Associated Environmental Group, LLC

January 3, 2022

Mr. Chang Kim
23886 SE Kent-Kangley Road
Maple Valley, Washington 98038-6848
jbangiek@gmail.com

RE: **Technical Memorandum – Cleanup Progress Report**
4 Corners Cleaners
23886 SE Kent-Kangley Road
Maple Valley, Washington 98038-6848
AEG Project: 17-126

Dear Mr. Kim:

Associated Environmental Group, LLC (AEG) has prepared this Technical Memorandum to provide an update on the progress of cleanup actions for *4 Corners Cleaners*, located at the above-referenced address in Maple Valley, Washington (Site). A soil vapor extraction (SVE) system has been operating at the Site as presented in AEG's Cleanup Action Plan, dated May 29, 2019. The system was designed to extract and remove adsorbed vapor-phase tetrachloroethylene (PCE) and other volatile organic compounds (VOCs) from subsurface soil beneath the building, and treat the vapors using granular activated carbon (GAC). The system also mitigates the potential for vapor intrusion of VOCs detected beneath the dry cleaner space into the indoor air. This memorandum includes a summary of the operation and maintenance (O&M) activities performed to date, a summary of the groundwater monitoring results, and recommendations for continued operations and monitoring for the Site. Figure 1, *Site Location Map*, presents the general vicinity of the Site. The Site's current layout, including soil boring and SVE extraction well locations, are illustrated in Figure 2, *Site Map*.

BACKGROUND

PCE and its anaerobic sequential degradation chain constituents, including trichloroethylene (TCE), cis-1,2-dichloroethylene (DCE), trans-1,2-DCE, and vinyl chloride, are the contaminants of concern (COCs) for the Site. Soil and soil vapor are the media affected. Groundwater was encountered at various depths from 25 to 33 feet below ground surface (bgs) in six of the ten borings and did not contain detectable VOCs. Soil impacts at the Site are likely the result of use and storage of PCE formerly used in the dry cleaner machine and dry-cleaning process.

PCE was the only COC detected in soil above Model Toxics Control Act (MTCA) cleanup levels. PCE exceeded the MTCA Method A cleanup level in AEG soil samples B1-22 (1.8 feet bgs) and B3-23 (1.9 feet bgs). Both of these borings were located inside the building. The vertical extent of

PCE in these borings could not be determined due to the very dense soils encountered and the limitations of drilling in these soils inside the building. PCE was also detected in boring B-11 at 18 feet bgs, which is outside the building to the north. Soil boring locations are illustrated on Figure 2, *Site Map*.

GROUNDWATER MONITORING

On May 18-20, 2020, AEG constructed four groundwater monitoring wells (MW-1, MW-2, MW-3, and MW-5) to allow for quarterly sampling of Site groundwater to address Ecology's comments. The target depth for the borings was 50 feet below ground surface (bgs) to evaluate the subsurface conditions. On the day of drilling, groundwater was encountered at 35 feet bgs. Samples of soil and groundwater were collected during drilling for field screening and laboratory analyses. Several attempts were made to advance to depth in the area proposed for MW-4; however, refusal was consistently encountered. As such, MW-4 was never installed.

Groundwater monitoring was performed on these wells in June, September, and December 2020, and in March 2021. Groundwater samples collected from the wells were submitted for laboratory analysis for PCE and daughter products using EPA Method 8260. No constituents of concern were detected in groundwater samples above the laboratory detection limits for monitoring wells MW-1, MW-2, MW-3, or MW-5 for four consecutive quarters. Analytical results for these sampling events are presented in Table 2, *Summary of Groundwater Analytical Results*.

The calculated groundwater gradient for the Site has ranged from about 0.017 to 0.02 feet per foot, and has been generally consistent to the north-northwest as illustrated on Figure 3, *Groundwater Elevation Contour Map 06/23/2020*, Figure 4, *Groundwater Elevation Contour Map 09/14/2020*, Figure 5, *Groundwater Elevation Contour Map 12/11/2020*, and Figure 6, *Groundwater Elevation Contour Map 03/19/2021*. A summary of groundwater elevations is presented as Table 1, *Summary of Groundwater Elevations*.

SVE SYSTEM INSTALLATION

Five SVE wells were installed on August 9 and 10, 2019 by Cascade Drilling, LP (Cascade) using sonic drilling technologies. Four SVE wells (SVE-1 through SVE-4) are outside the tenant space and are 15 feet in depth with slotted screens from 2 to 15 feet bgs. SVE-5 was installed inside the tenant space using vacuum extraction to a depth of 3 feet bgs and completed with slotted screen from 6 inches to 3 feet bgs. All wells were sealed at the surface with bentonite and concrete grout.

Sub-slab vapor monitoring points (VP-1 to VP-4) were installed by drilling through the existing concrete slab, placement, and sealing of the stainless steel VaporPin® sampling points. The vapor points were completed with accessible lids in locations for easy monitoring. Vapor monitoring points and SVE well locations are illustrated on Figure 2, *Site Map*.

The SVE system underground conveyance piping installation was completed in August through September 2019, and startup occurred on October 9, 2019. The system was constructed to meet the Site conditions and requirements of the property management company. The system was started with GAC filters in-place to be in compliance with the required Puget Sound Clean Air Agency (PSCAA) regulations.

SYSTEM PERFORMANCE AND ONGOING O&M

Since October 2021, AEG has been utilizing the services of DH Environmental, Inc. (DHE) to assist with O&M activities. Since DHE assumed O&M operations, the SVE system has been operating normally. The only system shutdowns have been the result of a general power failure (one occurrence – assumed to be external to the treatment system due to weather), and knockout tank high-water alarm shutdowns (four events since October). Routine system O&M is scheduled to occur at the beginning of each month, plus call outs when system shutdown alarm notifications are received.

The latest sub-slab vapor and SVE system sampling event was performed on November 2, 2021. Sub-slab vapor samples were collected from all four vapor monitoring points (VP-1 through VP-4). As shown in Table 3, *Summary of Sub-Slab Vapor Analytical Results*, the results indicate that PCE was present in vapor monitoring points VP-3 and VP-4 at 950 micrograms per cubic meter ($\mu g/m^3$) and 370 $\mu g/m^3$, respectively, which is above the MTCA Method B sub-slab screening level of 321 $\mu g/m^3$ for PCE. However, results from VP-1 and VP-2 were below this screening level.

As of the November 2, 2021 monitoring date, the SVE system had been operational at the Site for 552 days. From the startup date of October 9, 2019, the SVE system has had multiple shutdown events caused by high water in the moisture knockout tank. These shutdown events appear directly related to heavy precipitation events, and could be due to surface water infiltration from leaking drain lines, water in building sub-slab gravel, and/or higher groundwater levels. It's a fairly common issue and, each time, AEG has restarted the system after the alarms were cleared and the system vacuum was adjusted after the system was re-started.

The carbon filtration was removed from the system in January 2020 and the performance sample location has been the effluent air from the vacuum system stack output sample port. A 10-minute Summa canister sample was collected on November 2, 2021 to evaluate compliance with the PSCAA maximum allowable emission rates. PCE and related constituents were not detected in the exhaust air sample analysis. The analytical results of the effluent sample and potential to emit (PTE) toxic constituents are shown on Table 4, *Potential to Emit Summary*. Results from the air sampling are presented in Appendix A, Supporting Documents, *Laboratory Datasheets*. Approximately 1.052 pounds of halogenated volatile organic compounds (HVOCs) have been removed in vapor phase from the Site to date.

Based on the past two months of O&M, DHE anticipates being at the Site two to three times per month during the rainy season (October-April), and once per month during the dry season for routine maintenance and call outs to restart the system after receiving shutdown alerts.

Recommended Maintenance to Optimize Performance

Based on the recent O&M observations and performance data, AEG anticipates making the following modifications to the system and operations:

- Replace the five vacuum gauges on the SVE well manifold. Each of the SVE wells has a vacuum gauge so that the vacuum maintained on each well can be monitored. Recent O&M visits noted only one of the five vacuum gauges (SVE-5) is functioning, and the other four gauges are non-functioning and read zero whether vacuum is being applied to the well or not. AEG recommends replacing all five gauges, which could be installed during a routine O&M visit to minimize additional costs.
- Apply vacuum to SVE-4. Prior to October and through November, only three of the five SVE wells were under vacuum (SVE-1, -3 and -5), and the manifold valves for SVE-2 and SVE-4 have been in the closed position. The sub-slab soil gas results from the samples collected on November 2, 2021 indicate that VP-3 and VP-4 have the highest PCE concentrations of the four VP monitoring points, and the analytical data indicates that the concentrations at both VP-3 and VP-4 are above the established MTCA Method B sub-slab screening level for PCE of 321 µg/m^3, while the concentrations of PCE detected in VP-1 and VP-2 were below this MTCA screening level. The attached map shows the relative locations of the SVE wells and VP monitoring points, and shows that VP-3 and VP-4 are the furthest distance to the active SVE wells. For VP-3, it should help to turn on SVE-4, which is the SVE well closest to this VP location.
- Replace the manifold ball valve for SVE-4. During a recent site visit, it was observed that the vacuum at the wellhead at SVE-4 was barely detectible with the manifold valve turned on, indicating a blockage or potential break in this line – the most likely rationale is that the manifold valve for SVE-4 is broken in the closed position. Therefore, AEG recommends replacing the SVE-4 manifold valve to see if this resolves the issue. If it doesn't, which would indicate a break in the underground piping, vacuum-rated tubing may need to be placed inside of the underground piping from the manifold to SVE-4 to re-establish vacuum to this well.

CLOSING

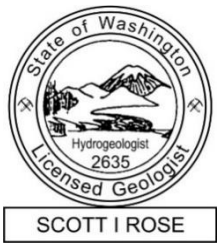
AEG recommends submitting this Progress Report to Ecology for review and opinion. Specifically, the opinion request would include seeking Ecology's opinion on the sufficiency of the groundwater monitoring performed to date and whether any future assessment of the groundwater is needed, as well as Ecology's opinion of the sufficiency of the ongoing cleanup actions performed to date.

If you have comments or questions, please contact our office at your convenience at 360.352.9835.

Sincerely,

Associated Environmental Group, LLC

Scott Rose, L.H.G.
Senior Hydrogeologist



Attachments: Figure 1 – *Site Location Map*
Figure 2 – *Site Map*
Figure 3 – *Groundwater Elevation Contour Map 06/23/2020*
Figure 4 – *Groundwater Elevation Contour Map 09/14/2020*
Figure 5 – *Groundwater Elevation Contour Map 12/11/2020*
Figure 6 – *Groundwater Elevation Contour Map 03/19/2021*

Table 1 – *Summary of Groundwater Elevations*
Table 2 – *Summary of Groundwater Analytical Results*
Table 3 – *Summary of Sub-Slab Vapor Analytical Results*
Table 4 – *Potential to Emit Summary*

Appendix A – Supporting Documents
Laboratory Datasheets

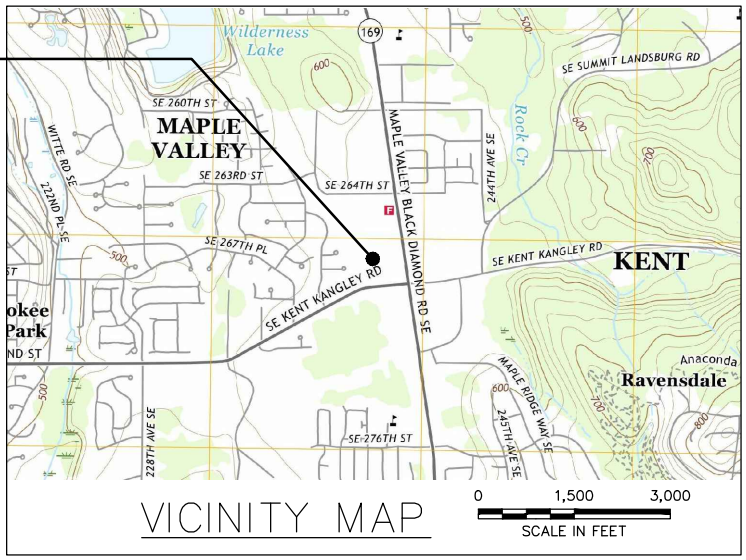
FIGURES

2633 Parkmont Lane SW, Suite A • Olympia, WA • 98502
Phone: 360-352-9835 • Fax: 360-352-8164 • Email: admin@aegwa.com

FILENAME	DRAWN BY		CHECKED BY		APPROVED BY		PROJECT NUMBER
17-126_17Q1.DWG	ICD	3/22/2017	CS	3/22/2017	CS	3/22/2017	17-126

N
W E
S

PROJECT LOCATION



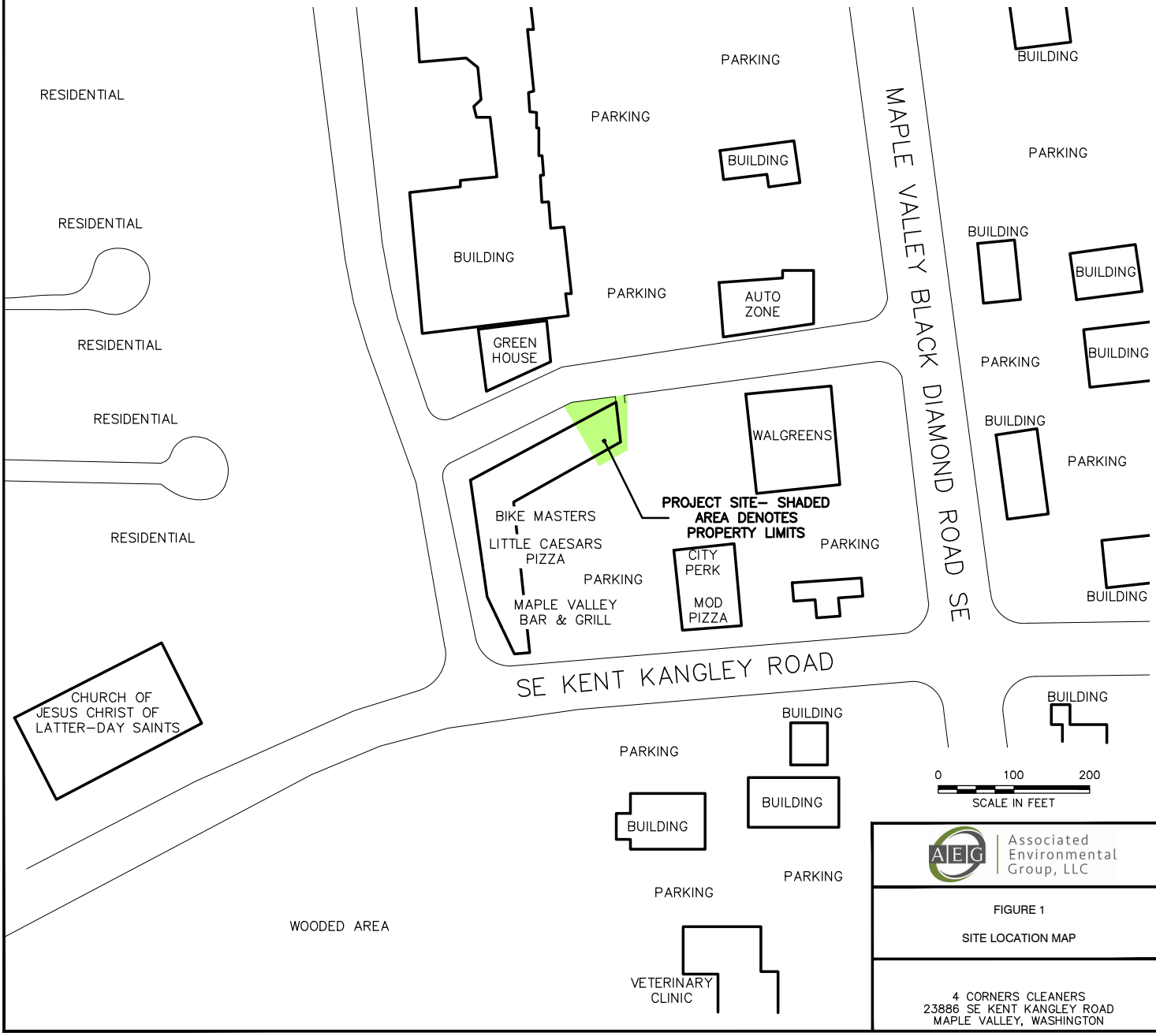
VICINITY MAP

NOTES

1. THE LOCATIONS OF ALL FEATURES SHOWN ARE APPROXIMATE
2. THIS DRAWING IS FOR INFORMATION PURPOSES. IT IS INTENDED TO ASSIST IN SHOWING FEATURES DISCUSSED IN AN ATTACHED DOCUMENT.

REFERENCE

DRAWING CREATED FROM AERIAL PHOTOGRAPH AND NOTES PROVIDED BY AEG, LLC.
VICINITY IMAGE SOURCE: U.S. GEOLOGICAL SURVEY–2017, 7.5 MINUTE QUADRANGLE MAP
BLACK DIAMOND, WASHINGTON



Associated Environmental Group, LLC

FIGURE 1

SITE LOCATION MAP

4 CORNERS CLEANERS
23886 SE KENT KANGLEY ROAD
MAPLE VALLEY, WASHINGTON

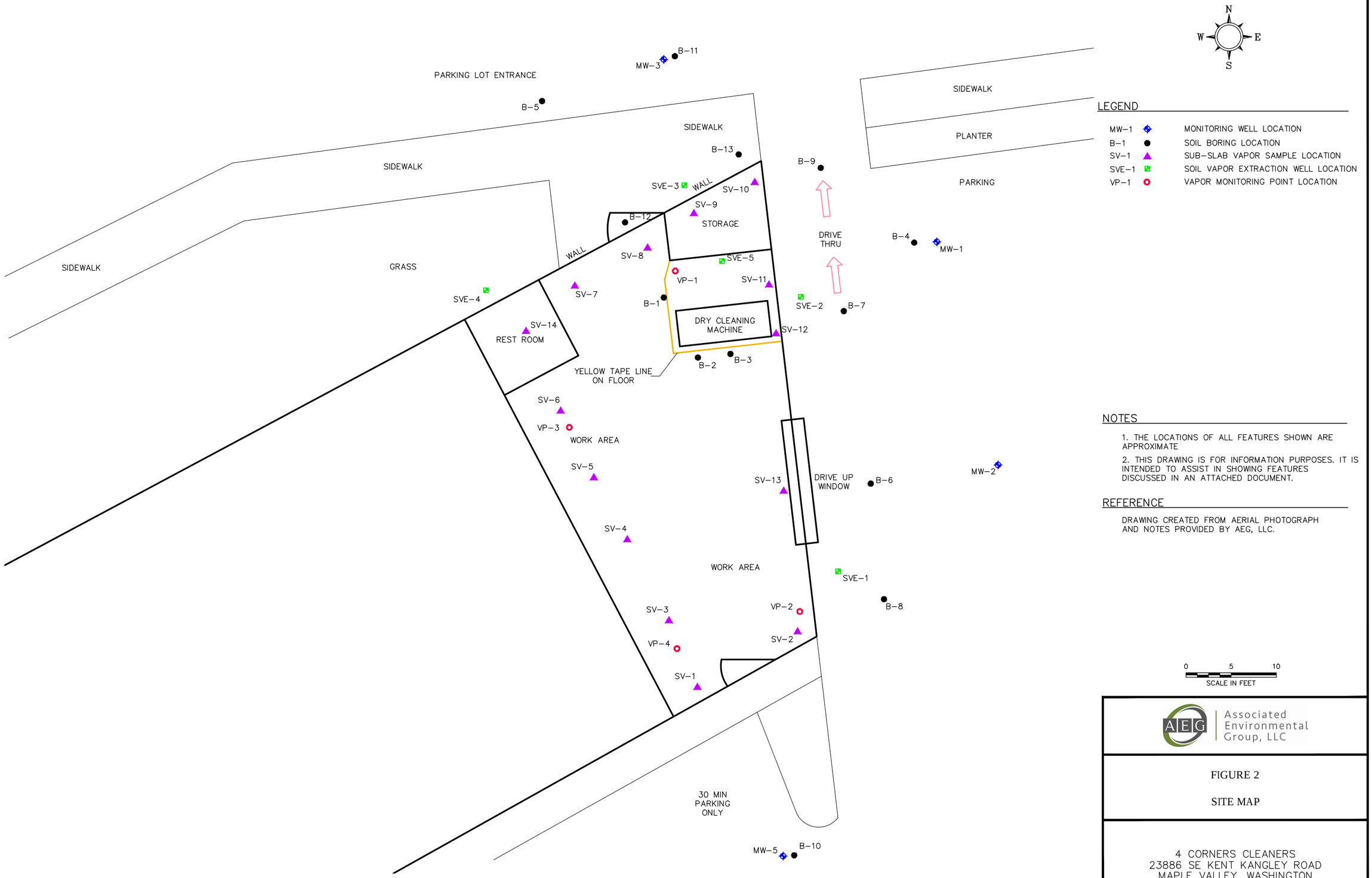
PROJECT NUMBER 17-126

APPROVED BY SR 12/15/2021

CHECKED BY SR 12/15/2021

DRAWN BY ICD 12/15/2021

FILENAME 17-126_2101_1.DWG



LEGEND

MW-1	MONITORING WELL LOCATION
B-1	SOIL BORING LOCATION
SV-1	SUB-SLAB VAPOR SAMPLE LOCATION
SVE-1	SOIL VAPOR EXTRACTION WELL LOCATION
VP-1	VAPOR MONITORING POINT LOCATION

NOTES

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REFERENCE

DRAWING CREATED FROM AERIAL PHOTOGRAPH AND NOTES PROVIDED BY AEG, LLC.

0 5 10
SCALE IN FEET

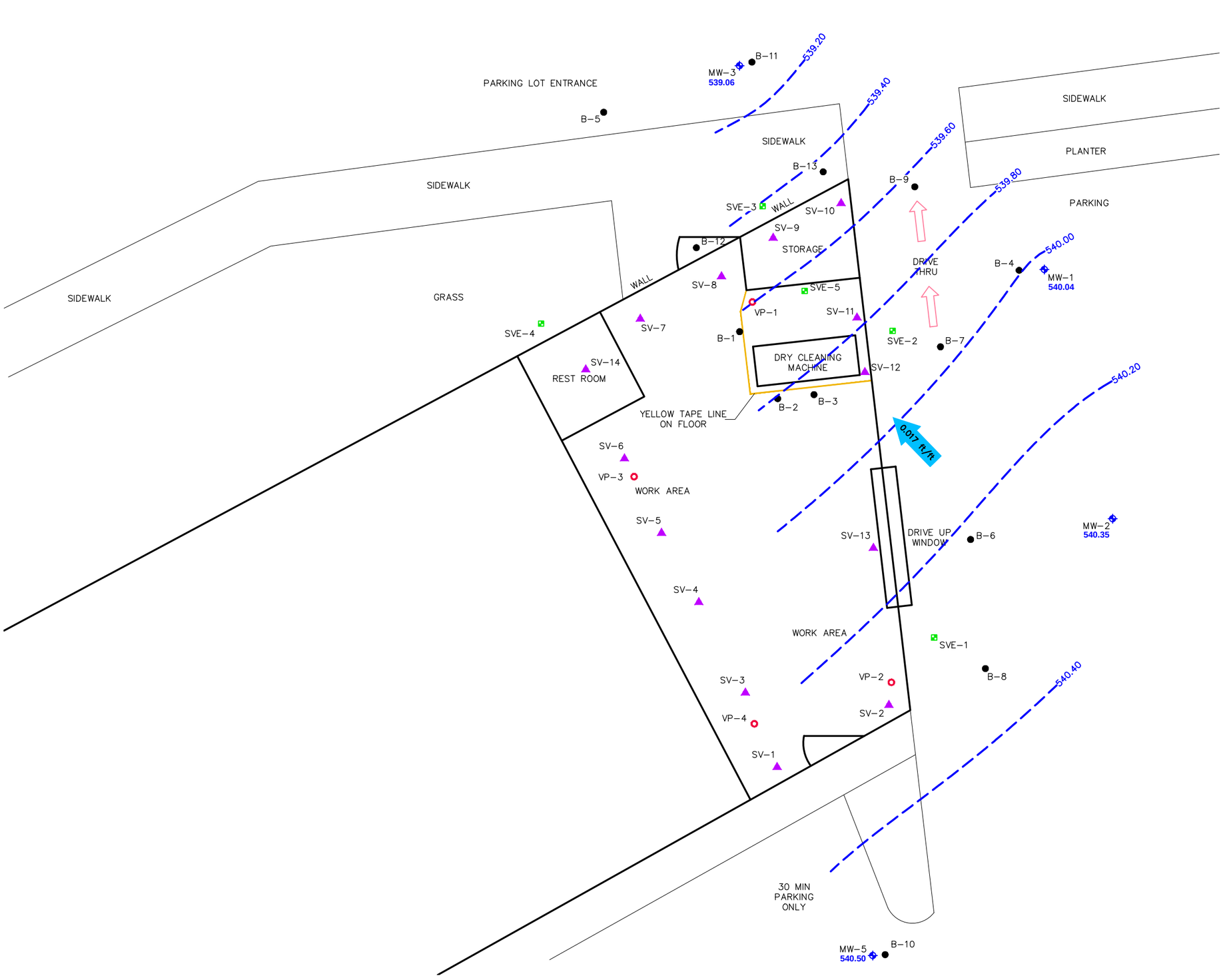
Associated Environmental Group, LLC

FIGURE 2

SITE MAP

4 CORNERS CLEANERS
23886 SE KENT KANGLEY ROAD
MAPLE VALLEY, WASHINGTON

FILENAME	DRAWN BY	CHECKED BY	APPROVED BY	PROJECT NUMBER
17-126_2002_1.DWG	ICD 12/15/2021	SR 12/15/2021	SR 12/15/2021	17-126



LEGEND

MW-1	MONITORING WELL LOCATION
B-1	SOIL BORING LOCATION
SV-1	SUB-SLAB VAPOR SAMPLE LOCATION
SVE-1	SOIL VAPOR EXTRACTION WELL LOCATION
VP-1	VAPOR MONITORING POINT LOCATION
540.04	GROUNDWATER ELEVATION (FEET)
540.00	INFERRED GROUNDWATER ELEVATION CONTOUR LINE (FEET) CONTOUR INTERVAL=0.20 FEET
0.017 ft/ft	APPROXIMATE GROUNDWATER GRADIENT DIRECTION (ft/ft)

NOTES

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REFERENCE

DRAWING CREATED FROM AERIAL PHOTOGRAPH AND NOTES PROVIDED BY AEG, LLC.

0 5 10
SCALE IN FEET

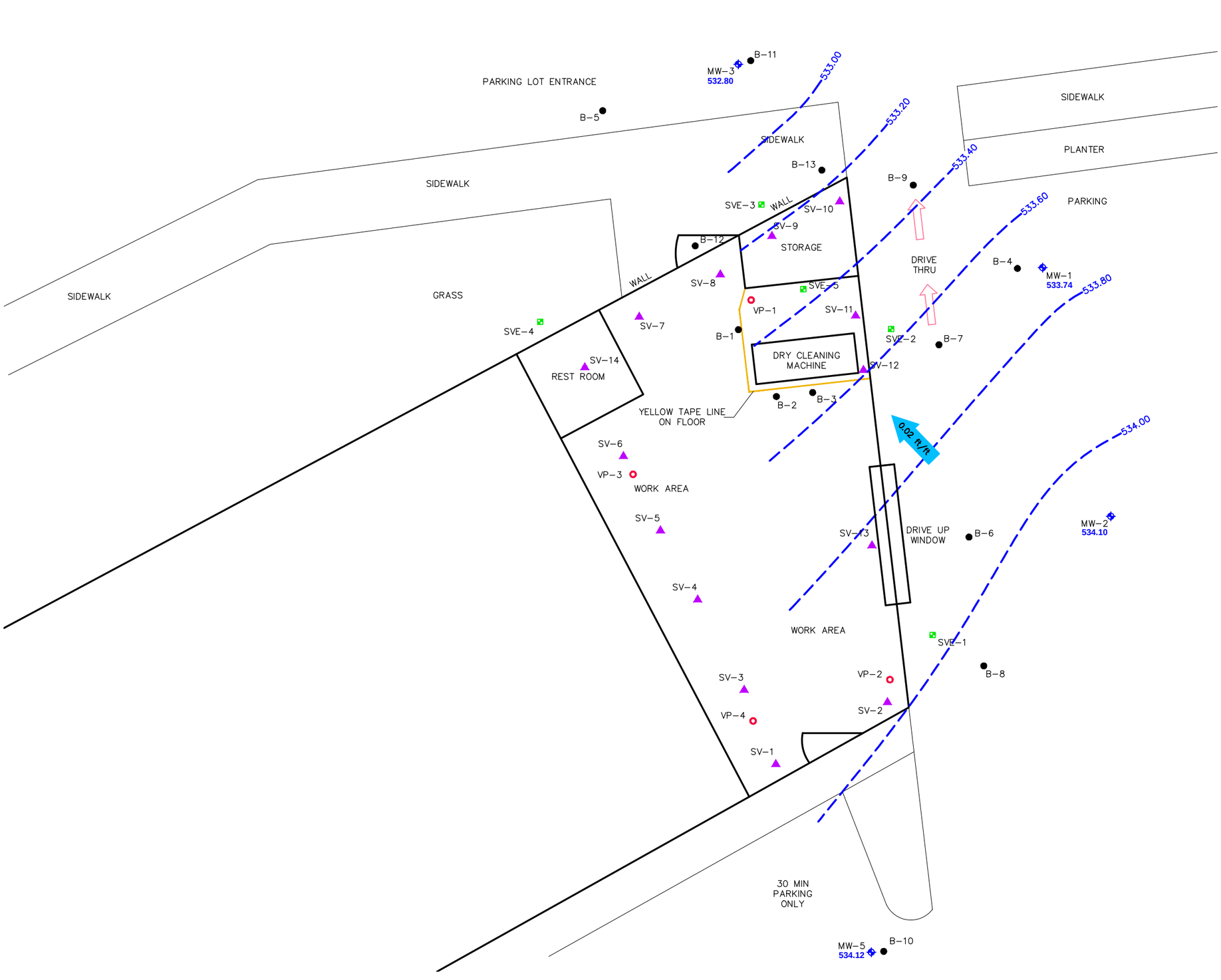
Associated Environmental Group, LLC

FIGURE 3

GROUNDWATER ELEVATION CONTOUR MAP
06/23/2020

4 CORNERS CLEANERS
23886 SE KENT KANGLEY ROAD
MAPLE VALLEY, WASHINGTON

PROJECT NUMBER	APPROVED BY	CHECKED BY	DRAWN BY	FILENAME
17-126	SR 12/15/2021	SR 12/15/2021	ICD 12/15/2021	17-126_2003_1.DWG



LEGEND

- MW-1 — MONITORING WELL LOCATION
- B-1 — SOIL BORING LOCATION
- SV-1 — SUB-SLAB VAPOR SAMPLE LOCATION
- SVE-1 — SOIL VAPOR EXTRACTION WELL LOCATION
- VP-1 — VAPOR MONITORING POINT LOCATION
- 534.10 — GROUNDWATER ELEVATION (FEET)
- 534.00 — INFERRED GROUNDWATER ELEVATION CONTOUR LINE (FEET) CONTOUR INTERVAL=0.20 FEET
- 0.02 ft/ft — APPROXIMATE GROUNDWATER GRADIENT DIRECTION (ft/ft)

NOTES

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REFERENCE

DRAWING CREATED FROM AERIAL PHOTOGRAPH AND NOTES PROVIDED BY AEG, LLC.

0 5 10
SCALE IN FEET

Associated Environmental Group, LLC

FIGURE 4

GROUNDWATER ELEVATION CONTOUR MAP
09/14/2020

4 CORNERS CLEANERS
23886 SE KENT KANGLEY ROAD
MAPLE VALLEY, WASHINGTON

PROJECT NUMBER	17-126
APPROVED BY	SR 12/15/2021
CHECKED BY	SR 12/15/2021
DRAWN BY	ICD 12/15/2021
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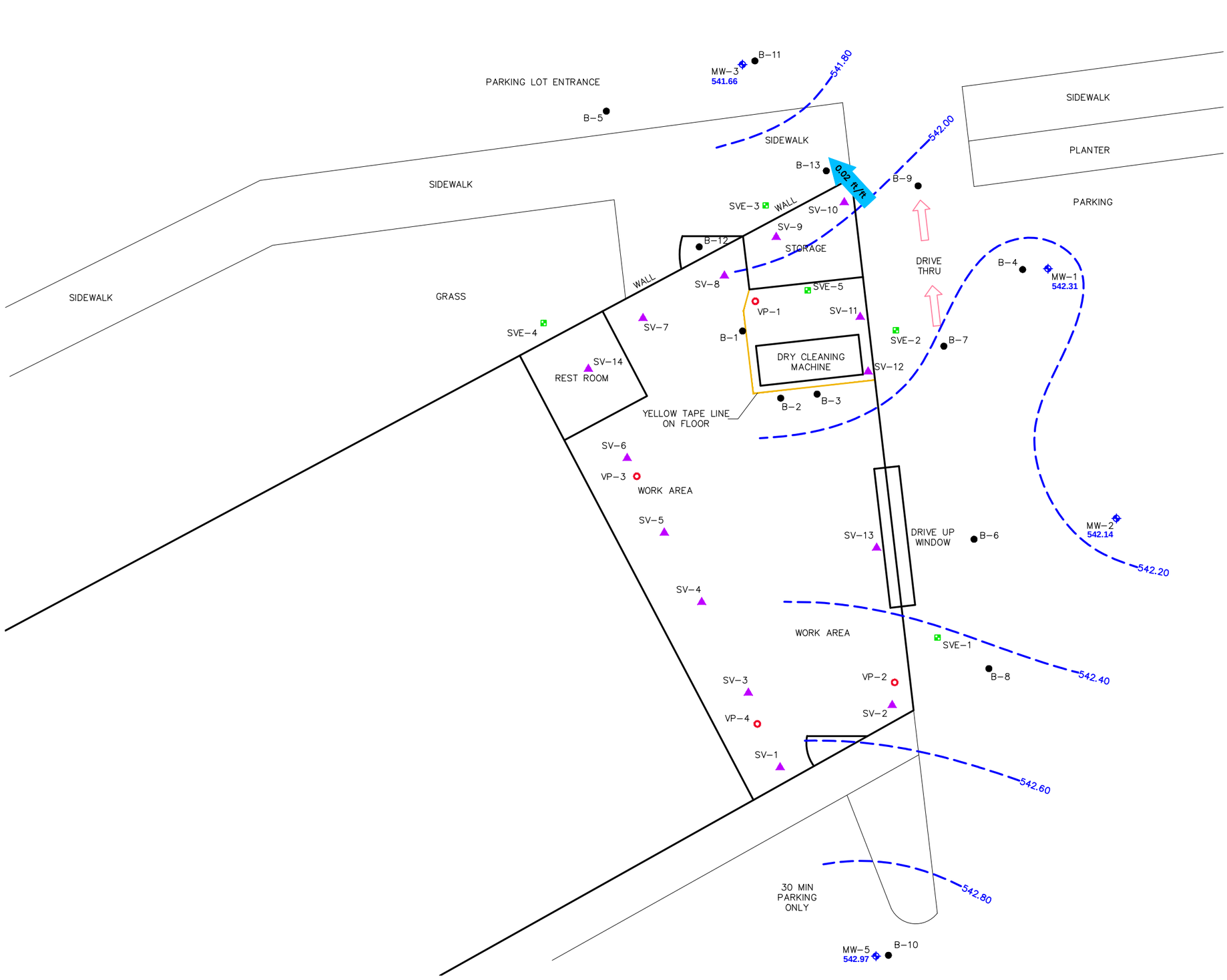

LEGEND

- MW-1 — MONITORING WELL LOCATION
- B-1 — SOIL BORING LOCATION
- SV-1 — SUB-SLAB VAPOR SAMPLE LOCATION
- SVE-1 — SOIL VAPOR EXTRACTION WELL LOCATION
- VP-1 — VAPOR MONITORING POINT LOCATION
- 542.31 — GROUNDWATER ELEVATION (FEET)
- 542.00 — INFERRED GROUNDWATER ELEVATION CONTOUR LINE (FEET) CONTOUR INTERVAL=0.20 FEET
- 0.02 ft/ft — APPROXIMATE GROUNDWATER GRADIENT DIRECTION (ft/ft)

NOTES

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REFERENCE

DRAWING CREATED FROM AERIAL PHOTOGRAPH AND NOTES PROVIDED BY AEG, LLC.

0 5 10
SCALE IN FEET

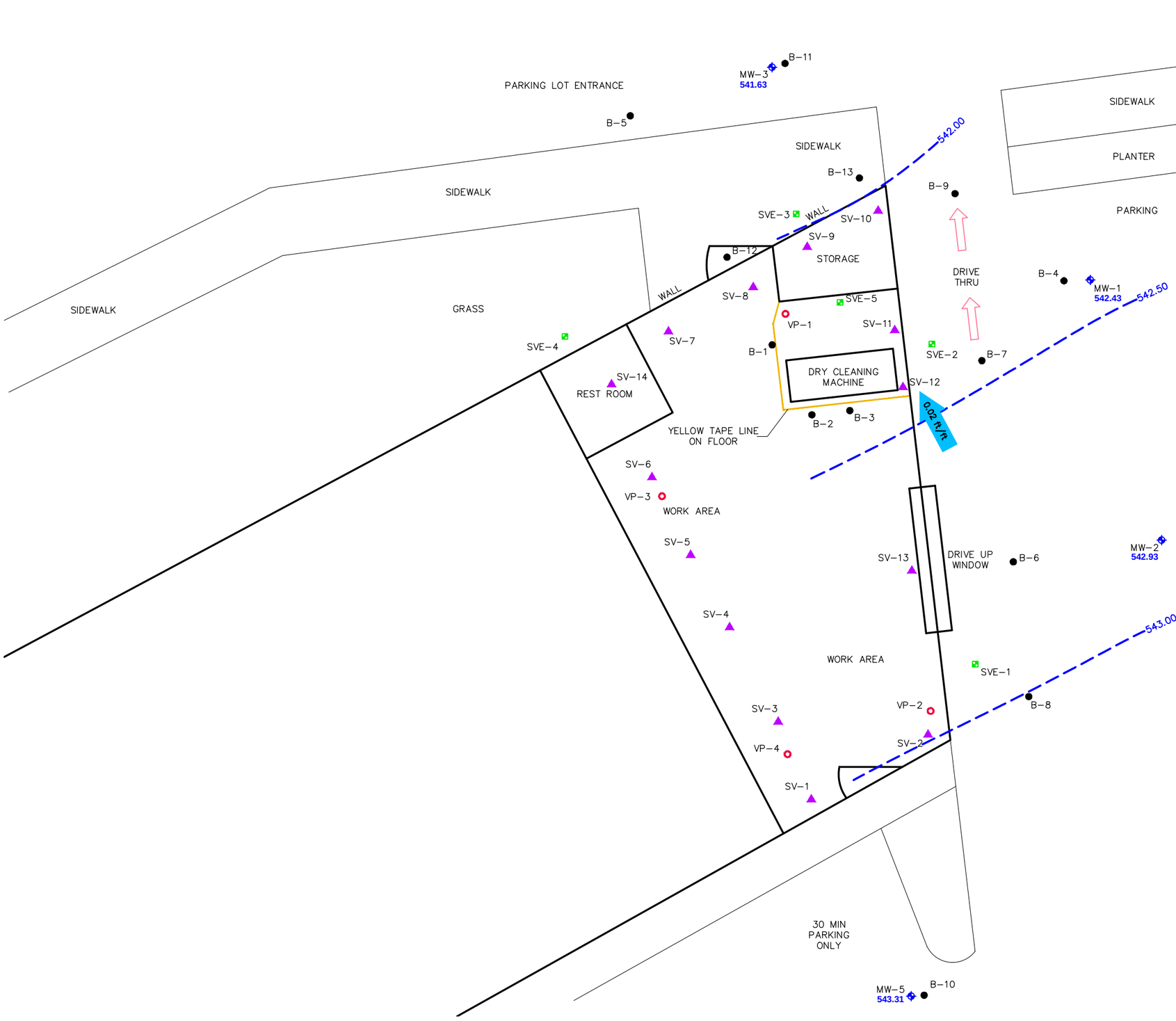
Associated Environmental Group, LLC

FIGURE 5

GROUNDWATER ELEVATION CONTOUR MAP
12/11/2020

4 CORNERS CLEANERS
23886 SE KENT KANGLEY ROAD
MAPLE VALLEY, WASHINGTON

PROJECT NUMBER	17-126	
APPROVED BY	SR	12/15/2021
CHECKED BY	SR	12/15/2021
DRAWN BY	ICD	12/15/2021
FILENAME	17-126_2101_1.DWG	



LEGEND

MW-1	MONITORING WELL LOCATION
B-1	SOIL BORING LOCATION
SV-1	SUB-SLAB VAPOR SAMPLE LOCATION
SVE-1	SOIL VAPOR EXTRACTION WELL LOCATION
VP-1	VAPOR MONITORING POINT LOCATION
542.43	GROUNDWATER ELEVATION (FEET)
542.00	INFERRED GROUNDWATER ELEVATION CONTOUR LINE (FEET) CONTOUR INTERVAL=0.50 FEET
0.02 ft/ft	APPROXIMATE GROUNDWATER GRADIENT DIRECTION (ft/ft)

NOTES

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REFERENCE

DRAWING CREATED FROM AERIAL PHOTOGRAPH AND NOTES PROVIDED BY AEG, LLC.

0 5 10
SCALE IN FEET

Associated Environmental Group, LLC

FIGURE 6

GROUNDWATER ELEVATION CONTOUR MAP
03/19/2021

4 CORNERS CLEANERS
23886 SE KENT KANGLEY ROAD
MAPLE VALLEY, WASHINGTON

TABLES

2633 Parkmont Lane SW, Suite A • Olympia, WA • 98502
Phone: 360-352-9835 • Fax: 360-352-8164 • Email: admin@aegwa.com

Table 1 - Summary of Groundwater Elevations
4 Corners Cleaners (17-126)
Maple Valley, Washington

Well No./ TOC Elevation	Date	Depth to Water	Depth to Free Product	Free Product Thickness	Actual Groundwater Elevation	Change in Elevation
MW-1	6/23/2020	22.67	--	--	540.04	--
562.71	9/14/2020	28.97	--	--	533.74	-6.30
	12/11/2020	20.40	--	--	542.31	8.57
	3/19/2021	20.28	--	--	542.43	0.12
MW-2	6/23/2020	22.04	--	--	540.35	--
562.39	9/14/2020	28.29	--	--	534.10	-6.25
	12/11/2020	20.25	--	--	542.14	8.04
	3/19/2021	19.46	--	--	542.93	0.79
MW-3	6/23/2020	24.82	--	--	539.06	--
563.88	9/14/2020	31.08	--	--	532.80	-6.26
	12/11/2020	22.22	--	--	541.66	8.86
	3/19/2021	22.25	--	--	541.63	-0.03
MW-5	6/23/2020	22.22	--	--	540.50	--
562.72	9/14/2020	28.60	--	--	534.12	-6.38
	12/11/2020	19.75	--	--	542.97	8.85
	3/19/2021	19.41	--	--	543.31	0.34

Notes:

All values reported in feet

TOC = Top of casing elevation relative to assigned benchmark.

-- = Not measured, not available, or not applicable

Table 2 - Summary of Groundwater Analytical Results

4 Corners Cleaners (17-126)
Maple Valley, Washington

Sample Number	Date Collected	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
Boring Groundwater Data						
B4-W	7/17/2018	<1.0	<1.0	<1.0	<1.0	<0.2
B5-W	7/17/2018	<1.0	<1.0	<1.0	<1.0	<0.2
B6-W	7/18/2018	<1.0	<1.0	<1.0	<1.0	<0.2
B7-W	7/18/2018	<1.0	<1.0	<1.0	<1.0	<0.2
B8-W	7/19/2018	<1.0	<1.0	<1.0	<1.0	<0.2
B9-W	7/19/2018	<1.0	<1.0	<1.0	<1.0	<0.2
Monitoring Well Groundwater Data[1]						
MW-1	6/23/2020	<1.0	<0.4	<1.0	<1.0	<0.2
	9/14/2020	<1.0	<0.4	<1.0	<1.0	<0.2
	12/11/2020	<1.0	<0.4	<1.0	<1.0	<0.2
	3/19/2021	<1.0	<0.4	<1.0	<1.0	<0.2
MW-2	6/23/2020	<1.0	<0.4	<1.0	<1.0	<0.2
	9/14/2020	<1.0	<0.4	<1.0	<1.0	<0.2
	12/11/2020	<1.0	<0.4	<1.0	<1.0	<0.2
	3/19/2021	<1.0	<0.4	<1.0	<1.0	<0.2
MW-3	6/23/2020	<1.0	<0.4	<1.0	<1.0	<0.2
	9/14/2020	<1.0	<0.4	<1.0	<1.0	<0.2
	12/11/2020	<1.0	<0.4	<1.0	<1.0	<0.2
	3/19/2021	<1.0	<0.4	<1.0	<1.0	<0.2
MW-5	6/23/2020	<1.0	<0.4	<1.0	<1.0	<0.2
	9/14/2020	<1.0	<0.4	<1.0	<1.0	<0.2
	12/11/2020	<1.0	<0.4	<1.0	<1.0	<0.2
	3/19/2021	<1.0	<0.4	<1.0	<1.0	<0.2
PQL		1.0	0.4/1.0	1.0	1.0	0.2
MTCA Method A Cleanup Levels		5.0	5.0	160*	16*	0.2

Notes:

All values present are micrograms per liter (µg/L)

-- = Not analyzed for constituent

< = Not detected at the listed laboratory detection limits

PQL = Practical Quantification Limit (laboratory detection limit)

Red Bold indicates the detected concentration exceeds Ecology MTCA Method A cleanup level

Bold indicates the detected concentration is below Ecology MTCA Method A cleanup levels

PCE = Tetrachloroethene

TCE = Trichloroethene

DCE = Dichloroethene

[1]Refusal was consistently encountered throughout the area proposed for well MW-4; it was never installed.

* MTCA Method B cleanup level; Method A cleanup level not established

Table 3 - Summary of Sub-Slab Vapor Analytical Results
4 Corners Cleaners
Maple Valley, Washington

Sample Number	Depth Collected (feet)	Date Collected	PCE and Daughter Products					Other Detected Volatile Organic Compounds		
			PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	Chloroform	Dichloro-difluoromethane	1,1,2-Trichloroethane
SV-1	SUB-SLAB	3/31/2017	1,600	<10	<10	<10	<10	<10	<10	<10
SV-2	SUB-SLAB	3/31/2017	1,800	<10	<10	<10	<10	<10	8,600	<10
SV-3	SUB-SLAB	3/31/2017	1,500	<10	<10	<10	<10	<10	12,000	<10
SV-4	SUB-SLAB	3/31/2017	790	<10	<10	<10	<10	<10	15,000	<10
SV-5	SUB-SLAB	3/31/2017	940	<10	<10	<10	<10	<10	8,200	<10
SV-6	SUB-SLAB	3/31/2017	850	<10	<10	<10	<10	<10	7,200	<10
SV-7	SUB-SLAB	3/31/2017	1,700	<10	<10	<10	<10	<10	870	<10
SV-8	SUB-SLAB	3/31/2017	1,100	<10	<10	<10	<10	<10	290	<10
SV-9	SUB-SLAB	3/31/2017	2,800	<10	<10	<10	<10	310	2,500	<10
SV-10	SUB-SLAB	3/31/2017	2,100	<10	<10	<10	<10	31,000	3,100	380
SV-11	SUB-SLAB	3/31/2017	6,300	<10	<10	<10	<10	<10	2,800	<10
SV-12	SUB-SLAB	3/31/2017	2,600	<10	<10	<10	<10	<10	3,400	<10
SV-13	SUB-SLAB	3/31/2017	180	<10	<10	<10	<10	<10	9,000	<10
SV-14	SUB-SLAB	3/31/2017	2,600	<10	<10	<10	<10	<10	610	<10
SVE SYSTEM STARTUP OCTOBER 9, 2019										
VP-1[1]	SUB-SLAB	10/9/2019	586	4.48	<0.793	<0.793	<0.511	--	--	--
		12/16/2019	4.03	1.95	<0.793	<0.793	<0.511	--	--	--
		1/16/2020	264E	3.18	<0.793	<0.793	<0.511	--	--	--
		2/25/2020	198	3.92	<0.793	<0.793	<0.511	--	--	--
		3/16/2020	270	3.7	<2.7	<2.7	<1.7	--	--	--
		5/20/2020	570	4.3	<5.6	<5.6	<3.6	--	--	--
		7/8/2020	580	4.6	<2.8	<2.8	<1.8	--	--	--
		8/26/2020	42	<1.0	<1.5	<1.5	<0.97	--	--	<0.41
		9/16/2020	<45	<0.71	<2.6	<2.6	<1.7	--	--	<0.36
		12/17/2020	420	2.7	<8.3	<8.3	<5.4	--	--	<1.1
		4/20/2021	150	1.8	<2.5	<2.5	<1.6	--	--	<0.34
		6/21/2021	53	1.2	<2.8	<2.8	<1.8	--	--	--
		8/17/2021	68	<2.1	<7.9	<7.9	<5.1	--	--	<1.1
		11/2/2021	240	1.8	<2.5	<2.5	<1.6	--	--	<0.35
VP-2[1]	SUB-SLAB	10/9/2019	<2.03	<1.07	<0.793	<0.793	<0.511	--	--	--
		12/16/2019	4.77	<1.07	<0.793	<0.793	<0.511	--	--	--
		1/16/2020	101	1.49	<0.793	<0.793	<0.511	--	--	--
		2/25/2020	72	<1.07	<0.793	<0.793	<0.511	--	--	--
		3/16/2020	66	<1.07	<2.7	<2.7	<1.7	--	--	--
		5/20/2020	230	<1.8	<2.7	<2.7	<1.7	--	--	--
		7/8/2020	170	<1.9	<2.8	<2.8	<1.8	--	--	--
		8/26/2020	120	<2.7	<4	<4	<2.6	--	--	<5.5
		9/16/2020	<44	<0.7	<2.6	<2.6	<1.7	--	--	<0.35
		12/17/2020	87	<1.1	<4.0	<4	<2.6	--	--	<0.55
		4/20/2021	190	0.76	<2.3	<2.3	<1.5	--	--	<0.32
		6/21/2021	86	0.78	<2.3	<2.3	<1.5	--	--	--
		8/17/2021	53	<0.75	<2.8	<2.8	<1.8	--	--	<0.38
		11/2/2021	79	<0.73	<2.7	<2.7	<1.7	--	--	<0.37
VP-3[1]	SUB-SLAB	10/9/2019	743	1.32	<0.793	<0.793	<0.511	--	--	--
		12/16/2019	2.53	<1.07	<0.793	<0.793	<0.511	--	--	--
		1/16/2020	423	<1.07	<0.793	<0.793	<0.511	--	--	--
		2/25/2020	457	1.13	<0.793	<0.793	<0.511	--	--	--
		3/16/2020	960	<9.4	<14	<14	<8.9	--	--	--
		5/20/2020	1,300	<9.4	<14	<14	<8.9	--	--	--
		7/8/2020	970	<3.8	<5.6	<5.6	<3.6	--	--	--
		8/26/2020	420	1.8	<1.6	<1.6	<1.6	--	--	<0.44
		9/16/2020	720	<5.6	<21	<21	<13	--	--	<2.8
		12/17/2020	690	<2.1	<7.9	<7.9	<5.1	--	--	<1.1
		4/20/2021	890 ve	1.6	<2.3	<2.3	<1.5	--	--	<0.32
		6/21/2021	830 ve	1.8	<2.6	<2.6	<1.7	--	--	--
		8/17/2021	720	2.6	<8.3	<8.3	<5.4	--	--	<1.1
		11/2/2021	950	1.0	<2.7	<2.7	<1.7	--	--	<0.37

Table 3 - Summary of Sub-Slab Vapor Analytical Results
4 Corners Cleaners
Maple Valley, Washington

Sample Number	Depth Collected (feet)	Date Collected	PCE and Daughter Products					Other Detected Volatile Organic Compounds		
			PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	Chloroform	Dichloro-difluoromethane	1,1,2-Trichloroethane
VP-4[1]	SUB-SLAB	7/8/2020	<32	<1.3	<1.9	<1.9	<1.2	--	--	--
		8/26/2020	**290**	<13	<19	<19	<13	--	--	<13
		9/16/2020	**56**	<2.4	<3.4	<2.4	<1.5	--	--	<0.33
		12/17/2020	**400**	<2.1	<7.9	<7.9	<5.1	--	--	<1.1
		4/20/2021	**340**	**1.2**	<2.9	<2.9	<1.8	--	--	<0.39
		6/21/2021	**280**	**0.8**	<2.5	<2.5	<1.6	--	--	--
		8/17/2021	**72**	<1.1	<3.9	<3.9	<2.5	--	--	<0.54
		11/2/2021	**370**	<0.68	<2.5	<2.5	<1.6	--	--	<0.34
PQL			varies	varies	varies	varies	varies	10.0	10.0	varies
MTCA Method B Sub-Slab Screening Levels			321	12.3	NL	NL	9.33	3.62	1,520	5.21

Notes:
[1] - Collected from the permanent vapor monitoring point.
All values are presented in micrograms per cubic meter (µg/m³)
< = Not detected at the listed laboratory detection limits
ve =The analyte response eceeded the valid instrument calibration range. The value reported is an estimate.
PQL = Practical Quantification Limit (laboratory detection limit)
NL = Not Listed; no sub-slab screening levels have been established for this constituent
Red Bold indicates the detected concentration exceeds Ecology MTCA Method B sub-slab screening level
Bold indicates the detected concentration is below Ecology MTCA Method B sub-slab screening levels

PCE = Tetrachloroethene
TCE = Trichloroethene
DCE = Dichloroethene

Table 4 - Potential to Emit Summary
4 Corners Cleaners
Maple Valley, Washington

Date	Sample ID	Contaminant	Laboratory Sample Results parts per million volume (ppmv)	Molecular Weight (1) grams per - mole (g/mole)	Flowrate Measured (2) cubic feet per minute (cfm)	Potential To Emit Estimated pounds per day (lb/day)	*Maximum Allowable Emission Rate pounds per day (lb/day)
1/16/2020	**INPUT**	Tetrachloroethene (PCE)	0.0229	165.85	120	0.0016785	***2.74***
	14:08:00	Trichloroethene (TCE)					***1.37***
	Flow Temp = 60 F						
	50-inches W.C.		Estimated Total Pounds of Total HVOCs Removed 10/9/2019 to 12/17/19				**0.420000**
	Total System Vacuum		Estimated Total Pounds of Total HVOCs Removed 1/14/2020 to 1/31/20				**0.046998**
2/25/2020	**INPUT**	Tetrachloroethene (PCE)	0.0450	165.85	120	0.0032983	
	9:27:00	Trichloroethene (TCE)					
	Flow Temp = 60 F						
	50-inches W.C.						
	Total System Vacuum		Estimated Total Pounds of Total HVOCs Removed 2/1/20 to 3/5/20				**0.108845**
3/16/2020	**OUPUT**	Tetrachloroethene (PCE)	0.0023	165.85	120	0.0001686	
	10:34:00	Trichloroethene (TCE)	0.00019	131.4	120	0.0000110	
	Flow Temp = 60 F						
	50-inches W.C.						
	Total System Vacuum		Estimated Total Pounds of Total HVOCs Removed 3/16/20 to 4/09/20				**0.005927**
5/20/2020	**OUPUT**	Tetrachloroethene (PCE)	0.0003	165.85	120	0.0000220	
	11:56:00	Trichloroethene (TCE)	0.006	131.4	120	0.0003484	
	Flow Temp = 60 F						
	50-inches W.C.						
	Total System Vacuum		Estimated Total Pounds of Total HVOCs Removed 4/10/2020 to 5/20/20				**0.015187**
7/8/2020	**OUPUT**	Tetrachloroethene (PCE)	0.0056	165.85	120	0.0004105	
	11:56:00	Trichloroethene (TCE)	0.006	131.4	120	0.0003484	
	Flow Temp = 60 F						
	50-inches W.C.						
	Total System Vacuum		Estimated Total Pounds of Total HVOCs Removed 5/20/2020 to 7/8/20				**0.037186**
8/20/2020	**4CC-Inlet SVE**	Tetrachloroethene (PCE)	0.0014	165.85	110	0.0000941	
	13:16:00	Trichloroethene (TCE)	0.000	131.4	110	0.0000106	
	Flow Temp = 55 F						
	55-inches W.C.						
	Total System Vacuum		Estimated Total Pounds of Total HVOCs Removed 7/8/2020 to 8/20/20				**0.004503**
9/16/2020	**Effluent-091620**	Tetrachloroethene (PCE)	0.0034	165.85	120	0.0002492	
	11:56:00	Trichloroethene (TCE)	0.000	131.4	120	0.0000075	
	Flow Temp = 60 F						
	50-inches W.C.						
	Total System Vacuum		Estimated Total Pounds of Total HVOCs Removed 8/20/2020 to 9/16/20				**0.006932**
12/17/2020	**Influent-121720**	Tetrachloroethene (PCE)	0.0110	165.85	120	0.0008063	
	13:20:00	Trichloroethene (TCE)	0.000	131.4	120	0.0000093	
	Flow Temp = 60 F						
	55-inches W.C.						
	Total System Vacuum		Estimated Total Pounds of Total HVOCs Removed 9/16/20 to 12/17/20				**0.075031**
4/21/2021	**SVE-0UT-42021**	Tetrachloroethene (PCE)	0.0360	165.85	120	0.0026387	
	15:50:00	Trichloroethene (TCE)	0.000	131.4	120	0.0000134	
	Flow Temp = 60 F						
	55-inches W.C.						
	Total System Vacuum		Estimated Total Pounds of Total HVOCs Removed 12/17/20 to 04/21/21				**0.331503**
8/17/2021	**INF-08122021**	Tetrachloroethene (PCE)	0.0043	165.85	120	0.0003152	
	13:20:00	Trichloroethene (TCE)	0.000	131.4	120	0.0000081	
	Flow Temp = 60 F						
	55-inches W.C.						
	Total System Vacuum		Estimated Total Pounds of Total HVOCs Removed 04/21/21 to 08/17/2021				**0.037827**
11/2/2021	**INF-110221**	Tetrachloroethene (PCE)	0.0000	165.85	120	0.0000000	
	12:38:00	Trichloroethene (TCE)	0.000	131.4	120	0.0000000	
	Flow Temp = 60 F						
	55-inches W.C.						
	Total System Vacuum		Estimated Total Pounds of Total HVOCs Removed 08/17/21 to 11/2/2021				**0.000000**
			Estimated Total Pounds of Total HVOCs Removed 552 Days Operating				**1.052112**

Table 4 - Potential to Emit Summary
4 Corners Cleaners
Maple Valley, Washington

Date	Sample ID	Contaminant	Laboratory Sample Results parts per million volume (ppmv)	Molecular Weight (1) grams per - mole (g/mole)	Flowrate Measured (2) cubic feet per minute (cfm)	Potential To Emit Estimated pounds per day (lb/day)	*Maximum Allowable Emission Rate pounds per day (lb/day)

Notes:

CFM = Flow rate of gas (standard cubic feet per minute)
PPMV = Concentration of gas in parts per million by volume
1 Pound = 453.6 grams
1 Liter = 0.03531 cubic feet
1 Mole of gas = 24.46 Liters volume at STP (77"F and 29.92 "w.c.)
ft/min = feet per minute
inches W.C. = Inches of Water Column

* PSCAA Maximum Allowable Emission Rate for soil and groundwater remediation projects involving <15 pounds per year of benzene or vinyl chloride, <500 pounds per year of perchloroethylene (PCE) , and <1,000 pounds per year of toxic air contaminants. *(ref. PSCAA, Regulation I, Section 6.03)*

TO CALCULATE TOTAL POUNDS REMOVED:

$$\text{TOTAL LBS REMOVED} = \frac{\textbf{MW}\ \text{g}}{1\ \text{mole}} \times \frac{1\ \text{lb}}{453.6\ \text{g}} \times \frac{1\ \text{mole}}{24.46\ \text{std L}} \times \frac{1\ \text{L}}{0.03531\ \text{cu ft}} \times \frac{\textbf{SCFM}\ \text{std cu ft}}{\text{min}} \times \frac{\textbf{CONC}\ \text{ppmv}}{1\text{x}10^{6}\ /\text{ppmv}}$$

(1) = Taken from the National Institute for Occupational Safety and Health (NIOSH) Pocket Guide to Chemical Hazards.
(2) = Velocity estimated from FPZ Blower Model SCL-K05 flow curves based on 40 inches W.C. vacuum at the system inlet.

APPENDIX A

Supporting Documents:
Laboratory Datasheets

2633 Parkmont Lane SW, Suite A • Olympia, WA • 98502
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
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November 12, 2021

Scott Rose, Project Manager
AEG
2633 Parkmont Lane SW, Suite A
Olympia, WA 98502

Dear Mr Rose:

Included are the results from the testing of material submitted on November 2, 2021 from the 4-Corners Cleaners 17-126, F&BI 111022 project. There are 10 pages included in this report.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: AEG A/P
AEG1112R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on November 2, 2021 by Friedman & Bruya, Inc. from the AEG 4-Corners Cleaners 17-126, F&BI 111022 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	AEG
111022 -01	INF-110221
111022 -02	VP-1-110221
111022 -03	VP-3-110221
111022 -04	VP-2-110221
111022 -05	VP-4-110221

All quality control requirements were acceptable.

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	INF-110221	Client:	AEG
Date Received:	11/02/21	Project:	4-Corners Cleaners 17-126, F&BI 111022
Date Collected:	11/02/21	Lab ID:	111022-01 1/6.6
Date Analyzed:	11/03/21	Data File:	110321.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	85	70	130

Compounds:	Concentration ug/m3	ppbv
Vinyl chloride	<1.7	<0.66
Chloroethane	<17	<6.6
1,1-Dichloroethene	<2.6	<0.66
trans-1,2-Dichloroethene	<2.6	<0.66
1,1-Dichloroethane	<2.7	<0.66
cis-1,2-Dichloroethene	<2.6	<0.66
1,2-Dichloroethane (EDC)	<0.27	<0.066
1,1,1-Trichloroethane	<3.6	<0.66
Trichloroethene	<0.71	<0.13
1,1,2-Trichloroethane	<0.36	<0.066
Tetrachloroethene	<45	<6.6

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	VP-1-110221	Client:	AEG
Date Received:	11/02/21	Project:	4-Corners Cleaners 17-126, F&BI 111022
Date Collected:	11/02/21	Lab ID:	111022-02 1/6.4
Date Analyzed:	11/03/21	Data File:	110322.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	85	70	130

Compounds:	Concentration ug/m3	ppbv
Vinyl chloride	<1.6	<0.64
Chloroethane	<17	<6.4
1,1-Dichloroethene	<2.5	<0.64
trans-1,2-Dichloroethene	<2.5	<0.64
1,1-Dichloroethane	<2.6	<0.64
cis-1,2-Dichloroethene	<2.5	<0.64
1,2-Dichloroethane (EDC)	<0.26	<0.064
1,1,1-Trichloroethane	<3.5	<0.64
Trichloroethene	1.8	0.33
1,1,2-Trichloroethane	<0.35	<0.064
Tetrachloroethene	240	35

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	VP-3-110221	Client:	AEG
Date Received:	11/02/21	Project:	4-Corners Cleaners 17-126, F&BI 111022
Date Collected:	11/02/21	Lab ID:	111022-03 1/6.7
Date Analyzed:	11/03/21	Data File:	110323.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	85	70	130

Compounds:	Concentration ug/m3	ppbv
Vinyl chloride	<1.7	<0.67
Chloroethane	<18	<6.7
1,1-Dichloroethene	<2.7	<0.67
trans-1,2-Dichloroethene	<2.7	<0.67
1,1-Dichloroethane	<2.7	<0.67
cis-1,2-Dichloroethene	<2.7	<0.67
1,2-Dichloroethane (EDC)	<0.27	<0.067
1,1,1-Trichloroethane	<3.7	<0.67
Trichloroethene	1.0	0.19
1,1,2-Trichloroethane	<0.37	<0.067
Tetrachloroethene	950 ve	140 ve

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	VP-2-110221	Client:	AEG
Date Received:	11/02/21	Project:	4-Corners Cleaners 17-126, F&BI 111022
Date Collected:	11/02/21	Lab ID:	111022-04 1/6.8
Date Analyzed:	11/03/21	Data File:	110324.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	86	70	130

Compounds:	Concentration ug/m3	ppbv
Vinyl chloride	<1.7	<0.68
Chloroethane	<18	<6.8
1,1-Dichloroethene	<2.7	<0.68
trans-1,2-Dichloroethene	<2.7	<0.68
1,1-Dichloroethane	<2.8	<0.68
cis-1,2-Dichloroethene	<2.7	<0.68
1,2-Dichloroethane (EDC)	<0.28	<0.068
1,1,1-Trichloroethane	<3.7	<0.68
Trichloroethene	<0.73	<0.14
1,1,2-Trichloroethane	<0.37	<0.068
Tetrachloroethene	79	12

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	VP-4-110221	Client:	AEG
Date Received:	11/02/21	Project:	4-Corners Cleaners 17-126, F&BI 111022
Date Collected:	11/02/21	Lab ID:	111022-05 1/6.3
Date Analyzed:	11/04/21	Data File:	110325.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	83	70	130

Compounds:	Concentration ug/m3	ppbv
Vinyl chloride	<1.6	<0.63
Chloroethane	<17	<6.3
1,1-Dichloroethene	<2.5	<0.63
trans-1,2-Dichloroethene	<2.5	<0.63
1,1-Dichloroethane	<2.5	<0.63
cis-1,2-Dichloroethene	<2.5	<0.63
1,2-Dichloroethane (EDC)	<0.25	<0.063
1,1,1-Trichloroethane	8.5	1.6
Trichloroethene	<0.68	<0.13
1,1,2-Trichloroethane	<0.34	<0.063
Tetrachloroethene	370	54

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	AEG
Date Received:	Not Applicable	Project:	4-Corners Cleaners 17-126, F&BI 111022
Date Collected:	11/03/21	Lab ID:	01-2408 MB
Date Analyzed:	11/03/21	Data File:	110310.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	86	70	130

Compounds:	Concentration ug/m3	ppbv
Vinyl chloride	<0.26	<0.1
Chloroethane	<2.6	<1
1,1-Dichloroethene	<0.4	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1
1,1-Dichloroethane	<0.4	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1
1,2-Dichloroethane (EDC)	<0.04	<0.01
1,1,1-Trichloroethane	<0.55	<0.1
Trichloroethene	<0.11	<0.02
1,1,2-Trichloroethane	<0.055	<0.01
Tetrachloroethene	<6.8	<1

Date of Report: 11/12/21
Date Received: 11/02/21
Project: 4-Corners Cleaners 17-126, F&BI 111022

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 111043-01 1/5.7 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Vinyl chloride	ug/m3	<1.5	<1.5	nm
Chloroethane	ug/m3	<15	<15	nm
1,1-Dichloroethene	ug/m3	<2.3	<2.3	nm
trans-1,2-Dichloroethene	ug/m3	<2.3	<2.3	nm
1,1-Dichloroethane	ug/m3	<2.3	<2.3	nm
cis-1,2-Dichloroethene	ug/m3	<2.3	<2.3	nm
1,2-Dichloroethane (EDC)	ug/m3	0.35	0.35	0
1,1,1-Trichloroethane	ug/m3	<3.1	<3.1	nm
Trichloroethene	ug/m3	<0.61	<0.61	nm
1,1,2-Trichloroethane	ug/m3	<0.31	<0.31	nm
Tetrachloroethene	ug/m3	<39	<39	nm

Date of Report: 11/12/21
Date Received: 11/02/21
Project: 4-Corners Cleaners 17-126, F&BI 111022

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Vinyl chloride	ug/m3	35	85	70-130
Chloroethane	ug/m3	36	96	70-130
1,1-Dichloroethene	ug/m3	54	96	70-130
trans-1,2-Dichloroethene	ug/m3	54	91	70-130
1,1-Dichloroethane	ug/m3	55	93	70-130
cis-1,2-Dichloroethene	ug/m3	54	89	70-130
1,2-Dichloroethane (EDC)	ug/m3	55	92	70-130
1,1,1-Trichloroethane	ug/m3	74	100	70-130
Trichloroethene	ug/m3	73	109	70-130
1,1,2-Trichloroethane	ug/m3	74	112	70-130
Tetrachloroethene	ug/m3	92	117	70-130

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. 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 lowest calibration standard. 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.

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.

SAMPLE CHAIN OF CUSTODY

111022

ME 11/2/21

Page # ____ of ____

Report To Scott Rose

Company AEG, LLC

Address 2633 Parkmont Lane SW Suite A

City, State, ZIP Olympia, WA 98502

Phone 360-352-1835 Email SROSE@AEGCOM.COM

SAMPLERS (signature)

PROJECT NAME & ADDRESS: 4-Corners Cleanup

PO # 17-126

NOTES: PCE/TCE + DAUGHTERS

INVOICE TO AGG

TURNAROUND TIME
- ☒ Standard
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Default: Clean after 3 days
- ☐ Archive (Fee may apply)

SAMPLE INFORMATION										ANALYSIS REQUESTED						
Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	TO15 Full Scan	TO15 BTEXN	TO15 cVOCs "	APH	Helium	PCE/TCE + daughters	Notes
IN - 110221	01	3287	280	IA / SG	110221	-29"	1238	-8"	1243			X			X	
VP-1 - 110221	02	2300	301	IA / (SG)	110221	-29.5"	1212	-8.	1216			X			X	
VP-3 - 110221	03	2298	242	IA / (SG)	110221	-29"	1227	-8.	1231			X			X	
VP-2 - 110221	04	2459	243	IA / (SG)	110221	-28.5	1150	-8	1153			X			X	
VP-4 - 110221	05	3667	244	IA / (SG)	110221	-29	1130	-8.	1134			X			X	
				IA / SG												
				IA / SG												
				IA / SG												

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Anthony Resnick	AWE/AEG	11/02/21	16:20
Received by:	Khoi Hoang	FBI	11/2/21	16:20
Relinquished by:				
Received by:				

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