



**EMCON**

18912 North Creek Parkway • Suite 200 • Bothell, Washington 98011-8016 • (425) 485-5000 • Fax (425) 486-9766

March 30, 1998  
Project 41289-001.001

Mr. Philip Wood  
Bedford Property Investors  
1400 112th Ave. S.E., Suite 100  
Bellevue, Washington 98004

Re: Revised Independent Remedial Action Interim Report  
Adobe Development  
Quadrant Lake Union Center, Seattle, Washington

Dear Mr. Wood:

This revised report summarizes the results of the independent remedial actions conducted to date at the Adobe Development (Adobe) at Quadrant's Lake Union Center in Seattle, Washington. The independent remedial actions were conducted by the Quadrant Corporation to address impacted soil associated with two former rail spurs and three underground storage tanks (USTs) present at the subject site. In addition, this report summarizes the actions taken to remove impacted soil encountered during excavation for site redevelopment. Independent remedial action performed to address impacted soil within the former Burlington Northern Railroad (BNR) right of way is presented in a separate report.

This revised report updates EMCON's August 11, 1997 report prepared for Quadrant Corporation. Activities completed since the publication of the August 1997 report include the placement of the stockpiled rail spur soil in the Aurora ramp, additional soil excavation and disposal associated with installation of a pile cap in the Building 2 area and additional soil sampling in the future Building 3 area.

EMCON has prepared this revised report for Bedford Property Investors as a potential purchaser of the Adobe Development. EMCON's environmental services up to the preparation of this report were performed for the Quadrant Corporation, the site developer. Ms. Barbara Chilcote of Quadrant Corporation provided EMCON verbal authorization to release the information contained in this report to Bedford Property Investors on January 16, 1998.



## **BACKGROUND**

### **Site Description**

Quadrant's Lake Union Center is a commercial development located in the Fremont district of Seattle, Washington. The center is bounded by Phinney Avenue on the west, North 34th Street on the north, Aurora Avenue on the east and the Lake Washington Ship Canal on the south (Figure 1).

The Adobe Development (Site) is located at the east half of the Lake Union Center and is bounded by the Fremont Avenue Bridge to the west, North 34th Street on the north, the Aurora Avenue Bridge on the east and Lake Union on the south (Figure 1). Prior to redevelopment, the site consisted of three buildings used for commercial purposes and warehousing. There were visible indications of two inactive rail spurs present in the northern and southern portions of the Adobe Development. The northern spur is approximately 600 feet long and the southern spur is approximately 400 feet long (Figure 2). The former right of way for the BNR tracks is located adjacent to North 34th Street. The railway tracks and ties were removed from the right of way between April 1989 and the end of 1990. The prior location of the tracks was covered by gravel surfacing. The remaining areas of the site surrounding the former buildings were typically covered by asphalt pavement.

The site is currently being redeveloped by constructing two new buildings which will have basement parking areas (Figure 2). The north east corner of the site may be developed for a third building at some point in the future. The construction of the basement parking areas requires removal of the upper 6 to 8 feet (ft) of soil beneath the new buildings. The areas outside of the building will typically be covered by asphalt pavement for access roads and parking or will be landscaped. A new privately owned access drive to North 34th Street (the Aurora ramp) will be constructed beneath the northern end of the Aurora Bridge (Figure 2).

### **Site History**

The Lake Union Center was used for commercial activities since 1889 (Earth Consultants Inc., 1987). A portion of the Adobe Development site was used as lumber mill from 1889 until 1929 when the mill was closed. The mill was reopened as a door and sash company in 1939 and was operated as such until 1957. The door and sash company was shut down gradually from 1955 through 1957 at which time the site was used as an industrial/commercial park until the current redevelopment.

Over the years the site has been filled concurrent with site development. Fill consisted of spoils from the dredging and construction of the Lake Washington Ship Canal which was placed on the south end of the site. Additional fill was placed on and adjacent to the north end of the site, reportedly using clean fill obtained from other construction sites in the greater Seattle area.

## **SITE INVESTIGATION**

Based on their experience with a rail spur on the western end of the Lake Union Center, Quadrant commissioned a soil investigation of the two rail spurs located on the Site. During the rail spur investigation, construction and demolition debris were encountered in several of the test pits. Quadrant requested that additional investigation be conducted within the limits of Adobe Development Buildings 1 and 2 general excavation (i.e., the excavation necessary for the basement parking garage) to evaluate subsurface soil conditions. An investigation of the future Building 3 area was performed after Buildings 1 and 2 general excavation was completed. A description of these investigations and the results of the testing are provided in the following sections.

### **Former Rail Spur Investigation**

**Field Investigation.** The rail spurs were investigated by excavating 11 test pits using a backhoe. Five test pits were located on or immediately adjacent to the northern spur (TP-1 through TP-4 and TP-11) and six test pits were located on the southern spur (TP-5 through TP-10). The test pits typically extended to a depth of 4 to 5 ft below ground surface (bgs). Test pit locations are shown on Figure 3.

The ground surface of both rail spurs was covered by approximately 3 to 4 inches of asphalt pavement. Soils encountered beneath the northern rail spur typically consisted of a dark brown gravely sand to a depth of 1 ft bgs, dark brown silt from 1 to 3.5 ft bgs, and a brown sand from 3.5 ft bgs to the maximum depth explored (5 ft). Soil beneath the southern spur typically consisted of brown silty sand from 0.3 to 2 ft bgs and brown to black sandy silt from 2 to 5 ft bgs, although several of the test pits (TP-8, TP-9 and TP-10) did not encounter this silt. Three of the test pits (TP-6, TP-7, TP-8) encountered a second layer of asphalt pavement from 1 to 1.5 ft bgs. Bricks and other construction debris were encountered in all of the southern rail spur test pits at depths of approximately 2 to 3.5 ft bgs.

Soil samples were collected from eight of the test pits (TP-1, TP-2, TP-4, TP-5, TP-7, TP-9, TP-10, and TP-11) at various depths for laboratory analysis. The test pits selected for sampling and the specific depth intervals sampled, were based on field screening with a photoionization detector (PID), physical appearance of the sample (i.e., discoloration), odors, spatial and vertical distribution, and professional judgment. All of the soil samples were analyzed for total petroleum hydrocarbons as diesel and oil (TPH-D and TPH-O) using Washington State Department of Ecology (Ecology) method WTPH-D extended. A select number of the samples were analyzed for halogenated volatile organic compounds (HVOCs) using U.S. Environmental Protection Agency (USEPA) method 8010B, polynuclear aromatic compounds (PAHs) using USEPA method 8310, polychlorinated biphenyls (PCBs) using USEPA method 8080, and Resource Conservation and Recovery Act (RCRA) metals using USEPA methods 6010/7060/7471/7740.

**Laboratory Results.** The rail spur test pit soil sample laboratory results are summarized on Tables 1 and 2. Copies of the laboratory reports are included in Attachment A.

For the northern spur, the results indicate that TPH-D and TPH-O concentrations exceeded Model Toxics Control Act (MTCA) Method A<sup>1</sup> cleanup levels (200 mg/kg) in two of the four samples collected at depths of 1 to 2 ft bgs. Two of these samples contained carcinogenic PAHs (CPAHs) at concentrations of 0.08 and 3.1 mg/kg. This latter concentration is significantly below the MTCA Method A industrial soil cleanup level but slightly above MTCA Method A residential cleanup level of 1 mg/kg. Non-carcinogenic PAHs were well below their respective cleanup levels (see the laboratory report in Attachment A for individual concentrations). PCBs and HVOCs were not detected in any of the samples analyzed from the northern spur. Concentrations of metals detected in these samples were well below their respective MTCA cleanup levels. None of the deeper (>2 ft bgs) samples collected from the northern spur contained TPH at concentrations exceeding MTCA levels.

The results for the samples from the southern spur indicate that all of the samples contained TPH-O and/or TPH-D at concentrations exceeding MTCA cleanup levels. Concentrations of TPH-O and TPH-D ranged from 202 to 1,190 mg/kg and 29 to 379 mg/kg, respectively. CPAHs were detected in both of the samples analyzed at concentrations of 0.1 and 3.64 mg/kg. This latter concentration is significantly below the MTCA Method A industrial soil cleanup level but slightly above MTCA Method A residential cleanup level of 1 mg/kg. PCBs and HVOCs were not detected in any of the samples analyzed from the southern spur. With the exception of sample TP-9-Comp A,

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<sup>1</sup> Chapter 173-340 WAC, "The Model Toxics Control Act Cleanup Regulation; Method A. Cleanup Levels." Amended January 1996.

concentrations of metals detected in the remaining samples from the southern spur were well below their respective MTCA cleanup levels. Sample SP-9-Comp A contained lead at 267 mg/kg, which is only slightly higher than the MTCA Method A cleanup level of 250 mg/kg.

### **Buildings 1 and 2 General Excavation Area Investigation**

**Field Investigation:** The Adobe Development required that a large portion of the site be over excavated to allow the construction of a basement level parking garage. When construction debris was encountered in the southern rail spur test pits, Quadrant requested that additional test pits be excavated in the general excavation area (excavation limits are shown on Figure 3) to evaluate the physical characteristics of the soil/fill and to assess the potential for impacted soil. A total of 22 test pits (DTP-1 through DTP-7, DTP-9 through DTP-16, and DTP-18 through DTP-24) were excavated through out the general excavation area. Test pits DTP-8 and DTP-17 were not excavated due to construction constraints. The test pits were excavated in a sequential manner, such that the results from previous test pits were used to locate subsequent test pits. For example, test pits DTP-18 through DTP-20 were excavated to investigate the extent of apparent impacted soil discovered in DTP-15 and test pits DTP-21 through DTP-24 investigated the extent of apparent impacted soil found in DTP-4. The test pits were also excavated concurrent with the demolition of the previous buildings at the site which allowed test pits to be located within the former building limits. The test pits typically extended to depths of approximately 10 ft bgs. The locations of the general excavation area test pits are shown on Figure 3.

The ground surface was covered by 3 to 4 inches of asphalt pavement at test pit locations not located within the former building footprints. Typically, the building floors consisted of one to two layers of concrete separated by clean sand (presumably the second layer of concrete was placed to accommodate settling of the first floor slab). Soil conditions encountered beneath the pavement and concrete floor slabs in the test pits were variable, but generally consisted of the following profile;

0 - 2 ft bgs - gray to brown sand with varying amounts of gravel, silt and clay

2 - 5 ft bgs - gray to brown sand, with occasional layers of wood waste (sawdust) and other organic material

5 - 10 ft bgs - gray sand, with varying amount of construction debris including treated and untreated wood/timbers, concrete and brick rubble, and vertical pilings and piling caps.

The greatest amount of buried wood debris and construction debris was encountered beneath former Buildings A and B and in the eastern end of Building E and D. Former pilings were encountered beneath Buildings D, E and F.

Soil samples were collected from 21 of the test pits at various depths for laboratory analysis. The test pits selected for sampling and the specific depth intervals sampled, were based on field screening with a photoionization detector (PID), physical appearance of the sample (i.e., discoloration), odors, spatial and vertical distribution, and professional judgment. Samples were not analyzed from DTP-3 and DTP-23 because there were no field screening data to indicate sampling was necessary. Soil samples were also collected from stockpiles of soil excavated from test pits in former Buildings B and C (Fbld B-SS and Fbld C-SS) and from a stockpile of soil excavated from the western end of former Building F (SP-COMP-1, -2, and -3). All of the soil samples were analyzed for total petroleum hydrocarbons as gasoline (TPH-G), and benzene, toluene, ethylbenzene and total xylenes (BTEX) using Ecology method WTPH-G, TPH-D and TPH-O using Ecology method WTPH-D extended, HVOCs using USEPA method 8010B, and PAHs using USEPA method 8270 SIM. A select number of the samples were also analyzed for PCBs using USEPA method 8080, and RCRA metals using USEPA methods 6010/7060/7471/7740.

Samples of water that accumulated in three of the test pits (DTP-4, DTP-7, and DTP-15) were collected for laboratory analysis for construction dewatering purposes. During construction, water samples were collected from the discharge of two dewatering sumps (Build 2-Sump and FF& 16-Sump). The sump locations are shown on Figure 3. The water samples were analyzed for the same parameters as the soil samples except RCRA metals were not analyzed.

**Laboratory Results.** The general excavation area test pit soil sample laboratory results are summarized on Tables 3 and 4, and test pit and dewatering sump water sample results are summarized on Table 5. Copies of the laboratory reports are included in Attachment A.

Generally the laboratory results indicated that most of the analytes, when detected, were present at low concentrations, typically below applicable MTCA cleanup levels. TPH-G was only detected in two of the 47 samples analyzed at concentrations of 72.3 and 4,660 mg/kg (DTP-15 at 0 to 5 ft and DTP-4 at 5 to 9 ft, respectively). Benzene, toluene and ethylbenzene were not detected in any of the analyzed samples and total xylenes were

detected in three samples at concentrations ranging from 0.16 to 14.1 mg/kg (well below the MTCA Method A cleanup level of 20 mg/kg). TPH-D and TPH-O were detected in 24 of 47 samples and 26 of 47 samples, respectively. TPH-D and TPH-O concentrations ranged from 10.2 to 258 mg/kg and 26.9 to 818 mg/kg, respectively. Only one sample (DTP-19 at 3 to 6 ft) contained TPH-D above Method A cleanup levels and only two samples (DTP-15 at 0 to 5 ft and DTP-19 at 3 to 6 ft) contained TPH-O above Method A cleanup levels. HVOCs and PCBs were not detected in any of the samples analyzed. Concentrations of metals, when detected, were well below their respective MTCA cleanup levels (Table 4).

The most prevalent group of analytes detected was the PAHs, which were detected in 34 of the 47 samples analyzed. Concentrations of non-carcinogenic PAHs were below their respective MTCA cleanup levels (see the laboratory reports in Attachment A for individual concentrations). When detected, the concentrations of total CPAHs were typically less than 0.50 mg/kg which is less than the MTCA Method A cleanup level (residential) of 1 mg/kg. There were seven samples that contained total CPAHs concentrations exceeding 1 mg/kg; however only one sample (DTP-12 at 3 to 7 ft) contained CPAHs at a concentration exceeding the MTCA Method A Industrial cleanup level of 20 mg/kg. The seven samples containing the elevated CPAHs concentrations were obtained from intervals where there was noticeable amounts of wood debris, including what appeared to be creosote treated timbers and pilings. It is likely, that the elevated concentrations of CPAHs in these samples is linked to the presence of this wood debris.

The laboratory results for the three test pit water and two dewatering sump water samples indicated that TPH-G, TPH-D, and/or TPH-O were detected in at least three of the samples at concentrations ranging from 0.0513 to 13.8 mg/L. Benzene and toluene were not detected in any of the samples and ethylbenzene and total xylenes were detected in one sample at a concentrations of 0.0123 and 0.0735 mg/L, respectively.

HVOCs were not detected in any of the water samples. CPAHs were detected in four of the samples at concentrations of 0.000377 to 0.1159 mg/L. The water samples obtained from the open excavation contained considerably higher CPAH concentrations than the sump samples. It is important to note that these samples were obtained either from an open excavation or a construction dewatering sump, were extremely turbid with high levels of suspended sediments, and therefore, should not be considered representative of groundwater conditions.

### **Future Building 3 Area**

**Field Investigation.** The future Building 3 area was covered by the concrete recycling plant and a large stockpile of recycled concrete aggregate when the field investigation for the Buildings 1 and 2 general excavation was performed. An investigation of soil conditions in the future Building 3 area was performed in September 1997. A total of eight test pits (DTP-30 through DTP-37) were excavated in the future Building 3 area. The test pits were excavated after the former Buildings A and B were demolished and the foundations and floor slabs completely removed. The test pits extended to depths ranging from 7 to 9.5 feet bgs. Locations of the test pits are shown on Figure 3.

Much of the area to be occupied by the future Building 3 was previously covered by the former Buildings A and B. The former buildings had 1 to 2 layers of concrete as flooring materials as discussed previously for the Building 1 and 2 investigation. Soil conditions encountered in the future Building 3 area were variable but generally consisted of the following profile;

#### **DTP-30 through DTP-32**

0-4 bgs — mottled gray brown mixture of silt, sand and gravel with low to moderate amounts of woodwaste, bricks and concrete. No detectable PID readings or noticeable odors.

4-9 bgs — brown fine to medium sand. Organic layer with wood found from 4-8 bgs in DTP-30 and an organic layer found from 2 to 2.5 ft bgs in DTP-31. No detectable PID readings or noticeable odors.

#### **DTP-33 through DTP-37**

0-9 bgs — gray brown to black, fine to medium sand with occasional concrete and brick debris. Uncharacteristic organic odor (non-petroleum) detected in DTP-35 and DTP 37. No detectable PID readings in any of the test pits.

Soil samples were collected from each of the eight test pits at various depths for laboratory analysis. In test pits where relatively consistent soil types were encountered, a composite soil sample representing the entire depth interval was collected. If a soil type was encountered that was not consistent with the sands typically found at the site, a composite sample representing that interval was collected. The samples were analyzed for TPH-G, TPH-D, TPH-O, BTEX, HVOCS, and PAHs using the same methods as for the Buildings 1 and 2 samples. Metals and PCBs were not analyzed because the results from

the Buildings 1 and 2 soil samples indicated that these compounds were not of concern at the site.

**Laboratory Results.** The laboratory results for the samples from the future Building 3 area are summarized on Table 3.

The laboratory results indicate that the analytes, when detected, were present at low concentrations, typically less than the applicable MTCA cleanup levels. TPH-D and TPH-O were both detected in six of the seven samples at concentrations ranging from 12.3 to 232 mg/kg and 31.6 to 178 mg/kg, respectively. Only one sample (DTP-36-6.5) contained TPH-D at a concentration (232 mg/kg) slightly above the MTCA Method A cleanup level. BTEX and HVOCs were not detected in any of the samples analyzed.

PAHs were detected at low concentrations in all of the samples analyzed. Concentrations of non-carcinogenic PAHs well below their respective MTCA Method B cleanup levels (see laboratory reports in Attachment A for individual concentrations). CPAHs were detected at concentrations less than 0.5 mg/kg in six of the seven samples analyzed. One sample (DTP-37-8) contained CPAHs at a concentration (1.4387 mg/kg) slightly above the MTCA Method A residential cleanup level of 1 mg/kg, however this concentration is significantly below the MTCA Method A industrial cleanup level of 20 mg/kg. The slightly higher concentration of CPAHs in sample DTP-37-8 may be attributed to the wood timbers that were encountered in this test pit.

## **INDEPENDENT REMEDIAL ACTIONS**

Based on the results of the site investigation, Quadrant implemented independent remedial actions at the former rail spurs and within the Buildings 1 and 2 general excavation area limits. In addition, three unregulated heating oil USTs were removed from the site; two of the USTs were located during soil excavation activities. Independent remedial actions were conducted at each of these areas prior to soil excavation for the site development to ensure that impacted soil was handled appropriately and disposed of at an approved facility. An EMCON field geologist/technician was on site during the excavation activities associated with both the independent remedial actions and for the site development excavation to monitor soil quality. Other than the USTs discovered during excavation and the three areas identified previously, the field geologist/technician did not observe any suspect soil conditions. A description of the independent actions performed and the results of confirmation sampling are described in the following sections.

## Rail Spur Soil Excavation

Based on the results of the rail spur soil investigation described previously, the soil beneath the northern and southern rail spurs containing TPH-D and/or TPH-O at concentrations greater than MTCA Method A was removed and stockpiled. The limits of the rail spur soil removal are shown on Figure 4. The depth of soil removal varied from 1.5 to 4.0 ft bgs for the northern spur and from 4 to 6 ft bgs for the southern spur. For both spurs, the soil removal extended the width of the ballast material which was approximately 10 to 15 ft. The stockpile was constructed using a visqueen liner and hay bales to form the sides. After placement of the soil in the stockpile it was covered with additional visqueen to prevent runoff and saturation of the soil. The soil was temporarily stockpiled beneath the Aurora Bridge overpass adjacent to North 34th Street. Approximately 2,000 cubic yards of soil was placed in the stockpile. The soil in the stockpile was used for backfill under the new private Aurora ramp (Figure 2). The soil is contained on the north, west, and east sides of the ramp by concrete retaining walls. A 1 foot layer of soil has been placed on top of the soil pending completion of the ramp pavement ( 1 foot of base rock and 4 inches of asphalt).

The tracks and ties were removed from the entire length of the spur as part of the site preparation. Reusable ties were recycled. The unusable railroad ties were transported to the Weyerhaeuser Material Recovery Facility in Longview, Washington, and subsequently disposed of at the Weyerhaeuser Regional Landfill which is permitted to accept these materials.

Confirmation soil samples were collected after rail spur excavation to confirm that the underlying materials were not impacted and could be managed accordingly. Five soil samples were collected from the excavation bottom or sidewalls along the northern spur (Figure 4). The samples were analyzed for TPH-D and TPH-O using Ecology method WTPH-D extended. The results are presented in Table 6 and copies of the laboratory reports are provided in Attachment A. The results indicate that concentrations of TPH-D (nondetect to 26.9 mg/kg) and TPH-O (nondetect to 68.5 mg/kg) beneath the areas excavated are well below their respective Method A cleanup levels of 200 mg/kg.

Similarly, eleven confirmation samples were collected from the southern spur after soil excavation. The samples were analyzed for the same parameters as the northern spur. The results (Table 6) indicate that the samples from the central portion of the southern spur contain TPH at concentrations above Method A levels. Samples SRS-2, -3 and -4 (all from 4 ft bgs) contained TPH above the cleanup level, so the excavation was extended another two feet deeper and confirmation samples SRS-5, -6 and -7 were collected from the same general area. The base of the excavation in this area was founded in a layer of

sawdust and other woodwaste with little amounts of soil. The results for samples SRS-5,-6, and -7 indicate concentrations of TPH above the MTCA Method A cleanup level. However, these samples were composed primarily of sawdust and wood debris and the elevated TPH concentrations are likely attributed to biogenic effects of the sawdust/wood debris and not related to petroleum hydrocarbons. The spur excavation in this area had extended below the water table and the excavation had filled with water before additional fill could be removed or additional samples obtained. The bottom of the southern rail spur was approximately the final grade of the general area excavation, so no further removal of soil was planned in this area. This area will be covered by the concrete floor slab of the parking garage beneath the new building.

#### **Buildings 1 and 2 General Excavation Area Soil Removal**

The site investigation results identified three areas where elevated concentrations of either TPH and/or CPAHs were detected. These areas are described below and shown on Figure 5.

- **DTP-4.** This area was located west of former Building B and contained elevated concentrations of TPH-G. The results of test pits DTP-21 through DTP-24 indicated that the area was relatively small, approximately a 15-ft radius around DTP-4. The source of the TPH-G is unknown.
- **DTP-12.** This area was located near the southeast corner of former Building D and contained concentrations of CPAHs higher than the MTCA Method A industrial cleanup level of 20 mg/kg. The source of the CPAHs is unknown but may be related to the presence of construction debris including creosote treated timbers found in this area.
- **DTP-15/DTP-19.** This area was located west of the northwest corner of former Building B and contained elevated concentrations of TPH-D and TPH-O, and concentrations of CPAHs less than MTCA Method A industrial levels but higher than the MTCA Method A residential cleanup levels. Results of test pits DTP-18 through DTP-20 suggested that the area of impacted soil was limited to the vicinity of DTP-15/DTP-19. The source of the TPH and CPAHs is unknown, however, the elevated CPAHs appears to be associated with the treated timbers found in DTP-15.

Based on this information, Quadrant decided to remove the soil containing TPH-D and TPH-O at concentrations exceeding MTCA Method A and CPAHs exceeding MTCA

Method A industrial. The limits of the excavations associated with each of these areas are shown on Figure 5. Typically, the excavations extended to depths of 5 to 7 ft bgs. The extent of the excavations were guided by the results of adjacent test pits and by field screening by the on-site geologist observing the excavation activities. Soil from the excavations was either loaded directly into the disposal trucks or was stockpiled briefly awaiting loading and subsequent disposal. The soil removed from these three areas was transported to the Weyerhaeuser Material Recovery Facility in Longview, Washington, and subsequently disposed of at the Weyerhaeuser Regional Landfill which is permitted to accept these materials.

Soil confirmation samples were collected to evaluate the soil quality after the excavation was presumed completed. The results of the soil confirmation sampling are summarized in Table 7 and discussed below.

- **DTP-4.** Three confirmation samples were collected from this area, one from the base and two composite samples of the sidewalls. The samples were analyzed for TPH-G and BTEX. Only one sample contained TPH-G (8.30 mg/kg) at concentration well Method A levels. BTEX was not detected in any of samples. No further excavation was deemed necessary based on these results.
- **DTP-12.** Four confirmation soil samples were collected from this area, two composite samples from adjacent sidewalls at depth intervals of 0 to 3 ft bgs and 3 to 7 ft bgs. The samples were analyzed for PAHs. The results indicated CPAHs concentrations significantly less than MTCA Method A industrial levels and only slightly higher than the MTCA Method A residential cleanup levels. No further excavation was deemed necessary based on these results.
- **DTP-15/DTP-19.** A total of 13 confirmation soil samples were collected from the excavation sidewalls and bottom. The samples (except for FT-37-N) were analyzed for TPH, BTEX, and PAHs. The results indicate that two samples (DTP-15/19-7 and DTP-25-fg) contained TPH-G at concentrations (249 and 2,550 mg/kg, respectively) above MTCA Method A cleanup levels. Concentrations of all other analytes, when detected were below their respective cleanup levels. Over excavation of the soil found at DTP-25-fg was attempted, however inflow of groundwater prevented excavation and resampling. Significant additional excavation was subsequently conducted east of DTP-25-fg, and along the west boundary as part of installing the pile cap for the foundation system. The area was excavated an additional 2 to 4 feet below the bottom of the excavation grade (i.e., 8 to 10 ft bgs). Confirmation soil samples could not be collected because the excavations were flooded by groundwater. The area with

TPH-G above cleanup levels is located beneath the parking garage concrete floor slab.

Because soil with elevated concentrations of TPH-G remained, an investigation of the groundwater quality near DTP-15/DTP-19 was performed. Groundwater samples were collected from five borings (SB-1 through SB-5) drilled using GeoProbe™ sampling equipment. The locations of the borings are shown on Figure 3. The borings were extended approximately 5 ft bgs (4 to 5 ft below groundwater) and a temporary well screen 3 feet long was exposed. The temporary well was purged of standing water (a minimum of three casing volumes) using a peristaltic pump. Groundwater samples were collected from each boring and analyzed for TPH and BTEX.

The laboratory results of the GeoProbe™ groundwater samples are summarized in Table 8. The results indicate that concentrations of TPH-G and TPH-D, when detected, were below the MTCA Method A cleanup level of 1 mg/L. TPH-O, benzene, and ethylbenzene were not detected in any of the groundwater samples collected. Toluene and/or total xylenes were detected in three of the samples at very low concentrations, well below their respective MTCA Method A cleanup levels. This data indicates that, although there appears to be an isolated area of soil containing TPH-G above cleanup levels, this residual impacted soil has not caused groundwater to exceed cleanup levels.

### **Underground Storage Tank Removal and Closure**

During the course of the general area excavation, two previously unknown USTs were discovered (UST-1 and UST-2). These two USTs and a third previously known UST (UST-3) were decommissioned and removed from the site. All three USTs appeared to be of steel construction, approximately 550 to 1,100 gallons in size, and were likely used for the storage of fuel oil. The location of the USTs are shown on Figure 3.

All three USTs were decommissioned by Filco of Seattle, Washington, under permits obtained from the Seattle Fire Department. The tanks were pumped dry of any liquids, tripled rinsed and inerted using dry ice before they were removed. The tanks were transported and destroyed. Documentation of UST removal and disposal is included in Attachment B.

The soil around each of the USTs was screened using a PID. Suspect soil was either directly loaded into transport trucks or stockpiled pending sampling and analysis. When UST-2 was encountered much of the soil surrounding the tank had already been removed. Screening of this soil did not indicate the presence of TPH nor were there any visible signs

or odors. After the tanks were removed and obvious impacted soil was excavated, soil confirmation samples were collected from each tank basin. A floor sample could not be collected from UST-2 because groundwater had filled the excavation bottom.

The UST confirmation soil sample laboratory results are summarized in Table 9. The results indicated that the soil removal activities for UST-1 and UST-2 were successful and that the residual concentrations of TPH found in the confirmation soil sample are below MTCA Method A cleanup levels. The confirmation soil samples results for UST-3 indicated that additional soil removal was required on two occasions. The final confirmation samples were all below MTCA Method A cleanup levels except for the composite sample from the north and west sidewalls, which had a TPH-D concentration of 249 mg/kg (only slightly higher than the cleanup level of 200 mg/kg). It is EMCON's opinion, that this concentration is protective of human health and the environment. Therefore no further excavation was necessary.

## CONCLUSIONS AND RECOMMENDATIONS

The site investigation revealed that the soil beneath the former rail spurs and within three areas in the Buildings 1 and 2 general excavation area contained concentrations of petroleum hydrocarbons and/or CPAHs at concentrations above applicable MTCA cleanup levels. In addition, three USTs were present at the site which were subsequently removed. The results of the soil samples from the future Building 3 area indicate that concentrations of TPH, HVOCs, BTEX and PAHs are typically below MTCA Method A cleanup levels. There was one sample (DTP-36-6.5) that slightly exceeded the cleanup level for TPH-D and one sample (DTP-37-8) that contained CPAHs at concentrations slightly above the MTCA Method A residential cleanup level but significantly below the Method A industrial cleanup level. Based on the existing uses of the site, these materials do not pose a threat to human health or the environment.

The results of the confirmation sampling following the removal of the USTs indicates that the tanks were removed consistent with the requirements of MTCA and that the no further soil removal beneath the former USTs is necessary.

The results of confirmation soil samples taken after soil was removed from the former rail spurs and from the Buildings 1 and 2 general excavation areas, indicate that concentrations of the compounds of concern are below their respective cleanup levels with two exceptions:

- Samples of the material beneath the former southern spur contained concentrations of TPH-D and TPH-O above Method A cleanup levels. These samples were collected from a layer composed primarily of sawdust and wood waste which is known to cause increased TPH concentrations. The elevated TPH concentrations are most likely caused by the biogenic interference of the sawdust, and are not likely the results of petroleum hydrocarbons associated with the former rail spur. In addition, this area will be completely covered by the new Building 1 which will isolate these materials from direct contact or leaching from infiltration of precipitation. These materials do not pose a threat to human health or the environment under these conditions.
- Samples of soil beneath a small part of the DTP-15/DTP-19 area contained TPH-G above cleanup levels. A significant amount of additional solid removed was conducted in this area, however confirmation soil samples could not be collected to document residual soil concentration. A groundwater study in and around this area indicated that groundwater did not exceed its cleanup level. In addition this area will also be covered by the parking garage for Building 2, and as such will be isolated from direct contact and leaching from the infiltration of precipitation. These materials do not pose a threat to human health or the environment under these conditions.

Based on the findings of this report and the proposed development of the site, EMCON believes no further actions other than those described below are required for the Adobe Development site. EMCON recommends the following actions:

- The rail spur stockpiled soil has been placed in the Aurora ramp as fill. This is an acceptable use of the material from an environmental standpoint because the soil will be encapsulated in the fill by the street pavement on the top and the concrete retaining walls on the sides. It is EMCON's understanding that the asphalt pavement will be constructed in the next 4 to 6 weeks.
- Although the concentrations of TPH and CPAHs in soil beneath the future Building 3 area are typically below cleanup levels, if these soils are to be removed as part of future site development, EMCON recommends verifying with the intended disposal site that the detected concentration levels are acceptable.

Mr. Philip Wood  
March 30, 1998  
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Project 41289-001.001

## LIMITATIONS


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


Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report.

EMCON appreciates the opportunity to assist Bedford Property Investors with this project. If you have any questions regarding this letter or require additional information, please do not hesitate to call.

Sincerely,

EMCON

  
Daniel A. Balbiani, P.E.  
Branch Manager

  
Michelle Lange  
Geologist

Attachments: Tables 1 through 9  
Figures 1 through 5  
Attachment A - Laboratory Reports  
Attachment B - UST Removal Documentation

cc: Barbara Chilcote, Quadrant Corporation

**Table 1**  
**Former Rail Spur**  
**Test Pit Soil Sample Laboratory Results**  
**TPH, HVOCs, and CPAHs**  
**Quadrant Lake Union Center**  
**Adobe Development**

Sample ID	Depth (feet)	TPH-D (mg/kg)	TPH-O (mg/kg)	HVOCs (mg/kg)	CPAHs (mg/kg)
MTCA Method A <sup>a</sup>		200	200	Varies	20/1 <sup>b</sup>
TP-1-1.5	1 - 2	ND	ND	ND	0.08
TP-1-4	3 - 4	ND	ND	—	—
TP-2-1.5	1 - 2	106	607	—	—
TP-2-4	3 - 4	ND	ND	—	—
TP-4-1.5	1 - 2	310	930	ND	3.1
TP-4-4	3 - 4	ND	ND	—	—
TP-5-Comp A	0.5 - 2	52	454	ND	0.1
TP-5-Comp B	2 - 5	338	817	—	—
TP-7-Comp A	0.5 - 2	280	457	—	—
TP-7-Comp B	2 - 5	57	384	—	—
TP-9-Comp A	0.5 - 2	141	593	ND	3.64
TP-9-Comp B	2 - 5	379	1,190	—	—
TP-10-Comp A	0.5 - 2	30	202	—	—
TP-10-Comp B	2 - 5	29	253	—	—
TP-11-Comp A	0.5 - 2	35	114	—	—
TP-11-Comp B	2 - 4	36	151	—	—

NOTE: ND = Not detected  
HVOC = Halogenated Volatile Organic Compounds.  
CPAHs = Carcinogenic Polynuclear Aromatic Hydrocarbons.  
— = Not analyzed.

<sup>a</sup> Chapter 173-340 WAC, *The Model Toxics Control Act Cleanup Regulations, Method A Cleanup Levels.*  
<sup>b</sup> MTCA Method A Industrial/MTCA Method A Residential.

**Table 2**  
**Former Rail Spur**  
**Test Pit Soil Sample Laboratory Results**  
**RCRA Metals and PCBs**  
**Quadrant Lake Union Center**  
**Adobe Development**

Sample ID	Depth (feet)	PCBs (mg/kg)	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)
MTCA Method A <sup>a</sup>		1.0	20	5,600 <sup>b</sup>	2.0	100.0	250.0	1.0	400.0	400.0 <sup>b</sup>
TP-1-1.5	1 - 2	ND	3	195	ND	35	ND	ND	ND	ND
TP-4-1.5	1 - 2	ND	6	215	ND	39	60	ND	ND	ND
TP-5-Comp A	0.5 - 2	ND	2	70	ND	23	21	ND	ND	ND
TP-9-Comp A	0.5 - 2	ND	6	211	ND	35	267	ND	ND	ND

NOTE: ND = Not detected  
<sup>a</sup> Model Toxics Control Act (MTCA) Cleanup Regulation, Chapter 173-340 WAC, Method A soil cleanup level  
<sup>b</sup> MTCA Method A not available. Method B cleanup level provided for reference.

**Table 3**  
**General Excavation Area**  
**Soil Sample Laboratory Results**  
**TPH, BTEX, HVOCS, and CPAHs**  
**Quadrant Lake Union Center**  
**Adobe Development**

Sample ID	Sample Depth (feet)	TPH-G (mg/kg)	TPH-D (mg/kg)	TPH-O (mg/kg)	BTEX (mg/kg)	HVOCS (mg/kg)	CPAHs (mg/kg)
MTCA Method A <sup>a</sup>		100	200	200	Varies	Varies	20/1 <sup>b</sup>
<b>Buildings 1 and 2 Area</b>							
DTP-1	4 - 10	ND	74.3	132	ND	ND	4.033
DTP-2	4 - 10	ND	24.2	145	ND	ND	2.295
DTP-4	5 - 9	4,660	54.6	113	(c)	ND	0.0733
DTP-5	2 - 10	ND	28.7	129	ND	ND	0.4629
DTP-6-ESW	3 - 6	ND	15.4	153	ND	ND	0.9713
DTP-6-WSW	3 - 6	ND	ND	ND	ND	ND	0.0743
DTP-6	0 - 3	ND	ND	36.1	ND	ND	0.1401
DTP-6	3 - 6	ND	ND	ND	ND	ND	0.2079
DTP-6	6 - 10	ND	ND	ND	ND	ND	ND
DTP-7	0 - 3	ND	ND	ND	ND	ND	0.1965
DTP-7	3 - 5	ND	ND	ND	ND	ND	0.3747
DTP-7	5 - 8	ND	ND	ND	ND	ND	ND
DTP-9	0 - 3	ND	ND	58.4	ND	ND	0.2091
DTP-9	3 - 6	ND	ND	49.4	ND	ND	0.4598
DTP-9	6 - 10	ND	10.2	61.2	ND	ND	0.0107
DTP-10	0 - 3	ND	ND	ND	ND	ND	0.0252
DTP-10	3 - 6	ND	12.8	72.1	ND	ND	0.0995
DTP-10	6 - 10	ND	18.3	55.4	ND	ND	0.1949
DTP-11	0 - 3	ND	30.6	122	ND	ND	0.4452
DTP-11	3 - 6	ND	19.2	66.7	ND	ND	1.2281
DTP-12	0 - 3	ND	62.5	158	ND	ND	38.18
DTP-12	3 - 7	ND	10.4	30.8	ND	ND	4.321
DTP-13	0 - 3	ND	109	130	ND	ND	0.1824
DTP-13	3 - 7	ND	30.7	102	ND	ND	0.5684
DTP-14	0 - 3	ND	ND	ND	ND	ND	0.4385
DTP-14	3 - 6	ND	ND	ND	ND	ND	ND
DTP-14	6 - 10	ND	ND	ND	ND	ND	0.0258
DTP-15	0 - 5	72.3	109	205	(c)	ND	16.556
DTP-16	0 - 3	ND	45.1	140	ND	ND	2.8385
DTP-16	3 - 6	ND	ND	ND	ND	ND	ND
DTP-16	6 - 10	ND	ND	ND	ND	ND	ND

Table 3

**General Excavation Area  
Soil Sample Laboratory Results  
TPH, BTEX, HVOCs, and CPAHs  
Quadrant Lake Union Center  
Adobe Development**

Page 2 of 2

Sample ID	Sample Depth (feet)	TPH-G (mg/kg)	TPH-D (mg/kg)	TPH-O (mg/kg)	BTEX (mg/kg)	HVOCs (mg/kg)	CPAHs (mg/kg)
MTCA Method A <sup>a</sup>		100	200	200	Varies	Varies	20/1 <sup>b</sup>
DTP-18	0 - 3	ND	13.2	ND	ND	ND	ND
DTP-18	3 - 6	ND	18.9	45.2	ND	ND	0.3583
DTP-19	0 - 3	ND	ND	ND	ND	ND	ND
DTP-19	3 - 6	ND	258	818	ND	ND	0.5413
DTP-20	0 - 3	ND	16.1	39.5	ND	ND	ND
DTP-20	3 - 6	ND	30.7	94.1	ND	ND	0.9024
DTP-21	0 - 4	ND	ND	ND	ND	ND	ND
DTP-21	4 - 7	ND	ND	ND	ND	ND	ND
DTP-22	0 - 4	6.41	ND	26.9	ND	ND	ND
DTP-22	4 - 7	106	ND	ND	(2)	ND	0.1045
DTP-24	0 - 3	ND	45.6	190	ND	ND	0.2640
<b>Future Building 3 Area</b>							
DTP-30-8	4 - 8	5.33	25.2	147	ND	ND	0.1476
DTP-31-8	0 - 8	ND	ND	ND	ND	ND	0.0847
DTP-32-9.5	4.5 - 9.5	ND	12.3	87.3	ND	ND	0.0393
DTP-33-9	0 - 9	ND	30.7	165	ND	ND	0.4917
DTP-34-9	0 - 9	ND	25.3	165	ND	ND	0.4706
DTP-35-9	0 - 9	ND	40.0	178	ND	ND	0.4484
DTP-36-6.5	6.5	13.9	232	149	ND	ND	0.4097
DTP-37-8	0 - 8	ND	19.9	31.6	ND	ND	1.4387
<b>Stockpile Samples</b>							
SP-COMP-1	NA	ND	ND	58.8	ND	ND	0.1079
SP-COMP-2	NA	ND	ND	62.3	ND	ND	ND
SP-COMP-3	NA	ND	24.7	188	ND	ND	0.3688
FBld B-SS	NA	ND	ND	ND	ND	ND	ND
FBld C-SS	0 - 4	ND	11.9	31.8	ND	ND	0.3612
NOTE: ND = Not detected BTEX = Benzene, toluene, ethylbenzene, and total xylenes HVOC = Halogenated Volatile Organic Compounds. CPAHs = Carcinogenic Polynuclear Aromatic Hydrocarbons. <sup>a</sup> Chapter 173-340 WAC, <i>The Model Toxics Control Act Cleanup Regulation; Method A Cleanup Levels.</i> <sup>b</sup> MTCA Method A Industrial/MTCA Method A Residential. (1) = Total xylenes detected at a concentration of 14.1 mg/kg. (2) = Total xylenes detected at a concentration of 0.228 mg/kg. (3) = Total xylenes detected at a concentration of 0.164 mg/kg.							

**Table 4**  
**General Excavation Area**  
**Soil Sample Laboratory Results**  
**RCRA Metals and PCBs**  
**Quadrant Lake Union Center**  
**Adobe Development**

Sample ID	PCBs (mg/kg)	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)
MTC Method A <sup>a</sup>	1.0	20	5,600 <sup>b</sup>	2.0	100.0	250.0	1.0	400.0	400.0 <sup>b</sup>
DTP-1	ND	ND	103	ND	17.0	64.4	ND	ND	ND
DTP-4	ND	ND	55.4	ND	19.8	ND	ND	ND	1.25
DTP-6-ESW	ND	ND	309	ND	17.4	163	0.0762	ND	1.79
DTP-6-6	ND	ND	45.7	ND	19.4	54.7	0.0575	ND	ND
DTP-7-3	ND	ND	66.6	ND	18.9	102	0.0560	ND	ND
DTP-9-3	ND	ND	41.4	ND	24.0	35.7	ND	ND	ND
DTP-10-10	ND	ND	32.7	ND	17.3	22.8	ND	ND	ND
DTP-11-6	ND	ND	89.6	ND	18.1	81.9	0.230	ND	1.54
DTP-12-7	ND	13.6	51.5	ND	13.9	26.0	0.0847	ND	ND
DTP-13-3	ND	ND	72.7	ND	15.7	40.4	0.0647	ND	1.31
DTP-15-5	ND	ND	90.6	ND	17.3	66.7	0.0763	ND	ND
DTP-16-3	ND	ND	49.7	ND	19.3	11.9	ND	ND	ND
DTP-19-6	ND	ND	50.5	ND	15.5	53.6	0.0668	ND	ND
DTP-21-7	ND	ND	53.3	ND	27.1	ND	ND	ND	ND
DTP-24-3	ND	ND	62.9	0.616	24.2	46.8	ND	ND	ND
SP-COMP-2	ND	ND	41.2	ND	21.4	ND	ND	ND	ND

NOTE: ND = Not detected  
PCBs = Polychlorinated Biphenyls  
<sup>a</sup> Model Toxics Control Act (MTC) Cleanup Regulation, Chapter 173-340 WAC, Method A soil cleanup level.  
<sup>b</sup> MTC Method A not available. Method B cleanup level provided for reference.

Table 5

General Excavation Area  
 Test Pit/Sump Water Laboratory Results  
 Quadrant Lake Union Center  
 Adobe Development

Sample ID	TPH-G (mg/L)	TPH-D (mg/L)	TPH-O (mg/L)	BTEX (mg/L)	HVOCs (mg/L)	CPAHs (mg/L)
DTP-4-W	ND	ND	2.57	ND	ND	0.0541
DTP-7-W	0.107	1.32	1.33	ND	ND	0.1159
DTP-15-W	13.8	0.949	1.10	(1)	ND	ND
Build2-Sump	ND	ND	ND	ND	ND	0.000377
FF&16-Sump	0.0513	0.582	ND	ND	ND	0.002453

NOTE: ND = Not detected  
 BTEX = Benzene, toluene, ethylbenzene, and total xylenes  
 HVOC = Halogenated Volatile Organic Compounds.  
 CPAHs = Carcinogenic Polynuclear Aromatic Hydrocarbons.  
 (1) = Ethylbenzene detected at a concentration of 0.0123 mg/L; total xylenes detected at a concentration of 0.0735 mg/L.

Table 6

**Former Rail Spur  
Confirmational Soil Sample Results  
Quadrant Lake Union Center  
Adobe Development**

Sample ID	TPH-D (mg/kg)	TPH-O (mg/kg)	Comments
<b>MTCA Method A Cleanup Levels<sup>a</sup></b>	200	200	
<b>Southern Railspur</b>			
SRS-1-4	ND	ND	
SRS-2-4	79.7	291	Over excavated - see SRS-5, -6, and -7
SRS-3-4	169	256	Over excavated - see SRS-5, -6, and -7
SRS-4-4	73.1	260	Over excavated - see SRS-5, -6, and -7
SRS-5-6	296	1,380	Primarily sawdust/wood debris
SRS-6-6	137	570	Primarily sawdust/wood debris
SRS-7-6	430	431	Primarily sawdust/wood debris
SRS-8-6	ND	35	
SRS-9-6	ND	ND	
SRS-10-6	36.9	215	
SRS-11-6	ND	50.9	
<b>Northern Railspur</b>			
NRS-1-2	ND	ND	
NRS-2-1.5	ND	ND	
NRS-3-4	ND	ND	
NRS-4-2	26.9	59.8	
NRS-5-2	26.0	68.5	
<b>NOTE:</b>			
ND = Not detected.			
<sup>a</sup> Chapter 173-340 WAC, <i>The Model Toxics Control Act Cleanup Regulations, Method A Cleanup Levels.</i>			

Table 7

General Excavation Area  
 Confirmational Soil Sample Laboratory Results  
 Quadrant Lake Union Center  
 Adobe Development

Sample ID	Sample Depth (feet)	TPH-G (mg/kg)	TPH-D (mg/kg)	TPH-O (mg/kg)	BTEX (mg/kg)	CPAHs (mg/kg)	Comments
MTCA Method A <sup>a</sup>		100	200	200	Varies	20/1 <sup>b</sup>	
<b>DTP-15/19/25 Area</b>							
DTP-15/19-1	0-3	ND	ND	ND	ND	ND	Overexcavated. See DTP-15/19-7
DTP-15/19-2	6	ND	20.3	72.8	ND	1.21	
DTP-15/19-3	6	ND	ND	ND	ND	ND	
DTP-15/19-4	6	1,230	40.6	91.0	(1)	3.52	
DTP-15/19-5	6	87.4	23.4	45.9	(2)	0.5582	
DTP-15/19-6	0-3	8.56	ND	ND	ND	ND	
DTP-15/19-7	6	249	18.3	38.0	(3)	0.5101	
DTP-25-NW	4	ND	ND	ND	ND	0.1249	
DTP-25-NE	5	ND	ND	ND	ND	ND	
DTP-25-E	4	ND	ND	ND	ND	ND	
DTP-25-S	5	12.5	47.4	175	ND	0.4261	
DTP-25-fg	6	2,550	78.8	170	(4)	0.2641	
FT-37-N	2 - 4 <sup>(5)</sup>	ND	ND	ND	ND	—	
<b>DTP-4 Area</b>							
DTP-4-Conf-1	0-4	ND	—	—	ND	—	
DTP-4-Conf-2	0-4	ND	—	—	ND	—	
DTP-4-Conf-Bottom	4	8.30	—	—	ND	—	
<b>DTP-12 Area</b>							

Table 7

**General Excavation Area  
Confirmational Soil Sample Laboratory Results  
Quadrant Lake Union Center  
Adobe Development**

Sample ID	Sample Depth (feet)	TPH-G (mg/kg)	TPH-D (mg/kg)	TPH-O (mg/kg)	BTEX (mg/kg)	CPAHs (mg/kg)	Comments
MTCA Method A <sup>a</sup>		100	200	200	Varies	20/1 <sup>b</sup>	
DTP-12-N/E	3	—	—	—	—	1.2689	
DTP-12-N/E	7	—	—	—	—	3.358	
DTP-12-SW	3	—	—	—	—	5.314	
DTP-12-SW	7	—	—	—	—	4.382	
<p>NOTE: ND = Not detected            — = Not analyzed            BTEX = Benzene, toluene, ethylbenzene, and total xylenes            HVOC = Halogenated Volatile Organic Compounds.            CPAHs = Carcinogenic Polynuclear Aromatic Hydrocarbons.  <sup>a</sup> Chapter 173-340 WAC, <i>The Model Toxics Control Act Cleanup Regulations, Method A Cleanup Levels.</i>  <sup>b</sup> MTCA Method A Industrial/MTCA Method A Residential.            (1) = Total xylenes detected at a concentration of 5.09 mg/kg.            (2) = Total xylenes detected at a concentration of 0.198 mg/kg.            (3) = Total xylenes detected at a concentration of 1.15 mg/kg.            (4) = Ethylbenzene and total xylenes detected at concentrations of 0.801 and 9.01 mg/kg respectively            (5) = Below final excavation grade which is approximately 6 feet below original ground surface.</p>							

Table 8

**General Excavation Area  
Geoprobe™ Water Sample Laboratory Results  
Quadrant Lake Union Center  
Adobe Development**

Sample ID	TPH-G (mg/L)	TPH-D (mg/L)	TPH-O (mg/L)	BTEX (mg/L)
MTCA Method A <sup>a</sup>	1	1	1	Varies
SB-1-0697	ND	ND	ND	ND
SB-2-0697	0.0519	0.256	ND	(1)
SB-3-0697	0.0944	ND	ND	ND
SB-4-0697	0.954	ND	ND	(2)
SB-5-0697	0.135	ND	ND	(3)

NOTE: ND = Not detected  
 BTEX = Benzene, toluene, ethylbenzene, and total xylenes  
<sup>a</sup> Chapter 173-340 WAC, *The Model Toxics Control Act Cleanup Regulations, Method A Cleanup Levels.*  
 (1) Toluene detected at a concentration of 0.000897 mg/L.  
 (2) Toluene detected at a concentration of 0.000561 mg/L; Total xylenes detected at a concentration of 0.00349 mg/L.  
 (3) Toluene detected at a concentration of 0.00053 mg/L; Total xylenes detected at a concentration of 0.00134 mg/L.

Table 9

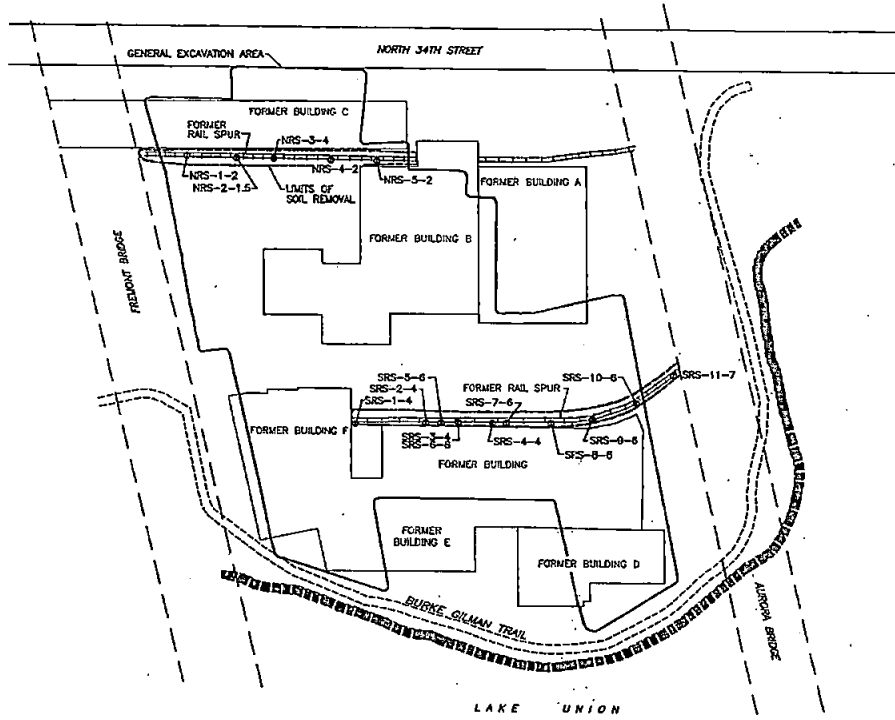
**UST Confirmation Soil Laboratory Results  
Quadrant Lake Union Center  
Adobe Development**

Sample ID	Sample Type	TPH-G (mg/kg)	TPH-D (mg/kg)	TPH-O (mg/kg)	BTEX (mg/kg)	HVOCs (mg/kg)	Comments
MTCA Method A <sup>a</sup>		100	200	200	Varies	Varies	
<b>UST-1</b>							
UST1-West wall/South floor	Confirmation	ND	27.5	81.4	(1)	—	
UST1-East wall/North wall	Confirmation	ND	15.5	32.6	ND	—	
UST1-Floor	Confirmation	15.5	46.1	73.6	ND	—	
UST1-Stockpile	Characterization	730	6800	ND	(2)	—	Sent off-site for disposal.
<b>UST-2</b>							
UST2-W	Confirmation	ND	31.7	90.1	ND	ND	
UST2-E	Confirmation	ND	13.7	51.2	ND	ND	
<b>UST-3</b>							
UST3-NW (1)	Confirmation	119	547	200	ND	—	Over excavated: see below.
UST3-SE (1)	Confirmation	98	634	310	ND	—	Over excavated: see below.
UST3-Floor (1)	Confirmation	209	1130	900	ND	—	Over excavated: see below.
UST3-NW (2)	Confirmation	ND	121	639	ND	—	Over excavated: see below.
UST3-SE (2)	Confirmation	ND	71.2	174	ND	—	
UST3-FLOOR (2)	Confirmation	ND	39.6	146	ND	—	
UST3-NW (3)	Confirmation	48.1	249	54.6	ND	—	
<p>NOTE: ND = Not detected            BTEX = Benzene, toluene, ethylbenzene, and total xylenes            HVOC = Halogenated Volatile Organic Compounds.            — = Not analyzed.  <sup>a</sup> Chapter 173-340 WAC, <i>The Model Toxics Control Act Cleanup Regulations, Method A Cleanup Levels.</i>            (1) = Toluene = 0.0667; Total xylenes = 0.100            (2) = Ethylbenzene = 0.538; Total xylenes = 4.99</p>							

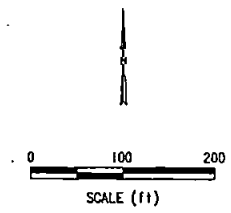




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Scale: 1" = 100.00' Date: 1/25/98 Time: 3:11 PM Operator: MJP



LEGEND:  
SRS-3-4  $\phi$  Sample Locations



DATE 1-98  
DWN MJP  
APP 3/12/98  
REV  
PROJECT NO.  
41229-001.001

Figure 4  
ADOBE DEVELOPMENT  
QUADRANT LAKE UNION CENTER  
SEATTLE, WASHINGTON  
RAIL SPUR CONFIRMATION  
SOIL SAMPLING LOCATIONS

