
# ENVIRONMENTAL SITE ASSESSMENT: PHASE II

Grandview Grocery
802 South C Street
Clallam County Parcel 0630000258000000
Port Angeles, Washington 98363

*Prepared For:*

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*By:*

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January 18, 2024

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January 18, 2024

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802 S C Street
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**Re: Report**
**Environmental Site Assessment: Phase II**
Grandview Grocery
802 South C Street
Clallam County Parcel 0630000258000000
Port Angeles, Washington 98363

Dear Grandview Grocery and MGM Group:

Stratum Group herein presents the results of a subsurface sampling investigation on the above referenced property in Port Angeles, Washington. The purpose of this investigation was to evaluate the subject property for potential subsurface contamination associated with its long history of gas station and service station operations.

The phase II assessment included a ground penetrating radar survey and completion of seven environmental borings in December 2023.

Three anomalies, suspected to be previously undiscovered underground storage tanks (USTs), were identified adjacent to the northeast corner of the convenience store building during the ground penetrating radar survey. The tanks are suspected to be associated with former fueling operation, possibly as early as the 1920s or 1940s.

The seven environmental borings were completed around the current fueling USTs and pump islands, as well as around former site buildings that included a store, auto repair/gas station, auto body, and auto repair shops.

Petroleum contaminated soil was encountered in three of the seven borings, including adjacent to the suspected USTs in the northeast corner of the property, southeast of the building where pump islands are suspected from a circa 1940s gas station, and in shallow soils between the active USTs and the front door of the convenience store building.

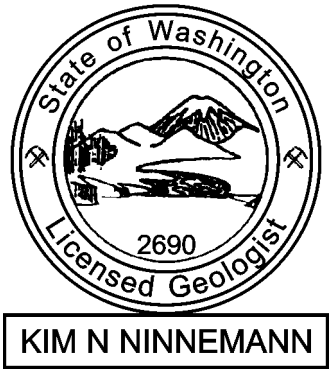
Concentrations of gasoline, diesel, and/or xylenes exceeded the Model Toxic Control Act (MTCA) Method A cleanup standards for unrestricted land use in soil. The lateral and horizontal extent of the contamination was not determined during this investigation. No groundwater samples were collected during the sampling event, as no groundwater was encountered in environmental borings that ranged in depth from 10 to 25 feet.

Based upon the exceedances of petroleum in the soil, the subject property is considered contaminated. The MTCA cleanup regulation (WAC 173-340-300) requires that any owner or operator that has knowledge that a hazardous substance has been released to the environment at their facility and where the release may be a threat to human health or the environment, report the release to Ecology. Reporting of this property to Ecology would place the property on the Confirmed and Suspected Contaminated Sites List.

Should you have any questions concerning this Phase II Environmental Site Assessment, please do not hesitate to contact us at (360) 714-9409.

Sincerely,
**Stratum Group**

Kim Ninnemann, B.Sc., L.G.
Licensed Geologist



# SECTION 1. EXECUTIVE SUMMARY

Stratum Group completed this Phase II environmental sampling investigation on the Grandview Grocery property at 802 South C Street in Port Angeles, Washington to evaluate the site for potential soil and/or groundwater contamination associated with the site's long history of gas station and automotive repair operations.

The subject property consists of 0.48 acres developed with an active gasoline station, convenience store and coffee shop. The site is an active underground storage tank (UST) site with the Department of Ecology (Ecology) and operates a fueling system with three diesel and gasoline USTs and two fuel dispensers. The current fueling system has been operational since approximately 1971.

A phase I environmental site assessment completed for the site by Stratum Group in November 2023 found that no previous environmental sampling had been completed on the site. The report identified two recognized environmental conditions in association with the site, which initiated this phase II sampling work:

- Lack of subsurface sampling information around the active fuel system that has been operational since 1971.
- Lack of subsurface sampling or tank information associated with the site's circa 1940 gas station, as well as early uses of the site for auto repair and painting

Historically, the site has been commercially developed since at least 1924. Our research indicates that the site has had at least three gas station operations: 1920, 1940s, and current system that has been operational since 1971.

To evaluate the risk of petroleum contamination on the site, Stratum Group oversaw a ground penetrating radar survey and environmental borings on the site in December 2023.

Three anomalies, suspected to be three previously undiscovered USTs, were identified near the northeast corner of the convenience store building during our ground penetrating radar survey on December 11, 2023. The tanks were located partially beneath the sidewalk and partially beneath the asphalt pavement of the subject property. The tanks were approximately 9-10 feet long and approximately 4 feet wide. Based upon this size, the tanks are likely 750 to 1,000-gallons in size. It is unknown if the tanks contain any residual fuel. The tanks would have been located near the back of the circa 1920s store building.  No other USTs were identified onsite, aside from the three active tanks registered with Ecology.

Stratum Group oversaw completion of seven environmental borings on the property on December 12, 2023. Borings were placed adjacent and down gradient of the newly discovered USTs, the location of the suspected former 1940s pump islands, around the active USTs and pump island, and through the locations of the former auto repair and auto painting buildings.

The borings were completed between 10 and 25 feet below the ground surface (bgs). No groundwater was encountered to depths up to 25 feet and therefore no groundwater samples were collected.

Petroleum contaminated soil was encountered in three of the seven borings. Petroleum-contaminated soil was encountered in soil adjacent to the suspected USTs in the northeast corner of the property (Boring B1). Gasoline impacted soil was encountered in three relatively narrow bands of soil at one foot, 8 foot, and 13-foot bgs in the boring. No contamination was suspected below approximately 15 feet bgs. Gasoline, diesel and/or xylene contamination was encountered to the southeast of the convenience store building, near the circa 1940s gas station, in soil zones at 3.5-foot, 14-foot, and 17-foot bgs (Boring B2). The boring hit refusal before the vertical extent of contamination could be confirmed. Gasoline and diesel contaminated soil was encountered at one-foot bgs between the active USTs and the main entrance to the convenience store (Boring B4). The contaminated soil was perched on a shallow concrete layer and was not encountered below the concrete.

The releases are suspected to be associated with the pre-1971 uses of the site, as no contamination was encountered around the active USTs or fuel pump islands. Additionally, no contamination was encountered in the borings through the former auto repair and paint booth buildings.

# SECTION 2. SITE LOCATION & PHYSICAL CHARACTERISTICS

## 2.1 Location

The subject property is located within the city limits of Port Angeles in Clallam County, Washington. The site is located approximately 1.25 miles west of downtown Port Angeles. The site is located on the west corner of the intersection of W 8$^{th}$ Street and South C Street. The property utilizes the street address 802 South C Street.

The location of the subject property is indicated on a site and vicinity map (Figure 1) in Appendix I.

## 2.2 Site Physical Setting

The subject property consists of one tax parcel that covers approximately 0.48 acres. The property is located on east-southeast sloping topography. The site's elevation ranges from approximately 228 feet above mean sea level on the west side of the site to 220 feet above mean sea level on the east side of the site, with steeper slopes present further to the east-southeast. The property is surrounded by a variety of commercial and residential properties.
An annotated aerial photograph of the property use of the subject property and vicinity is provided in Figure 2 in Appendix I.

### 2.3 Site Geology and Soils

The following description of the surficial deposits in the vicinity of the subject property was interpreted from the Washington State Department of Natural Resources Geologic Information Portal (https://geologyportal.dnr.wa.gov/) 1:24,000 geologic mapping. The subject property is mapped as being underlain by Vashon Stade glacial outwash (Qgo). Deposits of glacial outwash consist of well-sorted and stratified sand and gravel deposited in and along meltwater channels that emanated from the toe of continental glaciers during the last glacial period. These outwash deposits were not subsequently overridden by glacial ice and are therefore expected to be loose to medium dense and highly permeable.

Soils observed in borings completed as part of this investigation consisted of shallow fill underlain by silty sandy gravel to depths of up to 25 feet bgs. Narrow zones (less than 1') of silt and fine sand were observed in some of the borings.

### 2.4 Site Hydrology

No surface water features are located on or adjacent to the subject property. The nearest surface water feature is Tumwater Creek located approximately 0.35 miles southeast of the subject property at its nearest point. Tumwater Creek flows northeast in the vicinity of the subject property.

Groundwater is assumed to flow east-southeast, as indicated by the area topography; however, no groundwater was encountered in onsite borings to depths of up to 25 feet during our December 2023 sampling investigation.

## SECTION 3. SITE HISTORY

The site was undeveloped in 1917. Commercial buildings have been developed on the site since at least 1924. The locations of all known former buildings on the site are presented in Figure 3.

A commercial building was built on the east corner of the site by 1924. The building was replaced with a building, identified as a store in the Sanborn maps, which extended along the northeastern property boundary, along 8$^{th}$ Street, by 1930. A new store was present along the northeast portion of the building (part of the current convenience store) by 1949. A combined gas station and auto repair building with a canopy fronting South C Street was developed south of the east end of the grocery store by 1941. A building used for auto repair was built southwest of the 1940s gas station by 1948. A paint/spray booth was placed northwest of the auto repair building by 1962. The gas station, auto repair, and paint/spray booth buildings were all removed (only the existing store building remained) and the existing gas station was developed on the site by at least 1971.

Sanborn maps indicate that the circa 1924 building was utilized as a grocery store and a gas

station, based upon a gas tank marked just east of the store building in the right-of-way of South C Street, as shown by a circle with "GT" written within the circle [not previously confirmed in the 2023 phase I]. The circa 1930 building was utilized as a restaurant, barber shop, and restaurant. The current building is listed as being constructed in 1928, but its footprint does not match the building marked on the 1930 or 1949 Sanborn Map. It is suspected that the current building footprint consists of an early structure (pre-1949) that was expanded to its current footprint by 1971.

City directories indicate that the occupants have included Grandview Service Station (1941), Grandview Garage (1948), Fitchard's Grandview Service (1952), Smiley's Flying A Service (1959), Ben's Auto Rebuild (1965), Bill's Flying A Service (1962-1965), Bob's Beetle Service (1970), Double J Corral Restaurant (1984), The Back Door Café (1988-1995), Glacier Dairy Corporation (2008), US Post Office (2012), Higher Grounds Espresso (2003-current), and Grandview Grocery (1962-current). Our interviews indicate that the coffee shop area was previously occupied by frozen food lockers.

## SECTION 4. PREVIOUS ENVIRONMENTAL WORK

Stratum Group completed a Phase I ESA for the subject property in November 2023. The report found commercial use of the site dating back to at least 1924 and identified at least two gasoline stations on the site: one circa 1940s gas station and the current station, which was developed in 1971. The site was in compliance with current fueling system testing requirements and no releases were suspected from the current fueling system based upon observed site conditions. However, due to the lack of previous environmental sampling and the property's long history of commercial use including auto repair and gas stations, two RECs were identified:

- Lack of subsurface sampling information around the active fuel system that has been operational since 1971.
- Lack of subsurface sampling or tank information associated with the site's circa 1940 gas station, as well as early uses of the site for auto repair and painting

The 2023 phase I report concluded that a phase II environmental site assessment that included a ground penetrating radar survey, to evaluate for tank locations, and environmental sampling was recommended.

A previous phase I report was reportedly completed for the site for the current owner (; however, the report was not reviewed. The owner indicated that the report had recommended a phase II investigation.

No previous environmental sampling has been completed on the site, to the best of our knowledge.

# SECTION 5. SUBSURFACE INVESTIGATION

This Phase II environmental sampling investigation was designed to evaluate the subsurface conditions around the active fuel USTs and dispensing equipment, around the former suspected auto repair and gas station buildings, and to fill the data gaps identified in the 2023 Phase I. This investigation included a subsurface utility locate and ground penetrating radar survey, and completion of environmental borings for collection of soil samples.

Field activities were conducted in conformity with Stratum Group's standard field procedures (Appendix IV).

## 5.1 Ground Penetrating Radar & Utility Locate

A ground penetrating radar (GPR) survey was conducted by CNI Locates of Bonney Lake, Washington on December 11, 2023. The survey was completed around the exterior of the southeastern half of the property, including around the active fueling equipment and former building areas. The location of the anomalies and utility lines identified in the field are presented in Figure 4.

GPR provides non-destructive, detailed, cross-sectional imagery of underground conditions and can be used to detect utility lines, tanks, changes in subsurface materials, or buried objects.

The locations of the three known USTs were confirmed beneath the asphalt to the southwest of the building. The tanks are oriented in a gentle northwest-southeast orientation. The tanks are adjacent to each other, with each tank a differing length. The southeastern boundary of the USTs is approximately in alignment with the southeast exterior wall of the convenience store and the northwest line of the fueling canopy.

Four additional anomalies were identified onsite. Three of the anomalies are located beneath the asphalt pavement and concrete sidewalk to the east of the northeast corner of the convenience store building. The anomalies are suspected to be USTs. The anomalies are buried approximately 2.5 to 3 feet deep, range in width from approximately 4 feet 10 inches to 5 feet, and are approximately 9 to 10.5 feet in length. One suspected fill port was noted within one of the GPR delineated anomalies.

A fourth, small anomaly was noted near the southeast side of the active USTs. A small metal cap is visible within the asphalt. The anomaly was approximately 4 feet long by 3 feet wide. It is unclear why the anomaly was present and does not initially look like a UST.

No additional anomalies consistent with other USTs or areas of fill soil, where USTs or other objects could have been previously buried, were identified. The GPR was not completed beyond the site boundaries and therefore the potential presence of the 1924 gas tank was not evaluated; however its suspected former location is presented in Figure 4..

A significant number of linear anomalies were identified through the utility locate and GPR work:

- Electrical line from SE corner of the building to fuel pumps (southeast of USTs); likely active
- Electrical line from SE corner of the building to the SE corner of the active USTs; likely active
- Electrical line from two metal pipes along north side of the building, curves through paved area east of the building, and ends near SE corner of the building; unknown status.
- Suspected water line extends from meter box in sidewalk to SE end of building; likely active (line only visible with locate for short length and not visible with GPR)
- Stormwater lines extend between catch drain to the west of the USTs, around north side of the active USTs, and to sidewalk along north side of driveway entrance (near water meter). A second catch basin, near driveway entrance, discharges north into the same line. Stormwater lines identified using a cable within the basins and piping; active.
- Sewer line extends from cleanout just east of the entrance to the convenience store, east of USTs, and just east of the fuel pump islands; likely active. Sewer line was chased with a cable in the piping for approximately 75 feet. Sewer line looks to keep going south toward alley.

Sediment catchment bags within both catch basins were full of debris and in poor condition and were replaced by CNI Locates, with a new bag provided by the owner, during the GPR survey.

Nine potential boring locations were marked on the ground by Stratum Group personnel. Each potential sampling location was checked by CNI to verify that no utilities were present and were moved if anomalies or unusual imagery was noted with the GPR.

## 5.2 Boring Locations and Identification

Environmental drilling was completed by Holocene Drilling of Puyallup, Washington on December 12, 2023. Borings were completed using a truck mounted Geoprobe push probe drill rig.

Seven borings were completed to depths between 10 and 25 feet bgs. Borings were labeled B1 through B7 for reference. The locations of the borings are provided in Figure 3 in Appendix I.

The boring identification, approximate location, and rationale for sampling location is presented in Table 1.

**Table 1.** Sample Locations

| Sample ID | Location | Sampling Location Rationale |
|---|---|---|
| **B1** | East of northeast corner of store building, along northeastern property boundary | In close proximity and suspected down gradient location from 3 discovered USTs |
| **B2** | Southeast of southeast corner of the convenience store. | Suspected location of circa 1940s fuel pump islands |
| **B3** | Southeast of active USTs | Suspected down gradient position from active USTs |
| **B4** | Near entrance to convenience store | Northeast side of active USTs and near back of circa 1940s service station building |
| **B5** | Southwest of active USTs and northwest of fuel pumps | Through suspected former location of a paint booth building (circa 1962) |
| **B6** | West of active fuel pumps | Through suspected former location of an auto repair building (circa 1948) |
| **B7** | East of active fuel pumps | Down gradient of active fuel pumps |

## 5.3 Contaminants of Concern

Based on the historical and active use of the site as a gas station, as well as short periods of former auto repair and auto painting activities, the primary contaminants of concern were petroleum products and volatile organic compounds (VOCs). All of the samples were analyzed for diesel-, oil-, and gasoline-range petroleum and BTEX constituents (benzene, toluene, ethylbenzene, and xylenes). The BTEX analysis was not completed in three samples where a full suite of VOCs was analyzed, which included BTEX compounds. Additionally, two samples were analyzed for lead where gasoline contamination was suspected.

## 5.4 Sample Screening Levels and Laboratory Methodology

The method used by the laboratory to analyze each contaminant and the cleanup screening levels for each potential contaminant are presented in Table 2 for soil. Contaminant concentrations are measured in parts per million (mg/kg) in soil.

Screening levels based upon the MTCA Method A cleanup standards (Chapter 173-340 WAC) were used to evaluate the sample results. These levels are set to protect human health and the environment and sites that meet Method A standards have unrestricted land use. Please note that if cleanup activity is needed, additional factors may be needed to determine final site-specific cleanup values, including potential impacts to wildlife.

**Table 2.** Laboratory Analysis Method & Screening Levels

| Contaminant of Concern | Laboratory Analysis Method | Soil Screening Level(mg/kg) |
|---|---|---|
| Diesel | NWTPH-DX | 2,000[a] |
| Oil | | |
| Gasoline | NWTPH-GX | 100/30[b] |
| Benzene | EPA-8021 | 0.03 |
| Toluene | | 7 |
| Ethylbenzene | | 6 |
| Xylenes | | 9 |
| Lead | EPA-6020B | 250 |
| VOCs | EPA-8620D | varies |

a = cleanup value equals the combined concentrations of both diesel- and oil-range petroleum; b = higher cleanup value may only be used if benzene is not present and the combined concentrations of toluene, ethylbenzene is less than 1% of the gasoline concentration.

## 5.5 Soil Samples

### *5.5.1 Soil Sample Descriptions*

A description of the borings and soil samples collected from each boring are described below. Photographs of the boring locations and soil samples are provided in the site photographs in Appendix II. Detailed descriptions of soils encountered in each boring are provided in the boring logs in Appendix III.

Soils encountered on site were consistent across all seven sampling locations. Tan, moist silty sandy gravel was present throughout the subsurface soil to 25 feet bgs, except in locations where narrow layers of silt or sand were present. Each sample was labeled with a sample ID that consists of the boring number followed by the depth of the sample (i.e. B1-17 was collected from boring B1 at 17 feet depth).

Samples were collected from Boring B1 at 8.5 feet bgs (B1-8.5) and from 14 feet bgs (B1-14). The samples were collected from approximately one-foot thick zones of grey discolored soil where high PID readings were identified (275-335 ppm). Soil above and below these narrow zones was tan colored with PID readings that ranged from 0.5 to 2.0 ppm, except from approximately one-foot bgs where a slight oily odor was noted and a PID reading of 6.7 ppm was measured. No indication of contamination was identified between approximately 15 and 25-foot bgs. Boring 1 was completed to 25 feet bgs, the deepest boring of the investigation. The boring was allowed to remain open for approximately 20 minutes to see if groundwater was present; however, none was encountered.

Samples were collected from B2 at 3.5 feet bgs (B2-3.5) within a narrow grey sand layer, from 14 feet bgs (B2-14) within an approximately 10-inch thick sand layer, and at 17 feet bgs (B2-17) within a very gravelly layer with some silt and sand. Strong petroleum odors were noted within

the three sample zones, with the highest PID reading at 17 feet with a detection of 1,495 ppm. Soil between these sampled areas consisted of tan silty sandy gravel with PID readings of less than 1.6, except for a reading of 6.4 at 1.5-foot bgs. The boring was ceased at 17.5-foot bgs due to very slow drilling (near refusal). Slightly more moist soil was encountered at approximately 12-foot bgs; however, no water was produced. No groundwater was encountered in Boring B2.

Samples were collected from B3 at 10 feet bgs (B3-10) within brown to reddish brown, moist silty sandy gravel, and from 20 feet bgs (B3-20) within brown moist to very moist silty sandy gravel. Boring was completed to 20 feet bgs. No groundwater was encountered. PID readings throughout the boring at or less than 0.2 ppm. No obvious field indications of contamination were observed in the B3 soil core.

A soil sample was collected from B4 at 1 feet bgs (B4-1) within black silty sandy gravel located just above an approximately 4" red-dyed concrete layer. An additional sample was collected within a very moist layer at 17 feet (B4-17) with tan-brown silty sandy gravel. The PID reading from 1-foot bgs was 4.9 ppm; however, the soil at one foot had an oily smell and a very minor hydrocarbon sheen. PID readings throughout the remainder of the soil column ranged from 0.2 to 0.4 ppm. The boring was completed to 20-foot bgs. A few narrow zones of very moist soil were observed throughout the soil column; however, none of the layers were productive and no groundwater was encountered. Contamination was suspected in the soils above the concrete layer; however, no contamination was suspected in the soil below the concrete layer based upon field indicators.

Samples were collected from B5 at 4 feet bgs (B5-4 and from 10 feet bgs (B5-10) within tan-brown silty sandy gravel. PID readings were low (0.2-0.3 ppm) throughout the soil column. The boring was completed to 10 feet bgs. No groundwater or wet zones were encountered. No contamination was suspected based upon field testing within B5.

Samples were collected from B6 at 4 feet bgs (B6-4) and from 12 feet bgs (B6-12) within tan-brown silty sandy gravel. PID readings were low (0.3 ppm) throughout the soil column. The boring was completed to 15 feet bgs. No groundwater or wet zones were encountered. No contamination was suspected based upon field testing within B6.

Samples were collected from B7 at 7 feet bgs (B7-7) within tan-brown silty sandy gravel and from 15 feet bgs (B7-15). The soil at 15 feet bgs was too gravelly to collect samples within VOA containers for VOC analysis and therefore only a soil jar was filled. PID readings were low (0.3 ppm) throughout the soil column. The boring was completed to 15 feet bgs. No groundwater or wet zones were encountered. No contamination was suspected based upon field testing within B7.

### *5.5.2 Soil Sample Results*

Soil samples were delivered to Friedman & Bruya Laboratory of Seattle, Washington on December 13, 2023 for analysis. All fifteen soil samples collected during the investigation were

analyzed by the laboratory.

A summary of the soil analysis results, including PID readings from at or close to each sampling depth, is presented in Tables 3 and 4, below. Table 3 includes the results of the diesel, oil, gasoline, BTEX, and lead analyses. Table 4 includes the results of the VOC testing completed on three of the soil samples. The MTCA Method A screening level for each contaminant is presented for comparison. If no Method A level is available for a compound, the Method B standard for unrestricted land use is presented. Samples with exceedances of the screening level are presented in bold type within shaded boxes.

A map with the soil sampling results is provided in Figure 5 in Appendix I.

A complete copy of the analytical laboratory report and chain-of-custody are provided in Appendix III.

**Table 3.** Soil Sample Results (Petroleum, BTEX, Lead)

| Boring ID | Sample ID | PID Reading (ppm) | Concentration of Contaminant (mg/kg) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Diesel | Oil | Gasoline | Benzene | Toluene | Ethylbenzene | Xylenes | Lead |
| **B1** | B1-8.5 | 335.8 | U<50 | U<250 | **210** | U<0.02j | U<0.1 | 0.63 | 0.64 | 5.71 |
| | B1-14 | 275.1 | 94 | U<250 | **360** | U<0.02j | U<0.1 | U<0.66 | 0.79 | -- |
| **B2** | B2-3.5 | 352.4 | 2,000x | U<250 | **3,300** | U<0.02 | U<0.2 | 2.7 | **9.3** | -- |
| | B2-14 | 33.9 | 410x | U<250 | **1,300** | U<0.2 | U<0.2 | 1.5 | 2.5 | -- |
| | B2-17 | 1495 | 97x | U<250 | **360** | U<0.02 | See Table 4 | | | 9.55 |
| **B3** | B3-10 | 0.2 | U<50 | U<250 | U<5 | U<0.02 | U<0.02 | U<0.02 | U<0.06 | -- |
| | B3-20 | 0.2 | U<50 | U<250 | U<5 | U<0.02 | U<0.02 | U<0.02 | U<0.06 | -- |
| **B4** | B4-1 | 4.9 | **1,100** | **8,000** | **350** | U<0.02 | 0.41 | 0.20 | 1.8 | -- |
| | B4-17 | 0.3 | U<50 | U<250 | 6.4 | U<0.02 | U<0.02 | U<0.02 | U<0.06 | -- |
| **B5** | B5-4 | 0.2 | U<50 | U<250 | U<5 | U<0.02 | See Table 4 | | | -- |
| | B5-10 | 0.2 | U<50 | U<250 | U<5 | U<0.02 | U<0.02 | U<0.02 | U<0.06 | -- |
| **B6** | B6-4 | 0.3 | U<50 | U<250 | U<5 | U<0.02 | See Table 4 | | | -- |
| | B6-12 | 0.3 | U<50 | U<250 | U<5 | U<0.02 | U<0.02 | U<0.02 | U<0.06 | -- |
| **B7** | B7-7 | 0.3 | U<50 | U<250 | U<5 | U<0.02 | U<0.02 | U<0.02 | U<0.06 | -- |
| | B7-13 | 0.3 | U<50 | U<250 | U<5 | U<0.02 | U<0.02 | U<0.02 | U<0.06 | -- |
| *MTCA Method A Cleanup Levels* | | | *2,000[a]* | | *100[b]* | *0.03* | *7* | *6* | *9* | *250* |

U= contaminant not detected above the reporting limit shown in the parentheses; -- = analyte not tested; a = combined diesel and oil must be below 2,000 mg/kg to meet the standard; b = cleanup value of 30 mg/kg is used if benzene is present or the combined concentrations of toluene, ethylbenzene, and xylenes is greater than 1% of the gasoline concentration; x = chromatogram pattern does not resemble standard fuel; j = concentration measured below reporting limit

. **Table 4.** Soil Sample Results (Volatile Organic Compounds)

| VOC compound[a] | Concentration of Contaminant (mg/kg) | | | |
|---|---|---|---|---|
| | **B2-17** | **B5-4** | **B6-4** | *MTCA Method A/B Cleanup Levels* |
| **Hexane** | 0.54 | <0.25 | <0.25 | *24* |
| **Toluene** | 0.0070 | <0.001 | <0.001 | *7* |
| **Ethylbenzene** | 0.14 | <0.001 | <0.001 | *6* |
| **Xylenes (m,p,o)** | 0.223 | <0.001, <0.002 | <0.001, <0.002 | *9* |
| **Isopropylbenzene** | 0.077 | <0.05 | <0.05 | *na* |
| **n-Propylbenzene** | 0.44 | <0.05 | <0.05 | *8,000* |
| **1,3,5-Trimethylbenzene** | 1.5 | <0.05 | <0.05 | *800* |
| **1,2,4-Trimethylbenzene** | 1.8 | <0.05 | <0.05 | *800* |
| **Sec-Butylbenzene** | 0.13 | <0.05 | <0.05 | *na* |
| **p-Isopropyltoluene** | 0.12 | <0.05 | <0.05 | *na* |
| **Naphthalene** | 0.39 | <0.01 | <0.01 | *5* |

A = a suite of 66 VOCs was analyzed in each sample; however only the compounds detected above the reporting limit are presented in Table 4; U= contaminant not detected above the reporting limit shown in the parentheses; na = cleanup standard not available

## 5.6 Laboratory Quality Assurance

Friedman & Bruya, Inc. Laboratory of Seattle, Washington was responsible for completion of the analytical assessment of the samples collected during this investigation. The laboratory is accredited with the Washington Department of Ecology (C578).

Samples for B2-17, B4-17, and B7-13 were too gravelly to fill the laboratory prepared VOA containers and therefore only 4-ounce jars of soil were provided to the laboratory. The laboratory flagged the gasoline (NWTPH-GX) and VOC (EPA-8260D) results where the VOA containers were not received.

A qualifier ("x") was added to the diesel results of all three soil samples from B2. The qualifier indicates "the sample chromatographic pattern does not resemble the fuel standard used for quantitation". This qualifier is marked on sample results where the analyzed material contained hydrocarbons that fell within the expected diesel-range chromatograph pattern; however, the entirety of the chromatograph pattern was not consistent with that expected for diesel fuel. This may indicate that a diesel-like substance (e.g., kerosene) is present in the samples. The diesel-range detection for B3-3.5 is 2,000 mg/kg, which is exactly the level of the cleanup standard, which would typically warrant potential further investigation; however, all of the samples already exceed the standard in the gasoline-range and therefore gasoline would likely be the contaminant of concern during cleanup activity.

A qualifier ("j") was added to the results of two soil samples from B1 for the benzene analysis. The qualifier indicates that "the analyte concentration is reported below the standard reporting limit. The value reported is an estimate." The reporting limit for both samples is well below the cleanup level and therefore if a detection is present, is below both the reporting limit and the screening level used for this report.

The following quality assurance procedures were completed by Friedman & Bruya, Inc.: surrogate recovery, method and laboratory blanks, and blank spike duplicates. Reporting limits for all analytes were at or below their respective cleanup standards, indicating that non-detect results meet the cleanup standards. The EPA-8260D matrix spike and matrix spike duplicates failed the relative percent difference for several compounds; however, the analytes were not detected in the sample and therefore the data is considered acceptable. Additionally, the matrix spike and matrix spike duplicate exceeded the acceptance criteria for bromomethane; however, the compound was not detected and therefore the data is considered acceptable.

The laboratory quality control is sufficient and does not affect our ability to interpret the soil sample results for this report.

## 5.7 Sample Results Discussion

### *5.7.1 Soil*

Gasoline-range petroleum exceeded the MTCA Method A screening levels in six of the samples analyzed. All of the samples collected from Boring B1, B2, and the shallow sample in B4 exceeded for gasoline. The highest gasoline concentration was found in Boring B2 at 3.5-foot bgs with a detection of 3,300 mg/kg, which is well above the cleanup standard of 100 mg/kg.

Xylenes were detected just above the screening level in sample B2-3.5.

Diesel and oil-range petroleum exceeded the screening level in one soil sample: B4-1.

No lead, benzene, toluene, ethylbenzene, or VOCs (aside from xylene in B4-1) exceeded the screening levels.

The exceedance of gasoline in Boring B1 is assumed to be associated with the three suspected USTs discovered during the ground penetrating radar survey. The age of the tanks is unknown. The contamination was confirmed in two separate narrow layers (~1 foot thick) at 8-9 foot bgs and 13.5-14.5 foot bgs. Our field observations indicated a slight petroleum odor at one foot depth (not sampled), but otherwise the soil zones between these gasoline-impacted depths showed no signs of contamination. Additionally, no indication of contamination was noted in the soils below sample B1-14, between approximately 15- and 25-foot depth. The narrow zones of contamination are interpreted to be preferential pathways for contaminant migration from the source; however, our investigation did not uncover why contamination was discovered in these two layers and not at other depths. The horizontal extent of contamination around B1 is unknown but based upon the location of the tanks located across the property boundary and the position of B1 near the boundary, it is anticipated that contaminated soil extends beyond the parcel boundary to the north. The vertical extent of contamination in Boring B1 was determined; however, it is unclear how deep the impacts would be located beneath the suspected source/USTs.

The exceedance of gasoline and/or xylenes in Boring B2 is likely associated with the circa 1940s pump islands and/or fueling station. The boring was placed through the suspected former fuel pump area. The tank locations for the circa 1940s station is unknown. Contamination was encountered in a less than 1-foot thick zone around 3.5 foot bgs and below approximately 13 feet bgs. The soil collected from the base of the boring (~17-17.5-foot bgs) continued to exceed the cleanup standard with a detection of 360 mg/kg, where the screening level is 100 mg/kg. Therefore, the vertical extent of contamination was not determined in Boring B2. The horizontal and vertical extent of contamination around Boring B2 is unknown.

The exceedance of diesel, oil, and gasoline in the shallow soils of Boring B4 (B4-1) is suspected to be perched on top of an approximately 4-inch-thick layer of concrete. The source of the contamination is unknown but does not seem to be associated with current site use. In the boring

location, the vertical extent of the impacts is mitigated by the presence of the concrete in the B4 location; however, the extent of the shallow buried concrete is unknown. The horizontal extent of contamination around Boring B4 is unknown.

No contamination was encountered or suspected in Borings B3, B5, B6, or B7. The lack of contamination in Borings B3, B5, and B7, located adjacent to and down gradient of the active fueling equipment, indicates that the likelihood of releases from the current fueling system is low. Additionally, no contamination was encountered in Borings B5 or B6, which were placed through the former auto painting and auto repair buildings. No contamination is suspected in connection with these former structures based upon this sampling investigation.

# SECTION 6. CONCLUSIONS & RECOMMENDATIONS

## 6.1 Findings

Stratum Group completed a Phase II environmental sampling investigation on the Grandview Grocery property at 802 South C Street in Port Angeles, Washington. The goal of the investigation was to determine if releases had taken place in association with current fueling USTs and pump islands or former site buildings/operations that included stores, gas station(s), auto body, and auto repair shops.

Based upon additional historical review and the findings of this phase II investigation, at least three generations of fueling stations have been present on the site including in the 1920s, 1940s, and the current fueling system that has been operational since 1971.

Three anomalies, suspected to be previously undiscovered USTs, were found in the northeast corner of the site. The tanks are estimated to be 750-1,000 gallons in size, based upon the GPR delineation. The tanks are located partially on the subject property and partially beneath the adjacent sidewalk toward W 8$^{th}$ Street. The age of these tanks is unknown. No other suspected USTs were identified, aside from the known active USTs.

Seven environmental borings were completed around the site exterior in December 2023. Petroleum contaminated soil was encountered in three of the seven borings. Petroleum-contaminated soil was encountered in soil adjacent to the GPR-identified USTs in the northeast portion of the property, southeast of the building where pump islands are suspected from a circa 1940s gas station, and in shallow soils between the active USTs and the front door of the convenience store building on top of shallowly buried concrete.

Concentrations of gasoline, diesel, and/or xylenes exceeded the MTCA Method A cleanup standards for unrestricted land use in soil. The lateral and horizontal extent of the contamination was not determined during this investigation. No groundwater samples were collected during the sampling event, as no groundwater was encountered in environmental borings that ranged in depth from 10 to 25 feet.

Based upon the exceedances of petroleum in the soil, the subject property is considered contaminated.

## 6.2 Recommendations

*Reporting Requirements*

The Washington State Department of Ecology cleanup regulations known as the MTCA cleanup regulation (WAC 173-340-300) requires that any owner or operator that has knowledge that a hazardous substance has been released to the environment at their facility and where the release may be a threat to human health or the environment, report the release to Ecology.

Reporting of this property to Ecology would place the property on Ecology's Confirmed and Suspected Contaminated Sites List.

*Characterization of Contamination*

Additional environmental work will be needed to characterize the extent of contamination and verify the contaminant sources on the property. Based upon this initial assessment, different sources of contamination are suspected for each boring where contamination was encountered.

Future soil sampling will be needed to determine the vertical and horizontal extent of contamination, including the extent of contamination within the parcel as well as beyond the property boundaries.

No groundwater was encountered during this investigation to depths up to 25 feet; however, deeper borings may potentially be required to verify the depth and water quality beneath the site, if required by regulatory agencies.

The three borings where soil contamination was encountered were located within 30 feet of the convenience store building and therefore a vapor intrusion study may be warranted to evaluate if gasoline/petroleum vapors are entering the building.

Once the extent of contamination is understood, a reasonable cleanup cost estimate can be developed.

*UST Removal*

Three suspected USTs were discovered near the northeast corner of the site, with contamination present in close proximity to the USTs (Boring B1). It is unknown if these tanks contain fuel. Due to the potential that the tanks contain fuel and could continue to pose a risk of release at the site, we recommend that the tanks be removed.

*Potential Liable Parties and Funding*

We recommend that work be completed to determine if there are other potentially liable parties for the releases at the site and/or funding sources that could assist in further assessment and/or cleanup.

We recommend that a title and lease history be completed back to at least 1900 to determine former owners and/or leasees of the property. The information should be reviewed to determine if oil companies previously owned and/or operated the fueling station(s) on the site.

Additionally, efforts should be made to determine what insurance companies previously insured the site. If identified, the previous insurance companies should be contacted to get copies of insurance policies that covered the site prior to 1986. These early policies may include coverage for environmental contamination.

These efforts can be completed by the property owner, environmental consultants, and/or lawyers.

# APPENDIX I

Figure 1 – Site Vicinity Map

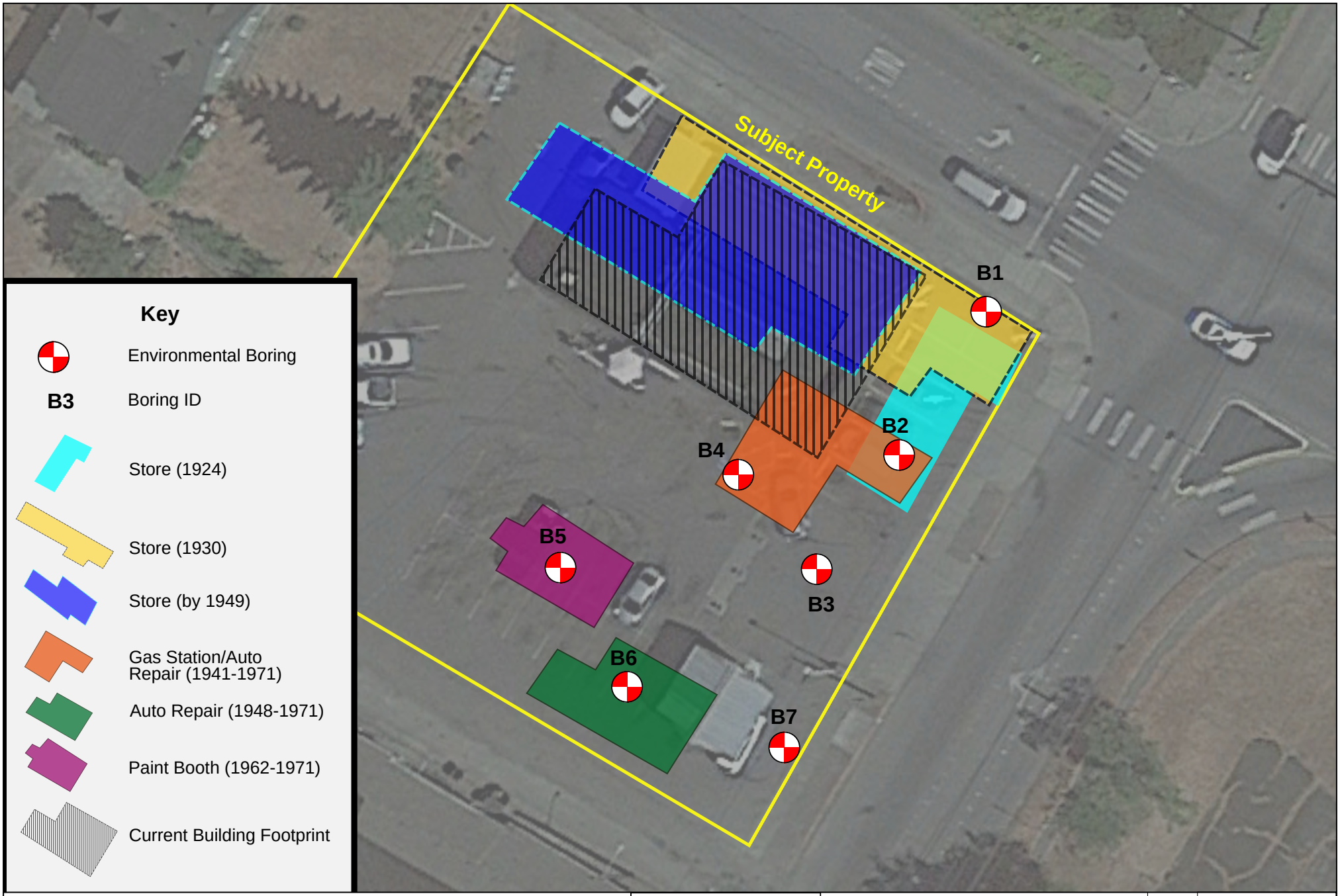
Figure 2 – Annotated Aerial Photograph of Site & Vicinity

Figure 3 – Boring Locations & Footprint of Former Buildings

Figure 4 – GPR and Anomaly Locations

Figure 5 - Map of Soil Sample Results


| | | | | |
|---|---|---|---|---|
| ★ Subject Property | Vicinity Map | **Figure 1** | N | STRATUM GROUP |
| | 802 South C Street<br>Port Angeles, WA 98363 | 0 0.25 0.5 mi | | |




Grandview Grocery
802 South C Street
Port Angeles, Washington 98363

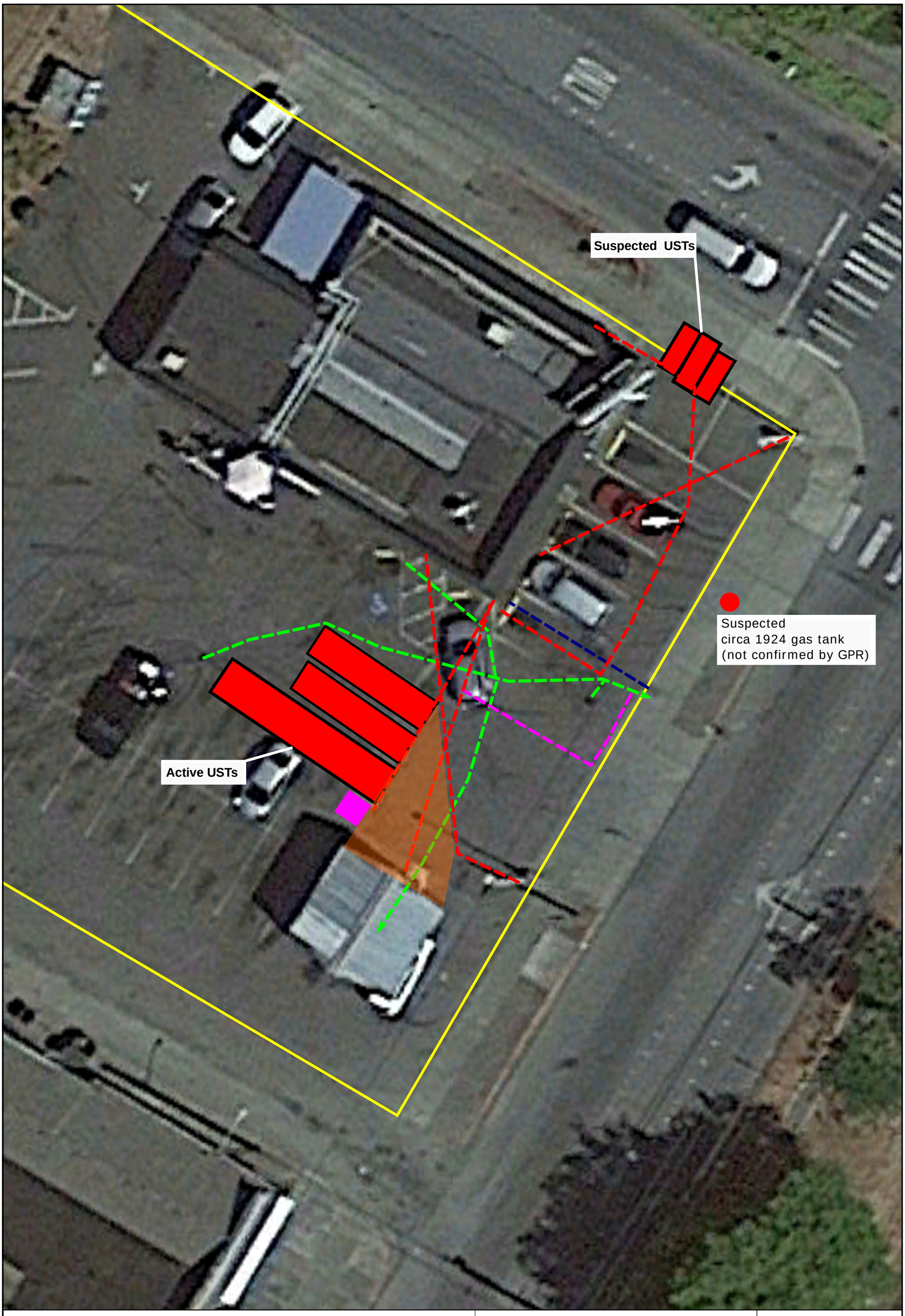
Boring Locations & Building Footprings

**Figure 3**

N

0 50 Feet

STRATUM GROUP




**Key**

- Underground Storage Tank/Anomaly Location
- Electrical Utility
- Suspected Water Utility
- Sewer & Stormwater Utility
- Unidentified Utility
- Suspected Fuel Piping Zone

**Tank & Utility Line Locations**

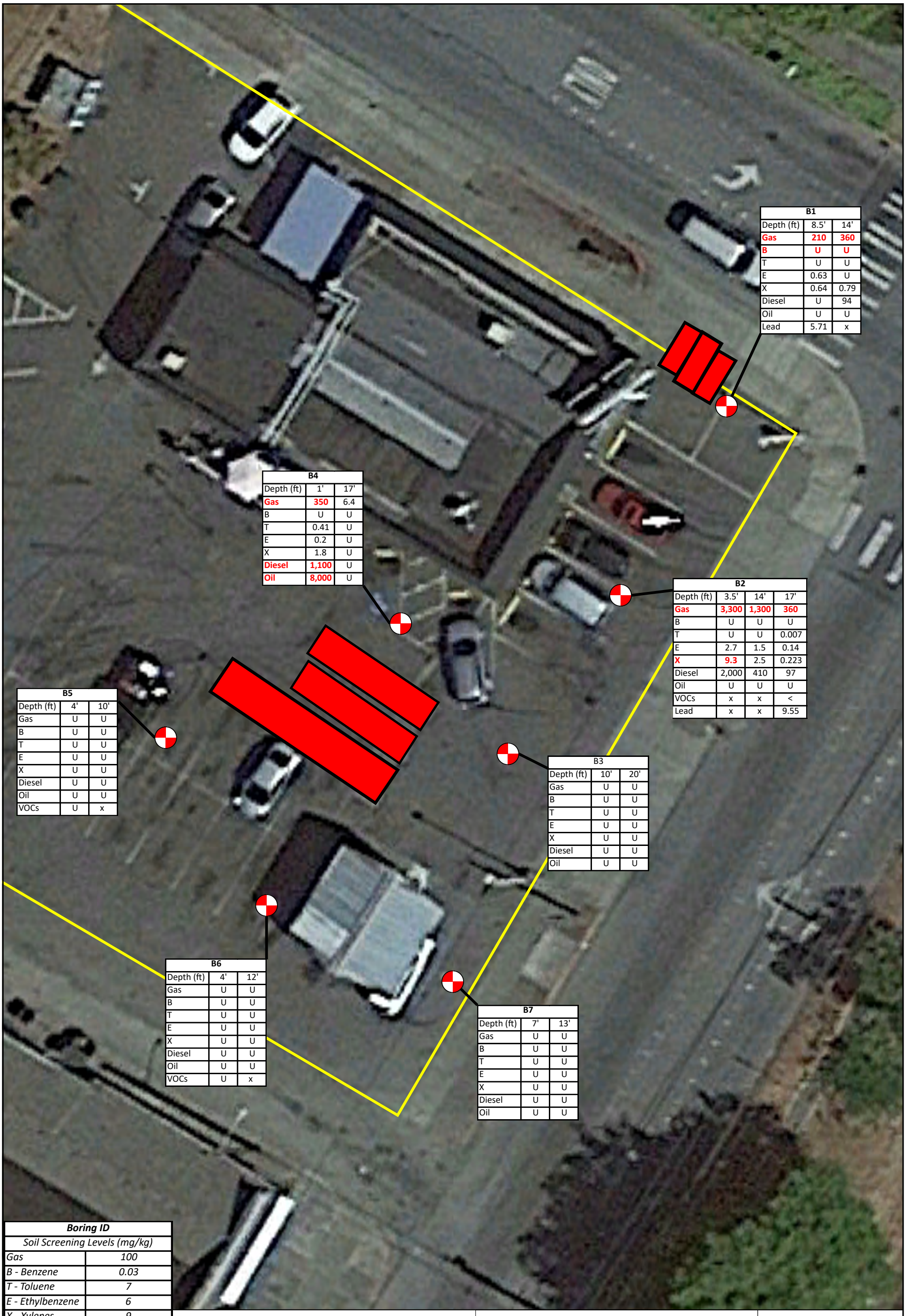
**Figure 4**

Grandview Grocery
802 S C Street
Port Angeles, Washington

N

0 Feet 50

STRATUM GROUP



| B1 | | |
|---|---|---|
| Depth (ft) | 8.5' | 14' |
| **Gas** | **210** | **360** |
| **B** | **U** | **U** |
| T | U | U |
| E | 0.63 | U |
| X | 0.64 | 0.79 |
| Diesel | U | 94 |
| Oil | U | U |
| Lead | 5.71 | x |

| B4 | | |
|---|---|---|
| Depth (ft) | 1' | 17' |
| **Gas** | **350** | 6.4 |
| B | U | U |
| T | 0.41 | U |
| E | 0.2 | U |
| X | 1.8 | U |
| **Diesel** | **1,100** | U |
| **Oil** | **8,000** | U |

| B2 | | | |
|---|---|---|---|
| Depth (ft) | 3.5' | 14' | 17' |
| **Gas** | **3,300** | **1,300** | **360** |
| B | U | U | U |
| T | U | U | 0.007 |
| E | 2.7 | 1.5 | 0.14 |
| **X** | **9.3** | 2.5 | 0.223 |
| Diesel | 2,000 | 410 | 97 |
| Oil | U | U | U |
| VOCs | x | x | < |
| Lead | x | x | 9.55 |

| B5 | | |
|---|---|---|
| Depth (ft) | 4' | 10' |
| Gas | U | U |
| B | U | U |
| T | U | U |
| E | U | U |
| X | U | U |
| Diesel | U | U |
| Oil | U | U |
| VOCs | U | x |

| B3 | | |
|---|---|---|
| Depth (ft) | 10' | 20' |
| Gas | U | U |
| B | U | U |
| T | U | U |
| E | U | U |
| X | U | U |
| Diesel | U | U |
| Oil | U | U |

| B6 | | |
|---|---|---|
| Depth (ft) | 4' | 12' |
| Gas | U | U |
| B | U | U |
| T | U | U |
| E | U | U |
| X | U | U |
| Diesel | U | U |
| Oil | U | U |
| VOCs | U | x |

| B7 | | |
|---|---|---|
| Depth (ft) | 7' | 13' |
| Gas | U | U |
| B | U | U |
| T | U | U |
| E | U | U |
| X | U | U |
| Diesel | U | U |
| Oil | U | U |

| *Boring ID* | |
|---|---|
| *Soil Screening Levels (mg/kg)* | |
| *Gas* | *100* |
| *B - Benzene* | *0.03* |
| *T - Toluene* | *7* |
| *E - Ethylbenzene* | *6* |
| *X - Xylenes* | *9* |
| *Diesel* | *2,000* |
| *Oil* | |
| *Lead* | *250* |
| *VOCs* | *varies* |
| U - analyte not detected | |
| x - analyte not tested | |
| *< - detections below screening level* | |
| **bold text = exceeds screening levels** | |

## Key

Environmental Boring Location

UST Location

**Soil Sample Results**

Grandview Grocery
802 S C Street
Port Angeles, Washington

0 Feet 50

N

STRATUM GROUP

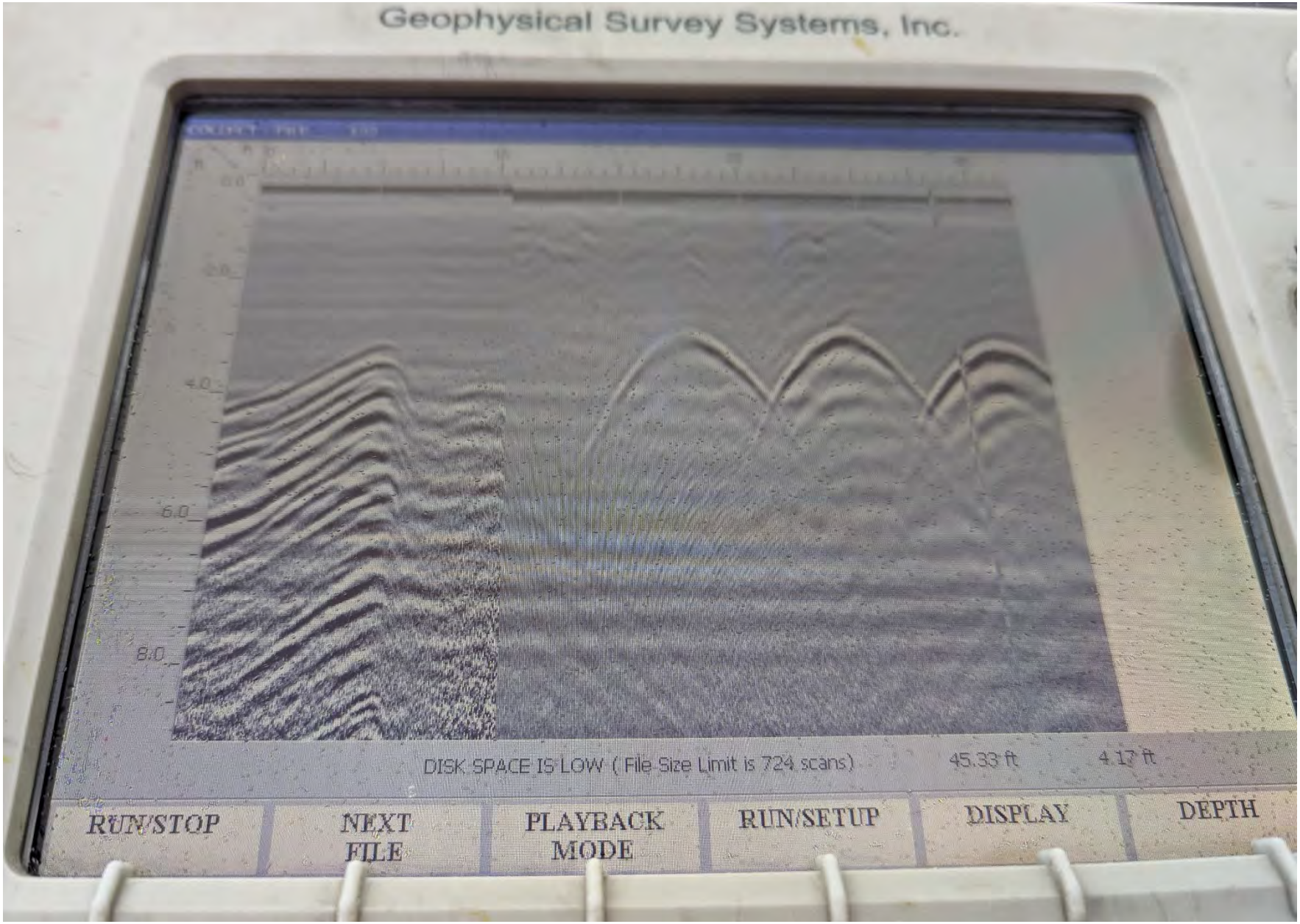
**Figure 5**

# APPENDIX II

Site Photographs

View of three anomalies (suspected USTs) near the northeast corner of the convenience store, looking westward. Each anomaly is identified with yellow paint.


View of a suspected fill port access to the eastern UST.




View the GPR image after a pass over the three anomalies. The rounded peaks in the right side of the image identify each anomaly.

View of the ground penetrating radar survey being completed in the vicinity of the active USTs. Yellow paint identifies the locations of the current USTs.


View of electrical utility lines located south of the building, looking southwest.

View of the sewer line that extends from the building toward the alley, looking southwest.

View of a cable placed within the stormwater drains to identify their underground pathway.


View of Boring B1, located southeast of the suspected USTs along the northeastern property boundary.

View of Boring B1, looking southeast across the suspected anomalies.

View of the soil cores from Boring B1.

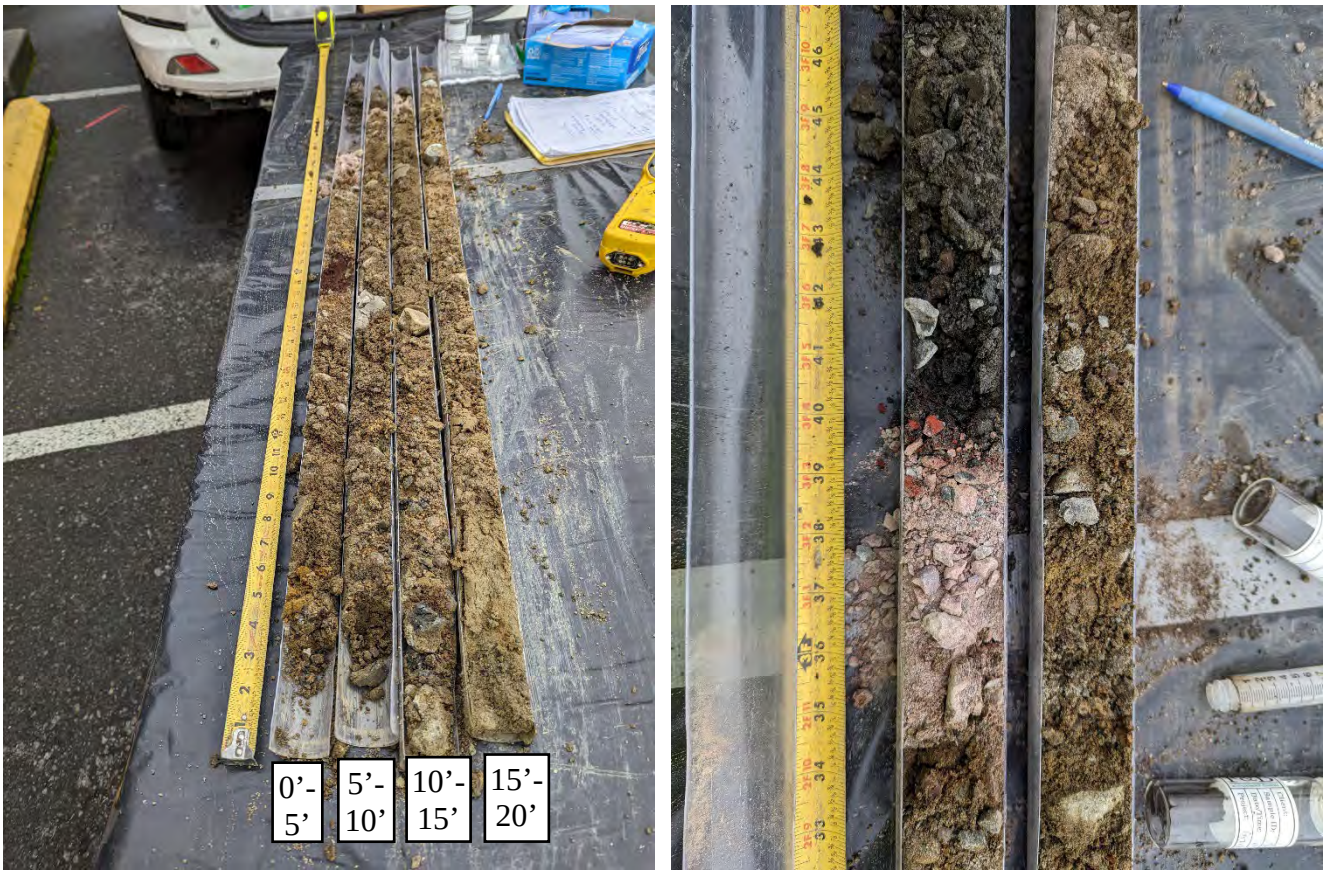
View of Boring B2, in suspected former fuel pump island for a 1940s gas station, looking northwest.


View of soil cores from Boring B2.


View of Boring B3 location, looking north. Boring was completed southeast and likely down gradient of active USTs. Boring location is identified by disturbed asphalt location in photo center.


View of soil core from Boring B3.


View of Boring B4, looking east. Boring was completed between the building and the active USTs.




Soil cores from B4. Close up of soil core in right side photo shows the dark colored contaminated soil (B4-1) on top of red/pink-dyed concrete.

View of Boring B5, looking southwest.


Soil core from B5.

View of Boring B6, looking west. Boring is located just to the right of the white parking line near the photo center, as indicated by a black patched circle in the asphalt.


Soil core from B6.

View of Boring B7, located down gradient of active fuel pumps, looking northeast.

Soil core from B7.

# APPENDIX III

Boring Logs

Laboratory Results with Chain-of-Custody

# ENVIRONMENTAL BORING B1

**PROJECT NUMBER** 10.30.23
**PROJECT NAME** Grandview Grocery
**CLIENT**
**ADDRESS** 802 South C Street, Port Angeles, WA

**DRILLING DATE** December 12, 2023
**TOTAL DEPTH** 25

**DRILLING COMPANY** Holocene Drilling
**DRILL RIG** Truck-mounted push probe

**COMMENTS** NE corner of site, adjacent to GPR discovered USTs

**LOGGED BY** Kim Ninnemann

| PID | Samples | Analysed | Depth (ft) | Graphic Log | Material Description |
|---|---|---|---|---|---|
| | | | 0 | | Asphalt and sand and gravel asphalt base |
| 6.7 | | | 1 | | Tan-brown moist, dense, silty sandy GRAVEL. Some reddish-brown soils in upper 5 feet. Increased gravel content noted between 20-25' bgs.<br><br>Slight petroleum odor noted at 1' bgs. Approximately one foot thick grey soil zone with strong petroleum odors between approximately 8-9' bgs and 13.5-14.5 bgs (sampled collected from both zones). No contamination suspected in soils above and below these contaminated layers/lenses. |
| | | | 2 | | |
| | | | 3 | | |
| | | | 4 | | |
| 0.8 | | | 5 | | |
| | | | 6 | | |
| 0.2 | | | 7 | | |
| 335.8 | | | 8 | | |
| | B1-8.5 | Y | 9 | | |
| 2.0 | | | 10 | | |
| | | | 11 | | |
| 1.6 | | | 12 | | |
| | | | 13 | | |
| 275.1 | B1-14 | Y | 14 | | |
| | | | 15 | | |
| | | | 16 | | |
| 0.5 | | | 17 | | |
| | | | 18 | | |
| | | | 19 | | |
| 0.5 | | | 20 | | |

# ENVIRONMENTAL BORING B1

| PID | Samples | Analysed | Depth (ft) | Graphic Log | Material Description |
|---|---|---|---|---|---|
| | | | 20 | | |
| | | | 21 | | |
| 0.7 | | | 22 | | |
| | | | 23 | | |
| | | | 24 | | Brown moist SILT |
| | | | | | Brown moist fine SAND |
| 1.1 | | | 25 | | Termination depth at 25 feet.<br>No groundwater encountered.<br>Contaminated suspected in two zones: 8-9' and 13.5-14.5'. |
| | | | 26 | | |
| | | | 27 | | |
| | | | 28 | | |
| | | | 29 | | |
| | | | 30 | | |
| | | | 31 | | |
| | | | 32 | | |
| | | | 33 | | |
| | | | 34 | | |
| | | | 35 | | |
| | | | 36 | | |
| | | | 37 | | |
| | | | 38 | | |
| | | | 39 | | |
| | | | 40 | | |
| | | | 41 | | |
| | | | 42 | | |
| | | | 43 | | |





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# ENVIRONMENTAL BORING B2

**PROJECT NUMBER** 10.30.23
**PROJECT NAME** Grandview Grocery
**CLIENT**
**ADDRESS** 802 South C Street, Port Angeles, WA

**DRILLING DATE** December 12, 2023
**TOTAL DEPTH** 17.5

**DRILLING COMPANY** Holocene Drilling
**DRILL RIG** Truck-mounted push probe

**COMMENTS** SE of convenience store building; in former suspected fuel pump island location

**LOGGED BY** Kim Ninnemann

| PID | Samples | Analysed | Depth (ft) | Graphic Log | Material Description |
|---|---|---|---|---|---|
| | | | | | Asphalt |
| | | | 1 | | Reddish brown moist SILT |
| 6.4 | | | 2 | | Tan-brown-reddish brown moist, dense, silty sandy GRAVEL. Increased gravel content between 15-17.5 ' bgs. Slightly more moist zone at 12' bgs, but no water production.<br><br>Strong petroleum odors noted in an approximately 6" zone at 3.5' bgs, a 1" zone at 8.5' bgs, and between 13-17' bgs |
| | | | 3 | | |
| 352.4 | B2-3.5 | Y | 4 | | |
| 1.6 | | | 5 | | |
| | | | 6 | | |
| 0.6 | | | 7 | | |
| | | | 8 | | |
| | | | 9 | | |
| 1.0 | | | 10 | | |
| | | | 11 | | |
| 0.6 | | | 12 | | |
| | | | 13 | | |
| 33.9 | B2-14 | Y | 14 | | |
| | | | 15 | | |
| | | | 16 | | |
| | | | 17 | | |
| 1495 | B2-17.5 | Y | | | |
| | | | 18 | | Termination depth at 17.5' feet due to very slow drilling (not quite refusal)<br>No groundwater encountered.<br>Contaminated suspected around 3.5' and between at least 13 and 17' bgs (depth of contamination not determined). |
| | | | 19 | | |





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# ENVIRONMENTAL BORING B3

**PROJECT NUMBER** 10.30.23
**PROJECT NAME** Grandview Grocery
**CLIENT**
**ADDRESS** 802 South C Street, Port Angeles, WA

**DRILLING DATE** December 12, 2023
**TOTAL DEPTH** 20

**DRILLING COMPANY** Holocene Drilling
**DRILL RIG** Truck-mounted push probe

**COMMENTS** East and suspected down gradient of active USTs

**LOGGED BY** Kim Ninnemann

| PID | Samples | Analysed | Depth (ft) | Graphic Log | Material Description |
|---|---|---|---|---|---|
| | | | 0 | | Asphalt |
| | | | 1 | | Brown-reddish brown moist, dense, silty sandy GRAVEL. Very moist within a 1" zone at 6.5' bgs, but no producible water. |
| 0.2 | | | 2 | | |
| | | | 3 | | |
| | | | 4 | | |
| 0.2 | | | 5 | | |
| | | | 6 | | |
| 0.2 | | | 7 | | |
| | | | 8 | | |
| | | | 9 | | |
| | B3-10 | Y | 10 | | |
| 0.2 | | | 11 | | |
| | | | 12 | | |
| 0.2 | | | 13 | | |
| | | | 14 | | |
| | | | 15 | | |
| 0.1 | | | 16 | | |
| | | | 17 | | |
| 0.1 | | | 18 | | Brown moist SAND |
| | | | 19 | | Brown, moist to very moist, GRAVEL with some silt and sand. |
| | B3-20 | Y | 20 | | |
| 0.2 | | | 21 | | Termination depth at 20 feet.<br>No groundwater encountered.<br>No obvious signs of contamination through field testing. |





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# ENVIRONMENTAL BORING B4

**PROJECT NUMBER** 10.30.23
**PROJECT NAME** Grandview Grocery
**CLIENT**
**ADDRESS** 802 South C Street, Port Angeles, WA

**DRILLING DATE** December 12, 2023
**TOTAL DEPTH** 20

**DRILLING COMPANY** Holocene Drilling
**DRILL RIG** Truck-mounted push probe

**COMMENTS** North of active USTs, near main entrance to convenience store

**LOGGED BY** Kim Ninnemann

| PID | Samples | Analysed | Depth (ft) | Graphic Log | Material Description |
|---|---|---|---|---|---|
| | | | 0 | | Asphalt |
| 4.9 | B4-1 | Y | 1 | | Black moist, dense, silty sandy GRAVEL. Oily odor. |
| | | | | | Red colored concrete, broken |
| | | | 2 | | Tan-brown moist silty sandy gravel. |
| | | | | | Very dark red moist SILT |
| | | | 3 | | Brown, orange-brown, grey, tan moist silty sandy GRAVEL |
| 0.2 | | | 5 | | |
| 0.4 | | | 7 | | |
| | | | 10 | | |
| 0.3 | | | | | Brown very moist SAND (no water production) |
| 0.2 | | | 12 | | |
| | | | 13 | | Tan-brown moist silty sandy GRAVEL to GRAVEL with some silt and sand. |
| 0.3 | | | 15 | | |
| | | | 17 | | |
| 0.3 | B4-17 | Y | | | |
| | | | 19 | | Tan moist SILT |
| | | | | | Brown moist SAND |
| 0.3 | | | 20 | | Termination depth at 20 feet.<br>No groundwater encountered.<br>Shallow contamination suspected above concrete layer (~1 foot bgs). No signs of contamination below concrete. |
| | | | 21 | | |

**Disclaimer** This bore log is intended for environmental not geotechnical purposes.



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# ENVIRONMENTAL BORING B5

**PROJECT NUMBER** 10.30.23
**PROJECT NAME** Grandview Grocery
**CLIENT**
**ADDRESS** 802 South C Street, Port Angeles, WA

**DRILLING DATE** December 12, 2023
**TOTAL DEPTH** 10

**DRILLING COMPANY** Holocene Drilling
**DRILL RIG** Truck-mounted push probe

**COMMENTS** West of pump islands in central portion of parking lot, through former auto painting booth building

**LOGGED BY** Kim Ninnemann

| PID | Samples | Analysed | Depth (ft) | Graphic Log | Material Description |
|---|---|---|---|---|---|
| | | | 0 | | Asphalt |
| | | | 1 | | Reddish brown to dark brown silty sandy GRAVEL. |
| | | | | | Reddish brown moist SILT |
| 0.3 | | | 2 | | Tan-brown moist silty sandy gravel with very narrow layer of sand at 9' bgs. |
| | | | 3 | | |
| | B5-4 | Y | 4 | | |
| 0.2 | | | 5 | | |
| | | | 6 | | |
| 0.3 | | | 7 | | |
| | | | 8 | | |
| | | | 9 | | |
| 0.3 | B5-10 | Y | 10 | | Termination depth at 10 feet.<br>No groundwater encountered.<br>No indication of contamination during field testing. |
| | | | 11 | | |
| | | | 12 | | |
| | | | 13 | | |
| | | | 14 | | |
| | | | 15 | | |
| | | | 16 | | |
| | | | 17 | | |
| | | | 18 | | |
| | | | 19 | | |



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# ENVIRONMENTAL BORING B6

**PROJECT NUMBER** 10.30.23
**PROJECT NAME** Grandview Grocery
**CLIENT**
**ADDRESS** 802 South C Street, Port Angeles, WA

**DRILLING DATE** December 12, 2023
**TOTAL DEPTH** 15

**DRILLING COMPANY** Holocene Drilling
**DRILL RIG** Truck-mounted push probe

**COMMENTS** Near SW corner of fuel canopy through parking lot and former auto repair building

**LOGGED BY** Kim Ninnemann

| PID | Samples | Analysed | Depth (ft) | Graphic Log | Material Description |
|---|---|---|---|---|---|
| | | | 0 | | Asphalt |
| | | | | | Light to dark brown moist sandy GRAVEL |
| | | | 1 | | Brown-reddish brown-tan moist silty sandy GRAVEL |
| 0.3 | | | 2 | | |
| | | | 3 | | |
| | B6-4 | Y | 4 | | |
| 0.3 | | | 5 | | |
| | | | 6 | | |
| 0.3 | | | 7 | | |
| | | | 8 | | |
| | | | 9 | | |
| 0.3 | | | 10 | | |
| | | | 11 | | |
| 0.3 | B6-12 | Y | 12 | | |
| | | | 13 | | |
| | | | 14 | | |
| 0.3 | | | 15 | | Termination depth at 15 feet.<br>No groundwater encountered.<br>No indication of contamination during field testing. |
| | | | 16 | | |
| | | | 17 | | |
| | | | 18 | | |
| | | | 19 | | |





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# ENVIRONMENTAL BORING B7

**PROJECT NUMBER** 10.30.23
**PROJECT NAME** Grandview Grocery
**CLIENT**
**ADDRESS** 802 South C Street, Port Angeles, WA

**DRILLING DATE** December 12, 2023
**TOTAL DEPTH** 15

**DRILLING COMPANY** Holocene Drilling
**DRILL RIG** Truck-mounted push probe

**COMMENTS** East of active pump islands

**LOGGED BY** Kim Ninnemann

| PID | Samples | Analysed | Depth (ft) | Graphic Log | Material Description |
|---|---|---|---|---|---|
| | | | 0 | | Asphalt |
| | | | | | Dark brown-black moist sandy GRAVEL (likely asphalt base) |
| | | | 1 | | Reddish brown moist SILT |
| | | | | | Tan-brown-dark brown moist silty sandy GRAVEL |
| 0.3 | | | 2 | | |
| | | | 3 | | |
| | | | 4 | | |
| 0.3 | | | 5 | | |
| | | | 6 | | |
| 0.3 | B7-7 | Y | 7 | | |
| | | | 8 | | |
| | | | 9 | | |
| 0.3 | | | 10 | | Tan-brown-orange brown-dark brown GRAVEL with some silt and sand (very gravelly) |
| | | | 11 | | |
| 0.3 | | | 12 | | |
| | B7-13 | Y | 13 | | |
| | | | 14 | | |
| 0.3 | | | 15 | | Termination depth at 15 feet.<br>No groundwater encountered.<br>No indication of contamination during field testing. |
| | | | 16 | | |
| | | | 17 | | |
| | | | 18 | | |
| | | | 19 | | |



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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

December 21, 2023

Kim Ninnemann, Project Manager
Stratum Group
2102 Young St
Bellingham, WA 98225

Dear Ms Ninnemann:

Included are the results from the testing of material submitted on December 13, 2023 from the Grandview Grocery, F&BI 312243 project. There are 19 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
STG1221R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on December 13, 2023 by Friedman & Bruya, Inc. from the Stratum Group Grandview Grocery, F&BI 312243 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | Stratum Group |
|---|---|
| 312243 -01 | B1-8.5 |
| 312243 -02 | B1-14 |
| 312243 -03 | B2-3.5 |
| 312243 -04 | B2-14 |
| 312243 -05 | B2-17 |
| 312243 -06 | B3-10 |
| 312243 -07 | B3-20 |
| 312243 -08 | B4-1 |
| 312243 -09 | B4-17 |
| 312243 -10 | B5-4 |
| 312243 -11 | B5-10 |
| 312243 -12 | B6-4 |
| 312243 -13 | B6-12 |
| 312243 -14 | B7-7 |
| 312243 -15 | B7-13 |

Samples B2-17, B4-17, and B7-13 were received in four ounce glass jars. The NWTPH-Gx and 8260D results were flagged accordingly.

The 8260D matrix spike and matrix spike duplicate failed the relative percent difference for several compounds. The analytes were not detected therefore the data were acceptable.

The 8260D matrix spike and matrix spike duplicate exceeded the acceptance criteria for bromomethane. The compound was not detected, therefore the data were acceptable.

All other quality control requirements were acceptable.

Date of Report: 12/21/23
Date Received: 12/13/23
Project: Grandview Grocery, F&BI 312243
Date Extracted: 12/18/23
Date Analyzed: 12/19/23

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Gasoline Range | Surrogate<br>(% Recovery)<br>(Limit 50-150) |
|---|---|---|
| B2-17 pc<br>312243-05 1/5 | 360 | 127 |
| B5-4<br>312243-10 | <5 | 96 |
| B6-4<br>312243-12 | <5 | 96 |
| Method Blank<br>03-2843 MB | <5 | 137 |

Date of Report: 12/21/23
Date Received: 12/13/23
Project: Grandview Grocery, F&BI 312243
Date Extracted: 12/18/23
Date Analyzed: 12/19/23

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Benzene | Toluene | Ethyl Benzene | Total Xylenes | Gasoline Range | Surrogate (% Recovery)<br>(Limit 50-150) |
|---|---|---|---|---|---|---|
| B1-8.5<br>312243-01 1/5 | <0.02 j | <0.1 | 0.63 | 0.64 | 210 | 75 |
| B1-14<br>312243-02 1/5 | <0.02 j | <0.1 | 0.66 | 0.79 | 360 | 78 |
| B2-3.5<br>312243-03 1/10 | <0.2 | <0.2 | 2.7 | 9.3 | 3,300 | 79 |
| B2-14<br>312243-04 1/10 | <0.2 | <0.2 | 1.5 | 2.5 | 1,300 | 75 |
| B3-10<br>312243-06 | <0.02 | <0.02 | <0.02 | <0.06 | <5 | 72 |
| B3-20<br>312243-07 | <0.02 | <0.02 | <0.02 | <0.06 | <5 | 75 |
| B4-1<br>312243-08 | <0.02 | 0.41 | 0.20 | 1.8 | 350 | 83 |
| B4-17 pc<br>312243-09 | <0.02 | <0.02 | <0.02 | <0.06 | 6.4 | 77 |
| B5-10<br>312243-11 | <0.02 | <0.02 | <0.02 | <0.06 | <5 | 73 |
| B6-12<br>312243-13 | <0.02 | <0.02 | <0.02 | <0.06 | <5 | 75 |

Date of Report: 12/21/23
Date Received: 12/13/23
Project: Grandview Grocery, F&BI 312243
Date Extracted: 12/18/23
Date Analyzed: 12/19/23

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Benzene | Toluene | Ethyl Benzene | Total Xylenes | Gasoline Range | Surrogate (% Recovery)<br>(Limit 50-150) |
|---|---|---|---|---|---|---|
| B7-7<br>312243-14 | <0.02 | <0.02 | <0.02 | <0.06 | <5 | 75 |
| B7-13 pc<br>312243-15 | <0.02 | <0.02 | <0.02 | <0.06 | <5 | 73 |
| Method Blank<br>03-2843 MB | <0.02 | <0.02 | <0.02 | <0.06 | <5 | 131 |

Date of Report: 12/21/23
Date Received: 12/13/23
Project: Grandview Grocery, F&BI 312243
Date Extracted: 12/14/23
Date Analyzed: 12/14/23

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 50-150) |
|---|---|---|---|
| B1-8.5<br>312243-01 | <50 | <250 | 89 |
| B1-14<br>312243-02 | 94 | <250 | 92 |
| B2-3.5<br>312243-03 | 2,000 x | <250 | 91 |
| B2-14<br>312243-04 | 410 x | <250 | 92 |
| B2-17<br>312243-05 | 97 x | <250 | 89 |
| B3-10<br>312243-06 | <50 | <250 | 87 |
| B3-20<br>312243-07 | <50 | <250 | 89 |
| B4-1<br>312243-08 | 1,100 | 8,000 | 88 |
| B4-17<br>312243-09 | <50 | <250 | 92 |
| B5-4<br>312243-10 | <50 | <250 | 89 |
| B5-10<br>312243-11 | <50 | <250 | 90 |

Date of Report: 12/21/23
Date Received: 12/13/23
Project: Grandview Grocery, F&BI 312243
Date Extracted: 12/14/23
Date Analyzed: 12/14/23

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

| Sample ID<br>Laboratory ID | Diesel Range<br>($C_{10}$-$C_{25}$) | Motor Oil Range<br>($C_{25}$-$C_{36}$) | Surrogate<br>(% Recovery)<br>(Limit 50-150) |
|---|---|---|---|
| B6-4<br>312243-12 | <50 | <250 | 89 |
| B6-12<br>312243-13 | <50 | <250 | 90 |
| B7-7<br>312243-14 | <50 | <250 | 90 |
| B7-13<br>312243-15 | <50 | <250 | 100 |
| Method Blank<br>03-2903 MB | <50 | <250 | 96 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B1-8.5 | Client: | Stratum Group |
| Date Received: | 12/13/23 | Project: | Grandview Grocery, F&BI 312243 |
| Date Extracted: | 12/14/23 | Lab ID: | 312243-01 |
| Date Analyzed: | 12/15/23 | Data File: | 312243-01.226 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Lead | 5.71 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | B2-17 | Client: | Stratum Group |
| Date Received: | 12/13/23 | Project: | Grandview Grocery, F&BI 312243 |
| Date Extracted: | 12/14/23 | Lab ID: | 312243-05 |
| Date Analyzed: | 12/15/23 | Data File: | 312243-05.232 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Lead | 9.55 |

## Analysis For Total Metals By EPA Method 6020B

| | | | |
|---|---|---|---|
| Client ID: | Method Blank | Client: | Stratum Group |
| Date Received: | NA | Project: | Grandview Grocery, F&BI 312243 |
| Date Extracted: | 12/14/23 | Lab ID: | I3-990 mb |
| Date Analyzed: | 12/14/23 | Data File: | I3-990 mb.116 |
| Matrix: | Soil | Instrument: | ICPMS2 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | SP |

| Analyte: | Concentration mg/kg (ppm) |
|---|---|
| Lead | <1 |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B2-17 pc | Client: | Stratum Group |
| Date Received: | 12/13/23 | Project: | Grandview Grocery, F&BI 312243 |
| Date Extracted: | 12/15/23 | Lab ID: | 312243-05 1/0.5 |
| Date Analyzed: | 12/15/23 | Data File: | 121543.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | IJL |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 105 | 84 | 120 |
| Toluene-d8 | 113 | 73 | 128 |
| 4-Bromofluorobenzene | 121 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | 0.14 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | 0.21 |
| Hexane | 0.54 | o-Xylene | 0.013 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | 0.077 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | 0.44 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | 1.5 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | 1.8 |
| Benzene | <0.001 | sec-Butylbenzene | 0.13 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | 0.12 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | 0.0070 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | 0.39 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B5-4 | Client: | Stratum Group |
| Date Received: | 12/13/23 | Project: | Grandview Grocery, F&BI 312243 |
| Date Extracted: | 12/15/23 | Lab ID: | 312243-10 1/0.5 |
| Date Analyzed: | 12/15/23 | Data File: | 121541.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | IJL |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 103 | 84 | 120 |
| Toluene-d8 | 100 | 73 | 128 |
| 4-Bromofluorobenzene | 113 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | B6-4 | Client: | Stratum Group |
| Date Received: | 12/13/23 | Project: | Grandview Grocery, F&BI 312243 |
| Date Extracted: | 12/15/23 | Lab ID: | 312243-12 1/0.5 |
| Date Analyzed: | 12/15/23 | Data File: | 121542.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | IJL |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 84 | 120 |
| Toluene-d8 | 102 | 73 | 128 |
| 4-Bromofluorobenzene | 111 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

## Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition LL

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | Stratum Group |
| Date Received: | Not Applicable | Project: | Grandview Grocery, F&BI 312243 |
| Date Extracted: | 12/15/23 | Lab ID: | 03-2900 mb 1/0.5 |
| Date Analyzed: | 12/15/23 | Data File: | 121523.D |
| Matrix: | Soil | Instrument: | GCMS13 |
| Units: | mg/kg (ppm) Dry Weight | Operator: | IJL |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | 84 | 120 |
| Toluene-d8 | 93 | 73 | 128 |
| 4-Bromofluorobenzene | 101 | 57 | 146 |

| Compounds: | Concentration mg/kg (ppm) | Compounds: | Concentration mg/kg (ppm) |
|---|---|---|---|
| Dichlorodifluoromethane | <0.5 | 1,3-Dichloropropane | <0.05 |
| Chloromethane | <0.5 | Tetrachloroethene | <0.002 |
| Vinyl chloride | <0.002 | Dibromochloromethane | <0.05 |
| Bromomethane | <0.5 | 1,2-Dibromoethane (EDB) | <0.005 |
| Chloroethane | <0.1 | Chlorobenzene | <0.05 |
| Trichlorofluoromethane | <0.5 | Ethylbenzene | <0.001 |
| Acetone | <5 | 1,1,1,2-Tetrachloroethane | <0.05 |
| 1,1-Dichloroethene | <0.002 | m,p-Xylene | <0.002 |
| Hexane | <0.25 | o-Xylene | <0.001 |
| Methylene chloride | <0.2 | Styrene | <0.05 |
| Methyl t-butyl ether (MTBE) | <0.002 | Isopropylbenzene | <0.05 |
| trans-1,2-Dichloroethene | <0.002 | Bromoform | <0.05 |
| 1,1-Dichloroethane | <0.002 | n-Propylbenzene | <0.05 |
| 2,2-Dichloropropane | <0.05 | Bromobenzene | <0.05 |
| cis-1,2-Dichloroethene | <0.002 | 1,3,5-Trimethylbenzene | <0.05 |
| Chloroform | <0.05 | 1,1,2,2-Tetrachloroethane | <0.05 |
| 2-Butanone (MEK) | <1 | 1,2,3-Trichloropropane | <0.05 |
| 1,2-Dichloroethane (EDC) | <0.002 | 2-Chlorotoluene | <0.05 |
| 1,1,1-Trichloroethane | <0.002 | 4-Chlorotoluene | <0.05 |
| 1,1-Dichloropropene | <0.05 | tert-Butylbenzene | <0.05 |
| Carbon tetrachloride | <0.05 | 1,2,4-Trimethylbenzene | <0.05 |
| Benzene | <0.001 | sec-Butylbenzene | <0.05 |
| Trichloroethene | <0.002 | p-Isopropyltoluene | <0.05 |
| 1,2-Dichloropropane | <0.05 | 1,3-Dichlorobenzene | <0.05 |
| Bromodichloromethane | <0.05 | 1,4-Dichlorobenzene | <0.05 |
| Dibromomethane | <0.05 | 1,2-Dichlorobenzene | <0.05 |
| 4-Methyl-2-pentanone | <1 | 1,2-Dibromo-3-chloropropane | <0.5 |
| cis-1,3-Dichloropropene | <0.05 | 1,2,4-Trichlorobenzene | <0.25 |
| Toluene | <0.001 | Hexachlorobutadiene | <0.25 |
| trans-1,3-Dichloropropene | <0.05 | Naphthalene | <0.01 |
| 1,1,2-Trichloroethane | <0.05 | 1,2,3-Trichlorobenzene | <0.25 |
| 2-Hexanone | <0.5 | | |

Date of Report: 12/21/23
Date Received: 12/13/23
Project: Grandview Grocery, F&BI 312243

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 312246-03 (Duplicate)

| Analyte | Reporting Units | Sample Result (Wet Wt) | Duplicate Result (Wet Wt) | RPD (Limit 20) |
|---|---|---|---|---|
| Benzene | mg/kg (ppm) | <0.02 | <0.02 | nm |
| Toluene | mg/kg (ppm) | <0.02 | <0.02 | nm |
| Ethylbenzene | mg/kg (ppm) | <0.02 | <0.02 | nm |
| Xylenes | mg/kg (ppm) | <0.06 | <0.06 | nm |
| Gasoline | mg/kg (ppm) | <5 | <5 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Benzene | mg/kg (ppm) | 1.0 | 92 | 70-130 |
| Toluene | mg/kg (ppm) | 1.0 | 96 | 70-130 |
| Ethylbenzene | mg/kg (ppm) | 1.0 | 97 | 70-130 |
| Xylenes | mg/kg (ppm) | 3.0 | 103 | 70-130 |
| Gasoline | mg/kg (ppm) | 40 | 85 | 70-130 |

Date of Report: 12/21/23
Date Received: 12/13/23
Project: Grandview Grocery, F&BI 312243

## QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 312243-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | (Wet wt) Sample Result | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | <50 | 90 | 90 | 64-136 | 0 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Diesel Extended | mg/kg (ppm) | 5,000 | 88 | 78-121 |

Date of Report: 12/21/23
Date Received: 12/13/23
Project: Grandview Grocery, F&BI 312243

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 312243-01 x5 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Lead | mg/kg (ppm) | 50 | 5.50 | 92 | 95 | 75-125 | 3 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Lead | mg/kg (ppm) | 50 | 112 | 80-120 |

Date of Report: 12/21/23
Date Received: 12/13/23
Project: Grandview Grocery, F&BI 312243

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 312228-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result (Wet wt) | Percent Recovery MS | Percent Recovery MSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 2 | <0.5 | 26 | 22 | 10-47 | 17 |
| Chloromethane | mg/kg (ppm) | 2 | <0.5 | 61 | 65 | 10-88 | 6 |
| Vinyl chloride | mg/kg (ppm) | 2 | <0.05 | 62 | 69 | 10-79 | 11 |
| Bromomethane | mg/kg (ppm) | 2 | <0.5 | 92 vo | 95 vo | 10-85 | 3 |
| Chloroethane | mg/kg (ppm) | 2 | <0.5 | 75 | 88 | 11-106 | 16 |
| Trichlorofluoromethane | mg/kg (ppm) | 2 | <0.5 | 50 | 56 | 10-85 | 11 |
| Acetone | mg/kg (ppm) | 10 | <5 | 46 | 56 | 10-224 | 20 |
| 1,1-Dichloroethene | mg/kg (ppm) | 2 | <0.05 | 56 | 63 | 11-105 | 12 |
| Hexane | mg/kg (ppm) | 2 | <0.25 | 36 | 43 | 10-106 | 18 |
| Methylene chloride | mg/kg (ppm) | 2 | <0.5 | 67 | 71 | 10-139 | 6 |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 2 | <0.05 | 71 | 76 | 18-131 | 7 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 2 | <0.05 | 61 | 63 | 16-122 | 3 |
| 1,1-Dichloroethane | mg/kg (ppm) | 2 | <0.05 | 70 | 80 | 19-125 | 13 |
| 2,2-Dichloropropane | mg/kg (ppm) | 2 | <0.05 | 57 | 62 | 10-184 | 8 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 2 | <0.05 | 65 | 72 | 18-129 | 10 |
| Chloroform | mg/kg (ppm) | 2 | <0.05 | 67 | 76 | 18-126 | 13 |
| 2-Butanone (MEK) | mg/kg (ppm) | 10 | <1 | 66 | 75 | 10-190 | 13 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 2 | <0.05 | 75 | 86 | 19-138 | 14 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 2 | <0.05 | 64 | 72 | 16-126 | 12 |
| 1,1-Dichloropropene | mg/kg (ppm) | 2 | <0.05 | 63 | 71 | 19-129 | 12 |
| Carbon tetrachloride | mg/kg (ppm) | 2 | <0.05 | 59 | 67 | 13-125 | 13 |
| Benzene | mg/kg (ppm) | 2 | <0.03 | 70 | 81 | 15-129 | 15 |
| Trichloroethene | mg/kg (ppm) | 2 | <0.02 | 68 | 80 | 14-127 | 16 |
| 1,2-Dichloropropane | mg/kg (ppm) | 2 | <0.05 | 68 | 76 | 17-137 | 11 |
| Bromodichloromethane | mg/kg (ppm) | 2 | <0.05 | 63 | 75 | 24-130 | 17 |
| Dibromomethane | mg/kg (ppm) | 2 | <0.05 | 64 | 72 | 20-138 | 12 |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 10 | <1 | 58 | 73 | 21-139 | 23 vo |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 2 | <0.05 | 57 | 69 | 17-135 | 19 |
| Toluene | mg/kg (ppm) | 2 | <0.05 | 66 | 81 | 15-129 | 20 |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 2 | <0.05 | 64 | 78 | 18-130 | 20 |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 2 | <0.05 | 74 | 84 | 29-128 | 13 |
| 2-Hexanone | mg/kg (ppm) | 10 | <0.5 | 70 | 75 | 28-142 | 7 |
| 1,3-Dichloropropane | mg/kg (ppm) | 2 | <0.05 | 75 | 81 | 20-135 | 8 |
| Tetrachloroethene | mg/kg (ppm) | 2 | <0.025 | 59 | 67 | 20-121 | 13 |
| Dibromochloromethane | mg/kg (ppm) | 2 | <0.05 | 62 | 74 | 11-138 | 18 |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 2 | <0.05 | 73 | 81 | 21-130 | 10 |
| Chlorobenzene | mg/kg (ppm) | 2 | <0.05 | 67 | 72 | 19-129 | 7 |
| Ethylbenzene | mg/kg (ppm) | 2 | <0.05 | 72 | 82 | 23-133 | 13 |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 2 | <0.05 | 64 | 70 | 16-127 | 9 |
| m,p-Xylene | mg/kg (ppm) | 4 | <0.1 | 67 | 72 | 19-134 | 7 |
| o-Xylene | mg/kg (ppm) | 2 | <0.05 | 69 | 67 | 20-132 | 3 |
| Styrene | mg/kg (ppm) | 2 | <0.05 | 66 | 64 | 23-127 | 3 |
| Isopropylbenzene | mg/kg (ppm) | 2 | <0.05 | 57 | 64 | 21-134 | 12 |
| Bromoform | mg/kg (ppm) | 2 | <0.05 | 59 | 56 | 10-142 | 5 |
| n-Propylbenzene | mg/kg (ppm) | 2 | <0.05 | 77 | 69 | 10-141 | 11 |
| Bromobenzene | mg/kg (ppm) | 2 | <0.05 | 68 | 59 | 10-135 | 14 |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 2 | <0.05 | 69 | 61 | 20-136 | 12 |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 2 | <0.05 | 76 | 67 | 10-234 | 13 |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 2 | <0.05 | 109 | 81 | 10-144 | 29 vo |
| 2-Chlorotoluene | mg/kg (ppm) | 2 | <0.05 | 75 | 66 | 10-139 | 13 |
| 4-Chlorotoluene | mg/kg (ppm) | 2 | <0.05 | 75 | 67 | 10-139 | 11 |
| tert-Butylbenzene | mg/kg (ppm) | 2 | <0.05 | 68 | 70 | 10-144 | 3 |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 2 | <0.05 | 70 | 72 | 24-133 | 3 |
| sec-Butylbenzene | mg/kg (ppm) | 2 | <0.05 | 69 | 75 | 23-134 | 8 |
| p-Isopropyltoluene | mg/kg (ppm) | 2 | <0.05 | 65 | 69 | 25-131 | 6 |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 2 | <0.05 | 65 | 67 | 10-143 | 3 |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 2 | <0.05 | 64 | 70 | 10-146 | 9 |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 2 | <0.05 | 80 | 74 | 10-144 | 8 |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 2 | <0.5 | 89 | 79 | 10-163 | 12 |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 2 | <0.25 | 66 | 62 | 10-147 | 6 |
| Hexachlorobutadiene | mg/kg (ppm) | 2 | <0.25 | 66 | 63 | 10-162 | 5 |
| Naphthalene | mg/kg (ppm) | 2 | <0.05 | 71 | 64 | 30-138 | 10 |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 2 | <0.25 | 66 | 52 | 10-173 | 24 vo |

Date of Report: 12/21/23
Date Received: 12/13/23
Project: Grandview Grocery, F&BI 312243

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Dichlorodifluoromethane | mg/kg (ppm) | 2 | 77 | 10-93 |
| Chloromethane | mg/kg (ppm) | 2 | 80 | 34-101 |
| Vinyl chloride | mg/kg (ppm) | 2 | 89 | 47-106 |
| Bromomethane | mg/kg (ppm) | 2 | 99 | 38-123 |
| Chloroethane | mg/kg (ppm) | 2 | 87 | 44-123 |
| Trichlorofluoromethane | mg/kg (ppm) | 2 | 96 | 56-108 |
| Acetone | mg/kg (ppm) | 10 | 74 | 24-185 |
| 1,1-Dichloroethene | mg/kg (ppm) | 2 | 93 | 61-118 |
| Hexane | mg/kg (ppm) | 2 | 94 | 54-142 |
| Methylene chloride | mg/kg (ppm) | 2 | 102 | 10-213 |
| Methyl t-butyl ether (MTBE) | mg/kg (ppm) | 2 | 93 | 70-130 |
| trans-1,2-Dichloroethene | mg/kg (ppm) | 2 | 95 | 70-130 |
| 1,1-Dichloroethane | mg/kg (ppm) | 2 | 95 | 70-130 |
| 2,2-Dichloropropane | mg/kg (ppm) | 2 | 106 | 45-172 |
| cis-1,2-Dichloroethene | mg/kg (ppm) | 2 | 94 | 70-130 |
| Chloroform | mg/kg (ppm) | 2 | 92 | 70-130 |
| 2-Butanone (MEK) | mg/kg (ppm) | 10 | 93 | 36-182 |
| 1,2-Dichloroethane (EDC) | mg/kg (ppm) | 2 | 98 | 66-140 |
| 1,1,1-Trichloroethane | mg/kg (ppm) | 2 | 95 | 70-130 |
| 1,1-Dichloropropene | mg/kg (ppm) | 2 | 94 | 70-130 |
| Carbon tetrachloride | mg/kg (ppm) | 2 | 94 | 68-146 |
| Benzene | mg/kg (ppm) | 2 | 99 | 70-130 |
| Trichloroethene | mg/kg (ppm) | 2 | 93 | 53-133 |
| 1,2-Dichloropropane | mg/kg (ppm) | 2 | 93 | 67-137 |
| Bromodichloromethane | mg/kg (ppm) | 2 | 91 | 70-130 |
| Dibromomethane | mg/kg (ppm) | 2 | 91 | 70-130 |
| 4-Methyl-2-pentanone | mg/kg (ppm) | 10 | 94 | 70-130 |
| cis-1,3-Dichloropropene | mg/kg (ppm) | 2 | 90 | 70-130 |
| Toluene | mg/kg (ppm) | 2 | 103 | 63-127 |
| trans-1,3-Dichloropropene | mg/kg (ppm) | 2 | 98 | 70-130 |
| 1,1,2-Trichloroethane | mg/kg (ppm) | 2 | 100 | 70-130 |
| 2-Hexanone | mg/kg (ppm) | 10 | 89 | 65-148 |
| 1,3-Dichloropropane | mg/kg (ppm) | 2 | 97 | 67-135 |
| Tetrachloroethene | mg/kg (ppm) | 2 | 96 | 59-138 |
| Dibromochloromethane | mg/kg (ppm) | 2 | 96 | 61-154 |
| 1,2-Dibromoethane (EDB) | mg/kg (ppm) | 2 | 103 | 70-130 |
| Chlorobenzene | mg/kg (ppm) | 2 | 100 | 65-133 |
| Ethylbenzene | mg/kg (ppm) | 2 | 104 | 60-140 |
| 1,1,1,2-Tetrachloroethane | mg/kg (ppm) | 2 | 100 | 68-129 |
| m,p-Xylene | mg/kg (ppm) | 4 | 101 | 56-145 |
| o-Xylene | mg/kg (ppm) | 2 | 101 | 61-137 |
| Styrene | mg/kg (ppm) | 2 | 100 | 61-138 |
| Isopropylbenzene | mg/kg (ppm) | 2 | 101 | 52-148 |
| Bromoform | mg/kg (ppm) | 2 | 95 | 57-166 |
| n-Propylbenzene | mg/kg (ppm) | 2 | 98 | 36-162 |
| Bromobenzene | mg/kg (ppm) | 2 | 93 | 63-127 |
| 1,3,5-Trimethylbenzene | mg/kg (ppm) | 2 | 96 | 43-156 |
| 1,1,2,2-Tetrachloroethane | mg/kg (ppm) | 2 | 94 | 35-184 |
| 1,2,3-Trichloropropane | mg/kg (ppm) | 2 | 97 | 70-130 |
| 2-Chlorotoluene | mg/kg (ppm) | 2 | 95 | 50-146 |
| 4-Chlorotoluene | mg/kg (ppm) | 2 | 96 | 47-150 |
| tert-Butylbenzene | mg/kg (ppm) | 2 | 97 | 41-154 |
| 1,2,4-Trimethylbenzene | mg/kg (ppm) | 2 | 97 | 42-159 |
| sec-Butylbenzene | mg/kg (ppm) | 2 | 97 | 25-175 |
| p-Isopropyltoluene | mg/kg (ppm) | 2 | 98 | 18-186 |
| 1,3-Dichlorobenzene | mg/kg (ppm) | 2 | 97 | 49-149 |
| 1,4-Dichlorobenzene | mg/kg (ppm) | 2 | 95 | 48-149 |
| 1,2-Dichlorobenzene | mg/kg (ppm) | 2 | 98 | 58-139 |
| 1,2-Dibromo-3-chloropropane | mg/kg (ppm) | 2 | 97 | 70-130 |
| 1,2,4-Trichlorobenzene | mg/kg (ppm) | 2 | 97 | 39-166 |
| Hexachlorobutadiene | mg/kg (ppm) | 2 | 96 | 41-186 |
| Naphthalene | mg/kg (ppm) | 2 | 95 | 67-143 |
| 1,2,3-Trichlorobenzene | mg/kg (ppm) | 2 | 95 | 49-165 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

312243

# SAMPLE CHAIN OF CUSTODY

12/13/23 G3/N3

Page # 1 of 2

Report To Kim Ninnemann
Company Stratum Group
Address P.O. Box 2546
City, State, ZIP Bellingham WA 98227
Phone 360 714 9409 Email kim@stratumgroup.net

SAMPLERS (*signature*)

PROJECT NAME: Grandview Quarry
PO #: Grandview
REMARKS: Project specific RLs? - Yes / No
INVOICE TO: Stratum Group

TURNAROUND TIME
☒ Standard turnaround
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Archive samples
☐ Other
Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | Lead | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B1 - 8.5 | 01 A-E | 12/12/23 | 0843 | Soil | 5 | X | X | X | | | | | X | | | | |
| B1 - 14 | 02 | " | 0853 | " | 5 | X | X | X | | | | | | | | | |
| B2 - 3.5 | 03 | " | 1005 | " | 5 | X | X | X | | | | | | | | | |
| B2 - 14 | 04 | " | 1017 | " | 5 | X | X | X | | | | | | | | | |
| B2 - 17 | 05 A-B | " | 1029 | " | 2 | X | X | | | X | | | X | | | | |
| B3 - 10 | 06 A-E | " | 1120 | " | 5 | X | X | X | | | | | | | | | |
| B3 - 20 | 07 | " | 1125 | " | 5 | X | X | X | | | | | | | | | |
| B4 - 1 | 08 | " | 1149 | " | 5 | X | X | X | | | | | | | | | |
| B4 - 17 | 09 A-B | " | 1207 | " | 2 | X | X | X | | | | | | | | | |
| B5 - 4 | 10 A-E | " | 1325 | " | 5 | X | X | X | | X | | | | | | | |

Samples received at 1 °C

BTEX by 8260

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Kim Ninnemann | Stratum Group | 12/13/23 | 15:32 |
| Received by: | ANPHAN | FSA | 12/13/23 | 13:32 |
| Relinquished by: | | | | |
| Received by: | | | | |

MR

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

312243

# SAMPLE CHAIN OF CUSTODY

12/13/23

G3 | N3

Page # 2 of 2

Report To Kim Ninnemann

Company Stratum Group

Address PO Box 2546

City, State, ZIP Bellingham WA 98227

Phone 360 714 9409 Email Kim@stratumgroup.net

SAMPLERS (signature)

PROJECT NAME: Grandview Grocery

PO #: Grandview

REMARKS

Project specific RLs? - Yes / No

INVOICE TO: Stratum Group

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [ ] Archive samples
- [ ] Other
- Default: Dispose after 30 days

| Sample ID | Lab ID | Date Sampled | Time Sampled | Sample Type | # of Jars | NWTPH-Dx | NWTPH-Gx | BTEX EPA 8021 | NWTPH-HCID | VOCs EPA 8260 | PAHs EPA 8270 | PCBs EPA 8082 | | | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ANALYSES REQUESTED | | | | | | | | | | | |
| B5-10 | 11 A-E | 12/12/23 | 1330 | Soil | 5 | X | X | X | | | | | | | | | |
| B6-4 | 12 | | 1355 | | 5 | X | X | X | | X | | | | | | | |
| B6-12 | 13 | | 1402 | | 5 | X | X | X | | | | | | | | | |
| B7-7 | 14 | | 1431 | | 5 | X | X | X | | | | | | | | | |
| B7-13 | 15 A-B | | 1442 | | 2 | X | X | X | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | Samples received at 1 °C | | | | | | | | | | |

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Kim Ninnemann | Stratum Group | 12/13/23 | 1150 |
| Received by: | ANHPHAN | F&B | 12/13/23 | 13:33 |
| Relinquished by: | | | | |
| Received by: | | | | |

13:33 MR

*Friedman & Bruya, Inc.*
*Ph. (206) 285-8282*

# APPENDIX IV

Field Procedures

# STRATUM GROUP FIELD PROCEDURES

## Site Preparatory Activities

Prior to the completion of subsurface exploration activities on the subject property, Stratum Group obtains approval for planned activities from the property owner and obtains or facilitates the public agency permits required for the desired work. Stratum Group marks the location of planned excavations or borings on the subject property with white paint and contacts the local one-call utility locating service at least two business days prior to the onset of exploration activities. Stratum Group also engages the services of a professional private utility locating company to survey the proposed exploration area(s) and conduct ground penetrating radar services to minimize the potential for exploration activities to encounter and/or damage buried utilities or objects.

## Soil Borings & Soil Sampling

Stratum Group engages a licensed professional drilling company to complete subsurface soil borings with a drill rig, unless hand auguring or hand-dug test pits are proposed for the site. Continuous soil cores are typically collected using Geoprobe/push probe samplers. The boring method(s) selected are indicated on the boring logs completed for the project. Stratum Group chooses the sample locations based upon researched site history and project goals with some variability based upon utility locate/GPR findings and/or conditions identified in the field.

### *Field Screening*

Soils recovered from the borehole are examined and field screened for odor, hydrocarbon sheen, discoloration, or other obvious indications of contamination. Any such obvious indicators, if observed, are recorded on the boring logs.

A MiniRAE 3000 photoionization detector (PID) equipped with a 10.6eV lamp is utilized to field scan samples for volatile organic compounds (VOCs). To evaluate for VOCs with the PID, soil is placed into a sealed plastic bag and allowed to sit for approximately 5 minutes. The PID sampler tip is then inserted into the headspace of the plastic bag to retrieve a parts per million (ppm) concentration of VOCs. Measurements obtained from the PID are recorded on the boring log. The PID is calibrated regularly in accordance with the manufacturer's specifications using a hexane or isobutylene standard.

Soils collected from the borings are described according to the Unified Soil Classification System (USCS), with particular note to presence of colors, moisture content, presence of debris and/or indicators of contamination. These descriptions are recorded on the boring log.

### *Soil Sampling (from borehole)*

Soil collected via soil cores from push probe equipment is sampled where contaminants are determined to be most likely based on field indications and background knowledge, such as sample depths where discoloration or odors were noted, the top of the groundwater table, or at depths associated with the suspected base of tanks or piping. Soil samples are labeled with the boring number followed by the depth of the sample. For example, sample B1-5 would have been collected from Boring B1 at 5 feet bgs (below ground surface).

Soil samples are placed into labeled laboratory supplied containers. Sample container selection is based upon laboratory recommendations for volume, container type, and preservation, if necessary. Sampling equipment is either disposable or washed with Alconox and triple-rinsed between samples. Samples are placed into an ice-chilled cooler immediately after sampling and delivered to a Washington State Department of Ecology approved laboratory for analysis. The samples are transferred under chain-of-custody protocol.

### *Borehole Completion*

If no temporary or permanent monitoring well is going to be installed, the soil boring is backfilled with bentonite chips to approximately 1 foot below the ground surface (bgs). The rest of the hole is filled and finished to the surface with material to match the surrounding surface (e.g., asphalt, concrete, dirt, etc.). The borehole is backfilled by the licensed well driller consistent with WAC 173-360 and overseen by Stratum Group.

### *Soil Sampling (from excavation)*

Stratum group engages a licensed excavation contractor to complete excavation activities. As in borehole sampling, soils from the sidewalls and base of the excavation area are regularly examined and field screened for obvious indications of contamination (e.g., odor, hydrocarbon sheen, discoloration, etc.). This field examination in combination with PID screening is used to direct excavation activities.

When field screening indicates that contaminant concentrations in residual soils have fallen below the cleanup standards established for the subject property, soil samples are collected from the base and sidewalls of the excavation. Where possible, samples are collected directly using hand tools that are washed with Alconox and triple-rinsed between each sample. For deeper samples, where the excavation depth is too great for Stratum Group personnel to access directly, samples are collected from the excavator bucket. Overburden slough material that collects on top of soils in the bucket is removed prior to sampling so sampled soils are representative of the desired sampling location. Samples are subsequently handled according to procedures outlined above for borehole samples.

## Monitoring Well Construction & Groundwater Sampling

If groundwater is encountered during soil boring completion, samples may be collected as either a grab sample from a temporary well or from a permanent monitoring well. Prior to well purging or sample collection, the depth of the groundwater table in the borehole or monitoring well is measured using a depth-to-water meter. Prior to sample collection, water is purged from the well. For a temporary well, water is purged until the water becomes clear or turbidity is significantly reduced. For a developed monitoring well, at least three well volumes are purged prior to sampling or until field parameters as measured with a field meter (e.g., temperature, dissolved oxygen, pH, conductivity) stabilize. If low water levels or low conductivity aquifers result in the wells pumping dry during purging, purging is halted and the well is allowed to recharge until it can be purged again. Multiple rounds of purging and recharging may be completed to allow for turbidity to decrease significantly, in the case of a temporary well, or for field parameters to stabilize, in the case of a permanent monitoring well. For a developed monitoring well, at least three well volumes are purged prior to sampling or until field parameters stabilize. Total well purge volumes prior to sampling may only be reduced (i.e., less than three well volumes) if several rounds of purging and recharge do not result in sufficient purge volume within a reasonable time frame. In such cases, the reduced purge volumes will be documented. Obvious indications of contamination observed in purge water such as odors or petroleum sheens are noted on the boring logs.

In the event of low water volumes or slow recharge of the wells, less water may be purged to allow for sample collection within reasonable time frames. Obvious indications of contamination observed in purge water such as odors or petroleum sheens are noted on the boring logs.

Both well purging and subsequent water sampling are accomplished using a low-flow, peristaltic pump, as recommended by the U.S. EPA. Low-flow pumping is utilized because it is more likely to produce a sample representative of actual groundwater conditions due to its relatively low impact on aquifer characteristics and chemistry. Tubing used for well purging and sample collection is single-use and is discarded after sample collection is complete.

Groundwater samples are placed into labeled laboratory supplied containers. Sample container selection is based upon laboratory recommendations for volume, container type, and preservation, if necessary. Samples are immediately placed into an ice-chilled cooler for storage until delivery to a Washington State Department of Ecology approved laboratory.

### *Temporary & Monitoring Well Construction*

Temporary wells are constructed using single-use slotted PVC pipe placed in the depth range of desired groundwater sampling. Blank pipe rises from the top of the screen to the surface. The screen length and placement depth are noted on the boring logs or within report text. Any reusable materials are washed and triple rinsed between uses.

Permanent monitoring wells are similarly constructed with a slotted PVC screen placed at the

desired sampling depth with non-slotted PVC to the surface. The annular space between the PVC and the borehole is filled with a silica sand filter pack, which extends approximately one to two feet above the screen. Hydrated bentonite is used to fill the annular space from the filter pack to approximately one to two feet below the ground surface to form a seal. The surface is finished with concrete surrounding a steel flush-mount or above-grade monument to protect the well and protect against surface water infiltration or placement of substances down the well casing. Well construction details are noted in the boring logs.

After construction, Stratum Group recommends engaging the services of a licensed professional land surveyor to establish the location and elevation of permanent monitoring wells. Markings are made on the north side of the well casing to establish a consistent point for collecting depth-to-water measurements. Established well casing elevations combined with depth-to-water measurements collected during groundwater sampling may then be used to model groundwater flow directions.

### *Well Development*

After construction of a permanent monitoring well, the well is developed using either a submersible pump or disposable bailer. An agitation apparatus that consists of a stainless-steel rod with neoprene washers the diameter of the inside of the well casing is periodically dropped into the well casing to generate additional pressure and suction through the sand filter pack and further remove fine-grained sediment from the well and surrounding filter. The submersible pump and agitator rod are thoroughly washed and rinsed between wells. Well pumping and agitation proceed until purge water turbidity has reduced and stabilized. The volume of water purged during development is recorded.

## Air Sampling

Air samples are commonly collected to help assess the vapor intrusion pathway for contamination into nearby structures. Air samples may be collected either as subsurface soil gas, sub-slab air, or indoor air. Sampling equipment including tubing and valve assemblies are single-use and disposable. After sampling collection, samples are delivered to a Washington State Department of Ecology approved laboratory for analysis. The samples are transferred under chain-of-custody protocol.

### *Sub-slab Vapor Sampling*

Stratum Group engages a professional drilling contractor to install permanent and temporary sub-slab vapor pins. For a permanent pin with a flush-mount installation, first a 1.5-inch hole is drilled approximately 1.75 inches into the concrete slab of the structure. A 5/8-inch diameter hole is then drilled through the bottom of the slab and approximately 1 inch into the underlying soil. The vapor pin is then hammered into the open hole. At least 20 minutes is allowed to pass before beginning the sample collection process to allow for equilibration. Prior to assembling the sampling apparatus, the laboratory supplied and cleaned 1L Summa canister and ~5-minute flow

controller used for sample collection are subjected to a shut-in test to look for leaks in the sampling equipment setup and the initial vacuum is recorded.

To collect a sample, tubing recommended by the vapor pin manufacturer is attached to the barb on the pin and attached to a valve assembly provided by the laboratory. Tubing also runs from the valve assembly to the Summa canister assembly. Prior to sample collection, a leak test and shut-in test are conducted on the sampling apparatus. The leak test is conducted using either a water dam (temporary pin) or by pouring water directly into the flush-mount hole (permanent) and looking for bubbling around the vapor pin or intrusion of water into the sample tubing. A shut-in test of the sampling apparatus involves manually applying a vacuum to the canister via the purge line of the apparatus and verifying that no leaks are allowing the vacuum to rapidly disappear.

Immediately before sampling, the sampling apparatus is purged using a manually applied vacuum sufficiently to remove ambient air from the tubing. The canister valve is then opened and the sample is collected over approximately 5 minutes or until the vacuum reading on the canister is approximately 5 in/Hg, being sure to not allow the vacuum to reach zero. The canister is then closed, and the vapor pin is either removed (temporary) and the hole patched or the pin is capped and covered (permanent) for future sampling.

### *Indoor Air Sampling*

Indoor air samples are collected using laboratory-supplied and cleaned 6L Summa canister attached to either an 8-hour or 24-hour flow controller, depending upon whether the site's use is residential or commercial, per Department of Ecology guidance. Prior to sampling, the canisters and flow controllers are subjected to a shut-in test to look for leaks in the sampling equipment setup and the initial vacuum is recorded. Sampling canisters are placed within the general breathing height zone (4 to 6 feet above the ground surface).

At the same time as indoor air sampling collection, at least one outdoor (ambient) air sample is collected of the same time period as the indoor sample(s). Contaminant concentrations detected in the ambient air samples are subtracted from contaminant concentrations detected in the indoor air samples to assess the contribution of vapor intrusion into site structures more directly.

## Sampling Results Quality Assurance

The laboratory that conducts analysis of the samples collected by Stratum Group conducts their own quality assurance procedures, which typically include surrogate recovery, method blank, laboratory blank, and blank spike duplicate tests. The results of these test are reviewed by Stratum Group and any significant non-conformances or problems identified that limit our ability to use the data is addressed in the body of this report.