PHASE II ENVIRONMENTAL SITE ASSESSMENT
FOR
LOWER BRULE SHOOTING RANGE
LOWER BRULE, LYMAN COUNTY, SOUTH DAKOTA

Prepared for:

U.S. ENVIRONMENTAL PROTECTION AGENCY
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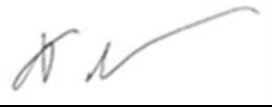
Prepared by:  Date: 9/26/2019

Michael Cherny
START Scientist

Approved by:  Date: 9/26/2019

Elliott Petri, P.E.
START Project Team Lead and Environmental Professional

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LIST OF ACRONYMS

ASTM	ASTM International
bgs	below ground surface
BLM	U.S. Bureau of Land Management
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	contaminant of concern
EPA	United States Environmental Protection Agency
ESA	Environmental Site Assessment
in.	inches
mg/kg	milligrams per kilogram
QA	Quality Assurance
QC	Quality Control
RSL	Regional Screening Level
SAP	Sampling and Analysis Plan
SD	South Dakota
SOO	Statement of Objectives
START	Superfund Technical Assessment and Response Team
TBA	Targeted Brownfields Assessment
TDD	Technical Direction Document
WESTON	Weston Solutions, Inc.
XRF	X-ray fluorescence

SUMMARY

The United States Environmental Protection Agency (EPA) tasked the Weston Solutions, Inc. (WESTON) Superfund Technical Assessment and Response Team (START) to assist the EPA in conducting a Phase II Environmental Site Assessment (ESA) for the Lower Brule Shooting Range located in Lower Brule, South Dakota (SD) (Site) (Figure 1).

SCOPE OF WORK

This Phase II ESA was conducted in accordance with Technical Direction Document (TDD) 0003/1903-02 and ASTM International (ASTM) E1903-11– Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process. The purpose of a Phase II ESA is to achieve the objectives set forth in the Statement of Objectives (SOO) developed by the EPA, user(s), and the Phase II Assessor. Goals for this Phase II ESA were to acquire and evaluate sufficient information to determine the location and concentration of potential environmental contamination at the Site, if present. The specific SOO for this Phase II ESA were as follows:

- Assess and evaluate surface and subsurface soils to determine extent of lead contamination.
- Develop sufficient information to render a reasonable professional opinion whether hazardous substances either are or are not present at the Site with respect to the potential concerns assessed. If present, include concentrations of hazardous substances based on field screening and/or laboratory analysis of samples.
- Gather and provide sufficient data to assist the TBA recipient in making informed decisions with regard to the future use of the property.
- Obtain sufficient data to support conceptual remediation cost estimating, if necessary.

SITE BACKGROUND

The Site consists of a vacant 2.5-acre lot that was formerly used as a shooting range by police officers and game wardens located on Trust Land of the Lower Brule Indian Reservation in Lower Brule, SD (Figure 2). An approximately 10-foot tall berm forms the southwestern boundary of the Site and served as the backstop where targets were placed.

The Lower Brule Sioux Tribe plans to redevelop the Site for use as a green/open space. An Environmental Site Assessment Transaction Screen was conducted by the Lower Brule Tribal EPA Office in 2018 and found that lead shot was present throughout the Site, particularly in the vicinity of the berm, and that a Phase II ESA should be conducted to determine the extent of lead contamination at the Site (Lower Brule Tribal EPA, 2018). The Phase II ESA was performed as a result of the conclusions of the Transaction Screen.

SUMMARY OF RESULTS AND CONCLUSIONS

Phase II assessment fieldwork was conducted on July 9 and 10, 2019. Results of the Phase II ESA have identified the presence of lead in excess of regulatory screening levels at the Site. The

following list is a summary of the results and conclusions regarding COCs and associated media identified by START at the Site:

Lead-in-Soils

Based on the laboratory results, concentrations of lead in Site soils from four sample locations exceeded the EPA Regional Screening Level (RSL) for Residential Soils (400 milligrams per kilogram [mg/kg]), but not the RSL for Industrial soils (800 mg/kg). Two of these exceedances were reported from Zone 2 from 0 to 6 inches (in.) below ground surface (bgs) (612 mg/kg and 718 mg/kg, respectively) and two from Zone 3 from 0 to 6 in. bgs (622 mg/kg and 570 mg/kg, respectively) (Table 1, Figure 3). Based on laboratory analytical results, the vertical extent of contamination did not extend to the 30 in. bgs interval.

A comparison to the EPA RSL for Industrial soils was used for the proposed use of open space. The concentrations of lead in surface soil samples did not exceed the EPA RSL for Industrial Soils (800 mg/kg), lead is not considered a contaminant of concern (COC) in relation to the Site for this scenario.

However, should the site be used for residential purposes, or prolonged camping, the exceedance of the EPA RSL for Residential soils (400 mg/kg) would mean that lead would be considered a COC. Additionally, at the request of the EPA, the results were also compared (Table 1) against the Wildlife and Livestock Risk Management Criteria for Metals in Soils for Cattle (244 mg/kg) (BLM, 2004). When comparing against these criteria the lead levels are in exceedance and would require cleanup.

SUMMARY OF RECOMMENDATIONS

Based on the results of the environmental assessment, START recommends the following:

- Based on the proposed use of the Site, no remedial actions are required to proceed with the current plans for use as open space. However, should the plans change, and the proposed development entail uses that must comply with residential or wildlife regulatory benchmarks, then remedial action would be required. This would entail excavating lead contaminated soils in the grids identified in Zones 2 and 3. Field screening should be performed during the excavation and/or conformation samples may be collected to confirm the vertical and horizontal extent of the lead contamination is removed.

This summary is intended to be a general description of the scope of work, results, conclusions, and recommendations identified as a result of the Phase II ESA of the Site; however, this section is not intended to be a "stand alone" document or to include the basis of all conclusions presented. The report should be read and used in its entirety. Information included in this section is subject to the scope of services and limitations noted in the original TDD and in this complete report.

1.0 INTRODUCTION

1.1 SCOPE OF WORK AND PURPOSE

WESTON START conducted a Phase II ESA for the Lower Brule Shooting Range located in Lower Brule, SD (Site) (Figure 1). The ESA was conducted in accordance with TDD 0003/1903-02 and ASTM E1903-11 – Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process. The purpose of a Phase II ESA is to acquire and evaluate information sufficient to achieve the objectives set forth in the SOO developed by the user(s) and the Phase II Assessor. The scope of a Phase II ESA is related to the activities agreed upon to meet the objectives of the investigation as defined in the SOO which are subject to ongoing evaluation and refinement as the assessment progresses. The SOO developed for this Site is presented in Section 1.2.

This Phase II ESA report contains the results of the data collection activities and associated quality assurance (QA)/quality control (QC) measures conducted specific to the Site. Information used to conduct this Phase II ESA was based upon reasonably ascertainable, visually and physically observable conditions, and included testing or sampling of materials. The structure of this report is based on the ASTM E1903-11 standard.

1.2 STATEMENT OF OBJECTIVES

The objectives were developed by the Lower Brule Sioux Tribe (User), START (Phase II Assessor), and the EPA to obtain sound, scientifically valid data concerning actual property conditions at the Site with respect to the presence or the likely presence of target analytes/substances including, but not limited to, those within the scope of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The SOO for the Site were determined during the project scoping meeting held on May 10, 2019. The Phase II ESA objectives determined for the Site were as follows:

- Assess and evaluate surface and subsurface soils to determine extent of lead contamination at the Site;
- Develop sufficient information to render a reasonable professional opinion whether hazardous substances either are or are not present at the sites with respect to the potential concerns assessed. If present, include concentrations of hazardous substances based on field screening and/or laboratory analysis of samples;
- Gather and provide sufficient data to assist the TBA recipient in making informed decisions with regard to the future use of the property; and
- Obtain sufficient data to support conceptual remediation cost estimating, if necessary.

2.0 SUMMARY OF BACKGROUND INFORMATION

The Lower Brule Sioux Tribe is planning to use the Site as green/open space. The ESA Transaction Screen, performed by the Brownfields Tribal Response Program Coordinator, Lower Brule Tribal EPA Office, highlighted the possibility of lead in soil contamination to be present. The Phase II ESA was performed as a result of the conclusions of the ESA Transaction Screen. The TBA recipient would like to determine the extent and location of contaminants before proceeding.

2.1 PROPERTY DESCRIPTION, LOCATION, AND HISTORY

The Site consists of approximately 2.5 acres of undeveloped land located in the Lower Brule Community, Lyman County, SD on Trust Land of the Lower Brule Indian Reservation at 44.066914°N latitude and -99.580549°W longitude. The Site is adjacent to the south of the Lower Brule Facilities Management Program and Lower Brule Roads Department, and west of the Lower Brule Community College and Lower Brule High School. The Site has been used as a shooting range since approximately 1974 and is no longer in use.

2.2 PREVIOUS ENVIRONMENTAL REPORTS AND RECORDS

Previous environmental reports and/or records, if available, were obtained by START from various sources, including local agencies, and reviewed for information relating to the Site. A summary of records obtained is provided in the following table.

Document Reviewed	Description
Document: TBA Application **Prepared for:** EPA **Prepared by:** Lower Brule Sioux Tribe **Date:** 11/28/2018 **Report Source:** EPA	**Document Summary:** The application gives brief summary of the Site background information and environmental conditions (including potential contaminants). The application also provides contact names(s) and phone numbers for stakeholders. **Information Relating to the Site:** The application indicates that the Site was used as a shooting range since approximately 1974 and is no longer in use. Due to the use as a shooting range for over 40 years, lead contamination is suspected to be present in soils. The Lower Brule Sioux Tribe plans to use the Site for green/open space.
Documents: Environmental Site Assessment Transaction Screen for the Old Shooting Range Site on the Lower Brule Sioux Reservation **Prepared for:** Lower Brule Tribal EPA Office **Prepared by:** Brownfields Tribal Response Program Coordinator, Lower Brule Tribal EPA Office **Date:** April 2018 **Report Source:** Lower Brule Tribal EPA Office	**Document Summary:** The purpose of the Environmental Site Assessment Transaction Screen is to identify potential environmental concerns with the property including any hazardous substances, petroleum products, contaminants, and pollutants that may potentially pose environmental impacts to the Old Shooting Range Site resulting from past or present uses of the subject property or surrounding properties. Specifically, from the historical use of the Site as a shooting range for over 40 years. **Information Relating to the Site:** The Transaction Screen identified one Recognized Environmental Condition in relation to the Site based on the potential presence for lead contamination in soils. The Transaction Screen recommended that a Phase II ESA be conducted at the Site to characterize lead contamination in soils.

3.0 DESCRIPTION OF WORK PERFORMED AND RATIONALE

This section summarizes the work performed and rationale for the work conducted to meet the SOO developed for the investigation as documented in the approved Sampling and Analysis Plan (SAP) for the Site (WESTON, 2019). Deviations from the approved SAP for this Phase II ESA are presented in Section 3.2.

Based upon the SOO developed for the Site, surface and subsurface soil sampling were conducted as part of this Phase II ESA. The investigation included sample collection for laboratory analysis. Details of the media investigation and rationale are presented below. Photographs of field activities are included in the Photograph Log presented in Appendix A and the analytical laboratory results are included in Appendix B. The Phase II fieldwork was conducted on July 9 and 10, 2019.

3.1 LEAD-IN-SOILS

Due to the potential for lead contamination in the surface and subsurface soils throughout the Site that is associated with the historical use as a shooting range, composite soil samples were collected at locations where potential lead contamination would most likely be found. The sampling design consisted of collection of 5-point composite soil samples from areas where high (Zone 3: ground surface at toe of berm), medium (Zone 2), and low (Zone 1) impacts were anticipated. Each zone was subdivided into three (3) grids (Figure 3). Surface soil samples (0-6 inches in. bgs) and subsurface soil samples (30-36 in. bgs) were collected from the areas within the grids in each zone with the exception of the berm area. Additional 5-point composite soil samples were collected from the berm area (Zone 3) from between 12-18 in. below the surface of the berm face at approximately 3-5 feet above the toe of the berm, where visual impacts were most obvious. One (1) 5-point composite background soil sample was collected between 12-18 in. bgs from an area that was clearly outside of the lead impacted shooting range.

3.2 DEVIATIONS FROM THE SAMPLING AND ANALYSIS PLAN

Due to the ongoing evaluation and refinement of the SOO, changes can occur to the approved SAP based upon site conditions encountered. No deviations from the approved SAP were identified during this Phase II ESA.

4.0 DESCRIPTION OF METHODS USED

4.1 LEAD-IN-SOILS

Sample Collection

Surface soil samples (0-6 in. bgs) and subsurface soil samples (30-36 in. bgs) were collected as 5-point composite samples from the grids identified in Figure 3 with the exception of the berm area. Soil samples were collected from within the berm area to an interior depth of 12-18 in. and were collected as 5-point composite samples. Aliquots were collected from five horizontal locations in each of the grids identified in Figure 3 as well as five locations from each of the berm area grids (Z3-1, Z3-2, and Z3-3) and one background location from 12-18 in. bgs. Surface soil aliquots were collected using disposable scoops and subsurface soil aliquots were collected via hand auger. Aliquots were collected into a plastic bag, homogenized, and the homogenized sample transferred into laboratory-supplied containers. Disposable gloves were used during sample collection and preparation procedures. The hand auger was decontaminated using Alconox detergent, a brush, and a deionized water rinse in between sample grids. The soil samples were labeled and stored until shipment for laboratory analysis accompanied by chain-of-custody documentation.

QA/QC

The following QA/QC activities were conducted as part of this investigation:

- Sample Duplicates – Three (3) duplicate composite sample, LBSR-Z1-3-91-0006 (duplicate of LBSR-Z1-3-01-0006), LBSR-Z2-2-91-3036 (duplicate of LBSR-Z2-2-01-3036), and LBSR-Z3-1-91-3036 (duplicate of LBSR-Z3-1-01-3036) were collected and submitted for laboratory analysis. The relative percent differences between these samples ranged from 1-6%, which is within the reasonable control limit for soils of ≤50%.
- Equipment Blanks – One (1) equipment blank was collected for each day of field work for a total of two (2) blanks and submitted for laboratory analysis for lead. Concentrations of lead were not reported for either sample above the laboratory reporting limit of 0.25 milligrams per liter indicating that decontamination procedures were sufficient in preventing cross-contamination from sampling equipment.

Laboratory Analytical Methods

Samples were delivered to Reservoirs in Denver, Colorado for lead analysis by EPA Method SW846 3050B / AA (7420).

5.0 PRESENTATION OF INFORMATION AND DATA ACQUIRED

5.1 LEAD-IN-SOILS

A total of 25 composite surface and subsurface soil samples, including three (3) duplicates, were collected from Zones 1 through 3 at the Site. The following table presents the sample location information; the laboratory results are summarized in Table 1.

Location	Soil Sample ID	Sample Depth
Background, outside of shooting range footprint at 44.067442°N, -99.579178°W	LBSR-BKG-1218	12-18 in. bgs
Zone 1, Grid 1	LBSR-Z1-1-01-0006	0-6 in. bgs
	LBSR-Z1-1-01-3036	30-36 in. bgs
Zone 1, Grid 2	LBSR-Z1-2-01-0006	0-6 in. bgs
	LBSR-Z1-2-01-3036	30-36 in. bgs
Zone 1, Grid 3	LBSR-Z1-3-01-0006	0-6 in. bgs
	LBSR-Z1-3-01-3036	30-36 in. bgs
Zone 2, Grid 1	LBSR-Z2-1-01-0006	0-6 in. bgs
	LBSR-Z2-1-01-3036	30-36 in. bgs
Zone 2, Grid 2	LBSR-Z2-2-01-0006	0-6 in. bgs
	LBSR-Z2-2-01-3036	30-36 in. bgs
Zone 2, Grid 3	LBSR-Z2-3-01-0006	0-6 in. bgs
	LBSR-Z2-3-01-3036	30-36 in. bgs
Zone 3, Grid 1	LBSR-Z3-1-01-0006	0-6 in. bgs
	LBSR-Z3-1-01-3036	30-36 in. bgs
Zone 3, Grid 1, Berm	LBSR-Z3-1-01-1218	12-18 in. interior depth
Zone 3, Grid 2	LBSR-Z3-2-01-0006	0-6 in. bgs
	LBSR-Z3-2-01-3036	30-36 in. bgs
Zone 3, Grid 2, Berm	LBSR-Z3-2-01-1218	12-18 in. interior depth
Zone 3, Grid 3	LBSR-Z3-3-01-0006	0-6 in. bgs
	LBSR-Z3-3-01-3036	30-36 in. bgs
Zone 3, Grid 3, Berm	LBSR-Z3-3-01-1218	12-18 in. interior depth
Zone 1, Grid 3	LBSR-Z1-3-91-0006	0-6 in. bgs
Zone 2, Grid 2	LBSR-Z2-2-91-3036	30-36 in. bgs
Zone 3, Grid 1	LBSR-Z3-1-91-3036	30-36 in. bgs

Observations

- Overall, the site and berm were overgrown with no stressed vegetation observed. No obvious areas of damage to the berm were noted.

- Bullet casings were primarily observed around the target staging area found in Zone 2, Grids 2 and 3. Bare soils were prevalent in these grids as well.

6.0 EVALUATION AND INTERPRETATION OF INFORMATION, DATA, AND RESULTS

The evaluation and interpretation of the information, data, and results for the Phase II ESA are presented below. This section summarizes the field screening data and laboratory results obtained to identify the location and extent of contamination. Benchmarks used for comparison are the EPA RSLs - Generic Tables Residential (400 mg/kg) and Industrial (800 mg/kg) Soil: Target Cancer Risk = 1E-6 and Target Hazard Quotient = 1.0 (EPA, 2019a).

The locations of samples and/or extent of soil concentrations exceeding benchmarks are depicted on Figure 3. Laboratory results for the samples collected are summarized in Table 1. Photographs of the field activities conducted are presented in Appendix A. Copies of the laboratory reports are presented in Appendix B.

6.1 LEAD-IN-SOILS

Surface soil samples were collected from the zones and grids described in Section 5.0 and submitted for laboratory analysis of lead. Lead was detected above the EPA RSL for Residential Soils in four (4) samples from two (2) zones. No exceedances of the EPA RSL for Industrial Soils were reported from the Site. The following table summarizes the samples where residential soil exceedances were reported for the lead-in-soil samples collected.

Soil Sample ID	Wildlife and Livestock Risk Management Criteria for Metals in Soils for Cattle (mg/kg)	EPA RSL – Residential Soil (mg/kg)	EPA RSL – Industrial Soil (mg/kg)	Lead Results (mg/kg)
LBSR-Z2-2-01-0006	244	400	800	**612**
LBSR-Z2-3-01-0006				**718**
LBSR-Z3-2-01-0006				**622**
LBSR-Z3-3-01-0006				**570**

Notes:
Results exceeding the EPA RSL for Residential Soil (400 mg/kg) and the Wildlife and Livestock Risk Management Criteria for Metals in Soils for Cattle (244 mg/kg) are bolded

Analytical results are presented in Table 1. The location of the lead-in-soil surface soil samples and reported exceedances is presented on Figure 3.

Interpretation of Results

Based on the laboratory results, concentrations of lead in Site soils from four sample locations exceeded the EPA RSL for Residential Soils (400 mg/kg) and Wildlife and Livestock Risk Management Criteria for Metals in Soils for Cattle (244 mg/kg). Two of these exceedances were

reported from Zone 2 (Grids 2 and 3) and two from Zone 3 (Grids 2 and 3) from 0 to 6 in. bgs. Based on laboratory analytical results, the vertical extent of contamination did not extend to the 30 in. bgs interval in any of the sample locations. Additionally, no exceedances were reported from any of the samples collected from the berm, which were collected from a height of approximately 3 to 5 feet from the toe of the berm at a 12 to 18 in. interior depth, where visual impacts were observed. Exceedances of the EPA RSL for Industrial Soils (800 mg/kg) were not reported for any of the samples collected at the Site.

Lead in surface soil is not currently considered a COC in relation to the Site as the proposed use of the Site for green/open space would not meet the exposure guidelines defined for residential soils.

However, should the site be used for residential purposes, or prolonged camping, the exceedances of the EPA RSL for Residential soils would mean that lead would be considered a COC. Additionally, at the request of the EPA the results were also compared against the Wildlife and Livestock Risk Management Criteria for Metals in Soils for Cattle (244 mg/kg) (BLM, 2004). When comparing against these criteria the lead levels are in exceedance and would require cleanup.

6.2 CONCEPTUAL SITE MODEL

Per ASTM E1903-11 (Section 6.4.6), validation of the conceptual site model is conducted by evaluating testing results and other investigation findings to determine whether available information is sufficient to support sound conclusions regarding the presence of the target analytes. The presence of the target analytes investigated as part of this Phase II ESA along with the current exposure pathways, as applicable, for the Site is presented in the following table.

Target Analytes	Media	Contaminants Present Above Screening Benchmarks	Exposure Pathway	Exposure Route	Human Receptors	
					Residential	Workers
Lead	Soil	Yes	Potentially Complete	Dermal	X	--
				Ingestion	X	--
				Inhalation	X	--
Notes: -- = Receptor not at risk (Currently) X = Receptor at risk to exposure (Currently or Potentially)						
Comments: Evaluation of exposure pathway completeness is based upon the existing site use as vacant and assumes that no people are currently accessing the Site or will be accessing the Site other than workers during future assessment/redevelopment or maintenance workers. If a change in current or proposed use as green/open space occurs, exposure pathways should be re-assessed as they may alter the pathway completeness presented in this report and require further evaluation prior to conducting subsequent activities or changes at the Site.						

6.3 DISCLOSURE OF AVAILABLE DATA INSUFFICIENT TO MEET OBJECTIVES

Per ASTM E1903-11 (Section 1.3.2), all Phase II ESA reports must disclose any respect in which available data are insufficient to meet the objectives of the assessment. Listed below are the

disclosures in which the available data set for this investigation were insufficient to meet the objectives of this Phase II ESA, if any.

- All objectives of the Phase II ESA were met using the available data.

7.0 CONCLUSIONS OF THE PHASE II ESA

START performed a Phase II ESA in conformance with the scope and limitations of ASTM Practice E1903-11 for the Lower Brule Shooting Range located in Lower Brule, SD. The following list is a summary of the conclusions regarding COCs and associated media identified by START at the Site:

Lead in Soil

- Based on the analytical results of the lead-in-soil samples, lead in surface soil is not currently considered a COC in relation to the Site as the proposed use of the Site for green/open space would not meet the exposure guidelines defined for residential soils.

RECOMMENDATIONS

Based on the results of the environmental assessment, START recommends the following:

- Based on the proposed use of the Site, no remedial actions are required to proceed with the current plans. However, should the plans change, and the proposed development entail uses that must comply with residential regulatory benchmarks, then remedial action would be required. This action would entail excavating lead contaminated soils in the grids identified in Zones 2 and 3. Field screening should be performed during the excavation and/or conformation samples may be collected to confirm the vertical and horizontal extent of the lead contamination is removed.

8.0 SIGNATURE OF PHASE II ASSESSOR AND SEAL

This Phase II ESA was completed by the following START personnel and subcontractor(s), if applicable. Qualifications are provided at the end of the report:

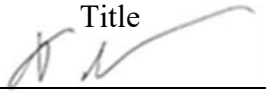
- Mr. Elliott Petri – Project Manager, Senior Engineer, and Environmental Professional;
- Ms. Angela Ledgerwood – Senior Project Scientist; and
- Mr. Michael Cherny – Scientist.

Mr. Elliott Petri has undertaken the role of Phase II Assessor for this assessment. The following is the certification statement as defined in ASTM Practice E1903-11 (Section 9.2.1):

> *We have performed a Phase II ESA at the Lower Brule Shooting Range located in Lower Brule, SD in conformance with the scope and limitations of ASTM Practice E1903-11 and for the following objectives:*
>
> - *Assess and evaluate surface and subsurface soils to determine extent of lead contamination.*
> - *Develop sufficient information to render a reasonable professional opinion whether hazardous substances either are or are not present at the Site with respect to the potential concerns assessed. If present, include concentrations of hazardous substances based on field screening and/or laboratory analysis of samples.*
> - *Gather and provide sufficient data to assist the TBA recipient in making informed decisions with regard to the future use of the property.*
> - *Obtain sufficient data to support conceptual remediation cost estimating, if necessary.*

Elliott Petri, P.E.
Certifying Environmental Professional (Print)

Project Manager
Title



Signature

9/26/2019
Date

9.0 SPECIFICATIONS FOR ASTM E1903-11 REPORT USE AND RELIANCE

9.1 SPECIAL TERMS AND CONDITIONS

This document has been prepared by the WESTON START-IV team as tasked by the EPA solely for the use and benefit of the EPA and the Lower Brule Sioux Tribe. Any use of this document or information herein by persons or entities other than the EPA or the Lower Brule Sioux Tribe, without the express written consent of START, will be at the sole risk and liability of said person or entity. START will not be liable to the EPA, the Lower Brule Sioux Tribe, or such persons or entities, for any damages resulting therefrom. It is understood that this document may not include all information pertaining to the described site.

9.2 LIMITATIONS AND EXCEPTIONS OF ASSESSMENT

ASTM E1903-11 (Section 4.2.1) acknowledges that "No Phase II ESA can eliminate all uncertainty. Furthermore, any sample, either surface or subsurface, taken for chemical testing may or may not be representative of a larger population. Professional judgment and interpretation are inherent in the process, and even when exercised in accordance with objective scientific principles, uncertainty is inevitable. Additional assessment beyond that which was reasonably undertaken may reduce the uncertainty". ASTM E1903-11 (Section 4.2.1.2) acknowledges that "The effectiveness of a Phase II ESA may be compromised by limitations or defects in the information used to define the objectives and scope of the investigation, including inability to obtain information concerning historic site uses or prior site assessment activities despite the efforts of the user and Phase II Assessor to obtain such information in accordance with 5.1.3". Furthermore, the ASTM E1903-11 (Section 4.2.2) states "Phase II ESAs do not generally require an exhaustive assessment of environmental conditions on a property. There is a point at which the cost of information obtained, and the time required to obtain it outweigh the benefit of the information and, in the context of private transactions and contractual responsibilities, may become a material detriment to the orderly conduct of business. If the presence of target analytes is confirmed on a property, the extent of further assessment is a function of the degree of confidence required and the degree of uncertainty acceptable in relation to the objectives of the assessment".

9.3 DISCLAIMERS

START has performed this Phase II ESA in general conformance with the scope and limitations of ASTM E1903-11 standards and TDD 0003/1903-02. The Phase II ESA findings and conclusions presented herein are professional opinions based solely on data collected during the assessment and/or interpretation of information and past data provided for review. The information and data collected from the Site by START is based on the conditions existing on the date(s) of START's assessment activities at the property. START does not warrant or guarantee information obtained from third parties used for this assessment are correct, complete, and/or current.

Though START did collect samples and/or perform testing during this assessment, it is possible that past contamination remains undiscovered or that property conditions will change in the future. START does not warrant or guarantee the property suitable for any particular purpose or certify the property as "clean."

ASTM E1903-11 (Section 1.5) states "This practice is not intended to supersede applicable requirements imposed by regulatory authorities. This practice does not attempt to define a legal standard of care either for the performance of professional services with respect to matters within its scope, or for the performance of any individual *Phase II Environmental Site Assessment"*.

Information, limitations, and disclaimers provided in this general section apply to all of the sections included in this report.

10.0 REFERENCES

ASTM International (ASTM), 2011. E1903-11, *Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process.* West Conshohocken, Pennsylvania.

Citation	Reference Type	Assessment Factor				
		Soundness	Applicability and Utility	Clarity and Completeness	Uncertainty and Variability	Evaluation and Review
ASTM, 2011	Guidance	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable

United States Environmental Protection Agency (EPA), 2019a. *Regional Screening Levels (RSLs) – Generic Tables*. May 2019.

Citation	Reference Type	Assessment Factor				
		Soundness	Applicability and Utility	Clarity and Completeness	Uncertainty and Variability	Evaluation and Review
EPA, 2019a	Guidance	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable

EPA, 2019b. *Technical Direction Document (TDD) Lower Brule Shooting Range* 0003/1903-02. March 18, 2019.

Citation	Reference Type	Assessment Factor				
		Soundness	Applicability and Utility	Clarity and Completeness	Uncertainty and Variability	Evaluation and Review
EPA, 2019b	Guidance	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable

Lower Brule Tribal Environmental Protection Agency (EPA), 2018. *Environmental Site Assessment Transaction Screen for the Old Shooting Range Site on the Lower Brule Sioux Reservation.* April 2018.

Citation	Reference Type	Assessment Factor				
		Soundness	Applicability and Utility	Clarity and Completeness	Uncertainty and Variability	Evaluation and Review
Lower Brule Tribal EPA, 2018	Document	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable

WESTON, 2019. *Sampling and Analysis Plan for Lower Brule Shooting Range, Lower Brule, Lyman County, South Dakota Targeted Brownfields Assessment.* June 2019.

Citation	Reference Type	Assessment Factor				
		Soundness	Applicability and Utility	Clarity and Completeness	Uncertainty and Variability	Evaluation and Review
WESTON, 2019	Document	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable

11.0 QUALIFICATIONS

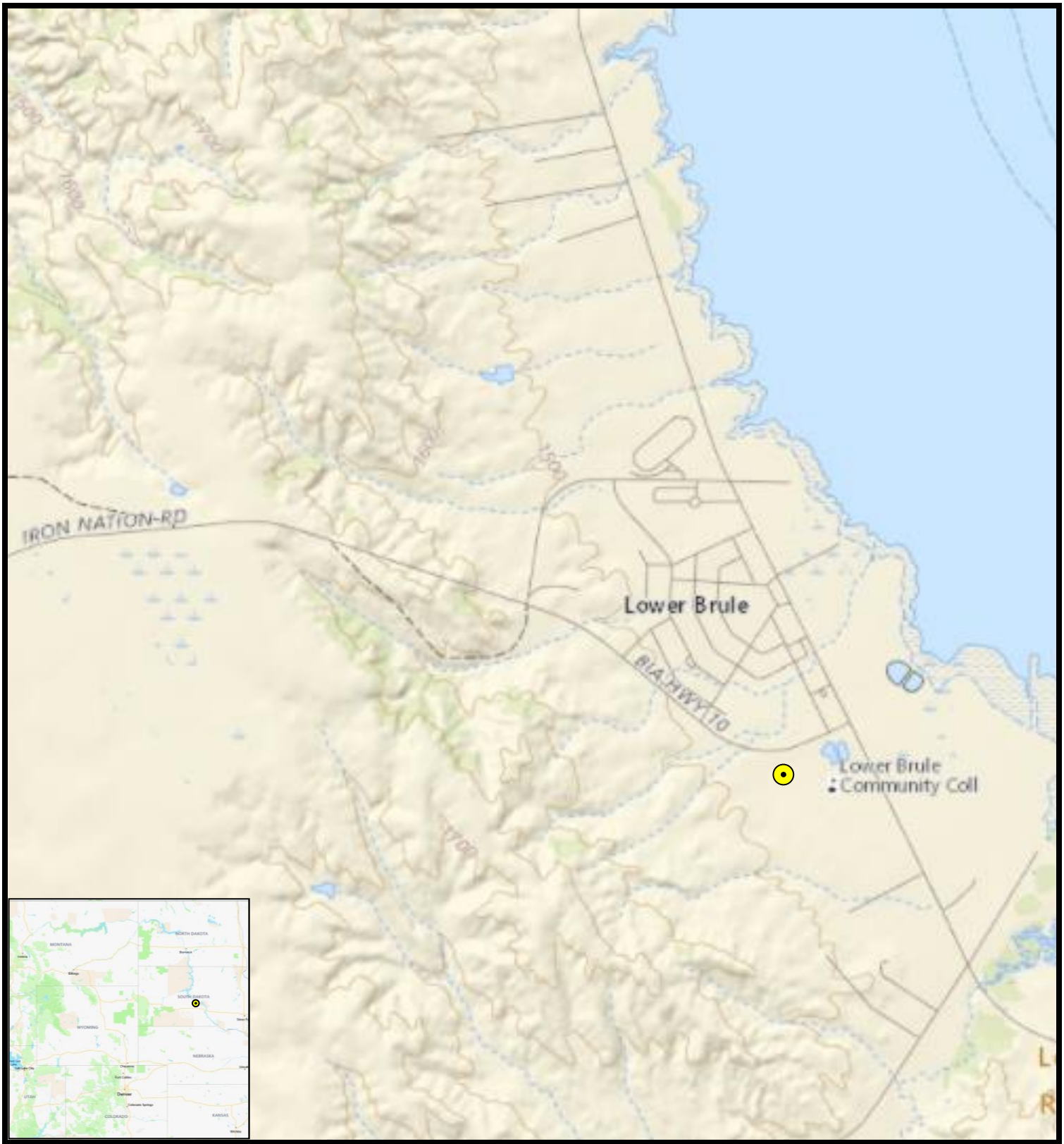
START utilized qualified, professional staff, trained in performing the scope of work required for this Phase II ESA. The START team personnel included a project manager and technical specialist(s). Their roles are described in more detail as follows:

- Project Manager, Senior Engineer, and Environmental Professional – Mr. Elliott Petri, P.E. has a M.S. in Environmental Science and Engineering with 8+ years of experience in the field of environmental sciences including site management, Phase I/II ESAs, site investigations, assessments and remediation; Mr. Petri has managed/conducted quality control on projects from $20,000 to 4 million dollars for the United States Air Force and the EPA.

- Senior Project Scientist and Environmental Professional – Ms. Angela Ledgerwood, CHMM, PMP is an environmental professional with a B.S. in Environmental Systems Technology, an M.Sc. in Geographical Information Sciences, and more than 20 years of experience conducting and managing projects including site assessments and remedial design activities at Resource Conservation and Recovery Act (RCRA)/CERCLA sites. She is experienced in conducting condition assessments, research, and writing technical documents including Phase I/II ESAs.

- Scientist – Mr. Michael Cherny has 6+ years of project experience collecting soil, groundwater, surface water, and air samples, and conducting air monitoring. His experience includes conducting Phase I and II ESAs, removals, technical report writing, field documentation, and field instrument proficiency. Mr. Cherny is a certified asbestos and LBP inspector in Colorado, Montana, and EPA Region 8 administered states.

FIGURES



Legend

- Site Location

0 1,000 2,000 feet

N W E S

Prepared for:
U.S. EPA Region 8

Contract No.:
EP-S8-13-01

TDD:
1902-02

TO:
0003

Prepared By:
Weston Solutions, Inc.
START IV

Suite 100
1435 Garrison Street
Lakewood, CO 80215

FIGURE 1

SITE LOCATION MAP
LOWER BRULE SHOOTING RANGE, LOWER BRULE, LYMAN COUNTY, SOUTH DAKOTA

Legend

Site boundary

0 100 200 feet

N W E S

Prepared for:
U.S. EPA Region 8

Contract No.:
EP-S8-13-01

TDD:
1903-02

TO:
0003

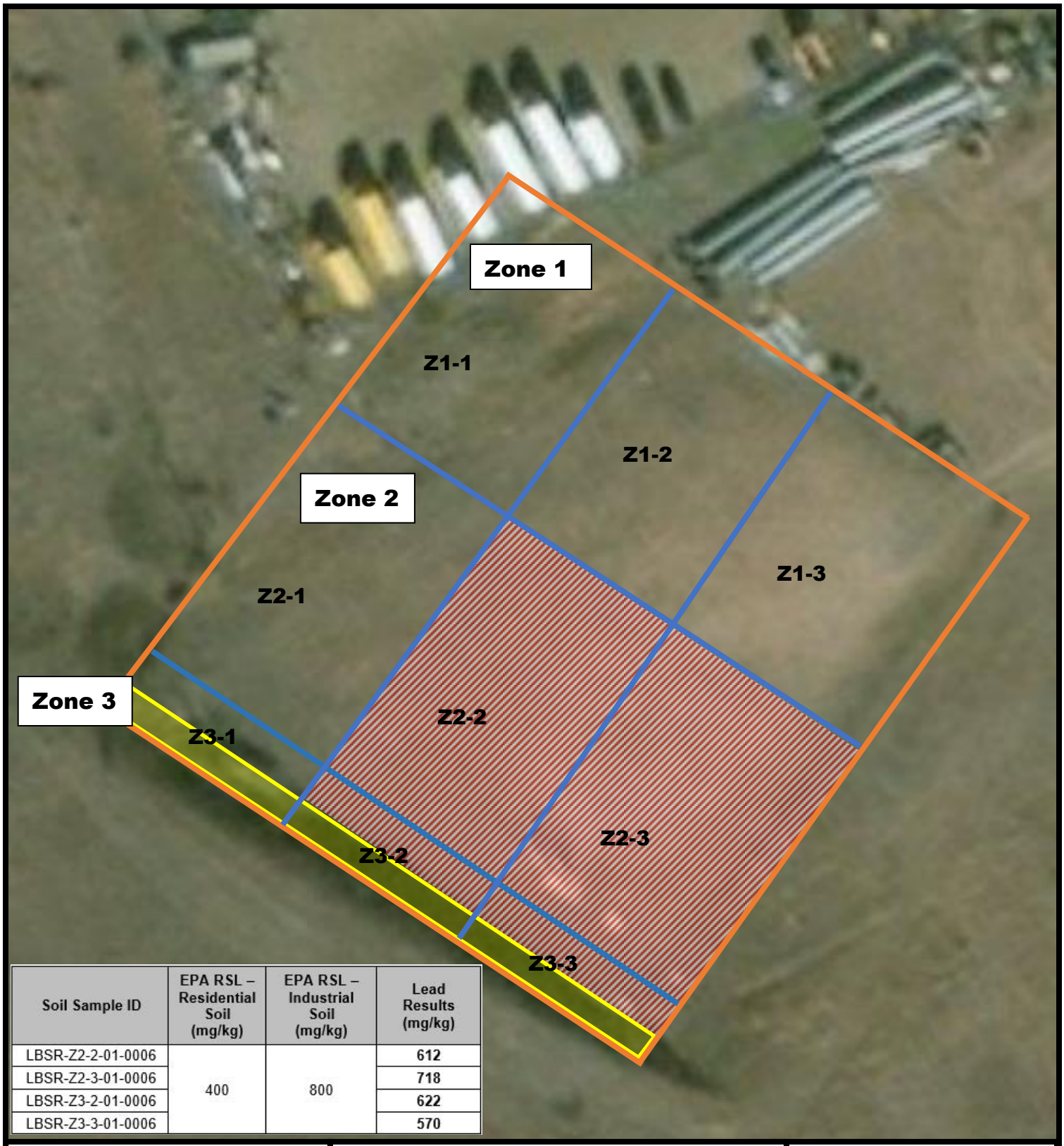
Prepared By:
Weston Solutions, Inc.
START IV

Suite 100
1435 Garrison Street
Lakewood, CO 80215

FIGURE 2

SITE VICINITY MAP
LOWER BRULE SHOOTING RANGE, LOWER BRULE, LYMAN COUNTY, SOUTH DAKOTA

DATE: 7/27/2019



Soil Sample ID	EPA RSL – Residential Soil (mg/kg)	EPA RSL – Industrial Soil (mg/kg)	Lead Results (mg/kg)
LBSR-Z2-2-01-0006	400	800	612
LBSR-Z2-3-01-0006			718
LBSR-Z3-2-01-0006			622
LBSR-Z3-3-01-0006			570

Legend

- Site boundary
- Sample Grids
- Berm
- Lead Concentrations Exceeding Benchmark

0 25 50 feet

N W E S

Prepared for:
U.S. EPA Region 8

Contract No.:
EP-S8-13-01

TDD:
1903-02

TO:
0003

Prepared By:
Weston Solutions, Inc.
START IV

Suite 100
1435 Garrison Street
Lakewood, CO 80215

FIGURE 3

SAMPLE LOCATION AND EXCEEDANCE MAP LOWER BRULE SHOOTING RANGE, LOWER BRULE, LYMAN COUNTY, SOUTH DAKOTA

DATE: 7/27/2019

TABLES

Table 1
Lead-in-Soil Analytical Results

Zone	Soil Sample ID	Lead Results (mg/kg)	Wildlife and Livestock Risk Management Criteria for Metals in Soils (mg/kg)	EPA RSL – Residential Soil (mg/kg)	EPA RSL – Industrial Soil (mg/kg)
Background	LBSR-BKG-1218	**20.6**	244	400	800
1	LBSR-Z1-1-01-0006	**19.5**			
	LBSR-Z1-1-01-3036	**14.9**			
	LBSR-Z1-2-01-0006	**18.3**			
	LBSR-Z1-2-01-3036	**24.1**			
	LBSR-Z1-3-01-0006	**11.7**			
	LBSR-Z1-3-91-0006	**15.0**			
	LBSR-Z1-3-01-3036	**15.1**			
2	LBSR-Z2-1-01-0006	**22.8**			
	LBSR-Z2-1-01-3036	**19.5**			
	LBSR-Z2-2-01-0006	**612**			
	LBSR-Z2-2-01-3036	**12.5**			
	LBSR-Z2-2-91-3036	**13.0**			
	LBSR-Z2-3-01-0006	**718**			
	LBSR-Z2-3-01-3036	**19.0**			
3	LBSR-Z3-1-01-0006	**20.3**			
	LBSR-Z3-1-01-1218	**136**			
	LBSR-Z3-1-01-3036	**12.9**			
	LBSR-Z3-1-91-3036	**12.1**			
	LBSR-Z3-2-01-0006	**622**			
	LBSR-Z3-2-01-1218	**87.0**			
	LBSR-Z3-2-01-3036	**23.0**			
	LBSR-Z3-3-01-0006	**570**			
	LBSR-Z3-3-01-1218	**38.0**			
	LBSR-Z3-3-01-3036	**16.8**			

Notes:

Bold = Analyte detected above detection limit

= Analyte detected above EPA Residential RSL and Wildlife and Livestock Risk Management Criteria for Metals in Soils

EPA = Environmental Protection Agency

mg/kg = milligrams per kilogram

RSL = Regional Screening Level

APPENDIX A
PHOTOGRAPH LOG

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Lower Brule Shooting Range	Lower Brule, SD	0003/1903-02

Photo No. 1	Date: 07/09/2019
Photo Coordinates	
Lat	44.067111
Long	-99.580536

Direction Photo Taken:
166.488387978142

Description:

Entrance and southeast fence line for the shooting range.

Photo No. 2	Date: 07/09/2019
Photo Coordinates	
Lat	44.067108
Long	-99.580519

Direction Photo Taken:
190.112419070041

Description:

Looking at the berm.

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Lower Brule Shooting Range	Lower Brule, SD	0003/1903-02

Photo No. 3	Date: 07/09/2019
Photo Coordinates	
Lat	44.067081
Long	-99.580536

Direction Photo Taken:
224.976882923192

Description:

Looking at the berm.

Photo No. 4	Date: 07/09/2019
Photo Coordinates	
Lat	44.067111
Long	-99.580567

Direction Photo Taken:
15.8046569776528

Description:

Decontamination of the hand auger bucket.

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Lower Brule Shooting Range	Lower Brule, SD	0003/1903-02

Photo No. 5	Date: 07/10/2019

Photo Coordinates

Lat	44.066678
Long	-99.580681

Direction Photo Taken:
307.335396039604

Description:

Bullet casings observed on bare soil.

Photo No. 6	Date: 07/10/2019

Photo Coordinates

Lat	44.0667
Long	-99.580703

Direction Photo Taken:
129.802768729642

Description:

Target staging area.

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Lower Brule Shooting Range	Lower Brule, SD	0003/1903-02

Photo No. 7	Date: 07/10/2019
Photo Coordinates	
Lat	44.066669
Long	-99.580719
Direction Photo Taken: 192.824447646494	
Description: START using hand auger to collect sample aliquots.	

Photo No. 8	Date: 07/10/2019
Photo Coordinates	
Lat	44.06665
Long	-99.580636
Direction Photo Taken: 324.676834295136	
Description: Target staging area.	

APPENDIX B
LABORATORY REPORTS

REI LAB **Reservoirs Environmental, Inc.**

July 22, 2019

Subcontractor Number:
Laboratory Report: **RES 439841-1**
Project #/P.O. #: **20408.016.003.0683.00**
Project Description: **Lower Brule**

Elliott Petri
Weston Solutions, Inc. (CO)
1435 Garrison St. Ste. 100
Lakewood CO 80215

Dear Elliott,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the American Industrial Hygiene Association, Lab ID 101533 - Accreditation Certificate #480. The laboratory is currently proficient in both IHPAT & ELPAT programs respectively.

Reservoirs has analyzed the following sample(s) using Atomic Absorption Spectroscopy (AAS) / Atomic Emission Spectroscopy - Mass Spectrometry (ICP-MS) per your request. Reported sample results were not blank corrected. The analysis has been completed in general accordance with the appropriate methodology as stated in the analysis table. Results have been sent to your office.

RES 439841-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Dustin Kramer

For Jeanne Spencer
President

RESERVOIRS ENVIRONMENTAL, INC

NVLAP Lab Code 101896-0
AIHA Certificate of Accreditation #480 LAB ID 101533

TABLE: I ANALYSIS: LEAD IN SOIL

RES Job Number:	**RES 439841-1**
Client:	**Weston Solutions, Inc. (CO)**
Client Project/P.O.:	**20408.016.003.0683.00**
Client Project Description:	**Lower Brule**
Date Samples Received:	**July 15, 2019**
Analysis Type:	**REI CHEMISTRY SOP / USEPA SW846 3050B/7420-M**
Turnaround:	**Standard**
Date Samples Analyzed:	**July 18, 2019**

NA = Not Analyzed
NR = Not Received
ND = None Detected
TR = Trace; <1 % Visual Estimate
Trem-Act = Tremolite-Actinolite
BAS = Below Analytical Sensitivity
BRL = Below Reporting Limit

Client ID Number	Reporting Limit (mg/kg)	LEAD CONCENTRATION (mg/kg)
LBSR-BKG-1218	5.8	20.6
LBSR-Z1-1-01-0006	4.3	19.5
LBSR-Z1-1-01-3036	4.9	14.9
LBSR-Z1-2-01-0006	5.9	18.3
LBSR-Z1-2-01-3036	5.6	24.1
LBSR-Z1-3-01-0006	6.0	11.7
LBSR-Z1-3-01-3036	5.4	15.1
LBSR-Z2-1-01-0006	5.1	22.8
LBSR-Z2-1-01-3036	4.2	19.5
LBSR-Z2-2-01-0006	5.3	612
LBSR-Z2-2-01-3036	5.0	12.5
LBSR-Z2-3-01-0006	5.2	718
LBSR-Z2-3-01-3036	4.9	19.0
LBSR-Z3-1-01-0006	5.6	20.3
LBSR-Z3-1-01-1218	5.4	136
LBSR-Z3-1-01-3036	4.9	12.9
LBSR-Z3-2-01-0006	5.8	622
LBSR-Z3-2-01-1218	5.5	87.0
LBSR-Z3-2-01-3036	5.7	23.0
LBSR-Z3-3-01-0006	5.1	570
LBSR-Z3-3-01-1218	5.0	38.0
LBSR-Z3-3-01-3036	5.2	16.8
LBSR-Z1-3-91-0006	5.8	15.0
LBSR-Z2-2-91-3036	5.6	13.0
LBSR-Z3-1-91-3036	4.9	12.1

* Unless otherwise noted all quality control samples performed within specifications established by the laboratory

Dustin Kramer
Analyst/Data QA

Due Date:_____
Due Time:_____

REI LAB **Reservoirs Environmental, Inc.**
5801 Logan St. Denver, CO 80216 • Ph: 303 964-1986 • Fax 303-477-4275 • Toll Free :866 RESI-ENV

RES 439841
Jo
Page ___ of ___

After Hours Cell Phone: 720-339-9228

INVOICE TO: (IF DIFFERENT)

Company: **Weston Solutions, Inc**
Address: 1435 Garrison St Suite 100
Lakewood, CO 80215

Company: **Weston Solutions, Inc**
Address:

CONTACT INFORMATION:

Contact: **Elliott Petri**
Phone:
Fax:
Cell/pager: 719-216-2754

Contact:
Phone:
Fax:
Cell/pager:

Project Number and/or P.O. #: 20408.016.003.0683.00
Project Description/Location: Lower Brule

Final Data Deliverable Email Address: elliott.petri@westonsolutions.com

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm

PLM / PCM / TEM ____ RUSH (Same Day) ___ PRIORITY (Next Day) X STANDARD
(Rush PCM = 2hr, TEM = 6hr.)

CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm

Metal(s) / Dust ___ RUSH ___ 24 hr. ___3-5 Day
RCRA 8 / Metals & Welding Fume Scan / TCLP ___ RUSH ___ 5 day ___10 day
Organics ___ 24 hr. ___ 3 day ___5 Day
****Prior notification is required for RUSH turnarounds.****

MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm

E.coli O157:H7, Coliforms, S.aureus ___ 24 hr. ___2 Day ___3-5 Day
Salmonella, Listeria, E.coli, APC, Y & M ___ 48 Hr. ___3-5 Day
Mold ___ RUSH ___24 Hr ___48 Hr ___3 Day ___5 Day

****Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.****

Special Instructions: Please provide EDD

REQUESTED ANALYSIS

VALID MATRIX CODES

Air = A | Bulk = B
Dust = D | Paint = P
Soil = S | Wipe = W
Swab = SW | F = Food
Drinking Water = DW | Waste Water = WW
O = Other
ASTM E1792 approved wipe media only

LAB NOTES:

Client sample ID number (Sample ID's must be unique)	PLM - Short report, Long report, Point Count	TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Preps	PCM - 7400A, 7400B, OSHA	DUST - Total, Respirable	METALS - Analyte(s) LEAD ONLY RCRA 8, TCLP, Welding Fume, Metals Scan	ORGANICS - METH	MICROBIOLOGY: Salmonella +/-	E.coli O157:H7 +/-	Listeria +/-	Aerobic Plate Count: +/- or Quantification	E.coli: +/- or Quantification	Coliforms: +/- or Quantification	S.aureus: +/- or Quantification	Y & M: +/- or Quantification	Mold: +/- Identification, Quantification	SAMPLER'S INITIALS OR OTHER NOTES	Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh/mm a/p	EM Number (Laboratory Use Only)
1 LBSR-BKG-1218					X													S	1	7/9/2019	10:45	
2 LBSR-Z1-1-01-0006					X													S	1	7/9/2019	11:10	
3 LBSR-Z1-1-01-3036					X													S	1	7/9/2019	11:45	
4 LBSR-Z1-2-01-0006					X													S	1	7/9/2019	12:48	
5 LBSR-Z1-2-01-3036					X													S	1	7/9/2019	13:18	
6 LBSR-Z1-3-01-0006					X													S	1	7/9/2019	13:30	
7 LBSR-Z1-3-01-3036					X													S	1	7/9/2019	14:10	
8 LBSR-Z2-1-01-0006					X												MS/MSD	S	1	7/9/2019	14:28	
9 LBSR-Z2-1-01-3036					X													S	1	7/9/2019	15:10	
10 LBSR-Z2-2-01-0006					X													S	1	7/9/2019	15:25	

Number of samples received: _____ (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By: _____ Date/Time: 7/10/19 1800

Sample Condition: On Ice Yes / No | Sealed Yes / No | Intact Yes / No
Temp. (F°) _____

Laboratory Use Only
Received By: Lina Contreras Date/Time: 7.15.19 9:15A Carrier: Fed Ex

Results:	Contact	Phone	Email	Fax	Date	Time	Initials	Contact	Phone	Email	Fax	Date	Time	Initials
	Contact	Phone	Email	Fax	Date	Time	Initials	Contact	Phone	Email	Fax	Date	Time	Initials

Reservoirs Environmental, Inc.
5801 Logan St. Denver, CO 80216 • Ph: 303 964-1986 • Fax 303-477-4275 • Toll Free 866 RESI-ENV

RES Job # 439841

Submitted by: _____

REQUESTED ANALYSIS

PLM - Short report, Long report, Point Count

TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Preps

PCM - 7400A, 7400B, OSHA

DUST - Total, Respirable

METALS - Analyte(s) LEAD ONLY RCRA 8, TCLP, Welding Fume, Metals Scan

ORGANICS - METH

MICROBIOLOGY
- Salmonella: +/-
- E.coli O157:H7: +/-
- Listeria: +/-
- Aerobic Plate Count: +/- or Quantification
- E.coli: +/- or Quantification
- Coliforms: +/- or Quantification
- S.aureus: +/- or Quantification
- Y & M: +/- or Quantification
- Mold: +/- or Quantification

OTHER -

VALID MATRIX CODES

Air = A	Bulk = B
Dust = D	Paint = P
Soil = S	Wipe = W
Swab = SW	F = Food
Drinking Water = DW	Waste Water = WW
O = Other	

ASTM E1792 approved wipe media only

LAB NOTES:

	Client sample ID number (Sample ID's must be unique)	PLM	TEM	PCM	DUST	METALS	ORGANICS	MICROBIOLOGY	OTHER	Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh/mm a/p
11	LBSR-Z2-2-01-3036					X					S	1	7/9/2019	16:00
12	LBSR-Z2-3-01-0006					X					S	1	7/10/2019	8:35
13	LBSR-Z2-3-01-3036					X					S	1	7/10/2019	9:05
14	LBSR-Z3-1-01-0006					X					S	1	7/10/2019	9:30
15	LBSR-Z3-1-01-1218					X					S	1	7/10/2019	10:10
16	LBSR-Z3-1-01-3036					X					S	1	7/10/2019	9:55
17	LBSR-Z3-2-01-0006					X					S	1	7/10/2019	10:35
18	LBSR-Z3-2-01-1218					X			MS/MSD		S	1	7/10/2019	11:15
19	LBSR-Z3-2-01-3036					X					S	1	7/10/2019	11:05
20	LBSR-Z3-3-01-0006					X					S	1	7/10/2019	11:30
21	LBSR-Z3-3-01-1218					X					S	1	7/10/2019	12:00
22	LBSR-Z3-3-01-3036					X					S	1	7/10/2019	11:50
23	LBSR-Z1-3-91-0006					X					S	1	7/9/2019	13:30
24	LBSR-Z2-2-91-3036					X					S	1	7/9/2019	16:00
25	LBSR-Z3-1-91-3036					X					S	1	7/10/2019	9:55
26	LBSR-ER-07092019					X					O	1	7/9/2019	16:10
27	LBSR-ER-07102019					X					O	1	7/9/2019	11:20
28														
29														
30														
31														
32														
33														
34														
35														
36														
37														
38														
39														
40														
41														

EM Number (Laboratory Use Only)

REI LAB **Reservoirs Environmental, Inc.**

July 22, 2019

Subcontractor Number:
Laboratory Report: **RES 439841-2**
Project #/P.O. #: **20408.016.003.0683.00**
Project Description: **Lower Brule**

Elliott Petri
Weston Solutions, Inc. (CO)
1435 Garrison St. Ste. 100
Lakewood CO 80215

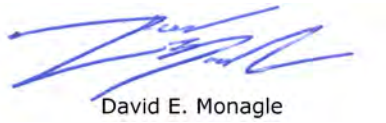
Dear Elliott,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of trace elements in drinking water by the State of Colorado. The laboratory is currently proficient in both ERA Laboratory Accreditation program respectively.

Reservoirs has analyzed the following sample(s) using Inductively Coupled Plasma Mass Spectrometry (ICP/MS) per your request. Reported sample results were not blank corrected. The analysis has been completed in general accordance with the appropriate methodology as stated in the analysis table. Results have been sent to your office.

RES 439841-2 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,



For Jeanne Spencer
President

RESERVOIRS ENVIRONMENTAL, INC

NVLAP Lab Code 101896-0
AIHA Certificate of Accreditation #480 LAB ID 101533

TABLE: I ANALYSIS: LEAD IN WATER

RES Job Number:	**RES 439841-2**
Client:	**Weston Solutions, Inc. (CO)**
Client Project/P.O.:	**20408.016.003.0683.00**
Client Project Description:	**Lower Brule**
Date Samples Received:	**July 15, 2019**
Analysis Type:	**REI CHEMISTRY SOP / USEPA 7000A-M**
Turnaround:	**Standard**
Date Samples Analyzed:	**July 18, 2019**

NA = Not Analyzed
NR = Not Received
ND = None Detected
TR = Trace; <1 % Visual Estimate
Trem-Act = Tremolite-Actinolite
BAS = Below Analytical Sensitivity
BRL = Below Reporting Limit

Client ID Number	Reporting Limit (mg/L)	LEAD CONCENTRATION (mg/L)
LBSR-ER-07092019	0.25	BRL
LBSR-ER-07102019	0.25	BRL

* Unless otherwise noted all quality control samples performed within specifications established by the laboratory

Dustin Kramer
Analyst

David E. Monagle
Data QA

Due Date:_____
Due Time:_____

REI LAB **Reservoirs Environmental, Inc.**
5801 Logan St. Denver, CO 80216 • Ph: 303 964-1986 • Fax 303-477-4275 • Toll Free :866 RESI-ENV

RES 439841
Jo
Page ___ of ___

After Hours Cell Phone: 720-339-9228

INVOICE TO: (IF DIFFERENT)

Company: **Weston Solutions, Inc**
Address: 1435 Garrison St Suite 100
Lakewood, CO 80215

Company: **Weston Solutions, Inc**
Address:

CONTACT INFORMATION:

Contact: **Elliott Petri**
Phone:
Fax:
Cell/pager: 719-216-2754

Contact:
Phone:
Fax:
Cell/pager:

Project Number and/or P.O. #: 20408.016.003.0683.00
Project Description/Location: Lower Brule

Final Data Deliverable Email Address: elliott.petri@westonsolutions.com

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm

PLM / PCM / TEM ____ RUSH (Same Day) ___ PRIORITY (Next Day) X STANDARD
(Rush PCM = 2hr, TEM = 6hr.)

CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm

Metal(s) / Dust ___ RUSH ___ 24 hr. ___3-5 Day
RCRA 8 / Metals & Welding Fume Scan / TCLP ___ RUSH ___ 5 day ___10 day
Organics ___ 24 hr. ___ 3 day ___5 Day
****Prior notification is required for RUSH turnarounds.****

MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm

E.coli O157:H7, Coliforms, S.aureus ___ 24 hr. ___2 Day ___3-5 Day
Salmonella, Listeria, E.coli, APC, Y & M ___ 48 Hr. ___3-5 Day
Mold ___ RUSH ___24 Hr ___48 Hr ___3 Day ___5 Day

****Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.****

Special Instructions: Please provide EDD

REQUESTED ANALYSIS

VALID MATRIX CODES

Air = A | Bulk = B
Dust = D | Paint = P
Soil = S | Wipe = W
Swab = SW | F = Food
Drinking Water = DW | Waste Water = WW
O = Other
ASTM E1792 approved wipe media only

LAB NOTES:

Client sample ID number (Sample ID's must be unique)	PLM - Short report, Long report, Point Count	TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Preps	PCM - 7400A, 7400B, OSHA	DUST - Total, Respirable	METALS - Analyte(s) LEAD ONLY RCRA 8, TCLP, Welding Fume, Metals Scan	ORGANICS - METH	MICROBIOLOGY: Salmonella +/-	E.coli O157:H7 +/-	Listeria +/-	Aerobic Plate Count: +/- or Quantification	E.coli: +/- or Quantification	Coliforms: +/- or Quantification	S.aureus: +/- or Quantification	Y & M: +/- or Quantification	Mold: +/- Identification, Quantification	SAMPLER'S INITIALS OR OTHER NOTES	Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh/mm a/p	EM Number (Laboratory Use Only)
1 LBSR-BKG-1218					X													S	1	7/9/2019	10:45	
2 LBSR-Z1-1-01-0006					X													S	1	7/9/2019	11:10	
3 LBSR-Z1-1-01-3036					X													S	1	7/9/2019	11:45	
4 LBSR-Z1-2-01-0006					X													S	1	7/9/2019	12:48	
5 LBSR-Z1-2-01-3036					X													S	1	7/9/2019	13:18	
6 LBSR-Z1-3-01-0006					X													S	1	7/9/2019	13:30	
7 LBSR-Z1-3-01-3036					X													S	1	7/9/2019	14:10	
8 LBSR-Z2-1-01-0006					X												MS/MSD	S	1	7/9/2019	14:28	
9 LBSR-Z2-1-01-3036					X													S	1	7/9/2019	15:10	
10 LBSR-Z2-2-01-0006					X													S	1	7/9/2019	15:25	

Number of samples received: _____ (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By: _____ Date/Time: 7/10/19 1800

Sample Condition: On Ice Yes / No | Sealed Yes / No | Intact Yes / No
Temp. (F°) _____

Laboratory Use Only
Received By: Lina Contreras Date/Time: 7.15.19 9:15A Carrier: Fed Ex

Results:	Contact	Phone	Email	Fax	Date	Time	Initials	Contact	Phone	Email	Fax	Date	Time	Initials
	Contact	Phone	Email	Fax	Date	Time	Initials	Contact	Phone	Email	Fax	Date	Time	Initials

Reservoirs Environmental, Inc.
5801 Logan St. Denver, CO 80216 • Ph: 303 964-1986 • Fax 303-477-4275 • Toll Free 866 RESI-ENV

RES Job # 439841

Submitted by: _____

REQUESTED ANALYSIS

PLM - Short report, Long report, Point Count

TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Preps

PCM - 7400A, 7400B, OSHA

DUST - Total, Respirable

METALS - Analyte(s) LEAD ONLY RCRA 8, TCLP, Welding Fume, Metals Scan

ORGANICS - METH

MICROBIOLOGY
- Salmonella: +/-
- E.coli O157:H7: +/-
- Listeria: +/-
- Aerobic Plate Count: +/- or Quantification
- E.coli: +/- or Quantification
- Coliforms: +/- or Quantification
- S.aureus: +/- or Quantification
- Y & M: +/- or Quantification
- Mold: +/- or Quantification

OTHER -

VALID MATRIX CODES

Air = A	Bulk = B
Dust = D	Paint = P
Soil = S	Wipe = W
Swab = SW	F = Food
Drinking Water = DW	Waste Water = WW
O = Other	

ASTM E1792 approved wipe media only

LAB NOTES:

	Client sample ID number (Sample ID's must be unique)	PLM	TEM	PCM	DUST	METALS	ORGANICS	MICROBIOLOGY	OTHER	Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh/mm a/p
11	LBSR-Z2-2-01-3036					X					S	1	7/9/2019	16:00
12	LBSR-Z2-3-01-0006					X					S	1	7/10/2019	8:35
13	LBSR-Z2-3-01-3036					X					S	1	7/10/2019	9:05
14	LBSR-Z3-1-01-0006					X					S	1	7/10/2019	9:30
15	LBSR-Z3-1-01-1218					X					S	1	7/10/2019	10:10
16	LBSR-Z3-1-01-3036					X					S	1	7/10/2019	9:55
17	LBSR-Z3-2-01-0006					X					S	1	7/10/2019	10:35
18	LBSR-Z3-2-01-1218					X			MS/MSD		S	1	7/10/2019	11:15
19	LBSR-Z3-2-01-3036					X					S	1	7/10/2019	11:05
20	LBSR-Z3-3-01-0006					X					S	1	7/10/2019	11:30
21	LBSR-Z3-3-01-1218					X					S	1	7/10/2019	12:00
22	LBSR-Z3-3-01-3036					X					S	1	7/10/2019	11:50
23	LBSR-Z1-3-91-0006					X					S	1	7/9/2019	13:30
24	LBSR-Z2-2-91-3036					X					S	1	7/9/2019	16:00
25	LBSR-Z3-1-91-3036					X					S	1	7/10/2019	9:55
26	LBSR-ER-07092019					X					O	1	7/9/2019	16:10
27	LBSR-ER-07102019					X					O	1	7/9/2019	11:20
28														
29														
30														
31														
32														
33														
34														
35														
36														
37														
38														
39														
40														
41														

EM Number (Laboratory Use Only)