Aspect
A Geosyntec Company

October 3, 2023

Reserve Silica Corporation
c/o Doug Steding
Northwest Resource Law PLLC
71 Columbia Street, Suite 325
Seattle, WA 98104

Re: Former Asarco Soil Nature and Extent Investigation Report
Reserve Silica Corporation, Ravensdale, Washington
Project No. 230360-A

Dear Doug:

Aspect Consulting, LLC (Aspect) has prepared this letter report to document our investigation into the presence, nature, and extent of arsenic- and lead-contaminated soil at the Reserve Silica Corporation (Reserve) Property located at approximately 28131 SE Ravensdale Way (King County tax parcel 0121069010) in Ravensdale, Washington. The investigation was completed as an independent action under the Washington State Model Toxics Control Act (MTCA), which is comprised of Chapter 70A.305 Revised Code of Washington (RCW) and its implementing regulations, Chapter 173-340 of the Washington Administrative Code (WAC).

The investigation was conducted in accordance with the scope of work described in the August 22, 2023, work plan[1] with minor revisions to address Washington State Department of Ecology (Ecology) comments on the work provided in their September 1, 2023, comment letter[2]. This letter report provides the project background, a description of our investigation work, and a summary of the results.

Project Background

In May 2023, a contractor reportedly imported 33 truckloads of arsenic- and lead-contaminated soil to the Reserve Property. The soil, estimated by the US Environmental Protection Agency (EPA) at approximately 700 cubic yards in total volume, was generated during property redevelopment activities at the former Asarco Tacoma Smelter Facility portion of the Commencement Bay Nearshore/Tideflats Superfund site. The soil was excavated from a property located at 5301 North Commercial Street in Ruston, Washington (Source Property). In July 2023, the EPA became aware of the soil excavation and disposal work completed in conjunction with property redevelopment and notified Ecology and Reserve of the non-compliant soil disposal. The investigation described herein was conducted to begin to determine the presence, nature, and extent of metals-contaminated soil delivered to the landfill.

EPA provided a laboratory analytical report to Reserve on August 22, 2023, which included the results for 20 soil samples collected by the Tacoma Pierce County Health Department in August

[1] Aspect Consulting, LLC, Letter regarding Former Asarco Soil Nature & Extent Investigation, Reserve Silica Inert Waste Landfill, Ravensdale, Washington, August 22, 2023.

[2] Washington State Department of Ecology, 2023, Letter regarding Comments on Former Asarco Soil Nature & Extent Investigation, Reserve Silica Inert Waste Landfill, Ravensdale, Washington (Aspect Consulting), September 1, 2023.

2023 from the Source Property. Concentrations of arsenic were reported up to 85 times higher than the MTCA Method A soil cleanup level (cleanup level) of 20 milligrams per kilogram (mg/kg), and concentrations of lead were reported up to 20 times higher than the cleanup level of 250 mg/kg.

Soil Investigation

On September 6, 7, and 8, 2023, 16 borings were advanced using direct-push drilling methods and a track-mounted rig by a Washington State-licensed driller (Holt Services, Inc.). The boring locations are shown on Figure 1. Initial borings were placed near the center of the landfill area and generally spiraled outward in a counterclockwise direction in an attempt to identify the location of elevated concentrations of arsenic and lead in soil as a result of the Source Property deposits. Each soil boring was advanced to a total depth of 18.5 to 30 feet below ground surface (bgs), depending on geology and drilled core recovery. Borings that were completed to total depths shallower than the 25-foot total depth described in the August 22, 2023, work plan were completed into native geology.

Soil samples were collected from each boring in 1-foot intervals above 10 feet bgs and 6-inch intervals below 10 feet bgs and were field screened for arsenic and lead using a Thermo Fisher Scientific Niton XL5 Plus x-ray fluorescence (XRF) analyzer. Soil samples were periodically collected for laboratory analysis to confirm of metals concentrations measured by XRF. Each boring location was temporarily marked in the field with a stake, flagging, and unique identification, and surveyed by a professional land surveyor (Encompass Engineering and Surveying).

Investigation Results

The soil observed in the borings generally consisted of silty-sand fill with trace to few anthropogenic debris overlying blue-gray, low plasticity clay fill, overlying native, yellow-brown silt with sand. The silt with sand is interpreted to be located at the pre-fill ground surface and to be weathered Puget Group-Renton Formation sedimentary bedrock, the native formation in this area[3]. Native material was encountered at depths of 15 to 17 feet bgs in borings on the northeast side of the fill area (furthest up the pre-fill slope) and was not encountered to total depths explored of 25 to 30 feet bgs in borings on the southwest side of the fill area (further down the pre-fill slope) where the fill thickness is greater. Soil boring logs are included as Appendix A.

The silty-sand fill and clay fill are poorly compacted, which results in compression of soil within the sampling sleeve from the weight of the probe rod advancing through the fill soil. This results in recovery that appears to be less than the 5-foot drive interval. The soil recovery from the borings is interpreted to be adequate to fully evaluate the presence, nature, and extent of metals-contaminated soil at those locations.

The soil XRF measurements and analytical results for samples collected at the Reserve Property were compared to the MTCA Method A soil cleanup levels for unrestricted land use (Table 1). The soil XRF measurements and analytical results are included in Table 1 and the laboratory analytical report is included as Appendix B.

[3] Aspect Consulting, LLC, 2017, Remedial Investigation Report, Reserve Silica Ravensdale Site, November 2017.

Arsenic and lead were consistently measured above the XRF level of detection (LOD) and analytical reporting limits at concentrations comparable to regional background concentrations for the Puget Sound region[4] (7 mg/kg for arsenic and 24 mg/kg for lead) and below the MTCA Method A cleanup levels of 20 mg/kg and 250 mg/kg, respectively. Arsenic was detected at concentrations slightly above the MTCA Method A cleanup level in single, discrete fill soil samples collected from borings AB-01, AB-12, and AB-16, with measured concentrations ranging from 22 mg/kg to 38 mg/kg (Table 1). Arsenic was also detected at concentrations slightly above the MTCA Method A cleanup in four native soil samples, with measured concentrations ranging from 21 mg/kg to 31 mg/kg (Table 1). Lead was not measured or detected above the MTCA Method A screening level in any of the soil samples (Table 1).

Limitations

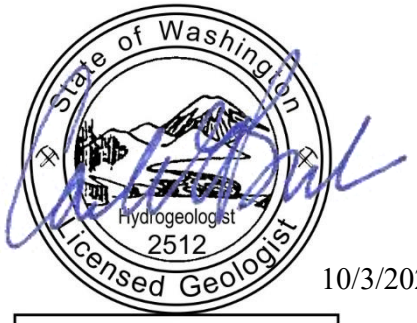
Work for this project was performed for the Reserve Silica Corporation (Client), and this letter was prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. This letter does not represent a legal opinion. No other warranty, expressed or implied, is made.

All reports prepared by Aspect Consulting for the Client apply only to the services described in the Agreement(s) with the Client. Any use or reuse by any party other than the Client is at the sole risk of that party, and without liability to Aspect Consulting. Aspect Consulting's original files/reports shall govern in the event of any dispute regarding the content of electronic documents furnished to others.

Please refer to Appendix C titled "Report Limitations and Guidelines for Use" for additional information governing the use of this report.

Sincerely,

Aspect consulting, LLC



10/3/2023

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[4] Washington State Department of Ecology, 1994, Natural Background Soil Metals Concentrations in Washington State, Toxics Cleanup Program, Publication # 94-115, October 1994.

Attachments: Table 1 – Soil Metals Results
Figure 1 – Site Exploration Map
Appendix A – Boring Logs (not included with Draft)
Appendix B – Laboratory Report
Appendix C – Report Limitations and Guidelines for Use

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TABLE

Table 1. Soil Metals Results

Project No. 203360, Reserve Silica Corporation, Ravensdale, Washington

					XRF Field Data[2]		Analytical Data	
					Arsenic	Lead	Arsenic	Lead
				MTCA Method A Cleanup Level[1]	20	250	20	250
Boring Identification	Sample Date	Sample Depth (feet bgs)[3]	Soil Type	Sample Name				
AB-01	9/6/2023	6	Fill - Sand	AB-01-06	11	21	--	--
		7		AB-01-07	6	6	--	--
		8		AB-01-08	4	16	--	--
		10		AB-01-10	7	10	--	--
		10.5		AB-01-10.5	38	167	--	--
		11		AB-01-11	6	7	--	--
		12.5		AB-01-12.5	4	13	--	--
		13		AB-01-13	8	16	--	--
		15		AB-01-15	19	38	--	--
		15.5		AB-01-15.5	11	51	--	--
		16		AB-01-16	6	7	--	--
		16.5		AB-01-16.5	10	14	--	--
		17		AB-01-17	14	32	--	--
		20		AB-01-20	17	21	--	--
		20.5		AB-01-20.5	10	14	--	--
		21		AB-01-21	10	13	--	--
		21.5		AB-01-21.5	7	23	--	--
		22	Fill - Clay	AB-01-22	10	10	--	--
		28		AB-01-28	12	10	--	--
AB-02	9/6/2023	0.5	Fill - Sand	AB-02-0.5	10	9	--	--
		1		AB-02-01	12	9	--	--
		2		AB-02-02	4	6	--	--
		5		AB-02-05	6	11	--	--
		6	Fill - Clay	AB-02-06	7	<LOD (1)	--	--
		7		AB-02-07	7	37	--	--
		10		AB-02-10	7	8	--	--
		10.5		AB-02-10.5	5	12	--	--
		11		AB-02-11	12	45	--	--
		11.5		AB-02-11.5	8	33	--	--
		12		AB-02-12	7	29	--	--
		12.5		AB-02-12.5	7	21	--	--
		15		AB-02-15	6	6	--	--
		15.5		AB-02-15.5	6	10	--	--
		16		AB-02-16	6	29	--	--
		16.5		AB-02-16.5	7	10	--	--
		17		AB-02-17	10	25	--	--
		17.5		AB-02-17.5	12	53	--	--
		18		AB-02-18	9	18	--	--
		18.5		AB-02-18.5	7	27	--	--
		20		AB-02-20	8	5	--	--
		20.5		AB-02-20.5	8	10	--	--
		21		AB-02-21	7	21	--	--
		20.5		AB-02-20.5	9	59	--	--
		22		AB-02-22	11	39	--	--
AB-03	9/6/2023	0.5	Fill - Sand	AB-03-0.5	8	7	--	--
		1		AB-02-01	6	4	--	--
		2		AB-02-02	8	12	--	--
		5		AB-02-05	12	10	--	--
		6	Fill - Clay	AB-02-06	8	10	--	--
		7		AB-02-07	13	20	--	--
		10		AB-03-10	8	19	--	--
		10.5		AB-03-10.5	7	16	--	--
		11		AB-03-11	6	15	--	--
		11.5		AB-03-11.5	7	30	--	--
		12		AB-03-12	10	6	--	--
		15		AB-03-15	4	14	--	--
		15.5		AB-03-15.5	7	5	--	--
		16		AB-03-16	10	15	--	--
		16.5		AB-03-16.5	8	25	--	--
		17		AB-03-17	7	6	--	--
		17.5		AB-03-17.5	9	5	--	--
		20		AB-03-20	9	9	--	--
		20.5		AB-03-20.5	8	15	--	--
		21	Native	AB-03-21	9	17	--	--

Table 1. Soil Metals Results

Project No. 203360, Reserve Silica Corporation, Ravensdale, Washington

					XRF Field Data[2]		Analytical Data	
					Arsenic	Lead	Arsenic	Lead
				MTCA Method A Cleanup Level[1]	20	250	20	250
Boring Identification	Sample Date	Sample Depth (feet bgs)[3]	Soil Type	Sample Name				
AB-04	9/6/2023	0.5	Fill - Sand	AB-04-0.5	7	3	--	--
		1		AB-04-01	6	3	--	--
		5	Fill - Clay	AB-04-05	4	7	--	--
		6		AB-04-06	7	3	--	--
		7		AB-04-07	7	3	--	--
		10		AB-04-10	7	3	--	--
		10.5		AB-04-10.5	7	3	--	--
		11		AB-04-11	7	5	--	--
		11.5		AB-04-11.5	4	5	--	--
		12		AB-04-12	13	13	--	--
		12.5		AB-04-12.5	7	9	--	--
		15		AB-04-15	8	<LOD (1)	--	--
		15.5		AB-04-15.5	8	8	--	--
		16		AB-04-16	6	5	--	--
		16.5		AB-04-16.5	5	7	--	--
		17		AB-04-17	4	9	--	--
		17.5		AB-04-17.5	7	7	--	--
		18		AB-04-18	8	13	--	--
		18.5		AB-04-18.5	9	6	--	--
		19		AB-04-19	7	7	--	--
		20		AB-04-20	6	3	--	--
		20.5		AB-04-20.5	7	7	--	--
		21		AB-04-21	5	5	--	--
		21.5		AB-04-21.5	9	5	--	--
		22		AB-04-22	9	9	--	--
		22.5		AB-04-22.5	5	4	--	--
AB-05	9/6/2023	0.5	Fill - Sand	AB-05-0.5	7	14	--	--
		1		AB-05-01	8	9	--	--
		2		AB-05-02	5	31	--	--
		3		AB-05-03	8	6	--	--
		5		AB-05-05	9	18	--	--
		6		AB-05-06	8	18	--	--
		10	Fill - Clay	AB-05-10	10	10	--	--
		10.5		AB-05-10.5	8	22	--	--
		11		AB-05-11	10	16	--	--
		11.5		AB-05-11.5	9	17	--	--
		12		AB-05-12	6	15	--	--
		15		AB-05-15	12	10	--	--
		15.5		AB-05-15.5	6	14	--	--
		16		AB-05-16	7	18	--	--
		16.5		AB-05-16.5	5	13	--	--
		17		AB-05-17	7	13	--	--
		17.5		AB-05-17.5	7	7	--	--
		20		AB-05-20	6	9	--	--
		20.5		AB-05-20.5	4	27	--	--
		21		AB-05-21	10	13	--	--
		21.5		AB-05-21.5	6	33	--	--
		22		AB-05-22	8	13	--	--
AB-06	9/7/223	0.5	Fill - Sand	AB-06-0.5	11	3	--	--
		1		AB-06-01	6	13	--	--
		2		AB-06-02	5	12	--	--
		5		AB-06-05	4	8	--	--
		6		AB-06-06	5	17	--	--
		7		AB-06-07	17	17	--	--
		10		AB-06-10	7	14	--	--
		10.5		AB-06-10.5	11	21	--	--
		11		AB-06-11	8	10	--	--
		11.5		AB-06-11.5	5	6	--	--
		12		AB-06-12	8	<LOD (1)	--	--
		15		AB-06-15	9	9	--	--
		15.5		AB-06-15.5	8	7	--	--
		16		AB-06-16	7	110	--	--
		16.5		AB-06-16.5	<LOD (2)	<LOD (1)	--	--
		17	Fill - Clay	AB-06-17	5	4	--	--
		20		AB-06-20	6	8	--	--
		20.5		AB-06-20.5	7	4	--	--
		21		AB-06-21	11	28	--	--
		21.5		AB-06-21.5	6	5	--	--
		22		AB-06-22	6	4	--	--
		22.5		AB-06-22.5	6	4	--	--
		23		AB-06-23	14	7	--	--
		23.5	Native	AB-06-23.5	8	7	--	--

Table 1. Soil Metals Results

Project No. 203360, Reserve Silica Corporation, Ravensdale, Washington

					XRF Field Data[2]		Analytical Data	
					Arsenic	Lead	Arsenic	Lead
				MTCA Method A Cleanup Level[1]	20	250	20	250
Boring Identification	Sample Date	Sample Depth (feet bgs)[3]	Soil Type	Sample Name				
AB-07	9/7/2023	0.5	Fill - Sand	AB-07-0.5	7	10	--	--
		1		AB-07-01	8	29	--	--
		2		AB-07-02	7	23	--	--
		5		AB-07-05	10	4	--	--
		6		AB-07-06	4	7	--	--
		10		AB-07-10	4	8	--	--
		10.5		AB-07-10.5	6	6	--	--
		11		AB-07-11	6	6	--	--
		11.5		AB-07-11.5	5	3	--	--
		15		AB-07-15	5	6	--	--
		15.5		AB-07-15.5	5	10	--	--
		16		AB-07-16	5	9	--	--
		16.5		AB-07-16.5	6	4	--	--
		20	Native	AB-07-20	9	9	--	--
		20.5		AB-07-20.5	9	12	--	--
		21		AB-07-21	12	5	--	--
		21.5		AB-07-21.5	11	14	--	--
		22		AB-07-22	10	10	--	--
		22.5		AB-07-22.5	8	12	--	--
		23		AB-07-23	8	10	--	--
		23.5		AB-07-23.5	9	9	--	--
		24		AB-07-24	12	7	--	--
		24.5		AB-07-24.5	9	10	--	--
AB-08	09/07/2023	0.5	Fill - Sand	AB-08-0.5	5	6	--	--
		1		AB-08-01	7	46	--	--
		1.5		AB-08-1.5	15	50	--	--
		2		AB-08-02	4	<LOD (1)	--	--
		5		AB-08-05	4	4	--	--
		6		AB-08-06	12	102	5.2	33.2
		6.5		AB-08-6.5	7	8	--	--
		10		AB-08-10	6	13	--	--
		10.5		AB-08-10.5	6	4	--	--
		11		AB-08-11	6	7	--	--
		11.5		AB-08-11.5	12	5	--	--
		15		AB-08-15	17	97	--	--
		15.5		AB-08-15.5	10	10	--	--
		16		AB-08-16	4	6	--	--
		16.5	Native	AB-08-16.5	9	13	--	--
		20		AB-08-20	7	22	--	--
		21		AB-08-21	13	15	--	--
		22		AB-08-22	21	21	--	--
		23		AB-08-23	10	16	--	--
		23.5		AB-08-23.5	10	9	--	--
		24		AB-08-24	9	12	--	--
AB-09	9/7/2023	0.25	Fill - Sand	AB-09-0.25	10	24	--	--
		0.75		AB-09-0.75	6	7	--	--
		1		AB-09-01	6	11	--	--
		1.5		AB-09-1.5	8	6	--	--
		2		AB-09-02	7	6	--	--
		5		AB-09-05	7	16	--	--
		5.5		AB-09-5.5	5	6	--	--
		6		AB-09-06	4	15	--	--
		10		AB-09-10	3	2	--	--
		10.5		AB-09-10.5	11	4	--	--
		11		AB-09-11	7	14	--	--
		11.5		AB-09-11.5	5	3	--	--
		15		AB-09-15	6	11	--	--
		15.5		AB-09-15.5	6	8	--	--
		16		AB-09-16	6	9	--	--
		16.5		AB-09-16.5	4	13	--	--
		20		AB-09-20	10	11	--	--
		20.5		AB-09-20.5	8	9	--	--
		21		AB-09-21	4	5	--	--
		21.5		AB-09-21.5	2	<LOD (1)	--	--
		25		AB-09-25	5	6	--	--
		25.5		AB-09-25.5	6	18	--	--
		26		AB-09-26	6	8	--	--
		26.5		AB-09-26.5	7	8	--	--
		27		AB-09-27	6	12	8.42	45.9
		27.5		AB-09-27.5	7	13	--	--
		28		AB-09-28	5	7	--	--

Table 1. Soil Metals Results

Project No. 203360, Reserve Silica Corporation, Ravensdale, Washington

					XRF Field Data[2]		Analytical Data	
					Arsenic	Lead	Arsenic	Lead
				MTCA Method A Cleanup Level[1]	20	250	20	250
Boring Identification	Sample Date	Sample Depth (feet bgs)[3]	Soil Type	Sample Name				
AB-10	9/7/2023	0.5	Fill - Sand	AB-10-0.5	4	5	--	--
		1		AB-10-01	5	4	--	--
		1.5		AB-10-1.5	4	6	--	--
		2		AB-10-02	15	23	--	--
		2.5		AB-10-2.5	6	8	--	--
		5		AB-10-05	7	9	--	--
		6		AB-10-06	7	10	--	--
		7		AB-10-07	6	13	4.84	6.24
		10		AB-10-10	5	17	--	--
		10.5		AB-10-10.5	7	10	--	--
		11	Fill - Clay	AB-10-11	6	7	--	--
		11.5		AB-10-11.5	9	3	--	--
		12		AB-10-12	10	8	--	--
		15		AB-10-15	9	11	--	--
		15.5		AB-10-15.5	6	7	--	--
		16		AB-10-16	4	7	--	--
		16.5		AB-10-16.5	9	6	--	--
		17		AB-10-17	6	4	--	--
		20		AB-10-20	7	7	--	--
		20.5		AB-10-20.5	6	3	--	--
		21		AB-10-21	7	6	--	--
		21.5		AB-10-21.5	10	42	--	--
		25		AB-10-25	6	6	--	--
		25.5		AB-10-25.5	6	6	--	--
		26		AB-10-26	4	13	--	--
		26.5		AB-10-26.5	7	4	--	--
		27		AB-10-27	5	8	--	--
		27.5		AB-10-27.5	9	10	--	--
		28		AB-10-28	11	8	--	--
		28.5		AB-10-28.5	8	3	--	--
		29		AB-10-29	6	10	--	--
		29.5		AB-10-29.5	8	8	--	--
AB-11	9/8/2023	0.5	Fill - Sand	AB-11-0.5	9	10	--	--
		1		AB-11-01	6	6	--	--
		1.5		AB-11-1.5	6	4	--	--
		2		AB-11-02	6	3	--	--
		2.5		AB-11-2.5	5	<LOD (1)	--	--
		5		AB-11-05	6	6	--	--
		6		AB-11-06	5	4	--	--
		7		AB-11-07	10	5	--	--
		7.5		AB-11-7.5	8	6	--	--
		10		AB-11-10	4	7	--	--
		10.5		AB-11-10.5	6	4	--	--
		11		AB-11-11	6	5	--	--
		11.5		AB-11-11.5	9	6	--	--
		12		AB-11-12	14	12	5.35	4.3
		12.5		AB-11-12.5	7	5	--	--
		15		AB-11-15	7	8	--	--
		15.5	Fill - Clay	AB-11-15.5	6	<LOD (1)	--	--
		16		AB-11-16	5	7	--	--
		16.5		AB-11-16.5	5	4	--	--
		17		AB-11-17	4	8	--	--
		20		AB-11-20	7	<LOD (1)	--	--
		20.5		AB-11-20.5	5	3	--	--
		21		AB-11-21	7	<LOD (1)	--	--
		21.5		AB-11-21.5	5	6	--	--
		22		AB-11-22	7	5	--	--
		22.5		AB-11-22.5	8	5	--	--
		23		AB-11-23	7	9	--	--
		25		AB-11-25	3	9	--	--
		25.5		AB-11-25.5	7	10	--	--
AB-12	9/8/2023	0.5	Fill - Sand	AB-12-0.5	4	11	--	--
		1		AB-12-01	6	8	--	--
		2		AB-12-02	4	5	--	--
		5		AB-12-05	13	18	--	--
		5.5		AB-12-5.5	10	15	--	--
		6		AB-12-06	19	30	--	--
		6.5		AB-12-6.5	10	10	--	--
		7		AB-12-07	8	33	--	--
		10		AB-12-10	12	7	--	--
		10.5		AB-12-10.5	13	10	--	--
		11		AB-12-11	4	18	--	--
		15		AB-12-15	6	5	--	--
		15.5		AB-12-15.5	23	64	3.88	9.42
		16	Native	AB-12-16	7	6	--	--
		16.5		AB-12-16.5	6	<LOD (1)	--	--
		17		AB-12-17	9	10	--	--
		17.5		AB-12-17.5	6	7	6.87	3.54
		18		AB-12-18	8	7	--	--

Table 1. Soil Metals Results

Project No. 203360, Reserve Silica Corporation, Ravensdale, Washington

					XRF Field Data[2]		Analytical Data	
					Arsenic	Lead	Arsenic	Lead
				MTCA Method A Cleanup Level[1]	20	250	20	250
Boring Identification	Sample Date	Sample Depth (feet bgs)[3]	Soil Type	Sample Name				
AB-13	9/8/2023	0.5	Fill - Sand	AB-13-0.5	10	22	--	--
		1		AB-13-01	8	14	--	--
		2		AB-13-02	11	17	--	--
		3		AB-13-03	5	7	--	--
		5	Fill - Clay	AB-13-05	4	15	--	--
		6		AB-13-06	9	4	--	--
		7		AB-13-07	19	42	--	--
		7.5		AB-13-7.5	8	7	--	--
		8		AB-13-08	7	7	--	--
		10		AB-13-10	6	4	--	--
		10.5		AB-13-10.5	11	36	--	--
		11		AB-13-11	8	9	--	--
		11.5		AB-13-11.5	7	13	--	--
		12		AB-13-12	10	6	--	--
		15	Native	AB-13-15	10	5	--	--
		15.5		AB-13-15.5	12	10	--	--
		16		AB-13-16	10	8	--	--
		16.5		AB-13-16.5	14	12	--	--
		17		AB-13-17	20	10	--	--
		17.5		AB-13-17.5	23	12	--	--
		18		AB-13-18	27	10	23	8.16
AB-14	9/8/2023	0.5	Fill - Sand	AB-14-0.5	9	12	--	--
		1		AB-14-01	10	14	--	--
		1.5		AB-14-1.5	12	8	--	--
		2		AB-14-02	7	8	--	--
		5		AB-14-05	15	20	4.63	8.83
		5.5	Fill - Clay	AB-14-5.5	9	21	--	--
		6		AB-14-06	5	8	--	--
		6.5		AB-14-6.5	8	23	--	--
		10		AB-14-10	7	7	--	--
		10.5		AB-14-10.5	9	18	--	--
		11		AB-14-11	8	14	--	--
		11.5		AB-14-11.5	6	2	--	--
		15		AB-14-15	5	8	--	--
		15.5		AB-14-15.5	4	8	--	--
		16		AB-14-16	3	8	--	--
		16.5		AB-14-16.5	7	15	--	--
		20		AB-14-20	6	3	--	--
		20.5		AB-14-20.5	9	11	--	--
		21		AB-14-21	6	7	--	--
		21.5		AB-14-21.5	7	19	--	--
		22		AB-14-22	4	7	--	--
		22.5		AB-14-22.5	6	13	--	--
		23		AB-14-23	10	9	--	--
AB-15	9/8/2023	0.5	Fill - Sand	AB-15-0.5	9	26	--	--
		1.5		AB-15-1.5	7	15	--	--
		2		AB-15-02	6	17	--	--
		5		AB-15-05	8	19	--	--
		6	Fill - Clay	AB-15-06	10	30	--	--
		6.5		AB-15-6.5	8	5	--	--
		10		AB-15-10	8	11	--	--
		10.5		AB-15-10.5	8	13	--	--
		11		AB-15-11	5	9	--	--
		11.5		AB-15-11.5	11	50	--	--
		12		AB-15-12	8	12	--	--
		15		AB-15-15	9	52	3.78	13.1
		15.5		AB-15-15.5	4	11	--	--
		16		AB-15-16	8	43	--	--
		16.5		AB-15-16.5	13	11	--	--
		20	Native	AB-15-20	10	12	--	--
		20.5		AB-15-20.5	11	10	--	--
		21		AB-15-21	31	9	--	--
		21.5		AB-15-21.5	13	12	--	--
		22		AB-15-22	10	9	--	--
		22.5		AB-15-22.5	16	11	--	--
		23		AB-15-23	9	17	--	--

Table 1. Soil Metals Results

Project No. 203360, Reserve Silica Corporation, Ravensdale, Washington

					XRF Field Data[2]		Analytical Data	
					Arsenic	Lead	Arsenic	Lead
				MTCA Method A Cleanup Level[1]	20	250	20	250
Boring Identification	Sample Date	Sample Depth (feet bgs)[3]	Soil Type	Sample Name				
AB-16	9/8/2023	0.5	Fill - Sand	AB-16-0.5	11	16	--	--
		1		AB-16-01	7	9	--	--
		2		AB-16-02	10	7	--	--
		5		AB-16-05	20	29	--	--
		6		AB-16-06	7	4	--	--
		10		AB-16-10	9	11	--	--
		10.5		AB-16-10.5	14	33	--	--
		11		AB-16-11	6	12	--	--
		11.5		AB-16-11.5	6	5	--	--
		12		AB-16-12	6	11	--	--
		15		AB-16-15	8	12	--	--
		15.5		AB-16-15.5	9	7	--	--
		16.5		AB-16-16.5	7	22	3.92	18.3
		17		AB-16-17	9	28	--	--
		20		AB-16-20	10	61	--	--
		20.5		AB-16-20.5	7	20	--	--
		21		AB-16-21	8	29	--	--
		21.5		AB-16-21.5	12	63	3.99	38.6
		25		AB-16-25	8	14	--	--
		25.5		AB-16-25.5	6	11	--	--
		26		AB-16-26	11	15	--	--
		26.5		AB-16-26.5	7	27	--	--
		27		AB-16-27	22	41	--	--

Notes:

All results in milligrams per kilogram (mg/kg)

Blue Shaded - identifies analyte concentrations above the MTCA Method A cleanup level.

LOD - XRF Level of Detection

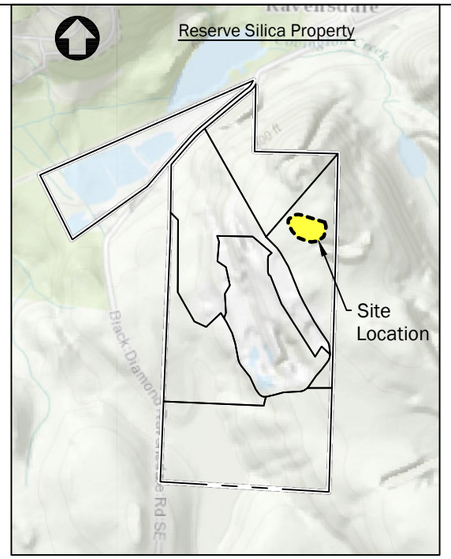
"--" - indicates results not available

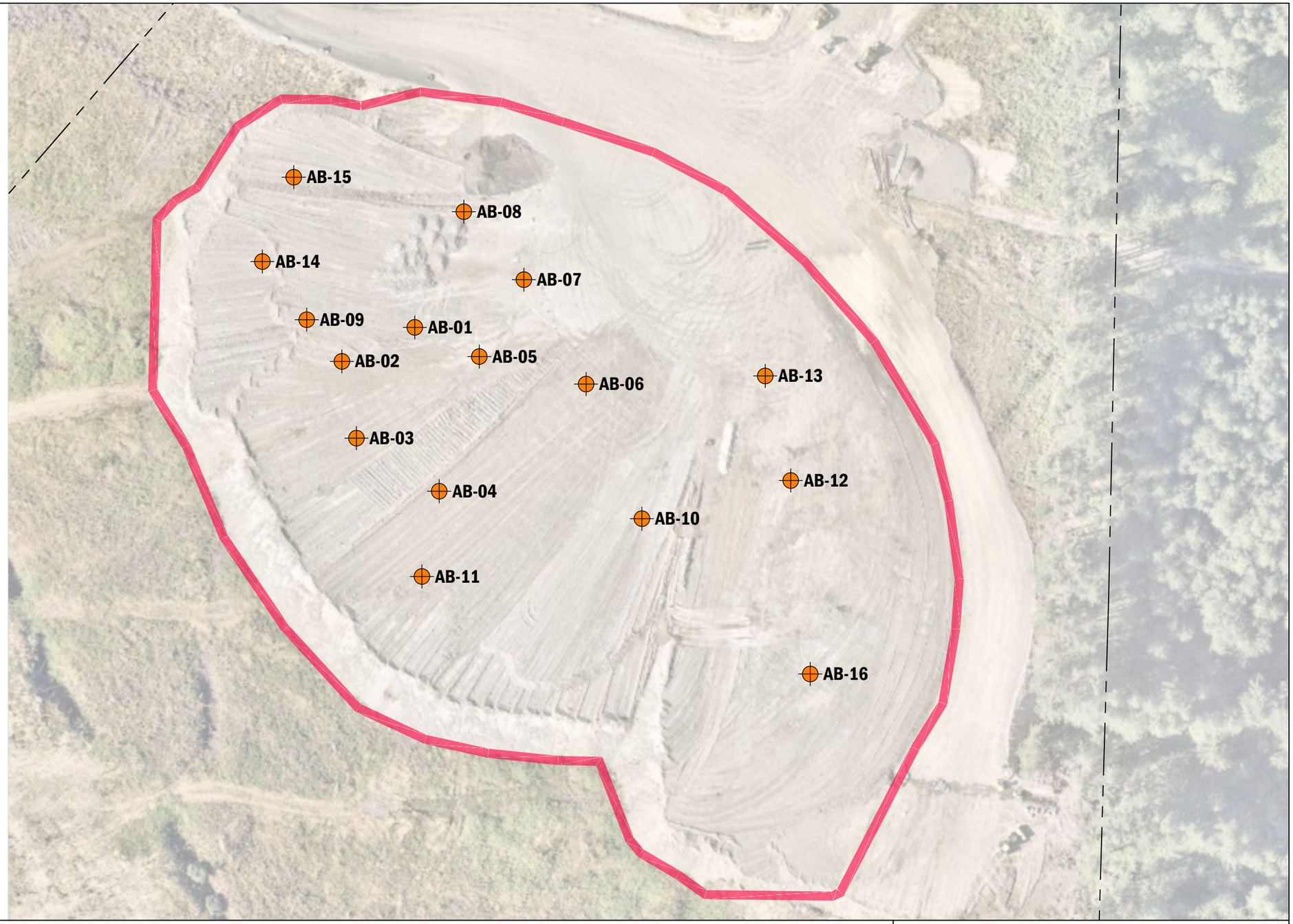
[1]Washington State Department of Ecology Model Toxics Control Act cleanup regulation (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Uses.

[2]Metals concentrations measured in the field using the ThermoScientific Niton XL5 handheld X-Ray Fluorescence (XRF) analyzer.

[3]Depth of sample collected in feet below ground surface (bgs).

FIGURE





Legend

- Boring Location
- Subject Area

This figure is based on the following:

1. Boring locations surveyed by Encompass Engineering & Surveying dates 9/25/2023.
2. Imagery provided by: Map data, ©2023 Google.

0 80 160 Feet

Site Exploration Map

Soil Nature and Extent Investigation
Reserve Silica Inert Waste Landfill
Ravensdale, Washington

Aspect Consulting	Oct-2023	BY: CEB/CMV	FIGURE NO. 1
	PROJECT NO. 230630	REVISED BY: BMG	

APPENDIX A

Boring Logs

Coarse-Grained Soils - More than 50%[1] Retained on No. 200 Sieve	Gravels - More than 50%[1] of Coarse Fraction Retained on No. 4 Sieve	≤5% Fines	GW	Well-graded GRAVEL Well-graded GRAVEL WITH SAND
			GP	Poorly-graded GRAVEL Poorly-graded GRAVEL WITH SAND
		≥15% Fines	GM	SILTY GRAVEL SILTY GRAVEL WITH SAND
			GC	CLAYEY GRAVEL CLAYEY GRAVEL WITH SAND
	Sands - 50%[1] or More of Coarse Fraction Passes No. 4 Sieve	≤5% Fines	SW	Well-graded SAND Well-graded SAND WITH GRAVEL
			SP	Poorly-graded SAND Poorly-graded SAND WITH GRAVEL
		≥15% Fines	SM	SILTY SAND SILTY SAND WITH GRAVEL
			SC	CLAYEY SAND CLAYEY SAND WITH GRAVEL
Fine-Grained Soils - 50%[1] or More Passes No. 200 Sieve	Silts and Clays Liquid Limit Less than 50%		ML	SILT SANDY or GRAVELLY SILT SILT WITH SAND SILT WITH GRAVEL
			CL	LEAN CLAY SANDY or GRAVELLY LEAN CLAY LEAN CLAY WITH SAND LEAN CLAY WITH GRAVEL
			OL	ORGANIC SILT SANDY or GRAVELLY ORGANIC SILT ORGANIC SILT WITH SAND ORGANIC SILT WITH GRAVEL
	Silts and Clays Liquid Limit 50% or More		MH	ELASTIC SILT SANDY or GRAVELLY ELASTIC SILT ELASTIC SILT WITH SAND ELASTIC SILT WITH GRAVEL
			CH	FAT CLAY SANDY or GRAVELLY FAT CLAY FAT CLAY WITH SAND FAT CLAY WITH GRAVEL
			OH	ORGANIC CLAY SANDY or GRAVELLY ORGANIC CLAY ORGANIC CLAY WITH SAND ORGANIC CLAY WITH GRAVEL
Highly Organic Soils			PT	PEAT and other mostly organic soils

"WITH SILT" or "WITH CLAY" means 5 to 15% silt and clay, denoted by a "-" in the group name; e.g., SP-SM • "SILTY" or "CLAYEY" means >15% silt and clay • "WITH SAND" or "WITH GRAVEL" means 15 to 30% sand and gravel. • "SANDY" or "GRAVELLY" means >30% sand and gravel. • "Well-graded" means approximately equal amounts of fine to coarse grain sizes • "Poorly graded" means unequal amounts of grain sizes • Group names separated by "/" means soil contains layers of the two soil types; e.g., SM/ML.

Soils were described and identified in the field in general accordance with the methods described in ASTM D2488. Where indicated in the log, soils were classified using ASTM D2487 or other laboratory tests as appropriate. Refer to the report accompanying these exploration logs for details.

1. Estimated or measured percentage by dry weight
2. (SPT) Standard Penetration Test (ASTM D1586)
3. Determined by SPT, DCPT (ASTM STP399) or other field methods. See report text for details.

GEOTECHNICAL LAB TESTS

MC	=	Natural Moisture Content
PS	=	Particle Size Distribution
FC	=	Fines Content (% < 0.075 mm)
GH	=	Hydrometer Test
AL	=	Atterberg Limits
C	=	Consolidation Test
Str	=	Strength Test
OC	=	Organic Content (% Loss by Ignition)
Comp	=	Proctor Test
K	=	Hydraulic Conductivity Test
SG	=	Specific Gravity Test

CHEMICAL LAB TESTS

Organic Chemicals

BTEX	=	Benzene, Toluene, Ethylbenzene, Xylenes
TPH-Dx	=	Diesel and Oil-Range Petroleum Hydrocarbons
TPH-G	=	Gasoline-Range Petroleum Hydrocarbons
VOCs	=	Volatile Organic Compounds
SVOCs	=	Semi-Volatile Organic Compounds
PAHs	=	Polycyclic Aromatic Hydrocarbon Compounds
PCBs	=	Polychlorinated Biphenyls

Metals

RCRA8	=	As, Ba, Cd, Cr, Pb, Hg, Se, Ag, (d = dissolved, t = total)
MTCA5	=	As, Cd, Cr, Hg, Pb (d = dissolved, t = total)
PP-13	=	Ag, As, Be, Cd, Cr, Cu, Hg, Ni, Pb, Sb, Se, Tl, Zn (d=dissolved, t=total)

FIELD TESTS

PID	=	Photoionization Detector
Sheen	=	Oil Sheen Test
SPT[2]	=	Standard Penetration Test
NSPT	=	Non-Standard Penetration Test
DCPT	=	Dynamic Cone Penetration Test

COMPONENT DEFINITIONS

Descriptive Term		*Size Range and Sieve Number*
Boulders	=	Larger than 12 inches
Cobbles	=	3 inches to 12 inches
Coarse Gravel	=	3 inches to 3/4 inches
Fine Gravel	=	3/4 inches to No. 4 (4.75 mm)
Coarse Sand	=	No. 4 (4.75 mm) to No. 10 (2.00 mm)
Medium Sand	=	No. 10 (2.00 mm) to No. 40 (0.425 mm)
Fine Sand	=	No. 40 (0.425 mm) to No. 200 (0.075 mm)
Silt and Clay	=	Smaller than No. 200 (0.075 mm)

ESTIMATED[1] PERCENTAGE

% by Weight		*Modifier*	*% by Weight*		*Modifier*
<1	=	Subtrace	15 to 25	=	Little
1 to <5	=	Trace	30 to 45	=	Some
5 to 10	=	Few	>50	=	Mostly

MOISTURE CONTENT

Dry	=	Absence of moisture, dusty, dry to the touch
Slightly Moist	=	Perceptible moisture
Moist	=	Damp but no visible water
Very Moist	=	Water visible but not free draining
Wet	=	Visible free water, usually from below water table

RELATIVE DENSITY

Non-Cohesive or Coarse-Grained Soils

Density[3]		*SPT*[2] *Blows/Foot*	*Penetration with 1/2" Diameter Rod*
Very Loose	=	0 to 4	≥ 2'
Loose	=	5 to 10	1' to 2'
Medium Dense	=	11 to 30	3" to 1'
Dense	=	31 to 50	1" to 3"
Very Dense	=	> 50	< 1"

CONSISTENCY

Cohesive or Fine-Grained Soils

Consistency[3]		*SPT*[2] *Blows/Foot*	*Manual Test*
Very Soft	=	0 to 1	Penetrated >1" easily by thumb. Extrudes between thumb & fingers.
Soft	=	2 to 4	Penetrated 1/4" to 1" easily by thumb. Easily molded.
Medium Stiff	=	5 to 8	Penetrated >1/4" with effort by thumb. Molded with strong pressure.
Stiff	=	9 to 15	Indented ~1/4" with effort by thumb.
Very Stiff	=	16 to 30	Indented easily by thumbnail.
Hard	=	> 30	Indented with difficulty by thumbnail.

GEOLOGIC CONTACTS

Observed and Distinct — Observed and Gradual — Inferred

Aspect CONSULTING

Exploration Log Key

Aspect CONSULTING	Reserve Silica Asarco Soil Investigation - 230360		Environmental Exploration Log	
	Project Address & Site Specific Location 28131 SE Ravensdale Way, Ravensdale, WA, Center of the site, NE of AB-02		*Coordinates (SPN NAD83 ft)* E:1354432.14 N:127625.20	*Exploration Number* **AB-01**
Contractor Holt Services, Inc.	*Equipment* Geoprobe 7822DT	*Sampling Method* Percussion hammer	*Ground Surface Elev. (NAVD88)* 981.056'	
Operator Louis Fehner	*Exploration Method(s)* Direct push	*Work Start/Completion Dates* 9/6/2023	*Top of Casing Elev. (NAVD88)* NA	*Depth to Water (Below GS)* No Water Encountered

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	980	Boring backfilled with bentonite chips					**FILL MATERIAL** SILTY SAND (SM); Slightly moist, gray to gray brown; nonplastic; fine to medium sand; trace fine subangular gravel; trace of wood debris; trace to few crushed marble, slate and concrete; trace puliverized brick.	0
5	975						Chunks of wood debris. Becomes moist.	5
10	970						Chunks of wood debris.	10
15	965							15
20	960							20
							CLAY WITH SAND (CL); moist, blue gray; low to medium plasticity; fine sand; subtrace fine subangular gravel.	
25	955						0.2in. pieces of charcoal.	25
30	950						Bottom of exploration at 30 ft. bgs. Note: Concentrations of As and Pb measured in the field using a Niton XL5 Plus XRF Analyzer. Limited recovery due to soft characteristic of fill material. No chemical odor detected at any depth.	30

Legend

Sample Type
- ◯ No Soil Sample Recovery
- ◧ Continuous core 1.85" ID

Water Level
- No Water Encountered

See Exploration Log Key for explanation of symbols

Logged by: RWN
Approved by: CB

Exploration Log AB-01
Sheet 1 of 1

NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINTW\PROJECTS\230360_RESERVE SILICA.GPJ October 2, 2023

Aspect CONSULTING	Reserve Silica Asarco Soil Investigation - 230360		Environmental Exploration Log	
	Project Address & Site Specific Location 28131 SE Ravensdale Way, Ravensdale, WA, West corner of the site, N of AB-03		*Coordinates (SPN NAD83 ft)* E:1354376.23 N:127598.87	*Exploration Number* **AB-02**
Contractor Holt Services, Inc.	*Equipment* Geoprobe 7822DT	*Sampling Method* Percussion hammer	*Ground Surface Elev. (NAVD88)* 976.536'	
Operator Louis Fehner	*Exploration Method(s)* Direct push	*Work Start/Completion Dates* 9/6/2023	*Top of Casing Elev. (NAVD88)* NA	*Depth to Water (Below GS)* No Water Encountered

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	975	Boring backfilled with bentonite chips					**FILL MATERIAL** SILTY SAND (SM); slightly moist, dark brown; nonplastic; fine to medium sand; trace fine subangular gravel; trace of wood debris; trace to few crushed marble, slate and concrete; trace puliverized brick.	0
5	970						CLAY WITH SAND (CL); moist, blue gray; low to medium plasticity; fine sand.	5
10	965							10
15	960						Becomes wet, dark brown, with little medium sand.	15
20	955						Becomes with trace to few wood debris.	20
25	950						Bottom of exploration at 25 ft. bgs. Note: Concentrations of As and Pb measured in the field using a Niton XL5 Plus XRF Analyzer. Limited recovery due to soft characteristic of fill material. No chemical odor detected at any depth.	25
30	945							30

Legend

Sample Type
- ◯ No Soil Sample Recovery
- ◧ Continuous core 1.85" ID

Water Level
- No Water Encountered

See Exploration Log Key for explanation of symbols

Logged by: RWN
Approved by: CB

Exploration Log AB-02
Sheet 1 of 1

NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINTW\PROJECTS\230360_RESERVE SILICA.GPJ October 2, 2023

Aspect CONSULTING	Reserve Silica Asarco Soil Investigation - 230360		Environmental Exploration Log	
	Project Address & Site Specific Location 28131 SE Ravensdale Way, Ravensdale, WA, Center of the site, SE of AB-02		*Coordinates (SPN NAD83 ft)* E:1354387.37 N:127540.20	*Exploration Number* **AB-03**
Contractor Holt Services, Inc.	*Equipment* Geoprobe 7822DT	*Sampling Method* Percussion hammer	*Ground Surface Elev. (NAVD88)* 976.193'	
Operator Louis Fehner	*Exploration Method(s)* Direct push	*Work Start/Completion Dates* 9/6/2023	*Top of Casing Elev. (NAVD88)* NA	*Depth to Water (Below GS)* No Water Encountered

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	975	Boring backfilled with bentonite chips					**FILL MATERIAL** SILTY SAND (SM); dry to slightly moist, brown to dark brown; nonplastic; fine to medium sand; trace fine subangular gravel; trace of wood debris; trace to few crushed marble, slate and concrete; trace pulverized brick.	0
5	970						CLAY WITH SAND (CL); moist, gray to blue gray; low to medium plasticity; fine sand; subtrace wood debris.	5
10	965							10
15	960						Becomes with 0.3 ft. lense of medium to coarse sand. Becomes with subtrace fine subrounded gravel.	15
20	955						**NATIVE** SILT WITH SAND (ML); moist, brown yellow; low plasticity; fine sand.	20
25	950						Bottom of exploration at 25 ft. bgs. Note: Concentrations of As and Pb measured in the field using a Niton XL5 Plus XRF Analyzer. Limited recovery due to soft characteristic of fill material. No chemical odor detected at any depth.	25
30	945							30

Legend

Sample Type
- ◯ No Soil Sample Recovery
- ◧ Continuous core 1.85" ID

Water Level
- No Water Encountered

See Exploration Log Key for explanation of symbols

Logged by: RWN
Approved by: CB

Exploration Log AB-03
Sheet 1 of 1

NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINTW\PROJECTS\230360_RESERVE SILICA.GPJ October 2, 2023

Aspect CONSULTING	Reserve Silica Asarco Soil Investigation - 230360		Environmental Exploration Log	
	Project Address & Site Specific Location 28131 SE Ravensdale Way, Ravensdale, WA, SE of AB-03, SW of AB-05		*Coordinates (SPN NAD83 ft)* E:1354450.90 N:127499.47	*Exploration Number* **AB-04**
Contractor Holt Services, Inc.	*Equipment* Geoprobe 7822DT	*Sampling Method* Percussion hammer	*Ground Surface Elev. (NAVD88)* 978.686'	
Operator Louis Fehner	*Exploration Method(s)* Direct push	*Work Start/Completion Dates* 9/6/2023	*Top of Casing Elev. (NAVD88)* NA	*Depth to Water (Below GS)* No Water Encountered

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0		Boring backfilled with bentonite chips					**FILL MATERIAL** SILTY SAND (SM); dry to slightly moist, brown to dark brown; nonplastic; fine to medium sand; trace fine subangular gravel; trace of wood debris; trace to few crushed marble, slate and concrete; trace to few puliverized red brick.	0
5	975						CLAY WITH SAND (CL); slightly moist to moist, gray to blue gray; low to medium plasticity; fine sand; subtrace wood debris.	5
10	970						0.2 ft. layer of fine to medium sand.	10
15	965							15
20	960						0.2ft. layer of charcoal.	20
25	955						Bottom of exploration at 25 ft. bgs. Note: Concentrations of As and Pb measured in the field using a Niton XL5 Plus XRF Analyzer. Limited recovery due to soft characteristic of fill material. No chemical odor detected at any depth.	25
30	950							30
	945							

Legend

Sample Type
- ◯ No Soil Sample Recovery
- ◧ Continuous core 1.85" ID

Water Level
- No Water Encountered

See Exploration Log Key for explanation of symbols

Logged by: RWN
Approved by: CB

Exploration Log AB-04
Sheet 1 of 1

NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINTW\PROJECTS\230360_RESERVE SILICA.GPJ October 2, 2023

Aspect CONSULTING	Reserve Silica Asarco Soil Investigation - 230360		Environmental Exploration Log	
	Project Address & Site Specific Location 28131 SE Ravensdale Way, Ravensdale, WA, Center of the site, E of AB-02		*Coordinates (SPN NAD83 ft)* E:1354481.64 N:127602.79	*Exploration Number* **AB-05**
Contractor Holt Services, Inc.	*Equipment* Geoprobe 7822DT	*Sampling Method* Percussion hammer	*Ground Surface Elev. (NAVD88)* 983.644'	
Operator Louis Fehner	*Exploration Method(s)* Direct push	*Work Start/Completion Dates* 9/6/2023	*Top of Casing Elev. (NAVD88)* NA	*Depth to Water (Below GS)* No Water Encountered

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0							**FILL MATERIAL** SILTY SAND (SM); dry to slightly moist, gray; nonplastic; fine to medium sand; trace fine subangular gravel; trace of wood debris; trace to few crushed marble, slate and concrete; trace to few puliverized red brick.	0
5	980	Boring backfilled with bentonite chips					Becomes moist, dark gray to gray.	5
10	975						CLAY WITH SAND (CL); slightly moist to moist, gray to blue gray; low to medium plasticity; fine sand; subtrace wood debris. Becomes with fine to medium sand.	10
15	970						Becomes with fine sand.	15
20	965						0.2 ft. layer of coarse sand. Wood chips 0.3 ft. wide Becomes wet with subtrace fine subangular gravel.	20
25	960						Bottom of exploration at 25 ft. bgs. Note: Concentrations of As and Pb measured in the field using a Niton XL5 Plus XRF Analyzer. Limited recovery due to soft characteristic of fill material. No chemical odor detected at any depth.	25
30	955							30
	950							

Legend

Sample Type
- ◯ No Soil Sample Recovery
- ◧ Continuous core 1.85" ID

Water Level
- No Water Encountered

See Exploration Log Key for explanation of symbols

Logged by: RWN
Approved by: CB

Exploration Log AB-05
Sheet 1 of 1

NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINTW\PROJECTS\230360_RESERVE SILICA.GPJ October 2, 2023

Aspect CONSULTING	Reserve Silica Asarco Soil Investigation - 230360		Environmental Exploration Log	
	Project Address & Site Specific Location 28131 SE Ravensdale Way, Ravensdale, WA, East corner of the site, SE of AB-05		*Coordinates (SPN NAD83 ft)* E:1354563.58 N:127581.68	*Exploration Number* **AB-06**
Contractor Holt Services, Inc.	*Equipment* Geoprobe 7822DT	*Sampling Method* Percussion hammer	*Ground Surface Elev. (NAVD88)* 986.51'	
Operator Louis Fehner	*Exploration Method(s)* Direct push	*Work Start/Completion Dates* 9/7/2023	*Top of Casing Elev. (NAVD88)* NA	*Depth to Water (Below GS)* No Water Encountered

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	985	Boring backfilled with bentonite chips					**FILL MATERIAL** SILTY SAND (SM); dry to slightly moist, gray; nonplastic; fine to medium sand; trace fine subangular gravel; trace of wood debris; trace to few crushed marble, slate and concrete; trace to few puliverized red brick. Becomes moist, dark brown.	0
5	980						0.25 ft. layer of crushed concrete.	5
10	975						0.25 ft. layer of crushed asphalt mixed with sand and gravel.	10
15	970						CLAY WITH SAND (CL); slightly moist to moist, gray to blue gray; medium plasticity; fine sand; subtrace wood debris.	15
20	965						**NATIVE** SILT WITH SAND (ML); moist, brown yellow; low plasticity; fine to medium sand; subtrace wood debris.	20
25	960						Bottom of exploration at 25 ft. bgs. Note: Concentrations of As and Pb measured in the field using a Niton XL5 Plus XRF Analyzer. Limited recovery due to soft characteristic of fill material. No chemical odor detected at any depth.	25
30	955							30

Legend

Sample Type
- ◯ No Soil Sample Recovery
- ◧ Continuous core 1.85" ID

Water Level
- No Water Encountered

See Exploration Log Key for explanation of symbols

Logged by: RWN
Approved by: CB

Exploration Log AB-06
Sheet 1 of 1

NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINTW\PROJECTS\230360_RESERVE SILICA.GPJ October 2, 2023

Aspect CONSULTING	Reserve Silica Asarco Soil Investigation - 230360		Environmental Exploration Log	
	Project Address & Site Specific Location 28131 SE Ravensdale Way, Ravensdale, WA, North corner of the site, NE of AB-01		*Coordinates (SPN NAD83 ft)* E:1354515.84 N:127661.79	*Exploration Number* **AB-07**
Contractor Holt Services, Inc.	*Equipment* Geoprobe 7822DT	*Sampling Method* Percussion hammer	*Ground Surface Elev. (NAVD88)* 984.147'	
Operator Louis Fehner	*Exploration Method(s)* Direct push	*Work Start/Completion Dates* 9/7/2023	*Top of Casing Elev. (NAVD88)* NA	*Depth to Water (Below GS)* No Water Encountered

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	984	Boring backfilled with bentonite chips					**FILL MATERIAL** SILTY SAND (SM); dry to slightly moist, dark brown; nonplastic; fine to medium sand; trace fine subangular gravel; trace of wood debris; trace to few crushed marble, slate and concrete; trace to few puliverized red brick.	0
5	980							5
10	975						0.5 ft. layer of fine to medium sand with subtrace fine subrounded gravel.	10
15	970						**NATIVE** SILT WITH SAND (ML); moist, brown yellow; low plasticity; fine to medium sand; subtrace wood debris.	15
20	965						0.2 ft. layer of fine to medium sand.	20
25	960						Bottom of exploration at 25 ft. bgs. Note: Concentrations of As and Pb measured in the field using a Niton XL5 Plus XRF Analyzer. Limited recovery due to soft characteristic of fill material. No chemical odor detected at any depth.	25
30	955							30
	950							

Legend

Sample Type
- ◯ No Soil Sample Recovery
- ◧ Continuous core 1.85" ID

Water Level
- No Water Encountered

See Exploration Log Key for explanation of symbols

Logged by: RWN
Approved by: CB

Exploration Log AB-07
Sheet 1 of 1

NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINTW\PROJECTS\230360_RESERVE SILICA.GPJ October 2, 2023

Aspect CONSULTING	Reserve Silica Asarco Soil Investigation - 230360		Environmental Exploration Log	
	Project Address & Site Specific Location 28131 SE Ravensdale Way, Ravensdale, WA, North corner of the site, NW of AB-07		*Coordinates (SPN NAD83 ft)* E:1354469.77 N:127713.97	*Exploration Number* **AB-08**
Contractor Holt Services, Inc.	*Equipment* Geoprobe 7822DT	*Sampling Method* Percussion hammer	*Ground Surface Elev. (NAVD88)* 982.068'	
Operator Louis Fehner	*Exploration Method(s)* Direct push	*Work Start/Completion Dates* 9/7/2023	*Top of Casing Elev. (NAVD88)* NA	*Depth to Water (Below GS)* No Water Encountered

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	980	Boring backfilled with bentonite chips					**FILL MATERIAL** SILTY SAND (SM); slightly moist, brown to gray brown; nonplastic; fine to medium sand; trace fine subangular gravel; trace of wood debris; trace to few crushed marble, slate and concrete; trace to few puliverized red brick. Becomes with wood chips 1 in. wide mixed with crushed concrete, sand and gravel.	0
5	975		1	AB-08-06 As and Pb by EPA 200.8			Becomes moist, gray.	5
10	970						0.2 ft. layer of fine to coarse sand with fine subangular gravel.	10
15	965						0.5 ft. layer of wood debris mixed with fine to medium sand and trace fine subangular gravel.	15
20	960						**NATIVE** SILT WITH SAND (ML); moist, brown yellow; low plasticity; fine to medium sand.	20
25	955						0.5 ft. layer of charcoal.	25
30	950						Bottom of exploration at 25 ft. bgs. Note: Concentrations of As and Pb measured in the field using a Niton XL5 Plus XRF Analyzer. Limited recovery due to soft characteristic of fill material. No chemical odor detected at any depth.	30

Legend

Sample Type
- No Soil Sample Recovery
- Continuous core 1.85" ID
- Grab sample

Water Level
- No Water Encountered

See Exploration Log Key for explanation of symbols

Logged by: RWN
Approved by: CB

Exploration Log AB-08
Sheet 1 of 1

NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINTW\PROJECTS\230360_RESERVE SILICA.GPJ October 2, 2023

Aspect CONSULTING	Reserve Silica Asarco Soil Investigation - 230360		Environmental Exploration Log	
	Project Address & Site Specific Location 28131 SE Ravensdale Way, Ravensdale, WA, East corner of the site, E of AB-01		*Coordinates (SPN NAD83 ft)* E:1354349.24 N:127631.06	*Exploration Number* **AB-09**
Contractor Holt Services, Inc.	*Equipment* Geoprobe 7822DT	*Sampling Method* Percussion hammer	*Ground Surface Elev. (NAVD88)* 972.77'	
Operator Louis Fehner	*Exploration Method(s)* Direct push	*Work Start/Completion Dates* 9/7/2023	*Top of Casing Elev. (NAVD88)* NA	*Depth to Water (Below GS)* No Water Encountered

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	970	Boring backfilled with bentonite chips					**FILL MATERIAL** SILTY SAND (SM); dry to slightly moist, red brown to dark brown; nonplastic; fine to medium sand; trace fine subangular gravel; trace of wood debris; trace to few crushed marble, slate and concrete; trace to few puliverized red brick. Becomes slightly moist, gray to dark gray.	0
5	965							5
10	960						Becomes with subtrace fine subrounded gravel.	10
15	955						0.1 ft. layer of fine to medium sand.	15
20	950						Becomes wet 0.3 ft. layer of wood debris mixed with crushed marble and fine gravel.	20
25	945		1	AB-09-27 As and Pb by EPA 200.8			0.2 ft. layer of medium to coarse sand.	25
30	940						Bottom of exploration at 30 ft. bgs. Note: Concentrations of As and Pb measured in the field using a Niton XL5 Plus XRF Analyzer. Limited recovery due to soft characteristic of fill material. No chemical odor detected at any depth.	30

Legend

Sample Type
- No Soil Sample Recovery
- Continuous core 1.85" ID
- Grab sample

Water Level
- No Water Encountered

See Exploration Log Key for explanation of symbols

Logged by: RWN
Approved by: CB

Exploration Log AB-09
Sheet 1 of 1

NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINTW\PROJECTS\230360_RESERVE SILICA.GPJ October 2, 2023

Aspect CONSULTING	Reserve Silica Asarco Soil Investigation - 230360		Environmental Exploration Log	
	Project Address & Site Specific Location 28131 SE Ravensdale Way, Ravensdale, WA, Southeast corner of the site, SE of AB-04		*Coordinates (SPN NAD83 ft)* E:1354606.40 N:127478.43	*Exploration Number* **AB-10**
Contractor Holt Services, Inc.	*Equipment* Geoprobe 7822DT	*Sampling Method* Percussion hammer	*Ground Surface Elev. (NAVD88)* 985.491'	
Operator Louis Fehner	*Exploration Method(s)* Direct push	*Work Start/Completion Dates* 9/7/2023	*Top of Casing Elev. (NAVD88)* NA	*Depth to Water (Below GS)* No Water Encountered

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	985	Boring backfilled with bentonite chips					**FILL MATERIAL** SILTY SAND (SM); dry to slightly moist, gray to light gray; nonplastic; fine to medium sand; trace fine subangular gravel; trace of wood debris; trace to few crushed marble, slate and concrete; trace to few puliverized red brick. Becomes slightly moist to moist, brown to dark brown.	0
5	980		1	AB-10-07 As and Pb by EPA 200.8				5
10	975						CLAY WITH SAND (CL); moist, gray to blue gray; low to medium plasticity; fine sand; subtrace wood debris.	10
15	970						0.2 ft. layer of medium to coarse sand with fine subangular gravel.	15
20	965							20
25	960						Becomes wet.	25
30	955						Bottom of exploration at 30 ft. bgs. Note: Concentrations of As and Pb measured in the field using a Niton XL5 Plus XRF Analyzer. Limited recovery due to soft characteristic of fill material. No chemical odor detected at any depth.	30

Legend

Sample Type
- ◯ No Soil Sample Recovery
- ▮▯ Continuous core 1.85" ID
- ☑ Grab sample

Water Level
- No Water Encountered

See Exploration Log Key for explanation of symbols

Logged by: RWN
Approved by: CB

Exploration Log AB-10
Sheet 1 of 1

NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINTW\PROJECTS\230360_RESERVE SILICA.GPJ October 2, 2023

Aspect CONSULTING	Reserve Silica Asarco Soil Investigation - 230360		Environmental Exploration Log	
	Project Address & Site Specific Location 28131 SE Ravensdale Way, Ravensdale, WA, South corner of the site, SW of AB-04		*Coordinates (SPN NAD83 ft)* E:1354437.63 N:127434.05	*Exploration Number* **AB-11**
Contractor Holt Services, Inc.	*Equipment* Geoprobe 7822DT	*Sampling Method* Percussion hammer	*Ground Surface Elev. (NAVD88)* 973.23'	
Operator Louis Fehner	*Exploration Method(s)* Direct push	*Work Start/Completion Dates* 9/8/2023	*Top of Casing Elev. (NAVD88)* NA	*Depth to Water (Below GS)* No Water Encountered

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	970	Boring backfilled with bentonite chips					**FILL MATERIAL** SILTY SAND (SM); slightly moist, brown to dark brown; nonplastic; fine to medium sand; trace fine subangular gravel; trace of wood debris; trace to few crushed marble, slate and concrete; trace to few puliverized red brick. 1 ft. layer of slightly moist, brown to light brown, sand with silt.	0
5							Becomes moist, brown to dark brown.	5
10	965							10
	960		1	AB-11-12 As and Pb by EPA 200.8				
15							CLAY WITH SAND (CL); very moist to wet, gray to blue gray; low to medium plasticity; fine sand.	15
20	955							20
25	950							25
	945							
30							Bottom of exploration at 30 ft. bgs. Note: Concentrations of As and Pb measured in the field using a Niton XL5 Plus XRF Analyzer. Limited recovery due to soft characteristic of fill material. No chemical odor detected at any depth.	30
	940							

Legend

Sample Type
- No Soil Sample Recovery
- Continuous core 1.85" ID
- Grab sample

Water Level
- No Water Encountered

See Exploration Log Key for explanation of symbols

Logged by: RWN
Approved by: CB

Exploration Log AB-11
Sheet 1 of 1

NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINTW\PROJECTS\230360_RESERVE SILICA.GPJ October 2, 2023

Aspect CONSULTING	Reserve Silica Asarco Soil Investigation - 230360		Environmental Exploration Log	
	Project Address & Site Specific Location: 28131 SE Ravensdale Way, Ravensdale, WA, West corner of the site, NE of AB-04		Coordinates (SPN NAD83 ft): E:1354720.58 N:127507.69	Exploration Number: **AB-12**
Contractor: Holt Services, Inc.	Equipment: Geoprobe 7822DT	Sampling Method: Percussion hammer	Ground Surface Elev. (NAVD88): 987.204'	
Operator: Louis Fehner	Exploration Method(s): Direct push	Work Start/Completion Dates: 9/8/2023	Top of Casing Elev. (NAVD88): NA	Depth to Water (Below GS): No Water Encountered

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	985	Boring backfilled with bentonite chips					**FILL MATERIAL** SILTY SAND (SM); slightly moist, brown to dark brown; nonplastic; fine to medium sand; trace fine subangular gravel; trace of wood debris; trace to few crushed marble, slate and concrete; trace to few puliverized red brick.	0
5	980						Becomes slightly moist to moist, brown to gray brown. 0.2 ft. layer of medium to coarse sand.	5
10	975							10
15	970		1 2	AB-12-15.5 As and Pb by EPA 200.8 AB-12-15.5 As and Pb by EPA 200.8			**NATIVE** SILT WITH SAND (ML); moist, yellow brown; nonplastic to low plasticity; fine sand. 0.5 ft. layer of medium to coarse sand. Refusal at 18.5ft. Bottom of exploration at 18.5 ft. bgs. Note: Concentrations of As and Pb measured in the field using a Niton XL5 Plus XRF Analyzer. Limited recovery due to soft characteristic of fill material. No chemical odor detected at any depth.	15
20	965							20
25	960							25
30	955							30

Legend

Sample Type
- ◯ No Soil Sample Recovery
- ▮▮ Continuous core 1.85" ID
- ⊠ Grab sample

Water Level
- No Water Encountered

See Exploration Log Key for explanation of symbols

Logged by: RWN
Approved by: CB

Exploration Log AB-12
Sheet 1 of 1

NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINTW\PROJECTS\230360_RESERVE SILICA.GPJ October 2, 2023

Aspect CONSULTING	Reserve Silica Asarco Soil Investigation - 230360		Environmental Exploration Log	
	Project Address & Site Specific Location 28131 SE Ravensdale Way, Ravensdale, WA, East corner of the site, N of AB-12		*Coordinates (SPN NAD83 ft)* E:1354701.00 N:127587.91	*Exploration Number* **AB-13**
Contractor Holt Services, Inc.	*Equipment* Geoprobe 7822DT	*Sampling Method* Percussion hammer	*Ground Surface Elev. (NAVD88)* 988.462'	
Operator Louis Fehner	*Exploration Method(s)* Direct push	*Work Start/Completion Dates* 9/8/2023	*Top of Casing Elev. (NAVD88)* NA	*Depth to Water (Below GS)* No Water Encountered

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0							**FILL MATERIAL** SILTY SAND (SM); slightly moist, brown to light brown; nonplastic; fine to medium sand; trace fine subangular gravel; trace of wood debris; trace to few crushed marble, slate and concrete; trace to few puliverized red brick. Becomes brown to dark brown.	0
5	985	Boring backfilled with bentonite chips					CLAY WITH SAND (CL); slightly moist to moist, gray to blue gray; low to medium plasticity; fine sand; subtrace wood debris.	5
10	980						Becomes with fine to medium sand.	10
15	975						**NATIVE** SILT WITH SAND (ML); moist, yellow brown; nonplastic to low plasticity; fine to medium sand. 0.2 ft. layer of charcoal.	15
18.5	970		1	AB-13-18 As and Pb by EPA 200.8			Refusal at 18.5ft. Bottom of exploration at 18.5 ft. bgs. Note: Concentrations of As and Pb measured in the field using a Niton XL5 Plus XRF Analyzer. Limited recovery due to soft characteristic of fill material. No chemical odor detected at any depth.	
20								20
25	965							25
30	960							30
	955							

Legend

Sample Type
- ◯ No Soil Sample Recovery
- ▮▯ Continuous core 1.85" ID
- ☑ Grab sample

Water Level
- No Water Encountered

See Exploration Log Key for explanation of symbols

Logged by: RWN
Approved by: CB

Exploration Log AB-13
Sheet 1 of 1

NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINTW\PROJECTS\230360_RESERVE SILICA.GPJ October 2, 2023

Aspect CONSULTING	Reserve Silica Asarco Soil Investigation - 230360		Environmental Exploration Log	
	Project Address & Site Specific Location 28131 SE Ravensdale Way, Ravensdale, WA, Northwest corner of the site, NW of AB-01		*Coordinates (SPN NAD83 ft)* E:1354315.19 N:127676.47	*Exploration Number* **AB-14**
Contractor Holt Services, Inc.	*Equipment* Geoprobe 7822DT	*Sampling Method* Percussion hammer	*Ground Surface Elev. (NAVD88)* 963.324'	
Operator Louis Fehner	*Exploration Method(s)* Direct push	*Work Start/Completion Dates* 9/8/2023	*Top of Casing Elev. (NAVD88)* NA	*Depth to Water (Below GS)* No Water Encountered

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0							**FILL MATERIAL** SILTY SAND (SM); slightly moist, gray to gray brown; nonplastic; fine to medium sand; trace fine subangular gravel; trace of wood debris; trace to few crushed marble, slate and concrete; trace to few puliverized red brick.	0
5	960	Boring backfilled with bentonite chips	1	AB-14-5 As and Pb by EPA 200.8			CLAY WITH SAND (CL); moist to very moist, gray to blue gray; low plasticity; fine to coarse sand; few fine subangular gravel.	5
10	955						Becomes low to medium plasticity with subtrace wood debris.	10
15	950						Becomes wet with trace to few wood debris, few fine subangular gravel.	15
20	945						0.5 ft. layer of medium to coarse sand.	20
25	940						Bottom of exploration at 25 ft. bgs. Note: Concentrations of As and Pb measured in the field using a Niton XL5 Plus XRF Analyzer. Limited recovery due to soft characteristic of fill material. No chemical odor detected at any depth.	25
30	935							30
	930							

Legend

Sample Type
- ◯ No Soil Sample Recovery
- ▮▯ Continuous core 1.85" ID
- ☒ Grab sample

Water Level
- No Water Encountered

See Exploration Log Key for explanation of symbols

Logged by: RWN
Approved by: CB

Exploration Log AB-14

Sheet 1 of 1

NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINTW\PROJECTS\230360_RESERVE SILICA.GPJ October 2, 2023

Aspect CONSULTING	Reserve Silica Asarco Soil Investigation - 230360		Environmental Exploration Log	
	Project Address & Site Specific Location 28131 SE Ravensdale Way, Ravensdale, WA, Northwest corner of the site, NE of AB-14		*Coordinates (SPN NAD83 ft)* E:1354339.27 N:127740.41	*Exploration Number* **AB-15**
Contractor Holt Services, Inc.	*Equipment* Geoprobe 7822DT	*Sampling Method* Percussion hammer	*Ground Surface Elev. (NAVD88)* 963.259'	
Operator Louis Fehner	*Exploration Method(s)* Direct push	*Work Start/Completion Dates* 9/8/2023	*Top of Casing Elev. (NAVD88)* NA	*Depth to Water (Below GS)* No Water Encountered

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	960	Boring backfilled with bentonite chips					**FILL MATERIAL** SILTY SAND (SM); slightly moist, gray brown to dark brown; nonplastic; fine to medium sand; trace fine subangular gravel; trace of wood debris; trace to few crushed marble, slate and concrete; trace to few puliverized red brick.	0
5	955						CLAY WITH SAND (CL); moist, gray to light gray; low to medium plasticity; fine to medium sand. Becomes with brown staining.	5
10	950						0.2 ft. layer of fine to medium sand.	10
15	945		1	AB-15-15 As and Pb by EPA 200.8			Wood chips 0.1ft wide.	15
20	940						**NATIVE** SILT WITH SAND (ML); very moist to wet, yellow brown; nonplastic to low plasticity; fine to medium sand.	20
25	935						Refusal at 23.5ft. Bottom of exploration at 23.5 ft. bgs. Note: Concentrations of As and Pb measured in the field using a Niton XL5 Plus XRF Analyzer. Limited recovery due to soft characteristic of fill material. No chemical odor detected at any depth.	25
30	930							30

Legend

Sample Type
- ◯ No Soil Sample Recovery
- ▮▯ Continuous core 1.85" ID
- ▩ Grab sample

Water Level
- No Water Encountered

See Exploration Log Key for explanation of symbols

Logged by: RWN
Approved by: CB

Exploration Log AB-15
Sheet 1 of 1

NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINTW\PROJECTS\230360_RESERVE SILICA.GPJ October 2, 2023

Aspect CONSULTING	Reserve Silica Asarco Soil Investigation - 230360		Environmental Exploration Log	
	Project Address & Site Specific Location 28131 SE Ravensdale Way, Ravensdale, WA, Southeast corner of the site, SE of AB-10		*Coordinates (SPN NAD83 ft)* E:1354739.17 N:127359.96	*Exploration Number* **AB-16**
Contractor Holt Services, Inc.	*Equipment* Geoprobe 7822DT	*Sampling Method* Percussion hammer	*Ground Surface Elev. (NAVD88)* 977.938'	
Operator Louis Fehner	*Exploration Method(s)* Direct push	*Work Start/Completion Dates* 9/8/2023	*Top of Casing Elev. (NAVD88)* NA	*Depth to Water (Below GS)* No Water Encountered

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	975	Boring backfilled with bentonite chips					**FILL MATERIAL** SILTY SAND (SM); slightly moist, brown to dark brown; nonplastic; fine to medium sand; trace fine subangular gravel; trace of wood debris; trace to few crushed marble, slate and concrete; trace to few puliverized red brick.	0
5	970							5
10	965						Becomes with few fine subangular gravel. Becomes with 0.3 ft. brown staining.	10
15	960		1	AB-16-16.5 As and Pb by EPA 200.8			Becomes with crushed concrete, red brick, and coarse subangular gravel.	15
20	955		2	AB-16-21.5 As and Pb by EPA 200.8			Becomes with subtrace crushed marble.	20
25	950						Becomes with subtrace wood debris.	25
30	945						Bottom of exploration at 30 ft. bgs. Note: Concentrations of As and Pb measured in the field using a Niton XL5 Plus XRF Analyzer. Limited recovery due to soft characteristic of fill material. No chemical odor detected at any depth.	30

Legend

Sample Type
- ◯ No Soil Sample Recovery
- ▮▯ Continuous core 1.85" ID
- ☑ Grab sample

Water Level
- No Water Encountered

See Exploration Log Key for explanation of symbols

Logged by: RWN
Approved by: CB

Exploration Log AB-16
Sheet 1 of 1

NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINTW\PROJECTS\230360_RESERVE SILICA.GPJ October 2, 2023

APPENDIX B

Laboratory Report

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
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www.friedmanandbruya.com

September 15, 2023

Breeyn Greer, Project Manager
Aspect Consulting, LLC
710 2nd Ave S, Suite 550
Seattle, WA 98104

Dear Ms Greer:

Included are the results from the testing of material submitted on September 11, 2023 from the Reserve Silica Drilling 230360, F&BI 309119 project. There are 15 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Aspect Data
ASP0915R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 11, 2023 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC Reserve Silica Drilling 230360, F&BI 309119 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Aspect Consulting, LLC
309119 -01	AB-08-06
309119 -02	AB-09-27
309119 -03	AB-10-07
309119 -04	AB-11-12
309119 -05	AB-12-15.5
309119 -06	AB-12-17.5
309119 -07	AB-13-18
309119 -08	AB-14-5
309119 -09	AB-15-15
309119 -10	AB-16-16.5
309119 -11	AB-16-21.5

All quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 200.8

Client ID:	AB-08-06	Client:	Aspect Consulting, LLC
Date Received:	09/11/23	Project:	Reserve Silica Drilling 230360
Date Extracted:	09/11/23	Lab ID:	309119-01
Date Analyzed:	09/11/23	Data File:	309119-01.105
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	5.20
Lead	33.2

Analysis For Total Metals By EPA Method 200.8

Client ID:	AB-09-27	Client:	Aspect Consulting, LLC
Date Received:	09/11/23	Project:	Reserve Silica Drilling 230360
Date Extracted:	09/11/23	Lab ID:	309119-02
Date Analyzed:	09/11/23	Data File:	309119-02.123
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	8.42
Lead	45.9

Analysis For Total Metals By EPA Method 200.8

Client ID:	AB-10-07	Client:	Aspect Consulting, LLC
Date Received:	09/11/23	Project:	Reserve Silica Drilling 230360
Date Extracted:	09/11/23	Lab ID:	309119-03
Date Analyzed:	09/11/23	Data File:	309119-03.124
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	4.84
Lead	6.24

Analysis For Total Metals By EPA Method 200.8

Client ID:	AB-11-12	Client:	Aspect Consulting, LLC
Date Received:	09/11/23	Project:	Reserve Silica Drilling 230360
Date Extracted:	09/11/23	Lab ID:	309119-04
Date Analyzed:	09/11/23	Data File:	309119-04.125
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	5.35
Lead	4.30

Analysis For Total Metals By EPA Method 200.8

Client ID:	AB-12-15.5	Client:	Aspect Consulting, LLC
Date Received:	09/11/23	Project:	Reserve Silica Drilling 230360
Date Extracted:	09/11/23	Lab ID:	309119-05
Date Analyzed:	09/11/23	Data File:	309119-05.126
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	3.88
Lead	9.42

Analysis For Total Metals By EPA Method 200.8

Client ID:	AB-12-17.5	Client:	Aspect Consulting, LLC
Date Received:	09/11/23	Project:	Reserve Silica Drilling 230360
Date Extracted:	09/11/23	Lab ID:	309119-06
Date Analyzed:	09/11/23	Data File:	309119-06.127
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	6.87
Lead	3.54

Analysis For Total Metals By EPA Method 200.8

Client ID:	AB-13-18	Client:	Aspect Consulting, LLC
Date Received:	09/11/23	Project:	Reserve Silica Drilling 230360
Date Extracted:	09/11/23	Lab ID:	309119-07
Date Analyzed:	09/11/23	Data File:	309119-07.128
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	23.0
Lead	8.16

Analysis For Total Metals By EPA Method 200.8

Client ID:	AB-14-5	Client:	Aspect Consulting, LLC
Date Received:	09/11/23	Project:	Reserve Silica Drilling 230360
Date Extracted:	09/11/23	Lab ID:	309119-08
Date Analyzed:	09/11/23	Data File:	309119-08.138
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	4.63
Lead	8.83

Analysis For Total Metals By EPA Method 200.8

Client ID:	AB-15-15	Client:	Aspect Consulting, LLC
Date Received:	09/11/23	Project:	Reserve Silica Drilling 230360
Date Extracted:	09/11/23	Lab ID:	309119-09
Date Analyzed:	09/11/23	Data File:	309119-09.139
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	3.78
Lead	13.1

Analysis For Total Metals By EPA Method 200.8

Client ID:	AB-16-16.5	Client:	Aspect Consulting, LLC
Date Received:	09/11/23	Project:	Reserve Silica Drilling 230360
Date Extracted:	09/11/23	Lab ID:	309119-10
Date Analyzed:	09/11/23	Data File:	309119-10.140
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	3.92
Lead	18.3

Analysis For Total Metals By EPA Method 200.8

Client ID:	AB-16-21.5	Client:	Aspect Consulting, LLC
Date Received:	09/11/23	Project:	Reserve Silica Drilling 230360
Date Extracted:	09/11/23	Lab ID:	309119-11
Date Analyzed:	09/11/23	Data File:	309119-11.141
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	3.99
Lead	38.6

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	Reserve Silica Drilling 230360
Date Extracted:	09/11/23	Lab ID:	I3-701 mb
Date Analyzed:	09/11/23	Data File:	I3-701 mb.096
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	<1

Date of Report: 09/15/23
Date Received: 09/11/23
Project: Reserve Silica Drilling 230360, F&BI 309119

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 309119-01 x5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	mg/kg (ppm)	10	<5	85	93	70-130	9
Lead	mg/kg (ppm)	50	28.4	77 b	89 b	70-130	14 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	97	85-115
Lead	mg/kg (ppm)	50	104	85-115

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

309119

SAMPLE CHAIN OF CUSTODY

09/11/23 M2

Page # 1 of 2

Report To Breeyn Greer, Carla Brock

Company Aspect Consulting, LLC

Address 710 2nd Ave Suite #550

City, State, ZIP Seattle, WA, 98104

Phone (206)812-4739 Email bgreer@aspectconsulting.com cbrock@aspectconsulting.com

SAMPLERS (*signature*)

PROJECT NAME: Reserve Silica Drilling

PO #: 230360

REMARKS: *Note: Archive extra sample volume

Project specific RLs? - Yes / (No)

INVOICE TO: Aspect Consulting

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Arsenic EPA 200.8	Lead EPA 200.8			Notes
AB-08-06	01	09/07/23	1130	Soil	1								X	X			*See Remarks
AB-09-27	02	09/07/23	1410														
AB-10-07	03	09/07/23	1549														
AB-11-12	04	09/08/23	0925														
AB-12-15.5	05	09/08/23	1105														
AB-12-17.5	06	09/08/23	1110														
AB-13-18	07	09/08/23	1205														
AB-14-5	08	09/08/23	1345														
AB-15-15	09	09/08/23	1450														
AB-16-16.5	10	09/08/23	1615	↓	↓								↓	↓			↓

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Ris' Nag	Aspect	09/11/23	1222
Received by:	ERIC YOUNG	K&B	9/11/23	1222
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
Ph. (206) 285-8282

Samples received at 4 °C

SAMPLE CHAIN OF CUSTODY 09/11/23 M2

309119

Page # 2 of 2

Report To Breeyn Greer, Carla Brock

Company Aspect Consulting, LLC

Address 710 2nd Ave Suite #550

City, State, ZIP Seattle, WA, 98104

Phone (206) 812-4739 Email bgreer@aspectconsulting.com cbrock@aspectconsulting.com

SAMPLERS (*signature*)

PROJECT NAME: Reserve Silica Drilling

PO #: 230360

REMARKS * Note : Archive extra Sample volume

INVOICE TO: Aspect Consulting

Project specific RLs? - Yes / (No)

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Arsenic EPA 200.8	Lead EPA 200.8			Notes
AB-16-21-5	11	09/08/23	1620	Soil	1								X	X			*See Remarks

09/11/23

Samples received at 4 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Risi Naa	Aspect	09/11/23	1222
Received by:	Eric Young	FCR	9/11/23	1222
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
Ph. (206) 285-8282

APPENDIX C

Report Limitations and Guidelines for Use

REPORT LIMITATIONS AND USE GUIDELINES

Reliance Conditions for Third Parties

This report was prepared for the exclusive use of the Client. No other party may rely on this report or the product of our services without the express written consent of Aspect Consulting, LLC (Aspect). This limitation is to provide our firm with reasonable protection against liability claims by third parties with whom there would otherwise be no contractual conditions or limitations and guidelines governing their use of the report. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and recognized standards of professionals in the same locality and involving similar conditions.

Services for Specific Purposes, Persons, and Projects

Aspect has performed the services in general accordance with the scope and limitations of our Agreement. This report has been prepared for the exclusive use of the Client and their authorized third parties, approved in writing by Aspect. This report is not intended for use by others, and the information contained herein is not applicable to other properties.

This report is not, and should not, be construed as a warranty or guarantee regarding the presence or absence of hazardous substances or petroleum products that may affect the subject property. The report is not intended to make any representation concerning title or ownership to the subject property. If real property records were reviewed, they were reviewed for the sole purpose of determining the subject property's historical uses. All findings, conclusions, and recommendations stated in this report are based on the data and information provided to Aspect, current use of the subject property, and observations and conditions that existed on the date and time of the report.

Aspect structures its services to meet the specific needs of our clients. Because each environmental study is unique, each environmental report is unique, prepared solely for the specific client and subject property. This report should not be applied for any purpose or project except the purpose described in the Agreement.

This Report Is Project-Specific

Aspect considered a number of unique, project-specific factors when establishing the Scope of Work for this project and report. You should not rely on this report if it was:

- Not prepared for you
- Not prepared for the specific purpose identified in the Agreement
- Not prepared for the specific real property assessed
- Completed before important changes occurred concerning the subject property, project or governmental regulatory actions

If changes are made to the project or subject property after the date of this report, Aspect should be retained to assess the impact of the changes with respect to the conclusions contained in the report.

Geoscience Interpretations

The geoscience practices (geotechnical engineering, geology, and environmental science) require interpretation of spatial information that can make them less exact than other engineering and natural science disciplines. It is important to recognize this limitation in evaluating the content of the report. If you are unclear how these "Report Limitations and Use Guidelines" apply to your project or site, you should contact Aspect.

Discipline-Specific Reports Are Not Interchangeable

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually address any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding the subject property.

Environmental Regulations Are Not Static

Some hazardous substances or petroleum products may be present near the subject property in quantities or under conditions that may have led, or may lead, to contamination of the subject property, but are not included in current local, state or federal regulatory definitions of hazardous substances or petroleum products or do not otherwise present potential liability. Changes may occur in the standards for appropriate inquiry or regulatory definitions of hazardous substance and petroleum products; therefore, this report has a limited useful life.

Property Conditions Change Over Time

This report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time (for example, Phase I ESA reports are applicable for 180 days), by events such as a change in property use or occupancy, or by natural events, such as floods, earthquakes, slope failure or groundwater fluctuations. If more than six months have passed since issuance of our report, or if any of the described events may have occurred following the issuance of the report, you should contact Aspect so that we may evaluate whether changed conditions affect the continued reliability or applicability of our conclusions and recommendations.

Historical Information Provided by Others

Aspect has relied upon information provided by others in our description of historical conditions and in our review of regulatory databases and files. The available data does not provide definitive information with regard to all past uses, operations or incidents affecting the subject property or adjacent properties. Aspect makes no warranties or guarantees regarding the accuracy or completeness of information provided or compiled by others.