

STATE OF WASHINGTON DEPARTMENT OF ECOLOGY

Northwest Region Office

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February 1, 2024

Michael Merlone MPG XI Town Center Lake Forest, LLC 425 California St, 10th Floor San Francisco, CA 94104 (<u>mmerlone@merlonegeier.com</u>)

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

- Site Name: Lake Forest Park and Magic Cleaners
- Site Address: 17171 Bothell Way NE, Lake Forest Park, WA 98155
- Facility/Site No.: 46842785
- Cleanup Site ID No.: 396
- VCP Project No.: NW3370

Dear Michael Merlone:

The Washington State Department of Ecology (Ecology) received your request for an opinion on completed site characterization at the Lake Forest Park and Magic 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.

Issue Presented and Opinion

Pursuant to completion of the Site characterization work described in *Environmental Investigation Summary, Lake Forest Park Cleaners, 17171 Bothell Way Northeast, Lake Forest Park, Washington,* dated November 19, 2021 (*November 2021 Environmental Investigation*) and *Supplemental Data for Former Magic Cleaners and Former Forest Park Cleaners, Town Center at Lake Forest Park, 17171 Bothell Way NE, Lake Forest Park, Washington,* dated December 5, 2023 (*December 2023 Supplemental Report*), is additional work necessary to resolve data gaps?

YES. Ecology has determined that additional sampling is needed to determine the current extent of contaminated groundwater and soil vapor at the Site.

Description of the Site

This opinion applies only to the Site described below. The Site is defined by the nature and extent of contamination associated with the following releases:

- Tetrachloroethylene (PCE) and trichloroethylene (TCE), and oil-range (TPH-O) petroleum hydrocarbons into the Soil.
- PCE, TCE, and vinyl chloride (VC) into the Groundwater.
- PCE and VC into the Air.

Releases at the Site are associated with two separate historical dry-cleaning operations. Magic Cleaners and Forest Park Cleaners were located in the central and southwestern portions of the Site, respectively. **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

This opinion is based on the information contained in the documents listed in **Enclosure B**. A number of these documents are accessible in electronic form from the <u>Site web page</u>¹. The complete records are kept in the Central Files of the Northwest Regional Office of Ecology (NWRO) for review by appointment only. Visit our <u>Public Records Request page</u>² to submit a public records request or 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

Based on a review of the *November 2021 Environmental Investigation* and *December 2023 Supplemental Report,* Ecology has determined:

Characterization

¹ <u>https://apps.ecology.wa.gov/cleanupsearch/site/396</u>

² <u>https://ecology.wa.gov/publicrecords</u>

Former Magic Cleaners

• Soil Characterization

Approximately 60 bank cubic yards of PCE affected soils were excavated from the source area in 1989 and promptly backfilled with gravel. Halogenated volatile organic compound (HVOC) concentrations in soil before and immediately after the excavation are not known. In 1997, three soil borings (B-1 through B-3; see **Enclosure A, Figure 2**) were installed at the edges and center of the previously excavated area. A sample was not collected from B-2, located in the center of the excavation footprint, due to the presence of coarse fill. HVOCs were not detected in the two soil samples collected from B-1 and B-3. The current extent of contaminated soils below Magic Cleaners is not defined. The institutional controls described below are adequately protective of any remaining soil contamination below Magic Cleaners.

• Soil Vapor Characterization

Soil vapor samples were collected from the north and south sub-slab depressurization system trench influent manifolds in April and October 2021 (see **Enclosure A, Figure 10**). Results from this sampling events indicated that concentrations of PCE were below the Method B screening level for unrestricted use.

• Groundwater Characterization

Groundwater samples have been collected at the Site from permanent groundwater monitoring wells from 1997 to August 2023. Groundwater samples were collected from permanent monitoring wells MW-1, MW-2, MW-3, MW-4, MW-5, and MW-6 in February and August 2023 (see **Enclosure A, Figure 1**). Groundwater samples collected from MW-3 and MW-6 contained VC exceeding the Method A cleanup level. The extent of VC exceeding the Method A cleanup level is not delineated downgradient to the south of the Property.

Ecology recommends collecting additional groundwater samples from DDC-7 if feasible to further characterize VC concentrations at the southern boundary of the Property. Depending on the results of additional sampling, additional wells may be necessary south of MW-3 to fully characterize the extent of contamination.

Former Forest Park Cleaners

• Soil Characterization

Soil samples were collected from the former Lake Forest Park Cleaners area near the location of the former dry-cleaning machine from 1997 to 2000. Soil samples collected in 1997 and 1998 reflected concentrations of PCE and VC above Method A cleanup levels. Additional soil samples collected in 1999 and 2000 targeted the former dry-cleaning machine and surrounding source area and did not detect HVOCs above laboratory detection limits. These results indicate that soil associated with Forest Park Cleaners meets Method A cleanup standards.

• Indoor Air Characterization

An indoor air sampling event took place inside the tenant space formerly occupied by Lake Forest Park Cleaners in April 2003 to characterize HVOCs in soil vapor. Two samples were collected near the floor surface and two samples were collected at a typical breathing zone height of approximately 5.5 feet above the floor surface (see **Enclosure A, Figure 11**). TCE was detected above the Method B cleanup level for unrestricted use in all four indoor air samples. PCE and cis-1,2-DCE were detected at concentrations below applicable Method B cleanup levels. VC was not detected above laboratory reporting limits.

Ecology recommends collecting additional soil vapor or indoor air samples to assess the current concentrations of contaminants in soil vapor or air in the tenant space. At least one soil vapor or indoor air sample should be collected close to the location of former monitoring well FCP-9S. Additional indoor air sampling may be necessary if contaminant concentrations in soil vapor exceed Method B screening levels for unrestricted use. Further guidance regarding vapor intrusion assessments is available in Ecology's *Guidance for Evaluating Vapor Intrusion in Washington State: Investigation and Remedial Action*, revised March 2022³.

• Groundwater Characterization

Groundwater sampling events were conducted in the vicinity of the former Forest Park Cleaners from 1999 to 2003 and in 2023. From 1999 to 2003, PCE, TCE, and cis-1,2-DCE were detected intermittently in groundwater at concentrations below Method A cleanup levels. During this timeframe, VC was consistently detected in groundwater above Method A cleanup level in FPC-9S, and periodically in FPC-4 and FPC-10S (see **Enclosure A, Figure 9**). Two monitoring wells, FMW-01 and FMW-02, were installed adjacent to FPC-1 and FPC-3, respectively.

Groundwater samples collected in 2023 from monitoring wells FMW-01 and FMW-02 did not detect HVOCs above the laboratory reporting limits. Ecology recommends installing additional monitoring wells in the vicinity of FPC-4 and FCP-10S to confirm that groundwater along the sanitary sewer line meets cleanup standards.

EIM Data Upload

Electronic submittal of all sampling data collected in and post-2005 into Ecology's electronic Environmental Information Management (EIM) database is a requirement in order to receive a final Ecology opinion for this Site. Nicole Masurat (email <u>Nicole.Masurat@ecy.wa.gov</u>, or telephone (564) 669-8294) is Ecology's contact and resource on entering data into EIM.

Cleanup Standards

Soil. Based on the measured depth to groundwater and presence of VOCs in soil and groundwater, the leaching pathway is complete at the Site. MTCA Method A soil cleanup

³ https://apps.ecology.wa.gov/publications/SummaryPages/0909047.html

levels for unrestricted uses, which are protective of the leaching pathway, are appropriate at the Site (WAC 173-340-740(2); Table 740-1). The standard point of compliance for protection of groundwater is throughout the Site (WAC 173-340-740(6)(b)).

A Terrestrial Ecological Evaluation (TEE) is required per WAC 173-340-7590 to determine if cleanup levels protective of terrestrial species are applicable to the Site. The first step is to determine if the Site qualifies for an exclusion from the TEE process. A <u>TEE form</u> is necessary to document your evaluation of the need for a TEE at the Site.

Groundwater. The highest beneficial use for groundwater is considered to be as a potable source, unless it can be demonstrated that groundwater is non-potable. MTCA Method A cleanup levels, which are protective of groundwater as a potable source, are appropriate for the Site (WAC 173-340-720(3); Table 720-1).

The Standard point of compliance for groundwater is throughout the Site from the beginning of the saturated interval to the lowest depth which could potentially be affected (WAC 173-340-720(8)(b)).

Air. At this time, Ecology recommends using Method B cleanup levels protective of unrestricted use as preliminary cleanup levels (PCULS) for air at the Site (WAC 173-340-750(3)(b)). The standard point of compliance is defined as ambient air throughout the Site (WAC 173-340-750(6)).

Cleanup Actions

Cleanup at the Site included the following remedial actions:

Magic Cleaners.

- Excavation of 60 bank cubic yards of HVOC-contaminated soil from beneath the former cleaners space in 1989.
- From December 1998 to March 1999, approximately 35,600 gallons of contaminated groundwater were removed by a dual-phase vacuum extraction system.
- From October 2001 to 2009, a density-driven convection (DDC) system was operated at the Site.
- A sub-slab depressurization system (SSDS) was installed below the former Magic Cleaners in 2005 to reduce the potential for vapor intrusion at the building above this release.
- A Restrictive Covenant was recorded on the eastern portion of the Property in July 2006.

Forest Park Cleaners.

• In 1990, a 500-gallon heating oil underground storage tank (UST) and approximately 30 cubic yards of contaminated soil were excavated and removed from the Site.

- From March to September 1999, a six-phase heating (SPH) and soil vapor extraction (SVE) system was operated at the Site.
- A Restrictive Covenant was recorded for this part of the Property in March 2004 and updated in February 2006.

Ecology appreciates your efforts in cleaning up the Site and summarizing historical data. As discussed above, additional soil, groundwater, and soil vapor or indoor air sampling is necessary to fully characterize the Site. In addition, Ecology recommends measuring the groundwater elevations across the Site (including both cleaners) to evaluate the groundwater flow directions.

Ecology understands remedial injections are planned at the Site. Ecology recommends submitting a work plan discussing details of the injection plan, including a proposed monitoring well network and sampling plan to ensure sufficient data are collected to document this remedial action.

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.

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 Ecologysupervised 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). After you have addressed our concerns, you may request another review of your cleanup. 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 web site: <u>www.ecy.wa.gov/vcp</u>. If you have any questions about this opinion, please contact me by phone at 206-459-6287 or e-mail at david.unruh@ecy.wa.gov.

Sincerely,

David Unruh Site Manager Toxics Cleanup Program, NWRO

- Enclosures (2): A Description and Diagrams of the Site B – Basis for the Opinion: List of Documents
- cc: Emerald Erickson-Mulanax, Farallon Consulting (<u>eerickson@farallonconsulting.com</u>) Sonia Fernandez, VCP Coordinator (<u>sonia.fernandez@ecy.wa.gov</u>)

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.

<u>Site</u>: The Site is defined by releases of the following at 17171 Bothell Way NE in Lake Forest Park, King County, Washington (Figure 1; Figure 2):

- Tetrachloroethylene (PCE), trichloroethylene (TCE), and oil-range total petroleum hydrocarbons (TPH-O) into the Soil.
- PCE; TCE; cis-1,2-dichloroethene (DCE); vinyl chloride (VC); acetone; and benzene into the Groundwater.
- PCE, VC into the Air.

The Site is located west of the intersection of Ballinger Way NE and Bothell Way NE and consists of one irregularly shaped King County tax parcel totaling 16.46 acres in area with the following parcel number:

• 4019301655 (17171 Bothell Way NE, Property)

According to MTCA, the Site is defined as all areas where contamination has come to be located. Based on currently available Site characterization data, the Site does not extend beyond the boundaries of the Property.

<u>Area and Property Description</u>: The Site is located in a commercial and residential area near the north tip of Lake Washington in Lake Forest Park. The Property is currently developed with a retail shopping mall center occupied by retail businesses, restaurants, and a grocery store. The Property is bounded by the following:

- North: Ballinger Way NE, with residential properties beyond
- East: 17425 Ballinger Way NE, with residential properties and Lake Washington beyond
- South: Bothell Way NE, with residential properties beyond
- West: multiple residential properties with 44th Ave NE beyond

Property History and Current Use: The shopping center on the Property was first developed in the 1960s. Two dry cleaning facilities, Magic Cleaners and Forest Park Cleaners, formerly operated at the Property:

- Forest Park Cleaners was historically located in the southwest corner of the Property, and operated from June 1989 until February 1997 when onsite dry-cleaning operations were suspended. At that time, dry cleaning machinery was removed from the facility. Prior to its use as a dry-cleaning facility, this area of the Property operated as an auto maintenance facility. The space is currently used as fast-food restaurants.
- Magic Cleaners was historically located in near the center of the Property. Magic Cleaners was a coin-operated dry-cleaning business that operated for approximately 5

years during the 1980s. The space is used as a drug store from the early 1990s to the present.

As discussed above, uses of other portions of the property include retail space, restaurants, a grocery store, and a gym from the 1960s to the present.

Sources of Contamination: The source of TPH-O at the site is attributed to a 500-gallon underground storage tank (UST) used for storage of heating oil for heating the former auto maintenance facility. Releases to soil were noted in a small area around the filling port of the UST and are interpreted to be the result of overfilling or a loose connection between the filling piping and the UST itself (**Figure 3**).

The source of PCE; TCE; cis-1,2-DCE; and VC (collectively HVOCs) contamination at the Site is associated with historical dry-cleaning operations in the southwestern (Forest Park Cleaners) and central (Magic Cleaners) portions of the Property.

At Forest Park Cleaners, dry-cleaning equipment and stored chemicals were located in the northwest corner of the facility (**Figure 4**). Two floor drains were observed on the ground floor of the facility: one in the vicinity of the dry-cleaning machinery and one near a mop sink. Upon removal of dry-cleaning equipment and machinery in February 1997, the condition of the floor tiling below the former equipment indicated the spillage of solvents to the floor had occurred. Groundwater samples collected from 1997 to 1999 contained HVOCs, acetone, and benzene above the Method A cleanup levels.

At Magic Cleaners, a release of solvent associated with a coin-operated dry-cleaning machine was discovered during construction activities in 1989. Solvent odors beneath the former laundromat were present and identified to be the result of a leaking floor sump (**Figure 2**). A test pit was excavated adjacent to the location of the suspected discharge. Soil and groundwater samples from the test pit contained detections of PCE and TCE.

Physiographic Setting: The Site is located within the Puget Sound Lowland Physiographic Province, a north-south trending structural and topographic depression that is bordered on its west side by the Olympic Mountains, and to the east by the Cascade Mountain foothills. The Puget Sound Lowland is underlain by Tertiary volcanic and sedimentary bedrock and has been filled to the present day land surface with Pleistocene-aged glacial and nonglacial sediments.

Repeated advances and retreats of the continental glaciers that flowed through the area out of Canada more than 10,000 years ago created the low undulating plains that are characteristic of the Puget Sound Lowland. Current land surfaces reflect the changes that are directly related to the most recent glacial advance and retreat through Snohomish County, known as the Vashon Stade of the Fraser Glaciation.

<u>Surface/Storm Water System</u>: Surface water runoff in the area is captured in municipal storm drains and transported to the nearest surface water drainage, Lake Washington. Rainfall not captured in the storm drain system infiltrates through landscaped areas. Two stormwater

retention ponds are located at the southeastern boundary of the Site. The closest surface water body is Lake Washington, located approximately 650 feet southeast of the Site.

Lyons Creek flows in an open channel along the western Property boundary and traverses its southwestern corner through a culvert and emerges again to flow along the southern Property boundary (**Figure 2**). The creek originally flowed through the Property but was diverted during the construction of the shopping complex.

Ecological Setting: The Property is zoned for commercial use. Adjoining properties to the east and south are also zoned for commercial use. The west and north adjacent properties are zoned for single-family residential use. Land and surfaces on the Property are primarily covered by a retail shopping center building and asphalt and concrete pavement, with some small, landscaped areas.

Geology: The geologic map of the area⁴ indicates the Site is underlain by Older Alluvium, which includes stratified sand and gravel deposited by small streams and ponds. Boring logs from Site investigation activities indicate that the Property is underlain by brown to gray brown, fine, silty sand to a maximum depth of 20 feet below ground surface (bgs). Investigation borings were terminated at 20 feet bgs.

Groundwater: Recent groundwater monitoring has been conducted from 2016 to 2021 in on-Site groundwater monitoring wells MW-1 to MW-3, MW-4R, MW-5, MW-6, FMW-01, and FMW-02 (**Figure 2, Figure 5**). Additionally, borings B-1 through B-13 were advanced for the purpose of collecting reconnaissance groundwater samples at the first-encountered groundwater bearing zone (**Figure 2**). Groundwater is generally encountered at the Site at depths ranging from 3 to 8 feet bgs. Groundwater flow at the Site has been measured consistently as southerly to southeasterly with an average hydraulic gradient of 0.015 feet/foot (**Figure 5**). Slug tests conducted in 2000 in MW-2 and MW-4 yielded hydraulic conductivity estimates of approximately 9 - 10 feet/day. Aquifer tests were also conducted at MW-2, MW-3, and MW-6 in 2021 which yielded an average hydraulic conductivity of 4 feet/day. The estimated hydraulic conductivity is consistent with the soil type (sand and silty sand) encountered at the Site.

Water Supply: Drinking water at the Property is supplied by the North City Water District. The North City Water District's drinking water is supplied by Seattle Public Utilities regional water system, which in turn sources water from both the Tolt and Cedar River Watersheds, located approximately 30 miles east and 35 miles southeast of the Property, respectively. The Site is located approximately 2600 feet south of the closest 10-year time of travel wellhead protection zone.

⁴ https://ngmdb.usgs.gov/Prodesc/proddesc 7448.htm

Release and Extent of Contamination:

Pre-remedial Conditions

Magic Cleaners – During redevelopment of the Property in 1989, solvent odors were noted below the slab in the area of a sump drain. A soil sample collected from this area contained PCE at a concentration exceeding the Method A cleanup level. Subsurface investigations were conducted from 1995 to November 2021. A Site Characterization conducted in 1996 identified PCE above the Method A cleanup levels in soil at depths from 5 to 10 feet bgs (SP-5, SP-7, SP-8, SP-13, and SP-20; **Figure 6**). Groundwater samples collected from temporary and permanent monitoring wells SP-7, SP-8, SP-13, and MW-3 contained PCE above the Method A cleanup level (**Figure 6; Figure 7**). Three surface water samples were collected for three quarters from May to December 1995 along Lyons Creek to the west and south of the release (SW-1 to -3; **Figure 8**). These samples did not contain HVOCs above their respective Method A/B cleanup levels.

Forest Park Cleaners – Prior to construction of Forest Park Cleaners, releases of TPH-O to soil were noted in association with the heating oil UST. Subsurface investigations were conducted in the vicinity of Forest Park Cleaners following closure of the cleaners in 1997. Soil collected from borings installed in the vicinity of the former location of the dry-cleaning equipment did not contain HVOCs above the Method A cleanup level. Groundwater samples collected from temporary and permanent monitoring wells B-6, B-7, PB-6, PB-4, FPC-1 to FPC-5, FPC-8S, FPC-8D, FPC-9S, FPC-10D contained HVOCs, acetone, and/or benzene above their respective Method A and Method B cleanup levels (**Figure 4**; **Figure 9**). Exceedances of the cleanup level at FPC-4, FPC-5, FPC-10S and FPC-10D appear to be related to groundwater movement along the preferential flow path associated with the sanitary sewer line located to the west of the cleaners building.

Remedial Actions:

Magic Cleaners

1989 Excavation and Groundwater Collection System. After the initial discovery of PCE and TCE in soil and groundwater during construction activities in 1989, approximately 60 bank cubic yards of contaminated soil was excavated and removed from the Property (**Figure 2**). The remediation effort extended approximately 6 feet below the water table. The excavated area was backfilled with coarse aggregate and a groundwater collection system was installed, consisting of a sump approximately 1.5 feet in diameter and 4.5 feet deep, equipped with a sump pump (**Figure 8**).

1998/1999 Dual Phase Vacuum Extraction (DPVE). From December 1998 to March 1999, a DPVE system was operated at the Site connected to MW-3 and MW-6. A stinger pipe and coupling were placed into each well to allow for dewatering of the well and removal of HVOC vapors from within the cone of depression created by pumping. Approximately 17,130 and 18,464 gallons of contaminated groundwater were pumped from MW-3 and MW-6,

respectively. The pumped groundwater was discharged to the sanitary sewer in accordance with a King County Industrial Waste Section (Metro) discharge approval dated November 25, 1998. No significant change in HVOC concentrations occurred as a result of the DPVE. PCE concentrations were consistently reported above Method A Cleanup Levels and ranged from 49.0 - 52.7 micrograms per liter (µg/L) in MW-6 and from 24.1 - 32 µg/L in MW-3. PCE degradation products trichloroethylene (TCE) and cis-1,2- DCE were also detected in groundwater samples from both MW-3 and MW-6.

2001-2009 Density Driven Convection (DDC). In September 2001, a DDC system was installed at two locations at the Site (System 1 and System 2). The DDC system consisted of 7 wells with two screened intervals. Each well was equipped with a drop tube which supplied air to the lower well screen. Sparged air displaced groundwater, creating an upward gradient to draw water in through the upper well screen. HVOCs within the updrawn air stream were removed through a granular activated carbon (GAC) unit prior to recirculation of the air into the well. System 1, consisting of wells DDC-1 through DDC-4, was installed immediately south of the source area to target the highest HVOC concentrations in groundwater (Figure 7). System 2 was installed north of Lyons Creek near the Site's southeastern property boundary and consisted of wells DDC-5 through DDC-7 (Figure 7). System 2 was designed as a barrier system to mitigate the potential flow of HVOC-affected groundwater into Lyons Creek.

The system began operation in October 2001, after which quarterly performance monitoring occurred. During each quarterly performance monitoring event, groundwater measurements and samples were collected from MW-2, MW-3, MW-4, and MW-6. Quarterly performance monitoring took place from January 2002 to January 2003. After January 2003, performance monitoring switched to a biannual schedule with sampling events taking place in June 2003, December 2003, and August 2004. Over this period, PCE was consistently detected at stable to declining concentrations above Method A Cleanup Level ranging from 4.45 – 26.5 µg/L near the source area in MW-3 and MW-6 (**Figure 7**). VC was detected in MW-6 during five sampling rounds at concentrations above the Method A cleanup level at concentrations ranging from 0.48 – 0.80 µg/L. HVOCs were not detected in MW-2 or MW-4 during the performance monitoring period. The DDC system was operated until 2009 at which time it was shut down. The infrastructure for the system remains in place.

Sub-slab Depressurization System (SSDS). In 2005, an SSDS was installed below the former Magic Cleaners. The SSDS consists of northern and southern horizontal extraction piping installed below the building slab (**Figure 10**). The piping is connected to a blower and manifold which exerts a vacuum on the system and vents the vapors to the atmosphere.

Restrictive Covenant. A Restrictive Covenant was recorded on the eastern portion of the Property in July 2006. The Restrictive Covenant requires the operation and maintenance of the DDC and SSDS systems, sampling of select permanent monitoring wells, and prohibits the use of the property for residential, educational, recreational, and elder care uses.

Forest Park Cleaners

1990 UST Removal and Excavation. In April 1990, a 500-gallon heating oil UST was removed from the alleyway to the west of the location of Forest Park Cleaners (**Figure 3**). Two composite soil samples were collected from the sidewalls and bottom of the excavation, both of which contained petroleum hydrocarbons above the Method A cleanup level. After removal of the UST, approximately 30 cubic yards of soil contaminated with TPH-O were excavated and transported to a permitted disposal facility.

Performance monitoring samples were collected from the sidewalls just above the saturated interval. None of the samples contained TPH-O above the Method A cleanup level. In June 1990, a monitoring well was installed approximately 20 feet south of the excavation in the assumed downgradient direction. A groundwater sample was collected and analyzed for petroleum hydrocarbons, benzene, toluene, ethylbenzene, and xylenes. None of these compounds were detected above the laboratory reporting limit.

1999 Six-Phase Heating. From March to September 1999, a six-phase heating (SPH) and soil vapor extraction (SVE) system was operated to remove HVOCs, acetone, and benzene from the soil and groundwater at the Site. The SPH system consisted of a total of 27 electrodes installed to a depth of 20 feet bgs (**Figure 9**). Four horizontal SVE wells were installed within the treatment area to remove HVOC vapors. Soil and groundwater were heated to the boiling point of water by the SPH system and resultant vapors were extracted by the SVE system and discharged to the atmosphere.

Groundwater monitoring was conducted at the Site following the conclusion of SPH treatment until 2003 to assess the efficacy of the remedial action. During the final groundwater sampling event, groundwater samples collected from monitoring wells in this portion of the Site did not contain HVOCs, acetone, or benzene above the Method A cleanup level with the exception of FPC-9S. Groundwater samples collected from FCP-9S contained VC above the Method A cleanup level but exhibited a decreasing trend.

A total of four air samples were collected from the Forest Park Cleaners building in April 2003. Two samples were collected at 2.5 inches above the floor (FPC-Air-1-Floor and FPC-Air-2-Floor) and another two were collected from the breathing zone at 5.5 feet above the floor (FPC-Air-1-BZ and FPC-Air-2-BZ; **Figure 12**). All four air samples contained TCE below the Method B cleanup level at the time. However, all four samples contained TCE above the current Method B cleanup level for unrestricted use.

Restrictive Covenant. To ensure groundwater sampling continued at the Site, a Restrictive Covenant was recorded for this portion of the Property. The Restrictive Covenant required groundwater samples be collected from FPC-9S on an annual basis and restricted use of groundwater on the Property.

Additional Site Characterization:

Magic Cleaners – From 2019 to 2023, groundwater samples were collected from MW-1 to MW-6. Samples collected from MW-3 and MW-3 contained VC above the Method A cleanup level. PCE; TCE; and cis-1,2-DCE were detected below their respective Method A and B cleanup levels. In April and October 2021, soil gas samples were collected from the north and south extraction trenches of the SSDS system (**Figure 11**). Samples from both trenches in April 2021 contained PCE above the Method B screening level for unrestricted use.

Forest Park Cleaners – In November 2022, two permanent monitoring wells, FMW-01 and FMW-02 were installed west and south, respectively of the former Forest Park Cleaners building. The wells were completed with 10-foot screens installed at depths ranging from 3 to 14 feet bgs. Groundwater sampling was conducted on a quarterly basis from December 2022 to September 2023. None of the groundwater samples collected from either well contained HVOCs above the laboratory reporting limits.





- MONITORING WELL LOCATION
- \bullet FORMER MONITORING WELL LOCATION

- SANITARY SEWER LINE ---- STREAM CULVERT

- - KING COUNTY PARCEL BOUNDARY

Your Challenges. Our Priority. | farallor

Enclosure A Figure 2



FARALLON PN: 1993-009 Date: 11/21/2023

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Job No. 28171-585-005 DAMES & MOORE

Enclosure A Figure 4

Forest Park Cleaners Seattle, Washington FIGURE 4





Enclosure A Figure 6



- MANHOLE

Enclosure A Figure 7



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Job No. 28171-585-005

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Enclosure A Figure 8 Former Magic Cleaners Coin-Operated Dry Cleaner Site Lake Forest Park Town Center, Seattle, Washington

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LEGEND

	Property boundary
MW-1-�- 34.73	Monitoring well location and groundwater elevation (feet above MSL)
(ZZ2)	Former Magic Cleaners coin-operated dry cleaner remediation area
	Stormwater retention pond
SG-1●	Stream gauge location
FPC-1 ⊙	Previously installed monitoring well (Ecova, 1990)
<u>42</u>	Groundwater elevation contour (feet above MSL)
>	Estimated groundwater flow direction
SW-1 ⊕	Surface water sampling location



Approximate Scale in Feet

Figure 5 GROUNDWATER ELEVATION CONTOUR MAP SEPTEMBER 12, 1997

					PB-6		Τ	5/14/99	1					1															
					Depth	(ft)	4	9	1			Ť		Be a	F	PC-7	2/17/99	5/14/	/99	6/9/99									
					PCE		3.11	3.62							V	'OCs	ND	NE	D	ND									
1					TCE		3.22	15.0				¥		/.			["												
					cis-1,2	-DCE	28.3	40.2					/																
					trans-	,2-DCE	ND	1.74		<u>۱</u>		∦ F	PC-7	S															
					Benze	ne	4.91	ND		\mathbf{N}	i.		-9-	i				PB-5		5	/14/99	1							
	2/1	3/00 /	1/6/99	4/27/99	5/14/99	5/21/9	9 5/27	/99 6/9/99		$ \rangle$		X		l				Depth	(ft)	4	9	-							
FPC-10S	1.5	10	214	63.3	7.09	ND	N	D 1.50	-	$ - \rangle$				-				cis-1,2	2-DCE	ND	1.16	13.43							
PCE	1.3	60	61	57.8	10.1	ND	1.2	20 1.38				Ļ		l			/	PCE		1.24	ND								
11-DCE	3.	33	ND	ND	ND	ND	N	D ND			$\left \right\rangle$			l S			V												
cis-1,2-DCE	3,2	270	142	197	63.2	6.35	6.3	6.06			$ \rangle$			1			1 .	FPC-4	•	2/17/99	4/6/99	4/27/99	5/14/99	5/21/99	5/27/99	6/9/99	6/17/99	8/9/99	10/1/99
trans-1,2-DCE	42	2.5	ND	2.32	ND	ND	N	D ND			$ \rangle$	Ť	E-27	ĺ				Benze	ene	ND	9.24	18.27	6.71	21.9	10.9	88.1	38.8	2.41	ND
VC	6	51 3	2.63	1.1	ND	ND	0.2	18 ND				\mathbf{N}	*	l				PCE		1,260	33	4.29	1.22	1.04	ND	ND	2.77	ND	ND
Toluene	1.	32	ND	ND	ND	ND	N	D ND		\searrow		X		1	E-20	/	<i>r</i> -	TCE		7.45	6.16	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	N	D	ND	ND	15.5	ND	1.6	0 ND	_	ek	\searrow		PB-6	-23	° /	/		VC	2-DCE	ND ND	2.18	ND	ND	ND	ND	ND	1.10 ND	ND 0.462	ND
Acetone	N	D	655	411	965	1290	0 90	7 405		Cre		1	∖ ° ¯	S			V	Aceto	ne	ND	617	552	338	510	389	415	414	18.6	206
MEK	N	D	93.6	50.2	121	1/2	93	.5 75.8		Sul Su			FPC	-6			ſ	MEK		ND	69.2	65.3	45.3	60.2	49.6	89.3	67	ND	12.2
Carbon Disulf	ide N		2.22	ND		9.54		1.06		Lyo	FI	PC-105	F-26	C-10D	E-19			4											K
500 100	2/16/00	A/6/00	a //2	7/00 5/	1//00 5	21/00	5/27/00	6/0/00					E 20 A	i /				Fo	orest F	Park 🦟	FPC-8D		2/16/99	4/6/99	4/27/99	5/14/99	6/9/99		
PCE	2.830	968	1	21 1	4.7	2 87	4.95	4 11		V		×	E-22 🛡	s 🛛 F	PB-5	/		C	Cleane	ers	cis-1,2-0	CE	8.21	ND	ND	ND	ND		
TCE	82.3	2.5	2.	05 1	2.3	1.07	1.51	1.49	/				E-25	E-1	80	/		/		/	VC		3.74	ND	ND	ND	ND		
cis-1,2-DCE	11	2.47	1.	36 4	4.41	ND	1.53	1.28 -			8	×		EP(C-4			/		h	Acetone	-	ND	112	57	813	160		
VC	1.26	0.26	2 N	ID	ND	ND	ND	ND					E-21	1	Š ¢			/	/		MEK		ND	ND	ND	ND	23.1		
Acetone	ND	75.9	35	5.9 3	32.1	147	31.0	56.4				,	•	Ś	¢ E 17	h п−	N				FPC-8S	1.	2/16/99	4/6/99	4/27/99	5/14/99	6/9/99		
MEK	ND	ND	N	ID	ND	2.14	ND	11.6				Î FP	C-5		E-17	7	ן ע הE-6♥	\Box			PCE		1.62	ND	ND	ND	ND		
			1	-	1					⊥_				L	E-16	<u>,</u> П	PB-	1/	E-11	-	cis-1,2-D	CE	359	2.65	ND	ND	3.13	14.18	
FPC-5	2/17/99	4/6/99	4/27/9	9 5/14/	99 5/21	/99 5/2	27/99	6/9/99 6/1	7/99 7/8/9	9			E-24	ľ	@	-1	× /	/	•	/	trans-1,2	-DCE	4.32	ND	ND	ND	ND		
PCE	ND	9.92	22	15.	5 15	5 2	9.9	10.4 3.	.87 ND						FPC	-2/FPC	-8D	F-7			VC		36.1	0.385	ND	ND	ND		
ICE	ND	1.6	3.5	3.20	6 2.8	3 3	3.94	2.88 1.	.08 ND	_ /		×		S 1		FF	C-8S		_		Acetone		ND	328	122	210	240		
VC	ND		3.4	12.2			2.27	2.12 M		_ /						€E-2	2	I	E-12		MEK		ND	38.7	ND	37.1	52.3		
Toluene	ND	ND	ND		2 0.2) NI		2.38	ND ND		-+		×	×	+ /		PB-2	(@ E.	e,	- 10		EPC-9D	1.	2/17/99	4/6/99	4/27/99	5/14/99	5/07/00	6/0/00	
Benzene	ND	ND	ND	1.30			2.84	ND ND		— (1	· /				¢ _F	3 _		e	-	Acetone		ND	91.2	52.5	66.8	5/2/135	120	
Ethyl Benzene	ND	ND	ND	ND) NI) 1	1.05	ND N		- \	×			s /	FPC-1	-	E-	9		/	2-Butano	one	ND	ND	ND	ND		28.4	
Acetone	ND	100	76.1	583	3 64	1 1	170	92.8 1	11 77.0	\neg		/			1		C-9D-6		E-14										
MEK	ND	ND	ND	78.0	6 35.	0 1	18.0	18.5 1	3.4 12.7		\times /			/	/	10 E	-4 -6 FPC-9	es 🕅	100	-	FPC-9S	:	2/16/99	4/6/99	4/27/99	5/14/99	6/9/99		
							= // 4		-	, the second sec		/	/ /				0 E	10	PB-3		cis-1,2,D	CE	114	ND	ND	ND	ND		
				PB-4	(44)		5/14/	99		and the second s	\sim	\mathbf{X}		s /		•	L-		•		trans-1,2	,DCE	4.25	ND	ND	ND	ND		
				Deptn		5 13.7	25	2 ND	- Jack)					E-5			E-15		Acotono		52.1	282	160	ND	ND		
				VC	-DOL	3.39	2.6	9 ND	_			\sim		4/				\mathcal{M}		K	MEK		ND	35.4	ND	56.0	28.5		
						0100	110		_				No. No.	Ó./					C	oncrete	Lineix		THE	00.1		00.0	2.0.0		
	FI	PC-2	2	2/17/99	4/6/99	4/27/99	5/14/	99 6/9/99			/		1	XX							EPC-3	2/17/00	4/6/00	4/27/00	5/14/00	E/04/00	Triazias	6/0/00	7/9/00
	P	CE		2.98	2.76	ND	ND	ND			/Ci	ulvert –		$\langle \cdot \rangle$	s.						VC	0.482	1.25	0.495	0.758	0 399	5/2//99	0/9/99	110/99
	т	Œ		ND	2.33	ND	ND	ND			/				1. 2				6	FPC-3	MEK	ND	ND	ND	ND	79	4.8	ND	15.8
	ci	s-1,2-DCI	E	1.84	10.2	4.47	2.6	9 5.62		/					11	1					Acetone	ND	ND	ND	ND	769	453	ND	294
	V	C		0.248	ND	ND	NC	ND					/			S.				Grass	L								
	A	cetone		ND	117	224	224	4 372	_	/				1	1		1				1	6							
	M	EK		ND	ND	ND	22.	7 71.5	J /	FPC-1	5	5/21/99	5/27/99	6/9/99		\sim	<u>````</u>			PB-3	5/14/99								
						PB-	1	5/14/99		cis-1,	2-DCE	12.7	5.25	2.26	PB-	-2	5/14/99	-			5 ND	-							
						Dep	oth (ft)	5		VC		0.358	ND	ND	Dep		5	-1		LUCS								-	
DCM						VOC	Cs	ND		Toluer	ne	ND	4.42	10.3		05	ND									V	OC C	ONC	ENTR
TDA	AMF.S	18	MO	ORF						Aceto	ne	1800	1560	425	-													PRE-	AND
					-					INEK		207	214	137	1					1999								1. 2010	

GROUP A DAMES & MOORE GROUP COMPANY

Job No. 28171-927-005

LEGEND	
FPC-2 🔶	Monitoring well
PB-6 ⊠	Performance boring
PCE 1,510	VOC concentrations in μ g/L
E-1 •	SPH electrode
ND	Not detected
Bold	Exceeds MTCA cleanup level
	Sanitary sewer line and flow direction

Samples collected on 2/16/99 represents baseline groundwater quality prior to SPH operation.

Six phase heating operation initiated in March 1999.







Figure 6 RATIONS IN GROUNDWATER POST-SIX PHASE HEATING

Enclosure A Figure 9 Former Forest Park Cleaners Seattle, Washington





FRENUME: Q.\geo\RRe Hid\Figure 5.dmg JOD NO. 33757930 EDIT DATE: 02/09/05 AT: 14:56

URS

Figure 5 As-Built SSVS Site Plan

Former Magic Cleaners Lake Forest Park, Washington



Job No. 33749307

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Enclosure B

Basis for the Opinion: List of Documents

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