

State of Oregon
Department of Environmental Quality

Memorandum

Date: August 20, 2024

To: FILE

Through: Peter Donahower, Katie Daugherty, and Todd Vanek

From: Kevin Dana
Northwest Region

Subject: Modera Morrison, LUST #26-21-0394; Staff Memorandum in support of a No Further Action determination

This document presents the basis for the Oregon Department of Environmental Quality's (DEQ's) recommended No Further Action (NFA) determination for the Modera Morrison site in Portland. As discussed in this report, contaminant concentrations in soils are below acceptable risk levels.

The proposed NFA determination meets the requirements of Oregon Administrative Rules (OAR) Chapter 340, Division 122, Sections 0205 to 360; and Oregon Revised Statutes (ORS) 465.200 through 465.455.

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:

- Address: 1120 SE Morrison Street, Portland, Multnomah County, Oregon.
- Latitude 45.5168° North; Longitude 122.6542° West
- Tax Lot 5100, Township 1 South, Range 1 East, Section 2 BA, Willamette Baseline and Meridian.

Site setting.

The 0.85-acre site in the City of Portland's Buckman neighborhood covers the city block bounded by SE Morrison Street to the north, SE Belmont Street to the south, SE 12th Avenue to the east, and SE 11th Avenue to the west. See Attachment 1 for a topographic map of the area and Attachment 2 for an aerial photo of the site. Modera Morrison is a 7-story building with 1-2 levels of below-ground parking, ground floor commercial space, and over 200 apartment units. Adjacent properties are a mix of small commercial buildings and mid-rise apartment and condominium buildings.

Hydrogeologic setting.

Soils at the site were generally described as fill material (clay, sand and gravel) to depths of up to 7 feet below ground surface (bgs), underlain by native alluvium (silty sands and gravels) to depths of up to 30 feet bgs. Groundwater was encountered during geotechnical investigations at about 45 feet bgs in February 2017 and about 35 feet bgs in the spring of 2019. The groundwater flow direction was not determined, but based on topography is expected to flow to the west.

Site history.

Sanborn maps show a single residence on the southeast portion of the block in 1901. By 1909, multiple residences occupied the east half of the block, and a telephone office occupied the northwest quarter of the block. By 1924, a bakery occupied the southwest quarter of the block.

By 1950, the bakery had expanded into the former telephone office building and occupied the west half of the block. The residences on the east half of the block were demolished sometime in the 1950s or 1960s and replaced with a paved surface parking lot. The bakery continued to operate on the west half of the block through 1970.

From 1975 to 1985, the combined bakery/telephone office structure was used as a warehouse by Bernstein Brothers, tobacco wholesalers. The site was owned by AJP Northwest as of 1991. As of 2005, the on-site building was jointly occupied by AJP Northwest and A&S Marketing and used as office space and as a warehouse for the storage and sale of paper products, janitorial supplies, and tobacco products. Alan Campf, a co-owner of Bernstein Brothers and CEO of AJP Northwest, owned and operated at the site from at least the mid-1980s through 2019.

2. BENEFICIAL LAND AND WATER USE DETERMINATIONS

Land use.

The site and surrounding properties to the north, west and south are zoned Central Employment with a design overlay (EXd) by the City of Portland. See Attachment 3 for a zoning map. The zoning allows for a full range of high density commercial and residential uses. The design overlay promotes design excellence through the application of additional design standards and guidelines. The adjacent property to the east is zoned Commercial Mixed Use 2 with a design overlay (CM2d). The mixed use zoning generally allows for four-story buildings with ground floor commercial use and upper floor apartments or condominiums.

Groundwater use.

A search of well logs on file with the Oregon Water Resources Department (OWRD) identified no domestic or community wells within the same township/range/section as the site.

The City of Portland is served by a municipal water supply system. The water is primarily obtained from surface water reservoirs in the Bull Run watershed on the western slopes of Mount Hood, and supplemented as needed with groundwater from the Columbia South Shore Wellfield.

Surface water use.

No surface water bodies are present within a ½ mile radius of the site. The nearest surface water body is the Willamette River, approximately 3,500 feet west of the site. Stormwater runoff from the site flows to catch basins that discharge to the City of Portland's combined sewer system.

3. INVESTIGATION AND CLEANUP WORK

Two underground storage tanks (USTs) were decommissioned by removal from the northwest corner of the block in July 1991. The two USTs, described as 1,000-gallon gasoline tanks, were shipped to Mt. Hood Metals for recycling as scrap. Approximately 300 gallons of liquids and rinse waters from the tanks were shipped to Fuel Processors for recycling and disposal.

Soil samples were collected from each end of each UST at depths of 9 feet bgs, and a fifth soil sample was collected between the USTs at a depth of 8 feet bgs. See Attachment 4 for a sample location diagram. (Note that north is to the right on the diagram). The five soil samples were analyzed for petroleum hydrocarbons. Gasoline was detected in the center soil sample at a concentration of 418 parts per million (ppm).

A petroleum release was reported to DEQ and assigned leaking underground storage tank (LUST) file number 26-91-0267. Approximately 100 cubic yards of soils were reportedly excavated from around the USTs and spread out on the site for aeration treatment. As of October 1991, no gasoline was reported to be present in the soils. DEQ issued a NFA letter for LUST file 26-91-0267 on October 1, 1996. See Attachment 5 for a copy of the NFA letter.

2016 HOT Decommissioning

In November 2016, the Portland Bureau of Transportation encountered a 1,000-gallon heating oil tank (HOT) during construction work to repair signal equipment on the southwest corner of the block. Approximately 750 gallons of heating oil and 250 gallons of water were pumped from the tank and shipped to Oil Re-Refining Company (ORRCO) for recycling and disposal. The HOT was reported to DEQ and assigned HOT file number 26-16-1462.

The UST was decommissioned by removal approximately two weeks later, by which time the tank and tank pit had filled with stormwater. Approximately 1,250 gallons of water were pumped from the tank and tank pit and shipped to ORRCO for recycling and disposal. The tank itself was shipped to Metro Metals Northwest for recycling as scrap. A total of 27.28 tons of petroleum-contaminated soils (PCS) were excavated from the tank pit and shipped to the Hillsboro Landfill for disposal.

Seven confirmation soil samples were collected from the tank excavation pit and analyzed for diesel and heavy oils. Soil samples were collected from each of the four sidewalls of the tank excavation pit at depths of 9 feet bgs. Two soil samples were collected from the bottom of the excavation pit at depths of about 11 feet bgs, and the 7th sample was collected at a depth of 14 feet bgs. See Attachment 6 for a sample location diagram.

Diesel was detected in the south pit wall at a concentration of 10,900 ppm. Diesel was also detected in the east pit wall at 9,110 ppm, and in the west pit wall at 3,610 ppm. Diesel was detected on the south pit floor at a concentration of 10,400 ppm, decreasing to a concentration of 398 ppm at 14 feet bgs. The excavation was subsequently backfilled, and a new traffic signal light was installed.

In April 2017, five borings (labeled B-1 through B-5) were advanced around the former excavation pit to determine the extent of residual contamination, as shown on Attachment 7. Eleven soil samples were collected from the borings, at depths ranging from 9 feet to 15 feet bgs, and analyzed for diesel and heavy oils. Diesel was detected in Boring B-2, on the north side of the excavation pit, at 119 ppm at 9 feet bgs and 1,980 ppm at 13 feet bgs. No diesel was detected at 15 feet bgs. The sample from 13 feet bgs was further analyzed for benzene, toluene, ethylbenzene, and xylenes (collectively abbreviated “BTEX”) and for polycyclic aromatic hydrocarbons (PAHs). No BTEX was detected. PAHs included fluoranthene (0.02 ppm), fluorene (0.743 ppm), and pyrene (0.0179 ppm).

Based on the sampling results, the contractor calculated that approximately 20 cubic yards of soil with diesel concentrations above 500 ppm remained around the tank excavation pit. The contaminated soil was too deep to pose a direct contact risk to residents or occupants of the site, and the lack of volatiles minimized any vapor intrusion risks. The contractor certified that no further investigation or cleanup of the HOT was necessary. DEQ issued a Certification letter for HOT file 26-16-1462 on June 6, 2017. See Attachment 8 for a copy of the Certification letter.

2019 Environmental Site Assessment

In May 2019, a geophysical survey was conducted on the block to look for additional USTs. Two USTs were identified beneath the sidewalk on the south edge of the block, and a third UST was identified northeast of the center of the block (adjacent to the building on the west edge of the paved surface parking lot).

Seventeen direct-push borings (labeled DP-1 through DP-17) were subsequently advanced at various locations around the block, as shown on Attachment 9, to characterize the soils for eventual disposal. A total of 37 soil samples were collected from the borings and analyzed for metals, PAHs, polychlorinated biphenyls (PCBs), and volatile organic compounds (VOCs). Borings advanced adjacent to the USTs were also analyzed for petroleum hydrocarbons. The only significant contamination detected was 194 ppm lead in boring DP-4 (on the east edge of the site) at a depth of ½-1½ feet bgs. No groundwater was encountered to 30 feet bgs.

Four additional soil samples were collected from two hand-augured borings (HA-1 and HA-2) advanced adjacent to floor drains inside the building. The four soil samples were analyzed for metals, PAHs, PCBs, and VOCs. No significant contamination was detected. Finally, two soil gas samples (SG-1 and SG-2) and one sub-slab vapor sample (SV-1) were collected from the site and analyzed for gasoline and VOCs. Gasoline was detected in SG-2 (on the south edge of the building near the two USTs) at a concentration of 454 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). VOCs included benzene ($8.40 \mu\text{g}/\text{m}^3$), chloromethane ($10.1 \mu\text{g}/\text{m}^3$), tetrachloroethylene ($31.4 \mu\text{g}/\text{m}^3$), 1,2,4-trimethylbenzene ($17.6 \mu\text{g}/\text{m}^3$), and xylenes ($23.34 \mu\text{g}/\text{m}^3$).

Fifteen additional direct-push borings (labeled DP-18 through DP-32) were advanced at the site in July 2019 (as shown on Attachment 10) to delineate the extent of contamination identified in the first round of sampling. Seven borings (DP-18 through DP-24) were advanced around the two underground storage tanks beneath the south sidewalk, while the other eight borings (DP-25 through DP-32) were advanced around boring DP-4 (on the east edge of the site) where 194 ppm lead had been detected in the soil.

A total of 11 soil samples were collected from borings DP-18 through DP-24, generally at depths between 10 and 14 feet bgs, and analyzed for petroleum hydrocarbons. No petroleum hydrocarbons were detected. Two of the samples were further analyzed for PAHs and VOCs. No PAHs or VOCs were detected.

Two soil samples each were collected from borings DP-25 through DP-32, mostly at depths of 1-1½ feet and 2-2½ feet bgs, and analyzed for lead. Lead was detected at concentrations ranging from 12.0 ppm to 1,580 ppm. Two of the soil samples, with lead concentrations of 991 ppm and 1,580 ppm, were further analyzed for leachable lead by the Toxicity Characteristic Leaching Procedure. The highest TCLP concentration was 0.35 milligrams per liter (mg/L).

Finally, 12 additional hand-augured borings (labeled HA-3 through HA-14 on Attachment 10) were advanced around the east parking lot to look for additional lead-contaminated soils. A total of 18 soil samples were collected from the borings, at depths less than two feet bgs. Lead concentrations in the soil samples ranged from 11.3 ppm to 329 ppm. Three soil samples with lead concentrations ranging from 131 ppm to 329 ppm were further analyzed for leachable lead by the TCLP. Leachable lead was measured at a maximum concentration of 0.106 mg/L. Soil samples from two of the borings (HA-8 and HA-10) near the southeast corner of the site were further analyzed for petroleum hydrocarbons, PAHs, PCBs, and VOCs. Low concentrations of gasoline (57.7 ppm), diesel (26.5 ppm), and heavy oils (157 ppm) were detected, along with very low concentrations of PAHs and VOCs.

Tank 1 Decommissioning

Nine underground storage tanks were encountered at the site in April and May 2021 during initial site clearing and redevelopment. The UST locations are shown on Attachment 11.

Tank 1 was a 3,000-gallon boiler fuel UST on the east side of the building near the center of the block. The UST was holding approximately 1,200 gallons of PS300 boiler fuel. Approximately 1,500 gallons of boiler fuel and rinse waters were pumped from the tank and shipped along with 300 gallons of oily solids to ORRCO for recycling and disposal. The tank was removed and shipped to Bob's Metals in Portland for recycling as scrap.

Post-removal soil samples were collected beneath the center of the tank (at a depth of 100 inches bgs) and the south end of the tank (at 120 inches bgs) and analyzed for diesel and oils. No diesel or oils were detected. A sample of overburden soils from atop the tank showed 27.8 ppm diesel and 76.7 ppm heavy oils. See Attachment 12 for a sample location diagram. The tank decommissioning met the criteria for a Level II Soil Matrix Cleanup.

Tank 2 Decommissioning

Tank 2 was a 675-gallon HOT in the northwest corner of the block. The tank was found to have been previously decommissioned in-place by filling with a concrete slurry. The tank was removed and shipped to Bob's Metals in Portland for recycling as scrap, while the concrete was shipped to the Hillsboro Landfill for disposal.

Post-removal soil samples were collected beneath the east and west ends of the HOT (at depths of 7 feet bgs) and from beneath the center of the HOT (at a depth of 7.75 feet bgs). The three samples were analyzed for diesel and oil. Diesel was detected in all three samples, at concentrations ranging from 21.0 ppm to 35.7 ppm. See Attachment 13 for a sample location diagram. A waste characterization sample of stockpiled soils from the Tank 2 decommissioning was further analyzed for metals, PCBs, and VOCs. Elevated concentrations of arsenic (12.3 ppm) and lead (80.6 ppm) were detected, along with a handful of VOCs including naphthalene (4.90 ppm) and 1,2,4-trimethylbenzene (43.9 ppm). No PCBs were detected.

The tank decommissioning met the criteria for a Level II Soil Matrix Cleanup, which allows for up to 500 ppm diesel and oils to remain in the soil.

Tanks 3 & 4 Decommissioning

Tanks 3 and 4 were 675-gallon HOTs located beneath the sidewalk along SE 11th Avenue in the southwest quarter of the block. Tank 3 was holding 600 gallons of diesel and Tank 4 was holding 300 gallons of diesel. Fluids and solids were pumped from the HOTs and shipped to ORRCO for recycling and disposal. The tanks were removed and shipped to Cherry City Metals in Salem for recycling as scrap.

Three soil samples were collected beneath each HOT at depths of 7 feet bgs, as shown on Attachment 14. (Note that north is to the left on the drawing). The six samples were analyzed for diesel and oil. Diesel (52,300 ppm) and heavy oils (643 ppm) were detected beneath the south end of Tank 3. Diesel was also detected beneath the north end (345 ppm) and center (33.6 ppm) of Tank 4. The residual contamination beneath Tank 4 met the criteria for a Level II Soil Matrix Cleanup.

Approximately 25 cubic yards of soils were excavated from around Tank 3 to a depth of 16 feet bgs. The soils were shipped to the Hillsboro Landfill for disposal. Six confirmation soil samples were collected from the tank excavation pit: two soil samples each from the east and west sidewalls (at depths of 6 feet bgs), and two soil samples from the pit floor (at 16 feet bgs). The six samples were analyzed for diesel and oil, and the two pit floor samples were additionally analyzed for gasoline. The only detection was 37.1 ppm diesel in one of the east sidewall samples. The residual contamination met the criteria for a Level II Soil Matrix Cleanup.

Tanks 5 & 6 Decommissioning

Tanks 5 and 6 were 1,000-gallon boiler fuel USTs located beneath the sidewalk along SE Belmont Street. Both tanks were holding about 300 gallons of PS300 boiler fuel. Fluids and solids were pumped from the USTs and shipped to ORRCO for recycling and disposal. The tanks were removed and shipped to Cherry City Metals for recycling as scrap.

A total of five soil samples were collected beneath the tanks, at depths ranging from 70-74 inches (about 6 feet) bgs, as shown on Attachment 15. All five samples were analyzed for diesel and oil. Diesel was detected in one sample at a concentration of 31.1 ppm. The decommissionings of Tanks 5 and 6 met the criteria for a Level II Soil Matrix Cleanup.

Separately, a composite waste characterization sample of oily solids from Tanks 1, 5 and 6 was analyzed for metals and PCBs. Only barium (1.17 ppm) and lead (1.08 ppm) were detected. A composite sample of stockpiled soils from the excavations of Tanks 3 through 6 was analyzed for metals, PCBs, and VOCs. Only background concentrations of metals and very low concentrations of VOCs were detected.

Tank 7 Decommissioning

Tank 7 was a 675-gallon HOT in the northwest corner of the block. The tank was found to have been previously decommissioned in-place by filling with a concrete slurry. A waste characterization sample of the concrete slurry was analyzed for metals, PCBs, and VOCs. Only low concentrations of metals were detected. The tank was removed and shipped to Cherry City Metals for recycling as scrap, while the concrete was shipped to the Hillsboro Landfill for disposal. Approximately 20 cubic yards of soils were excavated from around the tank to a depth of 12 feet bgs and also shipped to the Hillsboro Landfill for disposal.

Seven confirmation soil samples were collected from the tank excavation pit, as shown on Attachment 16: one soil sample from each of the four sidewalls at depths of 6 or 7 feet bgs, and three soil samples from the pit floor at depths of 12 feet bgs. All seven samples were analyzed for diesel and oil. No diesel or oils were detected. The tank decommissioning met the criteria for a Level II Soil Matrix Cleanup.

Tank 8 Decommissioning

Tank 8 was a 675-gallon gasoline UST located beneath the sidewalk along SE 11th Avenue in the southwest quarter of the block, a short distance north of Tanks 3 & 4. The tank was found to have been partially filled with concrete slurry. A waste characterization sample of the concrete slurry was analyzed for metals, PCBs, and VOCs. Low concentrations of metals and VOCs were detected. The tank was removed and shipped to Cherry City Metals for recycling as scrap, while the concrete was shipped to the Hillsboro Landfill for disposal.

Thirty-five (35) tons of soils were excavated from around the UST to depths up to 14 feet bgs and shipped to the Hillsboro Landfill for disposal. Eleven confirmation soil samples were collected from the excavation, as shown on Attachment 17. High concentrations of gasoline (up to 39,500 ppm) and VOCs were detected in the west and south sidewalls of the initial excavation pit at depths of 8 feet bgs. After additional excavations to the south and west, 12,300 ppm gasoline remained in the west sidewall (beneath 11th Avenue) at a depth of 8 feet bgs, along with 1,24-trimethylbenzene (4.85 ppm), 1,3,5-trimethylbenzene (12.9 ppm), and xylenes (3.83 ppm).

The release was reported to DEQ and assigned LUST file number 26-21-0394. Approximately 90 cubic yards of gasoline-contaminated soils remained around the Tank 8 excavation pit (mostly extending beneath 11th Avenue).

Tank 9 Decommissioning

Tank 9 was a 500-gallon gasoline UST in the northwest corner of the block. The tank was found to have been previously decommissioned in-place by filling with a concrete slurry. The tank was removed and shipped to Cherry City Metals for recycling as scrap, while the concrete was shipped to the Hillsboro Landfill for disposal.

Soil samples were collected beneath the north and south ends of the tank at depths of 8 feet bgs and analyzed for petroleum hydrocarbons. Gasoline-range and diesel-range organics were identified in both samples, but the results weren't quantified. An unreported volume of soils was subsequently removed from beneath the tank and shipped to the Hillsboro Landfill for disposal.

Confirmation soil samples were collected from the four sidewalls of a combined excavation pit for Tanks 2, 7 and 9 at depths of 8 feet bgs and from the excavation pit floor at 13 feet bgs, as shown on Attachment 11. The five samples were analyzed for gasoline, metals, and VOCs. Only background concentrations of metals were detected. The tank decommissioning met the criteria for a Level II Soil Matrix Cleanup.

Parking Lot Investigation

In April 2021, concurrent with the start of the tank decommissionings, composite soil samples were collected from the east parking lot to determine the nature and extent of lead-impacted fill soils. As shown on Attachment 11, the parking lot was divided into four composite sampling areas. Eight test pits were excavated within each composite sampling area. In each test pit, soil samples were collected from the fill soils (generally ½-2 feet bgs) and from the underlying native soils (2-3 feet bgs). The 32 fill soil samples were composited and analyzed for lead. Lead was identified at a concentration of 643 ppm. The eight native soil samples from each sample area were also composited and analyzed for lead. Lead was detected in the four native composite soil samples at concentrations ranging from 13.4 ppm to 36.5 ppm.

Site Excavation & Cleanup

In April and May 2021, soils across the block were excavated up to 25 feet bgs to accommodate an underground parking garage. Approximately 2,400 tons of soils (1,500 tons of lead-impacted soils and 916 tons of petroleum-contaminated soils) were shipped to the Hillsboro Landfill for disposal. An additional 40,000 tons of clean soils and construction debris were shipped to Scappoose Sand and Gravel (27,000 tons) and Site One LLC in Vancouver, Washington (13,000 tons). A reported 4,300 gallons of liquid wastes were pumped from the nine USTs and shipped to ORRCO for recycling and disposal.

Nature and extent of contamination.

Approximately 20 cubic yards of soils with diesel concentrations above 500 ppm remain in-place around a heating oil tank excavation on the southwest corner of the block, and approximately 90 cubic yards of gasoline-contaminated soils remain in-place around an underground storage tank excavation on the west edge of the block.

4. RISK EVALUATION

Conceptual site model.

A conceptual site model identifies the sources of contamination at a site, the human or ecological receptors that could be exposed to the contamination, and the pathways by which the exposures could occur.

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.

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

Pathway	Receptor	Applicable RBC?	Basis for selection/exclusion
SOIL			
Ingestion, dermal contact, and inhalation	Residential	No	See Note 1.
	Urban residential	No	See Note 2.
	Occupational	No	See Note 2.
	Construction worker	Yes	
	Excavation worker	Yes	
Volatilization to outdoor air	Residential	No	See Note 1.
	Urban residential	Yes	
	Occupational	Yes	
Leaching to groundwater	Residential	No	See Note 1 & Note 3.
	Urban residential	No	See Note 3.
	Occupational	No	See Note 3.
SOIL VAPOR			
Vapor intrusion into buildings	Residential	No	See Note 4.
	Commercial	No	See Note 4.

Notes:

1. Based on the zoning and recent construction, single-family residences are unlikely to be developed on the site.
2. Residual soil contamination at the site is at least 7-8 feet bgs. Residents and occupants of a site are not expected to come into direct contact with soils greater than 3 feet bgs.
3. Contamination at the site is not known or suspected to extend to groundwater.
4. The Modera Morrison building is underlain by 1-2 levels of underground parking, which are vented to outdoor air. This exposure pathway is unlikely to be complete.

Contaminant concentrations.

Contaminants of Potential Concern (COPCs) are contaminants that are present at a site at concentrations exceeding an RBC for a complete exposure pathway. Over 42,400 tons of soil

and debris were removed from the site to depths of up to 25 feet bgs during construction of the Modera Morrison apartments, including approximately 1,500 tons of lead-impacted soils and 916 tons of petroleum-contaminated soils. Although post-excavation confirmation soil samples were not collected, it is likely that all lead-impacted soils were removed from the east parking lot, and that all residual petroleum-contaminated soils were removed from around Tanks 1, 2, 7 & 9, as those soils were within the excavation footprint. The other tanks were beneath sidewalks on the south and west edges of the site, and residual soil contamination around those tanks was not removed during construction of Modera Morrison.

Construction and excavation workers may come into direct contact with soils at a site to depths of up to 15 feet bgs. Table 2 shows the maximum concentrations of contaminants remaining in soils at the Modera Morrison site, and compares those concentrations with DEQ's direct contact RBCs to determine if there are any COPCs.

Table 2. Screening for Construction and Excavation Worker COPCs for the Soil Ingestion, Dermal Contact, and Inhalation exposure pathway.

Contaminant of Interest	Maximum Soil Concentration	Construction Worker RBC	Excavation Worker RBC	COPC (Y/N)
Diesel	10,900 ppm	4,600 ppm	>MAX	Y
Gasoline	12,300 ppm	9,700 ppm	>MAX	Y
1,2,4-TMB	4.85 ppm	2,900 ppm	81,000 ppm	N
1,3,5-TMB	12.9 ppm	2,900 ppm	81,000 ppm	N
Xylenes	3.83 ppm	20,000 ppm	560,000 ppm	N

Notes:

1. The symbol ">MAX" signifies that the RBC for this pathway is greater than 1,000,000 ppm.
2. TMB = Trimethylbenzene.

Contaminants in soil may volatilize to outdoor air and be inhaled by residents and occupants of a site. Table 3 shows the maximum concentrations of contaminants remaining in the soils at the Modera Morrison site, and compares those concentrations with DEQ's volatilization to outdoor air RBCs to determine if there are any COPCs.

Table 3. Screening for Urban Residential and Occupational COPCs for the Volatilization to Outdoor Air exposure pathway.

Contaminant of Interest	Maximum Soil Concentration	Urban Residential RBC	Occupational RBC	COPC (Y/N)
Diesel	10,900 ppm	>MAX	>MAX	N
Gasoline	12,300 ppm	5,900 ppm	69,000 ppm	Y
1,2,4-TMB	4.85 ppm	>CSAT	>CSAT	N
1,3,5-TMB	12.9 ppm	>CSAT	>CSAT	N
Xylenes	3.83 ppm	>CSAT	>CSAT	N

Notes:

1. The symbol ">CSAT" signifies that the RBC for this pathway would not likely be exceeded unless soils were saturated with the contaminant.
2. The symbol ">MAX" signifies that the RBC for this pathway is greater than 1,000,000 ppm.
3. TMB = Trimethylbenzene.

In summary, the Contaminants of Potential Concern at Modera Morrison are diesel and gasoline.

Human health risk.

Contaminants of Concern (COCs) are those contaminants that present an unacceptable risk to human health or the environment.

Gasoline remains in the soil around the Tank 8 excavation pit at concentrations up to 12,300 ppm. The contamination is present at 8 feet bgs, and is not detected at depths ranging from 10 feet to 14 feet bgs. The maximum concentration exceeds DEQ's generic RBCs of 9,700 ppm for direct contact by construction workers and 5,900 ppm for volatilization to outdoor air. However, the generic RBCs are based on fresh gasoline, while the gasoline at the site is old and depleted in volatiles. DEQ calculated site-specific RBCs for the onsite gasoline using the confirmation sampling data, as shown in Attachment 18. The site-specific calculations resulted in an RBC of 14,000 ppm for direct contact and 21,000 ppm for volatilization to outdoor air. As the gasoline concentrations are below the site-specific RBCs, the contamination does not pose an unacceptable risk to human health. Consequently, gasoline is not a Contaminant of Concern at this site.

Diesel remains in the soil around the 2016 HOT excavation pit at concentrations up to 10,900 ppm. The contamination is present at 9 feet bgs, and drops to 398 ppm at 14 feet bgs. The maximum concentration exceeds DEQ's generic RBC of 4,600 ppm for direct contact by construction workers. Unfortunately, site-specific RBCs could not be calculated, because the contamination was not analyzed for all applicable volatiles. However, the volatiles that were analyzed for (benzene, ethylbenzene, naphthalene, toluene, and xylenes) were not detected, and no carcinogenic PAHs were detected. The estimated size of the residual diesel contamination (20 cubic yards) is also significantly smaller than the size of the gasoline contamination (90 cubic yards). Given the small size and depth of the contamination and the lack of volatiles and other constituents of concern, DEQ has determined that it is unlikely that the residual diesel contamination will pose an actual unacceptable direct contact risk for construction workers. Consequently, diesel is not a Contaminant of Concern at this site.

Ecological risk.

An ecological risk assessment was not conducted for the Modera Morrison site. The site is located in an urban area, and no surface water bodies or other ecological habitats were identified within a ½ mile radius of the site. The site has been completely capped by the Modera Morrison building and sidewalks, and only ornamental vegetation is present. No adverse impacts to ecological receptors are anticipated.

5. RECOMMENDATION

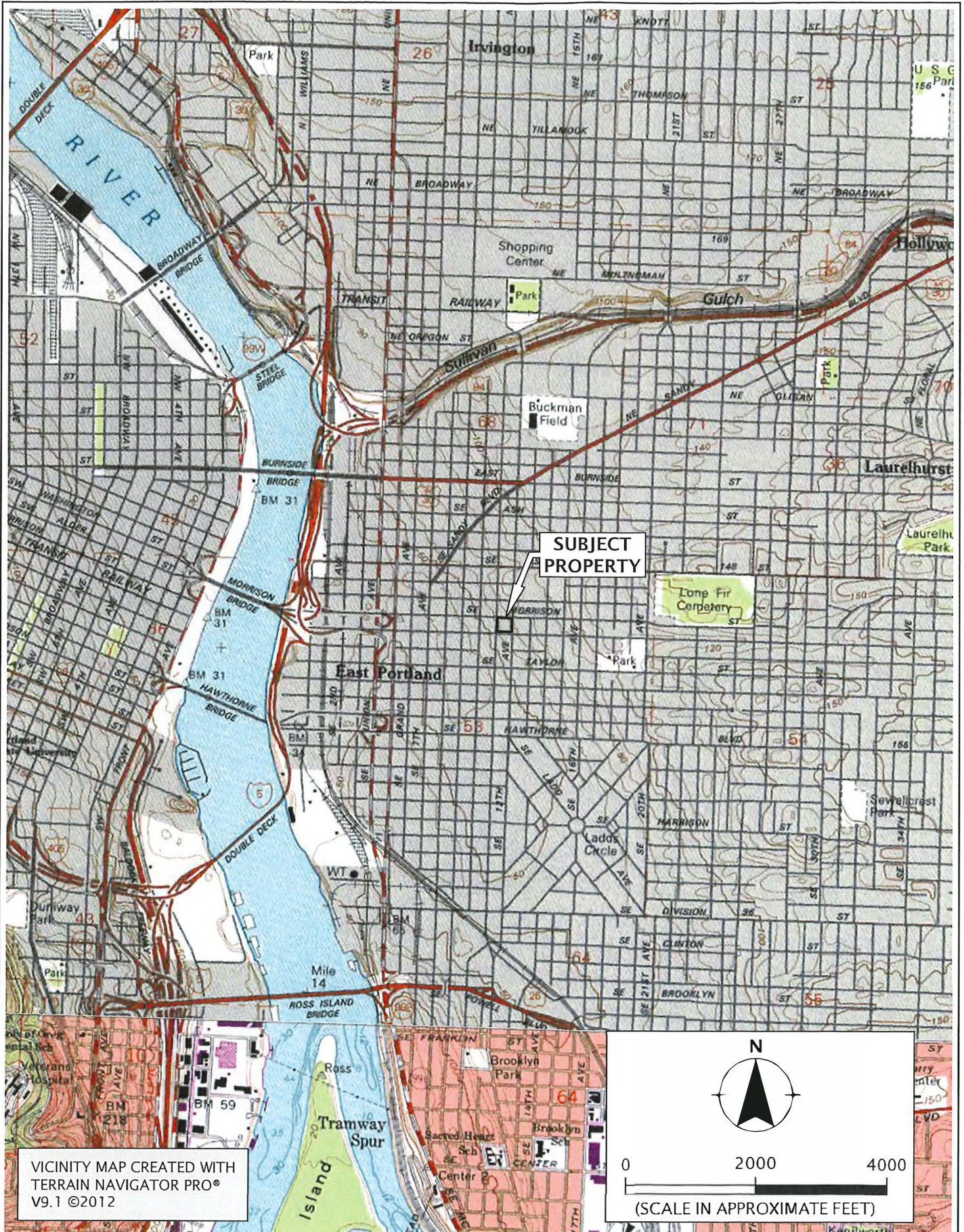
Following removal of contamination and based on confirmation sample results for soils, acceptable risk levels are not exceeded, and a No Further Action determination is recommended for this site. The No Further Action determination will be recorded in Your DEQ Online (YDO) under LUST file #26-21-0394.

6. ADMINISTRATIVE RECORD

1. GeoDesign "Phase I Environmental Site Assessment" (May 16, 2019).
2. GeoDesign "Phase II Environmental Site Assessment" (July 30, 2019).
3. GeoDesign "Updated Phase II Environmental Site Assessment" (August 28, 2019).
4. GeoDesign "Soil and Water Management Plan" (February 19, 2021).
5. Karl Van Zandt Environmental Consulting "Underground Storage Tank Decommissioning Report" (April 3, 2022).
6. NV5 "Environmental Summary and Closure Report" (May 11, 2023).
7. HOT file #26-16-1462.
8. LUST file #26-91-0267.
9. UST Facility ID #6680.

7. ATTACHMENTS

1. Topographic Map
2. Aerial Photo
3. Zoning Map
4. UST Sample Location Diagram (1991)
5. NFA Letter (LUST #26-91-0267)
6. HOT Sample Location Diagram (2016)
7. HOT Sample Location Diagram (2017)
8. Certification Letter (HOT #26-16-1462)
9. Sample Location Map (May 2019)
10. Sample Location Map (July 2019)
11. Sample Location Map (2021)
12. Tank 1 Sample Location Diagram
13. Tank 2 Sample Location Diagram
14. Tanks 3 & 4 Sample Location Diagram
15. Tanks 5 & 6 Sample Location Diagram
16. Tank 7 Sample Location Diagram
17. Tank 8 Sample Location Diagram
18. RBC Calculations Spreadsheet



NIV5

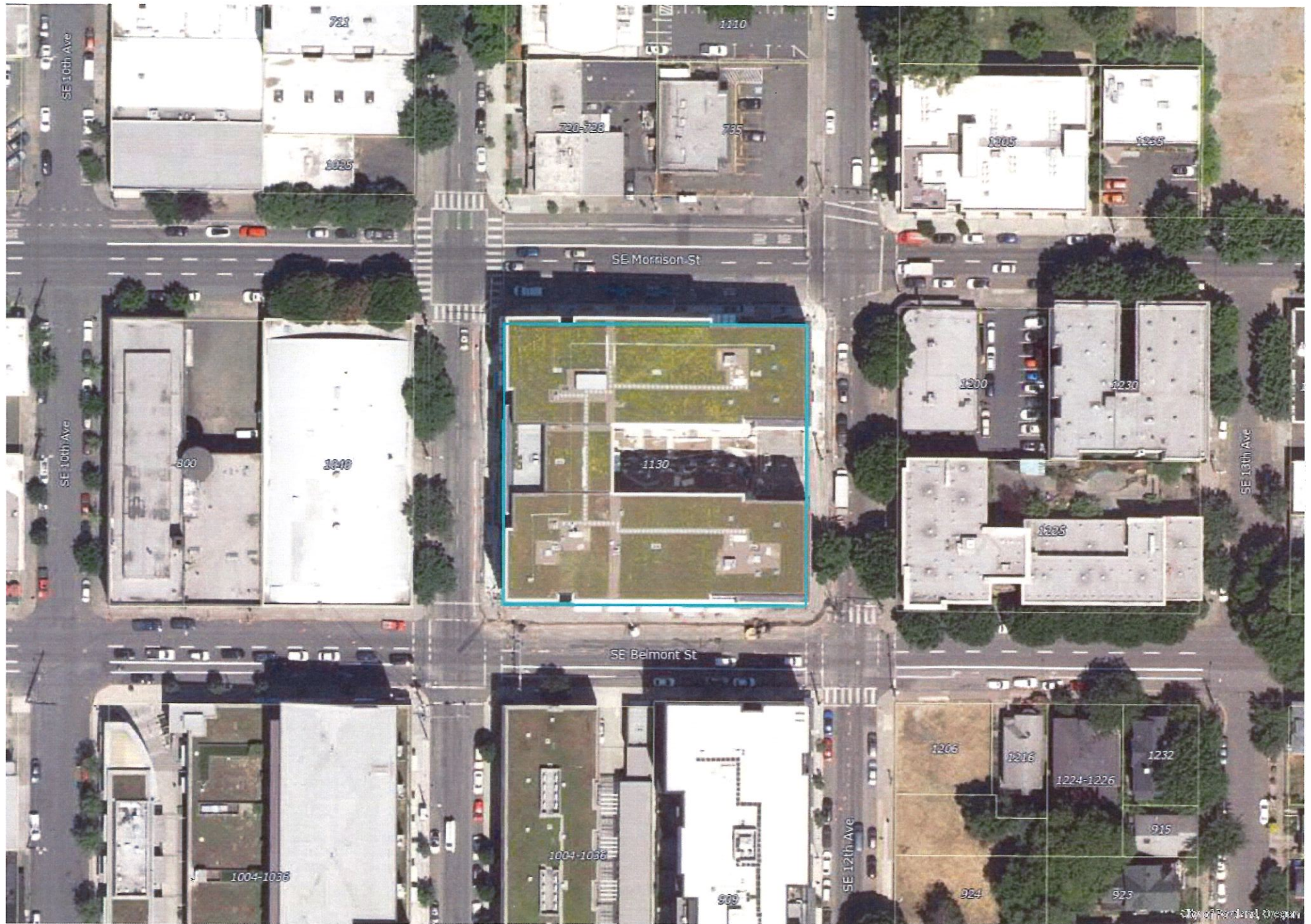
MILLCREEK-19-04

VICINITY MAP

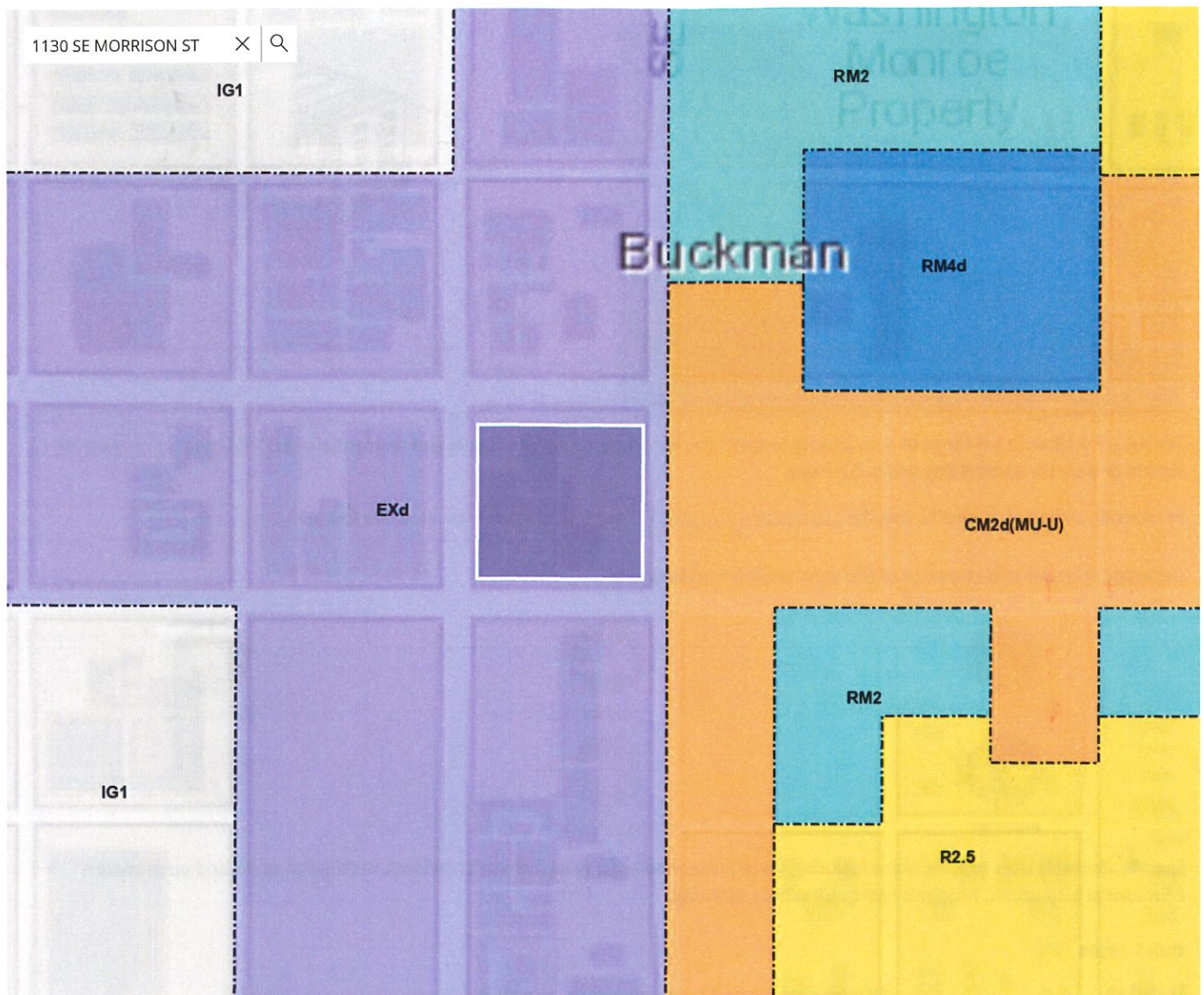
MAY 2023

MODERA MORRISON
PORTLAND, OR

ATTACH 1



Attachment 2



Attachment 3



Oregon Metro, Bureau of Land Management, State of Oregon, State of Oregon DOT, State of Oregon GEO, Esri, HERE, Garmin, GeoTechnologies, Inc., USGS, EPA | City ... Powered by Esri

1130 SE MORRISON ST

Comprehensive information for this property is available on PortlandMaps.com: [R150567](#)

The official zoning quarter section map(s) for this property is [3131](#)

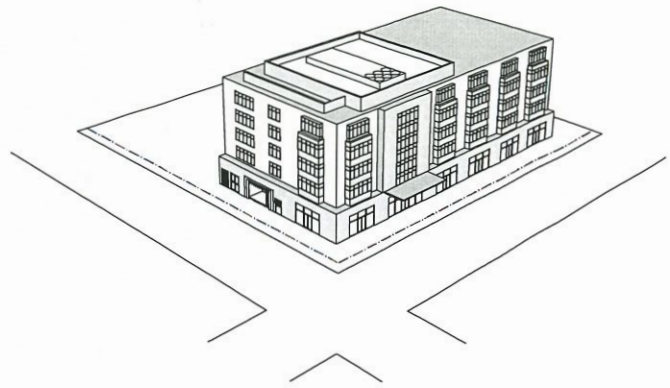
This property contains the following Comprehensive Plan Map Designation(s):

Central Employment

Detailed zone summaries are available below.

Base zones

Central Employment (EX)



The **EX** zone allows a full range of high density commercial, light industrial, institutional and residential uses. This zone is intended for sites in or near the Central City and in Gateway.

For specific zoning code details, visit the [zoning code website](#). The regulations for this zone are found in [Chapter 33.140](#).

Generally, the uses and character of this zone are oriented towards:



RETAIL



OFFICE



RESIDENTIAL



INDUSTRY



INSTITUTIONAL



OPEN SPACE

Specific allowable uses include: manufacturing, warehouse, wholesale sales, industrial services, residential, parks and open spaces, educational institutions, hospitals and quick vehicle servicing.

Quick facts

Location

EX Zones are located predominantly in or near the Central City and in Gateway.

65'+

maximum height, which is generally 6 stories.

FAR Range

FAR in the EX zone ranges from **3:1 - 9:1**

Height and FAR varies per plan district maps. Generally, buildings in EX zones are at least 65' and can reach up to 225' in some places.

Parking

is generally not required for non-residential uses when development is located near transit or contains fewer than 30 residential units.

Overlay zones

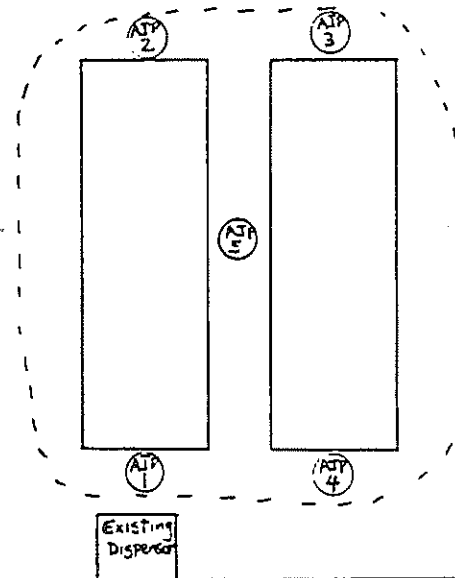
Design (d)

The Design (**d**) overlay zone ensures that Portland is both a city designed for people and a city in harmony with nature. The Design overlay zone supports the city's evolution within current and emerging centers of civic life. The overlay promotes design excellence in the built environment through the application of additional design standards and design guidelines that:

- Build on context by enhancing the distinctive physical, natural, historic and cultural qualities of the location while accommodating growth and change;
- Contribute to a public realm that encourages social interaction and fosters inclusivity in people's daily experience; and
- Promotes quality and long-term resilience in the face of changing demographics, climate and economy.

For specific zoning code details, visit the [zoning code website](#). The regulations for this zone are found in [Chapter 33.420](#).

11th St



Building

Morrison St

AJP SOIL SAMPLE PLAN
SCALE 1/4" = 1'-0"

RESULTS

DATE	SAMPLE #	DEPTH	TPH mg/kg
07/19	AJP1	9'	ND
	AJP2	9'	ND
	AJP3	9'	ND
	AJP4	9'	ND
	AJP5	8'	418

Attachment 4

October 1, 1996

ALAN CAMPF
AJP
1120 SE MORRISON
PORTLAND OREGON 97214

DEPARTMENT OF
ENVIRONMENTAL
QUALITY

NORTHWEST REGION

Re: AJP
File No. 26-91-267

Dear Mr. Campf:

The Department has reviewed its file on the underground storage tank decommissioning and cleanup conducted at 1120 SE Morrison in Portland, Oregon. The Department has determined that the cleanup appears to have met the requirements of Oregon Administrative Rules (OAR) 340-122-205 through 340-122-360 and that no further action is required at this time.

This determination is a result of our evaluation and judgment based on the regulations and facts as we now understand them, including:

1. Two 1,000 gallon gasoline USTs were decommissioned at this location. The tanks were recycled at Mt. Hood Metals.
2. Gasoline contamination was discovered during the decommissioning. Approximately 100 cubic yards of contaminated soil were removed from the excavation and treated onsite. After treatment was complete, no contamination was detected in the treated soil.

The final disposal location of the contaminated soil was not documented. The person responsible for the disposal is no longer able to provide documentation.

3. After excavation was complete, no contamination was detected in the soil.
4. No groundwater was encountered in the excavation.

The Department's determination will not be applicable if new or undisclosed facts show that the cleanup does not comply with the referenced rules. The Department's determination also does not apply to any conditions at the site other than the release of the petroleum product specifically addressed in the report(s).

John A. Kitzhaber
Governor



2020 SW Fourth Avenue
Suite 400
Portland, OR 97201-4987
(503) 229-5263 Voice
TTY (503) 229-5471
DEQ-1

Alan Campf
October 1, 1996
Page 2

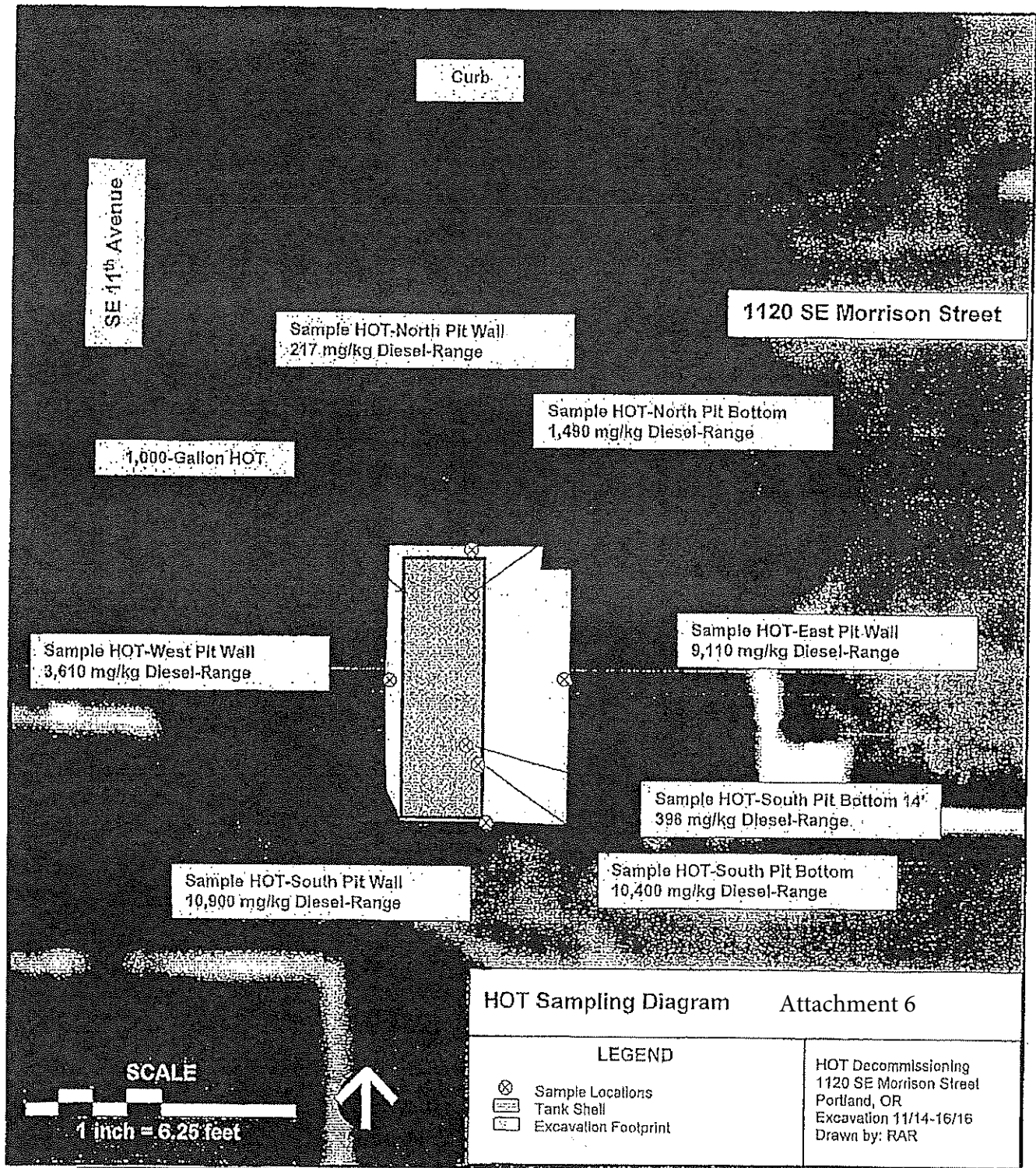
Please note that pursuant to OAR 340-122-360(2), a copy of your report must be retained until ten (10) years after the first transfer of the property. We recommend that a copy of this information be kept with the permanent facility records.

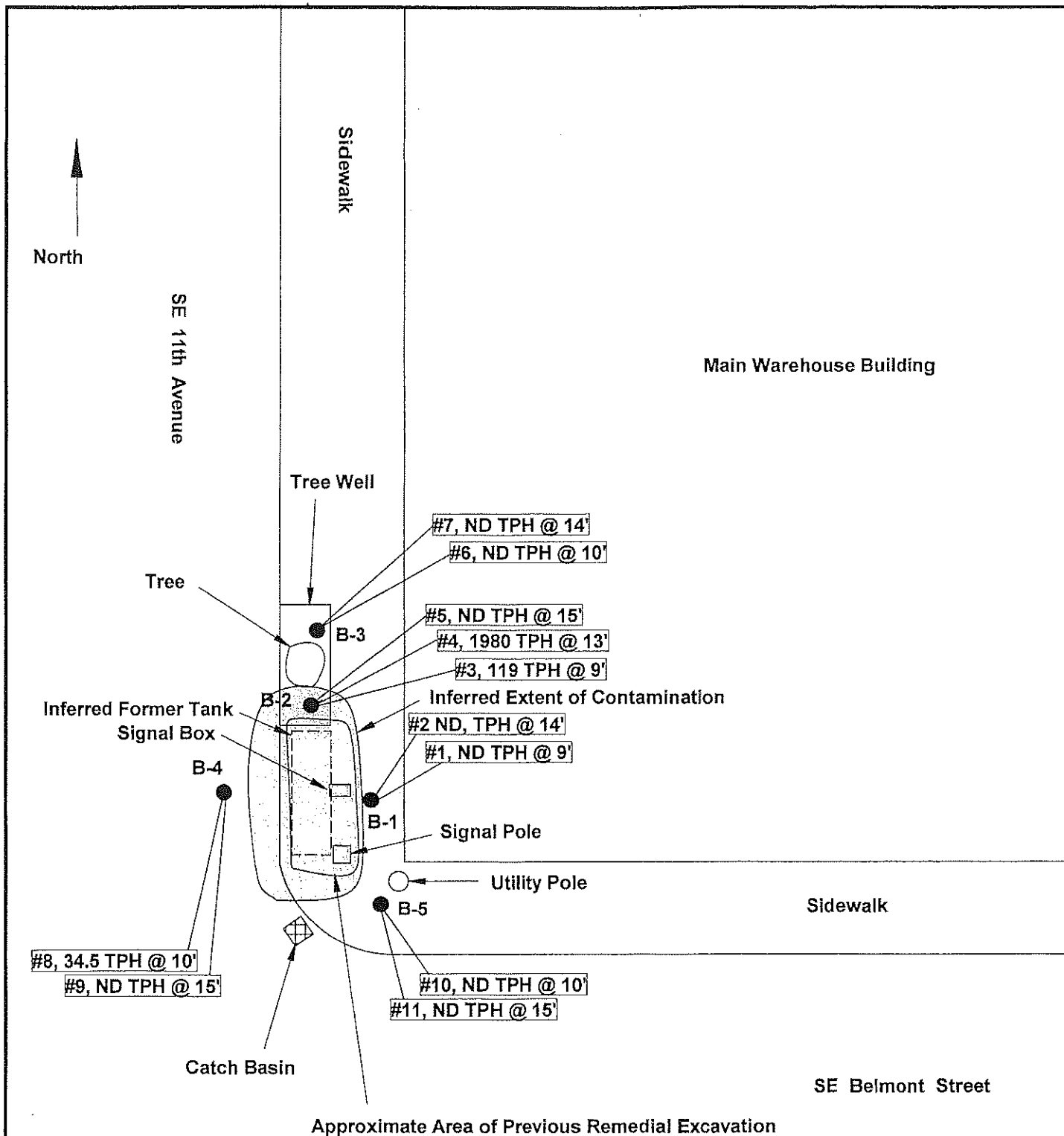
Your efforts to comply with the regulations to ensure that your facility has been adequately cleaned up have been appreciated. If you have any questions, please call me at (503) 229-5474.

Sincerely,


Andree Pollock
UST Cleanup Specialist

(avp:AVP)





Attachment 7

<u>Site Map</u> Alan Campf 1120 SE Morrison St. Portland, OR	<u>K&S Environmental, Inc.</u> #8, 34.5 TPH @ 10' ● - Sample Location w/Results & Depth	Job #5773 Date: 4/13/17 Scale: 1" = 14'
--	---	--



Oregon

Kate Brown, Governor

Department of Environmental Quality

Northwest Region

700 NE Multnomah Street, Suite 600

Portland, OR 97232

(503) 229-5263

FAX (503) 229-6945

TTY 711

June 6, 2017

CAMPF PROPERTIES LIMITED PARTNERSHIP
ALLEN CAMPF
1120 SE MORRISON ST
PORTLAND, OR 97214

Re: Campf, Allen
File No: 26-16-1462

Dear Campf Properties Limited Partnership:

The Department of Environmental Quality has received a report and K&S Environmental, Inc. certification concerning the heating oil underground storage tank (HOT) assessment and/or cleanup conducted at 1120 SE Morrison St, in Portland, Oregon.

K&S Environmental, Inc. was licensed to provide heating oil tank services and has certified that the cleanup has met the Department's requirements. The Department has registered this report and certification and closed its file on the project.

The decision to register the report and certification and to close the Department's file will no longer apply if new or undisclosed facts show that the project does not comply with the rules governing heating oil tank cleanups.

Please note that you are required by state law (ORS 105.464) to provide potential buyers a disclosure statement that includes information regarding underground storage tanks, HOTs and the environmental conditions on your property.

Accordingly, we recommend that you keep a copy of this letter, the certification and any reports of testing or corrective actions relating to your HOT with the permanent property records.

Your efforts to comply with Oregon's environmental rules and regulations to ensure that your heating oil tank has been adequately addressed have been appreciated. Proper decommissioning and cleanup helps ensure protection of the environment from future heating oil tank leaks and ensures that the heating oil does not adversely impact human health or the environment.

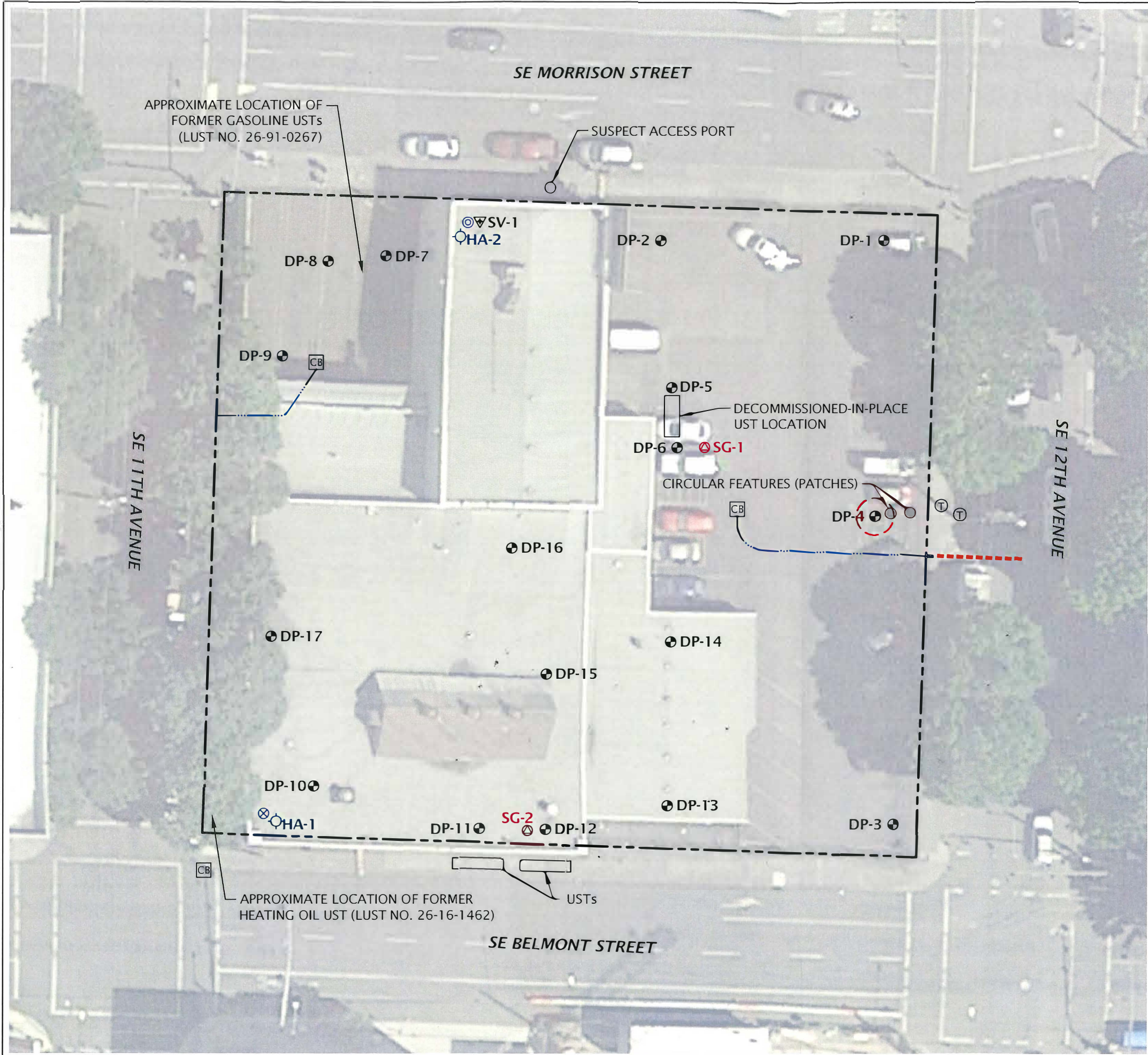
If you have any questions, please feel free to contact the HOT Program at (503) 229-6170.

Sincerely,

Michael H Korten Hof, Manager
DEQ Heating Oil Tank Program

cc. Contractor by email

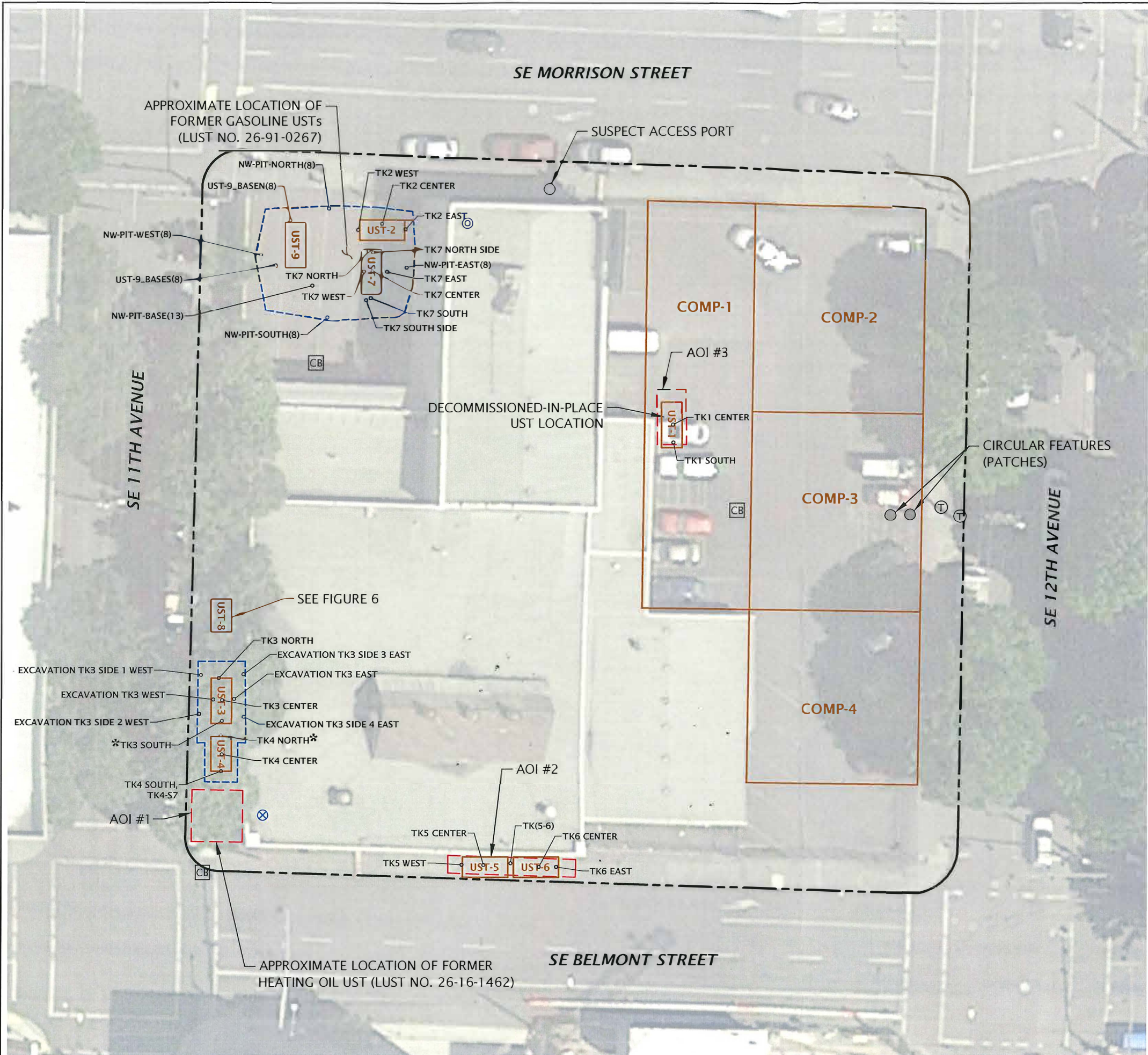
Printed By: mmiller | Print Date: 7/30/2019 8:14:56 AM
File Name: J:\M-R\MillCreek\MillCreek-19-01-02\Figures\CAD\MillCreek-19-01-02-SP01.dwg | Layout: FIGURE 2



GEODESIGN ^{INC.} 9450 SW Commerce Circle - Suite 300 Wilsonville, OR 97070 503.968.8787 www.geodesigninc.com	MILLCREEK-19-01-02		JULY 2019	
	MODERA MORRISON PORTLAND, OR		SITE PLAN	

SITE PLAN BASED ON AERIAL PHOTOGRAPH
OBTAINED FROM GOOGLE EARTH PRO®,
MARCH 22, 2019

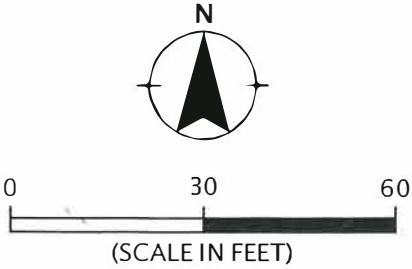
Printed By: mmiller | Print Date: 5/11/2023 2:35:02 PM
File Name: J:\M-R\MillCreek\MillCreek-19-04\Figures\CAD\MillCreek-19-04-SP03.dwg | Layout: FIGURE 3



- LEGEND:**
- SUBJECT PROPERTY BOUNDARY
 - CB CATCH BASIN
 - ⊕ POLE-MOUNTED TRANSFORMER
 - ⊙ FLOOR DRAIN IN OFFICE BASEMENT
 - ⊗ FLOOR DRAIN IN WAREHOUSE BATHROOM
 - [] AREA OF INTEREST
 - [] REMEDIAL EXCAVATION AREA
 - TK1 CENTER CONFIRMATION SOIL SAMPLE
 - * SOIL REPRESENTED BY THIS SAMPLE WAS REMOVED DURING OVER-EXCAVATION ACTIVITIES
 - COMP-1 SMA COMPOSITE AREA

NOTE:
SOIL SAMPLE SP2-1 WAS COLLECTED FROM A STOCKPILE OF SOIL GENERATED DURING REMOVAL OF OVERBURDEN SOIL ABOVE UST #1.

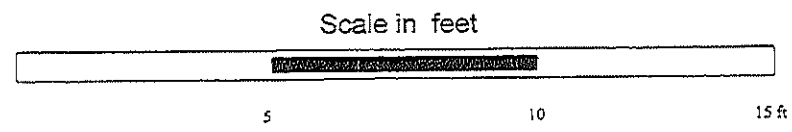
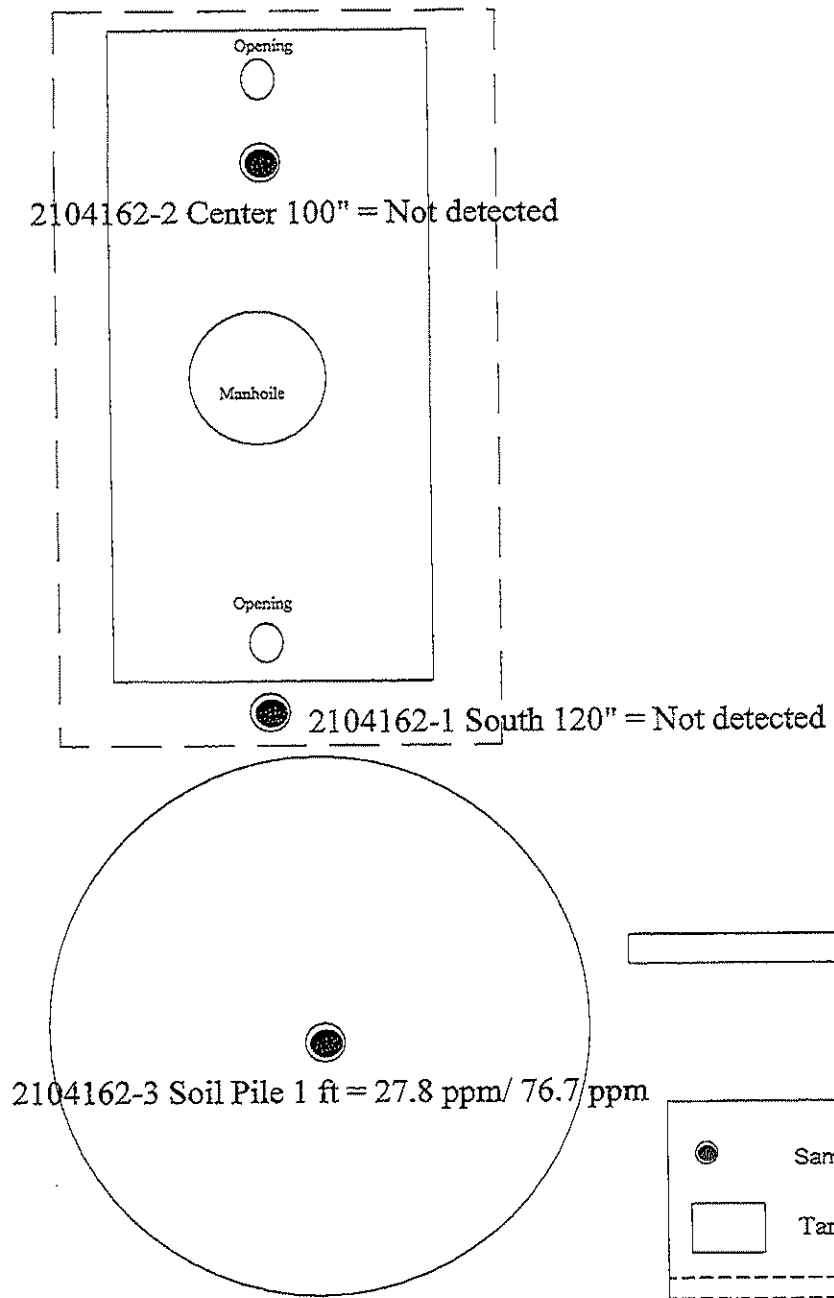
Attachment 11



SITE PLAN BASED ON AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH PRO®, MARCH 22, 2019

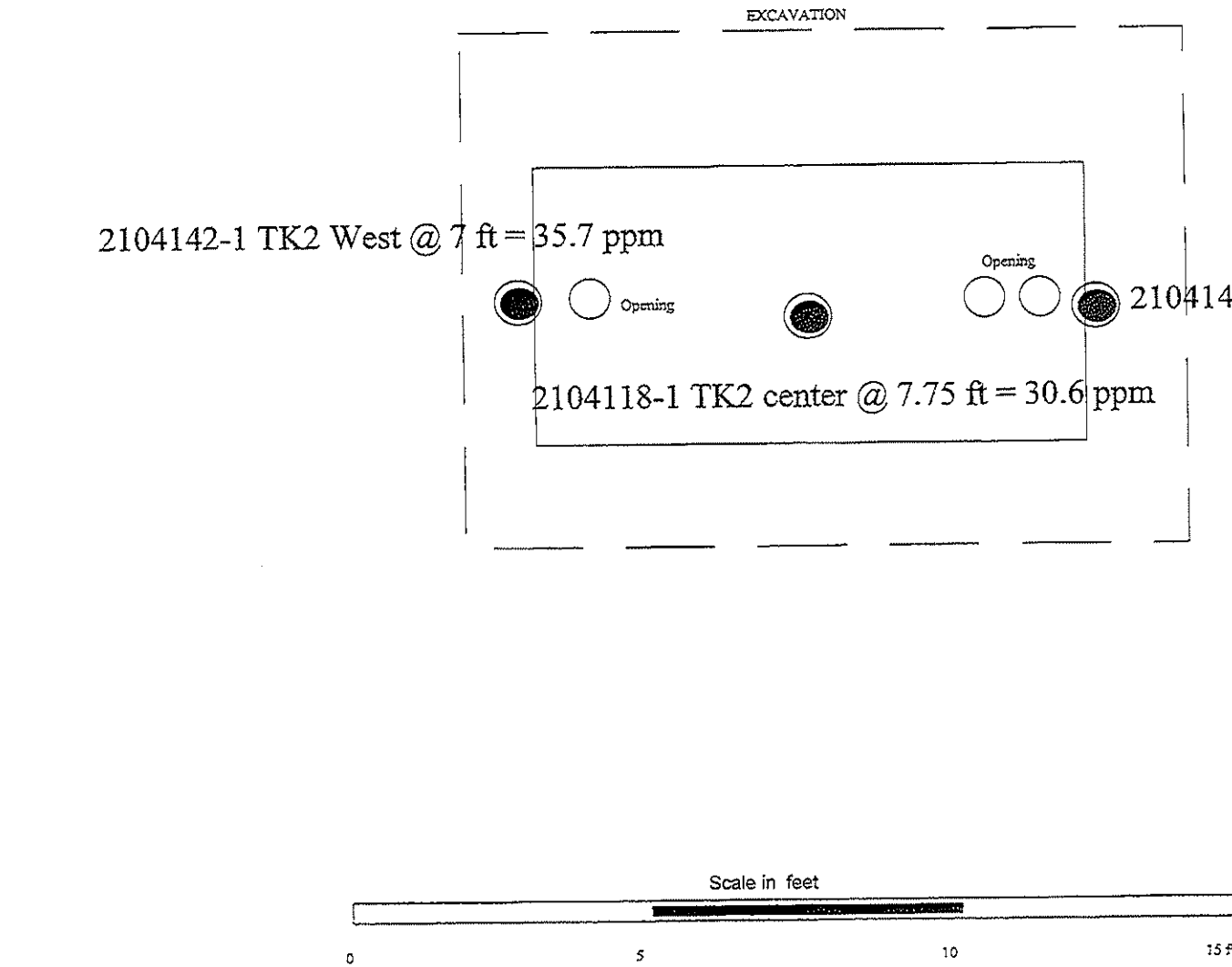
SITE PLAN - CONFIRMATION SOIL SAMPLES		MODERA MORRISON PORTLAND, OR	I RE
MILLCREEK-19-04	MAY 2023		





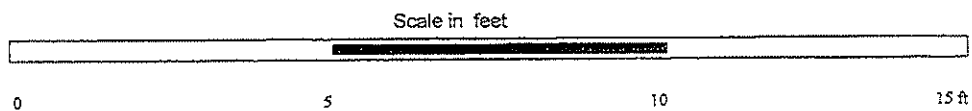
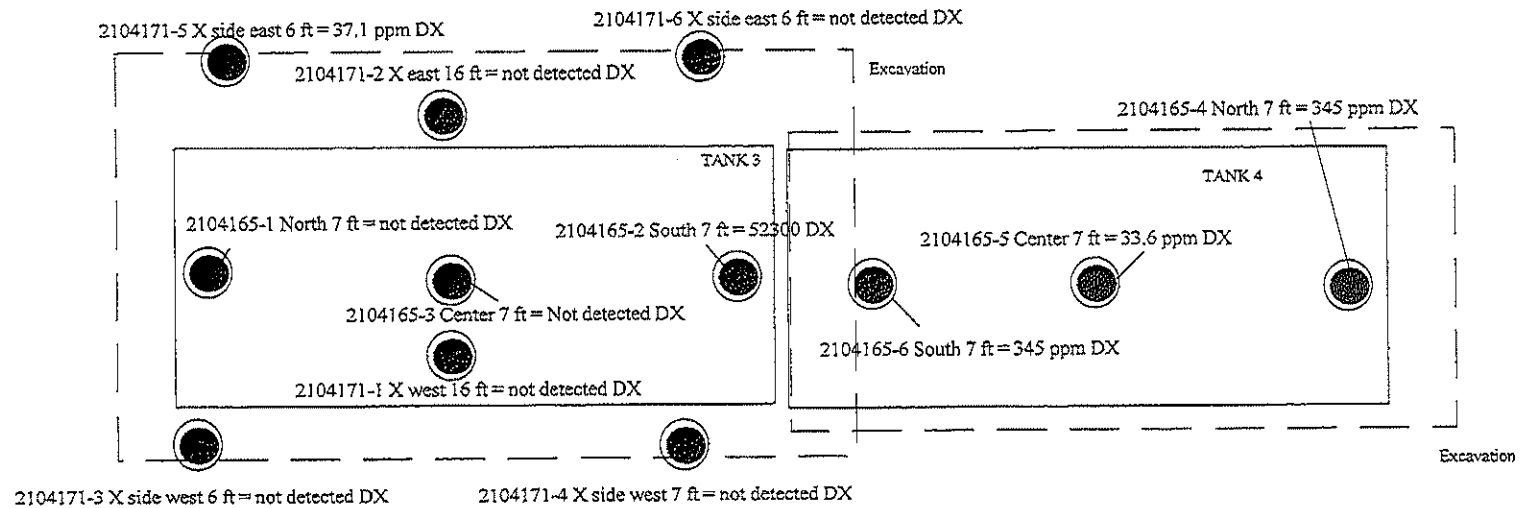
Attachment 12

Spartan Environmental Services LLC			
Site Drawing -TANK 1			
1120 SE Morrison Portland			
SIZE	CAGE CODE	DWG NO	REV
A0			4/4/22
SCALE		SHEET	

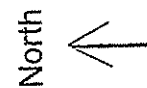


Attachment 13

 Sample  Tank		Spartan Environmental Services LLC			
		TITLE Site Drawing -TANK 2 1120 SE Morrison Portland			
DATE	GRADE CODE	DWG NO	REV		
A0			SOIL SAMPLE RESULTS		
SCALE		SHRLEY			4/4/22

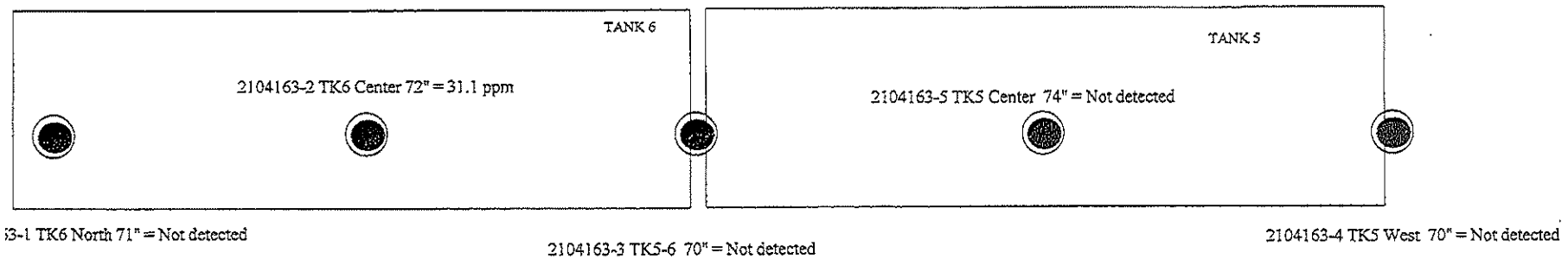


Attachment 14

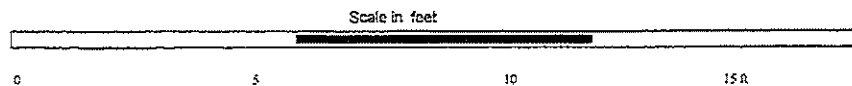


Sample				Spartan Environmental Services LLC			
Tank				TITLE Site Drawing -TANK 3 and 4 1120 SE Morrison Portland			
DATE	CHART CODE	DWG NO	REV		REV		REV
A0			SOIL SAMPLE RESULTS		4/4/22		
SCALE				SHEET			

Samples for TPH-Dx (diesel and heavy oil)



Attachment 15

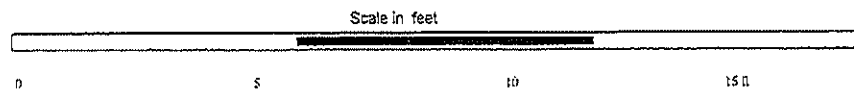
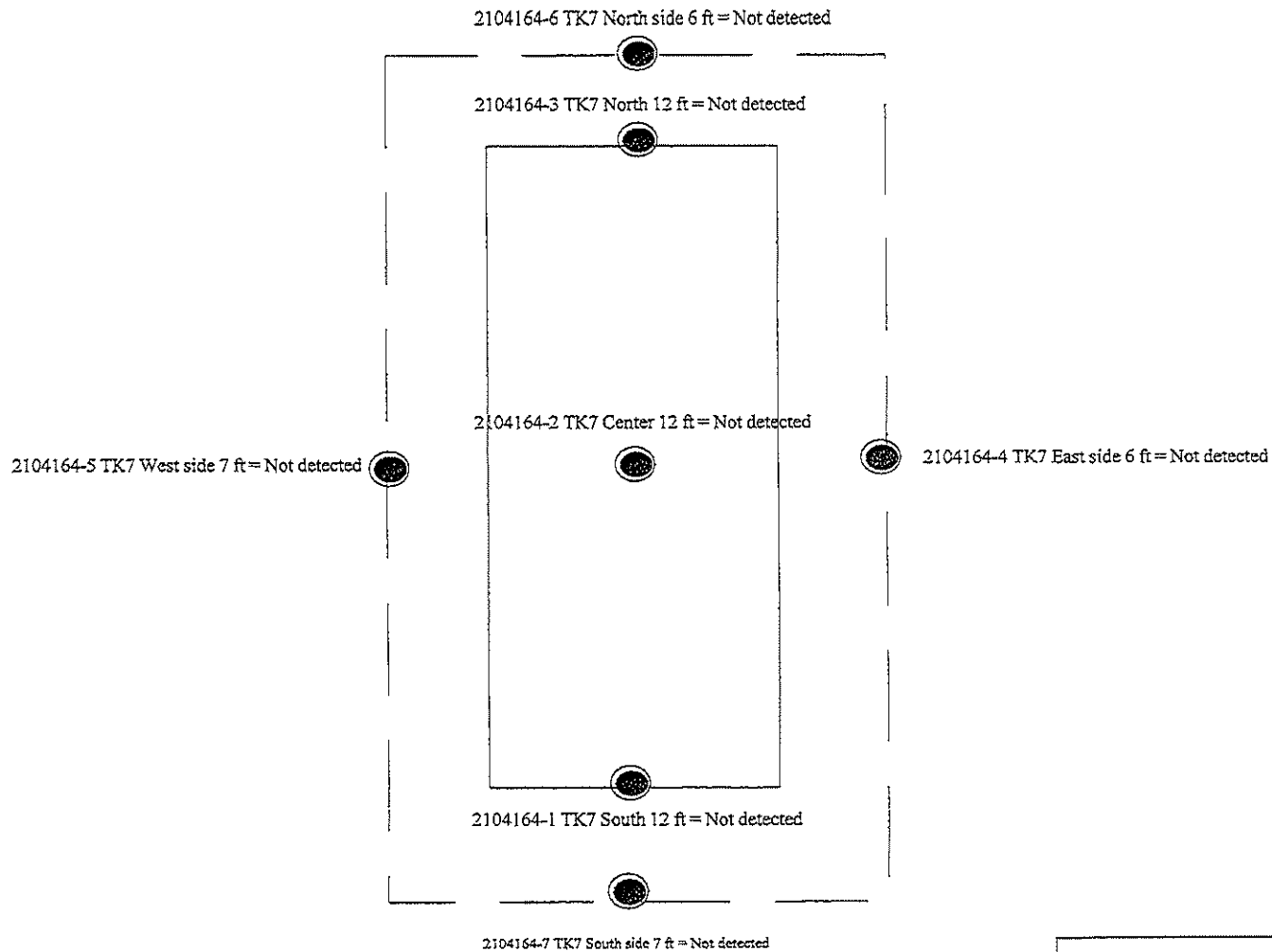


South



Sample		Spartan Environmental Services LLC	
Tank		TITLE Site Drawing -TANK 5 and 6 1120 SE Morrison Portland	
DATE AO	CASEL CODE	ISWG NO	REV 4/4/22
SCALE		SHEET	

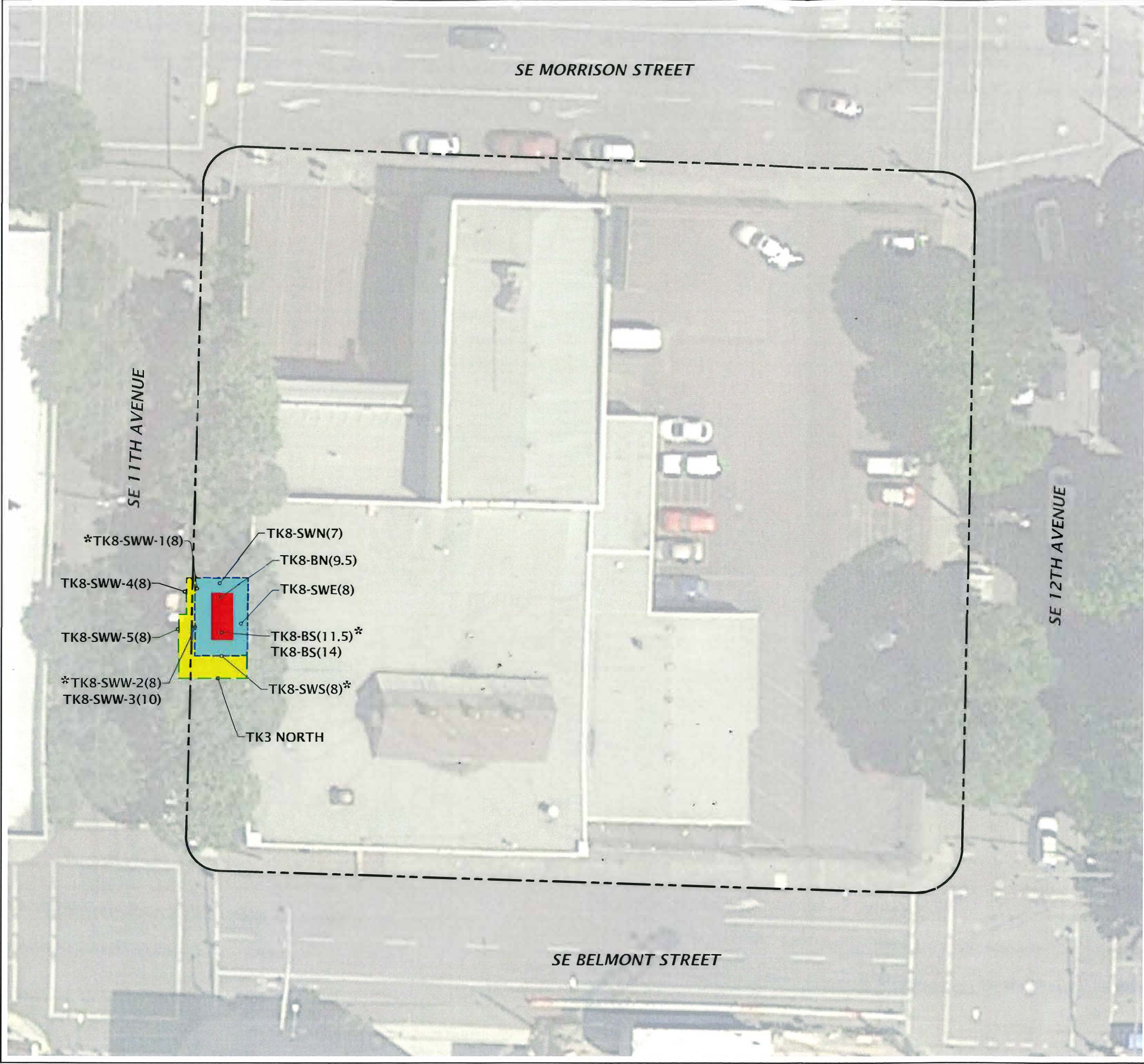
Samples for TPH-Dx (diesel and heavy oil)



Attachment 16

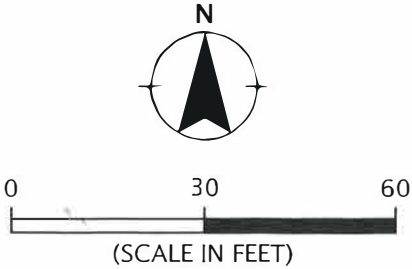
Sample Tank		Spartan Environmental Services LLC	
		TITLE Site Drawing -TANK 7 1120 SE Morrison Portland	
SIZE A0	DATE CODE SCALE	DWG NO SOIL SAMPLE RESULTS	REV 4/4/22

Printed By: mmiller | Print Date: 5/11/2023 2:35:16 PM
File Name: J:\M-R\MillCreek\MillCreek-19\MillCreek-19-04\Figures\CAD\MillCreek-19-04-SP03.dwg | Layout: FIGURE 6



- LEGEND:**
- SUBJECT PROPERTY BOUNDARY
 - FORMER UST #8
 - INITIAL EXCAVATION LIMITS
 - FINAL EXCAVATION LIMITS
 - TK8-SWN(7)
 - CONFIRMATION SOIL SAMPLE
 - * SOIL REPRESENTED BY THIS SAMPLE WAS REMOVED DURING OVER-EXCAVATION ACTIVITIES

Attachment 17



SITE PLAN BASED ON AERIAL PHOTOGRAPH
OBTAINED FROM GOOGLE EARTH PRO®,
MARCH 22, 2019

NV5

SITE PLAN - RESIDUAL CONTAMINATED SOIL

MILLCREEK-19-04

MAY 2023

MODERA MORRISON
PORTLAND, OR

R

TPH Fraction Composition (Weight Fraction)

Fuel Fractions	Site-Specific Data			Generic Weight Fraction Data		
	Raw Data mg/kg (ppm)	Adjusted Data mg/kg (ppm)	Weight Fraction	Gasoline	Diesel	Mineral Oil
Aliphatic C5-C6		3704	3.01E-01	2.06E-01	0.00E+00	0.00E+00
Aliphatic >C6-C8		3956	3.22E-01	2.20E-01	0.00E+00	0.00E+00
Aliphatic >C8-C10		1618	1.32E-01	9.00E-02	2.00E-02	1.00E-03
Aliphatic >C10-C12		539	4.39E-02	3.00E-02	7.00E-02	3.00E-03
Aliphatic >C12-C16		0	0.00E+00	0.00E+00	3.50E-01	1.60E-01
Aliphatic >C16-C21		0	0.00E+00	0.00E+00	3.40E-01	7.00E-01
Aliphatic >C21-C34		0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Aromatic >C8-C10		1622	1.32E-01	9.02E-02	2.52E-03	1.00E-03
Aromatic >C10-C12		405	3.29E-02	2.25E-02	7.40E-03	1.00E-03
Aromatic >C12-C16		0	0.00E+00	0.00E+00	8.00E-02	7.00E-03
Aromatic >C16-C21		0	0.00E+00	0.00E+00	1.20E-01	8.00E-02
Aromatic >C21-C34		0	0.00E+00	0.00E+00	0.00E+00	4.60E-02
n-Hexane		431.5	3.51E-02	2.40E-02	0.00E+00	0.00E+00
Benzene	0.1	0.1	1.18E-05	2.50E-02	2.90E-04	0.00E+00
Toluene	0.7	0.7	5.89E-05	1.20E-01	1.80E-03	0.00E+00
Ethylbenzene	0.4	0.4	2.94E-05	2.00E-02	6.80E-04	0.00E+00
Total Xylenes	3.8	3.8	3.11E-04	1.10E-01	5.00E-03	0.00E+00
1,2,4-trimethylbenzene	4.9	4.9	3.94E-04	3.00E-02	0.00E+00	0.00E+00
1,3,5-trimethylbenzene	12.9	12.9	1.05E-03	9.80E-03	1.80E-03	0.00E+00
Naphthalene	1.5	1.5	1.18E-04	2.50E-03	2.60E-03	0.00E+00
Total	24	12300	1.00	1.00	1.00	1.00

Use one of the following two options for site-specific TPH RBC calculations.		
OPTION 1:	(1) Enter TPH data (mg/kg or ppm) into the cell on the right.	12300
Estimate TPH Fractions	(2) Enter BTEX, TMB, and naphthalene data in the "Raw Data" column above.	Gasoline Estimate
	(3) Use one of the buttons at the right to identify the predominant product.	Diesel Estimate
OR		
OPTION 2:	(1) Enter TPH fraction <u>and</u> constituent data in the "Raw Data" column above.	Gasoline Fractions
Use VPH and EPH Results	(2) Use one of the buttons at the right to identify the predominant product.	Non-Gas Fractions

For references, please refer to *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites* (DEQ, 2003).

Risk-Based Concentrations for TPH: Site-Specific Data

Fuel Fraction	RBCss					RBCso			RBCsl			RBCsw		
	Residential	Urban Residential	Occupational	Construction Worker	Excavation Worker	Residential	Urban Residential	Occupational	Residential	Urban Residential	Occupational	Residential	Urban Residential	Occupational
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Aliphatic C5-C6	6.3E-02	6.5E-02	5.5E-02	2.1E-02	6.5E-03	2.7E-01	2.7E-01	3.6E-01	1.8E-01	1.8E-01	4.5E-01	1.5E-01	1.5E-01	3.7E-02
Aliphatic >C6-C8	6.7E-02	6.9E-02	5.8E-02	2.3E-02	7.0E-03	2.9E-01	2.9E-01	3.2E-01	1.9E-01	1.9E-01	8.8E-02	2.0E-02	2.0E-02	4.8E-03
Aliphatic >C8-C10	5.9E-01	6.0E-01	6.2E-01	6.5E-01	1.9E-01	3.8E-01	3.8E-01	9.1E-02	5.6E-01	5.6E-01	2.5E-02	5.5E-03	5.5E-03	1.3E-03
Aliphatic >C10-C12	1.8E-01	1.7E-01	1.7E-01	2.1E-01	6.2E-02	1.2E-02	1.2E-02	2.9E-03	4.2E-02	4.2E-02	7.9E-04	1.2E-04	1.2E-04	2.9E-05
Aliphatic >C12-C16	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Aliphatic >C16-C21	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Aliphatic >C21-C34	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Aromatic >C8-C10	2.3E-18	2.4E-18	2.1E-18	1.2E-18	3.1E-19	3.7E-18	3.7E-18	8.9E-19	7.9E-19	7.9E-19	2.4E-19	6.1E-18	6.1E-18	1.4E-18
Aromatic >C10-C12	6.7E-02	5.8E-02	5.4E-02	5.9E-02	1.6E-02	9.7E-03	9.7E-03	2.3E-03	3.7E-03	3.7E-03	6.3E-04	6.1E-02	6.1E-02	1.5E-02
Aromatic >C12-C16	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Aromatic >C16-C21	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Aromatic >C21-C34	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
n-Hexane	2.5E-02	2.6E-02	2.7E-02	2.9E-02	8.8E-03	3.1E-02	3.1E-02	2.7E-02	2.1E-02	2.1E-02	7.5E-03	1.4E-02	1.4E-02	3.4E-03
Benzene	1.5E-04	1.5E-04	1.5E-04	1.5E-04	4.6E-05	2.5E-04	2.5E-04	3.3E-04	1.7E-04	1.7E-04	1.3E-04	1.0E-02	1.0E-02	2.4E-03
Toluene	2.4E-05	2.4E-05	2.7E-05	3.3E-05	1.0E-05	7.4E-06	7.4E-06	4.2E-06	2.8E-06	2.8E-06	1.1E-06	2.5E-04	2.5E-04	6.1E-05
Ethylbenzene	1.3E-05	1.3E-05	1.4E-05	1.5E-05	4.4E-06	1.3E-05	1.3E-05	3.0E-06	3.8E-06	3.8E-06	8.2E-07	5.9E-05	5.9E-05	1.4E-05
Total Xylenes	5.0E-04	5.2E-04	4.5E-04	2.2E-04	5.7E-05	1.2E-03	1.2E-03	2.9E-04	3.4E-04	3.4E-04	8.0E-05	4.3E-03	4.3E-03	1.0E-03
1,2,4-trimethylbenzene	8.3E-03	7.0E-03	4.7E-03	2.8E-03	3.1E-04	5.0E-03	5.0E-03	1.2E-03	5.4E-04	5.4E-04	3.4E-04	2.1E-02	2.1E-02	5.1E-03
1,3,5-trimethylbenzene	3.1E-03	3.2E-03	3.6E-03	4.7E-03	1.4E-03	1.2E-20	1.2E-20	2.7E-21	6.0E-21	6.0E-21	7.4E-22	2.0E-03	2.0E-03	5.0E-04
Naphthalene	1.5E-03	1.1E-03	8.2E-04	6.4E-04	1.2E-04	1.2E-04	1.2E-04	2.9E-05	4.7E-05	4.7E-05	8.0E-06	7.7E-03	7.7E-03	1.8E-03
TPH RBC* →	2,300	4,800	35,000	14,000	>MAX	21,000	21,000	>MAX	110	110	>MAX	>MAX	>MAX	>MAX
Generic Gasoline	1,200	2,500	20,000	9,700	>MAX	5,900	5,900	69,000	94	94	>MAX	31	31	130
Generic Diesel / Heating Oil	1,100	2,200	14,000	4,600	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	9,500	9,500	>MAX
Generic Mineral Insulating Oil	2,800	5,700	36,000	11,000	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX	>MAX

RBCtw			RBCwo			RBCwi			RBCwe	RBCair			RBCsg		
Residential	Urban Residential	Occupational	Residential	Urban Residential	Occupational	Residential	Urban Residential	Occupational	Construction & Excavation Worker	Residential	Urban Residential	Occupational	Residential	Urban Residential	Occupational
(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/m ³)	(ug/m ³)	(ug/m ³)	(ug/m ³)	(ug/m ³)	(ug/m ³)
1.5E+03	1.5E+03	6.1E+03	6.5E+04	6.5E+04	2.7E+05	2.9E+03	2.9E+03	3.7E+04	1.7E+05	7.3E+02	7.3E+02	3.1E+03	1.5E+05	1.5E+05	3.1E+06
1.5E+03	1.5E+03	6.1E+03	4.3E+04	4.3E+04	1.8E+05	1.9E+03	1.9E+03	2.4E+04	1.7E+05	7.3E+02	7.3E+02	3.1E+03	1.5E+05	1.5E+05	3.1E+06
1.3E+02	1.3E+02	5.5E+02	3.8E+03	3.8E+03	1.6E+04	1.7E+02	1.7E+02	2.2E+03	2.0E+03	1.0E+02	1.0E+02	4.4E+02	2.1E+04	2.1E+04	4.4E+05
1.3E+02	1.3E+02	5.5E+02	2.6E+03	2.6E+03	1.1E+04	1.1E+02	1.1E+02	1.4E+03	6.7E+02	1.0E+02	1.0E+02	4.4E+02	2.1E+04	2.1E+04	4.4E+05
3.7E+02	3.7E+02	1.5E+03	5.9E+02	5.9E+02	2.5E+03	2.6E+01	2.6E+01	3.3E+02	1.2E+02	1.0E+02	1.0E+02	4.4E+02	-	-	-
1.1E+05	1.1E+05	4.4E+05	6.3E+18	6.3E+18	2.6E+19	2.8E+17	2.8E+17	3.5E+18	2.4E+03	1.0E+19	1.0E+19	4.4E+19	-	-	-
1.1E+05	1.1E+05	4.4E+05	3.1E+17	3.1E+17	1.3E+18	1.4E+16	1.4E+16	1.7E+17	9.0E+02	1.0E+19	1.0E+19	4.4E+19	-	-	-
2.0E+19	2.0E+19	8.3E+19	5.0E+22	5.0E+22	2.1E+23	2.7E+21	2.7E+21	3.4E+22	2.1E+21	1.0E+19	1.0E+19	4.4E+19	-	-	-
1.8E+02	1.8E+02	7.3E+02	1.2E+06	1.2E+06	4.9E+06	8.9E+04	8.9E+04	1.1E+06	1.4E+04	1.0E+02	1.0E+02	4.4E+02	2.1E+04	2.1E+04	4.4E+05
1.8E+02	1.8E+02	7.3E+02	1.9E+06	1.9E+06	7.9E+06	2.3E+05	2.3E+05	2.9E+06	1.2E+04	1.0E+02	1.0E+02	4.4E+02	2.1E+04	2.1E+04	4.4E+05
1.8E+02	1.8E+02	7.3E+02	3.8E+06	3.8E+06	1.6E+07	8.9E+05	8.9E+05	1.1E+07	9.5E+03	1.0E+02	1.0E+02	4.4E+02	2.1E+04	2.1E+04	4.4E+05
1.5E+03	1.5E+03	5.8E+03	4.2E+24	4.2E+24	1.8E+25	1.7E+24	1.7E+24	2.1E+25	7.3E+03	1.0E+19	1.0E+19	4.4E+19	-	-	-
8.8E+02	8.8E+02	3.6E+03	2.1E+05	2.1E+05	9.0E+05	9.5E+03	9.5E+03	1.2E+05	6.5E+04	7.3E+02	7.3E+02	3.1E+03	1.5E+05	1.5E+05	3.1E+06
4.4E+01	4.4E+01	1.8E+02	2.8E+05	2.8E+05	1.2E+06	1.9E+04	1.9E+04	2.4E+05	5.7E+03	3.1E+01	3.1E+01	1.3E+02	6.3E+03	6.3E+03	1.3E+05
2.3E+03	2.3E+03	9.2E+03	4.4E+07	4.4E+07	1.8E+08	2.7E+06	2.7E+06	3.4E+07	2.1E+05	5.2E+03	5.2E+03	2.2E+04	1.0E+06	1.0E+06	2.2E+07
1.3E+03	1.3E+03	5.5E+03	8.8E+06	8.8E+06	3.7E+07	5.3E+05	5.3E+05	6.6E+06	1.1E+05	1.0E+03	1.0E+03	4.4E+03	2.1E+05	2.1E+05	4.4E+06
2.0E+02	2.0E+02	8.5E+02	9.2E+05	9.2E+05	3.9E+06	5.9E+04	5.9E+04	7.4E+05	2.3E+04	1.0E+02	1.0E+02	4.4E+02	2.1E+04	2.1E+04	4.4E+05
1.5E+01	1.5E+01	6.1E+01	8.0E+04	8.0E+04	3.3E+05	5.0E+03	5.0E+03	6.4E+04	1.7E+03	7.3E+00	7.3E+00	3.1E+01	1.5E+03	1.5E+03	3.1E+04
3.7E+02	3.7E+02	1.5E+03	9.2E+22	9.2E+22	3.9E+23	5.4E+21	5.4E+21	6.8E+22	2.3E+04	1.0E+19	1.0E+19	4.4E+19	-	-	-
6.2E+00	6.2E+00	2.6E+01	1.4E+05	1.4E+05	5.7E+05	2.9E+04	2.9E+04	3.7E+05	7.2E+02	3.1E+00	3.1E+00	1.3E+01	6.3E+02	6.3E+02	1.3E+04
1,300	1,300	5,600	>S	>S	>S	4,100	4,100	>S	>S	700	700	3,000	140,000	140,000	3,000,000
110	110	450	>S	>S	>S	22,000	22,000	>S	14,000	390	390	1,700	79,000	79,000	1,700,000
100	100	430	>S	>S	>S	>S	>S	>S	>S	100	100	440	21,000	21,000	440,000
300	300	1,300	>S	>S	>S	>S	>S	>S	>S	150	150	620	30,000	30,000	620,000