EB-21-12053
501513-9S-PA-04	4	*0.07*	0.07	0.11	*-8.18*	2.81	5.27	*36.44*	30.23	50.15	*-2.84*	6.52	11.36	EB-21-12053
501513-9S-PA-05	5	*-0.04*	0.11	0.16	*-3.78*	2.21	4.00	*10.39*	29.20	50.06	*-4.95*	6.25	10.99	EB-21-12053
501513-9S-PA-06	6	*0.00*	0.06	0.10	*-5.05*	2.27	4.17	*21.12*	30.08	50.87	*-12.54*	6.12	11.15	EB-21-12053
501513-9S-PA-07	7	*0.01*	0.10	0.17	*-7.59*	2.66	4.97	*-12.12*	28.33	50.05	*-2.51*	6.42	11.17	EB-21-12053
501513-9S-PA-08	8	*0.05*	0.17	0.31	*-1.98*	1.93	3.42	*14.11*	29.87	50.96	*-4.32*	6.15	10.79	EB-21-12053
501513-9S-PA-09	9	*-0.02*	0.12	0.20	*-1.68*	1.71	3.03	*7.25*	30.44	52.42	*-6.96*	6.03	10.71	EB-21-12053
501513-9S-PA-10	10	*0.00*	0.16	0.25	*-1.13*	1.74	3.06	*15.40*	29.04	49.45	*-5.82*	5.99	10.59	EB-21-12053
501513-9S-PA-11	11	*-0.01*	0.20	0.34	*-1.54*	1.75	3.09	*11.45*	27.63	47.26	*-4.81*	6.08	10.69	EB-21-12053
501513-9S-PA-12	12	*0.04*	0.12	0.21	*-3.55*	1.96	3.55	*27.81*	31.89	53.59	*-5.50*	5.93	10.47	EB-21-12053
501513-9S-PA-13	13	*0.17*	0.15	0.32	*-1.54*	1.74	3.07	*20.46*	31.72	53.76	*-7.23*	6.26	11.12	EB-21-12053
501513-9S-PA-14	14	*-0.01*	0.07	0.28	*-5.73*	2.36	4.36	*15.10*	31.96	54.54	*-7.76*	6.00	10.70	EB-21-12053
501513-9S-PA-15	15	*-0.03*	0.15	0.21	*-4.57*	2.10	3.86	*4.80*	26.81	46.27	*-6.05*	5.94	10.52	EB-21-12053
501513-9S-PA-16	16	*0.06*	0.16	0.31	*-5.17*	2.27	4.18	*5.30*	29.56	51.02	*-5.56*	6.30	11.11	EB-21-12053
Average		*0.02*		0.23	*-4.58*		3.97	*14.34*		51.01	*-5.69*		10.83	
Std Dev		0.06			2.84			10.88			2.42			
Min		*-0.08*		0.10	*-10.95*		3.03	*-12.12*		46.27	*-12.54*		9.97	
Max		*0.17*		0.34	*-1.13*		5.62	*36.44*		54.54	*-2.51*		11.36	
QC Data														
501513-9S-PA-01	L-DUP	*0.00*	0.20	0.33	*-3.58*	2.03	3.68	*21.42*	30.50	51.59	*-4.56*	5.77	10.14	EB-21-12053

Italics Less than MDA/MDC
Bold Greater than or Equal to MDA/MDC

ATTACHMENT 9

LABORATORY ANALYTICAL REPORT – PAINT SAMPLES

APTIM FEDERAL SERVICES LLC

PO: 208345
Project: 501513 SSSB Decommissioning

LEVEL II
REPORT OF ANALYSIS

WORK ORDER #21-12053-OR

January 12, 2022

EBERLINE ANALYTICAL/OAK RIDGE LABORATORY
OAK RIDGE, TN

EBERLINE ANALYTICAL

EBERLINE ANALYTICAL CORPORATION
601 SCARBORO ROAD
OAK RIDGE, TENNESSEE 37830
PHONE (865) 481-0683
FAX (865) 483-4621

EBS-OR-49241

January 12, 2022

Guy Gallello, Jr.
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

CASE NARRATIVE
Work Order # 21-12053-OR

SAMPLE RECEIPT

This work order contains sixteen solid samples received 12/16/2021. Samples were analyzed for Tritium, Carbon-14, Nickel-63, and by Gamma Spectroscopy.

CLIENT ID	LAB ID	CLIENT ID	LAB ID
501513-9S-PA-01	21-12053-04	501513-9S-PA-09	21-12053-12
501513-9S-PA-02	21-12053-05	501513-9S-PA-10	21-12053-13
501513-9S-PA-03	21-12053-06	501513-9S-PA-11	21-12053-14
501513-9S-PA-04	21-12053-07	501513-9S-PA-12	21-12053-15
501513-9S-PA-05	21-12053-08	501513-9S-PA-13	21-12053-16
501513-9S-PA-06	21-12053-09	501513-9S-PA-14	21-12053-17
501513-9S-PA-07	21-12053-10	501513-9S-PA-15	21-12053-18
501513-9S-PA-08	21-12053-11	501513-9S-PA-16	21-12053-19

ANALYTICAL METHODS

Tritium was performed using Method LANL ER-210 Modified. Carbon-14 was performed using EPA Method 520.0 Modified. Nickel-63 was performed using Method ASTM 3500-Ni Modified. Gamma Spectroscopy was performed using EPA Method 901.1 Modified.

ANALYTICAL RESULTS

Combined Standard Uncertainty is reported at 1-sigma value.

Minimum Detectable Activity (MDA) values for data represented in this report are sample-specific. MDA measurements are determined based on factors and conditions including instrument settings, aliquot size, and matrix type.

TRITIUM

A representative aliquot of each sample was equilibrated with Tritium free water. Aliquots were taken from equilibrates and transferred to liquid scintillation vials. Cocktail was added. Samples were counted by beta liquid scintillation.

ANALYTICAL RESULTS CONTINUED

TRITIUM CONTINUED

Samples demonstrated acceptable results for all Tritium analyses. The Tritium method blank demonstrated an acceptable result. Results for the Tritium duplicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Tritium laboratory control sample demonstrated an acceptable percent recovery.

CARBON-14

A representative aliquot of each sample was placed into a 1-liter reaction vessel. A carbonate solution was added. Samples were oxidized using Potassium Permanganate. Carbon Dioxide was evolved, and Carbon-14 was captured into Harvey brand, Carb-Sorb cocktail. Carbon-14 beta emissions were determined by beta liquid scintillation using an energy selective region.

Samples demonstrated acceptable results for all Carbon-14 analyses. The Carbon-14 method blank demonstrated an acceptable result. Results for the Carbon-14 duplicate demonstrated a slightly high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Carbon-14 laboratory control sample demonstrated an acceptable percent recovery.

NICKEL-63

A representative aliquot of each sample was leached in 1.0 molar Nitric acid. Samples were placed into scintillation vials, diluted, and acid was neutralized with Sodium Hydroxide. Scintillation cocktail was added, and Nickel-63 activity was determined by energy window specific beta liquid scintillation.

Samples demonstrated acceptable results for all Nickel-63 analyses. The Nickel-63 method blank demonstrated an acceptable result. Results for the Nickel-63 duplicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Nickel-63 laboratory control sample demonstrated an acceptable percent recovery.

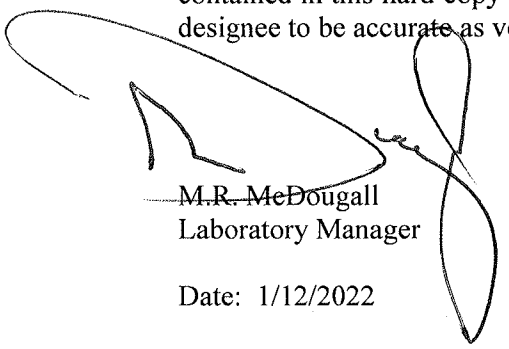
GAMMA SPECTROSCOPY

Samples for Gamma Spectroscopy analysis were prepared by transferring a known mass/aliquot of each pulverized and homogenized sample to a standard geometry container. Samples were counted on a High Purity Germanium (HPGe) gamma ray detector.

Samples demonstrated acceptable results for all gamma-emitting radionuclides as reported. The method blank demonstrated acceptable results for all radionuclides as reported. Results for the Bismuth-214 and Lead-214 replicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Potassium-40 replicate demonstrated an acceptable relative percent difference and normalized difference. Results for the Cobalt-60 and Cesium-137 laboratory control sample demonstrated an acceptable percent recovery.

CERTIFICATION OF ACCURACY

I certify that this data report complies with the terms and conditions of the Purchase Order, 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 cognizant project manager or his/her designee to be accurate as verified by the following signature.



M.R. McDougall
Laboratory Manager

Date: 1/12/2022

Eberline Analytical wants and encourages your feedback regarding our performance providing radioanalytical services. Please visit http://eberlineanalytical.com/ to provide us with feedback on our services.

Eberline Analytical
Final Report of Analysis

Report To:
Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:
SDG: 21-12053
Purchase Order: 208345
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12053-01	LCS	KNOWN	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Cobalt-60	EPA 901.1 Modified	2.66E+02	1.04E+01			pCi/g
21-12053-01	LCS	KNOWN	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Cesium-137	EPA 901.1 Modified	1.62E+02	6.66E+00			pCi/g
21-12053-01	LCS	SPIKE	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Cobalt-60	EPA 901.1 Modified	2.80E+02	1.59E+01	2.14E+01	2.44E+00	pCi/g
21-12053-01	LCS	SPIKE	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Cesium-137	EPA 901.1 Modified	1.81E+02	1.77E+01	1.99E+01	2.11E+00	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Actinium-228	EPA 901.1 Modified	7.86E-02	6.20E-02	6.21E-02	1.62E-01	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Silver-110m	EPA 901.1 Modified	-2.79E-02	3.21E-02	3.21E-02	4.20E-02	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Americium-241	EPA 901.1 Modified	3.00E-03	4.41E-02	4.41E-02	5.91E-02	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Bismuth-214	EPA 901.1 Modified	1.88E-02	4.87E-02	4.88E-02	8.37E-02	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Cobalt-58	EPA 901.1 Modified	-2.00E-03	2.14E-02	2.14E-02	3.48E-02	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Cobalt-60	EPA 901.1 Modified	2.75E-02	2.62E-02	2.63E-02	4.09E-02	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Cesium-134	EPA 901.1 Modified	-2.43E-02	2.79E-02	2.79E-02	3.49E-02	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Cesium-137	EPA 901.1 Modified	-3.28E-03	3.63E-02	3.63E-02	5.22E-02	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Europium-152	EPA 901.1 Modified	-1.34E-02	9.75E-02	9.75E-02	9.43E-02	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Europium-154	EPA 901.1 Modified	-1.50E-02	8.52E-02	8.52E-02	5.00E-02	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Europium-155	EPA 901.1 Modified	2.86E-02	5.29E-02	5.29E-02	7.46E-02	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Potassium-40	EPA 901.1 Modified	1.44E-01	1.99E-01	1.99E-01	4.40E-01	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Manganese-54	EPA 901.1 Modified	-1.24E-03	2.21E-02	2.21E-02	3.54E-02	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Niobium-94	EPA 901.1 Modified	8.90E-03	2.36E-02	2.36E-02	3.78E-02	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Lead-210	EPA 901.1 Modified	3.33E-01	4.79E-01	4.79E-01	7.10E-01	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Lead-212	EPA 901.1 Modified	5.32E-03	4.79E-02	4.79E-02	6.41E-02	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Lead-214	EPA 901.1 Modified	3.05E-02	4.99E-02	5.00E-02	7.89E-02	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Radium-226	EPA 901.1 Modified	1.88E-02	4.87E-02	4.88E-02	8.37E-02	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Radium-228	EPA 901.1 Modified	7.86E-02	6.20E-02	6.21E-02	1.62E-01	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Antimony-125	EPA 901.1 Modified	-4.41E-03	5.23E-02	5.23E-02	8.49E-02	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Thorium-234	EPA 901.1 Modified	2.03E-02	4.79E-01	4.79E-01	6.28E-01	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Thallium-208	EPA 901.1 Modified	5.41E-02	6.21E-02	6.22E-02	1.19E-01	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Uranium-235	EPA 901.1 Modified	1.11E-01	1.33E-01	1.33E-01	2.04E-01	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/17/2021	21-12053	Zinc-65	EPA 901.1 Modified	4.92E-03	3.56E-02	3.56E-02	8.58E-02	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:
SDG: 21-12053
Purchase Order: 208345
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Actinium-228	EPA 901.1 Modified	2.42E-01	6.19E-01	6.19E-01	1.08E+00	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Silver-110m	EPA 901.1 Modified	-9.03E-02	1.53E-01	1.53E-01	2.21E-01	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Americium-241	EPA 901.1 Modified	1.30E-01	2.21E-01	2.21E-01	3.26E-01	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Bismuth-214	EPA 901.1 Modified	3.12E-01	3.93E-01	3.93E-01	6.67E-01	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Cobalt-58	EPA 901.1 Modified	2.36E-02	1.06E-01	1.06E-01	2.42E-01	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Cobalt-60	EPA 901.1 Modified	-3.09E-03	2.04E-01	2.04E-01	3.29E-01	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Cesium-134	EPA 901.1 Modified	6.96E-02	1.83E-01	1.83E-01	3.01E-01	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Cesium-137	EPA 901.1 Modified	1.28E-01	1.45E-01	1.45E-01	2.73E-01	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Europium-152	EPA 901.1 Modified	2.42E-01	3.57E-01	3.57E-01	5.76E-01	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Europium-154	EPA 901.1 Modified	-1.36E-01	5.27E-01	5.27E-01	2.89E-01	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Europium-155	EPA 901.1 Modified	-7.55E-02	2.75E-01	2.75E-01	3.87E-01	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Potassium-40	EPA 901.1 Modified	3.97E+00	2.19E+00	2.20E+00	2.84E+00	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Manganese-54	EPA 901.1 Modified	-2.09E-02	6.63E-02	6.63E-02	2.57E-01	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Niobium-94	EPA 901.1 Modified	-1.23E-01	1.59E-01	1.60E-01	2.17E-01	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Lead-210	EPA 901.1 Modified	2.22E+00	2.75E+00	2.76E+00	4.07E+00	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Lead-212	EPA 901.1 Modified	3.27E-01	2.52E-01	2.52E-01	4.04E-01	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Lead-214	EPA 901.1 Modified	6.77E-01	3.38E-01	3.40E-01	5.54E-01	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Radium-226	EPA 901.1 Modified	3.12E-01	3.93E-01	3.93E-01	6.67E-01	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Radium-228	EPA 901.1 Modified	2.42E-01	6.19E-01	6.19E-01	1.08E+00	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Antimony-125	EPA 901.1 Modified	1.05E-01	3.88E-01	3.88E-01	6.36E-01	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Thorium-234	EPA 901.1 Modified	4.90E-01	2.07E+00	2.07E+00	2.98E+00	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Thallium-208	EPA 901.1 Modified	5.51E-01	4.89E-01	4.90E-01	8.89E-01	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Uranium-235	EPA 901.1 Modified	7.45E-02	6.94E-01	6.94E-01	1.06E+00	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Zinc-65	EPA 901.1 Modified	-3.35E-02	2.17E-01	2.17E-01	6.77E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:

Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:

SDG:	21-12053
Purchase Order:	208345
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Actinium-228	EPA 901.1 Modified	-4.08E-02	3.02E-01	3.02E-01	1.02E+00	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Silver-110m	EPA 901.1 Modified	7.58E-02	1.51E-01	1.51E-01	2.63E-01	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Americium-241	EPA 901.1 Modified	4.04E-02	2.23E-01	2.23E-01	3.24E-01	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Bismuth-214	EPA 901.1 Modified	4.81E-01	3.34E-01	3.35E-01	6.25E-01	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Cobalt-58	EPA 901.1 Modified	2.28E-02	1.67E-01	1.67E-01	2.80E-01	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Cobalt-60	EPA 901.1 Modified	8.05E-02	1.62E-01	1.62E-01	2.94E-01	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Cesium-134	EPA 901.1 Modified	6.68E-02	1.77E-01	1.78E-01	2.92E-01	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Cesium-137	EPA 901.1 Modified	-2.17E-02	1.69E-01	1.69E-01	2.65E-01	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Europium-152	EPA 901.1 Modified	-1.53E-01	4.79E-01	4.79E-01	5.62E-01	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Europium-154	EPA 901.1 Modified	-1.52E-01	3.59E-01	3.59E-01	2.78E-01	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Europium-155	EPA 901.1 Modified	-2.19E-01	2.74E-01	2.75E-01	3.71E-01	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Potassium-40	EPA 901.1 Modified	4.99E+00	2.66E+00	2.67E+00	3.62E+00	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Manganese-54	EPA 901.1 Modified	2.41E-02	1.36E-01	1.36E-01	2.35E-01	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Niobium-94	EPA 901.1 Modified	4.97E-02	1.38E-01	1.38E-01	2.48E-01	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Lead-210	EPA 901.1 Modified	1.61E+00	2.71E+00	2.71E+00	4.00E+00	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Lead-212	EPA 901.1 Modified	6.32E-01	3.74E-01	3.75E-01	5.97E-01	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Lead-214	EPA 901.1 Modified	7.63E-02	1.07E-01	1.07E-01	5.43E-01	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Radium-226	EPA 901.1 Modified	4.81E-01	3.34E-01	3.35E-01	6.25E-01	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Radium-228	EPA 901.1 Modified	-4.08E-02	3.02E-01	3.02E-01	1.02E+00	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Antimony-125	EPA 901.1 Modified	-3.57E-01	4.46E-01	4.46E-01	6.30E-01	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Thorium-234	EPA 901.1 Modified	6.32E-01	2.02E+00	2.02E+00	2.95E+00	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Thallium-208	EPA 901.1 Modified	1.15E-01	4.99E-01	4.99E-01	8.19E-01	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Uranium-235	EPA 901.1 Modified	2.33E-01	6.77E-01	6.78E-01	1.06E+00	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/17/2021	21-12053	Zinc-65	EPA 901.1 Modified	-4.87E-02	4.52E-01	4.52E-01	7.05E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:	
Guy Gallello, Jr	
APTIM	
16406 US Route 224 E, Annex	
Findlay, OH 45840	

Work Order Details:	
SDG:	21-12053
Purchase Order:	208345
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Actinium-228	EPA 901.1 Modified	3.26E-01	5.43E-01	5.43E-01	1.03E+00	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Silver-110m	EPA 901.1 Modified	1.83E-01	1.34E-01	1.34E-01	2.78E-01	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Americium-241	EPA 901.1 Modified	-1.85E-01	2.16E-01	2.16E-01	2.72E-01	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Bismuth-214	EPA 901.1 Modified	3.34E-01	2.78E-01	2.78E-01	4.35E-01	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Cobalt-58	EPA 901.1 Modified	-1.07E-01	1.68E-01	1.68E-01	2.30E-01	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Cobalt-60	EPA 901.1 Modified	-8.11E-02	1.63E-01	1.63E-01	2.44E-01	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Cesium-134	EPA 901.1 Modified	-1.40E-02	7.76E-02	7.76E-02	2.20E-01	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Cesium-137	EPA 901.1 Modified	3.26E-02	1.66E-01	1.66E-01	2.81E-01	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Europium-152	EPA 901.1 Modified	-1.88E-01	3.70E-01	3.70E-01	4.26E-01	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Europium-154	EPA 901.1 Modified	2.56E-01	4.13E-01	4.13E-01	2.22E-01	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Europium-155	EPA 901.1 Modified	-1.23E-01	2.03E-01	2.03E-01	3.00E-01	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Potassium-40	EPA 901.1 Modified	4.18E+00	2.13E+00	2.14E+00	2.53E+00	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Manganese-54	EPA 901.1 Modified	4.93E-02	1.61E-01	1.61E-01	2.85E-01	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Niobium-94	EPA 901.1 Modified	-2.22E-02	1.67E-01	1.67E-01	2.40E-01	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Lead-210	EPA 901.1 Modified	2.32E+00	1.73E+00	1.73E+00	2.71E+00	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Lead-212	EPA 901.1 Modified	3.87E-01	2.97E-01	2.97E-01	4.84E-01	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Lead-214	EPA 901.1 Modified	2.98E-01	3.64E-01	3.64E-01	6.09E-01	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Radium-226	EPA 901.1 Modified	3.34E-01	2.78E-01	2.78E-01	4.35E-01	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Radium-228	EPA 901.1 Modified	3.26E-01	5.43E-01	5.43E-01	1.03E+00	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Antimony-125	EPA 901.1 Modified	1.30E-01	3.39E-01	3.39E-01	5.93E-01	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Thorium-234	EPA 901.1 Modified	1.80E+00	1.80E+00	1.81E+00	2.72E+00	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Thallium-208	EPA 901.1 Modified	3.12E-01	4.43E-01	4.43E-01	2.64E-01	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Uranium-235	EPA 901.1 Modified	-1.25E-01	3.95E-01	3.96E-01	9.66E-01	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/17/2021	21-12053	Zinc-65	EPA 901.1 Modified	1.31E-01	3.15E-01	3.15E-01	5.84E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:
SDG: 21-12053
Purchase Order: 208345
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Actinium-228	EPA 901.1 Modified	3.98E-02	3.75E-01	3.75E-01	6.42E-01	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Silver-110m	EPA 901.1 Modified	-5.75E-03	4.66E-02	4.66E-02	1.52E-01	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Americium-241	EPA 901.1 Modified	-2.18E-01	1.99E-01	2.00E-01	2.55E-01	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Bismuth-214	EPA 901.1 Modified	6.53E-02	2.34E-01	2.34E-01	3.51E-01	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Cobalt-58	EPA 901.1 Modified	-8.38E-02	9.23E-02	9.24E-02	1.38E-01	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Cobalt-60	EPA 901.1 Modified	1.66E-02	9.10E-02	9.10E-02	1.63E-01	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Cesium-134	EPA 901.1 Modified	-2.76E-02	1.23E-01	1.23E-01	1.68E-01	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Cesium-137	EPA 901.1 Modified	-4.70E-02	1.03E-01	1.03E-01	1.42E-01	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Europium-152	EPA 901.1 Modified	-1.03E-01	3.30E-01	3.30E-01	3.68E-01	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Europium-154	EPA 901.1 Modified	8.72E-02	2.89E-01	2.89E-01	1.86E-01	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Europium-155	EPA 901.1 Modified	3.16E-02	2.11E-01	2.11E-01	3.08E-01	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Potassium-40	EPA 901.1 Modified	4.62E+00	1.54E+00	1.56E+00	1.45E+00	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Manganese-54	EPA 901.1 Modified	2.57E-02	5.52E-02	5.52E-02	1.36E-01	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Niobium-94	EPA 901.1 Modified	8.19E-03	9.50E-02	9.50E-02	1.57E-01	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Lead-210	EPA 901.1 Modified	1.15E+00	1.39E+00	1.39E+00	2.23E+00	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Lead-212	EPA 901.1 Modified	1.52E-01	1.87E-01	1.87E-01	3.13E-01	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Lead-214	EPA 901.1 Modified	2.52E-01	2.08E-01	2.08E-01	5.00E-01	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Radium-226	EPA 901.1 Modified	6.53E-02	2.34E-01	2.34E-01	3.51E-01	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Radium-228	EPA 901.1 Modified	3.98E-02	3.75E-01	3.75E-01	6.42E-01	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Antimony-125	EPA 901.1 Modified	-6.57E-02	3.22E-01	3.22E-01	4.29E-01	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Thorium-234	EPA 901.1 Modified	3.71E+00	1.64E+00	1.65E+00	2.79E+00	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Thallium-208	EPA 901.1 Modified	1.68E-01	3.40E-01	3.40E-01	5.28E-01	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Uranium-235	EPA 901.1 Modified	1.51E-01	5.40E-01	5.40E-01	8.31E-01	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/17/2021	21-12053	Zinc-65	EPA 901.1 Modified	9.06E-02	2.09E-01	2.09E-01	3.84E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:
SDG: 21-12053
Purchase Order: 208345
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Actinium-228	EPA 901.1 Modified	2.28E-01	2.70E-01	2.70E-01	4.96E-01	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Silver-110m	EPA 901.1 Modified	-4.77E-02	9.41E-02	9.41E-02	1.08E-01	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Americium-241	EPA 901.1 Modified	2.18E-02	1.33E-01	1.33E-01	1.79E-01	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Bismuth-214	EPA 901.1 Modified	2.13E-01	1.67E-01	1.67E-01	3.05E-01	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Cobalt-58	EPA 901.1 Modified	8.46E-03	4.93E-02	4.93E-02	1.14E-01	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Cobalt-60	EPA 901.1 Modified	7.49E-02	7.41E-02	7.42E-02	1.07E-01	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Cesium-134	EPA 901.1 Modified	2.99E-02	4.82E-02	4.82E-02	1.14E-01	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Cesium-137	EPA 901.1 Modified	1.83E-02	7.91E-02	7.91E-02	1.30E-01	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Europium-152	EPA 901.1 Modified	5.08E-02	3.09E-01	3.09E-01	2.68E-01	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Europium-154	EPA 901.1 Modified	1.46E-01	1.81E-01	1.81E-01	1.38E-01	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Europium-155	EPA 901.1 Modified	1.16E-01	1.34E-01	1.34E-01	2.00E-01	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Potassium-40	EPA 901.1 Modified	4.20E+00	1.30E+00	1.32E+00	1.18E+00	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Manganese-54	EPA 901.1 Modified	-3.22E-03	8.10E-02	8.10E-02	1.21E-01	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Niobium-94	EPA 901.1 Modified	7.93E-03	6.31E-02	6.31E-02	1.06E-01	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Lead-210	EPA 901.1 Modified	1.33E+00	1.29E+00	1.29E+00	1.97E+00	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Lead-212	EPA 901.1 Modified	1.84E-01	1.49E-01	1.50E-01	2.47E-01	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Lead-214	EPA 901.1 Modified	1.57E-01	1.67E-01	1.67E-01	2.77E-01	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Radium-226	EPA 901.1 Modified	2.13E-01	1.67E-01	1.67E-01	3.05E-01	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Radium-228	EPA 901.1 Modified	2.28E-01	2.70E-01	2.70E-01	4.96E-01	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Antimony-125	EPA 901.1 Modified	6.40E-02	1.53E-01	1.53E-01	2.83E-01	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Thorium-234	EPA 901.1 Modified	1.53E+00	1.36E+00	1.36E+00	2.00E+00	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Thallium-208	EPA 901.1 Modified	3.58E-01	2.37E-01	2.38E-01	4.50E-01	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Uranium-235	EPA 901.1 Modified	3.62E-02	4.28E-01	4.28E-01	5.80E-01	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/17/2021	21-12053	Zinc-65	EPA 901.1 Modified	-1.56E-01	1.77E-01	1.77E-01	2.17E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:
SDG: 21-12053
Purchase Order: 208345
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Actinium-228	EPA 901.1 Modified	-3.79E-02	3.89E-01	3.89E-01	6.41E-01	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Silver-110m	EPA 901.1 Modified	-1.83E-02	9.98E-02	9.98E-02	1.60E-01	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Americium-241	EPA 901.1 Modified	-1.70E-02	1.43E-01	1.43E-01	1.92E-01	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Bismuth-214	EPA 901.1 Modified	1.24E-01	2.06E-01	2.06E-01	3.69E-01	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Cobalt-58	EPA 901.1 Modified	1.47E-02	8.55E-02	8.55E-02	1.47E-01	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Cobalt-60	EPA 901.1 Modified	-4.14E-02	1.07E-01	1.07E-01	1.64E-01	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Cesium-134	EPA 901.1 Modified	-9.35E-02	1.10E-01	1.10E-01	1.50E-01	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Cesium-137	EPA 901.1 Modified	3.36E-02	1.03E-01	1.03E-01	1.79E-01	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Europium-152	EPA 901.1 Modified	-3.31E-01	3.77E-01	3.77E-01	2.75E-01	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Europium-154	EPA 901.1 Modified	2.68E-01	3.57E-01	3.57E-01	1.38E-01	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Europium-155	EPA 901.1 Modified	-4.76E-02	1.64E-01	1.64E-01	2.12E-01	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Potassium-40	EPA 901.1 Modified	4.83E+00	1.69E+00	1.71E+00	1.52E+00	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Manganese-54	EPA 901.1 Modified	9.83E-02	1.16E-01	1.16E-01	1.93E-01	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Niobium-94	EPA 901.1 Modified	-3.25E-02	9.57E-02	9.57E-02	1.29E-01	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Lead-210	EPA 901.1 Modified	6.41E-01	1.21E+00	1.21E+00	1.75E+00	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Lead-212	EPA 901.1 Modified	2.33E-01	1.89E-01	1.89E-01	3.09E-01	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Lead-214	EPA 901.1 Modified	2.54E-01	1.67E-01	1.68E-01	3.18E-01	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Radium-226	EPA 901.1 Modified	1.24E-01	2.06E-01	2.06E-01	3.69E-01	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Radium-228	EPA 901.1 Modified	-3.79E-02	3.89E-01	3.89E-01	6.41E-01	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Antimony-125	EPA 901.1 Modified	-2.03E-02	2.25E-01	2.25E-01	3.63E-01	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Thorium-234	EPA 901.1 Modified	2.17E+00	1.21E+00	1.21E+00	1.91E+00	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Thallium-208	EPA 901.1 Modified	4.05E-01	3.12E-01	3.13E-01	4.88E-01	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Uranium-235	EPA 901.1 Modified	-5.14E-01	4.11E-01	4.11E-01	5.72E-01	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/17/2021	21-12053	Zinc-65	EPA 901.1 Modified	3.24E-02	2.04E-01	2.04E-01	3.73E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:	Work Order Details:	
Guy Gallello, Jr	SDG:	21-12053
APTIM	Purchase Order:	208345
16406 US Route 224 E, Annex	Analysis Category:	ENVIRONMENTAL
Findlay, OH 45840	Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Actinium-228	EPA 901.1 Modified	2.22E-01	1.73E-01	1.74E-01	3.28E-01	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Silver-110m	EPA 901.1 Modified	-2.32E-02	7.90E-02	7.90E-02	1.07E-01	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Americium-241	EPA 901.1 Modified	-1.60E-01	1.27E-01	1.28E-01	1.60E-01	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Bismuth-214	EPA 901.1 Modified	1.97E-01	2.28E-01	2.28E-01	3.81E-01	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Cobalt-58	EPA 901.1 Modified	-5.79E-02	6.18E-02	6.18E-02	8.06E-02	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Cobalt-60	EPA 901.1 Modified	-6.04E-04	6.14E-02	6.14E-02	1.02E-01	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Cesium-134	EPA 901.1 Modified	4.31E-03	2.20E-02	2.20E-02	1.10E-01	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Cesium-137	EPA 901.1 Modified	-6.09E-03	8.56E-02	8.56E-02	1.20E-01	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Europium-152	EPA 901.1 Modified	1.84E-02	1.86E-01	1.86E-01	2.58E-01	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Europium-154	EPA 901.1 Modified	3.83E-02	1.51E-01	1.51E-01	1.31E-01	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Europium-155	EPA 901.1 Modified	-1.89E-01	1.41E-01	1.42E-01	1.81E-01	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Potassium-40	EPA 901.1 Modified	4.27E+00	1.25E+00	1.27E+00	1.30E+00	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Manganese-54	EPA 901.1 Modified	1.35E-02	6.65E-02	6.65E-02	1.14E-01	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Niobium-94	EPA 901.1 Modified	-9.12E-03	5.57E-02	5.57E-02	8.97E-02	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Lead-210	EPA 901.1 Modified	7.46E-01	8.32E-01	8.33E-01	1.34E+00	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Lead-212	EPA 901.1 Modified	2.33E-01	1.68E-01	1.68E-01	2.74E-01	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Lead-214	EPA 901.1 Modified	1.82E-01	1.92E-01	1.92E-01	3.19E-01	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Radium-226	EPA 901.1 Modified	1.97E-01	2.28E-01	2.28E-01	3.81E-01	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Radium-228	EPA 901.1 Modified	2.22E-01	1.73E-01	1.74E-01	3.28E-01	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Antimony-125	EPA 901.1 Modified	-8.84E-02	1.88E-01	1.88E-01	2.41E-01	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Thorium-234	EPA 901.1 Modified	1.81E+00	1.07E+00	1.07E+00	1.75E+00	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Thallium-208	EPA 901.1 Modified	1.75E-01	1.96E-01	1.96E-01	3.28E-01	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Uranium-235	EPA 901.1 Modified	7.13E-02	3.21E-01	3.21E-01	4.90E-01	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/17/2021	21-12053	Zinc-65	EPA 901.1 Modified	9.51E-03	7.41E-02	7.41E-02	2.38E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:
SDG: 21-12053
Purchase Order: 208345
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Actinium-228	EPA 901.1 Modified	-1.28E-01	3.01E-01	3.01E-01	5.50E-01	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Silver-110m	EPA 901.1 Modified	-1.76E-02	8.22E-02	8.22E-02	1.28E-01	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Americium-241	EPA 901.1 Modified	5.59E-02	1.20E-01	1.20E-01	1.77E-01	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Bismuth-214	EPA 901.1 Modified	1.24E-01	1.78E-01	1.78E-01	3.10E-01	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Cobalt-58	EPA 901.1 Modified	-3.47E-02	1.01E-01	1.01E-01	1.49E-01	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Cobalt-60	EPA 901.1 Modified	1.15E-02	9.87E-02	9.87E-02	1.70E-01	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Cesium-134	EPA 901.1 Modified	5.40E-02	8.30E-02	8.30E-02	1.44E-01	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Cesium-137	EPA 901.1 Modified	4.27E-02	8.31E-02	8.32E-02	1.47E-01	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Europium-152	EPA 901.1 Modified	6.49E-02	1.59E-01	1.59E-01	2.99E-01	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Europium-154	EPA 901.1 Modified	-1.84E-02	2.42E-01	2.42E-01	1.52E-01	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Europium-155	EPA 901.1 Modified	-2.41E-02	1.47E-01	1.47E-01	2.09E-01	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Potassium-40	EPA 901.1 Modified	4.28E+00	1.51E+00	1.53E+00	1.53E+00	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Manganese-54	EPA 901.1 Modified	3.20E-02	8.77E-02	8.78E-02	1.52E-01	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Niobium-94	EPA 901.1 Modified	-5.08E-02	8.15E-02	8.16E-02	1.17E-01	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Lead-210	EPA 901.1 Modified	6.78E-01	1.51E+00	1.51E+00	2.21E+00	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Lead-212	EPA 901.1 Modified	1.89E-01	2.11E-01	2.11E-01	3.50E-01	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Lead-214	EPA 901.1 Modified	3.43E-01	1.98E-01	1.98E-01	3.58E-01	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Radium-226	EPA 901.1 Modified	1.24E-01	1.78E-01	1.78E-01	3.10E-01	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Radium-228	EPA 901.1 Modified	-1.28E-01	3.01E-01	3.01E-01	5.50E-01	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Antimony-125	EPA 901.1 Modified	9.17E-02	2.07E-01	2.07E-01	3.46E-01	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Thorium-234	EPA 901.1 Modified	6.59E-01	1.11E+00	1.11E+00	1.63E+00	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Thallium-208	EPA 901.1 Modified	4.46E-02	2.53E-01	2.53E-01	4.15E-01	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Uranium-235	EPA 901.1 Modified	1.65E-02	3.89E-01	3.89E-01	5.93E-01	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/17/2021	21-12053	Zinc-65	EPA 901.1 Modified	-3.21E-02	2.18E-01	2.18E-01	3.42E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:	
Guy Gallello, Jr	
APTIM	
16406 US Route 224 E, Annex	
Findlay, OH 45840	

Work Order Details:	
SDG:	21-12053
Purchase Order:	208345
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Actinium-228	EPA 901.1 Modified	6.04E-02	5.57E-01	5.57E-01	9.39E-01	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Silver-110m	EPA 901.1 Modified	4.74E-02	1.31E-01	1.31E-01	2.36E-01	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Americium-241	EPA 901.1 Modified	5.25E-02	1.89E-01	1.89E-01	2.65E-01	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Bismuth-214	EPA 901.1 Modified	2.50E-01	3.19E-01	3.19E-01	5.80E-01	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Cobalt-58	EPA 901.1 Modified	-2.83E-02	1.47E-01	1.47E-01	2.42E-01	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Cobalt-60	EPA 901.1 Modified	4.55E-02	1.70E-01	1.70E-01	3.14E-01	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Cesium-134	EPA 901.1 Modified	2.05E-02	1.53E-01	1.53E-01	2.55E-01	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Cesium-137	EPA 901.1 Modified	2.83E-02	8.93E-02	8.93E-02	2.55E-01	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Europium-152	EPA 901.1 Modified	-1.33E-01	3.77E-01	3.77E-01	3.94E-01	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Europium-154	EPA 901.1 Modified	1.97E-01	4.20E-01	4.21E-01	1.95E-01	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Europium-155	EPA 901.1 Modified	-9.51E-02	2.29E-01	2.29E-01	2.89E-01	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Potassium-40	EPA 901.1 Modified	6.28E+00	2.45E+00	2.47E+00	2.39E+00	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Manganese-54	EPA 901.1 Modified	-2.66E-02	1.40E-01	1.40E-01	2.27E-01	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Niobium-94	EPA 901.1 Modified	3.97E-02	1.27E-01	1.27E-01	2.34E-01	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Lead-210	EPA 901.1 Modified	1.86E+00	1.70E+00	1.71E+00	2.57E+00	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Lead-212	EPA 901.1 Modified	3.10E-01	2.50E-01	2.51E-01	4.08E-01	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Lead-214	EPA 901.1 Modified	1.09E-01	2.56E-01	2.56E-01	4.35E-01	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Radium-226	EPA 901.1 Modified	2.50E-01	3.19E-01	3.19E-01	5.80E-01	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Radium-228	EPA 901.1 Modified	6.04E-02	5.57E-01	5.57E-01	9.39E-01	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Antimony-125	EPA 901.1 Modified	-1.29E-01	3.54E-01	3.54E-01	5.26E-01	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Thorium-234	EPA 901.1 Modified	1.91E+00	1.68E+00	1.68E+00	2.54E+00	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Thallium-208	EPA 901.1 Modified	2.50E-01	4.25E-01	4.25E-01	7.67E-01	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Uranium-235	EPA 901.1 Modified	4.46E-01	5.46E-01	5.46E-01	9.24E-01	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/17/2021	21-12053	Zinc-65	EPA 901.1 Modified	-9.94E-02	3.12E-01	3.12E-01	4.35E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:
SDG: 21-12053
Purchase Order: 208345
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Actinium-228	EPA 901.1 Modified	1.07E-01	3.67E-01	3.67E-01	6.53E-01	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Silver-110m	EPA 901.1 Modified	7.44E-02	1.16E-01	1.16E-01	1.87E-01	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Americium-241	EPA 901.1 Modified	-4.79E-01	2.22E-01	2.23E-01	2.49E-01	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Bismuth-214	EPA 901.1 Modified	5.35E-01	2.98E-01	2.99E-01	5.36E-01	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Cobalt-58	EPA 901.1 Modified	-4.42E-02	9.67E-02	9.67E-02	1.49E-01	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Cobalt-60	EPA 901.1 Modified	-1.83E-02	1.21E-01	1.21E-01	1.96E-01	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Cesium-134	EPA 901.1 Modified	1.59E-02	4.58E-02	4.58E-02	1.74E-01	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Cesium-137	EPA 901.1 Modified	2.25E-02	1.34E-01	1.34E-01	1.90E-01	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Europium-152	EPA 901.1 Modified	-4.97E-02	3.65E-01	3.65E-01	3.77E-01	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Europium-154	EPA 901.1 Modified	3.92E-02	1.46E-01	1.46E-01	1.99E-01	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Europium-155	EPA 901.1 Modified	-7.32E-02	2.15E-01	2.15E-01	3.00E-01	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Potassium-40	EPA 901.1 Modified	5.15E+00	1.69E+00	1.71E+00	1.62E+00	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Manganese-54	EPA 901.1 Modified	-3.87E-03	1.08E-01	1.08E-01	1.79E-01	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Niobium-94	EPA 901.1 Modified	-2.24E-03	9.71E-02	9.71E-02	1.58E-01	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Lead-210	EPA 901.1 Modified	1.35E+00	1.62E+00	1.62E+00	2.55E+00	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Lead-212	EPA 901.1 Modified	1.96E-01	1.50E-01	1.50E-01	3.02E-01	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Lead-214	EPA 901.1 Modified	3.69E-01	1.96E-01	1.96E-01	3.66E-01	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Radium-226	EPA 901.1 Modified	5.35E-01	2.98E-01	2.99E-01	5.36E-01	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Radium-228	EPA 901.1 Modified	1.07E-01	3.67E-01	3.67E-01	6.53E-01	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Antimony-125	EPA 901.1 Modified	1.46E-01	2.98E-01	2.98E-01	4.57E-01	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Thorium-234	EPA 901.1 Modified	3.92E+00	1.71E+00	1.73E+00	2.92E+00	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Thallium-208	EPA 901.1 Modified	1.53E-01	3.02E-01	3.02E-01	4.85E-01	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Uranium-235	EPA 901.1 Modified	2.15E-01	5.34E-01	5.34E-01	8.34E-01	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/17/2021	21-12053	Zinc-65	EPA 901.1 Modified	-1.17E-02	9.56E-02	9.56E-02	3.52E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:
SDG: 21-12053
Purchase Order: 208345
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Actinium-228	EPA 901.1 Modified	2.38E-01	5.57E-01	5.57E-01	1.04E+00	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Silver-110m	EPA 901.1 Modified	4.11E-02	1.52E-01	1.52E-01	2.65E-01	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Americium-241	EPA 901.1 Modified	-1.54E-01	2.31E-01	2.32E-01	2.86E-01	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Bismuth-214	EPA 901.1 Modified	9.43E-02	2.81E-01	2.81E-01	4.99E-01	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Cobalt-58	EPA 901.1 Modified	-7.21E-02	1.66E-01	1.66E-01	2.55E-01	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Cobalt-60	EPA 901.1 Modified	2.10E-03	1.60E-01	1.60E-01	2.48E-01	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Cesium-134	EPA 901.1 Modified	-9.62E-02	1.57E-01	1.57E-01	2.32E-01	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Cesium-137	EPA 901.1 Modified	-2.24E-02	1.69E-01	1.69E-01	2.75E-01	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Europium-152	EPA 901.1 Modified	-5.61E-01	5.72E-01	5.73E-01	4.29E-01	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Europium-154	EPA 901.1 Modified	-1.96E-01	4.53E-01	4.53E-01	2.24E-01	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Europium-155	EPA 901.1 Modified	8.56E-04	2.27E-01	2.27E-01	3.08E-01	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Potassium-40	EPA 901.1 Modified	4.03E+00	1.85E+00	1.86E+00	1.49E+00	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Manganese-54	EPA 901.1 Modified	0.00E+00	1.33E-01	1.33E-01	2.31E-01	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Niobium-94	EPA 901.1 Modified	-2.00E-02	1.65E-01	1.65E-01	2.69E-01	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Lead-210	EPA 901.1 Modified	7.61E-01	1.86E+00	1.86E+00	2.66E+00	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Lead-212	EPA 901.1 Modified	5.30E-01	3.78E-01	3.79E-01	6.16E-01	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Lead-214	EPA 901.1 Modified	2.38E-01	2.72E-01	2.72E-01	4.86E-01	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Radium-226	EPA 901.1 Modified	9.43E-02	2.81E-01	2.81E-01	4.99E-01	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Radium-228	EPA 901.1 Modified	2.38E-01	5.57E-01	5.57E-01	1.04E+00	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Antimony-125	EPA 901.1 Modified	-9.27E-02	3.93E-01	3.93E-01	6.06E-01	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Thorium-234	EPA 901.1 Modified	2.49E+00	1.89E+00	1.90E+00	2.91E+00	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Thallium-208	EPA 901.1 Modified	2.53E-01	4.48E-01	4.48E-01	8.01E-01	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Uranium-235	EPA 901.1 Modified	-1.13E-01	5.82E-01	5.82E-01	9.01E-01	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/17/2021	21-12053	Zinc-65	EPA 901.1 Modified	-1.84E-01	3.94E-01	3.94E-01	6.06E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:		Work Order Details:	
Guy Gallello, Jr		SDG:	21-12053
APTIM		Purchase Order:	208345
16406 US Route 224 E, Annex		Analysis Category:	ENVIRONMENTAL
Findlay, OH 45840		Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Actinium-228	EPA 901.1 Modified	-2.26E-01	7.20E-01	7.20E-01	1.14E+00	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Silver-110m	EPA 901.1 Modified	2.12E-02	2.03E-01	2.03E-01	3.31E-01	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Americium-241	EPA 901.1 Modified	5.81E-02	3.05E-01	3.05E-01	4.42E-01	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Bismuth-214	EPA 901.1 Modified	3.60E-01	4.26E-01	4.26E-01	7.09E-01	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Cobalt-58	EPA 901.1 Modified	7.68E-02	2.28E-01	2.28E-01	3.93E-01	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Cobalt-60	EPA 901.1 Modified	-7.99E-03	2.03E-01	2.03E-01	3.42E-01	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Cesium-134	EPA 901.1 Modified	7.10E-02	8.90E-02	8.91E-02	3.59E-01	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Cesium-137	EPA 901.1 Modified	1.19E-01	2.09E-01	2.09E-01	3.73E-01	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Europium-152	EPA 901.1 Modified	-2.76E-01	6.97E-01	6.97E-01	7.93E-01	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Europium-154	EPA 901.1 Modified	-9.77E-02	6.71E-01	6.71E-01	3.91E-01	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Europium-155	EPA 901.1 Modified	-1.45E-01	3.68E-01	3.68E-01	5.13E-01	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Potassium-40	EPA 901.1 Modified	6.05E+00	2.82E+00	2.83E+00	3.01E+00	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Manganese-54	EPA 901.1 Modified	2.92E-01	1.93E-01	1.94E-01	4.06E-01	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Niobium-94	EPA 901.1 Modified	-8.83E-02	2.22E-01	2.23E-01	3.19E-01	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Lead-210	EPA 901.1 Modified	1.62E+00	3.62E+00	3.62E+00	5.31E+00	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Lead-212	EPA 901.1 Modified	4.79E-01	2.77E-01	2.78E-01	6.66E-01	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Lead-214	EPA 901.1 Modified	4.47E-01	4.10E-01	4.11E-01	6.69E-01	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Radium-226	EPA 901.1 Modified	3.60E-01	4.26E-01	4.26E-01	7.09E-01	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Radium-228	EPA 901.1 Modified	-2.26E-01	7.20E-01	7.20E-01	1.14E+00	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Antimony-125	EPA 901.1 Modified	-4.38E-01	5.93E-01	5.94E-01	8.28E-01	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Thorium-234	EPA 901.1 Modified	3.17E+00	2.78E+00	2.79E+00	4.17E+00	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Thallium-208	EPA 901.1 Modified	5.66E-01	6.66E-01	6.67E-01	1.00E+00	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Uranium-235	EPA 901.1 Modified	1.78E-01	9.30E-01	9.30E-01	1.44E+00	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/17/2021	21-12053	Zinc-65	EPA 901.1 Modified	-4.84E-02	3.63E-01	3.63E-01	8.02E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:	
Guy Gallello, Jr	
APTIM	
16406 US Route 224 E, Annex	
Findlay, OH 45840	

Work Order Details:	
SDG:	21-12053
Purchase Order:	208345
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Actinium-228	EPA 901.1 Modified	4.35E-01	5.02E-01	5.02E-01	9.75E-01	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Silver-110m	EPA 901.1 Modified	-1.26E-02	1.48E-01	1.48E-01	2.13E-01	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Americium-241	EPA 901.1 Modified	2.03E-01	2.55E-01	2.55E-01	5.65E-01	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Bismuth-214	EPA 901.1 Modified	1.46E-01	4.00E-01	4.00E-01	5.95E-01	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Cobalt-58	EPA 901.1 Modified	4.51E-02	1.46E-01	1.46E-01	2.56E-01	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Cobalt-60	EPA 901.1 Modified	4.02E-02	1.24E-01	1.24E-01	2.09E-01	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Cesium-134	EPA 901.1 Modified	-1.96E-01	2.15E-01	2.15E-01	2.59E-01	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Cesium-137	EPA 901.1 Modified	-1.69E-02	1.74E-01	1.74E-01	2.32E-01	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Europium-152	EPA 901.1 Modified	-4.43E-02	4.95E-01	4.95E-01	5.42E-01	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Europium-154	EPA 901.1 Modified	-3.46E-01	4.63E-01	4.63E-01	2.73E-01	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Europium-155	EPA 901.1 Modified	-2.79E-01	3.12E-01	3.12E-01	4.14E-01	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Potassium-40	EPA 901.1 Modified	4.09E+00	2.46E+00	2.46E+00	3.62E+00	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Manganese-54	EPA 901.1 Modified	2.10E-02	1.03E-01	1.03E-01	1.83E-01	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Niobium-94	EPA 901.1 Modified	-3.87E-02	1.35E-01	1.35E-01	2.12E-01	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Lead-210	EPA 901.1 Modified	8.36E-01	2.06E+00	2.06E+00	3.17E+00	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Lead-212	EPA 901.1 Modified	2.74E-01	2.31E-01	2.31E-01	3.87E-01	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Lead-214	EPA 901.1 Modified	4.17E-01	2.64E-01	2.64E-01	4.85E-01	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Radium-226	EPA 901.1 Modified	1.46E-01	4.00E-01	4.00E-01	5.95E-01	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Radium-228	EPA 901.1 Modified	4.35E-01	5.02E-01	5.02E-01	9.75E-01	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Antimony-125	EPA 901.1 Modified	-1.84E-01	4.53E-01	4.53E-01	5.99E-01	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Thorium-234	EPA 901.1 Modified	4.96E+00	2.43E+00	2.45E+00	4.08E+00	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Thallium-208	EPA 901.1 Modified	4.12E-01	4.67E-01	4.67E-01	7.77E-01	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Uranium-235	EPA 901.1 Modified	3.24E-01	7.14E-01	7.14E-01	1.12E+00	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/17/2021	21-12053	Zinc-65	EPA 901.1 Modified	2.01E-01	2.77E-01	2.78E-01	5.48E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:
SDG: 21-12053
Purchase Order: 208345
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Actinium-228	EPA 901.1 Modified	7.68E-01	7.05E-01	7.06E-01	1.35E+00	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Silver-110m	EPA 901.1 Modified	-6.96E-02	1.57E-01	1.57E-01	2.36E-01	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Americium-241	EPA 901.1 Modified	8.80E-02	2.50E-01	2.50E-01	3.65E-01	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Bismuth-214	EPA 901.1 Modified	1.09E-01	3.72E-01	3.72E-01	6.12E-01	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Cobalt-58	EPA 901.1 Modified	-2.39E-01	2.11E-01	2.11E-01	2.58E-01	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Cobalt-60	EPA 901.1 Modified	1.68E-01	1.51E-01	1.52E-01	3.22E-01	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Cesium-134	EPA 901.1 Modified	8.93E-02	1.71E-01	1.71E-01	2.92E-01	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Cesium-137	EPA 901.1 Modified	-5.96E-02	1.83E-01	1.83E-01	2.71E-01	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Europium-152	EPA 901.1 Modified	-5.08E-01	7.48E-01	7.49E-01	6.16E-01	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Europium-154	EPA 901.1 Modified	-1.14E-01	5.70E-01	5.70E-01	3.05E-01	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Europium-155	EPA 901.1 Modified	-1.09E-01	2.97E-01	2.97E-01	4.17E-01	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Potassium-40	EPA 901.1 Modified	6.70E+00	2.74E+00	2.76E+00	2.99E+00	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Manganese-54	EPA 901.1 Modified	1.18E-02	1.43E-01	1.43E-01	2.36E-01	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Niobium-94	EPA 901.1 Modified	1.24E-01	1.49E-01	1.49E-01	2.78E-01	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Lead-210	EPA 901.1 Modified	5.52E-01	3.08E+00	3.08E+00	4.45E+00	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Lead-212	EPA 901.1 Modified	6.26E-01	4.17E-01	4.18E-01	6.67E-01	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Lead-214	EPA 901.1 Modified	1.21E-01	3.65E-01	3.65E-01	5.86E-01	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Radium-226	EPA 901.1 Modified	1.09E-01	3.72E-01	3.72E-01	6.12E-01	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Radium-228	EPA 901.1 Modified	7.68E-01	7.05E-01	7.06E-01	1.35E+00	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Antimony-125	EPA 901.1 Modified	3.34E-02	4.29E-01	4.29E-01	6.89E-01	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Thorium-234	EPA 901.1 Modified	4.98E-02	2.31E+00	2.31E+00	3.32E+00	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Thallium-208	EPA 901.1 Modified	6.28E-01	4.57E-01	4.58E-01	7.06E-01	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Uranium-235	EPA 901.1 Modified	-2.69E-02	7.25E-01	7.25E-01	1.11E+00	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/17/2021	21-12053	Zinc-65	EPA 901.1 Modified	2.83E-01	3.31E-01	3.31E-01	6.71E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:

Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:

SDG:	**21-12053**
Purchase Order:	208345
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Actinium-228	EPA 901.1 Modified	3.48E-01	7.05E-01	7.05E-01	1.29E+00	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Silver-110m	EPA 901.1 Modified	-6.76E-04	1.36E-01	1.36E-01	2.31E-01	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Americium-241	EPA 901.1 Modified	9.84E-02	2.06E-01	2.06E-01	2.98E-01	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Bismuth-214	EPA 901.1 Modified	2.62E-01	3.36E-01	3.36E-01	6.03E-01	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Cobalt-58	EPA 901.1 Modified	-6.69E-02	1.08E-01	1.08E-01	2.40E-01	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Cobalt-60	EPA 901.1 Modified	-1.17E-02	6.56E-02	6.56E-02	2.78E-01	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Cesium-134	EPA 901.1 Modified	-1.54E-01	1.69E-01	1.69E-01	2.09E-01	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Cesium-137	EPA 901.1 Modified	-6.49E-03	1.46E-01	1.46E-01	2.42E-01	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Europium-152	EPA 901.1 Modified	-3.51E-01	6.47E-01	6.47E-01	4.57E-01	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Europium-154	EPA 901.1 Modified	8.63E-02	4.23E-01	4.23E-01	2.35E-01	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Europium-155	EPA 901.1 Modified	-3.79E-01	2.81E-01	2.82E-01	3.25E-01	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Potassium-40	EPA 901.1 Modified	4.17E+00	2.91E+00	2.92E+00	4.34E+00	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Manganese-54	EPA 901.1 Modified	-4.36E-02	1.71E-01	1.71E-01	2.66E-01	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Niobium-94	EPA 901.1 Modified	0.00E+00	8.47E-02	8.47E-02	2.65E-01	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Lead-210	EPA 901.1 Modified	1.69E+00	2.18E+00	2.18E+00	3.18E+00	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Lead-212	EPA 901.1 Modified	2.14E-01	2.37E-01	2.37E-01	3.96E-01	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Lead-214	EPA 901.1 Modified	1.39E-02	2.96E-01	2.96E-01	4.81E-01	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Radium-226	EPA 901.1 Modified	2.62E-01	3.36E-01	3.36E-01	6.03E-01	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Radium-228	EPA 901.1 Modified	3.48E-01	7.05E-01	7.05E-01	1.29E+00	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Antimony-125	EPA 901.1 Modified	1.14E-01	3.99E-01	3.99E-01	6.65E-01	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Thorium-234	EPA 901.1 Modified	1.98E+00	1.96E+00	1.96E+00	2.94E+00	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Thallium-208	EPA 901.1 Modified	-5.29E-02	5.12E-01	5.12E-01	8.23E-01	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Uranium-235	EPA 901.1 Modified	-1.08E-01	6.66E-01	6.66E-01	1.03E+00	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/17/2021	21-12053	Zinc-65	EPA 901.1 Modified	1.93E-01	3.23E-01	3.23E-01	6.54E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:

Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:

SDG:	**21-12053**
Purchase Order:	208345
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Actinium-228	EPA 901.1 Modified	4.58E-01	5.24E-01	5.24E-01	1.01E+00	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Silver-110m	EPA 901.1 Modified	1.15E-01	1.44E-01	1.44E-01	2.45E-01	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Americium-241	EPA 901.1 Modified	-2.99E-01	2.73E-01	2.74E-01	3.52E-01	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Bismuth-214	EPA 901.1 Modified	4.31E-01	3.14E-01	3.15E-01	3.00E-01	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Cobalt-58	EPA 901.1 Modified	9.96E-03	1.41E-01	1.41E-01	2.39E-01	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Cobalt-60	EPA 901.1 Modified	-2.50E-02	1.49E-01	1.49E-01	2.09E-01	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Cesium-134	EPA 901.1 Modified	9.94E-03	7.44E-02	7.44E-02	2.55E-01	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Cesium-137	EPA 901.1 Modified	-3.52E-03	1.83E-01	1.83E-01	2.63E-01	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Europium-152	EPA 901.1 Modified	2.91E-02	3.93E-01	3.93E-01	5.09E-01	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Europium-154	EPA 901.1 Modified	1.51E-01	3.28E-01	3.28E-01	2.63E-01	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Europium-155	EPA 901.1 Modified	2.94E-02	2.88E-01	2.88E-01	4.22E-01	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Potassium-40	EPA 901.1 Modified	5.07E+00	2.38E+00	2.40E+00	3.18E+00	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Manganese-54	EPA 901.1 Modified	6.60E-02	1.33E-01	1.34E-01	2.45E-01	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Niobium-94	EPA 901.1 Modified	1.61E-02	1.01E-01	1.01E-01	1.95E-01	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Lead-210	EPA 901.1 Modified	2.17E+00	2.47E+00	2.47E+00	4.12E+00	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Lead-212	EPA 901.1 Modified	2.84E-01	2.51E-01	2.52E-01	4.12E-01	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Lead-214	EPA 901.1 Modified	5.01E-01	2.52E-01	2.53E-01	7.97E-01	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Radium-226	EPA 901.1 Modified	4.31E-01	3.14E-01	3.15E-01	3.00E-01	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Radium-228	EPA 901.1 Modified	4.58E-01	5.24E-01	5.24E-01	1.01E+00	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Antimony-125	EPA 901.1 Modified	-4.72E-02	4.21E-01	4.21E-01	5.81E-01	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Thorium-234	EPA 901.1 Modified	4.78E+00	3.12E+00	3.13E+00	4.85E+00	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Thallium-208	EPA 901.1 Modified	3.57E-02	5.48E-01	5.48E-01	7.79E-01	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Uranium-235	EPA 901.1 Modified	1.02E-01	6.71E-01	6.71E-01	1.03E+00	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/17/2021	21-12053	Zinc-65	EPA 901.1 Modified	2.12E-01	2.74E-01	2.74E-01	5.23E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:

Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:

SDG:	**21-12053**
Purchase Order:	208345
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Actinium-228	EPA 901.1 Modified	3.08E-02	6.84E-01	6.84E-01	1.13E+00	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Silver-110m	EPA 901.1 Modified	1.24E-01	1.66E-01	1.66E-01	3.07E-01	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Americium-241	EPA 901.1 Modified	-6.32E-02	2.32E-01	2.32E-01	3.05E-01	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Bismuth-214	EPA 901.1 Modified	1.60E-01	3.26E-01	3.26E-01	5.79E-01	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Cobalt-58	EPA 901.1 Modified	2.05E-01	1.67E-01	1.67E-01	2.56E-01	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Cobalt-60	EPA 901.1 Modified	6.28E-02	1.63E-01	1.63E-01	3.10E-01	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Cesium-134	EPA 901.1 Modified	-2.77E-02	1.65E-01	1.65E-01	2.66E-01	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Cesium-137	EPA 901.1 Modified	2.51E-02	1.88E-01	1.88E-01	2.97E-01	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Europium-152	EPA 901.1 Modified	-3.79E-01	6.14E-01	6.14E-01	3.80E-01	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Europium-154	EPA 901.1 Modified	-2.05E-01	6.02E-01	6.02E-01	2.24E-01	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Europium-155	EPA 901.1 Modified	-1.17E-01	1.20E-01	1.20E-01	3.55E-01	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Potassium-40	EPA 901.1 Modified	4.02E+00	2.36E+00	2.37E+00	3.10E+00	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Manganese-54	EPA 901.1 Modified	-1.29E-03	1.86E-01	1.86E-01	3.04E-01	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Niobium-94	EPA 901.1 Modified	-4.45E-02	1.61E-01	1.61E-01	2.60E-01	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Lead-210	EPA 901.1 Modified	2.33E+00	2.34E+00	2.34E+00	3.89E+00	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Lead-212	EPA 901.1 Modified	2.59E-01	1.82E-01	1.83E-01	2.87E-01	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Lead-214	EPA 901.1 Modified	1.23E-01	2.92E-01	2.92E-01	4.88E-01	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Radium-226	EPA 901.1 Modified	1.60E-01	3.26E-01	3.26E-01	5.79E-01	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Radium-228	EPA 901.1 Modified	3.08E-02	6.84E-01	6.84E-01	1.13E+00	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Antimony-125	EPA 901.1 Modified	-2.21E-01	3.81E-01	3.81E-01	5.47E-01	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Thorium-234	EPA 901.1 Modified	3.35E+00	2.01E+00	2.02E+00	3.17E+00	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Thallium-208	EPA 901.1 Modified	-2.62E-01	5.40E-01	5.40E-01	7.58E-01	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Uranium-235	EPA 901.1 Modified	5.54E-02	6.10E-01	6.10E-01	9.73E-01	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/17/2021	21-12053	Zinc-65	EPA 901.1 Modified	2.11E-02	2.50E-01	2.50E-01	7.39E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:	Work Order Details:	
Guy Gallello, Jr	SDG:	21-12053
APTIM	Purchase Order:	208345
16406 US Route 224 E, Annex	Analysis Category:	ENVIRONMENTAL
Findlay, OH 45840	Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12053-01	LCS	KNOWN	12/16/21 00:00	12/16/2021	12/30/2021	21-12053	Carbon-14	EPA 520.0 Modified	1.42E+03	3.99E+01			pCi/g
21-12053-01	LCS	SPIKE	12/16/21 00:00	12/16/2021	12/30/2021	21-12053	Carbon-14	EPA 520.0 Modified	1.49E+03	2.89E+01	2.10E+02	1.58E+01	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/30/2021	21-12053	Carbon-14	EPA 520.0 Modified	2.42E+00	9.44E+00	9.45E+00	1.61E+01	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/30/2021	21-12053	Carbon-14	EPA 520.0 Modified	-4.56E+00	5.77E+00	5.80E+00	1.01E+01	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/30/2021	21-12053	Carbon-14	EPA 520.0 Modified	-6.69E+00	6.29E+00	6.36E+00	1.11E+01	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/30/2021	21-12053	Carbon-14	EPA 520.0 Modified	-4.73E+00	5.66E+00	5.70E+00	9.97E+00	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/30/2021	21-12053	Carbon-14	EPA 520.0 Modified	-2.72E+00	6.25E+00	6.26E+00	1.09E+01	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/30/2021	21-12053	Carbon-14	EPA 520.0 Modified	-2.84E+00	6.52E+00	6.54E+00	1.14E+01	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/30/2021	21-12053	Carbon-14	EPA 520.0 Modified	-4.95E+00	6.25E+00	6.29E+00	1.10E+01	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/30/2021	21-12053	Carbon-14	EPA 520.0 Modified	-1.25E+01	6.12E+00	6.37E+00	1.11E+01	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/30/2021	21-12053	Carbon-14	EPA 520.0 Modified	-2.51E+00	6.42E+00	6.43E+00	1.12E+01	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/30/2021	21-12053	Carbon-14	EPA 520.0 Modified	-4.32E+00	6.15E+00	6.18E+00	1.08E+01	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/30/2021	21-12053	Carbon-14	EPA 520.0 Modified	-6.96E+00	6.03E+00	6.10E+00	1.07E+01	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/30/2021	21-12053	Carbon-14	EPA 520.0 Modified	-5.82E+00	5.99E+00	6.05E+00	1.06E+01	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/30/2021	21-12053	Carbon-14	EPA 520.0 Modified	-4.81E+00	6.08E+00	6.11E+00	1.07E+01	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/30/2021	21-12053	Carbon-14	EPA 520.0 Modified	-5.50E+00	5.93E+00	5.98E+00	1.05E+01	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/31/2021	21-12053	Carbon-14	EPA 520.0 Modified	-7.23E+00	6.26E+00	6.34E+00	1.11E+01	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/31/2021	21-12053	Carbon-14	EPA 520.0 Modified	-7.76E+00	6.00E+00	6.10E+00	1.07E+01	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/31/2021	21-12053	Carbon-14	EPA 520.0 Modified	-6.05E+00	5.94E+00	6.00E+00	1.05E+01	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/31/2021	21-12053	Carbon-14	EPA 520.0 Modified	-5.56E+00	6.30E+00	6.35E+00	1.11E+01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:
SDG: 21-12053
Purchase Order: 208345
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12053-01	LCS	KNOWN	12/16/21 00:00	12/16/2021	12/30/2021	21-12053	Tritium	LANL ER-210 Modified	1.81E+02	6.51E+00			pCi/g
21-12053-01	LCS	SPIKE	12/16/21 00:00	12/16/2021	12/30/2021	21-12053	Tritium	LANL ER-210 Modified	1.85E+02	7.40E+00	1.27E+01	5.47E+00	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/30/2021	21-12053	Tritium	LANL ER-210 Modified	9.45E-01	3.18E+00	3.18E+00	5.46E+00	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/30/2021	21-12053	Tritium	LANL ER-210 Modified	2.14E+01	3.05E+01	3.05E+01	5.16E+01	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/30/2021	21-12053	Tritium	LANL ER-210 Modified	2.29E+01	3.02E+01	3.02E+01	5.09E+01	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/30/2021	21-12053	Tritium	LANL ER-210 Modified	1.45E+01	3.07E+01	3.07E+01	5.24E+01	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/30/2021	21-12053	Tritium	LANL ER-210 Modified	1.46E+01	3.08E+01	3.08E+01	5.26E+01	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/30/2021	21-12053	Tritium	LANL ER-210 Modified	3.64E+01	3.02E+01	3.03E+01	5.02E+01	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/30/2021	21-12053	Tritium	LANL ER-210 Modified	1.04E+01	2.92E+01	2.92E+01	5.01E+01	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/30/2021	21-12053	Tritium	LANL ER-210 Modified	2.11E+01	3.01E+01	3.01E+01	5.09E+01	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/30/2021	21-12053	Tritium	LANL ER-210 Modified	-1.21E+01	2.83E+01	2.83E+01	5.00E+01	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/30/2021	21-12053	Tritium	LANL ER-210 Modified	1.41E+01	2.99E+01	2.99E+01	5.10E+01	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/30/2021	21-12053	Tritium	LANL ER-210 Modified	7.25E+00	3.04E+01	3.04E+01	5.24E+01	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/30/2021	21-12053	Tritium	LANL ER-210 Modified	1.54E+01	2.90E+01	2.91E+01	4.94E+01	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/30/2021	21-12053	Tritium	LANL ER-210 Modified	1.14E+01	2.76E+01	2.76E+01	4.73E+01	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/30/2021	21-12053	Tritium	LANL ER-210 Modified	2.78E+01	3.19E+01	3.19E+01	5.36E+01	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/30/2021	21-12053	Tritium	LANL ER-210 Modified	2.05E+01	3.17E+01	3.17E+01	5.38E+01	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/30/2021	21-12053	Tritium	LANL ER-210 Modified	1.51E+01	3.20E+01	3.20E+01	5.45E+01	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/30/2021	21-12053	Tritium	LANL ER-210 Modified	4.80E+00	2.68E+01	2.68E+01	4.63E+01	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/30/2021	21-12053	Tritium	LANL ER-210 Modified	5.30E+00	2.96E+01	2.96E+01	5.10E+01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:

Guy Gallello, Jr
APTIM
16406 US Route 224 E, Annex
Findlay, OH 45840

Work Order Details:

SDG:	**21-12053**
Purchase Order:	208345
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
21-12053-01	LCS	KNOWN	12/16/21 00:00	12/16/2021	12/29/2021	21-12053	Nickel-63	ASTM 3500-Ni Modified	1.48E+03	4.43E+01			pCi/g
21-12053-01	LCS	SPIKE	12/16/21 00:00	12/16/2021	12/29/2021	21-12053	Nickel-63	ASTM 3500-Ni Modified	1.52E+03	1.24E+01	9.01E+01	2.93E+00	pCi/g
21-12053-02	MBL	BLANK	12/16/21 00:00	12/16/2021	12/29/2021	21-12053	Nickel-63	ASTM 3500-Ni Modified	-7.75E-01	1.69E+00	1.69E+00	2.95E+00	pCi/g
21-12053-03	DUP	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/29/2021	21-12053	Nickel-63	ASTM 3500-Ni Modified	-3.58E+00	2.03E+00	2.04E+00	3.68E+00	pCi/g
21-12053-04	DO	501513-9S-PA-01	12/10/21 11:05	12/16/2021	12/29/2021	21-12053	Nickel-63	ASTM 3500-Ni Modified	-3.44E+00	1.89E+00	1.90E+00	3.44E+00	pCi/g
21-12053-05	TRG	501513-9S-PA-02	12/10/21 11:45	12/16/2021	12/29/2021	21-12053	Nickel-63	ASTM 3500-Ni Modified	-1.09E+01	2.93E+00	3.00E+00	5.62E+00	pCi/g
21-12053-06	TRG	501513-9S-PA-03	12/09/21 13:07	12/16/2021	12/29/2021	21-12053	Nickel-63	ASTM 3500-Ni Modified	-7.40E+00	2.37E+00	2.41E+00	4.46E+00	pCi/g
21-12053-07	TRG	501513-9S-PA-04	12/13/21 09:10	12/16/2021	12/29/2021	21-12053	Nickel-63	ASTM 3500-Ni Modified	-8.18E+00	2.81E+00	2.85E+00	5.27E+00	pCi/g
21-12053-08	TRG	501513-9S-PA-05	12/10/21 15:35	12/16/2021	12/29/2021	21-12053	Nickel-63	ASTM 3500-Ni Modified	-3.78E+00	2.21E+00	2.22E+00	4.00E+00	pCi/g
21-12053-09	TRG	501513-9S-PA-06	12/13/21 14:35	12/16/2021	12/29/2021	21-12053	Nickel-63	ASTM 3500-Ni Modified	-5.05E+00	2.27E+00	2.29E+00	4.17E+00	pCi/g
21-12053-10	TRG	501513-9S-PA-07	12/09/21 14:05	12/16/2021	12/29/2021	21-12053	Nickel-63	ASTM 3500-Ni Modified	-7.59E+00	2.66E+00	2.69E+00	4.97E+00	pCi/g
21-12053-11	TRG	501513-9S-PA-08	12/10/21 10:38	12/16/2021	12/30/2021	21-12053	Nickel-63	ASTM 3500-Ni Modified	-1.98E+00	1.93E+00	1.93E+00	3.42E+00	pCi/g
21-12053-12	TRG	501513-9S-PA-09	12/13/21 10:45	12/16/2021	12/30/2021	21-12053	Nickel-63	ASTM 3500-Ni Modified	-1.68E+00	1.71E+00	1.71E+00	3.03E+00	pCi/g
21-12053-13	TRG	501513-9S-PA-10	12/10/21 16:02	12/16/2021	12/30/2021	21-12053	Nickel-63	ASTM 3500-Ni Modified	-1.13E+00	1.74E+00	1.74E+00	3.06E+00	pCi/g
21-12053-14	TRG	501513-9S-PA-11	12/14/21 09:05	12/16/2021	12/30/2021	21-12053	Nickel-63	ASTM 3500-Ni Modified	-1.54E+00	1.75E+00	1.75E+00	3.09E+00	pCi/g
21-12053-15	TRG	501513-9S-PA-12	12/13/21 16:35	12/16/2021	12/30/2021	21-12053	Nickel-63	ASTM 3500-Ni Modified	-3.55E+00	1.96E+00	1.97E+00	3.55E+00	pCi/g
21-12053-16	TRG	501513-9S-PA-13	12/13/21 15:48	12/16/2021	12/30/2021	21-12053	Nickel-63	ASTM 3500-Ni Modified	-1.54E+00	1.74E+00	1.74E+00	3.07E+00	pCi/g
21-12053-17	TRG	501513-9S-PA-14	12/10/21 14:25	12/16/2021	12/30/2021	21-12053	Nickel-63	ASTM 3500-Ni Modified	-5.73E+00	2.36E+00	2.38E+00	4.36E+00	pCi/g
21-12053-18	TRG	501513-9S-PA-15	12/13/21 10:35	12/16/2021	12/30/2021	21-12053	Nickel-63	ASTM 3500-Ni Modified	-4.57E+00	2.10E+00	2.12E+00	3.86E+00	pCi/g
21-12053-19	TRG	501513-9S-PA-16	12/13/21 10:01	12/16/2021	12/30/2021	21-12053	Nickel-63	ASTM 3500-Ni Modified	-5.17E+00	2.27E+00	2.29E+00	4.18E+00	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

CHAIN OF CUSTODY

APTIM

REC'D DEC 16 2021

Ref. Document # 5010513-COC-031

Page 1 of 4

Project Number: 501513
Project Name / Location: SSSB Decomisioning
Purchase Order #: 208345

Project Contact: Michael Carr (Name & phone #)
Send Report To: Guy Gallello
Phone/Fax Number: guy.gallello@aptim.com
Address:
City:

Shipment Date: 12/14/2021
Waybill/Airbill Number: 7754-9600-6974
Lab Destination: Eberline-Oakridge
Lab Contact Name / ph. #: Mike McDougall 865-481-0863 ext 128

Sampler's Name(s): EC, DH

	Sample ID Number	Sample Description	Collection Information: Date	Time	G/C	Matrix	# of containers	Container type	Preservative: HCL	NaOH	HNO_3	H_2SO_4	Ice		Analyses Requested: Gross Alpha / Beta	Tritium (H3)	Nickel-63 (Ni-63)	Gamma Spectroscopy	Carbon-14 (C-14)					Turn Around Time Requested
																21-12053								
	501513-9S-SM-01	MARSAME Wipe; Tank 9S #1	12-8-21	0931	G	WP	1	Vial								X								21-BD
	501513-9S-SM-01	MARSAME Wipe; Tank 9S #1	12-8-21	0931	G	WP	1	Vial									X							21-BD
4	501513-9S-PA-01	MARSAME Paint Sample; Tank 9S #1	12-10-21	1105	C	CP	1	Bag								X	X	X	X					21-BD
	501513-9S-SM-02	MARSAME Wipe; Tank 9S #2	12-8-21	0939	G	WP	1	Vial								X								21-BD
	501513-9S-SM-02	MARSAME Wipe; Tank 9P #2	12-8-21	0939	G	WP	1	Vial									X							21-BD
5	501513-9S-PA-02	MARSAME Paint Sample; Tank 9S #2	12-10-21	1145	C	CP	1	Bag								X	X	X	X					21-BD
	501513-9S-SM-03	MARSAME Wipe; Tank 9S #3	12-8-21	1017	G	WP	1	Vial								X								21-BD
	501513-9S-SM-03	MARSAME Wipe; Tank 9S #3	12-8-21	1017	G	WP	1	Vial									X							21-BD
6	501513-9S-PA-03	MARSAME Paint Sample; Tank 9S #3	12-9-21	1307	C	CP	1	Bag								X	X	X	X					21-BD

Special Instructions: Air Sample volumes provided in sample description. For paint chip samples 501513-9P-PA-07, 14, 15 and 16 please save and return sample material so it can be fowarded to an independent third party for further analysis.

QC/Data Package Level Required: I II III IV/Project Specific:

Relinquished By: S. Carter	Date: 12/14/21 Time: 0905	Received By: Locked Storage	Date: 12/14/21 Time: 0905
Relinquished By: Locked Storage	Date: 12/14/21 Time: 1200	Received By: Bryon Rogers	Date: 12/14/21 Time: 1200
Relinquished By: Bryon Rogers	Date: 12-14-21 Time: 1630	Received By: Randolph Spencer	Date: 12-16-21 Time: 1400

G/C Codes

C = Composite G = Grab

Matrix Codes

DW = Drinking Water	SO = Soil
GW = Ground Water	SL = Sludge
WW = Waste Water	CP = Chip Samples
SW = Surface Water	WP = Wipe Samples
LIQ = Other Liquid	SOL = Other Solid
AS = Air Sample	SED = Sediment

APTIM

COC Continuation Page

COC Ref. Document # 5010513-COC-031 Page 2 of 4

Project Number: 501513 **Shipment Date:** 12/14/2021

Project Name / Location: SSSB Mobile, AL

RECD DEC 16 2021

21-12053

	Sample ID Number	Sample Description	Collection Information: Date	Time	G/C	Matrix	# of containers	Container type	Preservative: HCL	NaOH	HNO_3	H_2SO_4	Ice		Analyses Requested: Gross Alpha / Beta	Tritium (H3)	Nickel-63 (Ni-63)	Gamma Spectroscopy	Carbon-14 (C-14)						Turn Around Time Requested
	501513-9S-SM-04	MARSAME Wipe; Tank 9S #4	12-9-21	0943	G	WP	1	Vial								X									21-BD
	501513-9S-SM-04	MARSAME Wipe; Tank 9S #4	12-9-21	0943	G	WP	1	Vial									X								21-BD
7	501513-9S-PA-04	MARSAME Paint Sample; Tank 9S #4	12-13-21	0910	C	CP	1	Bag								X	X	X	X						21-BD
	501513-9S-SM-05	MARSAME Wipe; Tank 9S #5	12-8-21	0947	G	WP	1	Vial								X									21-BD
	501513-9S-SM-05	MARSAME Wipe; Tank 9S #5	12-8-21	0947	G	WP	1	Vial									X								21-BD
8	501513-9S-PA-05	MARSAME Paint Sample; Tank 9S #5	12-10-21	1535	C	CP	1	Bag								X	X	X	X						21-BD
	501513-9S-SM-06	MARSAME Wipe; Tank 9S #6	12-9-21	0950	G	WP	1	Vial								X									21-BD
	501513-9S-SM-06	MARSAME Wipe; Tank 9S #6	12-9-21	0950	G	WP	1	Vial									X								21-BD
9	501513-9S-PA-06	MARSAME Paint Sample; Tank 9S #6	12-13-21	1435	C	CP	1	Bag								X	X	X	X						21-BD
	501513-9S-SM-07	MARSAME Wipe; Tank 9S #7	12-8-21	0954	G	WP	1	Vial								X									21-BD
	501513-9S-SM-07	MARSAME Wipe; Tank 9S #7	12-8-21	0954	G	WP	1	Vial									X								21-BD
10	501513-9S-PA-07	MARSAME Paint Sample; Tank 9S #7	12-9-21	1405	C	CP	1	Bag								X	X	X	X						21-BD
	501513-9S-SM-08	MARSAME Wipe; Tank 9S #8	12-8-21	1002	G	WP	1	Vial								X									21-BD
	501513-9S-SM-08	MARSAME Wipe; Tank 9S #8	12-8-21	1002	G	WP	1	Vial									X								21-BD
11	501513-9S-PA-08	MARSAME Paint Sample; Tank 9S #8	12-10-21	1038	C	CP	1	Bag								X	X	X	X						21-BD
	501513-9S-SM-09	MARSAME Wipe; Tank 9S #9	12-9-21	0928	G	WP	1	Vial								X									21-BD
	501513-9S-SM-09	MARSAME Wipe; Tank 9S #9	12-9-21	0928	G	WP	1	Vial									X								21-BD
12	501513-9S-PA-09	MARSAME Paint Sample; Tank 9S #9	12-13-21	1045	C	CP	1	Bag								X	X	X	X						21-BD

Rec KBS 12-16-21 @ 1400

APTIM

COC Continuation Page

COC Ref. Document # 5010513-COC-031 Page 3 of 4

Project Number: 501513 **Shipment Date:** 12/14/2021

Project Name / Location: SSSB Mobile, AL

RECD DEC 16 2021

21-12053

	Sample ID Number	Sample Description	Collection Information			Matrix	# of containers	Container type	Preservative						Analyses Requested										Turn Around Time Requested
			Date	Time	G/C				HCL	NaOH	HNO_3	H_2SO_4	Ice		Gross Alpha / Beta	Tritium (H3)	Nickel-63 (Ni-63)	Gamma Spectroscopy	Carbon-14 (C-14)						
	501513-9S-SM-10	MARSAME Wipe; Tank 9S #10	12-8-21	1351	G	WP	1	Vial								X									21-BD
	501513-9S-SM-10	MARSAME Wipe; Tank 9S #10	12-8-21	1351	G	WP	1	Vial									X								21-BD
13	501513-9S-PA-10	MARSAME Paint Sample; Tank 9S #10	12-10-21	1602	C	CP	1	Bag								X	X	X	X						21-BD
	501513-9S-SM-11	MARSAME Wipe; Tank 9S #11	12-9-21	1053	G	WP	1	Vial								X									21-BD
	501513-9S-SM-11	MARSAME Wipe; Tank 9S #11	12-9-21	1053	G	WP	1	Vial									X								21-BD
14	501513-9S-PA-11	MARSAME Paint Sample; Tank 9S #11	12-14-21	0905	C	CP	1	Bag								X	X	X	X						21-BD
	501513-9S-SM-12	MARSAME Wipe; Tank 9S #12	12-9-21	1101	G	WP	1	Vial								X									21-BD
	501513-9S-SM-12	MARSAME Wipe; Tank 9S #12	12-9-21	1101	G	WP	1	Vial									X								21-BD
15	501513-9S-PA-12	MARSAME Paint Sample; Tank 9S #12	12-13-21	1635	C	CP	1	Bag								X	X	X	X						21-BD
	501513-9S-SM-13	MARSAME Wipe; Tank 9S #13	12-8-21	1031	G	WP	1	Vial								X									21-BD
	501513-9S-SM-13	MARSAME Wipe; Tank 9S #13	12-8-21	1031	G	WP	1	Vial									X								21-BD
16	501513-9S-PA-13	MARSAME Paint Sample; Tank 9S #13	12-13-21	1548	C	CP	1	Bag								X	X	X	X						21-BD
	501513-9S-SM-14	MARSAME Wipe; Tank 9S #14	12-8-21	1025	G	WP	1	Vial								X									21-BD
	501513-9S-SM-14	MARSAME Wipe; Tank 9S #14	12-8-21	1025	G	WP	1	Vial									X								21-BD
17	501513-9S-PA-14	MARSAME Paint Sample; Tank 9S #14	12-10-21	1425	C	CP	1	Bag								X	X	X	X						21-BD
	501513-9S-SM-15	MARSAME Wipe; Tank 9S #15	12-8-21	1337	G	WP	1	Vial								X									21-BD
	501513-9S-SM-15	MARSAME Wipe; Tank 9S #15	12-8-21	1337	G	WP	1	Vial									X								21-BD
18	501513-9S-PA-15	MARSAME Paint Sample; Tank 9S #15	12-13-21	1035	C	CP	1	Bag								X	X	X	X						21-BD

REC AS 12-16-21 @ 1480

APTIM

COC Continuation Page

COC Ref. Document # 5010513-COC-031 Page 4 of 4

Project Number: 501513 **Shipment Date:** 12/14/2021

Project Name / Location: SSSB Mobile, AL

REC'D DEC 16 2021

21-12053

Sample ID Number	Sample Description	Collection Information			Matrix	# of containers	Container type	Preservative						Analyses Requested									Turn Around Time Requested
		Date	Time	G/C				HCL	NaOH	HNO_3	H_2SO_4	Ice		Gross Alpha / Beta	Tritium (H3)	Nickel-63 (Ni-63)	Gamma Spectroscopy	Carbon-14 (C-14)					
501513-9S-SM-16	MARSAME Wipe; Tank 9S #16	12-9-21	0936	G	WP	1	Vial								X								21-BD
501513-9S-SM-16	MARSAME Wipe; Tank 9S #16	12-9-21	0936	G	WP	1	Vial									X							21-BD
19 501513-9S-PA-16	MARSAME Paint Sample; Tank 9S #16	12-13-21	1001	C	CP	1	Bag								X	X	X	X					21-BD
501513-9S-SM-16D	MARSAME Wipe; Tank 9S #16 Dup	12-9-21	0937	G	WP	1	Vial								X								21-BD
501513-9S-SM-16D	MARSAME Wipe; Tank 9S #16 Dup	12-9-21	0937	G	WP	1	Vial									X							21-BD
					W	A																	

Rec BB 12-16-21 @ 1400

Client Name	Contract/PO	Project Type	Date Received	Required Turnaround Days	Eberline Services Work Order
APTIM Federal Services LLC	208345	Environmental	12/16/2021	21	21-12053
Project Name	**Client WO**	**Sample Disp**	**Lab Deadline**	**Internal Deadline**	**Client Deadline**
501513	SSSB Decommissioning	H	01/04/2022	01/10/2022	01/11/2022

Internal ID	Client ID	Sample Date	Matrix	Storage	C0014	Gamma	H0003	Ni063																			Ttl
01	LCS	12/16/21	SO	D1.4	X	X	X	X																			4
02	BLANK	12/16/21	SO	D1.4	X	X	X	X																			4
03	DUP	12/16/21	SO	D1.4	X	X	X	X																			4
04	501513-9S-PA-01	12/10/21 11:05	SO	D1.4	X	X	X	X																			4
05	501513-9S-PA-02	12/10/21 11:45	SO	D1.4	X	X	X	X																			4
06	501513-9S-PA-03	12/09/21 13:07	SO	D1.4	X	X	X	X																			4
07	501513-9S-PA-04	12/13/21 09:10	SO	D1.4	X	X	X	X																			4
08	501513-9S-PA-05	12/10/21 15:35	SO	D1.4	X	X	X	X																			4
09	501513-9S-PA-06	12/13/21 14:35	SO	D1.4	X	X	X	X																			4
10	501513-9S-PA-07	12/09/21 14:05	SO	D1.4	X	X	X	X																			4
11	501513-9S-PA-08	12/10/21 10:38	SO	D1.4	X	X	X	X																			4
12	501513-9S-PA-09	12/13/21 10:45	SO	D1.4	X	X	X	X																			4
13	501513-9S-PA-10	12/10/21 16:02	SO	D1.4	X	X	X	X																			4
14	501513-9S-PA-11	12/14/21 09:05	SO	D1.4	X	X	X	X																			4
15	501513-9S-PA-12	12/13/21 16:35	SO	D1.4	X	X	X	X																			4
16	501513-9S-PA-13	12/13/21 15:48	SO	D1.4	X	X	X	X																			4
17	501513-9S-PA-14	12/10/21 14:25	SO	D1.4	X	X	X	X																			4
18	501513-9S-PA-15	12/13/21 10:35	SO	D1.4	X	X	X	X																			4
19	501513-9S-PA-16	12/13/21 10:01	SO	D1.4	X	X	X	X																			4
																											0
		Totals Per Analysis (non QA samples)			16	16	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

EBERLINE SERVICES

Sample Log In Report

Oak Ridge Laboratory
601 Scarboro Rd.
Oak Ridge, TN 37830

Voice: (865) 481-0683
Fax: (865) 483-4621

Invoice		Report Data	
	Accounts Payable		Guy Gallello, Jr
	APTIM Federal Services LLC		APTIM
	4171 Essen Lane		16406 US Route 224 E, Annex
	Baton Rouge, LA 70809		Findlay, OH 45840
Voice		*Voice*	419-348-5828
Fax		*Fax*	
Contact	Guy Gallello, Jr		
Voice	419-348-5828		
Fax			

Printed: 12/16/2021 3:43 PM

Eberline Services – Oak Ridge Laboratory

SAMPLE RECEIPT CHECKLIST
MP-001-2

WORK ORDER # 21-12053

SAMPLE MATRIX/MATRICES: (CIRCLE ONE OR BOTH)

AQUEOUS (NON-AQUEOUS)

(CIRCLE EITHER YES, NO, OR N/A)

WERE SAMPLES:

Received in good condition?	(Y)	N	
If aqueous, properly preserved	Y	N	(N/A)

WERE CHAIN OF CUSTODY SEALS:

Present on outside of package?	(Y)	N
Unbroken on outside of package?	(Y)	N
Present on samples?	(Y)	N
Unbroken on samples?	(Y)	N
Was chain of custody present upon sample receipt?	(Y)	N

IF THE RESPONSE TO ANY OF THE ABOVE IS **NO**, A DISCREPANT SAMPLE RECEIPT REPORT (DSR) HAS BEEN ISSUED.

REMARKS: _____

SIGNATURE: Randolph Spencer DATE: 12-16-21

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12053	H0003	1	pCi	g	APTIM Federal Services LLC

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
H-3		102.23%	6.88%	100.00%	3.60%	1.81E+02	6.51E+00	1.85E+02	1.27E+01	H-5a	3.99E+03	3.60E+00	1.01E-01

Matrix Spike

Analyte	*Normalized Difference*	*MS Actual % Rec*	*Expected MS Result*	*Expected MS Uncert*	*Actual MS Result*	*Actual MS CSU*	*Sample Result*	*Sample CSU*	*Sample Aliquot*	*Standard ID*	*Standard ACT (dpm)*	*Standard Error %*	*Standard Added (g)*

Replicate Sample

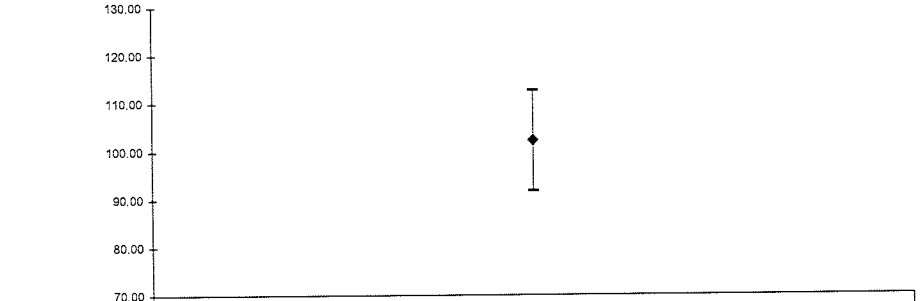
Analyte	*Normalized Difference*	*RPD*	*Original Result*	*Original CSU*	*Replicate Result*	*Replicate CSU*
H-3	0.07	6.62	2.29E+01	3.02E+01	2.14E+01	3.05E+01

QC Summary

LCS Relative Bias	*LCS % R*		*MS % R*	*MS ND*	*Rep RPD*	*Rep ND*
1.02	OK				NA	OK

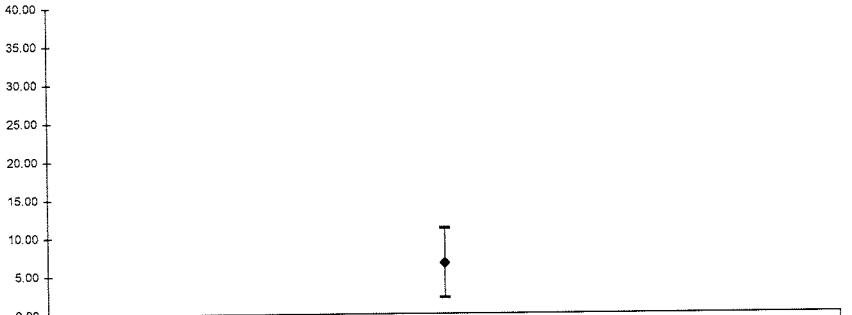
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12053	H0003	1	pCi	g	APTIM Federal Services LLC

LCS % Recovery



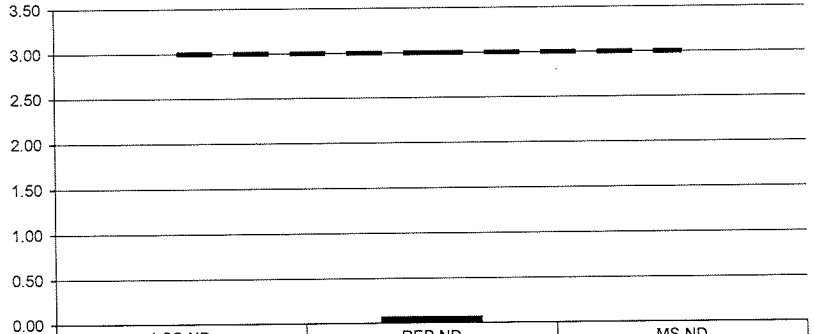
	H-3
Lower Error	91.75
Upper Error	112.72
%R	102.23
LCL	75
Mean	100
UCL	125

Replicate Sample RPD



	H-3
Lower Error	11.15
Upper Error	2.08
RPD	6.62
CL	35

Normalized Difference



	LCS ND	REP ND	MS ND
H-3	0.00	0.07	0.00
UCL	3	3	3

No Matrix Spike

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12053	C0014	1	pCi	g	APTIM Federal Services LLC

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
C-14		104.70%	14.06%	100.00%	2.80%	1.42E+03	3.99E+01	1.49E+03	2.10E+02	C-3a	2.91E+03	2.80E+00	1.09E+00

Matrix Spike

Analyte	*Normalized Difference*	*MS Actual % Rec*	*Expected MS Result*	*Expected MS Uncert*	*Actual MS Result*	*Actual MS CSU*	*Sample Result*	*Sample CSU*	*Sample Aliquot*	*Standard ID*	*Standard ACT (dpm)*	*Standard Error %*	*Standard Added (g)*

Replicate Sample

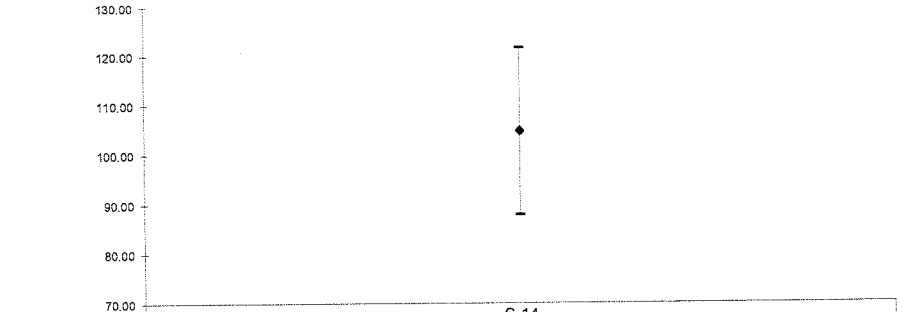
Analyte	*Normalized Difference*	*RPD*	*Original Result*	*Original CSU*	*Replicate Result*	*Replicate CSU*
C-14	0.48	37.75	-6.69E+00	6.36E+00	-4.56E+00	5.80E+00

QC Summary

LCS Relative Bias	*LCS % R*		*MS % R*	*MS ND*	*Rep RPD*	*Rep ND*
1.05	OK				NA	OK

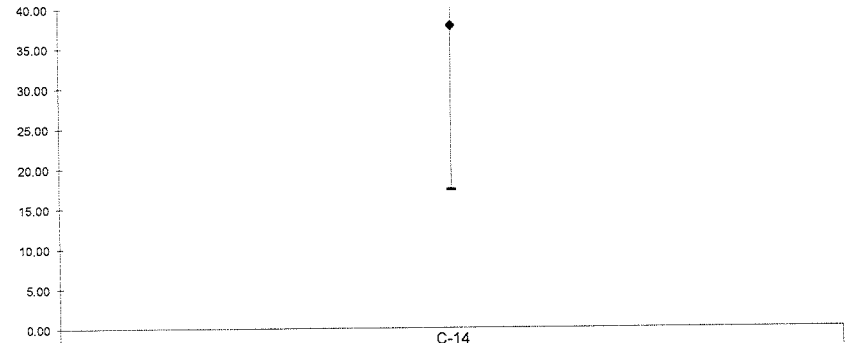
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12053	C0014	1	pCi	g	APTIM Federal Services LLC

LCS % Recovery



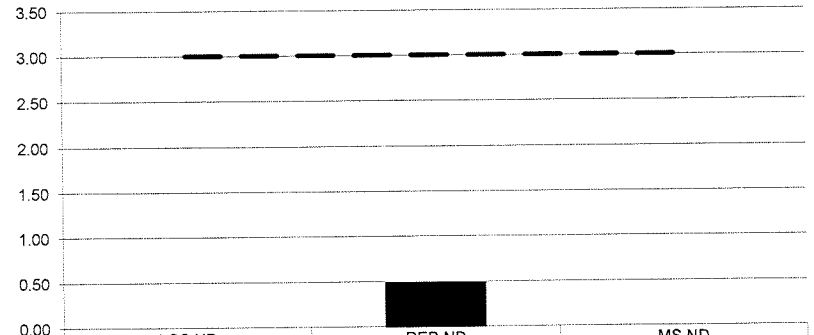
	C-14
Lower Error	87.85
Upper Error	121.56
%R	104.70
LCL	75
Mean	100
UCL	125

Replicate Sample RPD



	C-14
Lower Error	17.35
Upper Error	58.14
RPD	37.75
CL	35

Normalized Difference



	LCS ND	REP ND	MS ND
C-14	0.00	0.48	0.00
UCL	3	3	3

No Matrix Spike

Version

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12053	Ni063	1	pCi	g	APTIM Federal Services LLC

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
NI-63		102.70%	5.94%	100.00%	3.00%	1.48E+03	4.43E+01	1.52E+03	9.01E+01	Ni-3	2.11E+04	3.00E+00	1.56E-01

Matrix Spike

Analyte	*Normalized Difference*	*MS Actual % Rec*	*Expected MS Result*	*Expected MS Uncert*	*Actual MS Result*	*Actual MS CSU*	*Sample Result*	*Sample CSU*	*Sample Aliquot*	*Standard ID*	*Standard ACT (dpm)*	*Standard Error %*	*Standard Added (g)*

Replicate Sample

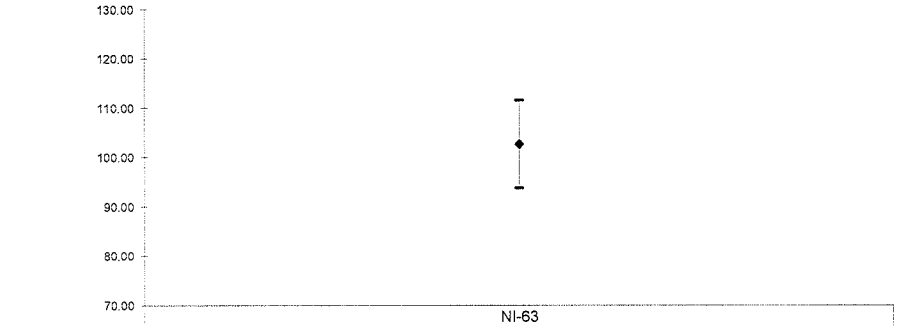
Analyte	*Normalized Difference*	*RPD*	*Original Result*	*Original CSU*	*Replicate Result*	*Replicate CSU*
NI-63	0.10	4.07	-3.44E+00	1.90E+00	-3.58E+00	2.04E+00

QC Summary

LCS Relative Bias	*LCS % R*		*MS % R*	*MS ND*	*Rep RPD*	*Rep ND*
1.03	OK				NA	OK

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12053	Ni063	1	pCi	g	APTIM Federal Services LLC

LCS % Recovery

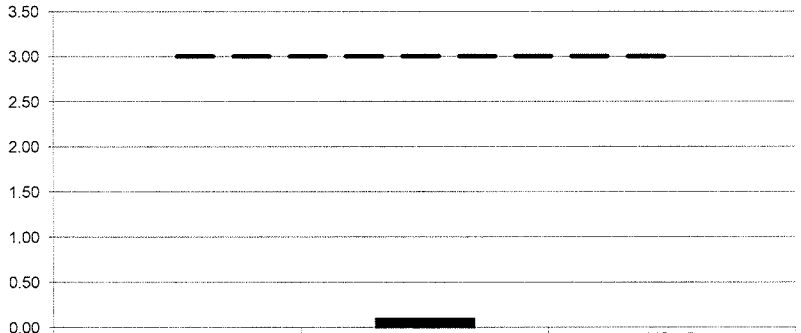


	NI-63
Lower Error	93.76
Upper Error	111.63
%R	102.70
LCL	75
Mean	100
UCL	125

Replicate Sample RPD

	NI-63
Lower Error	2.92
Upper Error	5.21
RPD	4.07
CL	35

Normalized Difference



	LCS ND	REP ND	MS ND
NI-63	0.00	0.10	0.00
UCL	3	3	3

No Matrix Spike

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12053	Gamma	1	pCi	g	APTIM Federal Services LLC

Laboratory Control Sample

Analyte		LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
CO-60		105.13%	7.64%	100.00%	3.90%	2.66E+02	1.04E+01	2.80E+02	2.14E+01	GAS-2001	2.66E+02	1.04E+01	3.68E+02
CS-137		111.31%	11.03%	100.00%	4.10%	1.62E+02	6.66E+00	1.81E+02	1.99E+01	GAS-2001	1.62E+02	6.66E+00	3.68E+02

Matrix Spike

Analyte	*Normalized Difference*	*MS Actual % Rec*	*Expected MS Result*	*Expected MS Uncert*	*Actual MS Result*	*Actual MS CSU*	*Sample Result*	*Sample CSU*	*Sample Aliquot*	*Standard ID*	*Standard ACT (dpm)*	*Standard Error %*	*Standard Added (g)*

Replicate Sample

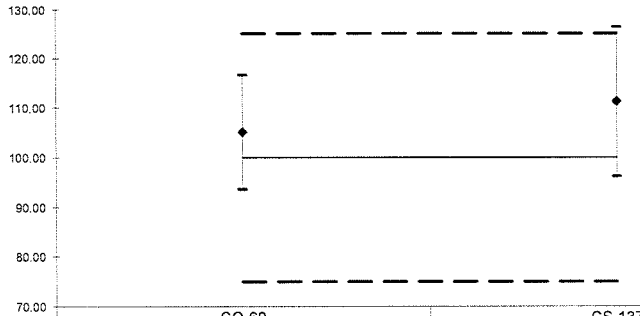
Analyte	*Normalized Difference*	*RPD*	*Original Result*	*Original CSU*	*Replicate Result*	*Replicate CSU*
Bl-214	0.64	42.68	4.81E-01	3.35E-01	3.12E-01	3.93E-01
K-40	0.57	22.64	4.99E+00	2.67E+00	3.97E+00	2.20E+00
PB-214	3.31	159.48	7.63E-02	1.07E-01	6.77E-01	3.40E-01

QC Summary

LCS Relative Bias	*LCS % R*		*MS % R*	*MS ND*	*Rep RPD*	*Rep ND*
1.05	OK		<CS-137	Bl-214>	NA	
1.11	OK		<CO-60	K-40>	NA	OK
				PB-214>	NA	OK

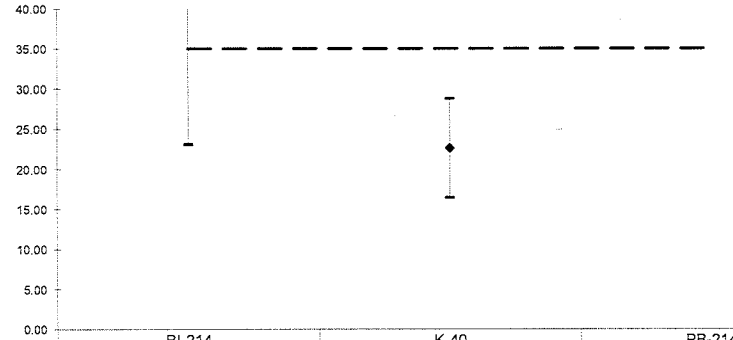
WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
21-12053	Gamma	1	pCi	g	APTIM Federal Services LLC

LCS % Recovery



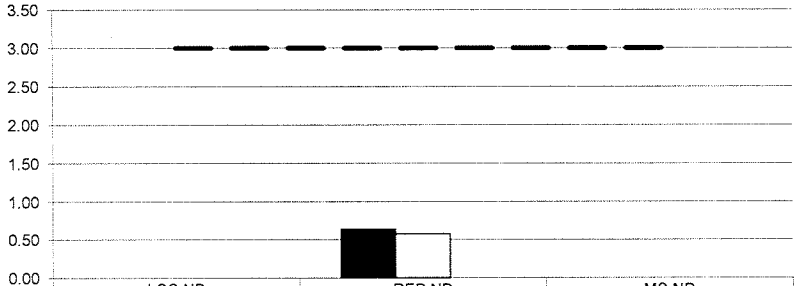
	CO-60	CS-137
Lower Error	93.58	96.18
Upper Error	116.67	126.44
%R	105.13	111.31
LCL	75	75
Mean	100	100
UCL	125	125

Replicate Sample RPD



	BI-214	K-40	PB-214
Lower Error	62.27	28.80	206.76
Upper Error	23.09	16.48	112.19
RPD	42.68	22.64	159.48
CL	35	35	35

Normalized Difference



	LCS ND	REP ND	MS ND
CO-60	0.00	0.64	0.00
CS-137	0.00	0.57	0.00
	0.00	0.00	0.00
UCL	3	3	3

No Matrix Spike