Volume I - Text, Tables, Figures, Appendix A
Phase II Environmental Site Assessment - December 2011 through November 2012

Hazardous Materials Investigation
120th Avenue NE Widening Project
NE 7th Street to NE 12th Street
Bellevue, Washington

for
City of Bellevue
c/o Parsons Brinckerhoff

April 15, 2013

GeoEngineers
Earth Science + Technology

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File No. 0526-170-03

April 15, 2013

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EXECUTIVE SUMMARY

Project Description and Study Area

GeoEngineers, Inc. (GeoEngineers) has performed a Phase II Environmental Site Assessment (ESA) for the 120th Avenue NE Widening Project (Project) between NE 7th Street and NE 12th Street. The Phase II ESA study area, explored in three phases of work between December 2011 and November 2012, includes existing rights-of-way of 120th Avenue NE near the Shell Service Station (12001 NE 8th Street) and portions of five currently developed properties that are within the future alignment of 120th Avenue NE. We understand that the City is planning to acquire in fee four of the five parcels studied for the Phase II ESA and will obtain additional rights-of-way near the Shell station and in the area studied on the fifth parcel. The four parcels the City is planning to acquire in fee are identified in this report based on the current land use as follows:

- Triangle Parking Lot, 11866 NE 8th Street; a former service station and car rental facility
- Barrier Pre-Owned Car Sales Showroom, 11855 NE Bel-Red Road; the location of a former dry cleaning plant
- Barrier Pre-Owned Parking Lot, 11876 NE 8th Street; the location of a former office
- Barrier Porsche, 12000 NE Bel-Red Road

The City is planning to acquire additional right-of-way at the southeastern portion of the fifth parcel that was part of this Phase II ESA: the existing Barrier Mercedes at 11950 NE Bel-Red Road. Phase I ESAs were completed in January 2012 for the four parcels that the City is planning to acquire in fee for this Project.

The study areas of this Phase II ESA were identified as "moderate" to "high risk" for hazardous materials in the "120th Avenue Widening Hazardous Materials Discipline Report" (Shannon & Wilson, July 2011). The 2011 Hazardous Materials Discipline Report and 2012 Phase I ESA reports by GeoEngineers for the City document historic property uses and potential sources and documented areas of soil and groundwater contamination in the area of the Project where the Phase II ESA was completed. Potential and/or documented sources of contamination include:

- Releases of petroleum from fuel underground storage tanks (USTs) from the previous service station and car rental facility.
- Releases of Stoddard solvent, a petroleum compound, from the previous dry cleaning plant.
- Releases of chlorinated volatile organic compounds (VOCs) including tetrachloroethene (PCE) and trichloroethylene (TCE) from the previous dry cleaning plant.
- Potential for releases associated with the existing Shell Service Station and current automobile service at Barrier Porsche and Barrier Mercedes.

Key Findings and Recommendations

Key findings and recommendations from the Phase II ESA study include the following:

- One existing UST apparently containing product is located on the Triangle Parking Lot. Product in the UST should be pumped as soon as practical. Because they are no longer in use, the UST and the tank pit observation well next to the UST should be removed in accordance with applicable local, state and federal regulations.
- Four previously installed monitoring wells are located on the Triangle Parking Lot property; there may be two additional previously installed monitoring wells on the property that have been paved over. The monitoring wells should be properly decommissioned before road improvements.
- The study confirmed the presence of co-mingled plumes of petroleum-related constituents and dry cleaning products including Stoddard solvent, PCE, TCE and related constituents in soil and groundwater on property planned to be acquired by the City for the 120th Avenue Widening Project and portions of existing City rights-of-way within the 120th Avenue Widening Project. In our opinion the study confirmed evidence of a reportable release under MTCA.
- Detected concentrations of contaminants of concern were greater than the MTCA Method A Cleanup Levels in soil at three of the Phase II ESA exploration locations, in groundwater at eleven of the Phase II exploration locations, and in groundwater from two existing monitoring wells, as shown in Figure 4. Locations where TCE, PCE, and associated breakdown products were detected above laboratory reporting limits in Phase II ESA soil and groundwater samples are shown in Figures 5 and 6, respectively.
- Total lead was detected in grab groundwater samples from three borings at concentrations greater than the MTCA Method A Cleanup Level; dissolved lead was not detected in the groundwater sample with the highest total lead concentration. The total lead detected in groundwater from these three borings may be a result of suspended solids in the samples and are not representative of dissolved lead concentrations in groundwater.
- Based on the concentrations of contaminants of concern in several portions of the Phase II ESA study area, the City's contractors will need to follow health and safety protocol for work in these areas. In addition, special handling and disposal for soil to be excavated in conjunction with the planned road improvements will be required. Soil in certain locations of the study area contains contaminants from dry cleaning operations that will classify excavated soil as listed State Dangerous Waste under Washington Administrative Code (WAC) 173-303. This classification will include any soil that may be excavated from below the water table and that is saturated with dry cleaning solvent-contaminated groundwater. Dangerous Waste requirements including but not limited to those for handling, labeling, containment, transportation, tracking and disposal at an approved landfill facility will apply. Excavated soil contaminated by dry cleaning solvents may qualify for a "Contained Out" determination from Ecology, which would allow the soil to be disposed as "non-hazardous" at a lower unit cost for off-site disposal.
- Worker health and safety protocols will be necessary if groundwater is encountered during roadway improvements within the Phase II ESA study area. In addition if construction dewatering in the Phase II ESA study area occurs in connection with the roadway improvements, then recovered fluids will need to be contained and sampled to determine appropriate waste handling or permitted discharge requirements that may involve pretreatment. Elevated levels of gasoline-range hydrocarbons (mineral spirits/Stoddard

solvent), TCE and PCE and related breakdown products greater than MTCA Method A Cleanup Levels were detected in groundwater at Phase II ESA explorations B106E, B-110E, B-111E, B-116E, GEIMW-1, and two existing monitoring wells, MW-1 and MW-5, at the approximate locations shown in Figure 4. Locations where dry cleaning solvents were detected in groundwater at concentrations greater than laboratory reporting limits are shown in Figure 6; these detections infer the boundaries of the solvent contaminant plume shown in the figure. Dewatering should be carefully considered in order to avoid affects to the location of the groundwater plume.

- The locations of elevated levels of petroleum-related constituents and dry cleaning products detected in soil and groundwater were generally consistent with the reported locations of former USTs, drain lines associated with the former dry cleaners, and soil contamination detected during previous investigations. Utility corridors in the vicinity of these features may have acted as pathways for contaminant migration. Existing or future utility vault confined spaces create a potential hazard for accumulation of contaminant vapors.
- Contamination detected in soil and groundwater adjacent to the existing building on the Barrier Pre-Owned Office property may extend beneath the building and could pose a risk of vapor intrusion to indoor air. The building foundation may be contaminated with dry cleaning solvents that could necessitate the handling and disposal of foundation debris as dangerous waste during building demolition.

This report has been prepared for the exclusive use of Parsons Brinckerhoff, City of Bellevue, their agents and the Project design team. Because this environmental report is not intended for use by others, no one else should rely on this report without first conferring with GeoEngineers. This Executive Summary should be used only in the context of the full report for which it is intended.

1.0 INTRODUCTION AND BACKGROUND

This report summarizes the results of the December 2011 Phase II ESA Hazardous Materials Investigation, the June and July 2012 Phase II ESA Supplemental Investigation, and the November 2012 Phase II ESA Plume Delineation Investigation in the 120th Avenue NE corridor between NE 7th and NE 12th, in Bellevue, Washington for the City of Bellevue (City). At the request of Parsons Brinckerhoff and the City, the results of the December 2011, June and July 2012, and November 2012 investigations are presented in this report and are collectively referred to as the Phase II ESA.

The purpose of the initial December 2011 Phase II ESA investigation was to characterize existing groundwater and soil conditions in the future alignment of 120th Avenue NE for the City's Project design in connection with future road construction activities. Based on the findings of the December 2011 sampling, two supplemental phases of exploration and sampling were conducted in June and July 2012 and November 2012 for the following purposes:

- Further define the extents and impacts of contamination to soil and groundwater that were identified during the initial investigation.
- Refine estimates for quantities of soil contaminated with dry cleaning-solvents (F-listed waste) that will be excavated for the Project. The presence of dry cleaning solvents in soil and groundwater within the Project corridor is significant because soil with detectable dry cleaning solvents that is removed during construction trenching or excavation would be classified as F-listed Dangerous Waste and under state and federal guidelines requiring special handling, transport, tracking and disposal in accordance with federal and state regulations.
- Establish a basis for longer-term groundwater monitoring within the Project corridor to evaluate seasonal groundwater fluctuations and the elevation of groundwater relative to planned areas of excavation associated with the 120th Avenue Widening Project.
- Further define the extent of peat previously identified in the Project corridor for the purpose of geotechnical soil characterization in areas where soldier pile walls are planned.

Findings related to estimated quantities of F-listed soil in the Project corridor and associated disposal cost estimates have been provided under separate cover. Geotechnical data collected from the hollow-stem auger borings are presented in a separate report.

This Phase II ESA was completed at the request of the City and Parsons Brinckerhoff as part of the 120th Avenue NE Corridor – NE 4th Street to Northup Way Improvement Project. The purpose of the Project is to realign and widen 120th Avenue NE between NE 4th Street and Northup Way.

The areas evaluated by the Phase II ESA were identified as "moderate" to "high risk" for hazardous materials in the "120th Avenue Widening Hazardous Materials Discipline Report" (Shannon and Wilson, July 2011). The July 2011 Hazardous Materials Discipline Report and Phase I ESA reports by GeoEngineers for the City document historic property uses and potential sources and documented areas of soil and groundwater contamination in the area of the Project where the Phase II ESA was completed.

The location of the Phase II ESA study area is shown on the Vicinity Map (Figure 1), and the following focus areas of this Phase II ESA are identified in the aerial photographs in Figures 2 and 3:

- City of Bellevue right-of-way (City ROW) in 120th Avenue NE, west of the Shell gas/service station (Parcel 3325059179) located at 12001 NE 8th Street. Releases of petroleum and related compounds have been documented at the Shell site. We understand that a narrow area at the northwest corner of the Shell property at the existing intersection of 120th Avenue NE and NE 8th Street will be acquired as part of the planned right-of-way widening.
- Triangle Parking Lot (Parcel 1099100425), 11866 NE 8th Street. This parking lot is used by Barrier Certified Pre-Owned (CPO) and was formerly a service station and car rental facility (Avis). One UST is known to remain in-place at this property. The property is currently owned by Jimmy Barrier and is planned to be acquired by the City.
- Barrier Certified Pre-Owned (CPO) Parking Lot (Parcel 1099100420), 11876 NE 8th Street. This parking lot is used by CPO. Prior uses of this parcel included an office building used in association with a former dry cleaning plant on the adjacent eastern property. This property is owned by Ernest Bakker and is planned to be acquired by the City.
- Barrier CPO Sales and Showroom (Parcel 1099100419), 11855 NE Bel-Red Road. This property was a previous dry cleaning plant. The property is owned by Ernest Bakker and is planned to be acquired by the City.
- Barrier Mercedes (Parcel 1099100415), 11950 NE Bel-Red Road. Current activities in the building include auto service and repair. This property is owned by Jimmy Barrier. A portion of the southeast corner of this property northwest of the existing intersection of NE Bel-Red Road and 120th Avenue NE will be acquired as part of the planned right-of-way widening.
- Barrier Porsche (Parcel 1099100167), 12000 NE Bel-Red Road. Current activities in the building include auto service and repair. This property is owned by Jimmy Barrier and is planned to be acquired by the City.

The approximate layout of the Phase II ESA exploration and sampling locations relative to the planned road alignment is shown on the Study Area Plan, Figure 2.

1.1. Study Area History

This section presents a summary of current and historical known and potential sources of contamination and site use history within the study area. Information presented in this section is based on the Hazardous Materials Discipline Report (Shannon and Wilson, 2011) and the Phase I ESAs completed for the City of Bellevue in 2011. The map in Appendix C illustrates prior contamination sources and previously documented locations of contaminated soil in the study area. Appendix C also contains relevant maps and figures from prior reports that indicate the locations of buildings, USTs and previous remedial excavation soil sampling.

1.1.1. Shell Service Station

The Shell Service Station site has been an operating gas station since 1972. The site is listed on the Washington State Department of Ecology's (Ecology) Confirmed and Suspected Contaminated

Sites List (CSCSL), Leaking Underground Storage Tank (LUST), Underground Storage Tank (UST), and Voluntary Cleanup Program (VCP) databases. Five fuel USTs were removed in this site in 1996 and three fuel USTs are currently in use at this site. Soil and groundwater contamination resulting from releases from the removed USTs were identified as of the early 1990s. Petroleum-contaminated soil and groundwater may remain along the west boundary of this site. Based on this information and that approximately 3 feet of excavation along the west side of this property is anticipated for the corridor, the Discipline Report concluded that this site was considered "moderate risk."

1.1.2. Triangle Parking Lot Used by CPO (Former Service Station and Car Rental Facility)

This property was occupied by a gasoline service station from at least 1956 through at least 1975. The station building was situated in the east portion of the parcel. The original service station service islands were located west of the building; the original service station UST locations were not confirmed and may have been west or north of the building based on available information. One UST remains on the property south of the previous building (see Figure 2). Because no existing USTs were identified north and west of the building in the December 2011 geophysics study, if USTs existed in those locations they are presumed to have been removed.

Petroleum-contaminated soil and groundwater were identified in 1989 during the removal of one 5,000-gallon gasoline UST and one previously undocumented 500-gallon waste oil UST both located south of the previous station building (now removed). Approximately 19 tons of contaminated soil were excavated and reportedly removed for off-site disposal. Petroleum- and benzene-contaminated soil was reportedly left in place beneath the building and beneath an underground utility corridor east of the building. A Phase II ESA and remedial excavation were completed at the site in 1991. Six monitoring wells (MW-1 through MW-6) were installed and approximately eight test pits were completed west and north of the previous rental car building. Following is a summary of the relevant information from reports documenting the 1991 characterization and remedial activities.

- Diesel-contaminated soil was identified north of the building. Approximately 130 cubic yards of the impacted soil was removed and transported to a landfill for disposal. Residual soil with diesel (63 milligrams per kilogram [mg/kg]) was left along the northern extent of the excavation.
- An elevated concentration of mineral spirits (1,400 mg/kg) was detected in a soil sample obtained from the northeast corner of the Triangle Parking Lot parcel at a depth of 6 feet below ground surface (bgs).
- Groundwater in the north portion of the site contained gasoline, mineral spirits (Stoddard solvent), and benzene at concentrations greater than applicable cleanup levels. The mineral spirits contamination was inferred to have migrated from the upgradient east-adjoining dry cleaning facility where a 6,000-gallon Stoddard solvent UST was known to exist.
- Elevated concentrations of dry cleaning solvents PCE and TCE greater than applicable cleanup levels were detected in a water sample obtained from a drain pipe that was discovered in the excavation and discharged onto the northeast corner of the Triangle Parking Lot property. The pipe reportedly was connected to floor drains in the dry cleaning building to the east.

- Concentrations of BETX greater than the MTCA groundwater cleanup levels were detected in the 1991 groundwater samples from MW-1, MW-3, and MW-6.
- Concentrations of PCE and TCE greater than the MTCA Method A Cleanup Levels were detected in one of the 1991 groundwater sample from MW-1.

The Discipline Report concluded that the Triangle Parking Lot was "considered a high risk to the Project because: 1) known gasoline- and diesel-range petroleum, benzene, mineral spirits, and chlorinated solvent contamination is present and may be migrating off-site; 2) the former gasoline USTs may still be present on site; and 3) the City would acquire this property."

1.1.3. CPO Parking Lot (Former Dry Cleaner Office Building)

The Former Dry Cleaner Office Building property is adjacent to the east of the Triangle Parking Lot and west of the Former Bakker's Dry Cleaning Plant property. This property was developed with a bank building in 1961; the building was subsequently used as an office building for the dry cleaner business situated on the adjacent parcel to the east. No dry cleaning is known to have been conducted at the office building property. However, reported poor housekeeping practices on the eastern adjacent former Dry Cleaning Plant property were documented in a previous environmental report, and a drain pipe discharging solvent-contaminated waste on or near this property was identified during previous investigations at the Triangle Parking Lot to the west. The previous environmental report concluded that the dry cleaner office building property is a moderate risk to the Project because it is adjacent to a contaminated property, had known contamination exiting the western property boundary, and because the City plans to acquire the property.

1.1.4. CPO Car Sales Showroom (Former Dry Cleaner Plant)

This property was originally occupied by a dry cleaning facility from 1959 until at least 2005. The remodeled building is now used as a showroom for Barrier Pre-Owned cars. Following is a summary of the relevant information from previous environmental reports:

- Four USTs, presumably installed in the late 1950s or early 1960s, were removed from the site in 1989. The USTs were used to store Stoddard solvent (mineral spirits, 6,000-gallon), diesel fuel (2,000-gallon), distillation (presumed to be spent solvents, 400 or 500 gallons and shown as inactive as of 1989), and Solvents (100 or 200 gallons and shown as inactive as of 1989). The diesel UST was presumably used for heating oil and the building was converted to natural gas heat at the time. The remaining USTs were used in connection with dry cleaning activities. The four USTs were excavated from a location northeast of the existing building. The tanks were reported to be in good condition with no corrosion, holes or defects. Ten soil samples from the limits of the excavation were analyzed for petroleum by EPA Method 418.1 and one soil sample was analyzed for chlorinated volatile organic compounds (VOCs) by EPA Method 8010. Analytes were either not detected or detected at concentrations less than applicable cleanup levels in place at the time the work was completed.
- A broken 4-inch tile drain line, which was connected to floor drains and the Stoddard tank room within the building, was observed to be discharging into the UST excavation. Anecdotal information indicated that "accidental" spills of Stoddard had occurred in the past at the floor drain location and that the drain line was eventually re-routed to discharge to garden beds located on the dry cleaning plant property.

- Water seepage reported as "minor" was identified in the UST excavation at approximately 8 feet bgs and "discoloration or iridescent sheens" were reportedly observed on the water surface. The water and water-impacted backfill were reported removed during UST excavation activities and additional seepage was not observed. Groundwater samples were not obtained in connection with the 1989 UST removal and broken drain line cleanup activities.
- The 1989 UST removal report concluded that "soil and groundwater proximal to the UST installation were not significantly contaminated" and that "no further characterization…is required."
- One new 6,000-gallon Stoddard solvent (mineral spirits) UST was installed in 1989 in the same location as the four removed USTs; the tank was removed in 1999. Concentrations of petroleum- and solvent-related contaminants in soil samples from the limits of the 1999 UST excavation were reportedly less than the MTCA Method A Cleanup Level of 200 parts per million (ppm).
- The 1999 UST removal report concluded only that results of the soil samples collected from the excavation area contained concentrations below MTCA Method A cleanup guidelines and did not make any additional conclusions or recommendations regarding additional work at the property.
- Solvents spills associated with poor housekeeping practices were reported for the property.
- The Discipline Report concluded, "this site is considered high risk due to the relatively high expense of remediating solvent contamination and because the City would acquire the site."

1.1.5. Barrier Mercedes

The Barrier Mercedes site includes an automotive show room and service garage. A leaking UST was identified in 1994 and reportedly cleaned up in 1995. In 1996, two additional USTs were removed. Releases of waste oil from broken piping beneath the service garage floor were identified and partially cleaned up in 1994 including removal of approximately 650 gallons of free product (waste oil). Three monitoring wells were installed in 1995 in the service garage area; the direction of shallow groundwater flow beneath the Barrier Mercedes property was to the northwest, based on data from these wells. Based on the reported cleanup complete status of this facility, because the cleanup area is not directly within the road widening area, and because this property is downgradient of the subject property and the road corridor, the Discipline Report concluded that this facility was low risk.

1.1.6. Barrier Porsche

The existing building on this property was constructed in 1969 and was occupied by a bakery until 1996. The building was significantly remodeled into the new car showroom and vehicle service in 2003. The Discipline Report concluded that the Porsche Property was "considered a moderate risk to the Project because of historical and current use of petroleum products on the site, 10 to 15 feet of excavation is anticipated along the western boundary of this property for a cut wall, and the City anticipates acquiring the property." The Discipline Report identifies that the building was historically heated by oil; however, our research for the subject property did not confirm historic oil heat use at the site. Tax archive records for the property and key persons interviewed for the Phase I ESA indicated that the building originally used natural gas and electric heating systems.

2.0 PURPOSE AND SCOPE OF SERVICES

This Phase II ESA investigation was conducted in three phases between December 2011 and November 2012. The purpose of the December 2011 investigation was to assess the nature and extent of soil and/or groundwater contamination or USTs that may be encountered during the 120th Avenue NE road construction Project during excavation, grading, construction of new utilities or dewatering. Based on the findings of the December 2011 Phase II ESA, a supplemental June and July 2012 investigation was conducted to further define the extent of contamination in soil and groundwater identified during the December investigation and the extent of peat, and establish a long-term monitoring program to evaluate groundwater elevations in the Project corridor. A follow-up investigation was conducted in November 2012 to delineate the extent of contamination in soil and groundwater extending to the east, west and northwest of the future road alignment.

The scope of services for the Phase II ESA investigation was as follows:

1. Review available documents in City, County and Ecology files related to the specific properties of moderate and high risk for soil and/or groundwater contamination to identify locations of contaminant sources, prior sampling locations, contaminants of concern, and nature and extent of residual (remaining) contamination.
2. Review underground utility maps and plans available for the above parcels and adjacent rights-of-way to identify locations of underground utilities that may have been sources for contaminant migration, specifically the sewer drain lines connected to the former dry cleaning plant and adjacent office.
3. Conduct a geophysics study of three areas of suspect USTs using ground penetrating radar (GPR) and electromagnetic (EM) methods to identify the presence or absence of suspect USTs and drain line locations.
4. Prepare Phase II ESA Exploration Sampling and Analysis Plans.
5. Apply for appropriate street use and traffic control permits to conduct the Phase II ESA explorations and notify the public utilities notification service to mark public utilities in the rights of way and easements.
6. Pre-clear select exploratory borings located in existing rights-of-way near areas of known utilities for underground utilities using air-knife (pneumatic vacuum extraction). Air-knife activities were completed by a licensed contractor under subcontract to GeoEngineers.
7. Monitor the completion of 19 direct push soil borings and four hollow-stem auger borings, completed as monitoring wells to obtain soil and groundwater samples for field screening and possible chemical analysis. Two of the four monitoring wells were installed along the planned Wall 6 alignment to refine the understanding of peat in the subsurface for geotechnical engineering purposes. The explorations were completed by a licensed drilling company under subcontract to GeoEngineers.
8. Obtain continuous core soil samples from each of the direct-push explorations and discrete soil samples at 2.5-foot depth intervals from the hollow-stem auger borings. Field screen the soil samples for evidence of petroleum and volatiles using visual, water sheen and headspace

vapor screening methods. Visually classify the samples in general accordance with ASTM D 2488 and maintain a detailed log of each boring.

9. Submit soil samples for chemical analyses of one or more of the following: gasoline-range and mineral spirits (Stoddard solvent)-range petroleum hydrocarbons by NWTPH-Gx Method; benzene, ethylbenzene, toluene and xylenes (BETX) by EPA Method 8021B or equivalent; diesel- and heavy oil-range hydrocarbons by Northwest Method NWTPH-Dx; volatile organic compounds (VOCs) including chlorinated solvents and gasoline additives by EPA Method 8260; polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8270 (in areas where diesel, lube oil or waste oil may be present); lead by EPA Method 6000/7000 series; cadmium, chromium and lead by EPA 6000/7000 series where waste oil may be present; metals (RCRA 8) by EPA 6000/7000 series; and polychlorinated biphenyls (PCBs) by EPA Method 8082 where waste oil may be present.
10. Complete the four hollow-stem auger borings as 2-inch diameter PVC monitoring wells within traffic-rated flush grade monuments. Screen the wells with 0.010-inch slot PVC screen extending between approximately 5 and 20 feet bgs to span the water table fluctuation. Develop the wells using a combination of surging and purging. Survey the top of well casings relative to the Project datum.
11. Obtain one-time grab groundwater samples from eleven direct-push explorations. Obtain one round of groundwater samples from the four new monitoring wells and two existing monitoring wells using low-flow sampling procedures. Submit the water samples for chemical analysis of one or more of the following: gasoline-range and mineral spirits (Stoddard solvent)-range petroleum hydrocarbons by NWTPH-Gx Method; diesel- and heavy oil-range hydrocarbons by Northwest Method NWTPH-Dx; BETX by EPA Method 8021B or equivalent; VOCs including chlorinated solvents by EPA Method 8260; PAHs by EPA Method 8270 (in areas where diesel, lube oil or waste oil may be present), lead by EPA Method 6000/7000 series; cadmium, chromium and lead by EPA 6000/7000 series where waste oil may be present and PCBs by EPA Method 8082 where waste oil may be present.
12. Install and program hydraulic pressure transducers and dataloggers in the four new wells to collect groundwater elevations.
13. Interpret the field and chemical analytical data with respect to Project objectives, identify Project areas where contaminated soil and/or groundwater is likely to be encountered during construction and characterize excavated soils and/or dewatering fluids that will require special handling and off-site disposal.
14. Prepare this Phase II ESA report for the study area including exploration logs, tabulated soil and groundwater field screening and chemical analytical data, comparison of chemical analytical results to the MTCA Method A Cleanup Levels for unrestricted land use or Method B Cleanup Levels if Method A levels are not available.

3.0 STUDY AREA SETTING

The study area is located in a heavily developed commercial area of Bellevue just east of downtown Bellevue. The main arterial roads located within the study area are 120th Avenue NE, NE 8th Street and NE Bel-Red Road (Figure 3). These roads are primary transportation corridors for

the City and are heavily trafficked. Building locations and uses within the study area are generally indicated in Figure 3.

The Triangle Parking Lot and CPO Parking Lot consist of asphalt and concrete pavement. Four monitoring wells installed during previous studies and one tank pit observation well are present on the Triangle Parking Lot at the approximate locations shown in Figure 3.

The nearest surface water body is Lake Bellevue, located approximately 400 feet to the northwest of the northern study area boundary (Figure 1). Topography in the central portion of the study area slopes gently downward to the west and northwest toward Lake Bellevue, and steeper upward trending slopes are present in the east portion of the study area. Based on previous investigations at the Triangle Parking Lot, groundwater beneath the study area is inferred to flow to the west and northwest toward Lake Bellevue.

4.0 POTENTIAL CHEMICALS OF CONCERN

Based on the property development and use history and potential sources of contamination (specifically historical fuel dispenser islands, USTs, and auto service area at the Triangle Parking Lot, and USTs and dry cleaner operation at the BPO Office), the contaminants of concern for the Phase II ESA study area are: petroleum hydrocarbons (including mineral spirits also known as Stoddard solvent), VOCs including BETX, PCE, and TCE, polycyclic aromatic hydrocarbons (PAHs), PCBs and metals associated with waste oil (cadmium, chromium, lead).

5.0 PHASE II ESA INVESTIGATION FINDINGS

5.1. Geophysical Survey

GeoEngineers contracted with Pacific Geophysics to conduct GPR and EM surveys to identify the presence or absence of suspect USTs and drain line locations. The survey was focused in the areas most likely to contain USTs and drain lines based on the findings of prior environmental reports (see figures in Appendix C). The areas of the geophysical investigation for each property are shown on Figure 3. The geophysical investigation was completed on December 19, 2011, prior to Phase II ESA exploratory drilling. Pacific Geophysics' report documenting the findings of the survey is presented as Appendix D. Key findings are summarized below.

Prior to the survey of the Triangle Parking lot, two square below-grade vaults and a tank pit observation well related to an apparent UST were observed on the concrete pad in the southern portion of the property. A geophysical survey of the concrete pad identified a geophysical anomaly typical of a fiberglass UST approximately 14 feet by 8 feet in size, and an estimated 5,000 gallons in capacity. Upon further inspection, an unknown liquid emitting a strong petroleum-like odor was observed through a fill port in one of the below-grade vaults. No other evidence of USTs was identified on the Triangle property during the survey.

The geophysics survey identified a magnetic anomaly typical of a reinforced concrete pad north of the UST in the Triangle Parking Lot. The anomaly location corresponded to the mapped location of the former service station building. The asphalt surface in this area was also observed to be

mounded relative to the surrounding area. Subsequent drilling in this area (see Section 5.2) confirmed the presence of concrete and other debris, which resulted in drilling refusal at two boring locations.

No evidence of USTs was identified in the areas surveyed on the CPO parking lot or CPO office parcels. No drain lines were identified in the locations noted in the prior environmental reports (north of the CPO showroom building and the central-eastern property boundary for the Triangle Parking Lot).

An apparent buried concrete slab was identified beneath the CPO Parking Lot. The observed geophysical anomaly typical of buried concrete corresponded with the reported former location of the office building on this property. One boring, B-114E, encountered concrete debris during drilling in this area.

5.2. Soil and Groundwater Explorations and Sampling

5.2.1. General

The Phase II ESA field explorations were conducted in December 2011, June and July 2012, and November 2012 in accordance with City ROW Use Permit 11 130092TK, and per the following two Right-of-Entry agreements obtained by the City:

- Barrier Motors, Inc. (Grantor), for three (3) properties located at: 12000 NE Bel-Red Road, KC Tax ID 1099100167; 11900 NE Bel-Red Road, KC Tax ID 1099100415; 11866 NE Bel-Red Road, KC Tax ID 1099100425.
- Barrier Motors, Inc., and Ernest H. Bakker (Grantors), for two (2) properties located at 11855 NE Bel-Red Road, KC Tax IDs 1099100420 and 1099100419.

The December 2011 exploratory borings were designated B-101E through B-114E, the June 2012 hollow-stem auger borings and monitoring wells were designated GEIMW-1 through GEIMW-4, and the November 2012 exploratory borings were designated B-115E through B-119E. The explorations are located within and adjacent to the planned 120th Avenue NE alignment approximately as shown in Figure 2. One of the exploratory borings, B-101E, was completed within the existing 120th Avenue NE right-of-way adjacent to the Shell Service Station, and two monitoring wells, GEIMW-1 and GEIMW-2 were completed within the existing Bel-Red Road right-of-way north of Barrier CPO Parking Lot and Sales Office. The remaining 20 explorations were completed on privately-owned property, as allowed by right-of-entry agreements.

Seven borings that were situated in or within close proximity to existing ROW and near known areas of utilities were cleared to 5 feet bgs using air-knife techniques to verify that no underground utilities were present. The air-knife clearance activities took place on December 19 and 20, 2011. The direct push exploratory borings were completed to depths of approximately 12 to 19 feet bgs between December 20 and 22, 2011 and November 2012. The monitoring wells were completed to depths of approximately 20 to 30 feet bgs using a hollow-stem auger rig on June 17 and 18, 2012. A representative of GeoEngineers observed and documented subsurface conditions in the explorations and obtained soil and groundwater samples for field screening and chemical

analysis. Exploration and sampling field procedures and the boring logs are presented in Appendix A.

Groundwater monitoring at the monitoring wells was conducted on July 9, 2012 and October 9, 2012. One-time groundwater samples were obtained from new monitoring wells GEIMW-1 through GEIMW-4 and from existing monitoring wells MW-1 and MW-5 in July 2012. Depth to groundwater was measured in each of these monitoring wells and also in existing wells, MW-3 and MW-6 in July and October 2012. The eight well casing rim elevations were surveyed to allow determination of groundwater elevations based on depth to water measurements. Hydraulic transducers and dataloggers were installed in wells GEIMW-1, GEIMW-2, and GEIMW-3 in July 2012 for groundwater elevation monitoring.

5.2.2. Exploration Location Rationale and Sampling Plan

Below is a summary of the Phase II ESA exploratory boring locations and the corresponding sampling rationale and contaminants of potential concern for each location.

Boring	Exploration Location General Description	Sampling Rationale	Contaminants of Potential Concern
December 2011 – Direct Push Exploratory Borings			
B-101E [w]	Northbound right turn lane of 120th Ave NE adjacent to Shell Service Station.	Nearest to Shell western property line where remediation of petroleum-contaminated soil and/or groundwater was noted. Within planned road improvement corridor.	▪ Petroleum hydrocarbons ▪ VOCs ▪ Lead
B-102E	Southern portion of Triangle Parking Lot, adjacent to existing UST.	Former gas/service station pump island, existing UST. Within planned road improvement corridor.	▪ Petroleum hydrocarbons ▪ BETX ▪ Lead
B-103E [w]	Southern portion of Triangle Parking Lot, adjacent to existing UST	Former gas/service station dispenser island, product piping, former USTs and waste oil tank, station building and service area. Within planned road improvement corridor.	▪ Petroleum hydrocarbons ▪ BETX ▪ Lead ▪ PAHs ▪ Polychlorinated biphenyls (PCBs) ▪ Metals (RCRA 8)
B-104E [w]	Southern portion of Triangle Parking Lot	Adjacent to existing UST. Within planned road improvement corridor.	▪ Petroleum hydrocarbons ▪ BETX ▪ Lead
B-105E [w]	Northern portion of Triangle Parking Lot	Former station building and service area, former USTs, remedial excavation reported. Within planned road improvement corridor.	▪ Petroleum hydrocarbons ▪ PAHs ▪ Metals (RCRA 8) ▪ VOCs including chlorinated solvents

Boring	Exploration Location General Description	Sampling Rationale	Contaminants of Potential Concern
B-106E	Northern portion of Triangle Parking Lot	Former USTs, remedial excavation reported. Within planned road improvement corridor.	▪ Petroleum hydrocarbons ▪ Lead ▪ VOCs including chlorinated solvents
B-107E	Northern portion of CPO Parking Lot	North of former dry cleaning office building, northeast of former gas station, former dry cleaners drain line. Within planned road improvement corridor.	▪ Petroleum hydrocarbons ▪ Lead ▪ VOCs including chlorinated solvents
B-108E	Between CPO Parking Lot and CPO Office	Former use of dry cleaning solvents. Within planned road improvement corridor.	▪ Petroleum hydrocarbons ▪ VOCs including chlorinated solvents
B-109E	North of CPO Office	Downgradient of former Stoddard solvent, diesel, and other solvent USTs. Within planned road improvement corridor.	▪ Petroleum hydrocarbons ▪ VOCs including chlorinated solvents
B-110E [w]	North of CPO Office, vicinity of former solvent tank	Location of former Stoddard solvent, diesel, and other solvent USTs, historical releases documented. Located slightly east of the eastern boundary of road improvement corridor.	▪ Petroleum hydrocarbons ▪ VOCs including chlorinated solvents
B-111E [w]	North of CPO Office	Downgradient of former Stoddard solvent, diesel, and other solvent USTs. Within planned road improvement corridor.	▪ Petroleum hydrocarbons ▪ VOCs including chlorinated solvents
B-112E	Southeast corner of Barrier Mercedes property	Within northern edge of planned road improvement corridor. Former use of petroleum, leaking UST reported on this property.	▪ Petroleum hydrocarbons ▪ BETX ▪ Metals (RCRA 8)
B-113E	Western portion of Barrier Porsche property	Current service garage, possible heating oil UST reported. Within planned road improvement corridor.	▪ Petroleum hydrocarbons ▪ BETX ▪ Metals (RCRA 8)
B-114E [w]	Between CPO Parking Lot and CPO Office	Former use of dry cleaning solvents, former dry cleaners drain line. Within planned road improvement corridor.	▪ Petroleum hydrocarbons ▪ VOCs including chlorinated solvents
November 2012 – Direct Push Exploratory Borings			
B-115E [w]	Southeast of CPO Office	Upgradient of former Stoddard solvent, diesel, and other solvent USTs. Outside planned road improvement corridor.	▪ Petroleum hydrocarbons ▪ VOCs including chlorinated solvents
B-116E [w]	Western portion of Triangle Parking Lot	Delineate the downgradient extent of VOCs in soil and groundwater. Outside planned road improvement corridor.	▪ Petroleum hydrocarbons ▪ VOCs including chlorinated solvents

Boring	Exploration Location General Description	Sampling Rationale	Contaminants of Potential Concern
B-117E [w]	Southern portion of Barrier Mercedes property	Delineate the downgradient extent of VOCs in soil and groundwater. Outside planned road improvement corridor.	▪ Petroleum hydrocarbons ▪ VOCs including chlorinated solvents
B-118E [w]	Southern portion of Barrier Mercedes property	Delineate the downgradient extent of VOCs in soil and groundwater. Outside planned road improvement corridor.	▪ Petroleum hydrocarbons ▪ VOCs including chlorinated solvents
B-119E [w]	Southern portion of Barrier Mercedes property	Delineate the downgradient extent of VOCs in soil and groundwater. Outside planned road improvement corridor.	▪ Petroleum hydrocarbons ▪ VOCs including chlorinated solvents
June 2012 – Monitoring Wells			
GEIMW-1 [w]	Northbound center lane of Bel-Red Road north of Barrier CPO Parking Lot and Sales Office	Downgradient of former Stoddard solvent, diesel, and other solvent USTs. Within planned road improvement corridor.	▪ Petroleum hydrocarbons ▪ VOCs including chlorinated solvents
GEIMW-2 [w]	Northbound center lane of Bel-Red Road north of Barrier CPO Parking Lot and Sales Office	Downgradient of former Stoddard solvent, diesel, and other solvent USTs. Within planned road improvement corridor.	▪ Petroleum hydrocarbons ▪ VOCs including chlorinated solvents
GEIMW-3 [w]	Southeast corner of Barrier Mercedes property	Delineate the downgradient extent of VOCs in groundwater, collect depth to groundwater data, delineate extent of peat near Wall 6. Within planned road improvement corridor.	▪ Petroleum hydrocarbons ▪ BETX ▪ Metals (RCRA 8)
GEIMW-4 [w]	Northeast corner of Barrier Mercedes property	Delineate the downgradient extent of VOCs in groundwater, collect depth to groundwater data, delineate extent of peat near Wall 6. Within planned road improvement corridor.	▪ Petroleum hydrocarbons ▪ BETX ▪ Metals (RCRA 8)

Note:

[w] indicates that groundwater samples were collected and analyzed, in addition to soil. Groundwater samples obtained from direct-push borings were one-time grab groundwater samples.

5.2.3. Soil Conditions

Published geologic information for the Project vicinity includes a Pacific Northwest Center for Geologic Mapping Studies map, "Geologic Map of King County, Washington." Mapped soils along the Project alignment consist primarily of recessional outwash deposits and glacial till (GeoEngineers, 2011).

Fill soil consisting of sand with varying amounts of silt and gravel was encountered in all borings beneath the asphalt surface to depths of between 3 and 14 feet bgs. The fill may represent material imported to the study area from unknown locations or it may be reworked native soil.

Pea gravel was encountered within the fill in borings B-103E and B-105E at depths of approximately 5 feet bgs and 2 feet bgs, respectively. Crushed gravel and rock were encountered in boring B-104E above approximately 5 feet bgs. Pea gravel and crushed gravel and rock are indicative of backfill placed after installation or removal of USTs, associated piping, drain lines or utility or backfill. Concrete was also encountered in the fill on the Triangle Parking Lot within the footprint of the former gas station building (see Section 4.3), which resulted in drilling refusal at the original boring location for B-105E. One boring on the CPO Parking Lot, B-114E, was successfully advanced through an apparent buried concrete surface at the former office building location.

Native soil encountered beneath the fill consisted of medium dense silty sand with occasional gravel, typical of glacial outwash deposits, and peat. Peat deposits approximately 1 to 6 feet thick were encountered below the fill in the upper portion of the native materials in B-106E, B-107E, GEIMW-1 through GEIMW-4, B-116E, B-117E, and B-119E.

Very dense glacial till consisting of silty sand with fine to coarse gravel underlies the outwash deposits to total depth explored. A weathered zone was observed in the upper portion of the till in most explorations. This weathered zone is somewhat drained, whereas the unweathered till is a barrier to vertical drainage. Direct push explorations at the study area generally terminated in the upper, unweathered portion of the till due to drilling refusal. The depth to till was observed to be greater toward the northern portion of the study area.

5.2.4. Groundwater Conditions

Groundwater was encountered in the explorations during drilling at depths between 5 and 18 feet bgs, except for B-109E where groundwater was not encountered. Groundwater was generally observed between 6 and 11 feet bgs during drilling on the southern portion of the study area and between 9 and 18 feet bgs during drilling on the northern portion of the study area. Groundwater was typically encountered just above the glacial till and peat contact (if present), with the water table located in fill or the top of the weathered till. This correlates with the observed increased depth to the till from south to north across the study area indicating the till may be a confining unit for vertical groundwater movement.

Four existing monitoring wells MW-1, MW-3, MW-5 and MW-6 and one tank pit observation well were observed on the Triangle Parking Area (Triangle Property) at the approximate locations shown in Figure 2. The wells were installed during prior investigations on the property, along with approximately two other monitoring wells MW-2 and MW-4 that are presumed to have been previously removed or paved over (see Appendix C for map of well locations).

The four new monitoring wells (GEIMW-1 through GEIMW-4) and two of the existing monitoring wells on the triangle parking lot (MW-1 and MW-5) were gauged and sampled during the July 2012 groundwater monitoring and sampling. The two other existing monitoring wells on the Triangle Parking Lot (MW-3 and MW-6) were also gauged to collect depth to groundwater information. Groundwater was measured in the monitoring wells at depths between 3 and 12 feet bgs. A second round of groundwater elevation measurements was conducted in October 2012. Groundwater was measured in the monitoring wells at depths between 4 and 13 feet bgs. Groundwater depths and elevations measured in July and October 2012 are presented in Table 5.

Based on the groundwater elevation measurements from the six wells that were monitored in July 2012, groundwater flows to the northwest in the Project corridor (Figure 7). Groundwater elevation measurements collected in October 2012 indicate a flatter groundwater flow gradient to the northwest and lower groundwater elevations typical of season variation in the Fall.

5.2.5. Soil Field Screening and Chemical Analytical Results

Soil samples obtained at approximately 2.5-foot depth intervals from the 23 exploration locations were screened in the field for evidence of petroleum hydrocarbons and volatiles using visual, water sheen and headspace vapor screening methods. Field screening methods are described in Appendix A Field Procedures. Field screening results are shown on the boring logs and summarized in Table 1 for the samples submitted for chemical analysis. Slight petroleum and/or chemical-like odors were observed in soil samples from explorations B-105E, B-106E, and B-111E; however, the odors could not be distinguished. Headspace vapor and water sheen field screening did not indicate evidence of significant petroleum or volatiles in soil samples from the explorations except for moderate sheen observed in the soil sample from B-105E at about 7.5 feet bgs.

Select soil samples from the explorations were submitted for chemical analysis; the results are summarized in Tables 1 through 4. The selection of samples was based on field screening results, reported locations and depths of potential sources of contamination and corresponding potential contaminants of concern, and sample depth in relation to Project design information regarding likely excavation depths or underground utility depths associated with the planned road improvements.

Soil samples were submitted for chemical analyses of one or more of the following:

- Gasoline-range and mineral spirits- (Stoddard solvent) range petroleum hydrocarbons by NWTPH-Gx Method;
- BETX by EPA Method 8021B or EPA Method 8260B;
- Diesel- and heavy oil-range hydrocarbons by Northwest Method NWTPH-HCID, and Northwest Method NWTPH-Dx with sulfuric acid/silica gel clean-up;
- VOCs including chlorinated solvents by EPA Method 8260B;
- PAHs by EPA Method 8270D/SIM with silica gel clean-up;
- Metals (RCRA 8) by EPA Method 6010B; and
- PCBs by EPA Method 8082.

Chemical analytical results for the soil samples are summarized in Tables 1 through 4. A copy of the laboratory report is provided in Appendix B.

5.2.5.1. PETROLEUM HYDROCARBONS (TABLE 1)

Diesel- and lube oil-range petroleum hydrocarbons either were not detected or the sum of detected concentrations was less than the MTCA Method A Cleanup Level of 2,000 mg/kg in each of the soil samples submitted for analysis except for the soil sample from B-105E at 7.5 feet bgs (2,170 mg/kg); B-105E is located on west margin of the planned 120th Avenue NE corridor.

Diesel- and lube oil-range hydrocarbons were detected in soil samples from shallow depths ranging between approximately 2.5 and 7.5 feet bgs. The highest concentration of diesel-range hydrocarbons (1,900 mg/kg) was detected in boring B-105E; lube oil-range hydrocarbons were also detected in this sample at a concentration of 270 mg/kg. The combined concentration of diesel- and lube oil-range hydrocarbons detected in this sample is 2,170 mg/kg, which exceeds the MTCA Method A Cleanup Level of 2,000 mg/kg. The highest concentration of lube oil-range hydrocarbons (1,100 mg/kg) was detected in boring B-109E which is located on east margin of the planned corridor. This detected concentration is less than the MTCA Method A Cleanup Level.

Gasoline-range hydrocarbons detected in soil samples from the study area were identified by the laboratory as mineral spirits, also known as "Stoddard solvent," which is a specific type of mineral spirits. Mineral spirits were detected at a concentration of 540 mg/kg in the soil sample from boring B-106E at a depth of approximately 2.5 feet bgs. Mineral spirits were detected at a concentration of 8,100 mg/kg in the soil sample from B-111E at a depth of approximately 10 feet bgs. These detected concentrations exceed the MTCA Method A Cleanup Level of 100 mg/kg for gasoline-range hydrocarbons in soil. Mineral spirits either were not detected (less than 6.8 mg/kg) and/or detected at concentrations less than the MTCA Method A Cleanup Level in the remaining soil samples tested.

5.2.5.2. BETX (TABLE 1)

BETX were not detected in the soil samples that were analyzed except for ethylbenzene in the soil sample from 10 feet bgs in B-111E (0.24 mg/kg) and xylenes in the soil sample from B-105E at 7.5 feet bgs (0.0014 mg/kg); these detected concentrations are both less than the corresponding MTCA Method A Cleanup Levels.

5.2.5.3. VOLATILE ORGANIC COMPOUNDS (VOCS) (TABLE 2)

BETX is discussed above. Other VOCs were not detected at concentrations exceeding the corresponding MTCA Method A Cleanup Levels in the soil samples tested for VOCs, with one exception. Tetrachloroethene (PCE) was detected in the soil sample from boring B-106E at a depth of 2.5 feet bgs at a concentration of 0.084 mg/kg, which is greater than the MTCA Method A Cleanup Level of 0.05 mg/kg. The following soil samples had detectable concentrations of dry cleaning solvent VOCs PCE and/or TCE: B-105E-1.5-122011, B-106E-2.5-122111, B-108E-5.0-122211, B-110E-2.5-122211, B-111E-2.5-121911, B-111E-5.0-121911, and B-115E-10.0.

5.2.5.4. POLYCYCLIC AROMATIC HYDROCARBONS (PAHS) (TABLE 3)

Two samples (B-105E-1.5-122011 and B-103E-5.0-122111) were submitted for analyses of PAHs. PAHs were not detected in B-103E-5.0-122111. Carcinogenic PAHs were detected in B-105E-1.5-122011 at a concentration of 10.76 mg/kg, greater than the MTCA Method A Cleanup Level of 0.1 mg/kg for cPAHs.

5.2.5.5. METALS (TABLE 4)

Arsenic, cadmium, chromium, mercury, selenium, and silver were not detected in the samples submitted for analyses. Barium was detected at a concentration of 39 mg/kg and chromium was detected at a concentration of 33 mg/kg in the soil sample from boring B-103E at 5 feet bgs. Lead was either not detected or the detected concentrations were less than the MTCA Method A Cleanup Level in the 18 soil samples tested for lead.

5.2.5.6. POLYCHLORINATED BIPHENYLS (PCBS) (TABLE 4)

Polychlorinated biphenyls were not detected in the soil sample B-103E-5.0-122111 submitted for analyses.

5.2.6. Groundwater Sampling Results

Groundwater samples were collected from eleven exploratory borings that were converted to temporary wells during field activities in December 2011 and November 2012, from four permanent monitoring wells installed during field activities in June 2012, and from two existing monitoring wells on the Triangle Parking Lot. Groundwater samples were obtained using dedicated disposable tubing and a peristaltic pump operating at low-flow sampling rates. Groundwater sampling field procedures are described in Appendix A.

The 17 groundwater samples were submitted for chemical analysis. The locations selected for groundwater sampling were based on soil field screening results, explorations locations relative to potential sources of contamination and corresponding potential contaminants of concern, groundwater flow direction, and proximity to the planned 120th Avenue road improvement corridor.

Chemical analytical results for the groundwater samples are summarized in Tables 5 through 8. A copy of the laboratory report is provided in Appendix B.

5.2.6.1. PETROLEUM HYDROCARBONS (TABLE 5)

Gasoline-range hydrocarbons were detected in two of the groundwater samples, B-110E and B-111E. The detected concentrations of gasoline-range hydrocarbons were interpreted to be mineral spirits (Stoddard solvent): 1,200 (micrograms per liter (µg/L) in the B-110E groundwater sample and 900 µg/L in the B-111E groundwater sample. Both of these concentrations are greater than the MTCA Method A Cleanup Level of 800 µg/L for gasoline-range hydrocarbons in groundwater.

Diesel-range hydrocarbons were not detected in the groundwater samples submitted for chemical analysis. The laboratory detection limit for one groundwater sample, B-111E-122211-GW (570 µg/L), was slightly greater than the MTCA Method A Cleanup Level for diesel (500 µg/L).

Lube oil-range petroleum hydrocarbons were not detected in the groundwater samples except for the groundwater samples from B-104E and B-115E. The detected concentrations of 1,300 µg/L and 550 µg/L in B-104E and B-115E, respectively are greater than the MTCA Method A Cleanup Level of 500 µg/L.

5.2.6.2. BETX (TABLE 5)

Groundwater samples from B-101E, B-103E, B-104E, B-105E, B-110E, B-111E, B-114E, GEIMW-1, GEIMW-2, GEIMW-3, and GEIMW-4 were analyzed for BETX compounds. Table XXX shows samples analyzed for BETX. Benzene was detected in groundwater samples from borings B-111E and B-114E at concentrations of 1.5 and 0.26 µg/L, respectively, which are less than the MTCA Method A Cleanup Level of 5 µg/L. Ethylbenzene was detected in groundwater samples from boring B-111E at a concentration of 5µg/L, which is less than the MTCA Method A Cleanup Level of 700 µg/L. Toluene was detected in groundwater samples from borings B-104E and B-111E at concentrations of 1.5 and 3.6 Cg/L, respectively, which are less than the MTCA Method A Cleanup Level of 1,000 µg/L. Xylenes were detected in groundwater samples from borings B-101E

(1.0 µg/L), B-103E (0.49 µg/L), B-104E (1.9 µg/L), B-105E (0.48 µg/L), B-111E (4.5 µg/L), B-114E (1.10 µg/L) and MW-1 (0.23 µg/l); the detected concentrations were less than the MTCA Method A Cleanup Level of 1,000 µg/L for xylenes.

5.2.6.3. VOCS (TABLE 6)

BETX is discussed above. Other VOCs were not detected in each of the groundwater samples analyzed except as follows.

- Trichloroethene (TCE) and Tetrachloroethene (PCE) were detected in the following groundwater samples at concentrations greater than the MTCA Method A Cleanup Levels: B-110E-122211-GW and B-111E-122211-GW.
- Trichloroethene (TCE) and/or Tetrachloroethene (PCE) were detected in the following groundwater samples at concentrations less than the MTCA Method A Cleanup Level: B-101E-122011-GW, B-105E-122011-GW, B-115E-GW, and MW-1.
- Vinyl Chloride was detected in the following groundwater samples at concentrations exceeding the MTCA Method A Cleanup Level: B-111E-12211-GW, B-114E-122211-GW, B-116E-GW, GEIMW-1, MW-1, and MW-5. Vinyl chloride was not detected in the remaining groundwater samples; however, the laboratory detection limit for vinyl chloride for sample B-110E-122211-GW (10 µg/L) was greater than the MTCA Method A Cleanup Level of 0.2 µg/L.
- Cis 1, 2 dichloroethene (1,2-DCE) was detected in the following groundwater samples at concentrations exceeding the MTCA Method A Cleanup Level of 5 µg/L: B-110E-122211 and B-111E-122211-GW. 1,2-DCE was detected in the following groundwater samples at concentrations less than the MTCA Method A Cleanup Level: B-105E-122211-GW, B-114E-122211-GW, B-115E-GW, B-116-GW, GEIMW-1, GEIMW-2, MW-1, and MW-5.

5.2.6.4. PAHS (TABLE 7)

One groundwater sample, B-103E-122111-GW, was analyzed for PAHs. Only one PAH, benzo[a]anthracene, a carcinogenic PAH, was detected at a concentration of 0.01 µg/L. Carcinogenic PAH constituents are weighted based on a toxicity factor for each constituent in accordance with MTCA, and a cumulative toxicity equivalent (TEQ) is calculated. The TEQ for cPAHs in sample B-103E-122111-GW was 0.067 µg/L, which is less than the MTCA Method A Cleanup level of 1 µg/L.

5.2.6.5. METALS (TABLE 8)

Arsenic, cadmium, mercury, selenium and silver were not detected in the groundwater sample from B-103E. Barium was detected at a concentration of 73 µg/L and chromium was detected at a concentration of 17 µg/L. Barium has no established cleanup level; the detected concentration of chromium is less than the MTCA Method A Cleanup Level of 50 µg/L.

Lead was detected in groundwater samples from B-103E and B-114E at concentrations of 11 µg/L and 10 µg/L, respectively, less than the MTCA Method A Cleanup Level of 15 µg/L.

Lead was detected in groundwater samples from B-101E, B-104E and B-105E at concentrations of 24 µg/L, 120 µg/L, and 42 µg/L, respectively, which is greater than the MTCA Method A Cleanup Level of 15 µg/L. The groundwater sample from B-114E was also analyzed for dissolved lead; dissolved lead was not detected in the groundwater sample collected from B-114E.

5.2.6.6. PCBS (TABLE 8)

PCBs were not detected in the groundwater sample B-103E-122111-GW.

6.0 LONG-TERM GROUNDWATER MONITORING AND DATA EVALUATION

After wells GEIMW-1, GEIMW-2 and GEIMW-3 installed in June 2012 were sampled, these wells were fitted with hydraulic transducers with datalogging capabilities. Transducers were installed to allow automated logging of groundwater elevation data over a long period of time.

Data from the transducers will be downloaded periodically, concurrent with the quarterly groundwater monitoring of these wells, and will be used to evaluate seasonal groundwater fluctuation with respect to the planned road utility excavations. In addition, depth to groundwater will be measured on a quarterly basis in each of the existing wells GEIMW-1 through GEIMW-4, MW-1, MW-3, MW-5, and MW-6 in the Project area.

7.0 CONCLUSIONS AND RECOMMENDATIONS

The Phase II ESA characterized soil and groundwater located beneath and in the vicinity of the future alignment of 120th Avenue NE. Soil and groundwater sample chemical analytical data obtained from the Phase II ESA were evaluated relative to MTCA Cleanup Levels and waste designation considerations.

Based on the findings of the Phase II ESA, our general conclusions regarding the source and locations of contamination identified during the study are as follows:

- One UST containing product was identified on the Triangle Parking Lot. Product in the UST should be pumped as soon as practical. Because it is no longer in use, the UST and the tank pit observation well next to it should be removed in accordance with applicable local, state and federal regulations. Four existing monitoring wells are located on this property. The monitoring wells should be properly decommissioned before road improvements.
- The locations where elevated levels of petroleum-related constituents and dry cleaning solvents were detected in soil and groundwater were generally consistent with the reported locations of the former service station on the Triangle Parking Lot and the former USTs and drain lines associated with the former dry cleaner plant and office building.
- Existing or former underground utility lines or backfill in the vicinity of former USTs and drain lines may have been or may currently be pathways for ongoing contaminant migration. Contamination detected in soil and groundwater adjacent to the existing building on the Barrier Pre-Owned Office property could pose a risk of vapor intrusion to indoor air. Contaminants in groundwater near existing or future utility vaults could create a potential for hazardous levels of contaminants in confined spaces.
- The findings at B-101E west of the existing Shell Service Station do not indicate a risk of impacted soil that will affect the road project.
- TCE and PCE, and their breakdown products including 1,2-DCE and vinyl chloride, are common contaminants associated with releases from dry cleaner operations. Based on the

documented use of solvents and reported poor housekeeping practices at the former dry cleaning plant, it appears that the concentrations of TCE, PCE, 1,2-DCE and/or vinyl chloride detected in groundwater samples from B-101E, B-105E, B-110E, B-111E, B-114E, B-115E, B-116E, MW-1, MW-5, GEIMW-1, and GEIMW-2 and in soil at B-105E, B-106E, B-108E, B-110E, B-111E, B-115E indicate residual contamination and/or contaminant migration likely originating from historic releases associated with the former dry cleaner plant in the building currently occupied by the CPO Showroom and Sales. Sources of releases include possible leaks or spills inside the building, and/or from USTs or sewer or floor drain lines.

- Mineral spirits, also known as Stoddard solvent a petroleum-based solvent, were also commonly used in dry cleaning operations. Based on the documented use of Stoddard solvent at the former dry cleaning plant on the CPO Showroom and Sales Parcel, it appears that the elevated concentrations of mineral spirits in groundwater at B-110E and B-111E and soil at B-111E and B-106E are likely the result of releases associated with the former dry cleaning plant.
- Lube oil-range petroleum hydrocarbons detected in the groundwater sample from borings B-104E and in soil at B-105E at concentrations greater than the MTCA Method A Cleanup Levels are likely related to releases associated with the former service station on the Triangle Parking Lot.
- Lube oil-range petroleum hydrocarbons were also detected in the groundwater sample from B-115E on the former dry cleaning parcel at a concentration slightly greater than the MTCA Method A Cleanup Level.
- Total Lead was detected in groundwater samples from B-101E, B-104E and B-105E at concentrations greater than the MTCA Method A Cleanup Level of 15 µg/L. Total lead was also detected in the groundwater sample collected from boring B-114E (10ug/L) at a concentration less than MTCA; however, dissolved lead was not detected. Based on these results, it appears that the total lead detected in the groundwater samples from this study may in part be due to suspended solids (turbidity) in the grab groundwater samples obtained from the borings. In this case, the lead concentrations reported are not representative of dissolved lead concentrations in groundwater. Additional sampling and analysis of groundwater for dissolved lead should be conducted if necessary to verify groundwater quality.
- The elevated concentration of cPAHs in the soil sample at 1.5 feet in B-105E may be due to contaminants or asphalt debris in fill at this location. Additional soil analysis is recommended to further characterize contaminated soil in this area for disposal purposes. Additional soil sampling and analysis could be conducted in conjunction with the initial stages of Project grading and excavation.

7.1. Impacted Soil Excavation and Handling

The areas of soil contamination likely to be encountered during road construction are described below. The discussion below is separately presented for dry cleaning VOC-contaminated media (PCE, TCE, 1,2-DCE, vinyl chloride, etc.,), which would designate as a state-listed Dangerous Waste (Washington Administrative Code [WAC] 173-303), and petroleum-only contaminants (mineral spirits, diesel, lube oil). There is some overlap in discussion sections due to contaminant types comingled in portions of the study area.

7.1.1. Dry Cleaning VOC–Impacted Soil

Soil with detectable concentrations of dry cleaning VOCs including PCE, TCE and related degradation products that originate from dry cleaning operations and are not petroleum-based compounds, are F002-listed dangerous waste source constituents under the Washington State Dangerous Waste Regulations, WAC 173-303. Soil originating from below the water table, if excavated, may also contain residual dry cleaning solvents that would necessitate handling excavated soil as F-listed waste. Figure 5 shows the locations and depths of soil samples from the Phase II ESA where these chemicals were detected.

7.1.1.1. TRIANGLE PARKING LOT

The PCE concentration in the shallow soil sample from B-106E on the Triangle Property at 2.5 feet bgs was 0.084 mg/kg, which exceeds the MTCA Method A Cleanup Level. It is anticipated that soil represented by this sample will be encountered during Project grading because the depth of this soil sample corresponds to the depth of planned grading. Additional soil samples with detectable VOCs are shown in Table 2.

7.1.1.2. CPO OFFICE (FORMER DRY CLEANERS PLANT)

Soil from B-110E and B-111E at depths of 2.5 feet bgs, from B-108E and B-111E from a depth of 5.0 feet bgs, and from B-115E at a depth of 10.0 feet bgs contained detectable dry cleaning VOCs; the detected concentrations were less than MTCA Cleanup Levels. Due to the presence of dry cleaning VOCs, soil excavated in this area would be considered F-listed Dangerous Waste. Concrete from the existing building may also contain detectable dry cleaning VOCs; foundation debris should be tested during building demolition to determine if this material is considered dangerous waste for the purposes of handling and disposal.

7.1.2. Petroleum- and PAH-Contaminated Soil

7.1.2.1. TRIANGLE PARKING AREA

PAH and petroleum contamination was observed in shallow soil from the Triangle Property. Soil from 1.5 feet bgs in B-105E contained carcinogenic PAHs at an equivalent concentration of 10.76 mg/kg, which is greater than the MTCA Method A Cleanup Level of 0.1 mg/kg. This appears to be an isolated area of high PAH concentrations in soil at the Study Area. The shallow soil in this area is within the planned road alignment and above the planned grading depth for the road construction, and is expected to be encountered during construction.

Mineral spirits were detected in the soil sample at 2.5 feet bgs from B-106E (540 mg/kg) at a concentration greater than the MTCA Method A Cleanup Level of 100 mg/kg. It is anticipated that soil represented by this sample will be encountered during Project grading because the depth of this soil sample corresponds to the depth of planned grading. Additional soil samples with detectable petroleum-related constituents that may necessitate special handling and disposal for excavated soil are shown in Tables 1 through 4.

7.1.2.2. CPO OFFICE (FORMER DRY CLEANERS PLANT)

Deep (10 feet bgs) soil from B-111E in the area to the north of the CPO Sales Office (former dry cleaners plant) contained mineral spirits at a concentration of 8,100 mg/kg, which is greater than the MTCA Method A Cleanup Level. This boring is located downgradient from the historic mineral spirits (Stoddard solvent) UST associated with the former dry cleaning plant. Additional soil

samples with detectable petroleum-related constituents that may necessitate special handling and disposal for excavated soil are shown in Tables 1 through 4.

7.2. Groundwater and Dewatering

Elevated concentrations of VOCs and petroleum-related constituents are present in groundwater beneath the CPO Sales and Showroom and parking lot properties and the Triangle Parking Lot and existing rights-of-ways as shown in Figure 4. Based on the data obtained for this study, dry cleaning solvents in groundwater extend to the west end of the Triangle Parking Lot at boring B-116E, to the north and northwest into the existing right-of-way of NE Bel-Red Road at wells GEIMW-1 and GEIMW-2, to the southeast of the CPO Sales and Showroom building at boring B-115E, and south of the NE 8th Street and 120th Ave NE intersection at boring B-101E. Groundwater contamination is present beneath portions of NE Bel-Red Road, and does not appear to extend north of NE Bel-Red Road onto the adjacent downgradient Barrier Mercedes property.

Based on our understanding of the current Project design and excavation depths, significant construction dewatering is not currently planned; however, groundwater may be encountered during construction in areas where excavations for retaining walls or deeper utilities or signal poles are planned and localized dewatering may be needed. Dewatering should be carefully considered in order to avoid affects to the location of the groundwater plume. The groundwater monitoring program begun in July 2012 will provide additional data regarding groundwater depths and seasonal trends to evaluate the need for dewatering during the Project and locations where contaminated groundwater may be encountered during the Project.

Contractor health and safety protocols including compliance with state HAZWOPER rules and regulations will be needed during future construction where groundwater with hazardous substances may be encountered. For the purposes of this Project, we recommend this area to include the 120th Avenue NE Widening Project construction boundaries between the south side of NE 8th and NE 12th Streets. Similarly, groundwater removed in association with dewatering in this area of the Project will necessitate special handling and/or treatment and specific discharge conditions or requirements due to the presence of contaminants which may be considered Dangerous Waste. The approximate area where groundwater is expected to contain detectable concentrations of dry cleaning VOCs is shown on Figure 6.Waste Disposal Considerations

Soil and groundwater handling and disposal specifications will be provided for the Project and should be followed by the Contractor during construction activities. The specifications pertain to handling, transport, treatment/disposal and documentation requirements for impacted soil and groundwater within the study area.

Contaminated waste media (soil and saturated soil) with detectable concentrations of dry cleaning solvents PCE and TCE and their breakdown products will be listed Dangerous Waste per WAC 173-303 and regulatory requirements including but not limited to handling, labeling, containment, transportation and disposal at an approved landfill facility and record-keeping will apply. It is possible excavated soil may qualify for a “Contained Out” determination from Ecology, which would allow the soil to be disposed as “non-hazardous” at a lower unit cost for off-site disposal. If dewatering is required in the Phase II area during construction, recovered fluids will

need to be contained and sampled to determine appropriate waste handling, pretreatment, and/or permitted discharge requirements.

Excavated soil with detectable concentrations of petroleum-related constituents only (mineral spirits, diesel- or lube-oil range), non F-listed waste, will also require special handling and disposal at an approved facility.

Prior to construction, the Contractor should provide the City their soil and groundwater management plan identifying the approved disposal facilities to be used and demonstrating compliance with all applicable federal, state and local regulations.

8.0 LIMITATIONS

This report has been prepared for use by Parsons Brinckerhoff and the City of Bellevue. Our services were completed in accordance with Amendment No. 2 to Professional Services Subcontract Between PB Americas, Inc. and GeoEngineers, Inc., dated December 3, 2010, under the original Agreement No. PW-R164 with the City of Bellevue dated July 27, 2010, and in accordance with Professional Services Agreement No. 950284-000, between City of Bellevue and GeoEngineers, Inc., dated May 26, 2009.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

Please refer to Appendix E titled "Report Limitations and Guidelines for Use" for additional information pertaining to use of this report.

9.0 REFERENCES

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TABLES

GeoEngineers

Table 1

Soil Chemical Analytical Results[1]

Petroleum Hydrocarbons and BETX

120th Avenue NE Widening Project

Bellevue, Washington

Sample Identification[2]	Sample Date	Sample Depth (feet bgs)	Field Screening Results[3]		Mineral Spirits[4] (mg/kg)	BETX[5] (mg/kg)				Total Petroleum Hydrocarbons[7] (mg/kg)		
			Headspace Vapors (ppm)	Sheen		Benzene	Ethylbenzene	Toluene	Xylenes[6]	Gasoline Range	Diesel Range	Lube Oil Range
B-101E-2.5-122011	12/20/2011	2.5	<1	SS	<5.3	<0.0008	<0.0008	<0.004	<0.0008	--	**42**	**130**
B-101E-7.5-122011	12/20/2011	7.5	<1	NS	--	<0.0017	<0.0017	<0.0084	<0.0017	<33	<83	<170
B-102E-2.5-122011	12/20/2011	2.5	<1	NS	--	--	--	--	--	<29	<74	<150
B-102E-7.5-122111	12/21/2011	7.5	<1	NS	--	--	--	--	--	<24	<59	<120
B-103E-5.0-122111	12/21/2011	5.0	<1	SS	<5.2	<0.0011	<0.0011	<0.0057	<0.0011	--	<26	<51
B-104E-2.5-121911	12/19/2011	2.5	<1	SS	<4.1	<0.020	<0.041	<0.041	<0.041	--	<26	**61**
B-104E-7.5-122011	12/20/2011	7.5	<1	NS	<4.8	<0.020	<0.048	<0.048	<0.048	--	**61**	**690**
B-104E-10.0-122011	12/20/2011	10.0	<1	NS	--	--	--	--	--	--	<29	<57
B-105E-1.5-122011	12/20/2011	1.5	<1	SS	<4.2	<0.001	<0.001	<0.0052	<0.001	--	<27	**140**
B-105E-7.5-122011	12/20/2011	7.5	<1	MS	<5.5	<0.00095	<0.00095	<0.0048	**0.0014**	--	**1,900**	**270**
B-105E-17.0-122011	12/20/2011	17.0	<1	SS	--	--	--	--	--	--	<27	<55
B-106E-2.5-122111	12/21/2011	2.5	<1	SS	**540**[9]	<0.0012	<0.0012	<0.006	<0.0012	--	**73**	**230**
B-106E-5.0-122111	12/21/2011	5.0	<1	NS	--	--	--	--	--	<26	<65	<130
B-107E-2.5-122111	12/21/2011	2.5	<1	SS	**21**[9]	<0.001	<0.001	<0.005	<0.001	--	<30	<59
B-107E-5.0-122111	12/21/2011	5.0	<1	NS	--	--	--	--	--	<25	<63	<130
B-108E-5.0-122211	12/22/2011	5.0	<1	NS	--	<0.00095	<0.00095	<0.0047	<0.00095	<22	<28	**120**
B-108E-10.0-122211	12/22/2011	10.0	<1	NS	--	<0.001	<0.001	<0.0051	<0.001	--	--	--
B-109E-2.5-122211	12/22/2011	2.5	<1	SS	<4.8	<0.00085	<0.00085	<0.0043	<0.00085	--	<140	**1,100**
B-109E-5.0-122211	12/22/2011	5.0	<1	SS	--	--	--	--	--	--	<30	<61
B-110E-2.5-122211	12/22/2011	2.5	<1	SS	<6.7	<0.00098	<0.00098	<0.0049	<0.00098	--	<30	**75**
B-111E-2.5-121911	12/19/2011	2.5	<1	SS	--	<0.001	<0.001	<0.005	<0.001	<24	<60	<120
B-111E-5.0-121911	12/19/2011	5.0	<1	SS	<6.3	<0.001	<0.001	<0.0051	<0.001	--	<31	**65**
B-111E-10.0-122011	12/20/2011	10.0	<1	NS	**8,100**[9]	<0.097	**0.24**	<0.48	<0.097	Detected[8]	<2,600	<110
B-112E-2.5-121911	12/19/2011	2.5	<1	SS	<4.9	<0.020	<0.049	<0.049	<0.049	--	<28	**78**
B-112E-5.0-121911	12/19/2011	5.0	<1	SS	<5.3	<0.020	<0.053	<0.053	<0.053	--	**45**	**390**
B-113E-2.5-121911	12/19/2011	2.5	<1	NS	--	--	--	--	--	<23	<57	<110
B-113E-5.0-121911	12/19/2011	5.0	<1	NS	--	--	--	--	--	--	--	--
B-114E-2.5-122211	12/22/2011	2.5	<1	SS	<5.4	<0.0011	<0.0011	<0.0054	<0.0011	--	<29	<57
B-114E-7.5-122211	12/22/2011	7.5	<1	NS	--	<0.0012	<0.0012	<0.0059	<0.0012	<24	<59	<120
B-114E-12.5-122211	12/22/2011	12.5	<1	NS	--	<0.0011	<0.0011	<0.0056	<0.0011	--	--	--
B-115E-5.0	11/30/2012	5.0	<1	NS	<5.1	<0.00084	<0.00084	<0.0042	<0.0017	--	<29	<57
B-115E-10.0	11/30/2012	10.0	<1	NS	<5.2	<0.00081	<0.00081	<0.004	<0.0016	--	<30	<61
B-116E-2.5	11/30/2012	2.5	<1	SS	--	<0.00092	<0.00092	<0.0046	<0.0018	--	<28	**97**
B-116E-8.0	11/30/2012	8.0	<1	NS	--	<0.00079	<0.00079	<0.0039	<0.0016	--	<27	<55
B-117E-2.5	11/30/2012	2.5	<1	SS	<4.4	<0.00086	<0.00086	<0.0043	<0.0017	--	--	--
B-117E-5.0	11/30/2012	5.0	<1	NS	<4.4	<0.00088	<0.00088	<0.0044	<0.0017	--	--	--
B-118E-2.5	11/30/2012	2.5	<1	SS	<5.5	<0.00093	<0.00093	<0.0047	<0.0019	--	--	--
B-118E-10.0	11/30/2012	10.0	<1	NS	<5.3	<0.0008	<0.0008	<0.004	<0.0016	--	--	--
B-119E-5.0	11/30/2012	5.0	<1	NS	<4.7	<0.00087	<0.00087	<0.0043	<0.0017	--	--	--
B-119E-10.0	11/30/2012	10.0	<1	NS	<5.0	<0.0008	<0.0008	<0.004	<0.0016	--	--	--
GEIMW-1-2.5	6/18/2012	2.5	<1	SS	<4.8	<0.00086	<0.00086	<0.0043	<0.00086	--	<140	**930**
GEIMW-1-5.0	6/18/2012	5.0	<1	SS	<6.8	--	--	--	--	--	<29	**290**
GEIMW-2-3.5	6/18/2012	3.5	<1	SS	<6.6	<0.00098	<0.00098	<0.0049	<0.00098	--	<31	<61
GEIMW-2-7.5	6/18/2012	7.5	<1	SS	<6.5	<0.0011	<0.0011	<0.0053	<0.0011	--	<32	<63
GEIMW-2-10.0	6/18/2012	10.0	<1	NS	--	<0.0012	<0.0012	<0.0059	<0.0012	--	--	--
GEIMW-3-2.5	6/17/2012	2.5	<1	SS	<5.6	<0.00095	<0.00095	<0.0048	<0.00095	--	<28	<57
GEIMW-3-12.5	6/17/2012	12.5	<1	NS	--	<0.00095	<0.00095	<0.0048	<0.00095	--	--	--
GEIMW-4-2.5	6/17/2012	2.5	<1	SS	<5.6	<0.0010	<0.0010	<0.0050	<0.0010	--	<28	**150**
GEIMW-4-12.5	6/17/2012	12.5	<1	NS	--	<0.00092	<0.00092	<0.0046	<0.00092	--	--	--
GEIMW-4-17.5	6/17/2012	17.5	<1	NS	--	<0.00088	<0.00088	<0.0044	<0.00088	--	--	--
MTCA Method A Cleanup Level - Unrestricted Land Use					30	0.03	6	7	9	100	2,000[10]	

Notes:

[1]Chemical analyses performed by OnSite Environmental of Redmond, Washington. Chemical analytical laboratory reports are included in Appendix B.

[2]The approximate exploration locations are shown in Figure 2.

[3]Field screening methods are described in Appendix A.

[4]Analyzed by NWTPH-Gx.

[5]BETX compounds were analyzed by EPA Methods 8021 or 8260. See Appendix B for details.

[6]Sum of m,p-Xylene and o-Xylene.

[7]Petroleum hydrocarbons analyzed by NWTPH-HCID with acid/silica gel clean-up or NWTPH-Dx with acid/silica gel clean-up.

[8]Values listed are for analyses by NWTPH-HCID with acid/silica gel clean-up.

[9]The hydrocarbons detected in this sample were identified by the laboratory as mineral spirits (Stoddard Solvent)

[10]The MTCA Method A cleanup level is for the sum of diesel- and lube oil-range hydrocarbons

MS = Moderate sheen; SS = Slight sheen; NS = No sheen.

bgs = below ground surface

ppm = parts per million

-- = Not analyzed

mg/kg = milligrams per kilogram

MTCA = Model Toxics Control Act

Bolded value indicates an analyte has been detected at the listed concentration.

Shaded values represent concentrations that are greater than the MTCA Method A cleanup level.

Table 2

Soil Chemical Analytical Results[1]

VOCs

120th Avenue Widening Project
Bellevue, Washington

Sample Identification[2]	Sample Date	Sample Depth (feet bgs)	Volatiles[3] (mg/kg)																	
			1, 2, 4-Trimethylbenzene	1,4-Dichlorobenzene	2-Butanone	Acetone	Dichlorodifluoromethane	Isopropylbenzene	Naphthalene	n-Butylbenzene	n-propylbenzene	p-Isopropyltoluene	sec-Butylbenzene	tert-Butylbenzene	Tetrachloroethene	Trichloroethene	1, 1, 1-Trichloroethane	1, 1-Dichloroethane	(cis)1, 2-Dichloroethene	Trichlorofluoromethane	Carbon Disulfide
B-101E-2.5-122011	12/20/2011	2.5	<0.0008	<0.0008	**0.016**	**0.11**	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008
B-101E-7.5-122011	12/20/2011	7.5	<0.0017	<0.0017	**0.017**	**0.15**	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017
B-103E-5.0-122111	12/21/2011	5.0	<0.0011	<0.0011	<0.0057	<0.0057	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011
B-105E-1.5-122011	12/20/2011	1.5	<0.001	<0.001	<0.0052	<0.0052	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	**0.0036**	<0.001	<0.001	<0.001	<0.001	<0.001
B-105E-7.5-122011	12/20/2011	7.5	**0.05**	**0.0013**	<0.0048	<0.0048	<0.00095	**0.015**	<0.00095	**0.054**	**0.03**	**0.029**	**0.047**	**0.0032**	<0.00095	<0.00095	<0.00095	<0.00095	<0.00095	<0.00095
B-106E-2.5-122111	12/21/2011	2.5	<0.0012	<0.0012	**0.0092**	**0.056**	<0.0012	<0.0012	<0.0012	**0.004**	<0.0012	<0.0012	**0.0069**	<0.0012	**0.084**	**0.0035**	<0.0012	<0.0012	<0.0012	<0.0012
B-107E-2.5-122111	12/21/2011	2.5	<0.001	<0.001	**0.018**	**0.087**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
B-108E-5.0-122211	12/22/2011	5.0	<0.00095	<0.00095	<0.0047	<0.0047	<0.00095	<0.00095	<0.00095	<0.00095	<0.00095	<0.00095	<0.00095	<0.00095	**0.0018**	<0.00095	<0.00095	<0.00095	<0.00095	<0.00095
B-108E-10.0-122211	12/22/2011	10.0	<0.001	<0.001	**0.012**	**0.071**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
B-109E-2.5-122211	12/22/2011	2.5	<0.00085	<0.00085	**0.011**	**0.061**	<0.00085	<0.00085	<0.00085	<0.00085	<0.00085	<0.00085	<0.00085	<0.00085	<0.00085	<0.00085	<0.00085	<0.00085	<0.00085	<0.00085
B-110E-2.5-122211	12/22/2011	2.5	<0.00098	<0.00098	<0.0049	<0.0049	<0.00098	<0.00098	<0.00098	<0.00098	<0.00098	<0.00098	<0.00098	<0.00098	**0.023**	**0.0016**	<0.00098	<0.00098	<0.00098	<0.00098
B-111E-2.5-121911	12/19/2011	2.5	<0.001	<0.001	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	**0.0015**	<0.001	<0.001	<0.001	<0.001	<0.001
B-111E-5.0-121911	12/19/2011	5.0	<0.001	<0.001	<0.0051	<0.0051	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	**0.004**	<0.001	<0.001	<0.001	<0.001	<0.001
B-111E-10.0-122011	12/20/2011	10.0	**10.0**	<0.097	<0.48	<0.48	<0.097	**2.1**	**0.13**	**3.4**	**5.5**	**3.3**	**4.8**	**0.28**	<0.097	<0.097	<0.097	<0.097	<0.097	<0.097
B-114E-2.5-122211	12/22/2011	2.5	<0.0011	<0.0011	<0.0054	**0.023**	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011
B-114E-7.5-122211	12/22/2011	7.5	<0.0012	<0.0012	**0.02**	**0.12**	**0.005**	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	**0.0026**	<0.0012
B-114E-12.5-122211	12/22/2011	12.5	<0.0011	<0.0011	<0.0011	**0.031**	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011
B-115E-5.0	11/30/2012	5.0	<0.00084	<0.00084	<0.0042	<0.0042	<0.00084	<0.00084	<0.00084	<0.00084	<0.00084	<0.00084	<0.00084	<0.00084	<0.00084	<0.00084	**0.0013**	<0.00084	<0.00084	<0.00084
B-115E-10.0	11/30/2012	10.0	<0.00081	<0.00081	<0.004	**0.014(Y)**	<0.00081	<0.00081	<0.00081	<0.00081	<0.00081	<0.00081	<0.00081	<0.00081	**0.0098**	**0.0028**	**0.00082**	**0.0011**	**0.0025**	<0.00081	**0.0019**
B-116E-2.5	11/30/2012	2.5	<0.00092	<0.00092	**0.0087(Y)**	**0.051(Y)**	<0.00092	<0.00092	<0.00092	<0.00092	<0.00092	<0.00092	<0.00092	<0.00092	<0.00092	<0.00092	<0.00092	<0.00092	<0.00092	<0.00092	**0.00093**
B-116E-8.0	11/30/2012	8.0	<0.00079	<0.00079	<0.0039	**0.011(Y)**	<0.00079	<0.00079	<0.00079	<0.00079	<0.00079	<0.00079	<0.00079	<0.00079	<0.00079	<0.00079	<0.00079	<0.00079	<0.00079	<0.00079
B-117E-2.5	11/30/2012	2.5	<0.00086	<0.00086	<0.0044	<0.0044	<0.00086	<0.00086	<0.00086	<0.00086	<0.00086	<0.00086	<0.00086	<0.00086	<0.00086	<0.00086	<0.00086	<0.00086	<0.00086	<0.00086
B-117E-5.0	11/30/2012	5.0	<0.00088	<0.00088	<0.0044	<0.0044	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088
B-118E-2.5	11/30/2012	2.5	<0.00093	<0.00093	<0.0047	<0.0047	<0.00093	<0.00093	<0.00093	<0.00093	<0.00093	<0.00093	<0.00093	<0.00093	<0.00093	<0.00093	<0.00093	<0.00093	<0.00093	<0.00093
B-118E-10.0	11/30/2012	10.0	<0.0008	<0.0008	<0.004	**0.011(Y)**	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008
B-119E-5.0	11/30/2012	5.0	<0.00087	<0.00087	**0.0055(Y)**	**0.052(Y)**	<0.00087	<0.00087	<0.00087	<0.00087	<0.00087	<0.00087	<0.00087	<0.00087	<0.00087	<0.00087	<0.00087	<0.00087	<0.00087	<0.00087
B-119E-10.0	11/30/2012	10.0	<0.0008	<0.0008	**0.0069(Y)**	**0.064(Y)**	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008
GEIMW-1-2.5	6/18/2012	2.5	<0.00086	<0.00086	<0.0043	**0.017**	<0.00086	<0.00086	<0.00086	<0.00086	<0.00086	<0.00086	<0.00086	<0.00086	<0.00086	<0.00086	<0.00086	<0.00086	<0.00086	<0.00086
GEIMW-2-3.5	6/18/2012	3.5	<0.00098	<0.00098	**0.010**	**0.092**	<0.00098	<0.00098	<0.00098	<0.00098	<0.00098	<0.00098	<0.00098	<0.00098	<0.00098	<0.00098	<0.00098	<0.00098	<0.00098	<0.00098
GEIMW-2-7.5	6/18/2012	7.5	<0.0011	<0.0011	**0.0063**	**0.063**	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011
GEIMW-2-10.0	6/18/2012	10.0	<0.0012	<0.0012	**0.0089**	**0.061**	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012
GEIMW-3-2.5	6/17/2012	2.5	<0.00095	<0.00095	**0.031**	**0.19**	<0.00095	**0.0023**	<0.00095	<0.00095	<0.00095	<0.00095	<0.00095	<0.00095	<0.00095	<0.00095	<0.00095	<0.00095	<0.00095	**0.0016**
GEIMW-3-12.5	6/17/2012	12.5	<0.00082	<0.00082	<0.0041	**0.016**	<0.00082	<0.00082	<0.00082	<0.00082	<0.00082	<0.00082	<0.00082	<0.00082	<0.00082	<0.00082	<0.00082	<0.00082	<0.00082	<0.00082
GEIMW-4-2.5	6/17/2012	2.5	<0.0010	<0.0010	<0.0050	**0.012**	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
GEIMW-4-12.5	6/17/2012	12.5	**0.00098**	<0.00092	**0.019**	**0.110**	<0.00092	<0.00092	<0.00092	<0.00092	<0.00092	<0.00092	<0.00092	<0.00092	<0.00092	<0.00092	<0.00092	<0.00092	<0.00092	<0.00092
GEIMW-4-17.5	6/17/2012	17.5	<0.00088	<0.00088	<0.0044	**0.030**	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088
MTCA Method A or B Cleanup Level - Unrestricted Land Use			NA	NA	NA	72,000	16,000	NA	5	NA	8,000	NA	NA	NA	0.05	0.03	160,000	16,000	160	24,000	8,000

Notes:

[1]Chemical analyses performed by OnSite Environmental of Redmond, Washington. Chemical analytical laboratory reports are included in Appendix B.

[2]The approximate exploration locations are shown in Figure 2.

[3]Volatiles were analyzed by EPA Method 8260B. Only volatiles with detections are listed; all other volatiles including Vinyl Chloride are non-detect for all samples. BETX compounds are presented in Table 1.

(Y) = Listed value is considered an estimate according to the analytical laboratory data qualifier.

bgs = below ground surface

NA = Not available

mg/kg = milligram per kilogram

MTCA = Model Toxics Control Act

Bolded value indicates an analyte has been detected at the listed concentration.

Shaded value represents concentrations that are greater than the MTCA Method A cleanup level.

Table 3

Soil Chemical Analytical Results[1]

Polycyclic Aromatic Hydrocarbons

120th Avenue NE Widening Project
Bellevue, Washington

Sample Identification[2]	Sample Date	Sample Depth (feet bgs)	Polycyclic Aromatic Hydrocarbons (PAHs)[3] (mg/kg)													
			Non-Carcinogenic PAHs						Carcinogenic PAHs							
			Anthracene	Benzo[g,h,i]perylene	Phenanthrene	Fluoranthene	Phenanthrene	Pyrene	Benzo[a]anthracene	Benzo[b]fluoranthene	Benzo(j,k)fluoranthene	Benzo[a]pyrene	Chrysene	Dibenz[a,h]anthracene	Indeno(1,2,3-c,d)pyrene	MTCA TEQ[4] Level
B-103E-5.0-122111	12/21/2011	5.0	<0.0069	<0.0069	<0.0069	<0.0069	<0.0069	<0.0069	<0.0069	<0.0069	<0.0069	<0.0069	<0.0069	<0.0069	<0.0069	0.0052
B-105E-1.5-122011	12/20/2011	1.5	**0.26**	**5.5**	**1.5**	**2.1**	**1.5**	**6.1**	**8.0**	**3.8**	**1.0**	**9.0**	**7.7**	**1.6**	**2.5**	**10.767**
MTCA Method A Cleanup Level for Unrestricted Land Use			NA	NA	NA	NA	NA	NA								0.1

Notes:

[1]Chemical analyses performed by OnSite Environmental of Redmond, Washington. Chemical analytical laboratory reports are included in Appendix B.

[2]The approximate exploration locations are shown in Figure 2.

[3]Polycyclic aromatic hydrocarbons were analyzed by EPA Method 8270D/SIM with silica gel clean-up.

[4]Calculated using MTCA CLARC Guidance for TEQ. Calculation.

bgs = below ground surface

ppm = parts per million

NA = Not available

mg/kg = milligram per kilogram

TEQ = Toxicity Equivalent

MTCA = Model Toxics Control Act

Bolded value indicates an analyte has been detected at the listed concentration.

Shaded values represent concentrations that are greater than the MTCA Method A cleanup level.

Table 4

Soil Chemical Analytical Results[1]

Metals and Polychlorinated Biphenyls

120th Avenue NE Widening Project

Bellevue, Washington

Sample Identification[2]	Sample Date	Sample Depth (feet bgs)	Total Metals[3] (mg/kg)								Polychlorinated Biphenyls[4] (mg/kg)
			Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	
B-101E-2.5-122011	12/20/2011	2.5	--	--	--	--	**16**	--	--	--	--
B-101E-7.5-122011	12/20/2011	7.5	--	--	--	--	<8.3	--	--	--	--
B-102E-2.5-122011	12/20/2011	2.5	--	--	--	--	<7.4	--	--	--	--
B-103E-5.0-122111	12/21/2011	5.0	<10	**39**	<0.51	**33**	<5.1	<0.26	<10	<0.51	<0.051
B-104E-2.5-121911	12/19/2011	2.5	--	--	--	--	<5.2	--	--	--	--
B-104E-7.5-122011	12/20/2011	7.5	--	--	--	--	**31**	--	--	--	--
B-105E-1.5-122011	12/20/2011	1.5	--	--	--	--	**7**	--	--	--	--
B-105E-7.5-122011	12/20/2011	7.5	--	--	--	--	**17**	--	--	--	--
B-106E-2.5-122111	12/21/2011	2.5	--	--	--	--	**27**	--	--	--	--
B-107E-2.5-122111	12/21/2011	2.5	--	--	--	--	**11**	--	--	--	--
B-109E-2.5-122211	12/22/2011	2.5	--	--	--	--	**5.5**	--	--	--	--
B-110E-2.5-122211	12/22/2011	2.5	--	--	--	--	<6.0	--	--	--	--
B-112E-2.5-121911	12/19/2011	2.5	--	--	--	--	**77**	--	--	**--**	--
B-112E-5.0-121911	12/19/2011	5.0	--	--	--	--	**7.9**	**--**	**--**	**--**	--
B-113E-2.5-121911	12/19/2011	2.5	--	--	--	--	<5.6	**--**	**--**	**--**	--
B-114E-2.5-122211	12/22/2011	2.5	--	--	--	--	**8.7**	--	--	--	--
B-115E-5.0	11/30/2012	5.0	--	--	--	--	<5.7	**--**	**--**	**--**	--
B-118E-10.0	11/30/2012	10.0	--	--	--	--	<5.7	**--**	**--**	**--**	--
MTCA Method A Cleanup Level - Unrestricted Land Use			20	NA	2	2,000[5]	250	2	NA	NA	1
Naturally occurring background metals in Puget Sound Soils[6]			7	255	0.80	48	17	0.07	0.78	0.61	NA

Notes:

[1]Chemical analyses performed by OnSite Environmental of Redmond, Washington. Chemical analytical laboratory reports are included in Appendix B.

[2]The approximate exploration locations are shown in Figure 2.

[3]Metals analyzed by EPA Method 6010B.

[4]Polychlorinated Biphenyls were analyzed by EPA Method 8082.

[5]MTCA Method A cleanup level for trivalent chromium is 2000 mg/kg.

[6]90th Percentile for natural background soil metals concentrations in Puget Sound region, Department of Ecology, publication #94-115, dated October 1994.

bgs = below ground surface

-- = Not analyzed

NA = Not available

mg/kg = milligram per kilogram

MTCA = Model Toxics Control Act

Bolded value indicates an analyte has been detected at the listed concentration.

Table 5

Groundwater Elevations and Groundwater Chemical Analytical Results[1]
Petroleum Hydrocarbons and BETX

120th Avenue NE Widening Project

Bellevue, Washington

Sample Identification[2]	Sample Date	Depth to Groundwater[6,7]	Groundwater Elevation	Mineral Spirits[3] (µg/L)	BETX[4] (µg/L)				Total Petroleum Hydrocarbons[5] (µg/L)	
					Benzene	Toluene	Ethylbenzene	Xylenes	Diesel Range	Lube Oil Range
B-101E-122011-GW	12/20/2011	–	–	<100	<0.2	<1.0	<0.2	**1.00**	<280	<440
B-103E-122111-GW	12/21/2011	–	–	<100	<0.2	<1.0	<0.2	**0.49**	<270	<440
B-104E-122011-GW	12/20/2011	–	–	<100	<1.0	**1.5**	<1.0	**1.9**	<440	**1,300**
B-105E-122011-GW	12/20/2011	–	–	<100	<0.2	<1.0	<0.2	**0.48**	<270	<430
B-110E-122211-GW	12/22/2011	–	–	**1,200**	<10	<50	<10	<20	<270	<430
B-111E-122211-GW	12/22/2011	–	–	**900**	**1.5**	**3.6**	**5**	**4.5**	<570	<490
B-114E-122211-GW	12/22/2011	–	–	<100	**0.26**	<1.0	<0.2	**1.10**	<170	<270
B-115E-GW	11/30/2012	–	–	<100	<0.2	<1.0	<0.2	<0.6	<300	**550**
B-116E-GW	11/30/2012	–	–	<100	**0.33**	<1.0	<0.2	<0.4	–	–
B-117E-GW	11/30/2012	–	–	<100	<0.2	<1.0	<0.2	<0.6	<270	<430
B-118E-GW	11/30/2012	–	–	<100	<0.2	<1.0	<0.2	<0.6	–	–
B-119E-GW	11/30/2012	–	–	<100	<0.2	<1.0	<0.2	<0.6	–	–
GEIMW-1	7/9/2012	7.85	149.85	<100	<0.2	<1.0	<0.2	<0.6	<260	<410
GEIMW-2	7/9/2012	9.37	152.47	<100	<0.2	<1.0	<0.2	<0.6	<260	<410
GEIMW-3	7/9/2012	3.13	146.82	<100	<0.2	<1.0	<0.2	<0.6	<260	<410
GEIMW-4	7/9/2012	12.64	156.37	<100	<0.2	<1.0	<0.2	<0.6	<260	<410
MW-1	7/9/2012	5.52	148.98	<100	<0.2	<1.0	<0.2	**0.23**	<260	<410
MW-3	7/9/2012	4.32	146.82	–	–	–	–	–	–	–
MW-5	7/9/2012	3.67	148.57	<100	<0.2	<1.0	<0.2	<0.6	<260	<410
MW-6	7/9/2012	7.78	148.20	–	–	–	–	–	–	–
GEIMW-1	10/9/2012	8.77	141.08	–	–	–	–	–	–	–
GEIMW-2	10/9/2012	10.70	141.77	–	–	–	–	–	–	–
GEIMW-3	10/9/2012	4.59	142.23	–	–	–	–	–	–	–
GEIMW-4	10/9/2012	13.48	142.89	–	–	–	–	–	–	–
MW-1	10/9/2012	7.05	141.93	–	–	–	–	–	–	–
MW-3	10/9/2012	7.00	141.39	–	–	–	–	–	–	–
MW-5	10/9/2012	5.62	142.95	–	–	–	–	–	–	–
MW-6	10/9/2012	8.61	139.59	–	–	–	–	–	–	–
MTCA Method A Cleanup Level				800	5	1,000	700	1,000	500	500

Notes:

[1]Chemical analyses performed by OnSite Environmental of Redmond, Washington. Chemical analytical laboratory reports are included in Appendix B.

[2]The approximate exploration locations are shown in Figure 2.

[3]Mineral Spirits was analyzed by NWTPH-Gx.

[4]BETX compounds were analyzed by EPA Methods 8021 or 8260.

[5]Petroleum hydrocarbons were analyzed by NWTPH-Dx with acid/silica gel clean-up.

[6]Depth of groundwater encountered during direct-push drilling is presented on boring logs.

[7]Monitoring well depth to groundwater below top of well casing.

-- = Not analyzed/not established

µg/L = microgram per liter

MTCA = Model Toxics Control Act

Bolded value indicates an analyte has been detected at the listed concentration.

Shaded values represent concentrations that are greater than the MTCA Method A cleanup level.

Table 6

Groundwater Chemical Analytical Results[1]

VOCs

120th Avenue Widening Project
Bellevue, Washington

Sample Identification[2]	Sample Date	Volatiles[3] (µg/L)																			
		1, 1-Dichloroethane	1, 2-Dichlorobenzene	(cis) 1, 2 Dichloroethene	(trans) 1,2 Dichloroethene	1, 2, 4-Trimethylbenzene	1,3,5 Trimethylbenzene	2-Butanone	Acetone	Carbon Disulfide	Isopropylbenzene	Naphthalene	n-Butylbenzene	n-propylbenzene	p-Isopropyltoluene	sec-Butylbenzene	tert-Butylbenzene	Tetrachloroethene	Trichloroethene	1, 1, 1-Trichloroethane	Vinyl Chloride	Chloroethane
B-101E-122011-GW	12/20/2011	<0.2	<0.2	<0.2	<0.2	**0.34**	<0.2	<5.0	<5.0	<0.2	<0.2	<1.0	<0.2	<0.2	<0.2	<0.2	<0.2	**0.34**	<0.2	<0.2	<0.2	<1.0
B-103E-122111-GW	12/21/2011	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<5.0	<5.0	<0.2	<0.2	<1.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1.0
B-105E-122011-GW	12/20/2011	<0.2	<0.2	**1.0**	<0.2	**0.26**	<0.2	<5.0	<5.0	<0.2	<0.2	<1.0	<0.2	<0.2	<0.2	<0.2	<0.2	**0.38**	**0.37**	<0.2	<0.2	<1.0
B-110E-122211-GW	12/22/2011	<10	<10	**21**	<10	<10	<10	<250	<250	<10	<10	<50	<10	<10	<10	<10	<10	**1,000**	**100**	<10	<10	<1.0
B-111E-122211-GW	12/22/2011	**0.38**	**1.5**	**27**	**0.2**	**15**	**0.22**	**7.7**	**100**	**0.86**	**13**	**1.7**	**6.1**	**29**	**2**	**15**	**1.4**	**15**	**12**	<1.0	**0.41**	<1.0
B-114E-122211-GW	12/22/2011	**3.6**	<0.2	**2.4**	<0.2	**0.26**	<0.2	<5.0	<5.0	<0.2	<0.2	<1.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**2.8**	<1.0
B-115E-GW	11/30/2012	**1.9**	<0.2	**5.0**	<0.2	<0.2	<0.2	<5.0	**9.1**	**0.33**	<0.2	<1.0	<0.2	<0.2	<0.2	<0.2	<0.2	**1.7**	**1.1**	**1.6**	<0.2	<1.0
B-116E-GW	11/30/2012	**0.74**	<0.2	**0.89**	<0.2	**0.29**	<0.2	<5.0	**33**	<0.2	<0.2	<1.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**0.3**	<1.0
B-117E-GW	11/30/2012	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<5.0	<5.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
B-118E-GW	11/30/2012	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<5.0	<5.0	**0.22**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
B-119E-GW	11/30/2012	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<5.0	<5.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
GEIMW-1	7/9/2012	**0.29**	<0.2	**1.4**	<0.2	<0.2	<0.2	<5.0	<5.0	<0.2	<0.2	<1.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**4.9**	**5.4**
GEIMW-2	7/9/2012	<0.2	<0.2	**1.2**	<0.2	<0.2	<0.2	<5.0	<5.0	<0.2	<0.2	<1.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1.0
GEIMW-3	7/9/2012	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<5.0	<5.0	<0.2	<0.2	<1.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
GEIMW-4	7/9/2012	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<5.0	<5.0	<0.2	<0.2	<1.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-1	7/9/2012	<0.2	<0.2	**1.6**	<0.2	<0.2	<0.2	<5.0	<5.0	<0.2	**0.36**	**2.2**	**0.37**	**0.70**	<0.2	**0.75**	<0.2	**0.79**	**0.65**	<0.2	**1.0**	<0.2
MW-5	7/9/2012	**0.53**	<0.2	**0.26**	<0.2	<0.2	<0.2	<5.0	<5.0	<0.2	<0.2	<1.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**0.4**	<0.2
MTCA Method A or B Cleanup Level		1,600	720	5[4]	5[4]	NA	80	NA	7,200	800	NA	160	NA	800	NA	NA	2,400	5	5		0.2	NA

Notes:

[1]Chemical analyses performed by OnSite Environmental of Redmond, Washington. Chemical analytical laboratory reports are included in Appendix B.

[2]The approximate exploration locations are shown in Figure 2.

[3]Volatiles were analyzed by EPA Method 8260B. Only volatiles that were detected in one or more samples are presented in this table. BETX compounds are presented in Table 5.

[4]Cleanup level is for total of (cis) 1,2 Dichloroethene and (trans) 1,2 Dichloroethene.

NA = No data available

µg/L = microgram per liter

MTCA = Model Toxics Control Act

Bolded value indicates an analyte has been detected at the listed concentration.

Shaded value represents concentrations that are greater than the MTCA Method A cleanup level.

Table 7

Groundwater Chemical Analytical Results[1]

Polycyclic Aromatic Hydrocarbons

120th Avenue NE Widening Project

Bellevue, Washington

Sample Identification[2]	Sample Date	Polycyclic Aromatic Hydrocarbons (PAHs)[3] (µg/L)												
		Non-Carcinogenic PAHs					Carcinogenic PAHs							
		Anthracene	Benzo[g,h,i] perylene	Fluoran-thene	Phenan-threne	Pyrene	Benzo[a] anthracene	Benzo[b]fluo ranthene	Benzo(j,k)flu oranthene	Benzo[a] pyrene	Chrysene	Dibenz[a,h]a nthracene	Indeno(1,2,3-c,d)pyrene	CPAH TEQ[4] Level
B-103E-122111-GW	12/21/2011	<0.095	<0.095	<0.095	<0.095	<0.095	**0.01**	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	**0.067975**
MTCA Toxicity Equivalent (TEQ) Level														1

Notes:

[1]Chemical analyses performed by OnSite Environmental of Redmond, Washington. Chemical analytical laboratory reports are included in Appendix B.

[2]The approximate exploration locations are shown in Figure 2.

[3]Polycyclic aromatic hydrocarbons were analyzed by EPA Method 8270D/SIM.

[4]Calculated using MTCA CLARC Guidance for TEQ Calculation.

bgs = below ground surface

ppm = parts per million

µg/L = micrograms per liter

TEQ = Toxicity Equivalent

MTCA = Model Toxics Control Act

Bolded value indicates an analyte has been detected at the listed concentration.

Table 8

Groundwater Chemical Analytical Results[1]

Metals and Polychlorinated Biphenyls

120th Avenue NE Widening Project

Bellevue, Washington

Sample Identification[2]	Sample Date	Total Metals[3] (µg/L)								Dissolved Metals[3] (µg/L)	Polychlorinated Biphenyls[4] (µg/L)
		Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	Lead	
B-101E-122011-GW	12/20/2011	--	--	--	--	**24**	--	--	--	--	--
B-103E-122111-GW[5]	12/21/2011	<3.0	**73**	<4.0	**17**	**11**	<0.5	<5.0	<10.0	**–**	<0.052
B-104E-122011-GW	12/20/2011	--	--	--	--	**120**	--	--	**–**	**–**	--
B-105E-122011-GW	12/20/2011	--	--	--	--	**42**	**–**	**–**	**–**	**–**	--
B-114E-122211-GW	12/22/2011	--	--	--	--	**10**	--	--	--	<1.0	--
MTCA Method A Cleanup Level		5	NA	5	50	15	2	NA	NA	15	1

Notes:

[1]Chemical analyses performed by OnSite Environmental of Redmond, Washington. Chemical analytical laboratory reports are included in Appendix B.

[2]The approximate exploration locations are shown in Figure 2.

[3]Metals analyzed by EPA Method 200.8.

[4]Polychlorinated Biphenyls were analyzed by EPA Method 8082.

[5]Sample was analyzed by EPA Method 200.8/7470A.

-- = Not analyzed

µg/L = microgram per liter

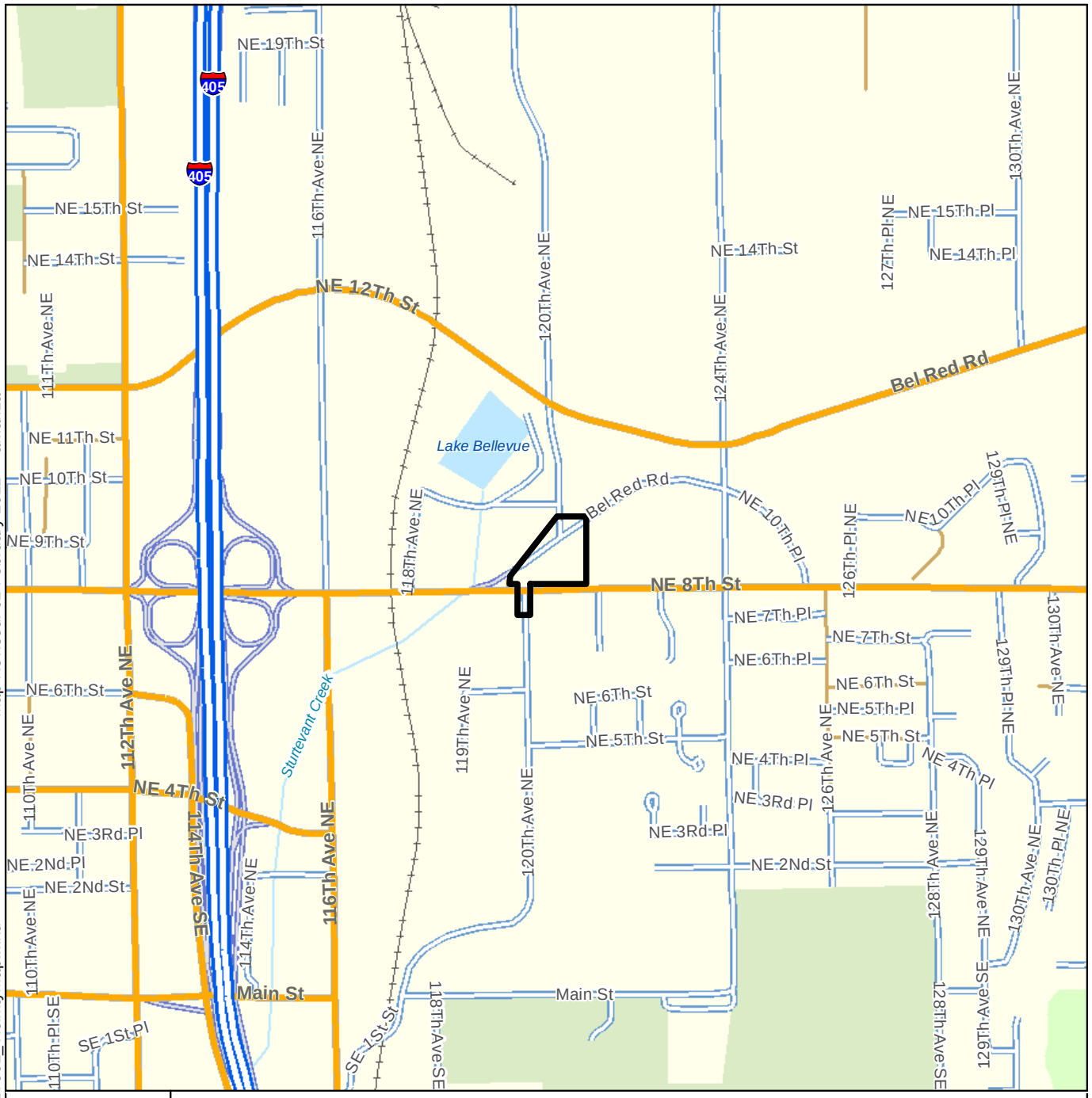
MTCA = Model Toxics Control Act

Bolded value indicates an analyte has been detected at the listed concentration.

Shaded value represents concentrations that are greater than the MTCA Method A cleanup level.

FIGURES

GeoEngineers



Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
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Data Sources: ESRI Data & Maps
Projection: NAD 1983 UTM Zone 10N

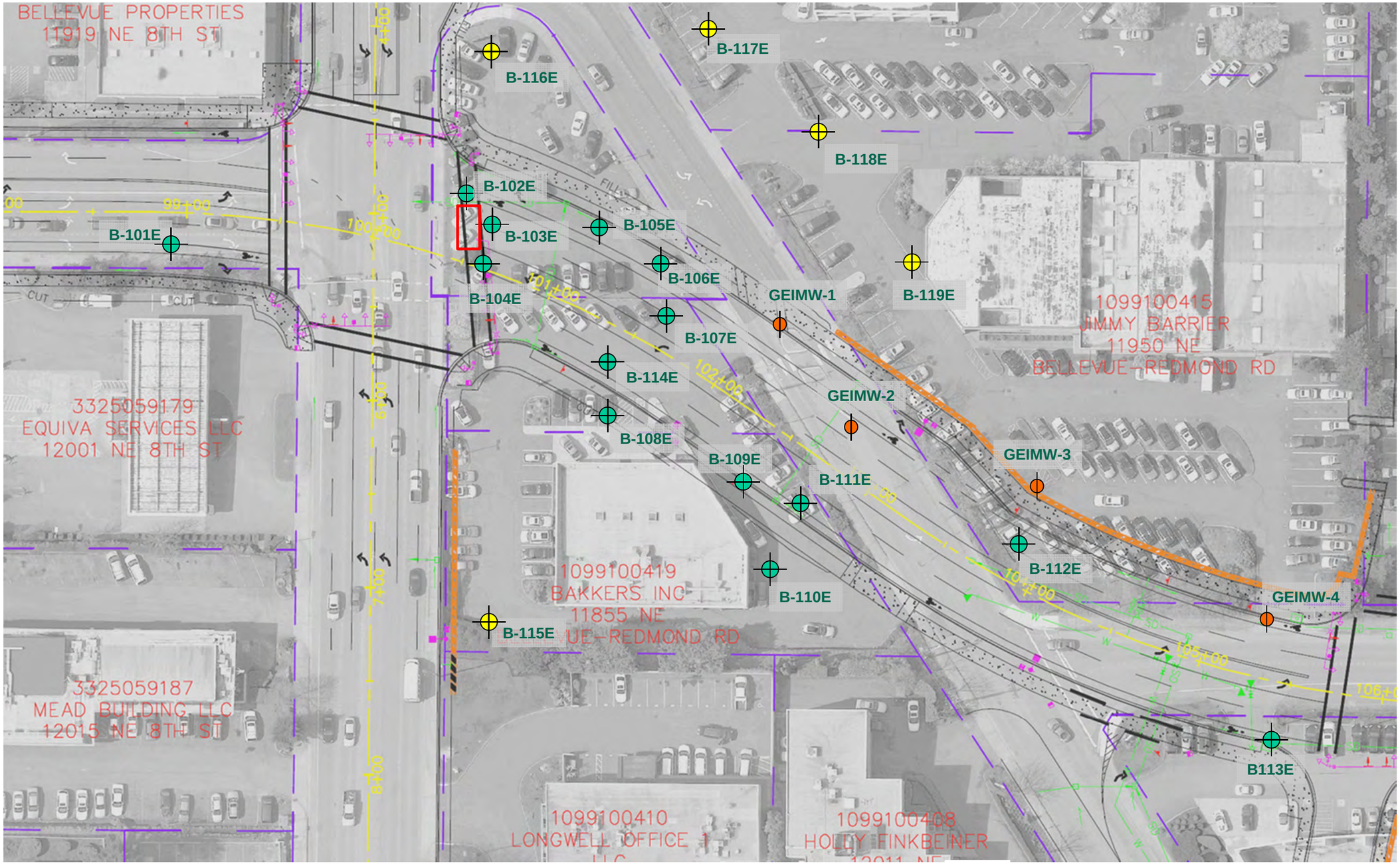
Vicinity Map

120th Avenue NE Widening Project
Bellevue, Washington

GeoEngineers

Figure 1

Path: \\sea\projects\0\0526170\GIS\052617001_VicinityMap.mxd
Map Revised: 02 February 2012 amanza
Seattle



LEGEND:

- B-101E — Exploratory Boring Location (GeoEngineers , December 2011)
- GEIMW-1 — Monitoring Well Location (GeoEngineers, June 2012)
- B-115E — Exploratory Boring Location (GeoEngineers, November 2012)

NOTES:

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Reference: Parsons Brinckerhoff, 2011

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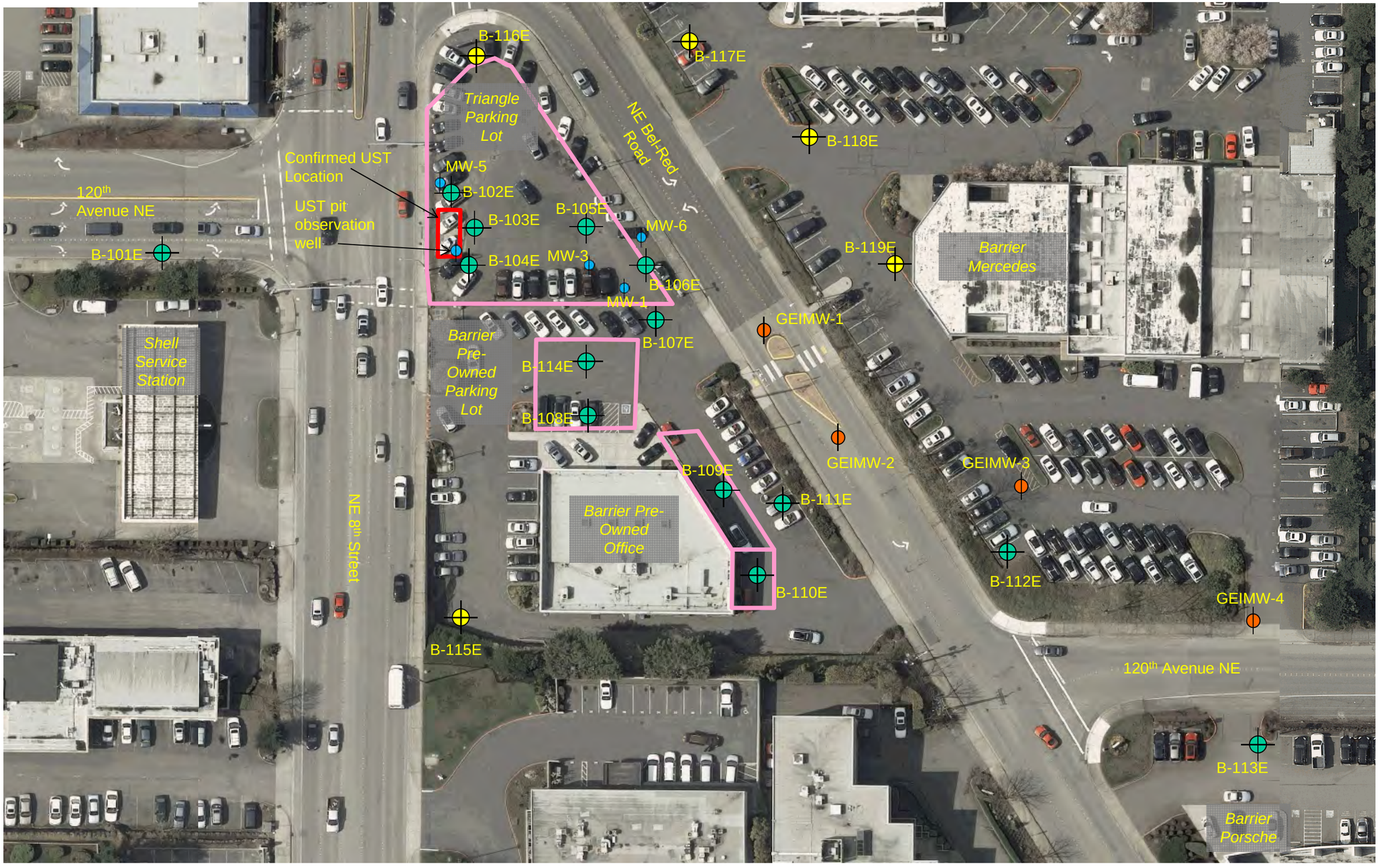
Feet

Planned 120th Avenue Widening Alignment and Phase II ESA Exploration Locations

120th Avenue NE Widening Project
Bellevue, Washington

GeoEngineers | **Figure 2**



LEGEND:

- B-101E — Exploratory Boring (GeoEngineers, December 2011)
- GEIMW-1 — Monitoring Well (GeoEngineers June 2012)
- MW-5 — Existing Monitoring Well in Triangle Lot Property (Avis 1990)
- B-115E — Exploratory Boring (GeoEngineers, November 2012)
- Geophysical Survey Area (December 2011)

NOTES:

1. The locations of all features shown are approximate.
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Reference: Parsons Brinckerhoff, 2011

W S E N

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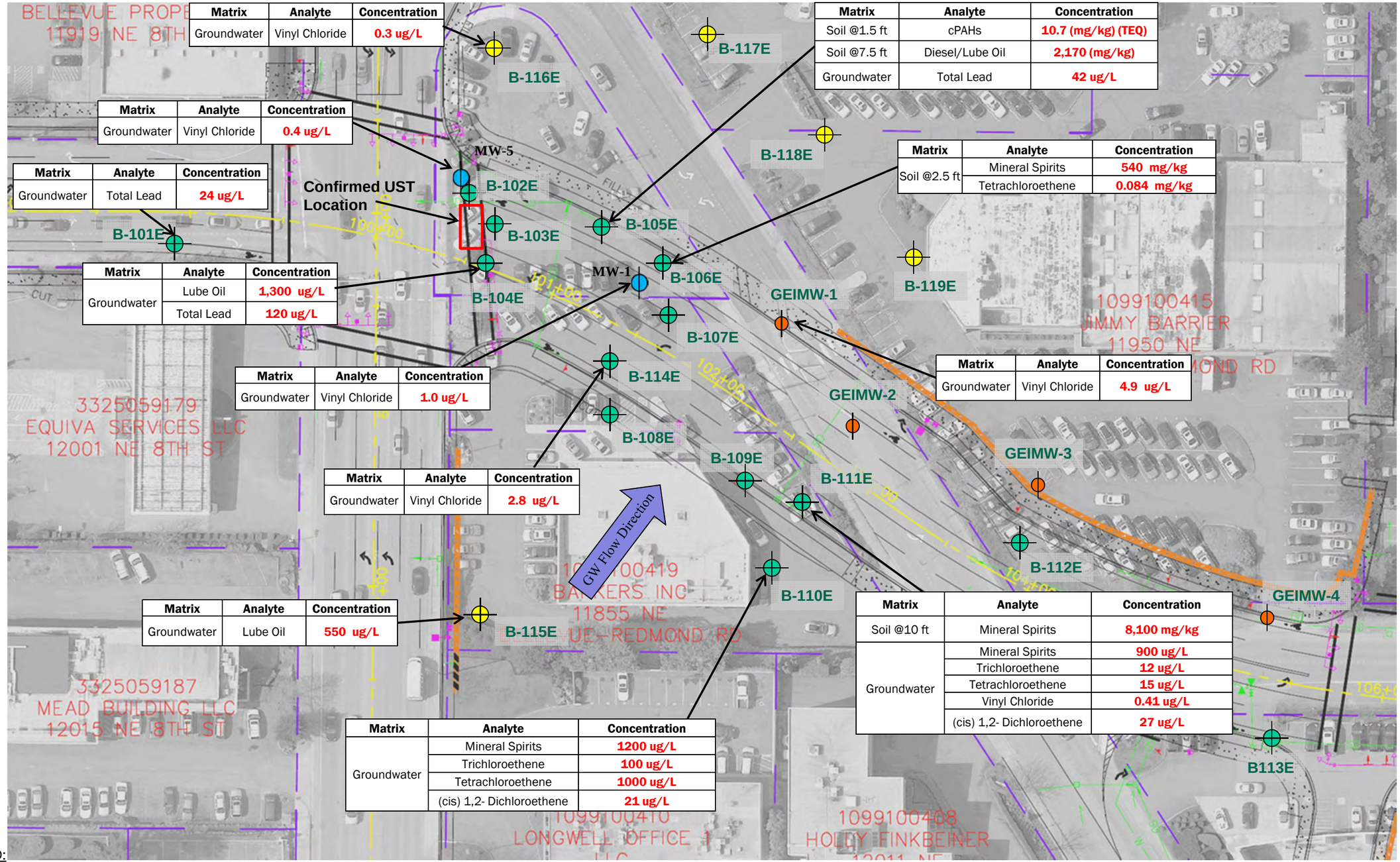
Feet

Study Area Plan – Phase II ESA Exploration Locations and Geophysical Survey Areas

120th Avenue NE Widening Project
Bellevue, Washington

GeoEngineers

Figure 3



Matrix	Analyte	Concentration
Groundwater	Vinyl Chloride	0.3 ug/L

Matrix	Analyte	Concentration
Groundwater	Vinyl Chloride	0.4 ug/L

Matrix	Analyte	Concentration
Groundwater	Total Lead	24 ug/L

Matrix	Analyte	Concentration
Groundwater	Lube Oil	1,300 ug/L
	Total Lead	120 ug/L

Matrix	Analyte	Concentration
Groundwater	Vinyl Chloride	1.0 ug/L

Matrix	Analyte	Concentration
Groundwater	Vinyl Chloride	2.8 ug/L

Matrix	Analyte	Concentration
Groundwater	Lube Oil	550 ug/L

Matrix	Analyte	Concentration
Groundwater	Mineral Spirits	1200 ug/L
	Trichloroethene	100 ug/L
	Tetrachloroethene	1000 ug/L
	(cis) 1,2- Dichloroethene	21 ug/L

Matrix	Analyte	Concentration
Soil @1.5 ft	cPAHs	10.7 (mg/kg) (TEQ)
Soil @7.5 ft	Diesel/Lube Oil	2,170 (mg/kg)
Groundwater	Total Lead	42 ug/L

Matrix	Analyte	Concentration
Soil @2.5 ft	Mineral Spirits	540 mg/kg
	Tetrachloroethene	0.084 mg/kg

Matrix	Analyte	Concentration
Groundwater	Vinyl Chloride	4.9 ug/L

Matrix	Analyte	Concentration
Soil @10 ft	Mineral Spirits	8,100 mg/kg
Groundwater	Mineral Spirits	900 ug/L
	Trichloroethene	12 ug/L
	Tetrachloroethene	15 ug/L
	Vinyl Chloride	0.41 ug/L
	(cis) 1,2- Dichloroethene	27 ug/L

LEGEND:

- B-101E — Exploratory Boring (GeoEngineers, December 2011)
- GEIMW-1 — Monitoring Well Location (GeoEngineers, June 2012)
- MW-1 — Existing Monitoring Well (Avis 1990) sampled in July 2012
- B-115E — Exploratory Boring (GeoEngineers, November 2012)
- ug/L — Micrograms per liter; mg/kg — Milligram per kilogram
- ft — Depth in feet below ground surface

NOTES:

1. The locations of all features shown are approximate.
2. No callout boxes next to exploration indicates Phase II ESA contaminants of concern in soil or groundwater samples were less than MTCA cleanup levels.
3. This drawing is only for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Parsons Brinckerhoff, 2011

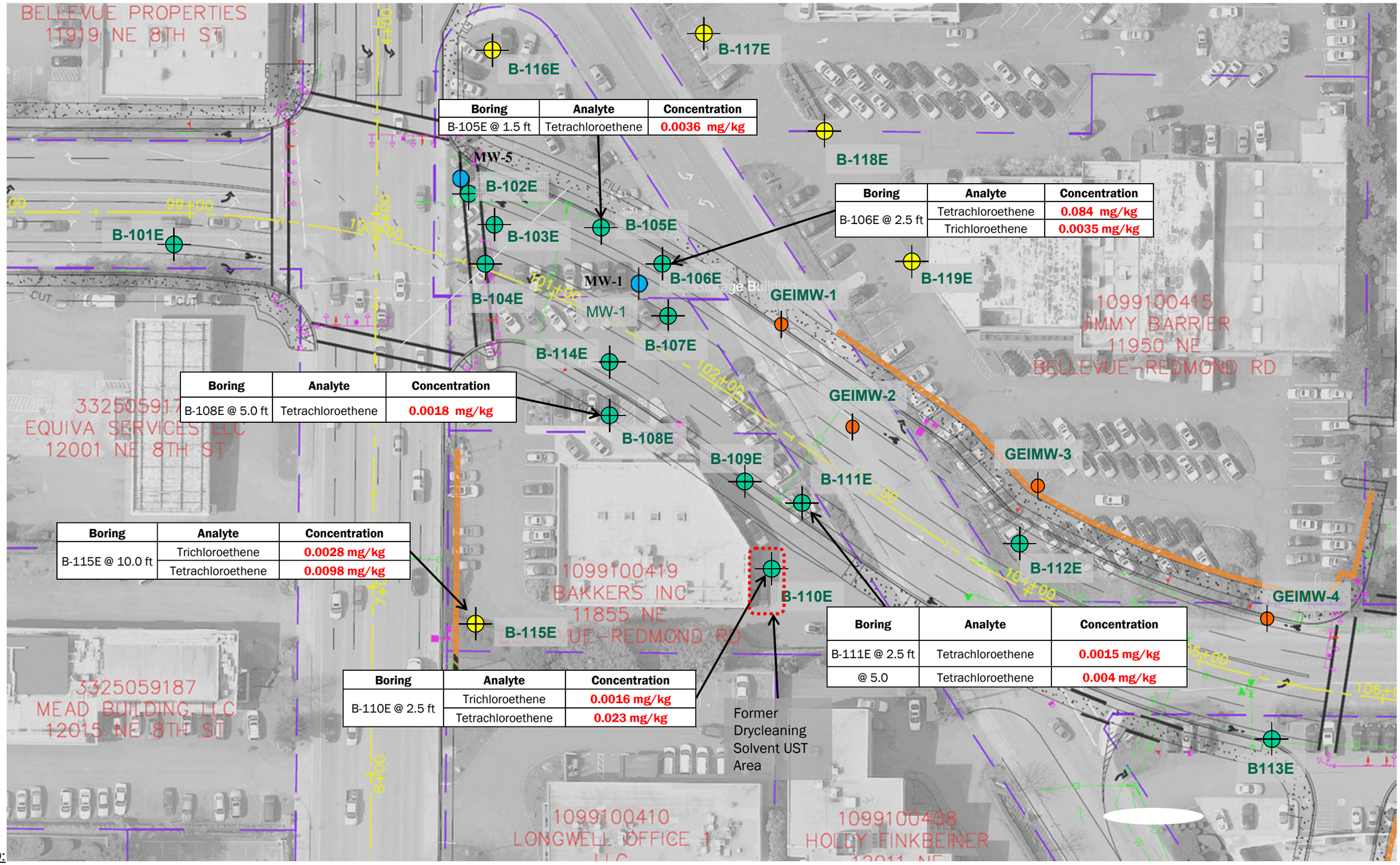
50 0 50
Feet

Soil and Groundwater Analytical Data – Samples Exceeding MTCA Cleanup Levels

120th Avenue NE Widening Project
Bellevue, Washington

GeoEngineers

Figure 4



Boring	Analyte	Concentration
B-105E @ 1.5 ft	Tetrachloroethene	0.0036 mg/kg

Boring	Analyte	Concentration
B-106E @ 2.5 ft	Tetrachloroethene	0.084 mg/kg
	Trichloroethene	0.0035 mg/kg

Boring	Analyte	Concentration
B-108E @ 5.0 ft	Tetrachloroethene	0.0018 mg/kg

Boring	Analyte	Concentration
B-115E @ 10.0 ft	Trichloroethene	0.0028 mg/kg
	Tetrachloroethene	0.0098 mg/kg

Boring	Analyte	Concentration
B-110E @ 2.5 ft	Trichloroethene	0.0016 mg/kg
	Tetrachloroethene	0.023 mg/kg

Boring	Analyte	Concentration
B-111E @ 2.5 ft	Tetrachloroethene	0.0015 mg/kg
@ 5.0	Tetrachloroethene	0.004 mg/kg

LEGEND:

- B-101E — Exploratory Boring (GeoEngineers, December 2011)
- GEIMW-1 — Monitoring Well Location (GeoEngineers, June 2012)
- MW-1 — Existing Monitoring Well in Triangle Lot Property (Avis 1990)
- Exploratory Boring (GeoEngineers, November 2012)

mg/kg Milligrams per kilogram; ft Depth in feet below ground surface

NOTES:

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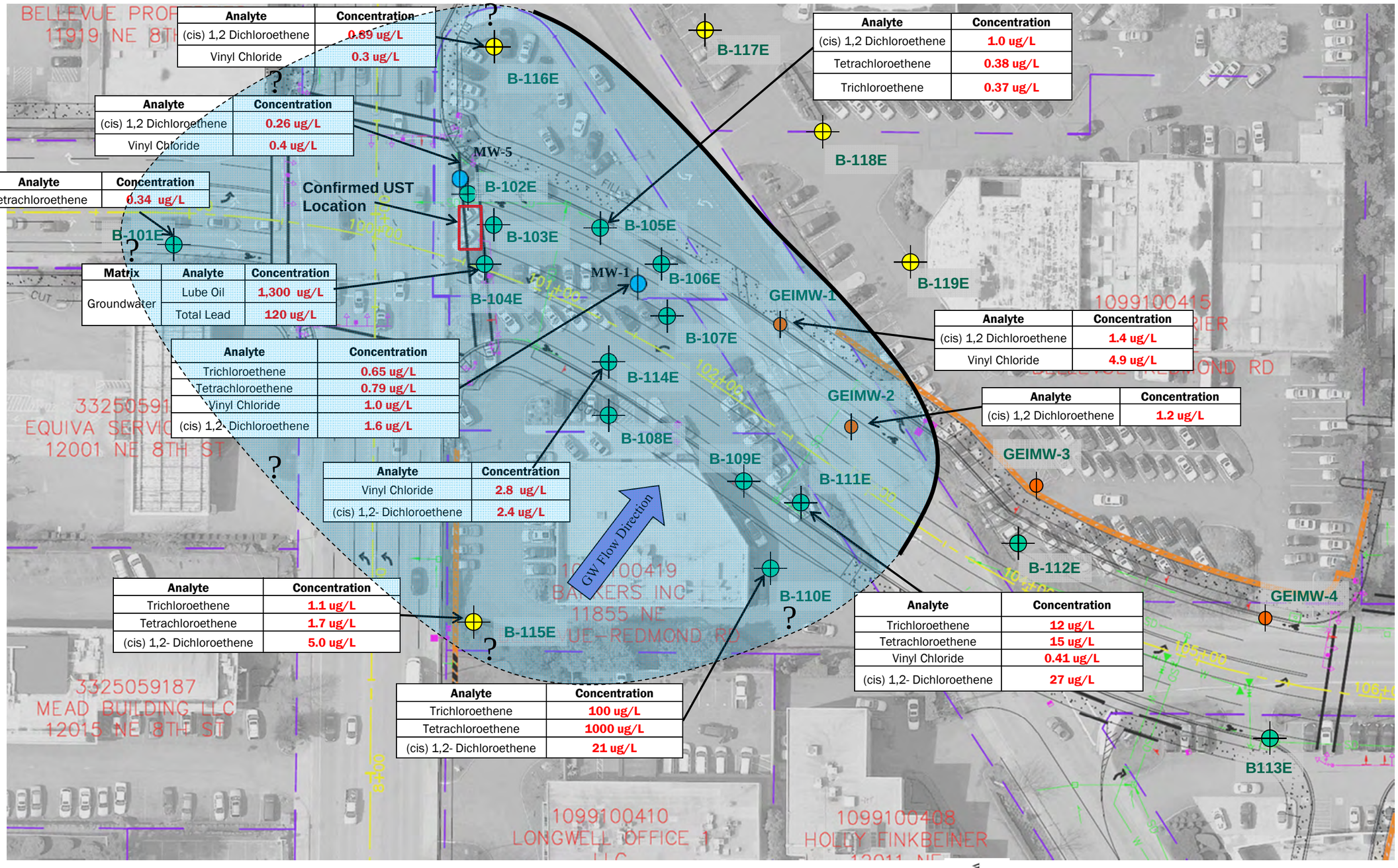
Reference: Parsons Brinckerhoff, 2011

50 0 50
Feet

Dry Cleaning Solvent Detections in Soil

120th Avenue NE Widening Project
Bellevue, Washington

GeoEngineers | **Figure 5**



LEGEND:

- B-101E — Exploratory Boring Location (GeoEngineers December 2011)
- GEIMW-1 — Monitoring Well Location (GeoEngineers June 2012)
- MW-1 — Existing Monitoring Well (Avis 1990) sampled in July 2012
- B-115E — Exploratory Boring (GeoEngineers, November 2012)
- ug/L — Micrograms per liter
- Inferred Plume Area of Detected Dry Cleaning Solvents in Groundwater – Solid line indicates delineation. Dashed where inferred.

NOTES:

1. The locations of all features shown are approximate.
2. This drawing is only for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

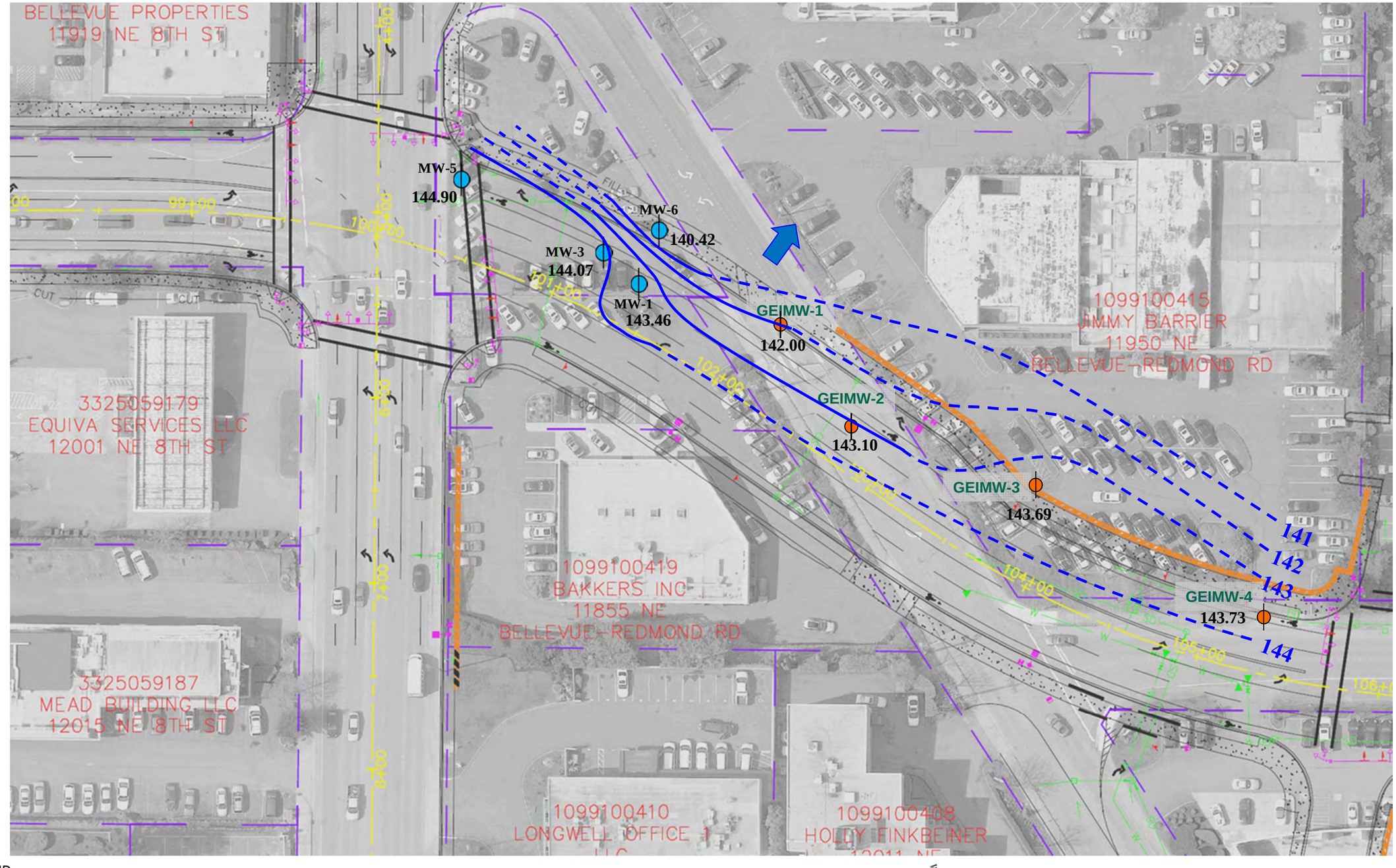
Reference: Parsons Brinckerhoff, 2011

50 0 50
Feet

Dry Cleaning Solvent Detections in Groundwater

120th Avenue NE Widening Project
Bellevue, Washington

GeoEngineers | **Figure 6**



LEGEND:

- Inferred Groundwater Flow Direction
- 142 — Groundwater Elevation Contour (feet), dashed where inferred
- GEIMW-1 — New Monitoring Well (GeoEngineers June 2012)
- 142.00 — Groundwater Elevation (NAVD88) measured at well on July 9, 2012
- MW-1 — Existing Monitoring Well (Avis 1990)

Note: Groundwater Elevations were also measured in October 2012; the gradient was flatter and elevations were lower. July 2012 data are presented here for flow direction clarity.

NOTES:

1. The locations of all features shown are approximate.
2. This drawing is only for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Parsons Brinckerhoff, 2011

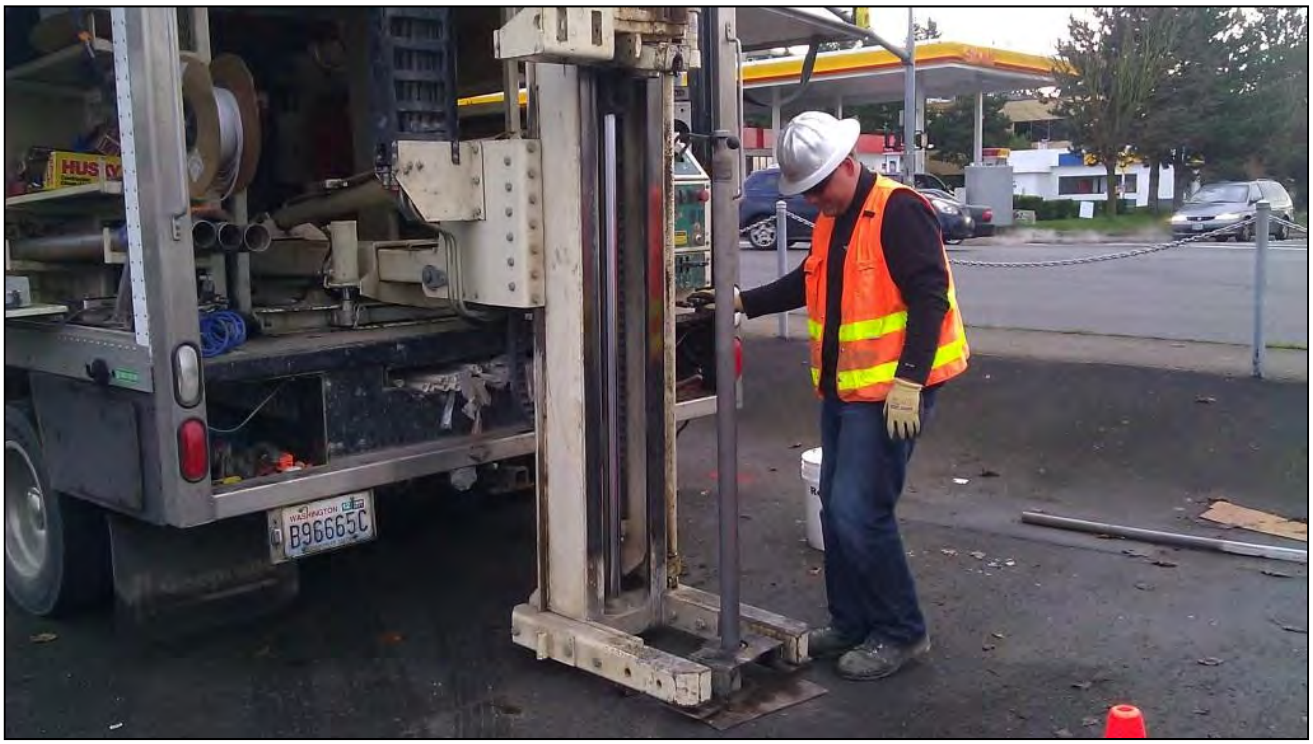
50 0 50
Feet

Groundwater Elevation Contour Map - July 9, 2012

120th Avenue NE Widening Project
Bellevue, Washington

GeoEngineers

Figure 7



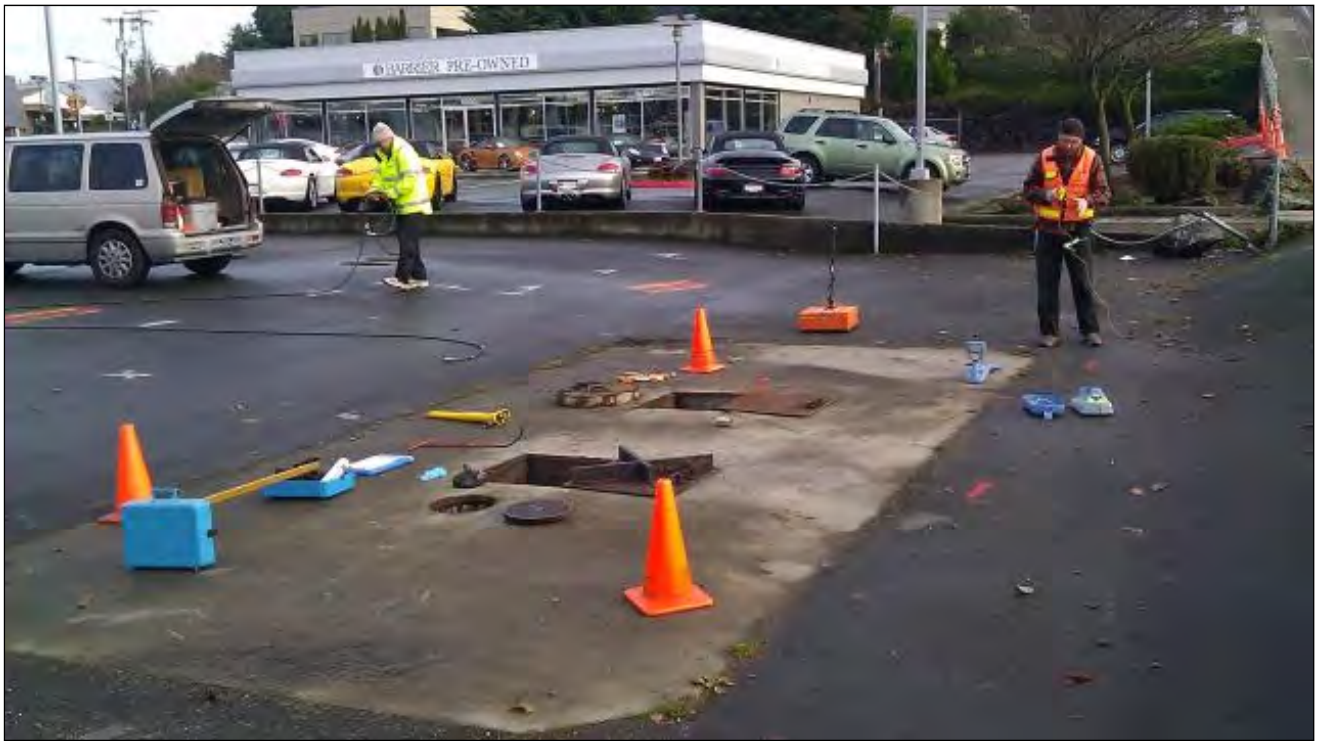
Direct-Push drilling activities to perform boring B-104E – Looking Southeast

Traffic control and air-knife activities at boring B-101E in 120th Avenue NE – Looking Southwest

GeoEngineers
Earth Science + Technology

SITE PHOTOGRAPHS – December 2011

Figure 8A



Geophysical survey crew working on Triangle Parking Lot. UST beneath concrete pad in foreground – Looking East

Apparent UST fill port observed within the vault

GeoEngineers
Earth Science + Technology

SITE PHOTOGRAPHS – December 2011

Figure 8B

Soil sample collected with split spoon sampler from GEIMW-4– peat is visible on the right

Drilling to install monitoring well GEIWMW-1 in center lane of Bel-Red Road – View to SW

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Earth Science + Technology

SITE PHOTOGRAPHS – June 2012

Figure 9A

Drilling to install monitoring well GEIMW-2 in center lane of Bel-Red Road– View to East

Completed monitoring well with monument installed, typical

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SITE PHOTOGRAPHS – June 2012

Figure 9B

Drilling at the Barrier Mercedes Lot property to complete B-119E boring – Looking East

Drilling at the Bakker property to complete B-115E boring – Looking East

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Earth Science + Technology

SITE PHOTOGRAPHS – November 2012

Figure 9C

Drilling at Triangle Lot Property for B-116E boring – Looking East

Groundwater sampling from B-119E exploration – Looking East

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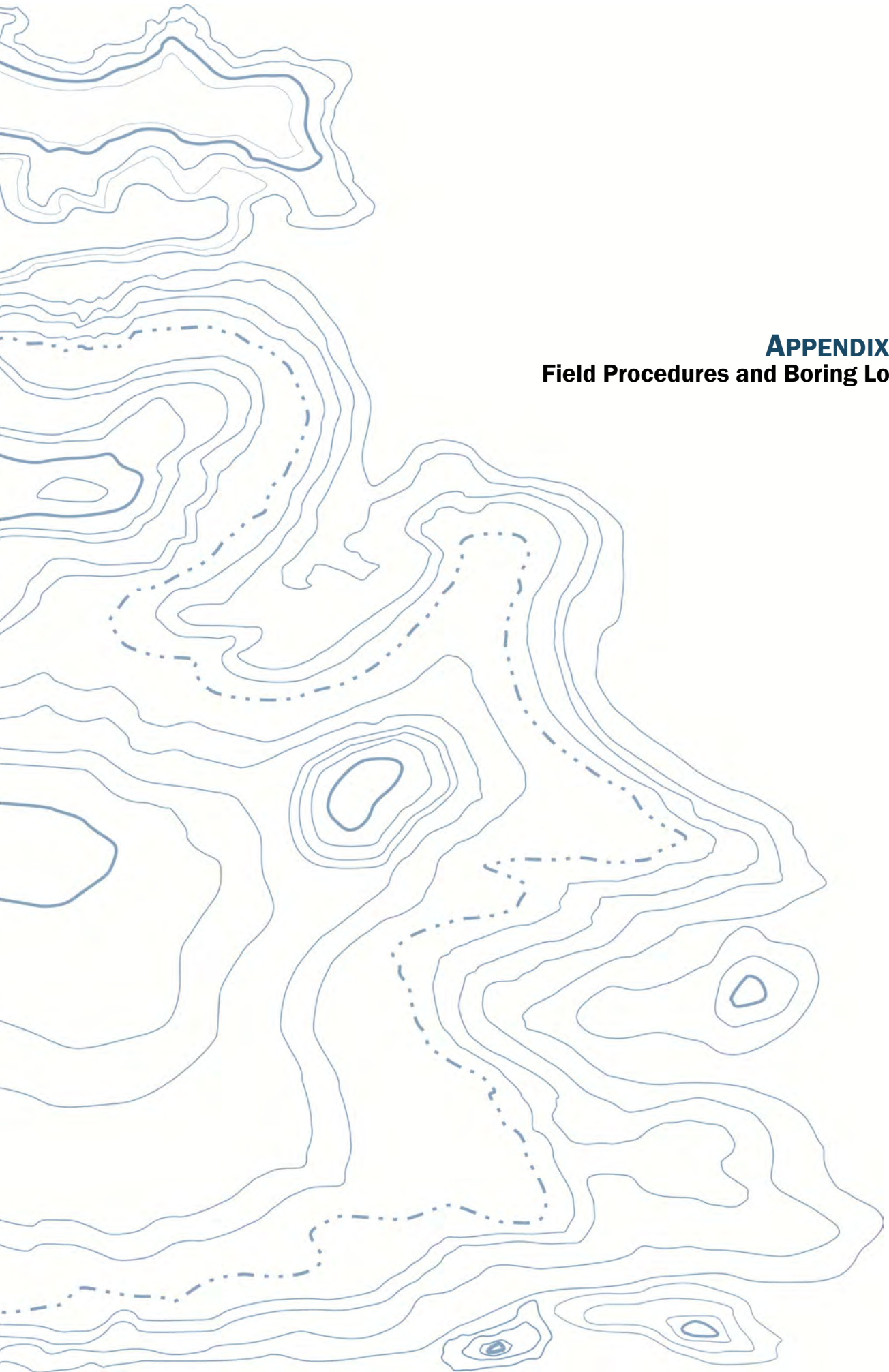
SITE PHOTOGRAPHS – November 2012

Figure 9D

APPENDICES

GeoEngineers



APPENDIX A
Field Procedures and Boring Logs

APPENDIX A
FIELD PROCEDURES AND BORING LOGS

Underground Utility Locate

Prior to drilling activities, an underground utility locate was conducted in the area of the proposed boring locations to identify subsurface utilities and/or potential underground physical hazards. The underground utility check consisted of contacting a local utility alert service (1-call) and hiring a private utility locating service.

Soil Sampling

Soil samples were obtained from the borings using direct-push and hollow-stem auger drilling equipment operated by Cascade Drilling of Woodinville, Washington. Drilling was conducted in general accordance with Washington Administrative Code (WAC) 173-760 by a Washington state-licensed drilling company. Continuous soil cores were obtained from the direct push borings using 1.5-inch diameter, 5-foot long stainless steel sampler rods driven with a pneumatic hammer. Soil samples were collected in clean, plastic 1.5-inch diameter disposable liners. The liners were placed inside the sampling rod and then hydraulically driven or pushed into the soil at the selected sampling depth. Discrete soil samples from select depths were obtained during hollow-stem auger drilling using a 2-inch diameter, 18-inch long stainless steel split spoon sampler driven with 300-pound auto hammer dropped from a distance of 30 inches.

A representative from our staff selected the exploration locations and observed and classified the soil encountered. Soil in the explorations was visually classified in general accordance with ASTM D 2488-94. The boring logs are presented in Figures A-2 through A-24.

The borings extended to depths ranging between approximately 12 and 30 feet below ground surface (bgs). The sampling equipment was decontaminated before each sampling attempt with a Liqui-Nox® solution wash and a distilled water rinse. Soil samples were obtained from continuous cores and split-spoon samplers for field screening and possible chemical analysis.

Soil samples obtained from the borings were collected from the sampler with a stainless steel knife, new gloves, or by EPA Method 5035A using a multi-functional sampling device and methanol-preserved VOA vials. A portion of each sample was placed in laboratory-prepared sample jars for possible chemical analysis. The remaining portion of each sample was used for field screening.

Selected samples from the borings were submitted for chemical analysis based on field screening results. Samples submitted for chemical analysis are designated with “CA” on the logs. The soil samples were placed in a cooler with ice for transport to the laboratory. Standard chain-of-custody procedures were followed in transporting the soil samples to the laboratory.

Drill cuttings and decontamination/purge water generated during drilling activities were temporarily stored behind the CPO showroom building in 55-gallon drums pending waste characterization and transportation for offsite disposal. Investigative waste tracking and disposal documentation is available in City of Bellevue files.

Sample Identification Scheme

Each soil sample obtained during the investigation was identified by a unique sample designation. The sample designation was documented in the field report and boring log, and included on the sample container label and laboratory chain-of-custody. The soil sample designation scheme is as follows:

- Borings number B-101E etc., followed by:
  - The depth from which the soil sample was collected, to the nearest 0.5 foot; and
  - The date of collection, using two digits each for month, day, and year.
- For example, a sample obtained at approximately 5.0 feet bgs on December 20, 2011 from B-103E would be designated: B-103E-5-122011. Sample identification for the grab groundwater samples from the borings was generally similar except there is no depth designation.

Field Screening of Soil Samples

Soil samples obtained from the borings were screened in the field for evidence of contamination using: 1) visual examination; 2) sheen screening; and 3) vapor headspace screening with a photo-ionization detector (PID). The results of headspace and sheen screening are included in the boring logs and in Table 1 for soil samples tested by chemical analysis.

Visual screening consists of inspecting the soil for stains indicative of petroleum-related contamination. Visual screening is generally more effective when contamination is related to heavy petroleum hydrocarbons, such as motor oil or hydraulic oil, or when hydrocarbon concentrations are high. Sheen screening and headspace vapor screening are more sensitive methods that have been effective in detecting contamination at concentrations less than regulatory cleanup guidelines. Sheen screening involves placing soil in a pan of water and observing the water surface for signs of sheen. Sheen classifications are as follows:

- No Sheen (NS): No visible sheen on water surface.
- Slight Sheen (SS): Light, colorless, dull sheen; spread is irregular, not rapid; sheen dissipates rapidly.
- Moderate Sheen (MS): Light to heavy sheen, may have some color/iridescence; spread is irregular to flowing; few remaining areas of no sheen on water surface.
- Heavy Sheen (HS): Heavy sheen with color/iridescence; spread is rapid; entire water surface may be covered with sheen.

Headspace vapor screening involves placing a soil sample in a plastic sample bag. Air is captured in the bag and the bag is shaken to expose the soil to the air trapped in the bag. The probe of a PID is inserted in the bag and the instrument measures the concentration of combustible vapor in the air removed from the sample headspace. The PID measures concentrations in ppm (parts per million) and is calibrated to isobutylene. The PID is designed to quantify combustible gas and organic vapor concentrations up to 2,500 ppm. A lower threshold of significance of 1 ppm was

used in this application. Field screening results are site-specific and vary with soil type, soil moisture content, temperature and type of contaminant.

Monitoring Well Installation

Monitoring wells GEIMW-1, GEIMW-2, GEIMW-3, and GEIMW-4 were installed using hollow-stem auger drilling methods in accordance with WAC 173-160 Minimum Standards for Construction and Maintenance of Wells. The monitoring wells were constructed using 2-inch diameter, Schedule 40, threaded, polyvinyl chloride (PVC) casing with screen intervals spanning the water table. Well screens consisted of 2-inch diameter, Schedule 40, 0.010-inch machine-slotted, PVC well screens. PVC end caps were installed on the bottom of the well screens. Monitoring well construction are shown on the well construction logs in Appendix A.

The 0.01-inch slot size was selected based on review of boring logs from the December 2011 borings, which indicated that the shallow water-bearing zone consists primarily of silty, fine to medium sands with minor amounts of gravel, and peat.

The filter pack for the wells consists of 10-20 silica sand with the appropriate grain size distribution to limit entry of fine-grained particulates from the surrounding formation into the wells. The filter pack in each well extends from the bottom of the well screen to at least one foot above the top of the well screen.

The annular seal in each well consists of a 1-foot, or greater, thick layer of hydrated bentonite pellets or chips installed between the filter pack and a 2-foot thick concrete surface seal. Monuments consisted of flush completions. The four new monitoring wells were surveyed relative to a temporary datum three weeks after construction, following collection of the groundwater samples. Three existing wells on the Triangle Property (MW-1, MW-3, MW-5, and MW-6) were also surveyed. In August 2012, City of Bellevue surveyors tied the temporary datum into the Project datum (NAVD88) and provided the data to GeoEngineers for future use.

Monitoring Well Development

The new monitoring wells (GEIMW-1 through GEIMW-4) were developed directly following installation to allow the sand pack to set and to establish hydraulic connection between the well and the aquifer. Prior to development, the depth to water in the well and the total well depth was measured and recorded. The wells were developed using a combination of surging and purging using a stainless-steel bailer until at least five well casing volumes are removed and discharge ran clear (free of visible turbidity).

Groundwater Sample Collection and Handling

Groundwater samples were obtained from the four monitoring wells (GEIMW-1 through GEIMW-4) three weeks following installation of the wells to allow the surrounding water-bearing zone to recover from well installation and development.

At direct-push borings where groundwater samples were obtained at the time of drilling, an approximately 1.25-inch diameter stainless steel rod was pushed approximately two feet below the water table and then pulled back to expose a temporary stainless steel screen.

Groundwater samples were collected from the temporary and permanent wells using a peristaltic pump with dedicated Teflon tubing at low-flow sampling rates. The groundwater was pumped at approximately 0.5 liter per minute until the water purged clear, after which samples were collected at a flow rate of approximately 0.5 liter per minute (low-flow). Purging generated wastewater which was drummed and temporarily stored on the Barrier property pending off-site disposal in accordance with applicable regulations.

Groundwater samples were transferred directly from the tubing outlet to laboratory-prepared sample containers. New nitrile gloves were worn when collecting each groundwater sample. The sample containers were filled completely and placed in a cooler with ice pending transport to the analytical laboratory. Sample labels were completed for each sample. Chain-of-custody procedures were followed in transporting the samples to the laboratory.

Long-Term Groundwater Data Collection Procedures

Following collection of groundwater samples from the monitoring wells, INW PT2X non-vented hydraulic pressure transducers with data-logging capabilities were installed in wells GEIMW-1, GEIMW-2, and GEIMW-3. The purpose of this was to allow the long-term collection of groundwater elevation data from the wells located within the planned road corridor. The transducers were placed at the approximate mid-point of each well screen and programmed to record hydraulic pressure at one hour intervals, with sufficient memory and battery to operate for at least one year. Data from the transducers will be downloaded manually on a quarterly basis for one year in order to evaluate seasonal groundwater fluctuation and depths. Pressure readings will be translated to elevation and calibrated to the Project datum using manual depth to water measurements taken prior to removing the transducer from the well during quarterly data downloads. Data from the non-vented transducers will be compensated to account for atmospheric pressure changes using atmospheric pressure readings recorded on one of several barometers located in the Project vicinity.

Decontamination Procedures

Sampling equipment was decontaminated before each sampling attempt with a Liqui-Nox® solution wash and distilled water rinse. Decontamination rinse water was collected in drums and managed as Investigative Wastes.

Boring Backfilling

The direct push borings were backfilled with bentonite and concrete at the end of the investigation, or as specified in the sampling and analysis plan.

Investigative Waste

Soil investigative waste generated during the Phase II ESA was stored in new 55-gallon drums. Investigative wastes are transported to an approved facility for transport and disposal in accordance with applicable regulations for Dangerous Waste.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% RETAINED ON NO. 200 SIEVE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
				SP	POORLY-GRADED SANDS, GRAVELLY SAND
	MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
	AC	Asphalt Concrete
	CC	Cement Concrete
	CR	Crushed Rock/ Quarry Spalls
	TS	Topsoil/ Forest Duff/Sod

Groundwater Contact

- **Measured groundwater level in exploration, well, or piezometer**
- **Groundwater observed at time of exploration**
- **Perched water observed at time of exploration**
- **Measured free product in well or piezometer**

Graphic Log Contact

- **Distinct contact between soil strata or geologic units**
- **Approximate location of soil strata change within a geologic soil unit**

Material Description Contact

- **Distinct contact between soil strata or geologic units**
- **Approximate location of soil strata change within a geologic soil unit**

Sampler Symbol Descriptions

- **2.4-inch I.D. split barrel**
- **Standard Penetration Test (SPT)**
- **Shelby tube**
- **Piston**
- **Direct-Push**
- **Bulk or grab**

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

A "P" indicates sampler pushed using the weight of the drill rig.

Laboratory / Field Tests

%F	Percent fines
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
OC	Organic content
PM	Permeability or hydraulic conductivity
PP	Pocket penetrometer
PPM	Parts per million
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen
NT	Not Tested

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

KEY TO EXPLORATION LOGS

GeoEngineers

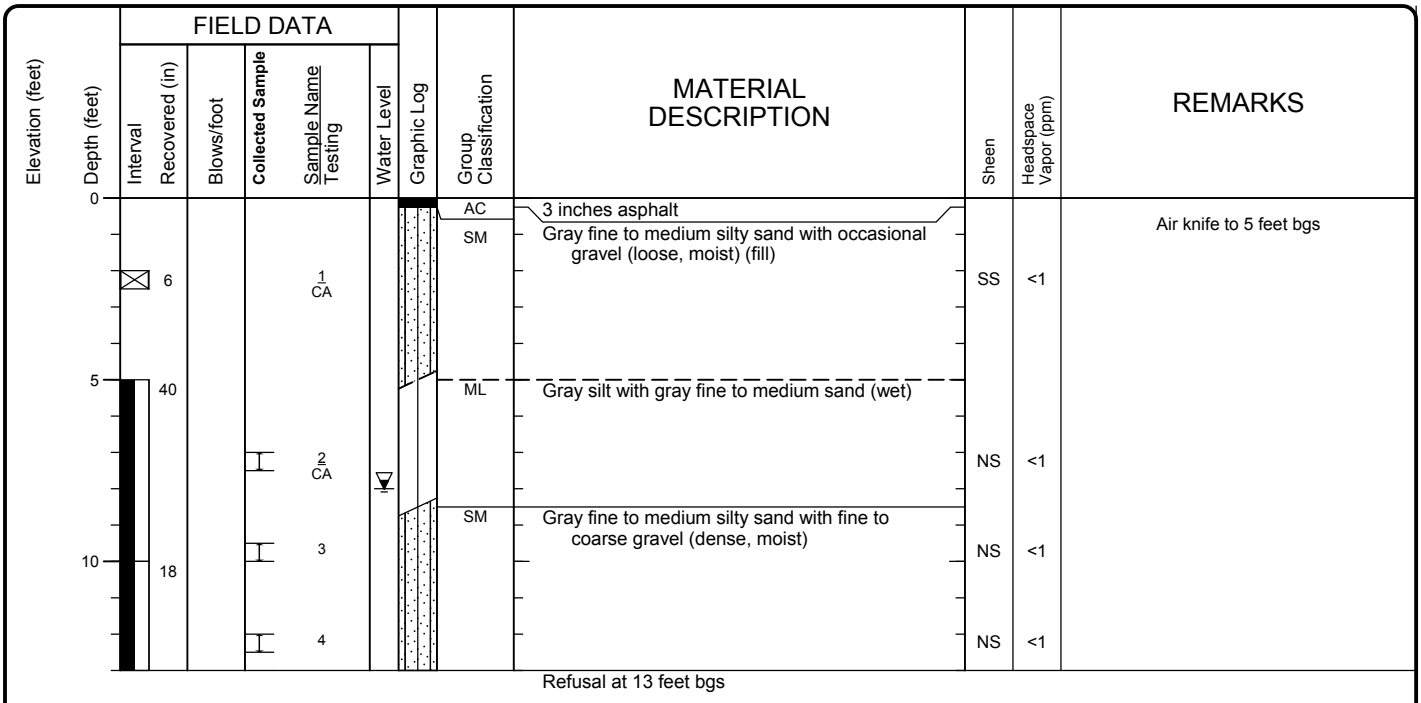
FIGURE A-1

Start / End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
Drilled 12/20/2011 / 12/20/2011	13	FK / JML	Cascade Drilling, L.P.	Direct Push

Surface Elevation (ft) Vertical Datum	Hammer Data	Drilling Equipment
Undetermined		GeoProbe

Easting (X) Northing (Y)	System Datum	Groundwater: Date Measured	Depth to Water (ft)	Elevation (ft)
		12/20/2011	8.0	

Notes: Groundwater sample B-101E-122011GW collected at 12:40



Note: Please see Figure A-1 for explanation of symbols

Log of Boring B-101E

GeoEngineers

Project: 120th Avenue NE Widening Project
Project Location: Bellevue, Washington
Project Number: 0526-170-01

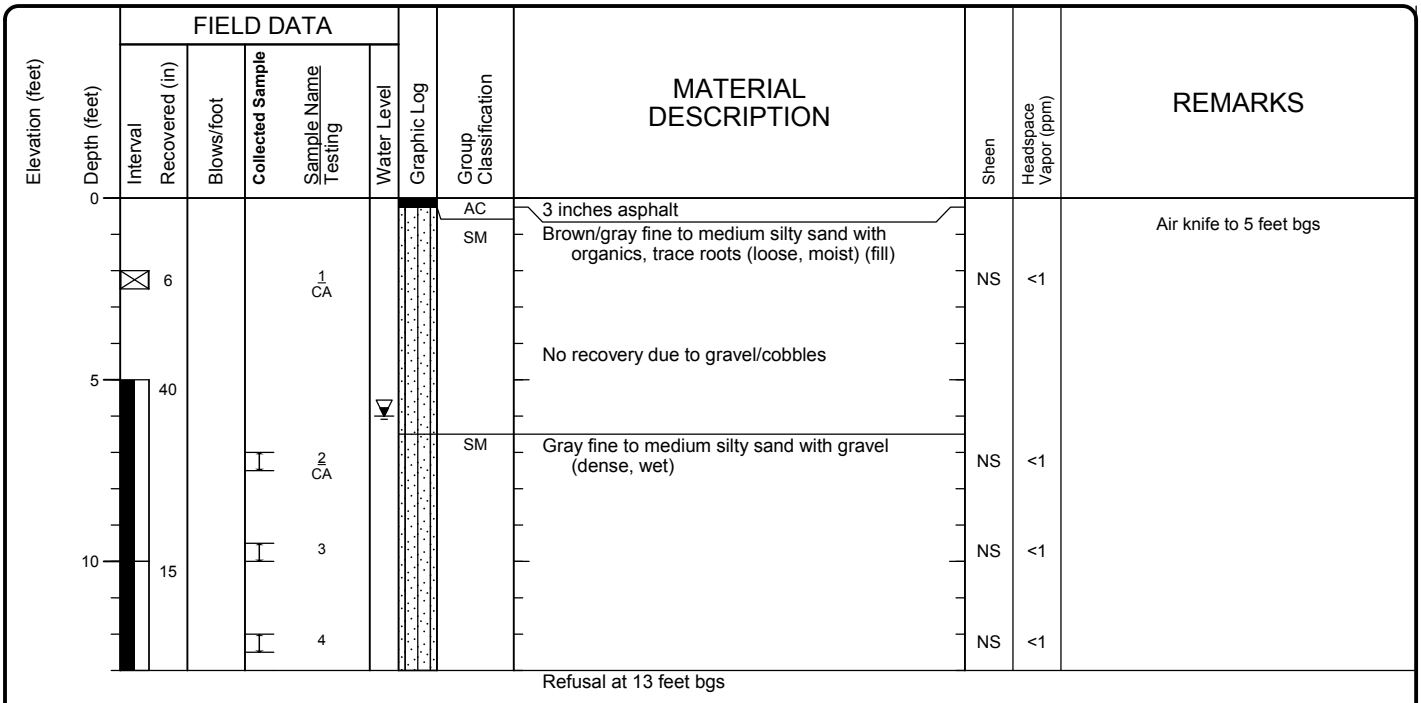
Figure A-2
Sheet 1 of 1

Start / End Drilled	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
12/20/2011 / 12/21/2011	13	FK / JML	Cascade Drilling, L.P.	Direct Push

Surface Elevation (ft) Vertical Datum	Hammer Data	Drilling Equipment
Undetermined		GeoProbe

Easting (X) Northing (Y)	System Datum	Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)
		12/21/2011	6.0	

Notes:



Note: Please see Figure A-1 for explanation of symbols

Log of Boring B-102E

GeoEngineers

Project: 120th Avenue NE Widening Project
Project Location: Bellevue, Washington
Project Number: 0526-170-01

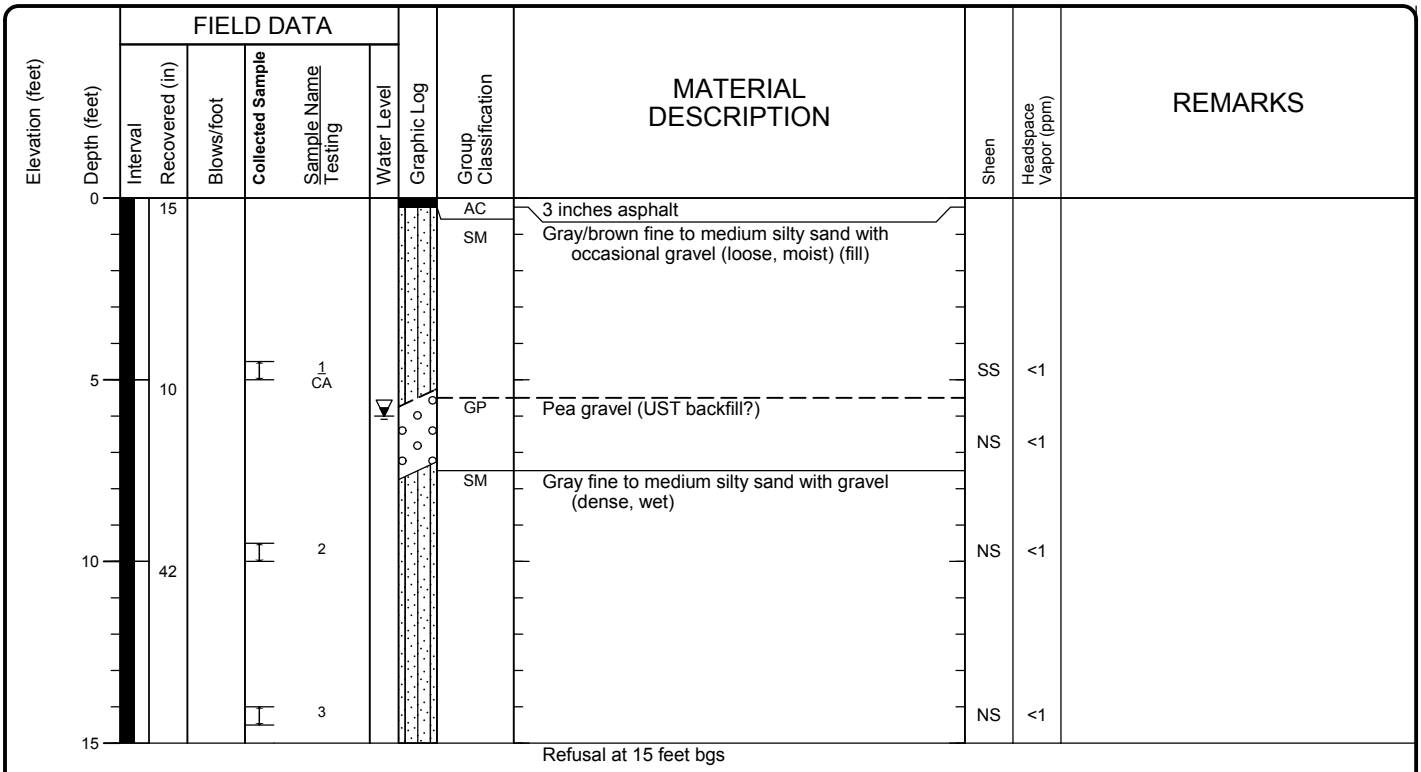
Figure A-3
Sheet 1 of 1

Start / End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
Drilled 12/21/2011 / 12/21/2011	15	FK / JML	Cascade Drilling, L.P.	Direct Push

Surface Elevation (ft) Vertical Datum	Hammer Data	Drilling Equipment
Undetermined		GeoProbe

Easting (X) Northing (Y)	System Datum	Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)
		12/21/2011	6.0	

Notes: Groundwater sample B-103E-122111GW collected at 14:00



Note: Please see Figure A-1 for explanation of symbols

Log of Boring B-103-E

GeoEngineers

Project: 120th Avenue NE Widening Project
Project Location: Bellevue, Washington
Project Number: 0526-170-01

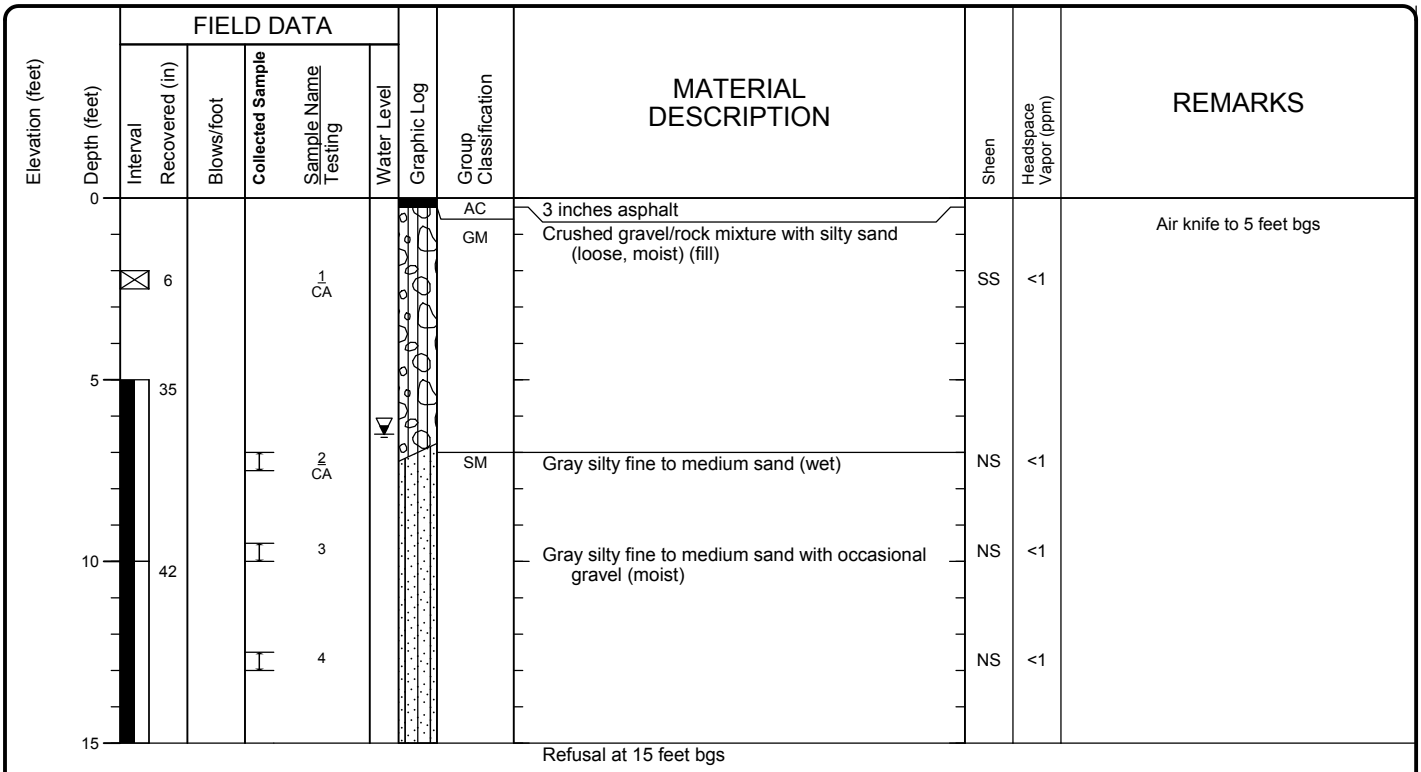
Figure A-4
Sheet 1 of 1

Start / End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
Drilled 12/19/2011 / 12/20/2011	15	FK / JML	Cascade Drilling, L.P.	Direct Push

Surface Elevation (ft) Vertical Datum	Hammer Data	Drilling Equipment
Undetermined		GeoProbe

Easting (X) Northing (Y)	System Datum	Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)
		12/20/2011	6.5	

Notes: Groundwater sample B-104E-122011GW collected at 09:10



Note: Please see Figure A-1 for explanation of symbols

Log of Boring B-104E

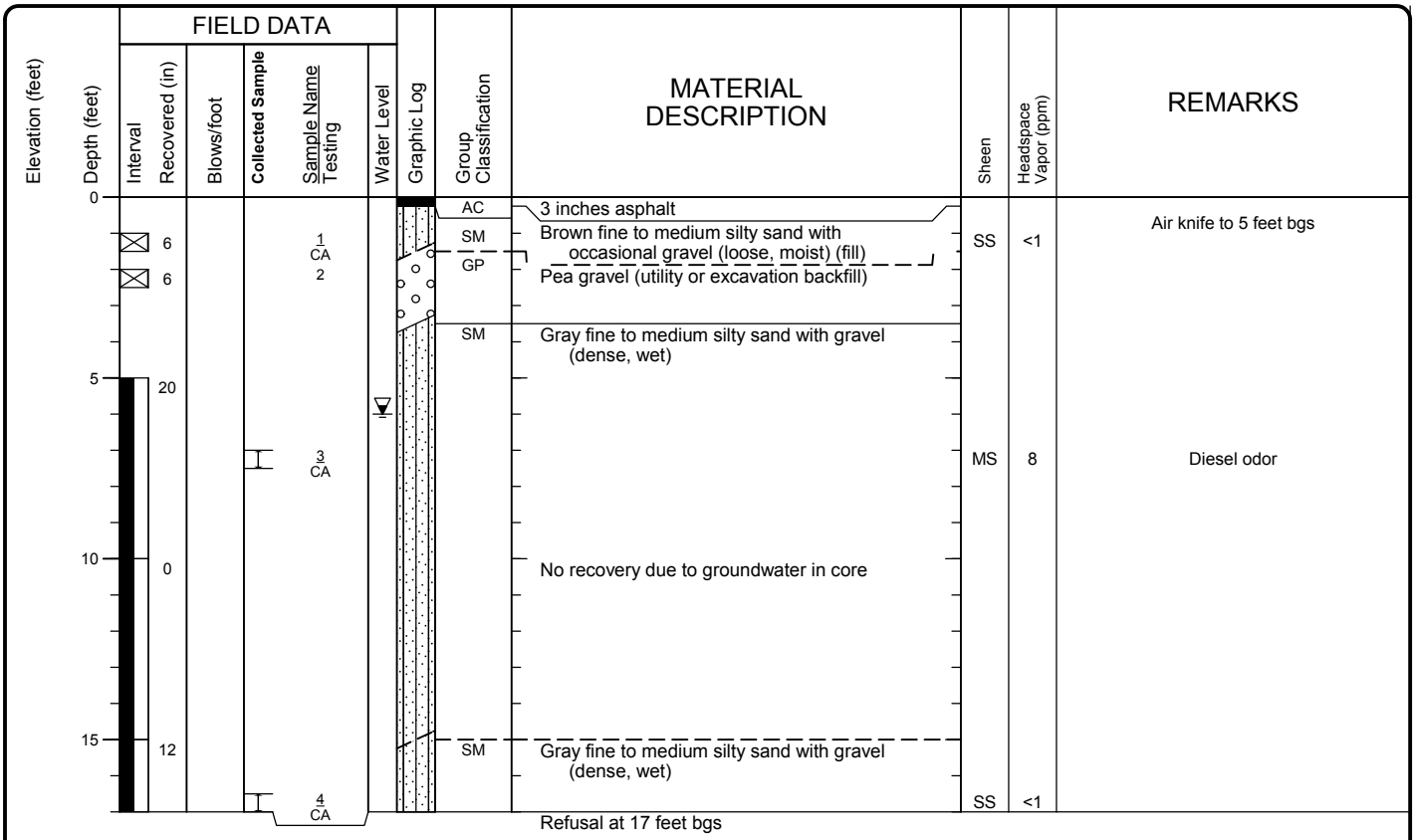
GeoEngineers

Project: 120th Avenue NE Widening Project
Project Location: Bellevue, Washington
Project Number: 0526-170-01

Figure A-5
Sheet 1 of 1

Start / End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
Drilled 12/20/2011 / 12/20/2011	17	FK / JML	Cascade Drilling, L.P.	Direct Push

Surface Elevation (ft) / Vertical Datum: Undetermined	Hammer Data	Drilling Equipment: GeoProbe
Easting (X) / Northing (Y)	System Datum	Groundwater — Date Measured: 12/20/2011; Depth to Water (ft): 6.0; Elevation (ft)
Notes:		



Note: Please see Figure A-1 for explanation of symbols

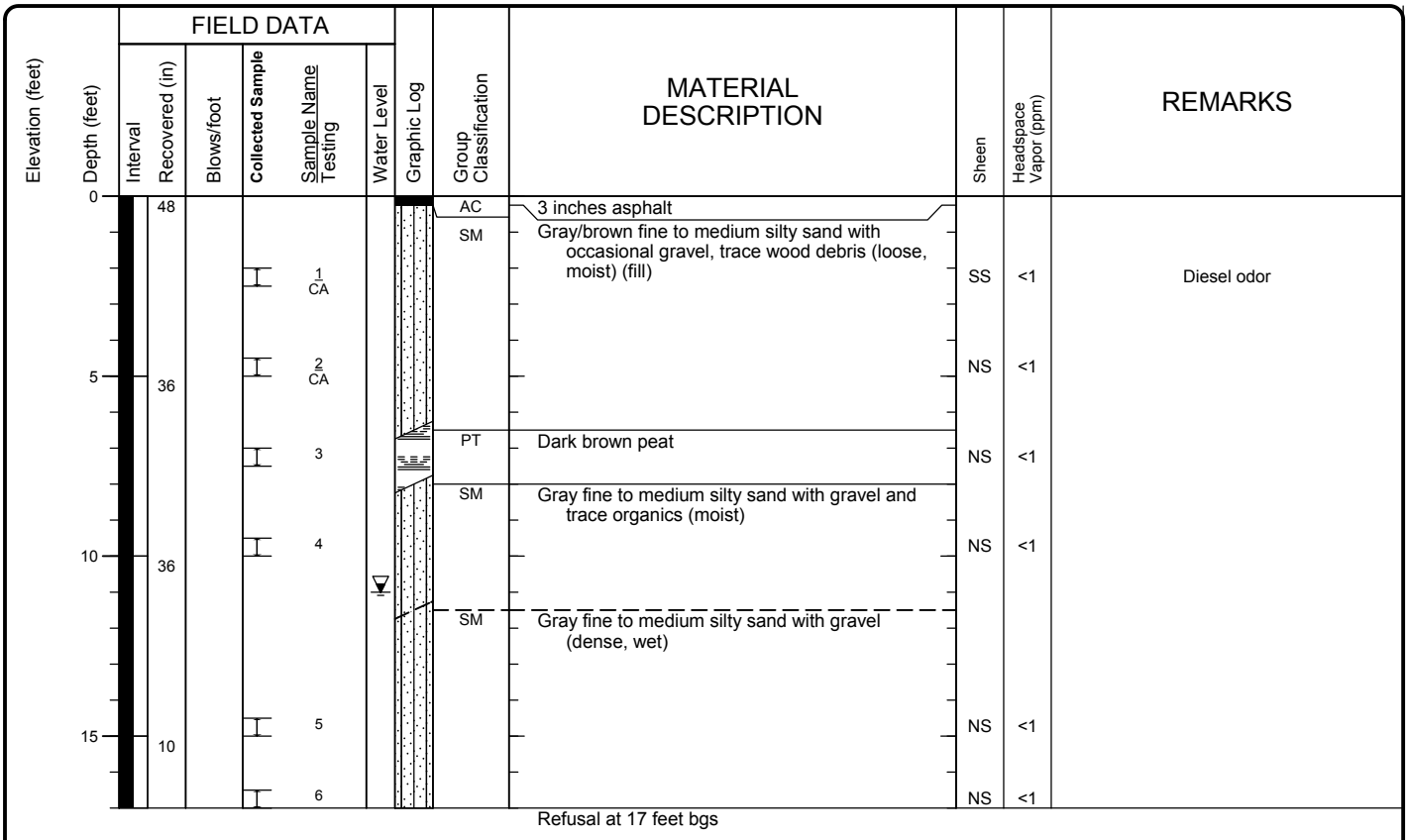
Log of Boring B-105E

GeoEngineers

Project: 120th Avenue NE Widening Project
Project Location: Bellevue, Washington
Project Number: 0526-170-01

Figure A-6
Sheet 1 of 1

Drilled Start 12/21/2011 End 12/21/2011	Total Depth (ft) 17	Logged By FK / Checked By JML	Driller Cascade Drilling, L.P.	Drilling Method Direct Push
Surface Elevation (ft) / Vertical Datum: Undetermined		Hammer Data		Drilling Equipment: GeoProbe
Easting (X) / Northing (Y)		System Datum		Groundwater — Date Measured: 12/21/2011; Depth to Water (ft): 11.0; Elevation (ft):
Notes: Groundwater sample B-106E-122111GW collected at 12:30				



Note: Please see Figure A-1 for explanation of symbols

Log of Boring B-106E

GeoEngineers

Project: 120th Avenue NE Widening Project
Project Location: Bellevue, Washington
Project Number: 0526-170-01

Figure A-7
Sheet 1 of 1

Start / End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
Drilled 12/21/2011 / 12/21/2011	19	FK / JML	Cascade Drilling, L.P.	Direct Push

Surface Elevation (ft) Vertical Datum	Hammer Data	Drilling Equipment
Undetermined		GeoProbe

Easting (X) Northing (Y)	System Datum	Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)
		12/21/2011	11.0	

Notes: Groundwater sample B-107E-122111GW collected at 15:00

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		42			1 CA			AC	3 inches asphalt			
									SM	Brown/gray fine to medium silty sand with occasional gravel (loose, moist) (fill)	SS	<1	
						2 CA			ML	Gray/brown sandy silt with trace organics (moist)	NS	<1	
	5		48			3			SP/ML	Gray/brown silt with sand and occasional gravel and 50% fibrous organics (moist)	NS	<1	
									PT	Dark brown organic peat (native)			
	10		50			4			SP-SM	Gray fine to medium sand with silt and occasional gravel (wet)			
						5					NS	<1	
						6			SM	Gray fine to medium silty sand with gravel (dense, moist)	NS	<1	
	15		14										
						7					NS	<1	

Refusal at 19 feet bgs

Note: Please see Figure A-1 for explanation of symbols

Log of Boring B-107E

GeoEngineers

Project: 120th Avenue NE Widening Project
Project Location: Bellevue, Washington
Project Number: 0526-170-01

Figure A-8
Sheet 1 of 1

Start / End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
Drilled 12/22/2011 / 12/22/2011	18	FK / JML	Cascade Drilling, L.P.	Direct Push

Surface Elevation (ft) Vertical Datum	Hammer Data	Drilling Equipment
Undetermined		GeoProbe

Easting (X) Northing (Y)	System Datum	Groundwater
		Date Measured: 12/22/2011; Depth to Water (ft): 16.0; Elevation (ft):

Notes: Groundwater sample B-108E-122211GW collected at 11:00

Elevation (feet) / Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample / Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
0							AC	3 inches asphalt			
	10						SM	Brown/gray fine to medium silty sand with occasional gravel (moist) (fill)			
								No recovery due to gravel			
				1 CA					NS	<1	
5	50						SM	Gray/brown fine to medium silty sand with occasional gravel (moist)			
				2					NS	<1	
				3 CA					NS	<1	
10	52										
				4			SM	Gray fine to medium silty sand with occasional gravel (moist)	NS	<1	
				5							
15	21										
				6			SM	Gray fine to medium silty sand with gravel (very dense, wet)	NS	<1	
								Refusal at 18 feet bgs			

Note: Please see Figure A-1 for explanation of symbols

Log of Boring B-108E

GeoEngineers

Project: 120th Avenue NE Widening Project
Project Location: Bellevue, Washington
Project Number: 0526-170-01

Figure A-9
Sheet 1 of 1

Start / End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
Drilled 12/22/2011 / 12/22/2011	13	FK / JML	Cascade Drilling, L.P.	Direct Push

Surface Elevation (ft) / Vertical Datum: Undetermined	Hammer Data	Drilling Equipment: GeoProbe
Easting (X) / Northing (Y)	System Datum	Groundwater — Date Measured / Depth to Water (ft) / Elevation (ft)
Notes:		

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		20			1 CA			AC	3 inches asphalt			
									SM	Brown fine to medium silty sand with gravel (loose, moist) (fill)	SS	<1	
	5		50			2 CA					SS	<1	
						3			SM	Gray/brown fine to medium silty sand with occasional gravel (dense, moist)	NS	<1	
	10		20			4					NS	<1	
						5					NS	<1	

Refusal at 13 feet bgs

Note: Please see Figure A-1 for explanation of symbols

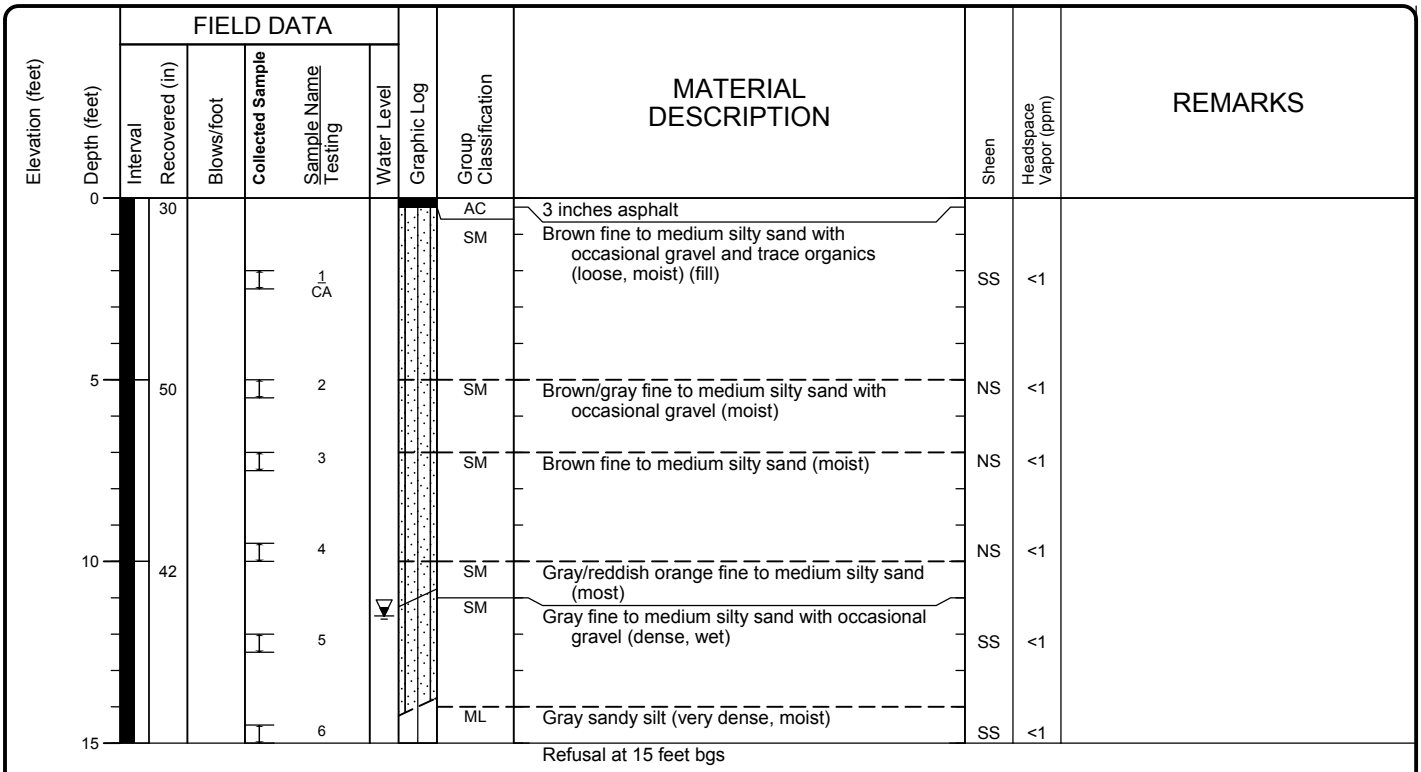
Log of Boring B-109E

GeoEngineers

Project: 120th Avenue NE Widening Project
Project Location: Bellevue, Washington
Project Number: 0526-170-01

Figure A-10

Drilled Start 12/22/2011 End 12/22/2011	Total Depth (ft) 15	Logged By FK / Checked By JML	Driller Cascade Drilling, L.P.	Drilling Method Direct Push
Surface Elevation (ft) / Vertical Datum: Undetermined		Hammer Data		Drilling Equipment: GeoProbe
Easting (X) / Northing (Y)		System Datum		Groundwater — Date Measured: 12/22/2011; Depth to Water (ft): 11.5; Elevation (ft):
Notes: Groundwater sample B-110E-122211GW collected at 09:05				



Note: Please see Figure A-1 for explanation of symbols

Log of Boring B-110E

GeoEngineers

Project: 120th Avenue NE Widening Project
Project Location: Bellevue, Washington
Project Number: 0526-170-01

Figure A-11
Sheet 1 of 1

Start / End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
Drilled 12/19/2011 / 12/19/2011	19	FK / JML	Cascade Drilling, L.P.	Direct Push

Surface Elevation (ft) Vertical Datum	Hammer Data	Drilling Equipment
Undetermined		GeoProbe

Easting (X) Northing (Y)	System Datum	Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)
		12/20/2011	9.5	

Notes: Groundwater sample B-111E-121911GW collected at 11:25

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0							AC	3 inches asphalt			Air knife to 6.5 feet bgs
								SM	Brown fine to medium silty sand with occasional gravel (loose, moist) (fill)			
		6			1 CA					NS	<1	
	5	6			2 CA					SS	<1	Unknown Chemical Odor
		?			3			SM	Brown fine to medium silty sand with gravel (dense, moist)	NS	<1	
	10	?			4 CA			SM	Gray fine to medium silty sand with gravel (dense, wet)	NS	<1	
					5					NS	<1	
	15	?			6					NS	<1	
					7			GP-GM	Gray fine to coarse gravel with sand and silt (very dense, moist)	NS	<1	
									Refusal at 19 feet bgs			

Note: Please see Figure A-1 for explanation of symbols

Log of Boring B-111E

GeoEngineers

Project: 120th Avenue NE Widening Project
Project Location: Bellevue, Washington
Project Number: 0526-170-01

Figure A-12
Sheet 1 of 1

Start / End Drilled	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
12/19/2011 / 12/21/2011	17	FK / JML	Cascade Drilling, L.P.	Direct Push

Surface Elevation (ft) Vertical Datum	Hammer Data	Drilling Equipment
Undetermined		GeoProbe

Easting (X) Northing (Y)	System Datum	Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)
		12/21/2011	8.0	

Notes: Groundwater sample B-112E-122111GW collected at 8:40

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0							AC	3 inches asphalt			Air knife to 6.5 feet bgs
		6			1 CA			SM	Gray/brown fine to medium silty sand with occasional gravel (loose, moist) (fill)	SS	<1	
	5	6			2 CA					SS	<1	
		36			3			SM	Dark brown/orange fine to medium silty sand with trace organics (medium dense, moist)	NS	<1	
								SM	Gray fine to medium silty sand with gravel (medium dense, moist)			
	10	44			4					NS	<1	
					5					NS	<1	
	15	12			6				Grades to dense	NS	<1	
					7				Grades to very dense	NS	<1	
									Refusal at 17 feet bgs			

Note: Please see Figure A-1 for explanation of symbols

Log of Boring B-112E

GeoEngineers

Project: 120th Avenue NE Widening Project
Project Location: Bellevue, Washington
Project Number: 0526-170-01

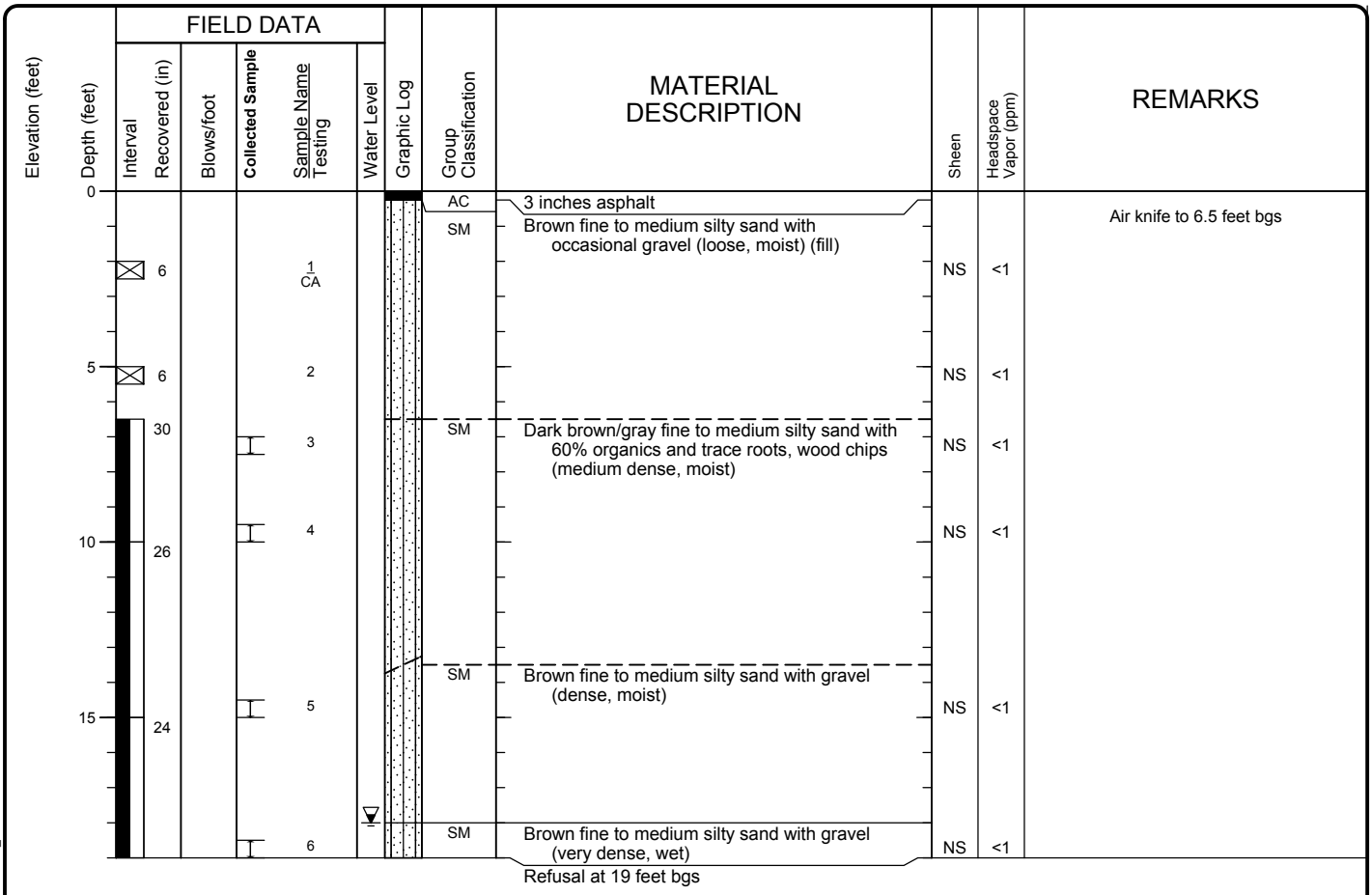
Figure A-13
Sheet 1 of 1

Start / End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
Drilled 12/19/2011 / 12/21/2011	19	FK / JML	Cascade Drilling, L.P.	Direct Push

Surface Elevation (ft) / Vertical Datum	Hammer Data	Drilling Equipment
Undetermined		GeoProbe

Easting (X) / Northing (Y)	System Datum	Groundwater: Date Measured	Depth to Water (ft)	Elevation (ft)
		12/21/2011	18.0	

Notes:



Note: Please see Figure A-1 for explanation of symbols

Log of Boring B-113E

GeoEngineers

Project: 120th Avenue NE Widening Project
Project Location: Bellevue, Washington
Project Number: 0526-170-01

Figure A-14
Sheet 1 of 1

Start / End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
Drilled 12/22/2011 / 12/22/2011	18	FK / JML	Cascade Drilling, L.P.	Direct Push

Surface Elevation (ft) Vertical Datum	Hammer Data	Drilling Equipment
Undetermined		GeoProbe

Easting (X) Northing (Y)	System Datum	Groundwater: Date Measured	Depth to Water (ft)	Elevation (ft)
		12/22/2011	11.0	

Notes: Groundwater sample B-114E-122211GW collected at 15:00

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		40			1 CA			AC	3 inches asphalt			
									SM	Brown/gray fine to medium silty sand, wood debris and occasional gravel (loose, moist) (fill)	SS	<1	
						2					SS	<1	
	5		25						GP	Pea gravel (utility or excavation backfill)			
						3 CA			SM	Gray/brown fine to medium silty sand with occasional gravel (medium dense, moist)	NS	<1	
						4					NS	<1	
	10		30				▽						
						5 CA			SM	Gray fine to medium silty sand with gravel (dense, wet)	NS	<1	
						6					NS	<1	
	15		24										
						7				Grades to very dense	NS	<1	
										Refusal at 18 feet bgs			

Note: Please see Figure A-1 for explanation of symbols

Log of Boring B-114E

GeoEngineers

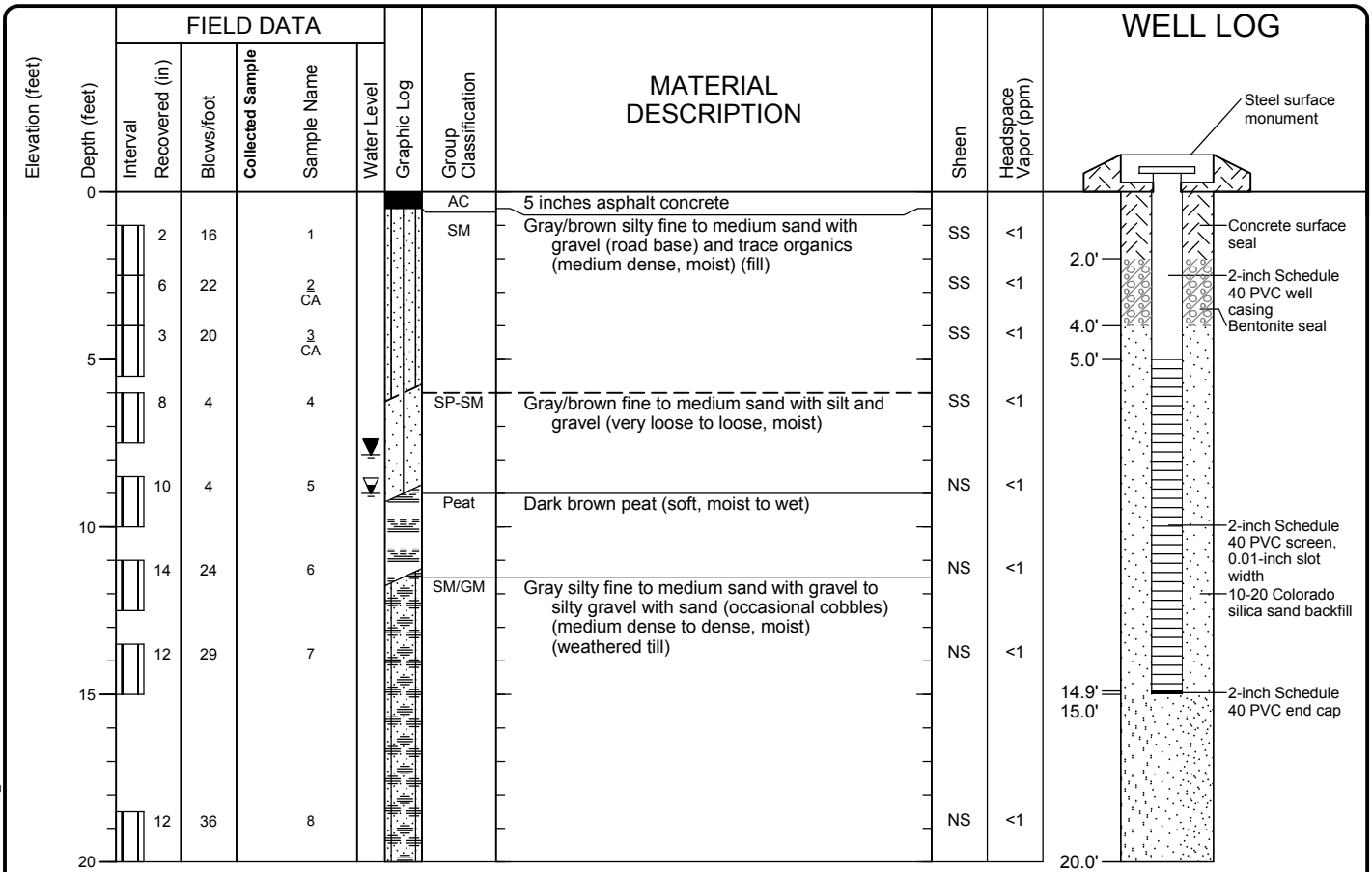
Project: 120th Avenue NE Widening Project
Project Location: Bellevue, Washington
Project Number: 0526-170-01

Figure A-15
Sheet 1 of 1

Drilled Start 6/18/2012	End 6/18/2012	Total Depth (ft) 20	Logged By FK / Checked By CMK	Driller Cascade Drilling	Drilling Method Hollow-stem Auger

Hammer Data: JARS, 300 (lbs) / 30 (in) Drop	Drilling Equipment: Truck Mounted CME 75	DOE Well I.D.: BHE 827 A 2 (in) well was installed on 6/18/2012 to a depth of 15 (ft).	
Surface Elevation (ft) / Vertical Datum: Undetermined / NAVD88	Top of Casing Elevation (ft): 149.85	Groundwater	
Easting (X) / Northing (Y)	Horizontal Datum: NAVD88	Date Measured: 7/9/2012	Depth to Water (ft): 7.9 — Elevation (ft): 142.00

Notes: Auger Data: 4¼-inch I.D.; 8-inch O.D.



Note: Please see Figure A-1 for explanation of symbols

Log of Monitoring Well GEI MW-1

GeoEngineers

Project: 120th Avenue NE Widening Project
Project Location: Bellevue, Washington
Project Number: 0526-170-01

Figure A-16
Sheet 1 of 1

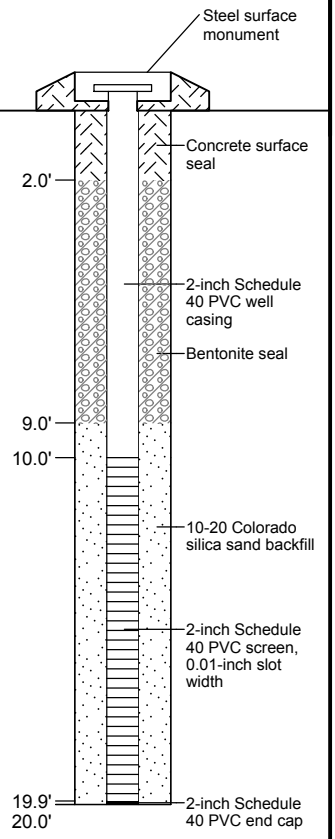
Drilled Start 6/18/2012	End 6/18/2012	Total Depth (ft) 20	Logged By FK / Checked By CMK	Driller Cascade Drilling	Drilling Method Hollow-stem Auger

Hammer Data: JARS, 300 (lbs) / 30 (in) Drop	Drilling Equipment: Truck Mounted CME 75	DOE Well I.D.: BHE 828 A 2 (in) well was installed on 6/18/2012 to a depth of 20 (ft).	
Surface Elevation (ft): Undetermined Vertical Datum: NAVD88	Top of Casing Elevation (ft): 152.47	Groundwater	
Easting (X) Northing (Y)	Horizontal Datum: NAVD88	Date Measured: 7/9/2012	Depth to Water (ft): 9.4 / Elevation (ft): 143.10

Notes: Auger Data: 4¼-inch I.D.; 8-inch O.D.

Elevation (feet)	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)
	0							AC	5 inches asphalt concrete		
		6	20		1			SM	Gray/brown silty fine to medium sand with gravel (occasional cobbles) (medium dense, moist) (fill)	NS	<1
		8	6		2 CA					SS	<1
								SM	Gray/brown silty fine to medium sand with gravel and trace organics (wood chips) (very loose, moist)		
		14	7		3					SS	<1
	5							ML	Gray/brown sandy silt (medium stiff, moist)		
		16	6		4 CA					SS	<1
		6	6		5 CA	▼				NS	<1
	10							SM	Gray silty fine to medium sand with gravel (very loose, moist)		
		16	5		6			Peat	Dark brown/black peat with wood chunks (soft to medium stiff, moist to wet)	NS	<1
		10	24		7	▼				NS	<1
		18	40		8			SM	Gray silty fine to medium sand with gravel (occasional cobbles) (medium dense, moist to wet)	NS	<1
	15										
		12	45		9					NS	<1
		8	48		10					NS	<1
	20										

WELL LOG



Note: Please see Figure A-1 for explanation of symbols

Log of Monitoring Well GEI MW-2

GeoEngineers

Project: 120th Avenue NE Widening Project
Project Location: Bellevue, Washington
Project Number: 0526-170-01

Figure A-17
Sheet 1 of 1

Redmond Date:9/5/12 Path:C:\USERS\CVOSS\DESKTOP\0526170001.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_WELL

Drilled Start	End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
6/17/2012	6/17/2012	20	FK / CMK	Cascade Drilling	Hollow-stem Auger

Hammer Data	JARS 300 (lbs) / 30 (in) Drop	Drilling Equipment	Truck Mounted CME 75
Surface Elevation (ft) / Vertical Datum	Undetermined / NAVD88	Top of Casing Elevation (ft)	146.82
Easting (X) / Northing (Y)		Horizontal Datum	NAVD88

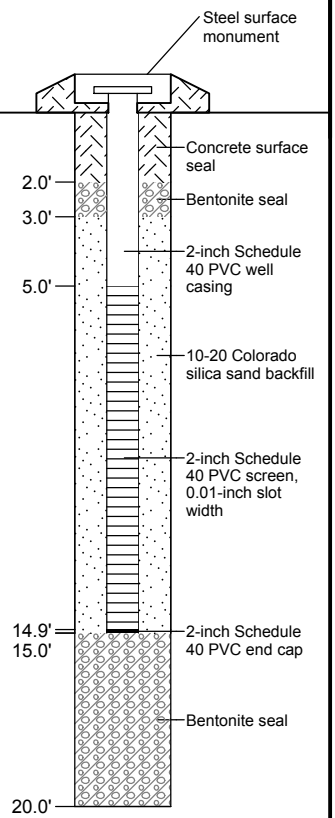
DOE Well I.D.: BHE 825
A 2 (in) well was installed on 6/17/2012 to a depth of 15 (ft).

Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)
7/9/2012	3.1	143.69

Notes: Auger Data: 4¼-inch I.D.; 8-inch O.D.

Elevation (feet)	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample / Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)
	0	18	16	1 CA	▼		AC	3 inches asphalt concrete		
							SM	Gray/brown sity fine to medium sand with gravel and wood chips (treated wood) (medium dense, moist) (fill)	SS	<1
	5	16	5	2			Peat	Dark brown/black peat with wood chunks (soft to medium stiff, moist)		
		18	3	3					NS	<1
		14	5	4					NS	<1
	10				▼		SM	Gray silty fine to medium sand with gravel (occasional cobbles) (loose to medium dense, moist to wet) (weathered till?)		
		12	12	5 CA					NS	<1
		14	22	6					NS	<1
	15									
		6	27	7				Becomes moist		
	20									

WELL LOG



Note: Please see Figure A-1 for explanation of symbols

Log of Monitoring Well GEI MW-3

GeoEngineers

Project: 120th Avenue NE Widening Project
Project Location: Bellevue, Washington
Project Number: 0526-170-01

Figure A-18
Sheet 1 of 1

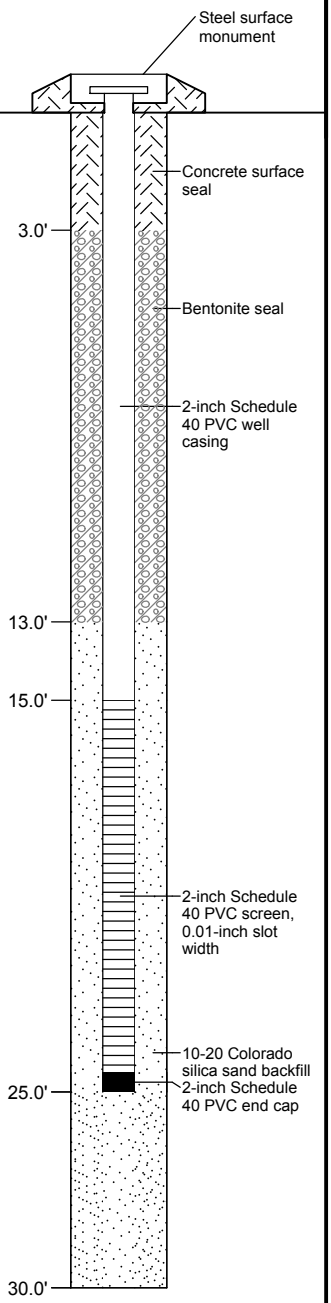
Drilled Start	End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
6/17/2012	6/17/2012	30	FK / CMK	Cascade Drilling	Hollow-stem Auger

Hammer Data	Drilling Equipment	DOE Well I.D.: BHE 826
JARS 300 (lbs) / 30 (in) Drop	Truck Mounted CME 75	A 2 (in) well was installed on 6/17/2012 to a depth of 25 (ft).
Surface Elevation (ft) Vertical Datum: Undetermined NAVD88	Top of Casing Elevation (ft): 156.37	Groundwater Date Measured: 7/9/2012 Depth to Water (ft): 12.6 Elevation (ft):
Easting (X) Northing (Y)	Horizontal Datum: NAVD88	

Notes: Auger Data: 4¼-inch I.D.; 8-inch O.D.

Elevation (feet)	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)
	0							AC	6 inches asphalt concrete		
		11	50/5"		1			SM	Gray/brown silty fine to medium sand with gravel, trace organics, brick and wood debris (occasional cobbles) (very loose, moist) (fill)	SS	<1
		18	4		2					SS	<1
	5	8	6		3					NS	<1
		0	4		4					NS	<1
	10	2	4		5	▼				NS	<1
		12	6		6			Peat	Dark brown/black peat with wood chunks (moist)	NS	<1
	15	16	4		7	▼		SM	Gray silty fine to medium sand with gravel (occasional cobbles) (loose, wet) (weathered till?)	NS	<1
		12	5		8			SM	Gray silty fine to medium sand with gravel (occasional cobbles) (dense to very dense, moist) (till)	NS	<1
	20										
		10	35		9					NS	<1
	25										
		12	50		10					NS	<1
	30										

WELL LOG



Note: Please see Figure A-1 for explanation of symbols

Log of Monitoring Well GEI MW-4

GeoEngineers

Project: 120th Avenue NE Widening Project
Project Location: Bellevue, Washington
Project Number: 0526-170-01

Figure A-19
Sheet 1 of 1

Redmond Date:1/18/13 Path:C:\USERS\CVOSS\DESKTOP\052617001_MWLOGS.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_WELL

Start / End Drilled	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
11/30/2012 / 11/30/2012	12	FK	Cascade Drilling	Continuous

Surface Elevation (ft) / Vertical Datum	Hammer Data	Drilling Equipment
Undetermined		Power Probe

Easting (X) / Northing (Y)	System Datum	Groundwater		
		Date Measured	Depth to Water (ft)	Elevation (ft)
Notes:		11/30/2012	11.0	

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		48						AC	3 inches asphalt			
									SP-SM	Gray silty fine to medium sand with silt (loose, moist) (fill)			
						1					SS	<1	No odor
									SM	Brown with orange mottling silty fine to medium sand with occasional gravel (loose, moist)			
	5		20			B-115E-5.0 CA					NS	<1	No odor
						3				Becomes gray/brown	NS	<1	No odor Rock in sampler shoe
	10		20			B-115E-10.0 CA				Becomes wet	NS	<1	No odor
									ML	Gray sandy silt (stiff, moist)			
						5					NS	<1	No odor

Note: See Figure A-1 for explanation of symbols.

Log of Boring B-115 E

GeoEngineers

Project: 120th Avenue NE Widening Project
Project Location: Bellevue, Washington
Project Number: 0526-170-03

Figure A-20
Sheet 1 of 1

Start / End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
Drilled 11/30/2012 / 11/30/2012	12	FK	Cascade Drilling	Continuous

Surface Elevation (ft) / Vertical Datum	Hammer Data	Drilling Equipment
Undetermined		Power Probe

Easting (X) / Northing (Y)	System Datum	Groundwater		
		Date Measured	Depth to Water (ft)	Elevation (ft)
Notes:		11/30/2012	5.0	

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		41						AC	2 inches asphalt			
									SM	Brown silty fine to medium sand with gravel, wood chips and trace organic matter (loose, moist) (fill)			
						B-116E-2.5 CA					SS	<1	No odor
						2			PT	Dark brown peat	NS	<1	No odor
	5		30						SM	Gray silty fine to medium sand with gravel (very dense, wet) (glacial till)			
						3					NS	<1	No odor
						B-116E-8.0 CA					NS	<1	No odor
	10		12										
						5					NS	<1	No odor

Note: See Figure A-1 for explanation of symbols.

Log of Boring B-116 E

GeoEngineers

Project: 120th Avenue NE Widening Project
Project Location: Bellevue, Washington
Project Number: 0526-170-03

Figure A-21
Sheet 1 of 1

Start / End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
Drilled 11/30/2012 / 11/30/2012	15	FK	Cascade Drilling	Continuous

Surface Elevation (ft) / Vertical Datum	Hammer Data	Drilling Equipment
Undetermined		Power Probe

Easting (X) / Northing (Y)	System Datum	Groundwater		
		Date Measured	Depth to Water (ft)	Elevation (ft)
Notes:		11/30/2012	9.0	

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		42						AC	2 inches asphalt			
									SM	Brown silty fine to medium sand with gravel (loose, moist) (fill)			
						B-117E-2.5 CA					SS	<1	No odor
	5		30			B-117E-5.0 CA					NS	<1	No odor
									PT	Dark brown peat (moist)			
					3								Rock in sampler shoe
							▽		SM	Gray silty fine to medium sand with gravel (dense, wet) (glacial till)			
	10		40		4						NS	<1	No odor
					5						NS	<1	No odor
	15				6						NS	<1	No odor

Note: See Figure A-1 for explanation of symbols.

Log of Boring B-117 E

GeoEngineers

Project: 120th Avenue NE Widening Project
Project Location: Bellevue, Washington
Project Number: 0526-170-03

Figure A-22
Sheet 1 of 1

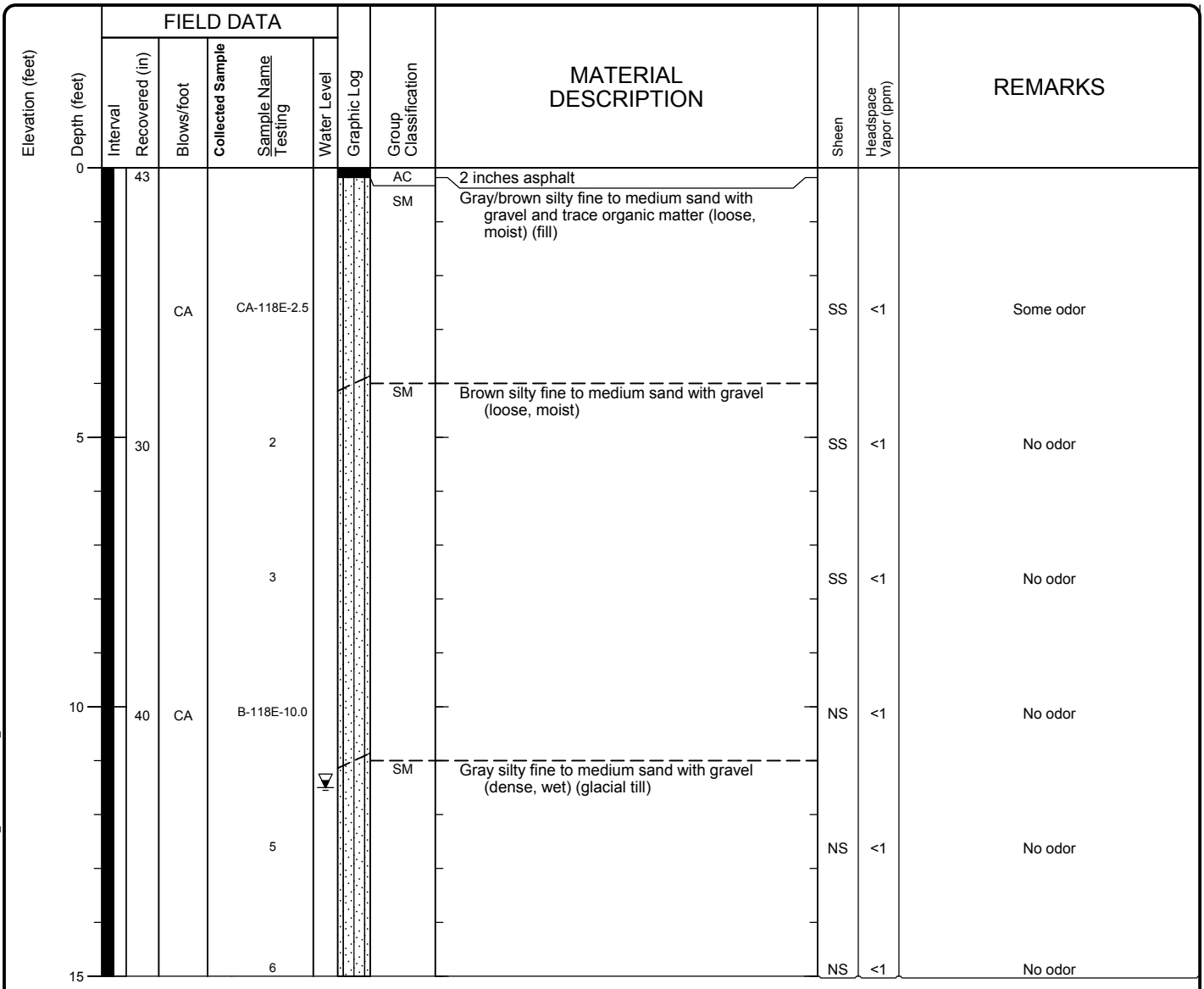
Redmond Date:1/18/13 Path:C:\USERS\CVOSS\DESKTOP\0526017003.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Start / End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
Drilled 11/30/2012 / 11/30/2012	15	FK	Cascade Drilling	Continuous

Surface Elevation (ft) / Vertical Datum	Hammer Data	Drilling Equipment
Undetermined		Power Probe

Easting (X) / Northing (Y)	System Datum	Groundwater: Date Measured	Depth to Water (ft)	Elevation (ft)
		11/30/2012	11.5	

Notes:



Note: See Figure A-1 for explanation of symbols.

Log of Boring B-118 E

GeoEngineers

Project: 120th Avenue NE Widening Project
Project Location: Bellevue, Washington
Project Number: 0526-170-03

Figure A-23
Sheet 1 of 1

Start / End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
Drilled 11/30/2012 / 11/30/2012	15	FK	Cascade Drilling	Continuous

Surface Elevation (ft) / Vertical Datum	Hammer Data	Drilling Equipment
Undetermined		Power Probe

Easting (X) / Northing (Y)	System Datum	Groundwater		
		Date Measured	Depth to Water (ft)	Elevation (ft)
Notes:		11/30/2012	10.0	

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		41						AC	2 inches asphalt			
									SM	Brown/gray silty fine to medium sand with occasional gravel and trace organic matter (loose, moist) (fill)			
						1					SS	<1	No odor
									SM	Gray silty fine to medium sand with gravel (loose, moist)			
	5		33			B-119E-5.0 CA					NS	<1	No odor
						3					NS	<1	No odor
	10		52			B-119E-10.0 CA	▽				NS	<1	No odor
									PT	Dark brown peat			
									SM	Gray silty fine to medium sand with gravel (dense, wet) (glacial till)			
	15					5					NS	<1	No odor

Note: See Figure A-1 for explanation of symbols.

Log of Boring B-119 E

GeoEngineers

Project: 120th Avenue NE Widening Project
Project Location: Bellevue, Washington
Project Number: 0526-170-03

Figure A-24
Sheet 1 of 1