Appendix L
DRAFT Remedial Investigation Report
Vapor Intrusion Assessment Amendment
January 27, 2022

Memorandum

27 January 2022

To	Kaia Petersen, Department of Ecology, kpet461@ECY.WA.GOV		
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From	Jeff Gaarder, GHD Inc.	**Tel**	425.563.6504
Subject	701 Bozarth Ave, Woodland WA, Draft Remedial Investigation Report - Vapor Intrusion Assessment Amendment - Due 1/28/22	**Project no.**	11218521

GHD Inc. (GHD) has prepared this memo as requested by the Department of Ecology in their January 20, 2022 email for the subject site. The memo presents the findings of the initial assessment of the vapor intrusion (VI) pathway following the steps outlined in Appendix B of *Ecology's November 2021 Draft Guidance for Evaluating Vapor Intrusion in Washington.* The VI assessment amends the *Draft Remedial Investigation Report (RI)* issued to Ecology on May 18, 2020.

GHD followed the eight-step process in Appendix B for the neighboring properties and the results are presented below:

STEP 1: Confirm the release. See RI Section 2.2 Site Discovery and Regulatory Status

STEP 2: Determine if an immediate action is necessary. There are no safety concerns or acute exposure threats from vapor intrusion, therefore immediate action is unnecessary. See RI Section 6 Interim Actions for remedial work performed between 1985 and 2016.

STEP 3: Characterize the site and develop a conceptual site model (CSM). *See RI Section 6 Conceptual Site Model.*

STEP 4: Evaluate whether there are any contaminants besides petroleum. See RI Section 8 Areas Requiring Future Management. As discussed, other non-petroleum constituents have been detected, however, the primary constituents of concern are petroleum.

STEP 5: Determine if there are precluding factors. Based on the RI findings, it is unlikely that there are precluding factors as listed below, that would prevent using this process for assessing the VI pathway.

a. Changing site conditions, such as an expanding plume or planned development above/adjacent to the contamination.
b. Preferential pathways.
c. Extremely low soil moisture content.
d. Limited oxygen in the soil due to the presence of relatively impermeable ground cover surrounding the building of interest, large structures, or methanogenesis (due to the release of higher ethanol blends of gasoline or the presence of very high organic material in the soil).
e. The presence of lead scavengers in the released fuel.
f. The presence of other additives in the released fuel that may aerobically biodegrade more slowly than benzene.
g. Subsurface petroleum VOC contamination in direct contact with the building's foundation.

STEP 6: Determine if buildings are within the lateral inclusion zone. The degree and extent of contamination at the Site is well defined and the dissolved phase plume is stable or

receding. Consequently, a horizontal separation distance of 30 feet is appropriate for establishing a lateral inclusion zone for the vapor intrusion pathway. As shown on the attached Figure 3, neither the MTCA Site Boundary nor the 30 ft horizontal separation boundary intersect neighboring structures located on the north, east or south sides of the Site. **Therefore, the initial vapor intrusion pathway assessment is complete for the neighboring properties and the final two steps of this process (7 and 8) are unnecessary.** Note that the property structures within the Site if occupied do represent a potential vapor intrusion data gap, however, this will be addressed as part of the final cleanup action.

The initial VI assessment presented above will be added to the RI following the public comment period as shown in the second paragraph of Section 8.4 below:

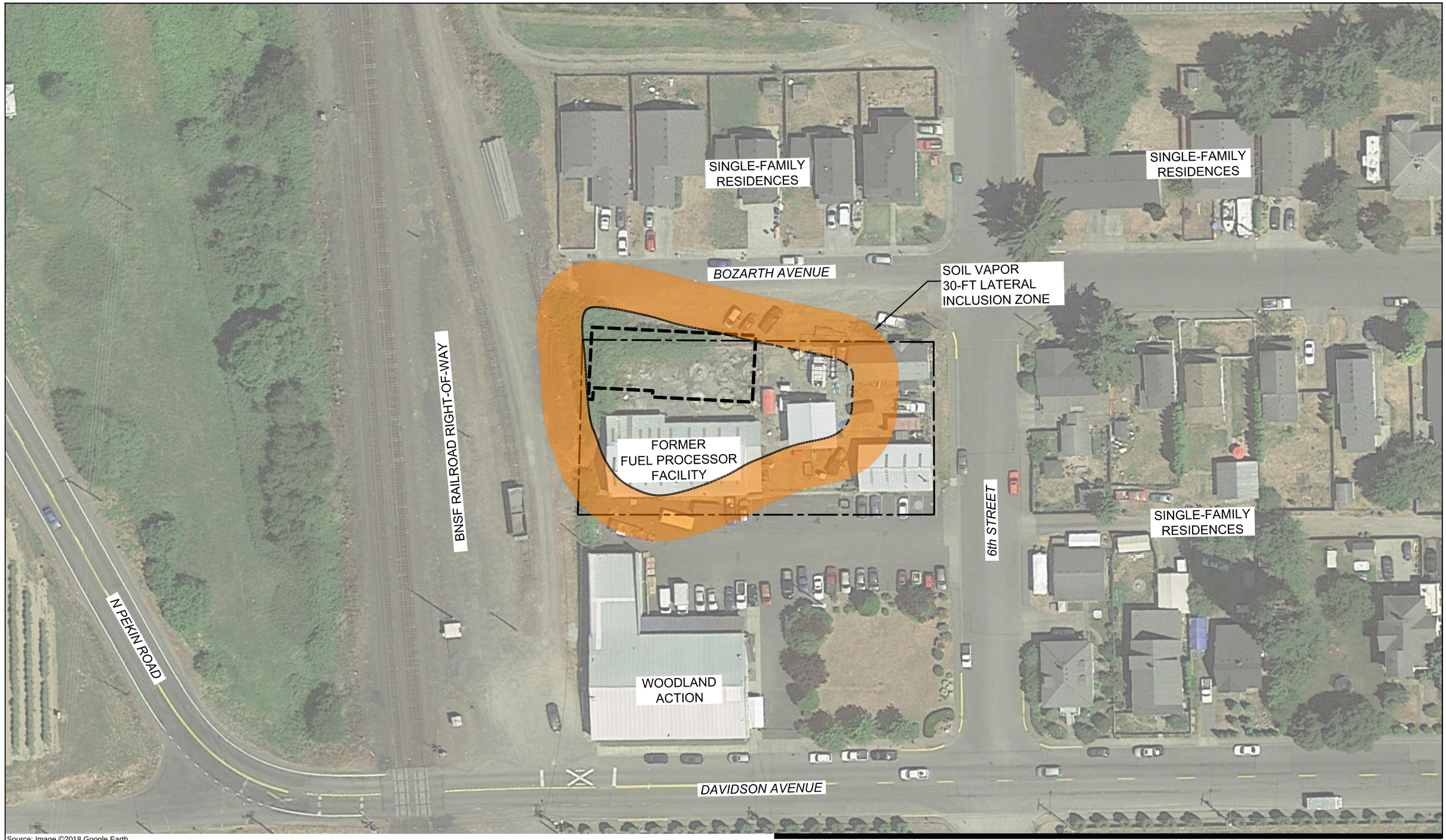
> **8.4 Soil Vapor Requiring Future Management**
>
> *Based on a review of previous subsurface investigations at the Site, the soil vapor intrusion pathway at the Site represents a data gap. Shallow petroleum-impacted soil and groundwater are present within the footprint of the warehouse building and within approximately 20 to 25 feet of the on-Property house and shop building. The shallow petroleum-impacted soil and groundwater is also present within approximately 35 to 85 feet of the south and north adjoining property buildings. Additionally, SPH is present within at least 40 feet of on-Property buildings and within 100 feet of adjoining property buildings. Based on the current and proposed mixed-use of the Property and adjoining properties as residential and light industrial, the soil vapor intrusion pathway at the Site requires further evaluation.*
>
> *As a result, an initial assessment of the vapor intrusion pathway was conducted as outlined in Ecology's November 2021 Draft Guidance for Evaluating Vapor Intrusion in Washington. GHD followed the steps outlined in Appendix B to evaluate the vapor intrusion pathway for the neighboring properties located beyond the MTCA Site Boundary as shown on Figure 3. Pursuant to Step 6 of the Appendix B process, GHD believes the degree and extent of contamination at the Site is well defined and the dissolved phase plume is stable or receding. Consequently, a horizontal separation distance of 30 feet is appropriate for establishing a lateral inclusion zone for the vapor intrusion pathway. As shown on Figure 3, neither the MTCA Site Boundary nor the 30 ft horizontal separation boundary intersect neighboring structures located on the north, east or south sides of the Site. Therefore, the initial vapor intrusion pathway assessment is complete for the neighboring properties. Note that the property structures within the Site if occupied do represent a potential vapor intrusion data gap, however, this will be addressed as part of the final cleanup action.*

Please contact us if you have questions or would like to discuss the contents of this memo.

Regards,

Jeff Gaarder
Principal

Brian Peters
Associate



Source: Image ©2018 Google Earth.

LEGEND

SUBJECT SITE BOUNDARY

MODEL TOXICS CONTROL ACT (MTCA) SITE BOUNDARY, DASHED WHERE INFERRED

0 30 60 ft

1" = 60 ft

Coordinate System: STATE PLANE WA-NAD83-SF

N

GHD

FUEL PROCESSORS FACILITY
701 BOZARTH AVENUE
WOODLAND, WASHINGTON

AREA MAP

Project No. **11218521**
Date **January 2022**

FIGURE 3

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