

State of Oregon
Department of Environmental Quality

Memorandum

Date: April 26, 2024

To: ORMS, LUST24-19-1063 and LUST24-91-4344

Through: Bruce Scherzinger, Lead Worker
Peter Donahower, Section Manager

From: Ellen Woods, Project Manager
Western Region

Subject: Front and Center, LUST #24-19-1063; Hayden Saab Service, LUST #24-91-4344;
Staff Memorandum in support of a Conditional No Further Action determination

This document presents the basis for the Oregon Department of Environmental Quality's (DEQ's) recommended Conditional No Further Action (NFA) determination for the Front and Center and former Hayden Saab Service site in Salem, OR. As discussed in this report, contaminant concentrations in soil, groundwater, and soil gas remaining at the site are not likely to pose a threat to human health and the environment, with certain conditions.

The proposed Conditional NFA meets the requirements of Oregon Administrative Rules Chapter 340, Division 122, Sections 0205 to 0360.

The proposal is based on information documented in the administrative record for this site. A copy of the administrative record index is presented at the end of this report.

1. BACKGROUND

Site location.

The site's location can be described as follows (see Figure 1 for vicinity map):

- Address: 240-270 Center Street NE, Salem, Marion County, Oregon.
- Latitude: 44.9438 N, Longitude: -123.0401 W.
- Marion County Map Township 07 South, Range 03 West, Section 22, and tax lot 3400 (formerly tax lots 3100 and 3200).

Site setting.

The site covers approximately 0.41 acres in the northern portion of tax lot 3400. The site and property do not contain any buildings and the site is currently being used as an outdoor storage facility for various construction materials (Figure 2). The property is bounded to the north by Center Street NE and to the east by Front Street NE. The tax lot immediately west adjacent of the site also does not contain any buildings: buildings formerly on this tax lot have been demolished in preparation for redevelopment of the site by the Urban Renewal Agency of the City of Salem. On the south end of the same city block as the site is a recently developed urban residential

apartment structure with a lower-level business, an office for the Willamette Health Council, and a small parking lot.

Physical setting.

The site is generally flat and located at approximately 159 feet above mean sea level. Borings at the site encountered four inches of asphalt and two inches of coarse gravel. Soils underneath the paved material at the site consist of 14 feet of interbedded silts and sands underlain by well-graded gravel/gravel-sand to at least 25 feet below ground surface (bgs). Groundwater was encountered between 18 to 22 feet bgs during environmental investigation activities. The groundwater flow direction at the site is generally north-northeast. However, groundwater flow direction has also been recorded at other sites nearby as flowing south-southwest. The closest surface water body to the site is the Willamette River, which flows north.

Site history.

The site previously consisted of two tax lots, 3100 and 3200. The site was developed for residential use in 1884 and remained as such until the 1930s. From the 1930s through the 1970s, a retail service station and automobile repair shop operated within former tax lot 3200. Hayden Saab Service took over operations from the 1980s until 2005. Since the 1930s, former tax lot 3100 had been used as a parking and used car lot. The Urban Renewal Agency of the City of Salem purchased tax lots 3100 and 3200 in 2019. Both tax lots have since been combined with the previously south-adjacent tax lot to form tax lot 3400 (see Figure 2). The site and remainder of the tax lot does not contain any buildings and the site is currently being used as an outdoor storage facility for various construction materials.

2. BENEFICIAL LAND AND WATER USE DETERMINATIONS

Land use.

The site and all adjacent properties are zoned as Central Business District (CB). The CB zoning designation allows for the implementation of the central business district designation of the Salem Area Comprehensive Plan by permitting compact integration of residential, retail, and commercial purposes. These enterprises together are designed to encourage convenient pedestrian access. The site is anticipated to be developed for first-floor retail and commercial purposes with second-floor residential units.

Groundwater use.

Groundwater at the site has been encountered between 18 to 22 feet bgs. A beneficial water use survey was conducted for the site. According to the Oregon Water Resources Department Database, no water wells were identified within 0.25 miles of the site. Municipal water is supplied to the site and to surrounding properties by the City of Salem. The City of Salem obtains its drinking water from the North Santiam River watershed. The watershed encompasses more than 490,000 acres of land extending from Mt. Jefferson and Three-Fingered Jack of the Cascade Mountains to the City's water intake, north of Stayton.

Surface water use.

There are no surface water bodies at the site or in the immediate vicinity. The closest surface water body to the site is the Willamette River, located approximately 550 feet west of the site.

The site is currently covered in concrete. Stormwater is directed to drains and catchments that flow into the municipal storm sewer system.

3. INVESTIGATION AND CLEANUP WORK

In 1990, two 10,000-gallon underground storage tanks (USTs) were decommissioned by removal from the site. During decommissioning, two soil samples were collected and analyzed for total petroleum hydrocarbons (TPH). Both soil samples measured TPH at 15 milligrams per kilograms (mg/Kg). A release report was submitted to DEQ, leading to the creation of LUST # 24-91-4344 Hayden Saab Service, in March 1992. No additional site investigation or cleanup activities were conducted at the site until a Phase I Environmental Site Assessment (ESA) in March 2018.

The Phase I ESA indicated that one 1,000-gallon waste oil UST and one 550-gallon waste oil UST may have been left in place after the UST decommissioning activities in 1990. A Phase II ESA was then conducted in May 2018 to investigate potential contamination from these USTs, as well as the documented gasoline release associated with LUST # 24-91-4344, Hayden Saab Service. A geophysical survey was conducted to identify the locations of the potential waste oil USTs. The survey identified two subsurface anomalies that may have been associated with the waste oil USTs near the center of former tax lot 3200, but no USTs were encountered during subsequent soil excavation activities in this area. During site reconnaissance, features associated with two hydraulic lifts and a concrete utility vault were also identified. Figure 3 depicts a site map with former features, former tax lots and sampling locations from throughout the site's investigative history.

Five borings were advanced at the site within former tax lot 3200 to investigate potential contamination from the waste oil USTs and the historic gasoline release. One soil sample and one groundwater sample were collected from each boring. The five soil samples were collected from depths ranging from 17 feet to 22 feet bgs. Soil and groundwater samples were analyzed for TPH, volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), metals and polychlorinated biphenyls (PCBs). PCBs were not detected in any soil or groundwater samples.

Gasoline contamination was detected in three of the five soil samples, with concentrations ranging from 252 mg/Kg to 1,040 mg/Kg. Relatively lower concentrations of diesel were detected in the same three samples, with detections ranging from 42.4 mg/Kg to 478 mg/Kg. Oil was only detected in one sample at a concentration of 44.9 mg/Kg. Various VOCs and PAHs were also detected at relatively low concentrations. Chromium and lead were detected at concentrations below naturally occurring background levels for the South Willamette Valley.

Elevated concentrations of gasoline were detected in groundwater samples from four of the five borings, ranging from 19,400 micrograms per liter (µg/L) to 26,600 µg/L. As with the soil results, concentrations of diesel and oil were detected at significantly lower concentrations: 593 µg/L to

5,770 µg/L (diesel) and 3,720 µg/L to 3,908 µg/L (oil). Ethylbenzene was detected at concentrations ranging from 143 µg/L to 1,390 µg/L. Relatively lower concentration of other VOCs, PAHs, chromium and lead were also detected. Due to detections of contamination in soil and groundwater in this area of the property that could be potentially attributed to the former waste oil tanks, a new release was reported to DEQ and LUST file # 24-19-1063, Front and Center, was opened.

The results from the Phase II ESA prompted a supplemental Phase II ESA to delineate soil and groundwater contamination and evaluate the need for site cleanup. A total of 11 borings were advanced within former tax lot 3200 in March 2020. Soil samples were collected from seven borings, with two samples collected from each boring: one shallow subsurface sample from 0 feet to 3 feet bgs and one deeper subsurface sample from 18 feet to 20 feet bgs. Groundwater samples were collected from 10 borings. Soil and groundwater samples were analyzed for TPH, VOCs, PAHs and metals.

Gasoline and diesel were primarily detected in deeper subsurface samples. Gasoline contamination was detected in five soil samples, with concentrations ranging from 56.3 mg/Kg to 713 mg/Kg. Concentrations of diesel were detected in three samples, with detections ranging from 53.2 mg/Kg to 131 mg/Kg. Oil was only detected in three of the shallow soil samples, at concentrations ranging from 95.5 mg/Kg to 469 mg/Kg. Ethylbenzene was also detected in three shallow soil samples at concentrations ranging from 0.0176 mg/Kg to 7.04 mg/Kg. Various other VOCs and PAHs were detected at relatively low concentrations. Lead was detected at concentrations above naturally occurring background levels for the South Willamette Valley in five of the seven shallow soil samples.

Like the initial Phase II ESA, elevated concentrations of gasoline were detected in groundwater samples, ranging from 619 µg/L to 34,400 µg/L. Concentrations of diesel and oil were detected at significantly lower concentrations: 228 µg/L to 5,700 µg/L (diesel) and 352 µg/L to 1,050 µg/L (oil). Ethylbenzene was detected at concentrations ranging from 19.7 µg/L to 2,450 µg/L. Other VOCs, PAHs, and metals were also detected at relatively low concentrations. An additional groundwater investigation was conducted in September 2020 in the northwest and southeast corners of the site, where elevated concentrations of gasoline (732 µg/L to 45,000 µg/L) and significantly higher concentrations diesel (532 µg/L to 94,400 µg/L) and oil (838 µg/L to 11,800 µg/L) were observed.

A soil gas investigation was also conducted as part of the supplemental Phase II ESA in March 2020. Three borings were advanced in the area of the suspected waste oil tanks, hydraulic lifts and concrete vault. Two additional borings were advanced near the site's property line that is adjacent to Center Street NE. Each sample was analyzed for VOCs. Elevated concentrations of ethylbenzene (120 micrograms/cubic meters [µg/m³]) and n-hexane (31,000 µg/m³) were detected. Relatively low concentrations of other VOCs were detected in each of the samples.

The results of the supplemental Phase II ESA and groundwater investigation promoted cleanup at the site. Approximately 50 gallons of hydraulic fluid was pumped out of the two hydraulic lifts, in addition to approximately 5 gallons of water from the utility vault. The remnants of the hydraulic

lifts and concrete vault were removed from the site. Approximately 365 tons of petroleum contaminated soils were excavated from the area of the suspected waste oil USTs, hydraulic lifts and concrete vault. The resulting excavation area was approximately 40 feet by 25 feet, with a depth of 12 feet bgs. Confirmation soil samples from the bottom of the resulting excavation and its sidewalls did not show any detections of total petroleum hydrocarbons, indicating that impacted soils were successfully removed in this area of the site. Contaminated soils were removed from the site and disposed at Coffin Butte Landfill.

Nature and extent of contamination.

Soil and groundwater at the site were contaminated by a release that is suspected to have been the result of a petroleum leak from one or more USTs. The contaminants of interest in soil and groundwater include:

- TPH as gasoline, diesel and oil
- VOCs
- PAHs
- Lead

The contaminants of interest in soil gas include:

- VOCs

Prior to any soil excavation, impacted soils were primarily encountered at depths ranging from 16 feet to over 20 feet bgs throughout the central portion of former tax lot 3200. Petroleum contaminated soils in the area of the former waste oil USTs, hydraulic lifts and concrete vault area of the site were successfully excavated. Residual soil contamination remains at the site outside of the remedial excavation area.

Two plumes of contaminated groundwater were observed at the site at depths ranging from approximately 18 feet to 22 feet bgs (Figure 3). One plume is estimated to span the majority of the site, emanating from the center of former tax lot 3200 and slightly extending underneath the western sidewalk, with an isolated area of elevated contaminant concentrations in the northwest corner of former tax lot 3200. This isolated area of elevated contamination extends slightly underneath the Center Street NE right-of-way. The other plume was observed in the southeast corner of former tax lot 3200, with higher contaminant concentrations observed in this area than in any other groundwater samples. This suggests that another source may be impacting groundwater conditions in this area of the site.

At least one VOC was detected in each soil gas sample collected at the site. The highest concentrations of VOCs were detected in the soil gas sample collected near the suspected waste oil USTs and concrete vault. Soil in this area were excavated after the soil gas samples were collected. Results of the soil gas assessment are discussed in the Contaminant Concentrations section below.

4. RISK EVALUATION

Conceptual site model.

To evaluate human exposure to residual chemical contamination requires an assessment of the type and extent of that exposure. This is based on current and reasonably likely future site use. DEQ publishes risk-based concentrations (RBCs) for contaminants commonly encountered, for different types of exposure scenarios. These RBCs are conservative estimates of protective levels of contaminants in soil, groundwater and air. Table 1 shows potential exposure pathways and receptors for this site. Based on this, applicable RBCs are identified and used for risk screening.

Pathways by which soil contamination at the site could reach human receptors include:

- Soil ingestion, dermal contact, and inhalation for urban residential, occupational, construction and excavation worker receptors,
- Volatilization to outdoor air for urban residential and occupational receptors, and
- Vapor intrusion into indoor air for urban residential and occupational receptors.

Pathways by which groundwater contamination at the site could reach human receptors include:

- Groundwater ingestion, dermal contact, and inhalation for construction and excavation workers,
- Volatilization to outdoor air for urban residential and occupational receptors, and
- Vapor intrusion into indoor air for urban residential and occupational receptors.

Pathways by which soil gas contamination at the site could reach human receptors include:

- Vapor inhalation for urban residential and occupational receptors.

Contaminant concentrations.

Shallow soils (0 feet to 3 feet bgs)

Concentrations of gasoline, diesel, VOCs and PAHs were not detected in shallow soils remaining onsite. The highest concentration of residual oil contamination in shallow soils was observed to be 156 mg/Kg, in a location between one of the suspected waste oil tanks and the previously excavated fuel lines from the retail service station operation (see location GP-12 in Figure 3). This concentration of oil does not exceed any RBCs for the applicable urban residential, occupational, construction worker or excavation worker soil exposure pathways listed previously. Lead was detected in shallow soil at this location at a concentration exceeding naturally occurring background levels for the region (28 mg/Kg) and soil ingestion, dermal contact and inhalation RBCs:

Contaminant	Max. Concentration Detected	RBCss			
		Urban Residential	Occupational	Construction Worker	Excavation Worker
Lead	1,310 mg/Kg	400 mg/Kg	800 mg/Kg	800 mg/Kg	800 mg/Kg

RBCss = Soil ingestion, dermal contact and inhalation.

Subsurface soils (deeper than 3 feet bgs)

Concentrations of oil were not detected in deeper subsurface soils remaining onsite. The highest concentrations of the following contaminants of interest were observed at various locations (see Figure 3) at the site. None of the concentrations for the contaminants of interest observed in subsurface soils exceed RBCs for the applicable urban residential, occupational, construction worker or excavation worker soil exposure pathways:

Contaminant	Sampling Location	Max. Concentration Detected	RBCss		RBCso	
			Construction Worker	Excavation Worker	Urban Residential	Occupational
Diesel	GP-12	95.6 mg/Kg	4,600 mg/Kg	>Max	>Max	>Max
Gasoline	GP-7	1,190 mg/Kg	9,700 mg/Kg	>Max	5,900 mg/Kg	69,000 mg/Kg
1,2,4-Trimethylbenzene	GP-7	47.4 mg/Kg	2,900 mg/Kg	81,000 mg/Kg	>Csat	>Csat
1,3,5-Trimethylbenzene	GP-7	13.3 mg/Kg	2,900 mg/Kg	81,000 mg/Kg	>Csat	>Csat
Ethylbenzene	GP-1	12 mg/Kg	1,700 mg/Kg	49,000 mg/Kg	85 mg/Kg	160 mg/Kg
Naphthalene	GP-1	7.52 mg/Kg	580 mg/Kg	16,000 mg/Kg	15 mg/Kg	83 mg/Kg
Total xylenes	GP-1	46.5 mg/Kg	20,000 mg/Kg	560,000 mg/Kg	>Csat	>Csat
Lead	GP-1	8.81 mg/Kg	800 mg/Kg	800 mg/Kg	Nonvolatile	Nonvolatile

RBCss = Soil ingestion, dermal contact and inhalation.

RBCso = Volatilization to outdoor air.

>Max = The constituent RBC for this pathway is calculated as greater than 1,000,000 mg/kg. Therefore, this substance is deemed not to pose risks in this scenario.

>Csat = This soil RBC exceeds the limit of three-phase equilibrium partitioning. The detected concentrations are lower than the contaminant Csat value).

DEQ no longer has RBCs to evaluate the soil to vapor intrusion to indoor air pathways. Generally, DEQ considers that concentrations of gasoline-range TPH of 80 mg/Kg or above and diesel-range TPH of 500 mg/Kg or above could result in possible vapor intrusion. The highest concentration of gasoline is about 14 times greater than 80 mg/Kg. Soil gas samples were collected at the site to assess whether or not vapor intrusion into air could be a concern. The results of the soil gas assessment are discussed later in this section.

Groundwater

Elevated concentrations of TPH and associated constituents were detected in groundwater at sampling locations throughout the site and underneath the adjacent sidewalk adjacent to Center Street NE:

Contaminant	Sampling Location	Max. Concentration Detected	RBCwe
			Construction/ Excavation Worker
Gasoline	GP-21	45,000 µg/L	14,000 µg/L
Diesel	GP-21	94,400 µg/L	>S
Oil	GP-19	11,800 µg/L	>S
1,2,4-Trimethylbenzene	GP-14	1,710 µg/L	6,300 µg/L
1,3,5-Trimethylbenzene	GP-14	491 µg/L	7,500 µg/L
Benzene	GP-14	151 µg/L	1,800 µg/L
Ethylbenzene	GP-14	2,450 µg/L	4,500 µg/L
Naphthalene	GP-14	481 µg/L	500 µg/L
Total xylenes	GP-14	5,424 µg/L	23,000 µg/L
Iso-propylbenzene	GP-12	147 µg/L	51,000 µg/L
Toluene	GP-19	695 µg/L	220,000 µg/L
Lead (total/dissolved)	GP-8/GP-14	0.839 µg/L /0.01 µg/L	>S

RBCwe = Ingestion, dermal contact and inhalation of groundwater in excavation.

Bold = The concentration detected exceeds the associated RBC.

>S = The RBC for diesel and oil for this pathway is listed as >S, where S is the solubility limit.

Concentrations of gasoline exceeded the groundwater in excavation RBC at 10 of 18 sampling locations, with the highest concentration observed underneath the sidewalk adjacent to Center Street NE and the northwest corner of the site. This concentration is likely attributed to the historic retail service operation near this area of the property. Additionally, concentrations of diesel exceeded the RBC at three sampling locations, and concentrations of oil exceeded the RBC at two locations. The RBC for diesel and oil for this pathway is listed as >S, where S is the solubility limit. The solubility limit of diesel and oil is 6,800 µg/L. The highest concentrations of diesel and oil observed in groundwater are greater than their solubility limit and indicate the possible presence of free product in the vicinity of these sampling locations and, potentially, the Center Street NE right-of-way. It should be noted that free product was not encountered at the site during assessment activities. Lead, VOCs and PAHs did not exceed the groundwater in excavation RBC.

No contaminant concentrations exceeded the groundwater volatilization to outdoor air RBCs for any receptors. However, several concentrations of TPH and gasoline-related VOCs observed in groundwater exceeded DEQ's recently updated groundwater to vapor intrusion into buildings RBCs (note that contaminant concentrations were evaluated under DEQ's previous RBCs at the time site investigation reports were submitted to DEQ):

Contaminant	Sampling Location	Max. Concentration Detected	RBCwi	
			Residential*	Commercial*
Gasoline	GP-21	45,000 µg/L	120 µg/L	520 µg/L
Diesel	GP-21	94,400 µg/L	400 µg/L	1,700 µg/L
Oil	GP-19	11,800 µg/L	400 µg/L	1,500 µg/L
1,2,4-Trimethylbenzene	GP-14	1,710 µg/L	560 µg/L	2,400 µg/L
1,3,5-Trimethylbenzene	GP-14	491 µg/L	400 µg/L	1,700 µg/L
Benzene	GP-14	151 µg/L	2.8 µg/L	12 µg/L
Ethylbenzene	GP-14	2,450 µg/L	7.1 µg/L	31 µg/L
Naphthalene	GP-14	481 µg/L	11 µg/L	50 µg/L
Total xylenes	GP-14	5,424 µg/L	780 µg/L	3,300 µg/L
Isopropylbenzene	GP-12	147 µg/L	2,200 µg/L	9,100 µg/L
Toluene	GP-19	695 µg/L	36,000 µg/L	150,000 µg/L

RBCwi = Groundwater to vapor intrusion into buildings.

* = DEQ no longer has RBCs to evaluate the groundwater to vapor intrusion to indoor air pathway for the urban residential scenario. There are only RBCs for residential and commercial (formerly “occupational”) receptors.

Bold = The concentration detected exceeds the associated RBC.

Due to the groundwater results, DEQ requested an additional evaluation of potential vapor inhalation risks to offsite, downgradient receptors from residual groundwater contamination. Potential receptors in the adjacent downgradient area were identified as limited to people experiencing houselessness who might camp for short durations underneath the nearby overpass. The extent of gasoline and ethylbenzene concentrations in groundwater were modeled and predicted concentrations downgradient of the site. The conclusions from the model were that the plumes of gasoline and ethylbenzene contamination are likely not migrating far enough offsite to potentially affect people who may camp under the overpass.

Soil gas

Contaminant concentrations in soil and groundwater prompted a soil gas investigation at the site. The highest concentrations of ethylbenzene and heptane exceeded DEQ’s recently updated soil gas to vapor intrusion into buildings RBCs for residents (note that contaminant concentrations were evaluated under DEQ’s previous RBCs at the time site investigation reports were submitted to DEQ):

Contaminant	Sampling Location	Max. Concentration Detected	RBCsv	
			Residential*	Commercial*
1,2,4-Trimethylbenzene	SG-02	350 µg/m ³	2,100 µg/m ³	8,800 µg/m ³
1,3,5-Trimethylbenzene	SG-02	150 µg/m ³	2,100 µg/m ³	8,800 µg/m ³
Carbon disulfide	SG-05	24 µg/m ³	24,000 µg/m ³	100,000 µg/m ³
Cyclohexane	SG-02	3,400 µg/m ³	210,000 µg/m ³	880,000 µg/m ³
Ethylbenzene	SG-02	120 µg/m³	37 µg/m³	160 µg/m ³
n-Hexane	SG-03	31,000 µg/m³	24,000 µg/m³	100,000 µg/m ³
Propyl benzene	SG-04	6.2 µg/m ³	35,000 µg/m ³	150,000 µg/m ³
m-p-Xylenes	SG-02	560 µg/m ³	3,500 µg/m ³	15,000 µg/m ³
o-Xylene	SG-03	140 µg/m ³	3,500 µg/m ³	15,000 µg/m ³
Toluene	SG-02	47 µg/m ³	170,000 µg/m ³	730,000 µg/m ³

RBCsv = Soil vapor intrusion into buildings.

* = DEQ no longer has RBCs to evaluate the soil gas to vapor intrusion to indoor air pathway for the urban residential scenario. There are only RBCs for residential and commercial (formerly “occupational”) receptors.

Human health risk.

Lead detected in shallow soil at location GP-12 exceeds soil ingestion, dermal contact and inhalation RBCs for all applicable receptors. It is not anticipated that urban residential and occupational receptors will be exposed to this concentration of lead in the future due to the City’s plans to redevelop the site. However, future construction and exaction workers may come into contact with the lead contamination and a Contaminated Media Management Plan (CMMP) for the site with a Health and Safety Plan (HASP) is needed to protect any future workers from exposure during redevelopment of the site. (The CMMP and HASP are discussed in more detail in DEQ’s recommendation for closure later in this document.) No other contaminants of interest were detected in shallow soils above RBCs. Additionally, none of the concentrations for the contaminants of interest observed in deeper subsurface soils exceed RBCs for the applicable urban residential, occupational, construction worker or excavation worker soil exposure pathways.

Concentrations of gasoline, diesel and oil also exceeded groundwater in excavation RBCs for construction and excavation workers underneath former tax lot 3200 and the southwest corner of former tax lot 3100. As mentioned previously, a CMMP for the site with a HASP is needed to protect any future works from exposure to contaminated groundwater during the redevelopment of the site.

Concentrations of TPH and VOCs in groundwater exceeded DEQ’s current RBCs for groundwater to vapor intrusion into buildings for residential and commercial receptors. The results of a subsequent soil gas investigation showed that concentrations of ethylbenzene and n-hexane exceeded DEQ’s recently updated soil gas to vapor intrusion into buildings RBCs for residential receptors. It is possible that future residents at the site could be exposed to vapors from soil and groundwater that exceed acceptable risk levels.

Ecological risk.

The site is entirely paved and bordered by roads and other commercially developed properties. As such, no terrestrial or aquatic ecological receptors or habitat are present at the site or adjacent properties. Future development plans for the site will not create terrestrial habitat. Concentrations of gasoline in groundwater were observed to decrease from approximately 30,000 µg/L to less than 2,000 µg/L over a 75-foot distance from the source area in the center of the site to offsite boring locations between the site and the Willamette River. The river is located approximately 550 feet west of the site. Based on the river's distance from the site, risk of aquatic ecological exposure to residual contamination from the site is not considered a concern as contaminants would not be expected to migrate this far. Thus, there is no current or future unacceptable ecological risk at the site.

5. RECOMMENDATION

A CMMP for the site is required due to residual concentrations of contamination in shallow soils and groundwater that exceed RBCs for construction and excavation workers, in addition to indicating the potential presence of petroleum free product. The CMMP will include site-specific information and guidance to future site contractors regarding the management of contaminated groundwater and potential free product that may be encountered during future construction activities and site improvements. The CMMP will also include a HASP to identify the pertinent health and safety requirements for construction and excavation workers at the site and recommend measures to be taken to reduce exposures to workers, and ensure that they are aware of the presence of the contamination.

An Easement and Equitable Servitudes (EES) will need to be prepared and recorded on the property stipulating that the CMMP and HASP must be followed when doing excavation work within the areas of contamination. This plan should also be provided to the City of Salem Public Works Department and to utility providers due to contamination that extends underneath adjacent rights-of-way. Due to exceeded RBCs for vapor intrusion in soil gas and groundwater, the EES will also include a restriction on land use that prohibits ground floor residential use in new buildings and require an engineered vapor barrier/other vapor intrusion mitigation system to protect future ground floor commercial workers. A groundwater use restriction that prohibits the use of shallow groundwater for beneficial uses will also be included. A 30-day public comment period will be conducted to give the above parties and neighboring properties an opportunity to comment on this recommendation.

Following the submission of a DEQ reviewed and approved CMMP, the recording of the EES, and based on sample results for soil, groundwater and soil gas, acceptable risk levels are not exceeded, and a Conditional No Further Action determination is recommended for this site. This recommendation assumes that groundwater at the site is not and will not be used in the future, and that future residential use of the site will be above the ground floor of new buildings. Use of groundwater at the site and/or ground floor residential use may result in unacceptable risk and invalidate DEQ's decision. Additionally, any construction, removal of soil or groundwater or excavation in the property, including the adjacent rights-of-way, should reference the CMMP. The

Conditional No Further Action determination should be recorded in DEQ's environmental data management system, Your DEQ Online (Facility No. 10388 and LUST Nos. 24-91-4344 and 24-19-1063).

6. ADMINISTRATIVE RECORD

Supplemental Phase II Environmental Site Assessment, Stantec Consulting Services, Inc., April 14, 2020.

Petroleum-Impacted Soil Cleanup Report, 3 Kings Environmental, January 12, 2021.

Closure Report – Front and Center Property, Stantec Consulting Services, Inc., March 2, 2021.

Reference: Front and Center Site, Salem, Oregon, Stantec Consulting Services, Inc. July 13, 2021. (Memo summarizing modeling of offsite migration and impacts from contaminated groundwater.)

7. ATTACHMENTS

1. Figure 1. Vicinity map
2. Figure 2. Current site features
3. Figure 3. Site map with former features, former tax lots and sampling locations
4. Table 1. Identification of applicable RBCs, based on pertinent pathways and receptors

Figure 1. Vicinity map



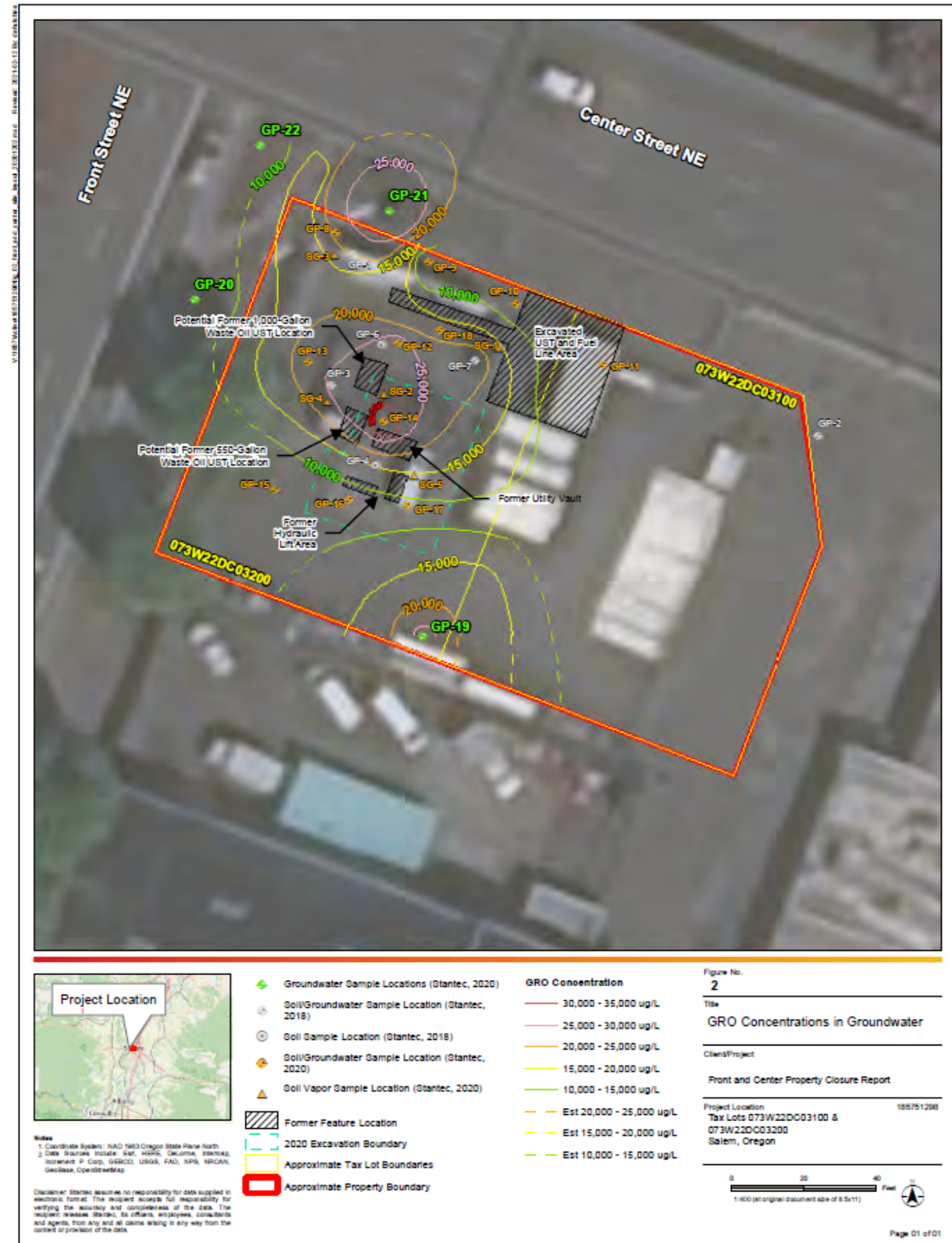
From Closure Report – Front and Center Property, Stantec Consulting Services, Inc., March 2, 2021.

Figure 2. Current site features



From Google Earth Pro.

Figure 3. Site map with former features, former tax lots and sampling locations



From Closure Report – Front and Center Property, Stantec Consulting Services, Inc., March 2, 2021.

Table 1. Identification of applicable RBCs, based on pertinent pathways and receptors

	Pathway	Receptor	Is Pathway Complete?	Is RBC Exceeded?	Comments
Soil	Ingestion, Dermal Contact and Inhalation	Residential	No	Yes	See note 1.
		Urban Residential	Yes	Yes	
		Occupational	Yes	Yes	
		Construction Worker	Yes	Yes	
		Excavation Worker	Yes	Yes	
	Volatilization to Outdoor Air	Residential	No	No	
		Urban Residential	Yes	No	
		Occupational	Yes	No	
	Leaching to Groundwater	Residential	No	Yes	See note 2.
		Urban Residential	No	Yes	
		Occupational	No	Yes	
Groundwater	Ingestion & Inhalation From Tap Water	Residential	No	Yes	See note 3.
		Urban Residential	No	Yes	
		Occupational	No	Yes	
	Volatilization to Outdoor Air	Residential	No	No	
		Urban Residential	Yes	No	
		Occupational	Yes	No	
	Vapor Intrusion Into Buildings	Residential	Yes	Yes	
		Commercial	Yes	No	
	Groundwater in Excavation	Construction & Excavation Worker	Yes	Yes	
	Soil Gas to VI	Residential	Yes	Yes	See note 4.
		Commercial	Yes	No	
Air		Residential	Yes	N/A	See note 5.
		Occupational	Yes	N/A	
Ecological		Terrestrial & Surface Water	No	N/A	See note 6.

Notes:

1. While Central Business District (CB) zoning permits certain single-family residential uses, such as residential treatment homes and adult foster homes, such uses are unlikely in the future. Future development of the site is anticipated to include multi-family housing above ground floor commercial uses.
2. Groundwater is not used for drinking. This pathway is therefore not considered, in accordance with Section B.3.2.4 of DEQ's RBDM guidance.
3. City water is provided. Local groundwater is not currently used for drinking water and is not likely to be used for this purpose in the future.

4. An EES will be recorded on the property that prohibits ground floor residential use in new buildings and an engineered vapor barrier/other vapor intrusion mitigation system to protect future ground floor commercial workers.
5. Indoor air data were not collected during site investigation activities due to no buildings at the site. Soil gas data collected from the subsurface showed that concentrations of ethylbenzene and n-hexane exceeded DEQ's recently updated soil gas to vapor intrusion into buildings RBCs for residential receptors.
6. There is no aquatic or terrestrial habitat at the site currently or expected to be in the future