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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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April 13, 2022

Chang Kim
Four Corners Cleaners
23886 Kent-Kangley Road
Maple Valley, WA 98038
(jbangiek@gmail.com)

Re: Opinion Pursuant to WAC 173-340-515(5) on Remedial Action for the following Hazardous Waste Site:

- **Name: Four Corners Cleaners New Location**
- **Address:** 23886 SE Kent-Kangley Road, Maple Valley, WA 98038
- **Facility/Site No.:** 5867
- **Cleanup Site ID No.:** 12513
- **VCP No.:** NW3234

Dear Chang Kim:

The Washington State Department of Ecology (Ecology) received your request for an opinion on *Four Corners Cleaners Technical Memorandum – Cleanup Progress Report,* dated January 3, 2022, which presents the progress of cleanup actions for the **Four Corners Cleaners** facility (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA), Chapter 70A.305 RCW. This opinion applies only to the Site described below.

Description of the Site

The Site is defined by the nature and extent of contamination associated with the following releases:

- Tetrachloroethylene (PCE), Trichloroethene (TCE), cis-1,2-Dichloroethene (DCE), trans-1,2-DCE and vinyl chloride into the Soil
- PCE, TCE, cis-1,2-DCE, trans-1,2-DCE and vinyl chloride into the Soil Gas
- Suspected PCE and associated breakdown products into the Groundwater

Enclosure A includes a detailed description and diagrams of the Site, as currently known to Ecology.
Please note a parcel of real property can be affected by multiple sites. At this time, we have no information that the parcel associated with this Site is affected by other sites.

Basis for the Opinion

Ecology's Toxics Cleanup Program has reviewed the following information contained in the following documents regarding your proposed remedial actions:

1. Associated Environmental Group, LLC, *Technical Memorandum – Cleanup Progress Report; Four Corners Cleaners New Location; 23886 Kent-Kangley Road, Maple Valley, Washington* dated January 3, 2022.

2. Associated Environmental Group, LLC, December 2020 Compliance Quarterly Groundwater Monitoring and SVE O&M Report, *Four Corners Cleaners New Location; 23886 Kent-Kangley Road, Maple Valley, Washington* dated January 19, 2021.

3. Washington Department of Ecology, SVE System Installation Opinion, *Four Corners Cleaners New Location; 23886 Kent-Kangley Road, Maple Valley, Washington* dated April 9, 2020.

4. Associated Environmental Group, LLC, *Technical Memorandum – Soil Vapor Extraction (SVE) System Installation; Four Corners Cleaners New Location; 23886 Kent-Kangley Road, Maple Valley, Washington* dated December 20, 2019.

5. Washington Department of Ecology, *RI/FS and CAP Opinion*, *Four Corners Cleaners New Location; 23886 Kent-Kangley Road, Maple Valley, Washington, VCP No. NW3234,* dated November 13, 2019.

6. Associated Environmental Group, LLC, *Four Corners Cleaners New Location Cleanup Action Plan; Four Corners Cleaners New Location; 23886 Kent-Kangley Road, Maple Valley, Washington* dated May 29, 2019.

7. Associated Environmental Group, LLC, *Four Corners Cleaners New Location Remedial Investigation/Feasibility Study/Report; Four Corners Cleaners New Location, 23886 Kent-Kangley Road, Maple Valley, Washington,* dated March 14, 2019.

8. Washington Department of Ecology, *No Further Action Opinion, Four Corners Cleaners New Location; 23886 Kent-Kangley Road, Maple Valley, Washington, VCP No. NW2962,* dated February 28, 2017.

A number of these documents are accessible in electronic form from the Site webpage[1]. The complete records are stored in the Central Files of the Northwest Regional Office of Ecology (NWRO) for review by appointment only. Visit our Public Records Request page[2], to submit a public records get more information about the process. If you require assistance with this process, you may contact the Public Records Officer at publicrecordsofficer@ecy.wa.gov or 360-407-6040.

This opinion is void if any of the information contained in those documents is materially false or misleading.

Analysis and Opinion

The elements of the SVE system interim action consists of the following:

[1] https://apps.ecology.wa.gov/cleanupsearch/site/12513
[2] https://ecology.wa.gov/About-us/Accountability-transparency/Public-records-requests

- Installation of SVE wells and vapor monitoring points. Four SVE wells (SVE-1 through SVE-4) were installed outside the tenant space at a depth of 15 feet below ground surface (bgs). One SVE well (SVE-5) was installed within the tenant space. Three sub-slab monitoring points (VP-1 to VP-3) were installed.

- System performance evaluated by measuring the induced vacuum below the building slab, collecting inlet/outlet samples, collecting sub-slab vapor samples and monitoring indoor air quality. In general, the system has been doing its primary job of removing some source mass and decreasing vapor concentrations. Conditions are not yet down to below screening levels.

- Performance monitoring to assess the duration of the SVE operation and effectiveness.

- Routine assessment of indoor air quality. Ecology had requested the following indoor air sampling:

    - At least one winter sampling event which would include multiple indoor locations.

    - Continued indoor air monitoring at additional times after the winter sampling event.

    - Monitoring at several points throughout the winter, as well as conducting another measurement of pressure field extension (indoor/sub-slab pressures).

    - Additional sampling should commence after a period of stabilization following remediation. The data will determine if the SVE interim action is likely to result in soil, soil gas, and groundwater cleanup standards being met in a reasonable timeframe.

    - Indoor air quality to critique post-remediation site conditions (sub-slab, ambient, and indoor air sampling and analysis activities). Ecology recommends again sampling indoor air at several points throughout the winter, as well as conducting additional measurements of pressure field extension (indoor/sub-slab pressures).

- As requested in Ecology's 2019 opinion letter, four groundwater monitoring wells (MW-1, MW-2, MW-3, and MW-5) were installed in 2020 to allow for quarterly sampling of Site groundwater.

    - Groundwater depth at the Site ranged from approximately 25 to 33 feet bgs. The calculated groundwater gradient for the Site has ranged from about 0.017 to 0.02 feet per foot, and the groundwater flow direction is generally to the north-northwest.

    - Concentrations of chemicals of concern (COCs) in groundwater: PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride detections were below groundwater MTCA Method A cleanup levels. Groundwater monitoring was performed in June, September and December 2020, and March 2021. Bi-annual groundwater sampling and analysis should continue as the SVE system continues operating.

    - A minimum of four quarters of groundwater samples with results below MTCA Method A cleanup levels at completion of remediation are necessary to support a Site No Further Action opinion. The period of groundwater sampling after conducting remediation could be extended to assess potential rebound of contaminant concentrations.

- Potential impacts to local groundwater supplies still needs to accessed. The Site is located within the 1-year time-of-travel wellhead protection zone of the Witte Well #2, operated by the Covington Water District.

Based on a review of the *Four Corners Cleaners Technical Memorandum – Cleanup Progress Report*, Ecology has determined:

- That the described enhanced SVE system maintenance needs to be conducted.
- Restarting the vacuum at location SVE-4 should be conducted given the location of the higher contaminant concentration which remain in the soil vapor.
- Since soil vapor concentrations are not yet below screening levels, more comprehensive system changes or design should be considered in early 2023, including (specifically targeting the soil vapor beneath the west side of the building if those concentrations stay elevated.
- Continued SVE system operations and performance evaluations, continued operation and maintenance (O&M) activities, as well as additional soil, soil gas, and groundwater sampling and evaluation are necessary at the Property.
- Future vapor assessment has not yet been conducted and the considerations include: vapor intrusion pathway potential if a new building is constructed on the Property, and vapor intrusion pathway potential to commercial buildings in the vicinity of the Property. Ecology's Vapor Intrusion Guidance[3] has been updated and provides information for assessing and addressing future and adjacent soil vapor issues.

5. Upload of Site data to EIM

Electronic submittal of all sampling data into Ecology's electronic *Environmental Information Management* (EIM) database[4] is a requirement in order to receive a final Ecology opinion for a Site. Note that all data must be uploaded into the Ecology EIM system upon submission of each report to Ecology. This allows the Ecology Site Manger to access data to check results or perform additional analyses with those data. Gaylen Sinclair (email gsin461@ecy.wa.gov), or via telephone at 360-407-6496) is Ecology's contact and resource on entering data into EIM.

Limitations of the Opinion

1. Opinion does not settle liability with the state.

Liable persons are strictly liable, jointly and severally, for all remedial action costs and for all natural resource damages resulting from the release or releases of hazardous substances at the Site. This opinion **does not**:

- Resolve or alter a person's liability to the state.
- Protect liable persons from contribution claims by third parties.

[3] https://apps.ecology.wa.gov/publications/SummaryPages/0909047.html
[4] https://ecology.wa.gov/Research-Data/Data-resources/Environmental-Information-Management-database

To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW 70A.305.040(4).

2. Opinion does not constitute a determination of substantial equivalence.

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you performed is substantially equivalent. Courts make that determination. *See* RCW 70A.305.080 and WAC 173-340-545.

3. State is immune from liability.

The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. *See* RCW 70A.305.170(6).

Contact Information

Thank you for choosing to clean up the Site under the Voluntary Cleanup Program (VCP).
Ecology appreciates your initiative in conducting independent remedial action and requesting technical consultation under the VCP. As the cleanup of the Site progresses, you may request additional consultative services under the VCP. Please do not hesitate to request additional services as your cleanup progresses. We look forward to working with you.

For more information about the VCP and the cleanup process, please visit our VCP webpage [5]. If you have any questions about this opinion, please feel free to contact me by phone at (425) 495-5436 or by email at glynis.carrosino@ecy.wa.gov.

Sincerely,

Glynis A. Carrosino
Project Manager
Toxics Cleanup Program

Enclosures (1): A – Description and Diagrams of the Site

cc: Scott Rose, Associated Environmental Group LLC, (srose@aegwa.com)
V McMullin, Associated Environmental Group LLC, (vmcmullin@aegwa.com)
Sonia Fernandez, VCP Coordinator, Ecology, (sonia.fernandez@ecy.wa.gov)

[5] http://www.ecy.wa.gov/vcp

Enclosure A

Description and Diagrams of the Site

Site Description

This section provides Ecology's understanding and interpretation of Site conditions, and is the basis for the opinions expressed in the body of the letter.

Site: The Site is defined by PCE, TCE, cis-1,2-DCE, trans-1,2-DCE and vinyl chloride into the soil, soil gas, and groundwater. The Site is located northwest of the intersection between SE Kent-Kangley Road and Highway 169 in Maple Valley. The Property consists of King County tax parcel 510711-0010, which covers approximately 9.57 acres at 23886 Kent-Kangley Road in Maple Valley, Washington (Property). **(Figure 1)**

Area and Property Description: The Property is located in the middle of a city block, in an area of five retail buildings totaling 254,663 square feet. An "L" shaped building on the southwest portion of the Property includes the Four Corners Cleaners tenant space. The remainder of the Property not covered by buildings consists of asphalt-paved parking and driveways, and landscaped areas. The immediate vicinity of the Site is primarily commercial businesses. **(Figure 2)**

Site History and Current Use: The "L" shaped commercial building was built in1988; it is uncertain how long the current dry cleaning facility has been operating at its current location; however, the Four Corners Cleaners business was located in the a former adjacent building from 1984 to 2000. The Four Corners Cleaners facility continues to operate, and switched processes to a hydrocarbon dry cleaning machine in 2017.

Sources of Contamination: The potential sources of contamination at the Site are PCE and the related degradation products TCE, cis-1,2-DCE, trans-1,2-DCE and vinyl chloride, associated with releases of chlorinated compounds from operations of the former dry cleaning machine at the facility. Site assessments conducted from 2003 to 2014 confirmed the presence of PCE and related degradation products in the soil vapor.

Physiographic Setting: The Site is located within the Puget Lowland physiographic province, a broad, low-lying region situated between the Cascade Range to the east and the Olympic Mountains to the west. The Site is located on the Covington drift upland, at an elevation of approximately 565 feet above mean sea level (msl). The Site surface is relatively level, with a slight slope toward the north.

Surface Water: The closest bodies of water to the Site is Rock Creek, which is located approximately 2,500 feet to the east of the Site. Surface water and storm water runoff on and in the vicinity of the Site disperses via sheet flow to the City of Maple Valley's storm water drainage system.

Water Supply: A Public water supply is currently provided to the Site by the Covington Water District which obtains water from the City of Tacoma Green River watershed and multiple wells in the Lake Sawyer area. The Site is located within the 1-year time-of-travel wellhead protection zone of the District Witte Well #2.

According to Ecology's well log data base, there are no private drinking water wells located within approximately 1,000 feet of the Site.

Ecological Setting: The Property is located in a developed area and is surrounded by roadways and commercial and residential properties. Land surfaces are primarily covered by buildings and concrete or asphalt pavement.

Geology: The Site and vicinity are primarily underlain by the Vashon till, a dense unconsolidated glacial deposit characterized by poorly-sorted materials including gravel, sand, silt and clay. A thin veneer of Vashon recessional outwash deposits is also present, as recorded in Site well logs to depths of at least 20 feet bgs, overlying the till. Soils encountered at the Site consisted of silt with gravel to approximately 5 feet bgs, underlain by dense, sandy gravel with fine to course-sized gravels, and cobbles to about 35 feet bgs.

Groundwater: Groundwater depth at the Site ranged from approximately 25 to 33 feet bgs. The calculated groundwater gradient for the Site has ranged from about 0.017 to 0.02 feet per foot, and the groundwater flow direction is generally to the north-northwest. **(Figure 4)**

Release and Extent of Soil, Soil gas, and Groundwater Contamination: The source of releases of contamination to the soil, soil gas and groundwater at the Site are the use of chlorinated solvents associated with the operations of the Four Corners Dry Cleaners facility prior to process change to hydrocarbon cleaning. **(Figure 3)**

Site characterization results are summarized as follows:

- In 2018, soil and groundwater samples were collected from 10 boring locations (B-4 through B-13) to a maximum depth of 35 feet bgs. Soil sample B11-18 was the only soil sample with a PCE detection above MTCA Method A cleanup levels. Groundwater was encountered in six of the ten borings and no contaminants were detected in the single set of groundwater samples collected.
- Also in 2018, a Soil Vapor Extraction (SVE) pilot test was conducted. Eight temporary wells (T-1 through T-8) were installed at the Site. The SVE pilot test was conducted over a single day.
- Analytical results of sub-slab vapor samples identified the presence of PCE at concentrations above the MTCA Method B sub-slab screening level of 321 ug/m3 in all of the collected vapor samples, except sample SV-13. Concentrations of PCE ranged from 850 $\mu g/m^3$ in vapor sample SV-6, to 6,300 $\mu g/m^3$ in vapor sample SV-11. The highest concentrations were in the vicinity of the current and former dry cleaning machine.
- SVE system startup occurred on October 9, 2019 and is currently in operation, including regular monitoring and collection of system data **(SVE Well Locations Figure 4)**.
- In 2020, four groundwater monitoring wells (MW-1, MW-2, MW-3, and MW-5) were constructed to allow for quarterly sampling of Site groundwater.

Site Diagrams

FILENAME	DRAWN BY		CHECKED BY		APPROVED BY		PROJECT NUMBER
17-126_1701.DWG	ICD	3/22/2017	CS	3/22/2017	CS	3/22/2017	17-126

N
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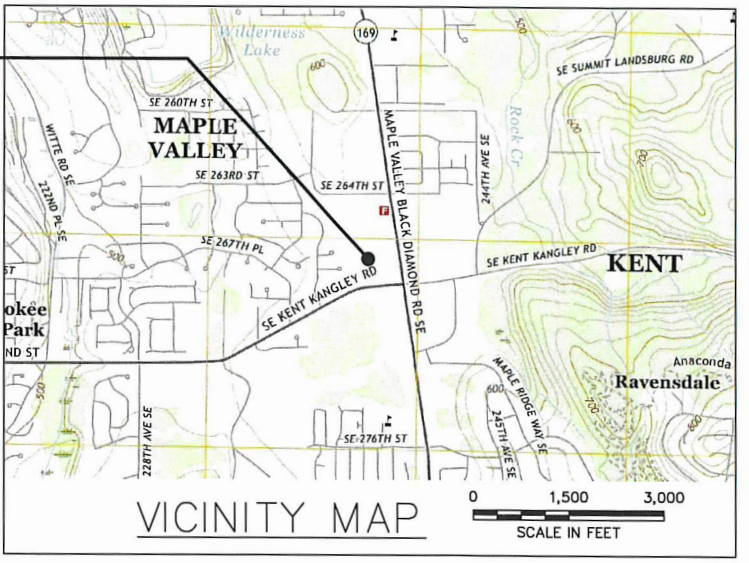
PROJECT LOCATION

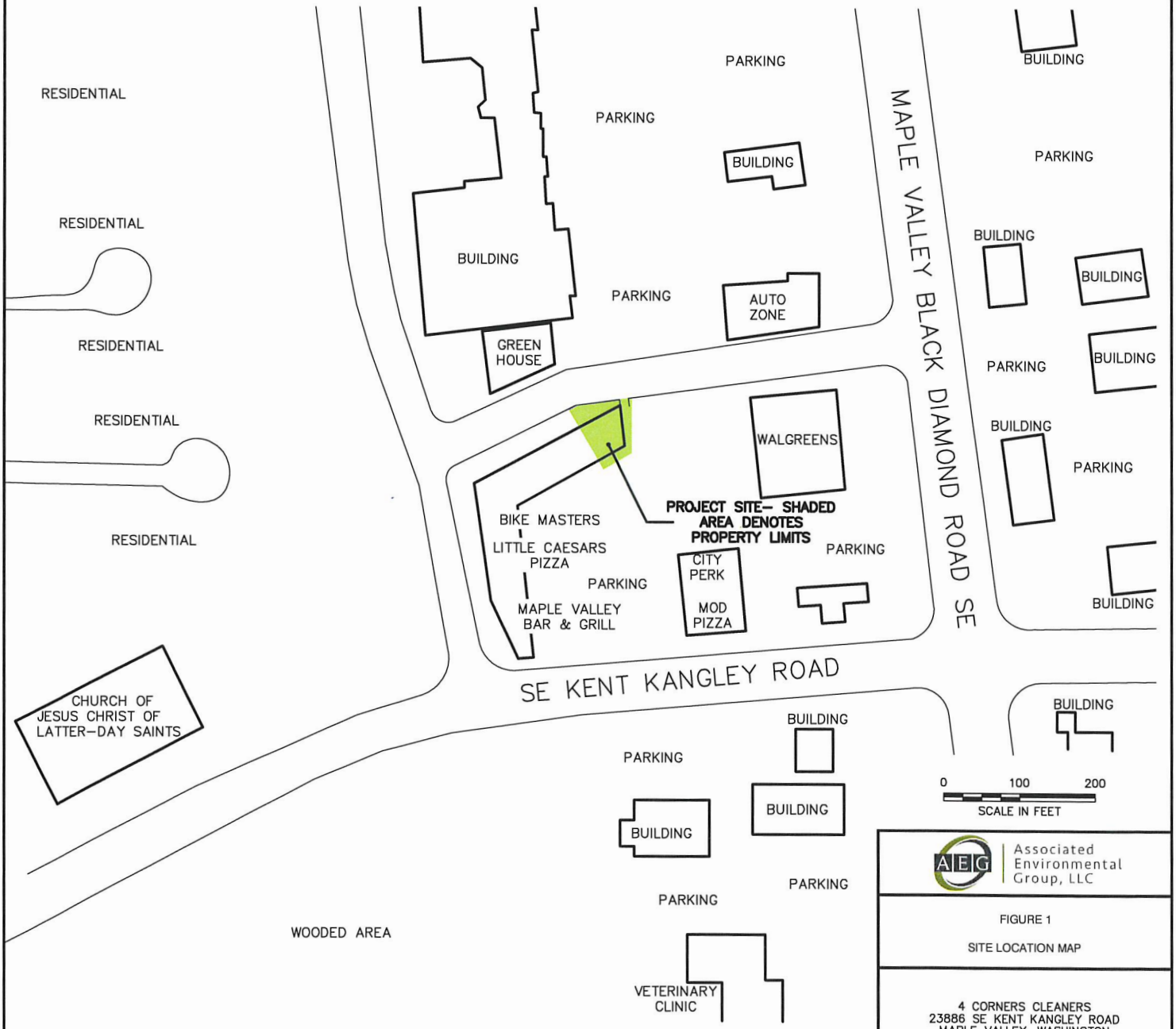


NOTES

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

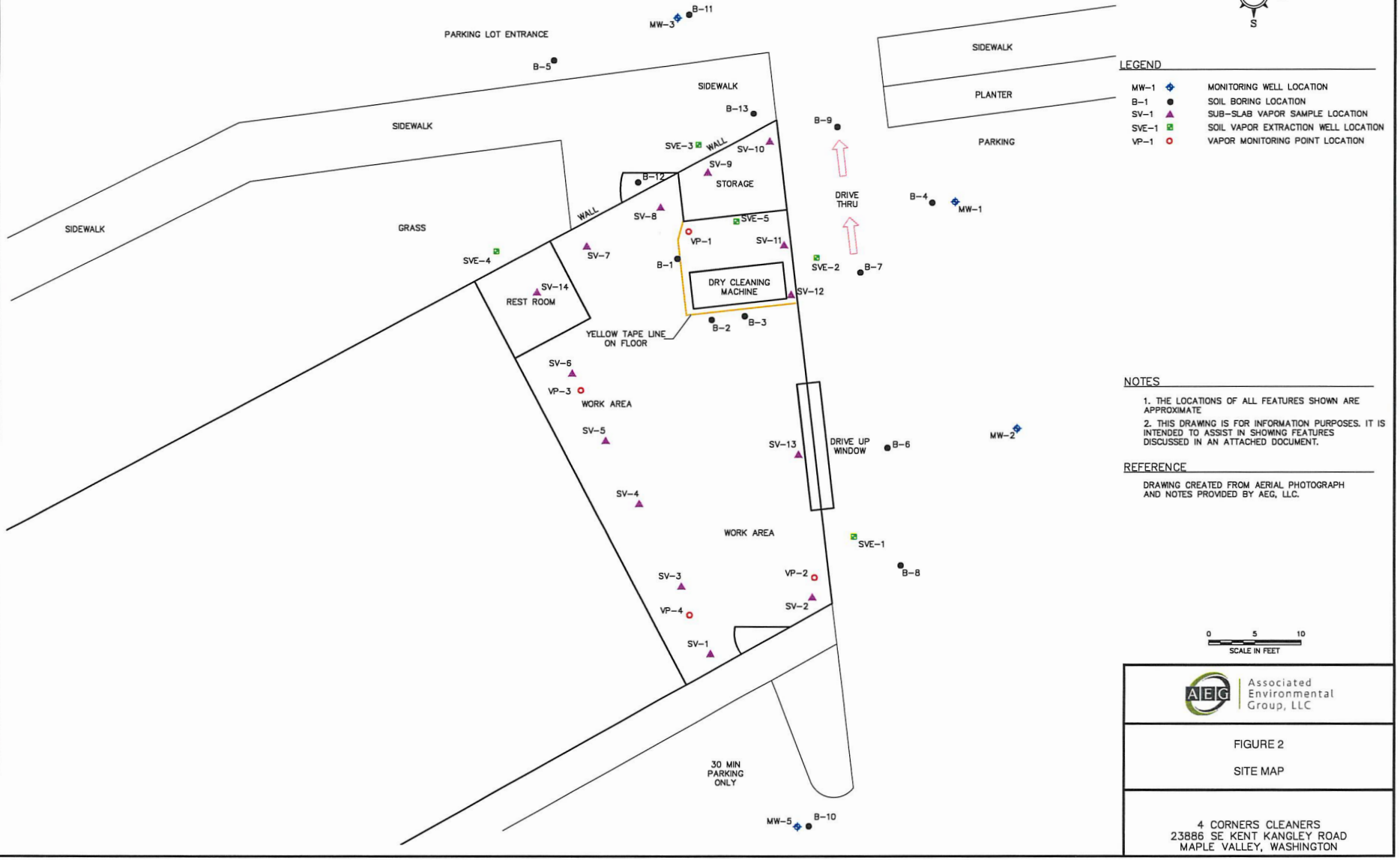


AEG Associated Environmental Group, LLC

FIGURE 1

SITE LOCATION MAP

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



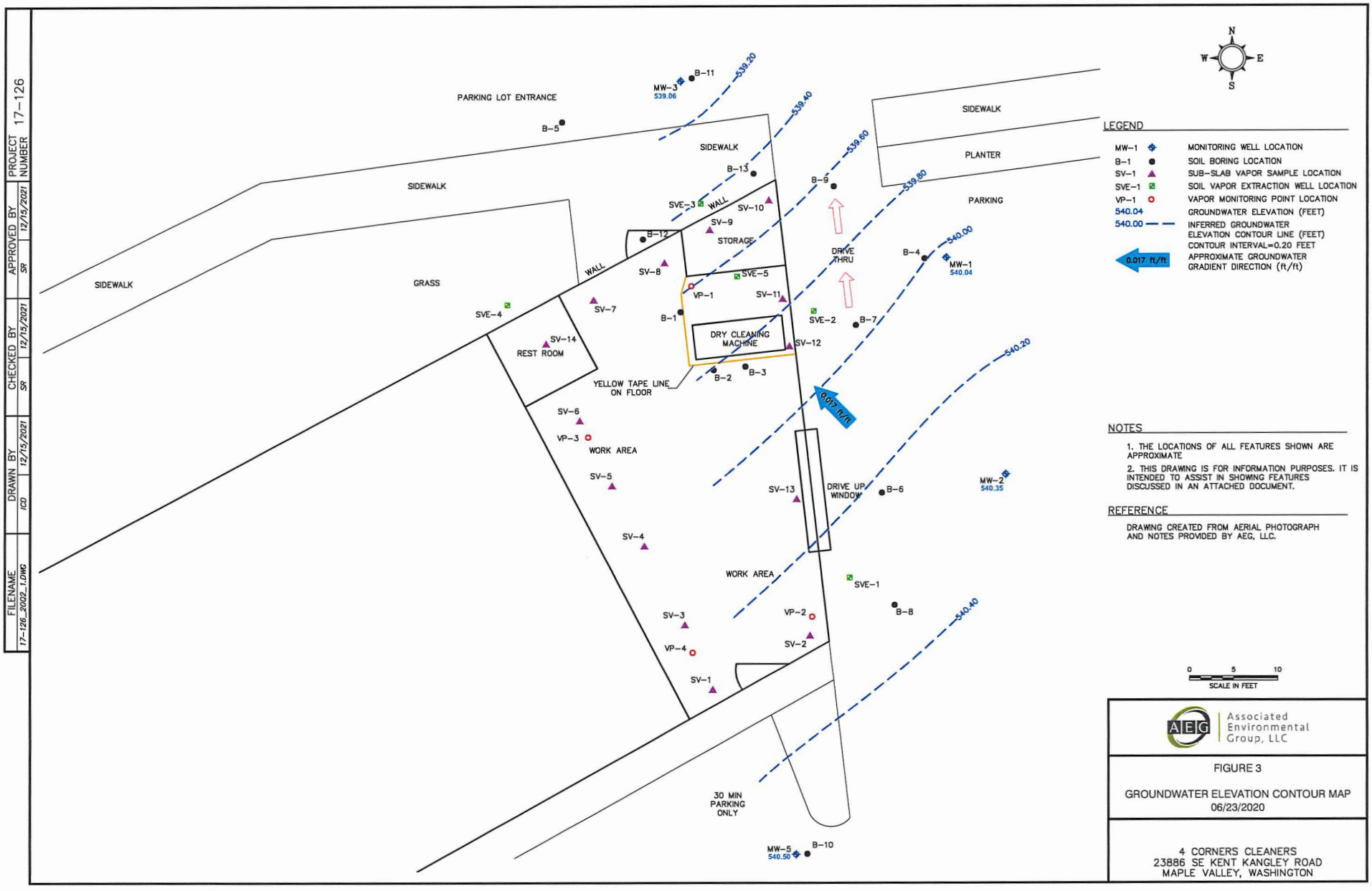
FILENAME	DRAWN BY	CHECKED BY	APPROVED BY	PROJECT NUMBER
17-126_2101_1.DWG	ICD 12/15/2021	SR 12/15/2021	SR 12/15/2021	17-126

Associated Environmental Group, LLC

FIGURE 2

SITE MAP

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


PARKING LOT ENTRANCE
SIDEWALK
SIDEWALK
SIDEWALK
GRASS
SIDEWALK
PLANTER
PARKING
WALL
WALL
STORAGE
DRIVE THRU
DRY CLEANING MACHINE
REST ROOM
YELLOW TAPE LINE ON FLOOR
WORK AREA
WORK AREA
DRIVE UP WINDOW
30 MIN PARKING ONLY
MW-1 540.04
MW-2 540.35
MW-3 539.06
MW-5 540.50
B-1
B-2
B-3
B-4
B-5
B-6
B-7
B-8
B-9
B-10
B-11
B-12
B-13
SV-1
SV-2
SV-3
SV-4
SV-5
SV-6
SV-7
SV-8
SV-9
SV-10
SV-11
SV-12
SV-13
SV-14
SVE-1
SVE-2
SVE-3
SVE-4
SVE-5
VP-1
VP-2
VP-3
VP-4
539.20
539.40
539.60
539.80
540.00
540.20
540.40
0.017 ft/ft
0.017 ft/ft
N
W
E
S
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
1. THE LOCATIONS OF ALL FEATURES SHOWN ARE APPROXIMATE
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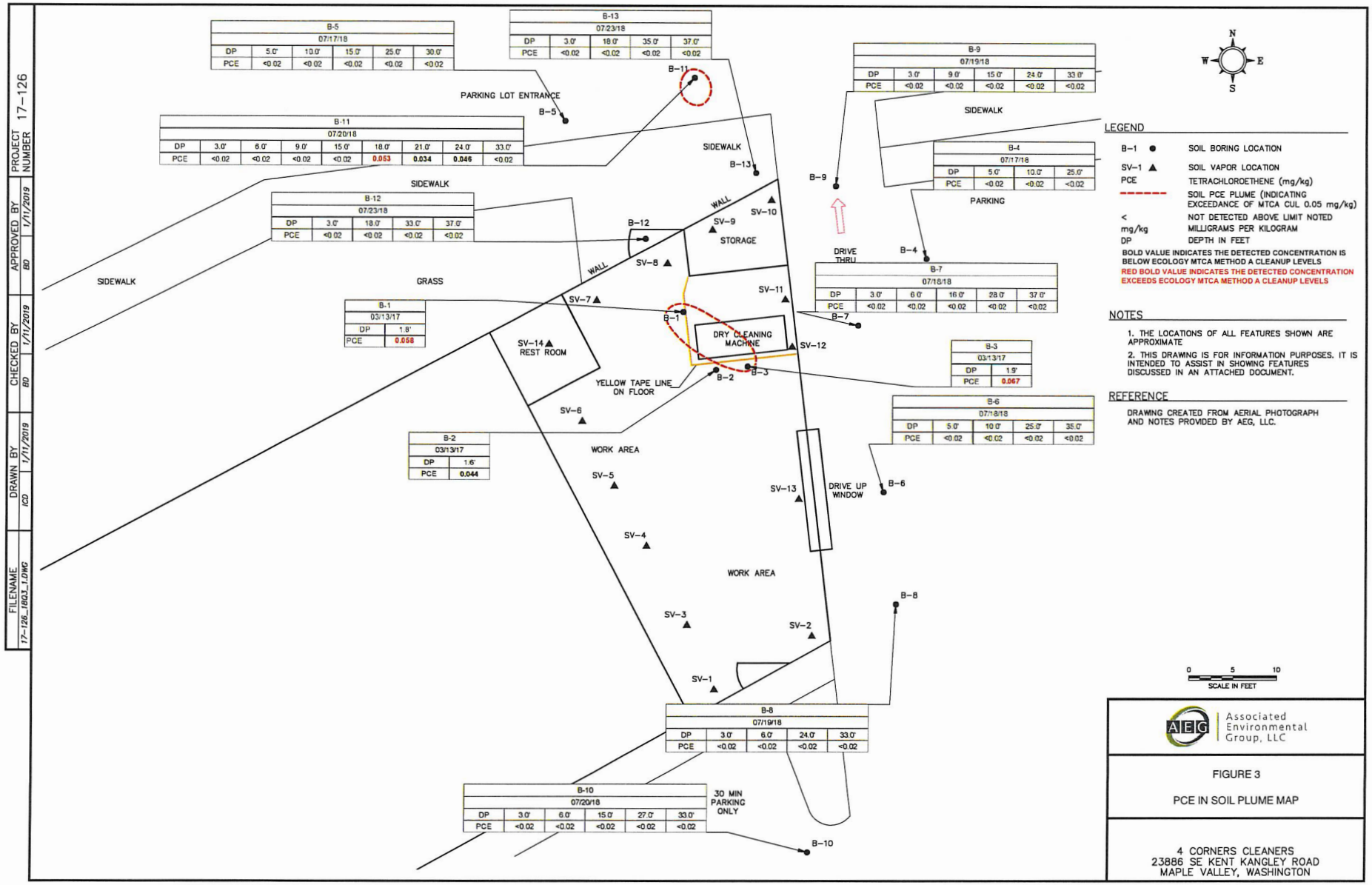
REFERENCE
DRAWING CREATED FROM AERIAL PHOTOGRAPH AND NOTES PROVIDED BY AEG, LLC.
0 5 10
SCALE IN FEET
AEG Associated Environmental Group, LLC
FIGURE 3
GROUNDWATER ELEVATION CONTOUR MAP
06/23/2020
4 CORNERS CLEANERS
23886 SE KENT KANGLEY ROAD
MAPLE VALLEY, WASHINGTON
FILENAME 17-126_2002_1.DWG
DRAWN BY ICD 12/15/2021
CHECKED BY SR 12/15/2021
APPROVED BY SR 12/15/2021
PROJECT NUMBER 17-126



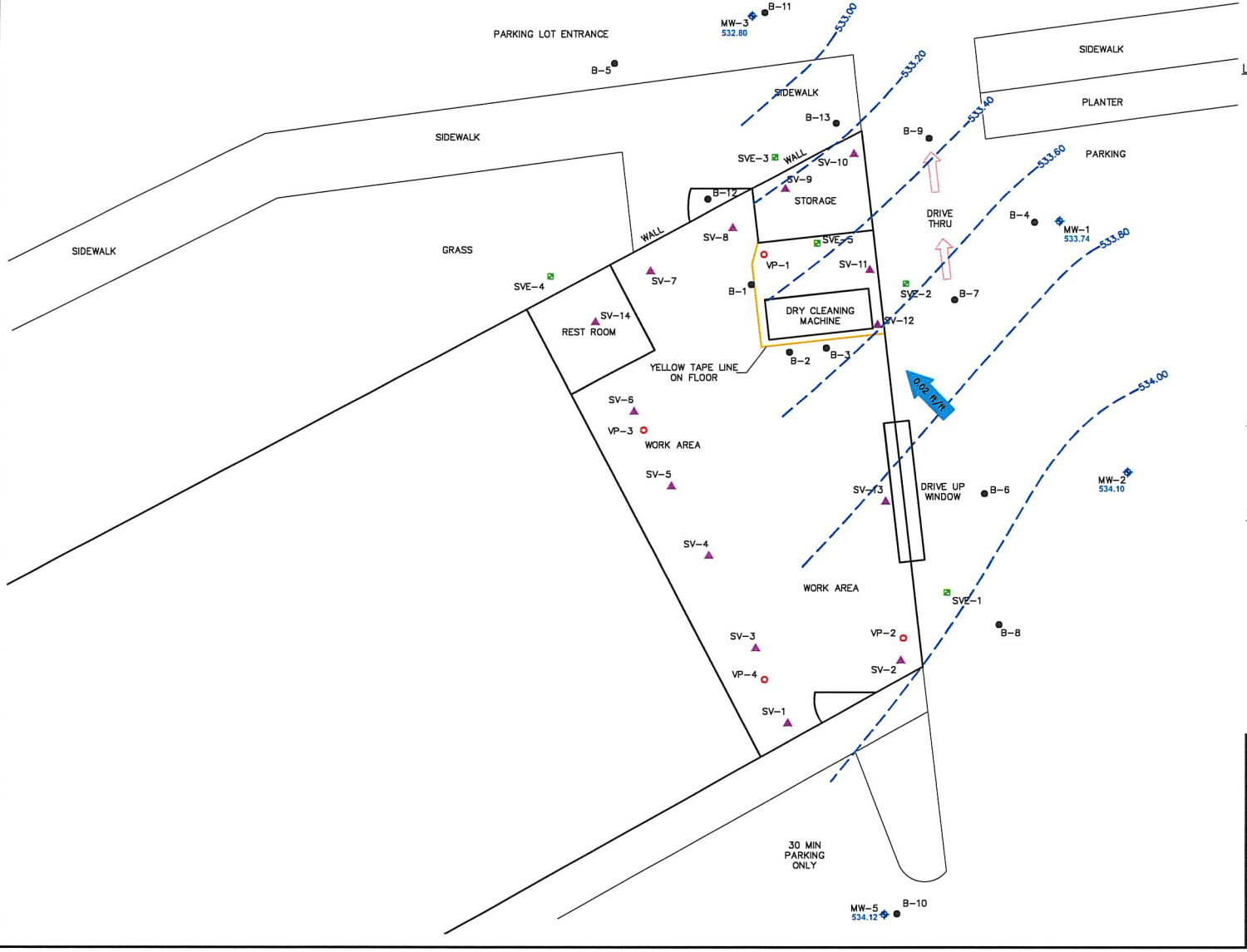
FILENAME	DRAWN BY		CHECKED BY		APPROVED BY		PROJECT NUMBER
17-126_1803_1.DWG	ICD	1/11/2019	BD	1/11/2019	BD	1/11/2019	17-126

Associated Environmental Group, LLC

FIGURE 3

PCE IN SOIL PLUME MAP

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



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.

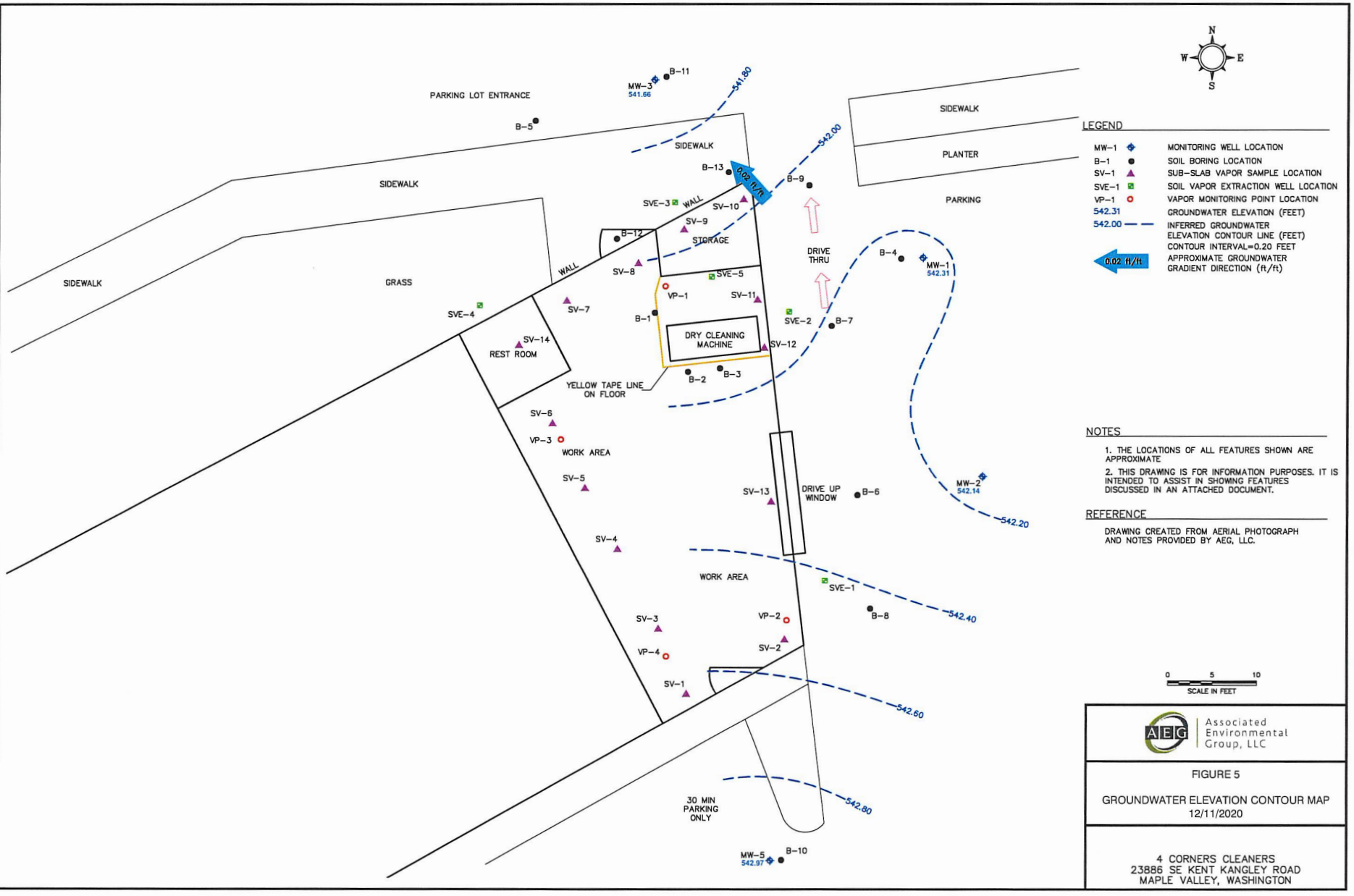
FILENAME	DRAWN BY	CHECKED BY	APPROVED BY	PROJECT NUMBER
17-126_2003_1.DWG	ICD 12/15/2021	SR 12/15/2021	SR 12/15/2021	17-126

Associated Environmental Group, LLC

FIGURE 4

GROUNDWATER ELEVATION CONTOUR MAP
09/14/2020

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



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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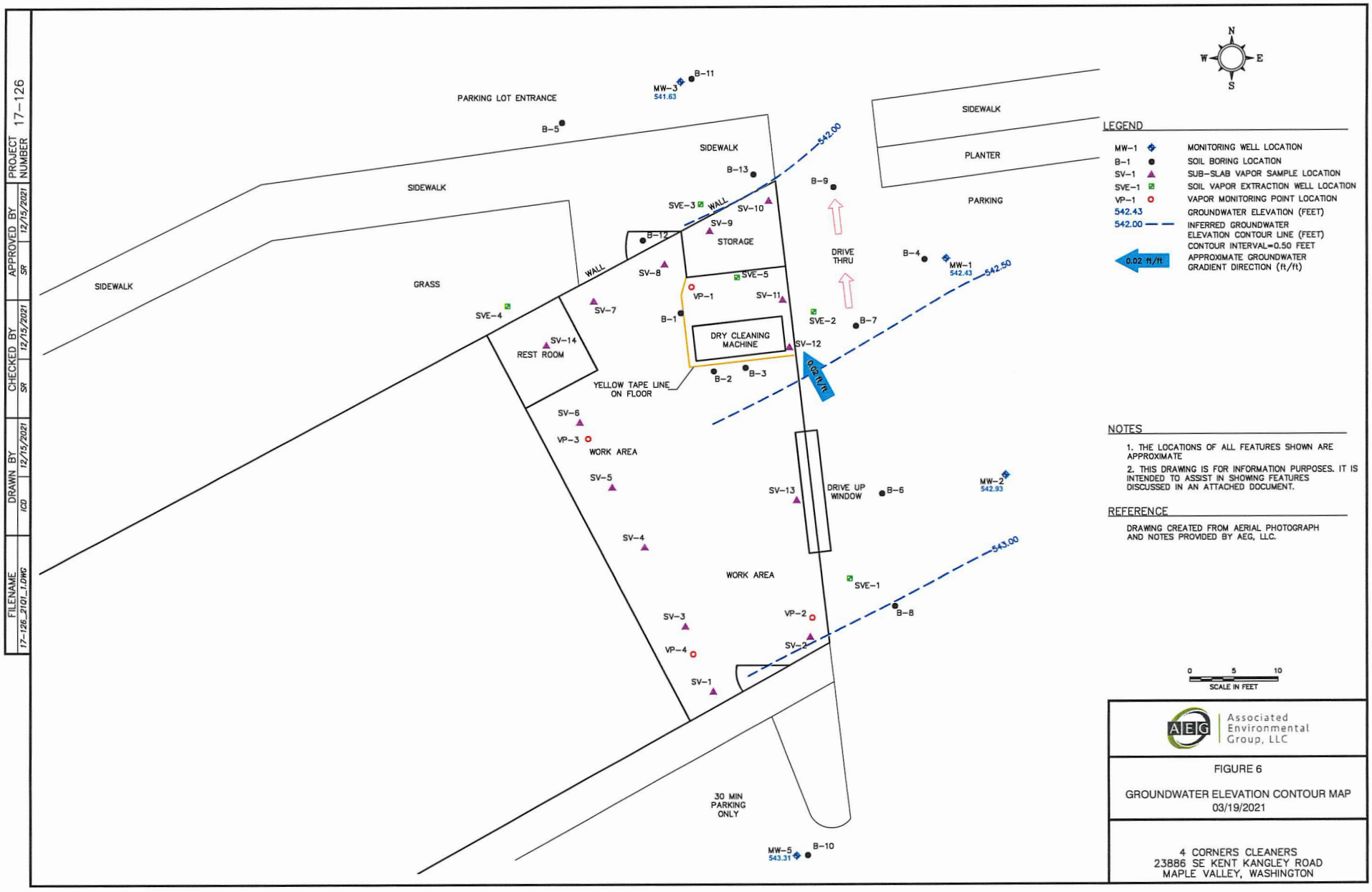
FILENAME	DRAWN BY	CHECKED BY	APPROVED BY	PROJECT NUMBER
17-126_2004_1.DWG	ICD 12/15/2021	SR 12/15/2021	SR 12/15/2021	17-126

Associated Environmental Group, LLC

FIGURE 5

GROUNDWATER ELEVATION CONTOUR MAP
12/11/2020

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



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