STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600 • Olympia, Washington 98504-7600 • 360-407-6300

February 24, 2025

Pete Lymberis
Taylor Morrison Northwest, LLC
13810 Southeast Eastgate Way, Suite 410
Bellevue, Washington 98005
PLymberis@taylormorrison.com

Re: Technical assistance for the following contaminated Site

Site Name:	Rose Hill Cleaners
Site Address:	12663 NE 85th St, Kirkland, King County, WA 98033
Cleanup Site ID:	12276
Facility/Site ID:	34187446
VCP Project ID:	XN0016

Dear Pete Lymberis:

On February 10, 2025, the Washington State Department of Ecology (Ecology) received a document titled *Subsurface Investigation Summary Report, Rose Hill Property*. That document included a request for "a technical assistance letter from Ecology to confirm that the proposed mitigation measures at the Rosehill Property are necessary and sufficient to mitigate the potential vapor intrusion risk and protect human health and the environment." This letter provides our opinion and analysis regarding the sufficiency of characterization and proposed vapor intrusion mitigation measures at the Rose Hill Cleaners facility (Site), under the Voluntary Cleanup Program (VCP).[1] We provide this opinion under the authority of the Model Toxics Control Act[2] (MTCA), chapter 70A.305[3] RCW. This technical assistance is provided under the requirements of WAC 173-340-515[4].

Background

The Rose Hill Cleaners site (Site) was enrolled in the expedited VCP process on December 27, 2021. On February 16, 2022, Ecology issued a No Further Action (NFA) Likely letter, based on a Cleanup Action Plan (CAP) dated January 17, 2022. The cleanup involved excavation and offsite disposal of tetrachloroethene (PCE) contamination attributed to a release(s) from former dry-cleaning operation. The cleanup work was conducted in early 2024, as documented within a Cleanup Action Report dated July 26, 2024.

[1] https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Voluntary-Cleanup-Program
[2] https://apps.ecology.wa.gov/publications/SummaryPages/9406.html
[3] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305
[4] https://app.leg.wa.gov/WAC/default.aspx?cite=173-340&full=true#173-340-515

Ecology issued a NFA determination for the Site in a letter dated August 5, 2024. Pertinent Site documents can be found on Ecology's Cleanup and Tank Search web page.[5]

During site development activities, petroleum was found in soil gas near the northwest Property boundary. This petroleum was determined to likely originate from the Rose Hill Car Wash site (CSID 17031) or the Chevron 90126 site (CSID 6635), both of which are located to the west of the Rose Hill Cleaners Property (King County Parcel 123310-0680).

Ecology provided concurrence that the petroleum in soil gas in this area appeared to be from an off-Property release and was unrelated to the Rose Hill Cleaners site. Further characterization work was done to determine the need for vapor intrusion mitigation measures during redevelopment at the Property as reported in Farallon Consulting's *Subsurface Investigation Summary Report, Rose Hill Property, dated February 10, 2025, (hereinafter referred to as "the Report")*. Ecology's feedback regarding the proposed vapor intrusion mitigation measures are provided herein.

Issue presented and opinion

- Are the proposed vapor intrusion mitigation measures at the Rosehill Property necessary and appropriate to mitigate the potential vapor intrusion risk and protect human health and the environment?

Yes. Ecology has determined that the proposed vapor intrusion mitigation measures are necessary and appropriate to address risks of vapor intrusion at the Property. Such measures should be designed by a licensed professional engineer, who should stamp their work product.

Analysis of the data and proposed mitigation measures

The Report concluded:

> *Based on the results of the soil gas analytical results, TPH impacts to soil gas is limited to the northwestern portion of the Rosehill Property and defined by soil gas points VP-02 and MW10- G to the east; VP-03 to the southeast; SG-04 to the southwest; VP-04 to the west; and SG-05 to the northwest. The detected concentrations of TPH in the soil gas samples collected from these soil gas points during the October 2024 soil gas sampling event were below the MTCA Method B screening levels of 1,500 µg/m^3, which is protective of the vapor intrusion pathway for residential land use…*
>
> *The soil gas laboratory analytical results demonstrate that TPH concentrations in soil gas are stable and/or not increasing. However, historical releases and the current operations of the gasoline service station on the west-adjacent property presents an on-going potential for the migration of hazardous substances onto the Rosehill Property. Mitigation measures will be implemented on the northwestern portion of the Rosehill Property to prevent the potential vapor intrusion pathway to indoor air.*

[5] https://apps.ecology.wa.gov/gsp/Sitepage.aspx?csid=12276

Ecology concurs with the above conclusions, and that vapor intrusion mitigation is necessary and appropriate for the planned structure located within the northwest Property area, to ensure no vapor intrusion concerns in the future. This is particularly important due to the residential land use for the planned structure.

Soil and soil gas sampling locations and results are provided in Enclosure A. A total of 12 soil samples were collected from four locations in this area in July 2024. Samples were collected at depths of 2.5, 5.0, and 10 feet below ground surface (ft bgs) and analyzed for diesel-, heavy oil-, and gasoline-range petroleum hydrocarbons and benzene, toluene, ethylbenzene, and xylenes (BTEX). No petroleum or BTEX were detected in any of these soil samples.

Four soil gas sampling rounds conducted in this area are summarized in Table 1:

Table 1. Soil Gas Sampling Events and Cleanup Level Exceedances

Sampling Round	Number of Cleanup Level Exceedances/Samples	Maximum TPH Concentration (mg/kg)[a]	Maximum Naphthalene Concentration (mg/kg)
Method B Screening Level[b]		*1,500*	*2.5*
April 2024	1/2	**2,743**	4.9
June 2024	0/1	**1,473**	<2.3
July 2024	3/4	**4,681**	<4.2
October 2024	0/6	929	<1.5

[a] mg/kg = milligrams per kilogram.

[b] Sub-slab Screening Level based on unrestricted land use.

Bold font indicates screening level exceedance.

Although no soil gas samples collected in the most recent sampling round (October 2024) had any screening level exceedances, exceedances during previous sampling rounds suggest a potential for future vapor intrusion risk. Ecology has concluded that the soil and soil gas data collected are sufficient for the identification and development of appropriate vapor intrusion mitigation measures.

Proposed Vapor Intrusion Mitigation

The report proposed the installation of a chemical resistant vapor barrier consisting of a 20-mil high-density polyethylene liner that will extend under horizontal foundation slabs of the building located in the northeast corner of the Property. In addition to installation of the vapor barrier consistent with the manufacturer's specifications, quality assurance/quality control checklists are proposed to be used, and smoke tests conducted on the completed vapor barrier. These tests will be performed post-rebar installation and prior to the pouring of the concrete foundation. This vapor barrier should be protected to ensure that it provides long-term protection for the new structure.

Limitations of the opinion

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 doesn't resolve or alter a person's liability to the state or 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).[6]

Opinion does not constitute a determination of substantial equivalence

To recover remedial action costs from other liable persons under MTCA, one must demonstrate 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 would make that determination. See RCW 70A.305.080[7] and WAC 173-340-545.[8]

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).[9]

[6] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305.040
[7] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305.080
[8] https://apps.leg.wa.gov/WAC/default.aspx?cite=173-340-545
[9] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305.170

Contact us for more information

Ecology appreciates the efforts to ensure that potential vapor intrusion risks at the Property are appropriately mitigated. If you have any questions about this opinion, please contact me at (509) 654-0689 or frank.winslow@ecy.wa.gov.

Sincerely,

Frank P. Winslow, LHG
Cleanup Project Manager
Headquarters Section

FPW/tam

Enclosure: A – Site Diagrams

cc by email: Jeff Borchardt, Taylor Morrison Northwest, LLC, jborchardt@taylormorrison.com
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Greg Peters, Farallon Consulting, gpeters@farallonconsulting.com
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Ecology Site File

Enclosure A

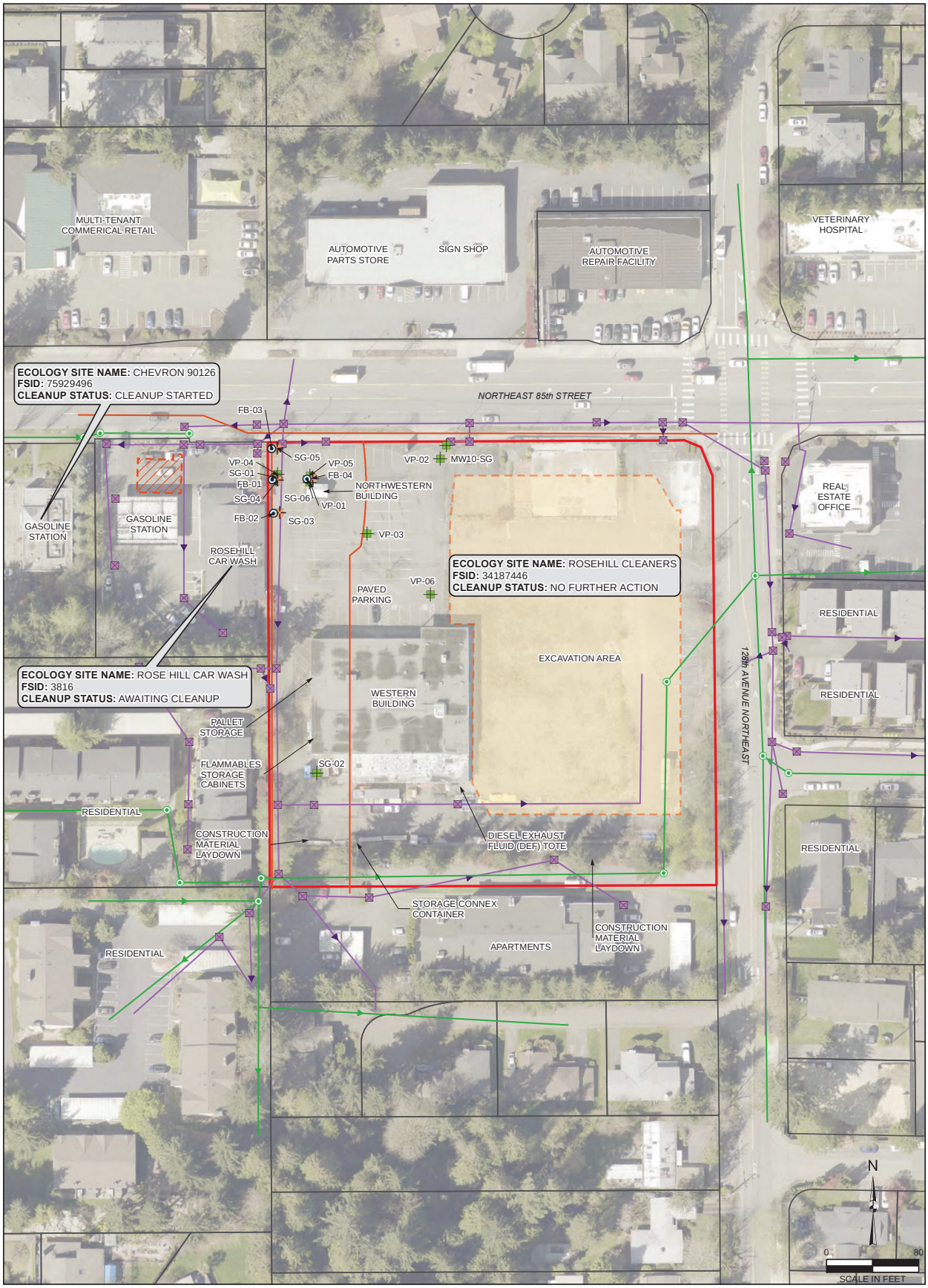
Site diagrams

Site Diagrams

Figures and Tables from Farallon Consulting's *Subsurface Investigation Summary Report, Rosehill Property,* dated February 10, 2025.

Figures

Tables



LEGEND

- BORING
- PERMANENT SOIL GAS LOCATION
- SOIL GAS MONITORING POINT
- CATCH BASIN
- MANHOLE
- STORM DRAIN
- SEWER LINE
- POWER LINE
- APPROXIMATE LOCATION OF FORMER TEXACO GAS STATION UNDERGROUND STORAGE TANKS
- EXCAVATION AREA
- PROPERTY BOUNDARY
- KING COUNTY PARCEL BOUNDARY

NOTES:
1. ALL LOCATIONS ARE APPROXIMATE.
2. FIGURES WERE PRODUCED IN COLOR. GRAYSCALE COPIES MAY NOT REPRODUCE ALL ORIGINAL INFORMATION.

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FIGURE 2

PROPERTY PLAN
ROSEHILL PROPERTY
12631 NORTHEAST 85th STREET
KIRKLAND, WASHINGTON

FARALLON PN: 2616-003

Drawn By: jjones | Checked By: GP | Date: 2/3/2025 | Disc Reference:

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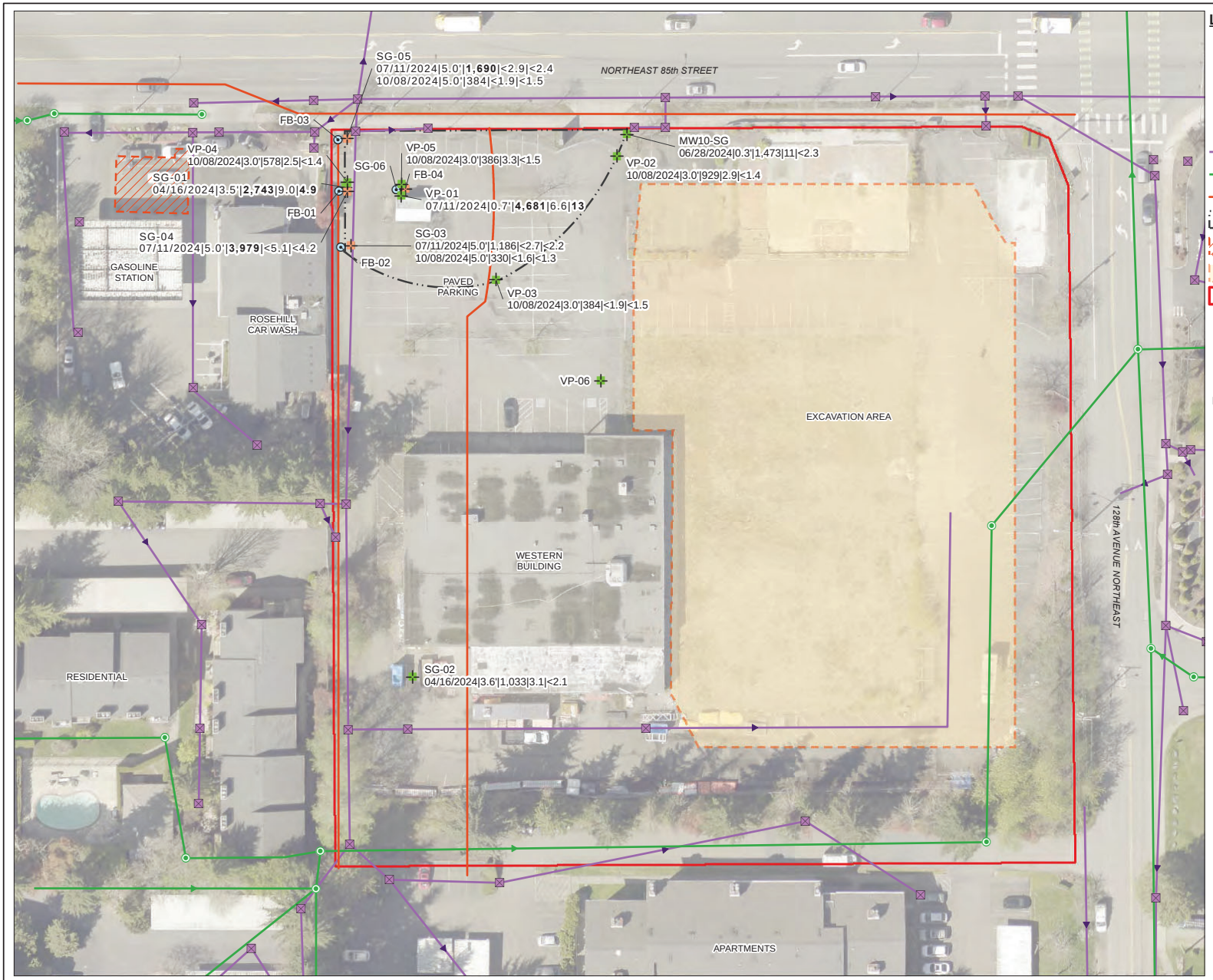

LEGEND

- BORING
- PERMANENT SOIL GAS LOCATION
- SOIL GAS MONITORING POINT
- CATCH BASIN
- MANHOLE
- STORM DRAIN
- SEWER LINE
- POWER LINE
- APPROXIMATE EXTENT OF SOIL GAS IMPACTS
- APPROXIMATE LOCATION OF FORMER TEXACO GAS STATION UNDERGROUND STORAGE TANKS
- EXCAVATION AREA
- PROPERTY BOUNDARY

NOTES:
SOIL GAS ANALYTICAL RESULTS AS:
DATE | DEPTH IN FEET BELOW GROUND SURFACE | TPH | BENZENE | NAPHTHALENE
SOIL GAS ANALYTICAL RESULTS IN MICROGRAMS PER CUBIC METER ($\mu g/m^3$).

BOLD = DENOTES CONCENTRATIONS THAT EXCEED THE WASHINGTON STATE MODEL TOXICS CONTROL ACT METHOD B SUB-SLAB SOIL GAS SCREENING LEVEL FOR RESIDENTIAL EXPOSURE.
< = DENOTES ANALYTE NOT DETECTED AT OR EXCEEDING THE LISTED REPORTING LIMIT
TPH = TOTAL PETROLEUM HYDROCARBONS

N

0 50
SCALE IN FEET

FIGURE 3A

SOIL GAS ANALYTICAL RESULTS
ROSEHILL PROPERTY
12631 NORTHEAST 85th STREET
KIRKLAND, WASHINGTON

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Drawn By: aguse Checked By: GP Date: 12/11/2024

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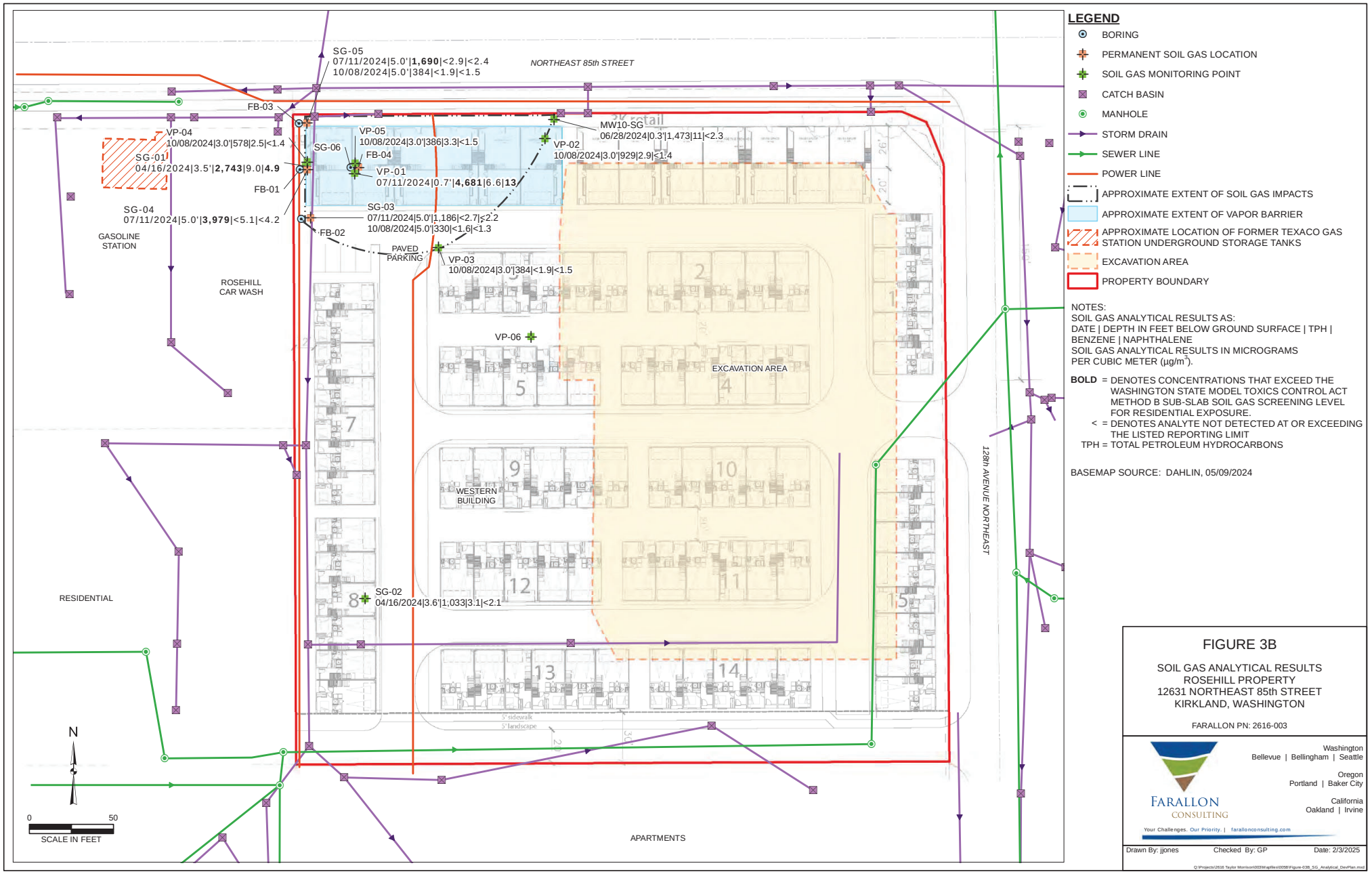

LEGEND

- BORING
- PERMANENT SOIL GAS LOCATION
- SOIL GAS MONITORING POINT
- CATCH BASIN
- MANHOLE
- STORM DRAIN
- SEWER LINE
- POWER LINE
- APPROXIMATE EXTENT OF SOIL GAS IMPACTS
- APPROXIMATE EXTENT OF VAPOR BARRIER
- APPROXIMATE LOCATION OF FORMER TEXACO GAS STATION UNDERGROUND STORAGE TANKS
- EXCAVATION AREA
- PROPERTY BOUNDARY

NOTES:
SOIL GAS ANALYTICAL RESULTS AS:
DATE | DEPTH IN FEET BELOW GROUND SURFACE | TPH | BENZENE | NAPHTHALENE
SOIL GAS ANALYTICAL RESULTS IN MICROGRAMS PER CUBIC METER (µg/m^3).

BOLD = DENOTES CONCENTRATIONS THAT EXCEED THE WASHINGTON STATE MODEL TOXICS CONTROL ACT METHOD B SUB-SLAB SOIL GAS SCREENING LEVEL FOR RESIDENTIAL EXPOSURE.
< = DENOTES ANALYTE NOT DETECTED AT OR EXCEEDING THE LISTED REPORTING LIMIT
TPH = TOTAL PETROLEUM HYDROCARBONS

BASEMAP SOURCE: DAHLIN, 05/09/2024

FIGURE 3B

SOIL GAS ANALYTICAL RESULTS
ROSEHILL PROPERTY
12631 NORTHEAST 85th STREET
KIRKLAND, WASHINGTON

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Table 1
Soil Analytical Results for TPH and BTEX
Rosehill Property
Kirkland, Washington
Farallon PN: 2616-003

Sample Location	Sample Identification	Sample Depth (feet)[1]	Sample Date	Analytical Results (milligrams per kilogram)						
				DRO[2]	ORO[2]	GRO[3]	Benzene[4]	Toluene[4]	Ethylbenzene[4]	Xylenes[4]
FB-01	FB-01-2.5	2.5	7/9/2024	< 50	< 250	< 5	< 0.002	< 0.002	< 0.002	< 0.006
	FB-01-5.0	5.0	7/9/2024	< 50	< 250	< 5	< 0.002	< 0.002	< 0.002	< 0.006
	FB-01-10.0	10.0	7/9/2024	< 50	< 250	< 5	< 0.002	< 0.002	< 0.002	< 0.006
FB-02	FB-02-2.5	2.5	7/9/2024	< 50	< 250	< 5	< 0.002	< 0.002	< 0.002	< 0.006
	FB-02-5.0	5.0	7/9/2024	< 50	< 250	< 5	< 0.002	< 0.002	< 0.002	< 0.006
	FB-02-10.0	10.0	7/9/2024	< 50	< 250	< 5	< 0.002	< 0.002	< 0.002	< 0.006
FB-03	FB-03-2.5	2.5	7/9/2024	< 50	< 250	< 5	< 0.002	< 0.002	< 0.002	< 0.006
	FB-03-5.0	5.0	7/9/2024	< 50	< 250	< 5	< 0.002	< 0.002	< 0.002	< 0.006
	FB-03-10.0	10.0	7/9/2024	< 50	< 250	< 5	< 0.002	< 0.002	< 0.002	< 0.006
FB-04	FB-04-2.5	2.5	7/10/2024	< 50	< 250	< 5	< 0.002	< 0.002	< 0.002	< 0.006
	FB-04-5.0	5.0	7/10/2024	< 50	< 250	< 5	< 0.002	< 0.002	< 0.002	< 0.006
	FB-04-10.0	10.0	7/10/2024	< 50	< 250	< 5	< 0.002	< 0.002	< 0.002	< 0.006
MTCA Method A Cleanup Levels for Soil[5]				**2,000**	**2,000**	**30/100[6]**	**0.03**	**7**	**6**	**9**

NOTES:

< denotes analyte not detected at or exceeding the laboratory reporting limit listed.

[1]Depth in feet below ground surface.

[2]Analyzed by Northwest Method NWTPH-Dx.

[3]Analyzed by Northwest Method NWTPH-Gx.

[4]Analyzed by U.S. Environmental Protection Agency Method 8021B/8260D.

[5]Washington State Model Toxics Control Act Cleanup Regulation (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Uses, Table 740-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as revised 2013.

[6]Cleanup level is 30 milligrams per kilogram if benzene is detected and 100 milligrams per kilogram if benzene is not detected.

BTEX = benzene, toluene, ethylbenzene and xylenes

DRO = total petroleum hydrocarbons (TPH) as diesel-range organics

GRO = TPH as gasoline-range organics

ORO = TPH as oil-range organics

TPH = total petroleum hydrocarbons

Table 2
Soil Gas Analytical Results for Petroleum Hydrocarbons
Rosehill Property
Kirkland, Washington
Farallon PN: 2616-003

				Analytical Results (micrograms per cubic meter)								
				Non-carcinogenic Petroleum Compounds						Carcinogenic Petroleum Compounds		
Sample Location	Sample Date	Sample Identification	Sample Depth[1]	C5-C8 Aliphatics[2]	C9-C12 Aliphatics[2]	C9-C10 Aromatics[2]	Toluene[3]	Ethylbenzene[3]	Total Xylenes[3]	Benzene[3]	Naphthalene[3]	Total Petroleum Hydrocarbons[4]
MW10-SG	6/28/2024	MW10SG-062824	0.3	660	650	< 220	< 66	< 3.8	< 11.4	11	< 2.3	1,473
SG-01	4/16/2024	SG-01-041624	3.5	2,400	< 210	< 210	< 64	11	76.4	9.0	**4.9**	**2,743**
SG-02	4/16/2024	SG-02-041624	3.6	770	< 200	< 200	< 62	4.4	23.7	3.1	< 2.1	1,033
SG-03	7/11/2024	SG-03-071124	5.0	670	370	< 210	< 63	< 3.6	< 10.9	< 2.7	< 2.2	1,186
	10/8/2024	SG-03-100824	5.0	< 370	< 120	< 120	< 38	< 2.2	< 6.5	< 1.6	< 1.3	330
SG-04	7/11/2024	SG-04-071124	5.0	1,600	2,100	< 400	< 120	< 6.9	< 20.9	< 5.1	< 4.2	**3,979**
SG-05	7/11/2024	SG-05-071124	5.0	890	640	< 230	< 69	< 4	< 12	< 2.9	< 2.4	**1,690**
	10/8/2024	SG-05-100824	5.0	< 430	< 140	< 140	< 44	< 2.5	< 7.5	< 1.9	< 1.5	384
VP-01	7/11/2024	VP-01-071124	0.7	1,300	3,200	< 220	< 68	< 3.9	15.5	6.6	**13**	**4,681**
VP-02	10/8/2024	VP-02-100824	3.0	580	250	< 130	< 40	< 2.3	9.6	2.9	< 1.4	929
VP-03	10/8/2024	VP-03-100824	3.0	< 430	< 140	< 140	< 44	< 2.5	< 7.5	< 1.9	< 1.5	384
VP-04	10/8/2024	VP-04-100824	3.0	420	< 130	< 130	< 41	< 2.3	< 7.0	2.5	< 1.4	578
VP-05	10/8/2024	VP-05-100824	3.0	< 430	< 140	< 140	< 43	< 2.5	< 7.5	3.3	< 1.5	386
Site-Specific Soil Gas TPH Screening Levels[5]										**NA**	**NA**	**1,897**
MTCA Method B Subslab Soil Gas Screening Level - Residential Exposure[6]										**11**	**2.5**	**1,500**
MTCA Method B Subslab Soil Gas Screening Level for a Commercial Worker[6]										**50**	**11**	**13,000**

NOTES:

Results in **bold** and highlighted in yellow denote concentrations exceeding applicable screening levels.

< denotes analyte not detected at or exceeding the reporting limit listed.

TPH = total petroleum hydrocarbons

NA = not applicable

[1]Depth in feet below ground surface.

[2]Analyzed by Massachusetts Department of Environmental Protection Method MA-APH.

[3]Analyzed by U.S. Environmental Protection Agency Method TO-15.

[4]Sum of all non-carcinogenic and carcinogenic petroleum compounds. Non-detected values summed at 1/2 the reporting limit.

[5]Calculation of a site-specific TPH indoor air cleanup level and soil gas screening level is based on the example provided in Tables E-5, E-6, and E-7 of the Washington State Department of Ecology's Guidance for Evaluating Vapor Intrusion in Washington State, Publication No. 09-09-047, Final March 2022. The intermediate factor is as provided and explained in Table E-5.

[6]Washington State Model Toxics Control Act Cleanup Regulation Cleanup Levels and Risk Calculations, Standard Method B Values for Subslab Soil Gas Screening Level and Screening Level for Commercial Worker, dated July 2022, https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Contamination-clean-up-tools/CLARC