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January 7, 2022

ATTACHMENT F

Mr. Drew Zaborowski
Avenue 55, LLC
600 University Street, Suite 2305
Seattle, Washington 98101

SUBJECT: EXPOSURE PATHWAY EVALUATION REPORT
Redmond Flex
6900 188th Avenue Northeast
Redmond, Washington 98052
Project Number: 0970-017

Dear Mr. Zaborowski:

SoundEarth Strategies, Inc. (SoundEarth) has prepared this letter report to present the findings of the exposure pathway evaluation and risk quantification conducted for the Redmond Flex property located at 6900 188th Avenue Northeast in Redmond, Washington (the Property; Figure 1). This report includes the following:

- A summary of the known environmental conditions and soil sampling conducted to date at the Property.
- A summary of the remaining data gaps identified for the Property.
- An evaluation of exposure pathways and risks associated with the known and potential contamination at the Property.
- A summary of the feasible remedy that will be implemented to effectively mitigate the risks associated with the known and potential contamination at the Property.
- A quantification of the risk associated with remediation of the known and potentially contaminated soil at the Property.
- A summary of the proposed scope of work and estimated costs for a supplemental subsurface investigation to address the remaining data gaps at the Property.

PROPERTY DESCRIPTION

The Property consists of an irregular-shaped tax parcel (King County Parcel No. 128630-0012) that covers approximately 254,687 square feet (5.85 acres) of land. The Property is currently undeveloped. Several temporary structures and storage containers are present on the Property, including a mobile office trailer, sheds, dumpsters, truck trailers and semitrailers, and heavy equipment. Adjoining properties include gravel pits and associated areas operated by Cadman Inc to the north and east, Southeast Redmond Park to the south, and a FedEx Ground Distribution Center beyond the 188th Avenue Northeast right-of-way to the west. Land uses on surrounding properties include commercial, recreational, and mining.

The Property is planned to be redeveloped with one slab-on-grade building and an associated parking lot, access road, and stormwater vault. Construction of the building would require excavation to a maximum depth of 9 feet below ground surface (bgs) in the area of a proposed stormwater vault on the northwestern portion of the Property. It is anticipated that grading and excavation on the remainder of the Property would be conducted to a depth of less than 2 feet bgs.

SUMMARY OF PREVIOUS INVESTIGATIONS AND KNOWN ENVIRONMENTAL CONDITIONS

SoundEarth previously conducted two Phase I Environmental Site Assessments (ESAs) in November 2020 and December 2021 and a limited subsurface investigation in May and June 2021. These investigations are summarized in the following sections.

Phase I ESAs (November 2020 and December 2021)

SoundEarth conducted two Phase I ESAs at the Property; the respective reports are dated November 16, 2020, and December 28, 2021. The Phase I ESAs identified the following recognized environmental condition:

- **The confirmed presence of contaminated fill material beneath the Property.** Aerial photographs suggest that the Property was historically part of the gravel mine that currently operates on adjoining properties. Commonly, imported fill material is used to replace the gravel that has been excavated and removed from such mines. Up to 35 feet of fill material was encountered during redevelopment of the west-adjoining property. Impacts related to that fill material included petroleum hydrocarbons and carcinogenic polycyclic aromatic hydrocarbons (cPAHs) in soil and arsenic in groundwater. The arsenic-impacted groundwater was reportedly a result of storm and process water discharged to groundwater from the nearby Cadman Inc gravel mine.

Limited Subsurface Soil Investigation (May and June 2021)

SoundEarth conducted a limited subsurface soil investigation to evaluate the nature of the fill material at the Property in May and June 2021. This investigation included the advancement of 10 test pits to depths of 3 to 5 feet bgs in the locations shown on Figure 2. Test pit locations were selected based on areas that are likely to be graded during planned redevelopment activities.

Gasoline- and oil-range petroleum hydrocarbons were detected at concentrations below the applicable Washington State Model Toxics Control Act (MTCA) Method A cleanup levels in test pit TP01, located on the western portion of the Property, at a depth of approximately 5 feet bgs. The cPAH benzo(a)pyrene was detected at concentrations exceeding the applicable MTCA Method A cleanup level at a depth of approximately 1 foot bgs in test pits TP07 and TP10, which are located on the eastern portion of the Property. The concentration of benzo(a)pyrene detected in the soil sample collected at a depth of approximately 3 feet bgs from test pit TP07 was below the MTCA Method A cleanup level, indicating that cPAH impacts appear to be limited to the upper 1 to 2 feet of soil. Concentrations of metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) were not detected in soil at concentrations exceeding applicable MTCA cleanup levels during this investigation.

The results of the limited subsurface soil investigation indicate that petroleum hydrocarbons and metals are not present at concentrations exceeding applicable MTCA cleanup levels in the explored areas of the Property. Elevated cPAH concentrations associated with the fill material beneath the Property were

observed in one localized area on the eastern portion of the Property at a depth of 1 foot bgs, indicating that cPAH impacts in soil are limited in lateral and vertical extent.

REMAINING DATA GAPS

Soil

Test pit locations during SoundEarth's 2021 limited subsurface soil investigation were selected based on the areas that are likely to be graded or excavated during planned redevelopment activities. Soil conditions beneath the northeastern, southeastern, southwestern, and central portions of the Property were not evaluated during this investigation. The results of the test pit soil sampling indicated that cPAHs were not present at concentrations exceeding the MTCA Method A cleanup level in shallow soil collected from the majority of the test pits, with the exception of two test pits advanced in a localized area in the eastern portion of the Property. Based on these findings, cPAH impacts in shallow soil beneath the Property appear to be limited in lateral and vertical extent. However, given the heterogeneous nature of fill material that is present throughout the Property, the potential presence of cPAHs in soil at concentrations exceeding applicable cleanup levels beneath the northeastern, southeastern, southwestern, and central portions of the Property remains a data gap.

Groundwater

Previous subsurface investigations conducted by SLR Consulting (SLR) at the west-adjacent FedEx Ground Distribution Center property have identified concentrations of dissolved arsenic exceeding the MTCA Method A cleanup level in groundwater beneath the southeastern portion of the property. Concentrations ranged from 5.6 to 86 micrograms per liter ($\mu\text{g/L}$). These elevated arsenic concentrations have been attributed by SLR to the upgradient Cadman Inc property, which maintains large infiltration ponds for the discharge of storm and process water to groundwater. The majority of the detected arsenic concentrations fall within the range of natural background arsenic concentrations for the Puget Sound lowlands (0.8 to 76 $\mu\text{g/L}$), as determined by Ecology in its July 2021 draft study on Natural Background Groundwater Arsenic Concentrations in Washington State. Based on SLR's investigations, groundwater flow beneath the west-adjacent property is generally to the southeast. However, the findings of regional groundwater studies conducted by the City of Redmond have shown that groundwater flow direction in the vicinity of the Property is generally toward the west-southwest. Given the uncertainty regarding groundwater flow direction and the known presence of elevated arsenic concentrations in groundwater on the west-adjacent property, the potential presence of arsenic in groundwater beneath the Property is considered a remaining data gap.

EXPOSURE PATHWAY EVALUATION

Environmental Fate and Transport

The known and potential contaminants of concern at the Property include cPAHs in soil and arsenic in groundwater.

The principal contaminant fate and transport mechanism for cPAHs in soil at the Property is adsorption. Because cPAHs have a strong capacity for adsorption to soil and low aqueous solubility, downward leaching of cPAHs through most soil profiles is typically limited to near-surface soil (i.e., low risk of affecting groundwater quality). This is supported by the data obtained during SoundEarth's test pit evaluation, which indicate that cPAH concentrations in soil do not extend to depths greater than 1 to 2 feet bgs.

The solubility of arsenic is generally a function of pH, oxidation-reduction potential, hardness, or salinity. Arsenic is most soluble in soft, acidic waters. In general, the mobility of arsenic will increase in environments with low pH (typically pH less than 4) due to the enhanced solubility of arsenic in acidic conditions, while neutral to reducing subsurface conditions will encourage arsenic compounds to precipitate and be adsorbed to the soil.

Exposure Pathways

Based on contaminant fate and transport mechanisms for cPAHs and arsenic, the environmental media of concern include near-surface soil and potentially groundwater beneath the Property.

Soil

Soil with concentrations of cPAHs exceeding applicable MTCA Method A cleanup levels presents a potential risk to human receptors. The potential exposure pathways for soil at the Property include direct contact with soil or inhalation of airborne soil particles. The potential exposure pathways for soil are discussed in the sections below:

- **Dermal Contact and Ingestion (Direct Contact) of Contaminated Soil.** Soil contaminated with cPAHs is present in localized portions of the Property to an approximate depth of 2 feet bgs. This pathway may be complete for environmental field personnel and construction and utility workers who may come into contact with contaminated soil during excavation and grading activities during the planned Property redevelopment. When the Property is redeveloped, source removal and engineering controls to manage any residual soil contamination will eliminate the dermal contact pathway for potential future receptors.
- **Inhalation of Airborne Soil.** The exposure pathway for inhalation of airborne soil particles during excavation and construction activities on the Property may be complete for potential receptors, including environmental field personnel and construction and utility workers during redevelopment. The inhalation exposure pathway can be mitigated through the use of dust control measures during soil handling activities.

Other soil exposure pathways, including leaching to groundwater, are considered incomplete for the Property based on the available data and the fate and transport characteristics of cPAHs.

Groundwater

Groundwater contaminated with arsenic at concentrations exceeding the MTCA Method A cleanup level that may have migrated onto the Property does not present a risk of exposure to potential human receptors given the redevelopment plans for the Property and the fate and transport characteristics of arsenic. Based on previous investigations conducted on surrounding properties, groundwater in the vicinity of the Property is present at depths of 30 feet or greater. Limited and discontinuous perched groundwater was encountered in soil borings advanced on the west-adjacent property at depths between 11 and 19 feet bgs. Groundwater is not anticipated to be encountered during the planned redevelopment work, as the maximum excavation depth is anticipated to be 9 feet bgs for the installation of a stormwater vault. Additionally, the new development will be connected to the municipal water supply, and groundwater at the Property

is not a current or future source of drinking water. As such, the exposure pathways for direct contact and ingestion of contaminated groundwater are considered incomplete.

Vapor

The vapor inhalation pathway is considered incomplete for the Property. The contaminants of concern are not sufficiently volatile to partition from soil or groundwater and do not present a vapor intrusion risk for the future building at the Property.

FEASIBLE REMEDY TO MITIGATE EXPOSURE RISK

Based on the planned land use for the Property, the proposed remedy to mitigate the exposure risks associated with cPAH-contaminated soil at the Property includes the management and disposal of contaminated soil that may be removed during excavation and grading associated with the planned redevelopment. Given that the planned redevelopment involves the construction of a slab-on-grade building with minimal excavation and grading for utilities and other subsurface features, it is not feasible to remove the full extent of known and potentially contaminated soil, as shown on Figure 2, in conjunction with the planned redevelopment activities. Based on the current redevelopment plans, it is estimated that approximately 50 percent of the known or potentially contaminated soil may be excavated during redevelopment activities. Any excavated soil with cPAH concentrations exceeding the MTCA Method A cleanup level will be handled as Class 3 contaminated material and will be transported to a Subtitle D landfill for proper disposal.

Any residual contaminated soil that may remain in place following redevelopment activities would be managed through the use of engineering and institutional controls. Following redevelopment, the majority of the Property will be covered by a building or a paved parking lot, which would serve as a cap preventing direct contact with the residual contaminated soil. An environmental covenant would be recorded for the Property to ensure that conditions remain protective of human health and the environment. Given the nature of the contaminants of concern for the Property and the evaluation of applicable exposure pathways, these engineering and institutional controls would effectively mitigate the exposure risk for potential receptors at the Property.

RISK QUANTIFICATION

SoundEarth conducted an evaluation of the quantifiable risk associated with the proposed remedy to address cPAH-contaminated soil at the Property. Based on the available data and the vertical extent of cPAH impacts of approximately 2 feet bgs, the estimated volume of cPAH-contaminated soil potentially present at the Property is approximately 18,000 tons. The risk quantifications presented are rough order of magnitude (ROM) costs based on other project sites with similar conditions and land use. ROM costs are subject to change. The components and assumptions of the risk quantification include the following:

- **Disposal of Contaminated Soil.** Soil removed from the Property during redevelopment activities that contains concentrations of cPAHs exceeding MTCA Method A cleanup levels would be disposed of as Class 3 material at a Subtitle D landfill. The risk quantification assumes an incremental cost of \$40 per ton for disposal of this material. Soil handling and transportation are considered development related costs and are not included in the risk quantification. Based on redevelopment plans, it is assumed that approximately 50 percent of the total estimated volume of cPAH-contaminated soil potentially present at the Property (approximately 9,000 tons) may be removed and disposed of off the Property.

- **Health and Safety and Management of Contaminated Material.** The risk quantification includes the anticipated incremental cost associated with handling and segregation of contaminated material during redevelopment activities, as well as the implementation of health and safety measures for environmental and construction personnel to minimize risk of exposure to contaminants during redevelopment. Waste characterization sampling and consulting support is also included in this quantification.
- **Reporting, Environmental Covenant, and Regulatory Support.** At the completion of redevelopment and remedial activities, a Remedial Investigation, Feasibility Study, and Cleanup Action Report would be prepared for submittal to the Washington State Department of Ecology to document the site conditions and the completed remedial action. If residual contaminated soil or arsenic-contaminated groundwater remains in place, an Environmental Covenant would be recorded for the Property.
- **Data Gap Investigation.** To address the remaining data gaps and further evaluate the extent of cPAH impacts in soil to refine the estimated quantities of cPAH-contaminated soil that may be removed during redevelopment activities, a supplemental subsurface investigation would be conducted, as described in the following section of this report. The investigation would also evaluate the groundwater conditions beneath the Property.

The quantified risk amounts associated with the components described above are presented in the following table:

Incremental Cost Component	Estimated Risk Amount
Disposal of Contaminated Soil (9,000 tons at \$40 per ton)	\$360,000
Health and Safety and Management of Contaminated Material	\$100,000
Reporting, Environmental Covenant, and Regulatory Support	\$50,000
Data Gap Investigation	\$35,000
Total	\$545,000

SUMMARY OF PROPOSED SCOPE OF WORK FOR DATA GAP INVESTIGATION

To address the remaining data gaps and further evaluate the extent of cPAH-contaminated soil, SoundEarth proposes to conduct a supplemental subsurface investigation of soil and groundwater at the Property. The proposed scope of work includes the advancement of nine additional test pits in previously unexplored locations, as shown on Figure 3, to a depth of approximately 5 feet bgs. Up to two soil samples per test pit would be submitted for laboratory analysis of cPAHs.

Additionally, to evaluate the potential for arsenic in groundwater that may have migrated beneath the Property, two monitoring wells would be installed to a depth of approximately 50 feet bgs, depending on observed groundwater conditions, on the northern portion of the Property (Figure 3). The monitoring wells would be advanced using a hollow-stem auger drill rig. The monitoring wells would be developed following installation, and groundwater samples would be collected from each monitoring well using standard low-flow methodology and submitted for laboratory analysis of dissolved arsenic.

LIMITATIONS

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, expressed or implied, is made. These services were performed consistent with SoundEarth's agreement with the client. This report is solely for the use and information of SoundEarth's client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report are derived, in part, from data gathered by others, and from conditions evaluated when services were performed, and are intended only for the client, purposes, locations, time frames, and project parameters indicated. SoundEarth does not warrant and is not responsible for the accuracy or validity of work performed by others, or for the impacts of changes in environmental standards, practices, or regulations subsequent to performance of services. SoundEarth does not warrant the use of segregated portions of this report.

CLOSING

SoundEarth appreciates the opportunity to provide technical services for this project. Please contact either of the undersigned at 206-306-1900 with questions.

Respectfully,

SoundEarth Strategies, Inc.

Clare Tochilin, LG
Associate Geologist

Chris Carter
Managing Principal

Attachments: Figure 1, Property Location Map
Figure 2, Extent of Known or Potentially Contaminated Soil
Figure 3, Proposed Additional Exploration Locations

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FIGURES





