Contaminated Soil Handling and Management Plan

King County Children and Family
Justice Center Project
1211 East Alder Street
Seattle, Washington

for
Balfour Beatty Construction, LLC
dba Howard S. Wright

August 5, 2016

GeoEngineers
Earth Science + Technology

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File No. 0146-120-00

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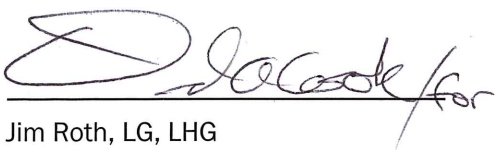

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1.0 INTRODUCTION

This Contaminated Soil Handling and Management Plan (Plan) has been prepared by GeoEngineers, Inc. (GeoEngineers) for Howard S. Wright (HSW) to facilitate management of environmental media on behalf of the design-builder for the King County Children and Family Justice Center (CFJC) project. HSW is a subsidiary of Balfour Beatty Construction, LLC and is the lead entity on the CFJC design-build team that is redeveloping the King County Youth Services Center. GeoEngineers is part of the design-build team and is providing geotechnical engineering and environmental services for the project. The Youth Services Center is located at 1211 East Alder Street in Seattle, Washington. The project involves demolishing existing buildings/ facilities and redeveloping the site into the new King County CFJC ("Site") which will consist of a Courthouse, Detention Center and Parking Garage. The redevelopment project will be completed in two phases—the Courthouse and Detention Center will be constructed in Phase I; the Garage will be constructed in Phase II. Approximate locations of the existing and proposed buildings are shown on Figure 1.

Herrera Environmental Consultants, Inc. (Herrera), King County's environmental consultant, completed a Phase I Environmental Site Assessment (ESA) in April 2010. The Phase I ESA identified the following sources of contamination at the Site: at least one, and possibly several upgradient dry cleaners that released dry cleaning solvents into soil and groundwater which has migrated to the King County property; petroleum hydrocarbons from underground storage tanks (USTs) and an elevator at the Site; and contaminated fill soil with low levels of petroleum and lead above natural background levels. Because of the recognized environmental conditions (RECs) identified in the Phase I ESA, Herrera completed a Phase II ESA in 2013 to evaluate soil and groundwater conditions at the Site, delineate the extent of the solvent plume, and provide preliminary recommendations on soil and water handling during construction. Herrera collected/tested groundwater samples at the Site during four sampling events in 2013 and 2014 to obtain additional information on solvent-contaminated groundwater at the Site as discussed in Section 2.0. We understand from King County that they notified Washington State Department of Ecology (Ecology) of the solvent contamination that was identified in soil and groundwater at this Site at concentrations greater than Model Toxics Cleanup Act (MTCA) cleanup levels. The mechanism for follow-up reporting to Ecology is being handled by King County and is beyond the scope of this development project and beyond the scope of GeoEngineers' and HSW's contract with King County.

In order to fill data gaps in the soil dataset within the planned Courthouse, Detention Center and Garage development footprint and to plan for construction, GeoEngineers completed a Supplemental Environmental Site Characterization study in June 2015 that focused on obtaining additional soil characterization data. Results from the Herrera and GeoEngineers studies form the basis for soil handling/disposal guidelines presented in this Plan. Construction dewatering effluent handling, testing and disposal is discussed in Section 6.0. We understand HSW will prepare a dewatering effluent management plan addressing appropriate containment and treatment methodologies. GeoEngineers' 2015 study was not intended to represent a Remedial Investigation (RI) per Ecology guidance (Washington Administrative Code [WAC] 173-340-350) but was solely completed to assist with planning for successful soil management and off-site export for the redevelopment project.

To the greatest extent possible, excavation and disposal of contaminated soil will proceed based on pre-characterized soil defined by the 2013 and 2015 studies. Supplemental soil sampling and chemical testing will be performed during construction to evaluate soil conditions in some excavation areas, including areas that were not accessible during previous studies due to the presence of existing buildings. The

supplemental soil characterization data will be used to refine boundaries between Impacted-Contaminated and clean soil areas, and obtain additional information for soil disposal planning in the Garage footprint. The environmental soil classification and handling guidelines in this Plan may be revised for some areas based on the results of supplemental soil sampling/testing. For example, estimated lateral boundaries between tetrachloroethene (PCE) Contained-In soil and petroleum-impacted soil may be revised if PCE is not detected in samples near the east and west edges of the PCE soil area shown on Figure 2. Soil sampling during construction will be conducted in a manner that minimizes impact to excavation production and schedule. The soil chemical analytical data from the 2013 and 2015 environmental investigations will be used to prepare soil waste profiles and obtain approval from two permitted soil disposal facilities for disposal of "Impacted", "Contaminated" and "Contained-In" soil as defined in Section 3.0 of this Plan. As discussed in this Plan, contaminated soil and groundwater removed from the construction excavations will be handled and disposed in accordance with MTCA requirements, and workers in contact with contamination will be Hazardous Waste Operations and Emergency Response (HAZWOPER) trained as stated in the MTCA cleanup regulation, and WAC 296-843.

2.0 BACKGROUND

Following is a summary of the environmental investigations completed at the CFJC Site by King County (Herrera, 2013 and 2104) and the CFJC Design-Build team (GeoEngineers, 2015). The approximate locations of soil borings and monitoring wells completed during these investigations and a summary of the chemical analytical data are shown on Figures 1 and 2. Cross-sections through the Courthouse and Garage excavations that include chemical data for soil and groundwater samples are provided in Figures 3 through 6.

2.1. Herrera – 2010 Phase I ESA, 2013 Phase II ESA and 2014 Groundwater Monitoring

Herrera's 2010 Phase I ESA research identified potential releases of petroleum hydrocarbons from a historical emergency generator diesel UST in the southwest portion of the Site, and a hydraulic oil leak from the north Alder Tower elevator. Migration of petroleum hydrocarbons and chlorinated solvents from historical dry cleaning and fuel station operations located upgradient (north) of the CFJC Site were identified as environmental concerns in the Phase I ESA. Herrera completed 36 soil borings and nine groundwater monitoring wells for a Phase II ESA in 2013. Three additional groundwater monitoring wells were installed in 2013 during a geotechnical study by Icicle Creek Engineers. Four rounds of groundwater monitoring were completed by Herrera in 2013 and 2014 to evaluate groundwater conditions at the Site. Based on Herrera's reports:

- Fill soil throughout much of the site contains relatively low level concentrations of diesel- and oil-range petroleum hydrocarbons and lead at depths ranging from 1 to 10 feet below the ground surface (bgs). Petroleum- and lead-impacted fill soil was not identified in the northeast and east-central portions of the Site.
- PCE-contaminated soil was detected at depths of 3 feet to 24 feet bgs in the northwest portion of the Site. PCE-contaminated soil was not detected in the east or south halves of the Site. However, the southern extent of PCE-contaminated soil was not well defined because of existing buildings that limited drilling access.

- A long plume of dry cleaning solvent-contaminated groundwater with PCE concentrations exceeding regulatory cleanup levels is migrating along a narrow band approximately 150 to 250 feet wide, from the northwest corner to the southeast corner of the Site. The source of the plume appears to be one or more former dry cleaning businesses located north of the CFJC Site. The east and west boundaries of the groundwater plume at the Site have been delineated; the groundwater plume appears to extend beyond the south boundary of the Site.
- PCE concentrations in groundwater are highest in the northwest and central portion of the Site. PCE concentrations decrease at the south end of the Site, but still exceed MTCA cleanup levels as shown on Figures 1 and 2.

2.2. GeoEngineers – May/June 2015 Supplemental Environmental Site Characterization

GeoEngineers completed 19 soil borings at the Site in May/June 2015 to supplement the data provided in the 2013 study. GeoEngineers' study was specifically focused on areas of the Site where construction activities will occur. As described in the Supplemental Site Characterization report:

- Petroleum- and lead-impacted fill soil with organics, wood, charcoal, plastic, and brick fragments was encountered in the proposed Courthouse footprint at depths of 2 to 10.5 feet bgs (approximately Elevations 250 to 238). Petroleum- and lead-impacted soil was not identified within the footprint of proposed Detention Center. Petroleum- and lead-impacted soil was identified at depths of 3 feet and 9 feet bgs in the northeast and northwest portions of the proposed Garage.
- PCE-contaminated soil appears to extend beneath most of the western two-thirds of the proposed Courthouse. The top of the PCE-contaminated soil is estimated at approximately Elevation 245 feet in the northwest corner of the proposed courthouse (approximately 7 feet bgs, Elevation 252), and Elevation 233 feet in the southeast corner (approximately 17 feet bgs, Elevation 250). PCE was not detected in soil samples from borings within the footprints of the proposed Detention Center and Garage. The extent of PCE-contaminated soil south of the proposed Courthouse is unknown because existing buildings limit drilling access. However, the mass excavation for the proposed Garage extends to approximately Elevation 225 and likely will not extend below the water table which has been identified at approximately elevations 225 (north portion) to 215 (south portion) in the vicinity of the Garage (PCE in soil was transported by groundwater). Additional soil sampling to evaluate the possible presence of PCE is recommended beneath the north portion of the garage once the existing building is removed from that area.

GeoEngineers' reports that provide detailed information on geotechnical, geological and environmental conditions at the Site are "Geotechnical Engineering Services, King County Children and Family Justice Center Design-Build Project, Seattle, Washington", dated December 15, 2015, and "Supplemental Environmental Site Characterization Report, King County Children and Family Justice Center Design-Build Project, Seattle, Washington" dated July 22, 2016.

2.3. Soil Sampling During Construction

2.3.1. Supplemental Characterization Samples to be Obtained During Excavation

To the greatest extent possible, excavation and disposal of contaminated soil will proceed based on pre-characterized soil defined by the 2013 and 2015 studies. As discussed with HSW, GeoEngineers will perform supplemental soil sampling/chemical testing to evaluate soil conditions in excavation areas where additional data is needed to classify soil for disposal purposes. Additional samples are recommended in the Courthouse excavation near the east and west edges of PCE soil area shown on Figure 2, and to confirm

the estimated top of the sloping PCE soil surface shown in Figure 6. Samples would be collected by potholing once the mass excavation is within approximately four feet of the top of the interpreted PCE soil. Estimated lateral and vertical boundaries between PCE Contained-In soil and petroleum-impacted soil may be revised based on these sampling results. Some of the future sampling locations (e.g. portions of proposed Garage) were not accessible to sample during the 2013 and 2015 studies due to presence of existing buildings. Additional sampling in the Garage is recommended to define impacted fill thickness and lateral extent in areas that were not accessible, and evaluate whether PCE-contaminated soil is present in the north portion of the Garage excavation where the groundwater surface is close to the bottom of the planned excavation. Soil sampling/testing will also be performed during Phase II construction at the locations of the existing and former USTs and Alder Tower elevator oil release to evaluate-refine contaminated soil extent. Some of the current soil classifications shown on Figures 1 and 2 and discussed in this document may be revised based on chemical test results from the future soil sampling.

2.3.2. Final Verification Soil Sampling to be Obtained at Final Excavation Limits

Confirmation soil samples will be collected from the final limits of remedial excavations in the limited areas where petroleum and PCE soil exceeded MTCA cleanup levels to document levels of contamination left in place. Confirmation soil sampling is not planned at the final limits of excavations with clean soil (for example in the Detention Center building footprint) and impacted soil (less than MTCA levels).

3.0 SOIL HANDLING AND MANAGEMENT

3.1. Soil Categories

Based on the subsurface investigation results, GeoEngineers classified soil at the Site into four categories for soil handling and management purposes: Impacted, Contaminated, Contained-In, and Non-Impacted (Clean):

Impacted Soil

Soil is considered impacted if one or more of the following conditions are met:

- Contaminant concentrations for petroleum exceed laboratory detection limits but are less than MTCA cleanup levels.
- Metals are detected at concentrations less than MTCA cleanup levels and above natural background levels for the Puget Sound region (Ecology, 1994).
- Physical evidence of low level contamination (slight sheen, mild odor, staining) is observed.

Contaminated Soil

Soil is considered contaminated if one or more of the following conditions are met:

- Contaminant concentrations for petroleum or metals exceed MTCA Method A cleanup levels.
- Physical evidence of contamination (moderate to heavy sheen, strong odor, staining) is observed.

PCE Contained-In Soil

Soil is considered "Contained-In" when the following conditions are met:

- PCE and associated chlorinated solvents are detected at concentrations that exceed laboratory detection limits (does not matter whether the concentrations are greater or less than the MTCA cleanup levels).
- Ecology approves the request for "Contained-In Determination" for solvents-contaminated soil based on chemical data from the CFJC Site.

Non-Impacted (Clean) Soil

Soil is considered Non-Impacted (Clean) if one or more of the following conditions are met:

- Contaminants are not detected except for low levels of metals.
- Metals are detected at concentrations equal to or less than natural background concentrations in the Puget Sound region (Ecology, 1994).
- No physical evidence of contamination (sheen, odor, staining, suspect debris etc.) is observed.

3.2. Guidelines for Soil Excavation and Handling

Based on the soil chemical data and PCE groundwater data, GeoEngineers assigned color codes to areas where Impacted (yellow shaded), Contaminated (purple shaded), Contained-In (pink shaded), and Non-Impacted (Clean, green shaded) soils are expected during construction drilling and soil excavation activities at the Site. These color shaded areas are discussed below and shown on Figures 1, 2, 7 and 8. The information presented in this section and in the Figures is intended to be used as a guide by the contractor during drilling of shoring wall piles and soil excavation activities. However, modifications to this plan may be warranted in some areas of the Site if soil conditions encountered during construction differ from those encountered in the pre-construction characterization borings. The boundaries of Impacted soil, Contaminated soil, Contained-In soil, and Non-Impacted (Clean) soil shown on Figures 1, 2, 7 and 8 may be revised based on the results of supplemental soil sampling during-construction. These Figures should be reviewed together with the information in this section for a complete understanding of soil handing and management guidelines. GeoEngineers will be on site full-time during excavation of Contaminated and Contained-In soil, and part-time during excavation of low-level Impacted soil. GeoEngineers environmental services during construction will include:

1. Field screen soil and assist the contractor as needed in identifying and segregating impacted/ contaminated soil from adjacent-underlying Contained-In and clean soil, and
2. Obtain characterization/confirmation soil samples.

Field screening and confirmation soil sampling procedures are described in Appendix A.

3.2.1. Yellow Shaded Areas: Impacted Soil

Based on 2013 and 2015 borings, Impacted soil (Figure 1, yellow shaded areas) with low level petroleum (diesel- and lube oil-range) and lead detections is present at depths of 1 to 12 feet bgs in various portions of the Site. Field observations, field screening, and supplemental soil sampling could result in changing the extent of yellow shaded areas in some areas (Figure 1).

Handling and management requirements for Impacted soil include:

- **Waste Profile, Landfill Selection and Soil Disposal:** GeoEngineers and HSW will prepare a soil waste profile and obtain approval from a permitted landfill/disposal facility to dispose impacted soil off-site prior to commencing impacted soil excavation activities. Impacted soil will be transported to disposal facilities that have provided approval to accept Impacted soil from the Site. The Impacted soil disposal facilities to be used for the project are:
    - Republic/Rabanco's Roosevelt Landfill located in Klickitat County, Washington. A rail transfer station for this landfill is located in Seattle, Washington.
    - Waste Management's Columbia Ridge Landfill in Arlington, Oregon. A rail transfer station for this landfill is located in Seattle, Washington.
- **Soil Excavation and Segregation:** As the Impacted soil is excavated, the Contractor (with GeoEngineers assistance) will segregate the impacted soil from adjacent-underlying soil (Contained-In or Clean) to avoid cross-contamination. **It should be noted that Impacted fill soil overlaps with Contained-In soil in the mass excavation footprint for the proposed Courthouse.** The Contractor and GeoEngineers will work together to avoid excavating Contained-In soil during Impacted soil excavation activities by using existing chemical data and completing potholes and collecting soil samples during excavation for PCE testing to verify the Impacted/Contained-in contact. Some Impacted soil located close to the contact with underlying Contained-in soil may need to be disposed as Contained-In to avoid having Contained-in soil sent off as Impacted soil.
- **Onsite Reuse:** Impacted soil with low level petroleum and lead detections may be managed/reused on site as non-structural fill in areas where no bio-retention cells and stormwater control features are planned, provided such soil is considered suitable for use by the project Geotechnical Engineer. GeoEngineers environmental and geotechnical engineers need to be consulted before Impacted soil is reused on site. On-site reuse of low level Impacted soil must be completed in accordance with Ecology guidelines[1]. Onsite reuse of low level Impacted soil will decrease off-site disposal costs. Impacted soil that cannot be reused on site must be disposed at a permitted landfill.
- **Temporary Stockpiling of Impacted Soil:** Impacted soil will either be loaded directly into trucks for off-site disposal, or stockpiled on the Site pending reuse/disposal. If Impacted soil is temporarily stockpiled, the stockpiles must be covered with plastic sheeting at all times and protected from stormwater runoff. Construction best management practices for temporary erosion and sediment control must be followed during stockpiling activities.
- **Loading and Transportation:** If Impacted soil is not reused on site, the Contractor will load the Impacted material into trucks and transport the material to one of the permitted landfill/disposal facilities listed below. A tracking procedure will be developed and approved by HSW and GeoEngineers prior to starting excavation activities to track/document each truckload of Impacted soil with landfill receipts. Construction best management practices for temporary erosion and sediment will be followed during loading and transportation.

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[1] Washington State Department of Ecology's Remediation of Petroleum Contaminated Sites guidance document, Publication N0.10-09-057, dated September, 2011 provides end-use guidelines for managing soil containing contaminants at various concentrations (See Table 12.1 in Ecology's guidance document). Although Ecology allows reuse of soil containing low levels of petroleum (herein referred as "impacted") with certain limitations, the end-use of impacted soil largely depends on construction logistics, cut-fill ratios, owner's risk tolerance etc.

- **Confirmation Soil Sampling:** GeoEngineers will obtain soil samples from excavations in yellow shaded areas (Figure 1) to confirm the lateral-vertical limits of Impacted soil in areas that need additional characterization. Confirmation samples will be obtained from the sidewalls and base of the excavation. Confirmation soil samples will be submitted for chemical analysis on a rush (1- to 2-day) turnaround as needed to facilitate construction schedule.

3.2.2. Purple Shaded Areas (Contaminated Soil)

Anticipated areas of Contaminated soil are shown on Figure 1 with purple shading. Area 1—an area with an oil-range petroleum detection (boring GEI-7) greater than the MTCA Method A cleanup level is present at an approximate depth of 3 feet bgs in the southwest corner of the proposed Courthouse. Areas 2 and 3—based on GeoEngineers experience, Contaminated soil is nearly always present beneath USTs; therefore, Contaminated soil is presumed beneath the historic UST and existing UST in the southwest portion of the Site near the planned Garage (USTs shown on Figure 2). Area 4—the historic oil release (approximately 50 gallons) at the north Alder Tower elevator pit in the central portion of the Site. Contaminated soil will be encountered at the elevator oil release area. Field observations, field screening, and supplemental soil sampling could result in changing the lateral extent of the purple shaded areas on Figure 1.

Handling and management requirements for Contaminated soil include:

- **Waste Profile, Landfill Selection and Soil Disposal:** GeoEngineers and HSW will prepare a soil waste profile and obtain approval from a permitted landfill/disposal facility to dispose Contaminated soil off site prior to starting Contaminated soil excavation activities. Contaminated soil will be transported to one of the disposal facilities below once they have provided approval to accept the soil. The Contaminated soil disposal facilities to be used for the project are:
    - Republic/Rabanco's Roosevelt Landfill located in Klickitat County, Washington. A rail transfer station for this landfill is located in Seattle, Washington.
    - Waste Management's Columbia Ridge Landfill in Arlington, Oregon. A rail transfer station for this landfill is located in Seattle, Washington.
- **Soil Excavation and Segregation:** As the Contaminated soil is excavated, the Contractor (with GeoEngineers assistance) will segregate the Contaminated soil from adjacent-underlying soil (Contained-In or Clean) to avoid cross-contamination.
- **Onsite Reuse:** Contaminated soil must **NOT** be reused on site. The Contractor will direct-load Contaminated soil into trucks whenever practical and transport off site to a permitted treatment/disposal facility.
- **Temporary Stockpiling of Contaminated Soil:** It is expected that Contaminated soil will be loaded directly into trucks for off-site disposal whenever practical. If Contaminated soil is temporarily stockpiled pending disposal because of construction logistics, the stockpiles must be covered with plastic sheeting at all times and protected from stormwater runoff. Construction best management practices for temporary erosion and sediment control must be followed during stockpiling activities.
- **Loading and Transportation:** The Contractor will load the Contaminated soil into trucks and transport the material to one of the permitted landfill/disposal facilities listed below. A tracking procedure will be developed and approved by HSW and GeoEngineers prior to starting excavation activities to track/document each truckload of Contaminated soil with landfill receipts. Construction best management practices for temporary erosion and sediment will be followed during loading and transportation.

- **Confirmation Soil Sampling:** GeoEngineers will obtain soil samples from remedial excavations at the GEI-7 location, two USTs, and the Alder Tower elevator pit to document soil conditions at the limits of excavation. Except for GEI-7, these locations were inaccessible during previous studies due to the presence of existing buildings and utilities. Confirmation samples will be obtained from the sidewalls and base of the remedial excavations. Confirmation soil samples will be submitted for chemical analysis on a rush (1- to 2-day) turnaround as needed to facilitate construction schedule.

3.2.3. Pink Shaded Area (PCE Contained-In Soil)

Areas of Contained-In soil that are anticipated in the proposed Courthouse excavation and drilled piles are shown on Figures 2, 7 and 8 with pink shading. Portions of utility excavations north of the Courthouse where PCE soil is expected based on a shallow PCE detection at 3 feet bgs in boring GP-14, also are shown. The top of the PCE-contaminated soil is estimated at approximately Elevation 245 feet (approximately 7 feet bgs) in the northwest corner of the proposed courthouse, and Elevation 233 feet (approximately 17 feet bgs) in the southeast corner (Figure 2). The estimated top of the PCE soil surface through the site is shown in the northwest-southeast cross-section on Figure 6. This PCE surface is based on soil and groundwater chemical data and the assumption that PCE soil extends 2 feet above the March 2014 groundwater levels measured in site wells (PCE contamination in soil was transported by groundwater). Ecology has the authority to designate soil with low to moderate PCE contamination originating from a dry cleaner as "Contained-In." Contained-In soil has less stringent handling and disposal requirements compared to soil with high levels of PCE contamination that designates as Hazardous Waste. Ecology has approved a Contained-in Determination for PCE-contaminated soil at the Site in July 2016. A copy of the Contained-In Determination letter will be provided as Appendix B to this Plan.

Handling, management and disposal requirements for Contained-In soil are shown on Figure 8 and include the following:

- **Waste Profile, Landfill Selection and Soil Disposal:** GeoEngineers and HSW will prepare a Contained-In soil waste profile and obtain approval from a permitted landfill/disposal facility to transport/dispose PCE soil off site prior to starting Contained-In soil excavation activities. Excavated Contained-In soil can be transported to the selected disposal facilities that have provided approval to accept Contained-In soil from the Site. Disposal facilities to be used for the project are:
    - Allied Waste/Rabanco's Roosevelt Landfill located in Klickitat County, Washington. A rail transfer station for this landfill is located in Seattle, Washington.
    - Waste Management's Columbia Ridge Landfill in Arlington, Oregon. A rail transfer station for this landfill is located in Seattle, Washington.
- **Soil Excavation and Segregation:** Contained-In soil excavated from the proposed Courthouse footprint, limited utility trenches and some of the soldier piles will be placed in plastic-lined steel containers provided by the disposal facility. During excavation, the Contractor will segregate the adjacent-overlying Impacted soil to prevent cross-contamination with Contained-In soil. GeoEngineers will assist the Contractor in soil segregation activities using the potholing/sampling procedures described in Section 3.2.1.
- **On-site Reuse:** Contained-In soil cannot be reused on site.
- **Temporary Stockpiling of Impacted Soil:** Stockpiling of PCE Contained-In soil is not planned during construction. If the soil needs to be stockpiled temporarily because of construction logistics, Contained-In soil must be placed on and covered with plastic sheeting at all times and protected from

stormwater runoff. Construction best management practices for temporary erosion and sediment control must be followed during stockpiling activities.

- **Loading and Transportation:** The Contained-In soil will be loaded in plastic-lined steel containers and hauled to a permitted Contained-In soil transfer station in Seattle, Washington. A wheel-wash station will be installed to avoid tracking of Contained-In soil to off-site rights-of-way. A tracking procedure will be developed and approved by HSW prior to starting excavation activities to track/document each truckload of Contained-In soil with landfill receipts. Construction best management practices for temporary erosion and sediment will be followed during loading and transportation.
- **Confirmation Soil Sampling:** Characterization soil samples will be obtained to further define lateral-vertical extent of Contained-In soil in construction excavations located within the PCE plume at the Site. Confirmation samples will be obtained from the sidewalls and base of the excavations and submitted for chemical analysis of selected halogenated volatile compounds. Sample results will be requested on a rush (1- to 2-day) turnaround time as needed to facilitate construction schedule.

3.2.4. Green Shaded Areas: Non-Impacted (Clean) Soil

Soil is currently classified as Non-Impacted (Clean) in the mass excavation footprint for the proposed Detention Center and excavations for the proposed stormwater vaults in the northeast and southwest portions of the Phase I development. Contaminants of concern either were not detected in soil samples tested from 2013 and 2015 borings located within the green shaded areas shown on Figure 1, or the detected concentrations represent natural background levels for metals. This classification may change in some areas if contaminants are detected in some of the supplemental soil samples obtained during construction. GeoEngineers recommends that Non-Impacted soil that is not reused on site be disposed at a construction debris landfill or similar controlled facility accepting clean fill. Disposal at uncontrolled facilities accepting fill from multiple construction projects is not recommended for Owner risk management purposes. GeoEngineers will be available on an as-needed basis to assist in soil segregation and evaluate soil for physical evidence of contamination.

4.0 GUIDELINES FOR SUSPECT CONTAMINATION

GeoEngineers will be available on an as-needed basis to field screen suspect soil during construction excavation in areas that are classified as Clean based on existing data. Therefore, it is the earthwork Contractor's responsibility to be aware of soil conditions, identify suspect soil (potentially Impacted-Contaminated) as described below, and promptly notify HSW/GeoEngineers. Suspect soil should be considered Impacted-Contaminated if it exhibits one or more of the following physical characteristics:

- Staining;
- Petroleum odors;
- A moderate or heavy sheen when placed in contact with water;
- Elevated concentrations of organic vapors detected using headspace field screening methods.

If soil in a Clean area exhibits one or more of the above characteristics, or if an undocumented UST is discovered, the earthwork Contractor must notify HSW/GeoEngineers immediately so that the soil can be properly characterized before additional excavation takes place in the suspect soil location.

5.0 SITE DEVELOPMENT

The Phase I development consists of the proposed Courthouse and Detention Center buildings in the north half of the Site; the Phase II development consists of the proposed Garage in the south half. Impacted, Contaminated, Contained-In, and Non-Impacted (Clean) soils excavated during construction activities for the Phase I and Phase II developments will be managed according to the procedures described in Section 3.2. Preliminary estimates of Impacted, Contaminated and Contained-In soil volumes to be excavated during Site development are summarized in Section 5.3 of this document. Major components of the Phase I and Phase II developments are discussed below.

5.1. Phase I Development – Detention and Courthouse

5.1.1. Haul Road Grading (Impacted Soil)

Soil will be excavated/graded in an approximately 14-foot wide east-west bench that runs parallel to the north limits of the Courthouse excavation for a haul road. Grading is planned to approximate depths of 1 to 4 feet bgs. Excavated soil (estimated 1,200 tons) should be considered Impacted.

5.1.2. Soldier Pile Drilling (Impacted and Contained-In Soil)

Based on review of the Shoring Plan (Sheet SH101) and Shoring Details (Sheets SH301 to 303), approximately 116 soldier piles will be drilled along the north, south, and west walls of the new Courthouse and a portion of the tunnel connecting the Courthouse and proposed Garage). The piles will be drilled to approximate depths of 27 to 34 feet bgs. Soil cuttings from 51 soldier piles (estimated 300 tons) shaded yellow in Figure 3 should be considered Impacted. Soil cuttings from the remaining 65 soldier piles (approximately 450 tons) shaded pink in Figure 7 should be considered Contained-In.

5.1.3. Mass Excavation – Courthouse (Impacted and Contained-In Soil) – Detention (Clean Soil)

Impacted soil and Contained-In soil will be excavated from the Courthouse mass excavation. The construction excavation will extend from ground surface (approximately Elevation 252) to an approximate depth of 15 feet bgs (Elevation 237), which is 2 feet below the planned bottom finish floor (Elevation 239) of the proposed Courthouse. Impacted soil ranging from approximately 7 to 12 feet thick (estimated 44,100 tons) will be excavated from the proposed Courthouse footprint. Contained-In soil ranging from approximately 1 to 9 feet thick (estimated 11,700 tons) will be excavated from the proposed Courthouse footprint. Excavation for a tower crane footing is expected to extend 5 feet below the bottom of mass excavation (estimated 200 tons). Soil excavated for the tower crane footing should be considered Contained-In. The Contractor must be aware that Contained-In soil overlaps with Impacted soil in the central and west portions of the Courthouse mass excavation. It is the Contractor's responsibility to work with GeoEngineers to segregate Impacted soil from underlying Contained-In soil and not cut into the Contained-In soil while excavating the Impacted soil. This will be accomplished by using existing PCE data, and completing potholes and collecting soil samples during excavation for PCE testing to verify the Impacted/Contained-in contact. Soil excavated from the footprint of the proposed Detention Center is expected to be Non-Impacted (Clean) based on 2013 sample results. Nevertheless, the site characterization results were based on widely spaced borings and the Contractor should exercise caution and notify HSW and GeoEngineers immediately if potential suspect soil hot spots are observed during excavation in the Detention Center footprint. If suspect soil is encountered, then the procedures outlined in Section 4.0 will apply.

5.1.4. Excavation for Utilities and Stormwater Vaults/Bio-retention Cells (Impacted Soil)

Multiple utilities and stormwater vaults are planned for the proposed Courthouse and Detention Center. Based on physical evidence of petroleum contamination (fuel odor) identified by Herrera in 2013 explorations (GP-8 and MW-9), Impacted soil will be excavated from ground surface to an approximate depth of 12 feet bgs (estimated 400 tons), for a proposed utility corridor in the north-central portion of the Phase I area (Figure 1). Impacted soil will be excavated from the upper 4 feet (estimated 400 tons) for stormwater vaults in the southeast portion of the Phase I development (Figure 1). Soil below the 4-foot depth at this location is considered Non-Impacted (Clean) based on existing information.

Based on a shallow PCE detection in boring GP-14, Contained-In soil is anticipated below pavement to approximate depths of 3 to 6 feet bgs in limited sections (approximately 60 linear feet) of trenches for a proposed communication line and storm drain in the northwest portion of Phase I (Figure 2). An estimated 150 tons of Contained-In soil will be removed from theses trenches.

GeoEngineers will obtain soil samples during construction to refine the vertical and lateral extent of Impacted and Contained-In soil at these utility and vault locations.

The bio-retention cells proposed at four locations in the east half of the Phase I development appear to be areas where grades will be raised during construction. Excavation of Impacted soil from the bio-retention cell planned in northwest portion of the Phase I area is accounted for by the haul road grading discussed in Section 5.1.1.

5.2. Phase II Development - Garage

5.2.1. Mass Excavation (Impacted Soil)

Based on limited soil data, it is assumed that shallow Impacted soil will be excavated from the mass excavation for the proposed Garage. The planned construction excavation for the Garage will extend from ground surface (approximately Elevation 235) to an approximate depth of 9 feet bgs (Elevation 226) which is 2 feet below the lowest planned finished floor (Elevation 228). The Garage excavation includes open-cut, sloped sidewalls (no shoring walls are planned for the Garage). For planning purposes, it is assumed that the upper 3 feet of soil is Impacted and will be excavated from the entire footprint of the Garage excavation shown on Figure 1 (estimated 9,600 tons). The soil below a depth of 3 feet is assumed to be Non-Impacted (Clean). Contained-In soil is not anticipated to be removed during mass excavation for the Garage based on the depths to groundwater beneath the Garage footprint. As mentioned in Section 2.3.1, it is possible PCE-contaminated soil is present in the north portion of the Garage excavation where the groundwater table is close to the bottom of the planned excavation. Additional soil sampling is recommended once the existing building is demolished to confirm these soil classification assumptions.

It is the Contractor's responsibility to work with GeoEngineers to avoid cross-contamination of underlying clean soil by Impacted soil during mass excavation. As discussed in Section 2.3, additional characterization soil sampling needs to be completed in the Garage footprint. Although soil excavated below the 3-foot depth is currently assumed to be Clean, the Contractor should exercise caution and watch for potential Impacted-Contaminated soil during excavation. If suspect soil is encountered, then procedures described in Section 4.0 need to be followed.

5.2.2. Underground Storage Tanks and Alder Tower Elevator Pit (Anticipated Contaminated Soil)

According to previous environmental investigations, two diesel USTs have stored diesel for an emergency generator at the west side of the Alder Tower in the southwest portion of the Site. The existing UST shown on Figures 1 and 2 is a double wall steel tank (approximate storage volume 1,100 gallons or less) registered with Ecology (UST Site ID #102500). The 2013 Herrera report says that no tank removal documentation was available for the historic 1,000 gallon steel tank shown on Figures 1 and 2. Approximately 50 gallons of hydraulic oil reportedly leaked at the north Alder Tower elevator pit in the north portion of the Phase II area. Only limited soil sampling and chemical testing was performed during pre-construction environmental investigations at these locations because of existing buildings and utilities. Chemical analytical results for 2013 and 2014 groundwater samples from a monitoring well close to the USTs did not detect petroleum contamination in groundwater. However, based on the existing soil data and our experience at many UST sites, petroleum-contaminated soil is expected at the two USTs and the elevator pit locations (estimated 1,800 tons combined).

We understand HSW will contract with a Washington State-licensed UST decommissioning company to remove the historic and existing tanks and fuel piping during Phase II construction. GeoEngineers will complete a UST Site Assessment which includes soil sampling and chemical testing following tank removal to evaluate soil conditions at these locations. The approximate extent of Contaminated soil shown on Figure 1 will be confirmed during remedial soil excavation at the UST and elevator pit locations.

5.2.3. Excavation for Utilities and Stormwater Vaults/Bio-retention Cells (Clean Soil)

Soil that will be excavated for utilities in Phase II area is considered Non-Impacted (Clean) based on existing information. However, the Contractor should exercise caution and watch for potential Impacted-Contaminated soil during excavation. If suspect soil is encountered, then procedures outlined in Section 4.0 will apply. The bio-retention cells planned near the north wall of the proposed Garage will be excavated as Impacted soil during mass excavation for the Garage. Site grades at the other proposed Phase II bio-retention cell locations will be raised from existing grades based on drawings that were reviewed.

5.3. Preliminary Soil Volume Estimates

5.3.1. Impacted-Contaminated Soil from Phase I and Phase II Development

Hos Brothers (HSW's earthwork contractor) used Impacted-Contaminated soil extent information from GeoEngineers to prepare estimates of Impacted-Contaminated soil volumes that will be excavated from the mass excavation footprint of the Courthouse and Garage. GeoEngineers developed estimates of Impacted soil volumes that will be excavated for soldier pile drilling, haul road grading, and utility/stormwater vault excavations based on the 50 percent Contract Document construction drawings and communications with the project team. GeoEngineers reduced Hos Brothers' volume estimate for Impacted soil excavated from the Garage to account for the decreased footprint of the excavation layback related to the recently revised (higher) bottom finish floor Elevation (currently Elevation 228 feet versus initial Elevation 217). The estimates in the table below are preliminary and Impacted-Contaminated soil volumes will change based on final designs, construction excavation planning and supplemental soil sampling/testing during construction. Preliminary Impacted-Contaminated soil volume estimates are shown in the table below.

Construction Activity: Impacted-Contaminated Soil Excavation	Soil Classification	Preliminary Estimated Soil Volume (Tons)
Phase I Development		
Haul Road Grading	Impacted	1,200
Soldier Piles Drill Cuttings	Impacted	300
Mass Excavation for Courthouse	Impacted/Contaminated	44,100
Utility Trenches/Stormwater Vaults	Impacted	800
Estimated Impacted-Contaminated Soil Volume for Phase I		**46,400 Tons**
Phase II Development		
Mass Excavation for the Garage	Impacted	9,600
Two USTs and Alder Tower Elevator Pit	Contaminated	1,800
Estimated Impacted-Contaminated Soil Volume for Phase II		**11,400 Tons**
PRELIMINARY ESTIMATED IMPACTED-CONTAMINATED SOIL VOLUME FOR THE PROJECT		**57,800 Tons**
50% Volume Contingency (can be removed or modified once final design and excavation plans are completed (69,600 for Phase I plus 17,100 for Phase II)		**86,700**

5.3.2. Contained-In Soil from Phase I Development

Contained-In soil will be excavated during construction of the Phase I development. Hos Brothers prepared estimates of Contained-In soil volumes that will be removed from the Courthouse mass excavation based on PCE soil extent information from GeoEngineers. Contained-In soil volume estimates from soldier pile drilling at the Courthouse and utility trench excavations were prepared by GeoEngineers based on review of construction drawings and communications with the project team. These estimates are preliminary and volumes may change based on the results of soil sampling/chemical testing during construction.

Preliminary Contained-In soil volumes are shown in the table below.

Construction Activity: Contained-In Soil Excavation	Preliminary Estimated Soil Volume (Tons)
Phase I Development	
Soldier Piles Drill Cuttings	450
Mass Excavation for Courthouse	11,900
Utility Trenches	150
Estimated Contained-In Soil Volume for Phase I	**12,500 Tons**
Phase II Development	
No Contained-In Soil is Expected from the Garage Excavation	0
Estimated Contained-In Soil Volume for Phase II	**0**
PRELIMINARY ESTIMATED CONTAINED-IN SOIL VOLUME FOR THE PROJECT	**12,500 Tons**
50% Volume Contingency (can be removed or modified once final design and excavation plans are completed	**18,750**

5.4. Worker Health and Safety

The Contractor, in the course of work, shall be aware that petroleum and lead Impacted-Contaminated soil and PCE Contained-In soil and groundwater have been identified in some areas of the Site. The Contractor shall assume full responsibility and liability for compliance with all federal, state, and local regulations pertaining to work practices, protection of workers and visitors to the site relative to the presence of Impacted-Contaminated/Contained-In soil during construction. We understand HSW has retained a Certified Industrial Hygienist (CIH) to assist with evaluation of health and safety/chemical exposure issues during construction, including potential for solvent vapors in confined spaces. The Contractor will comply with the following provisions:

- The content of WAC 173-340-810 (MTCA Cleanup Regulation, Worker Safety and Health). WAC 173-340-810 states that requirements under the Occupational and Safety Health Act (OSHA) and the Washington Industrial Safety and Health Act (WISHA) are applicable to excavation and handling of Contaminated soil-groundwater.
- Contractors performing excavation, handling or loading of Impacted-Contaminated/Contained-In soil and groundwater shall prepare a site-specific Health and Safety Plan that addresses the presence of the contaminants described in this document. Details regarding the specific type, concentration and location of contaminants detected at the Site are available in environmental reports prepared by Herrera and GeoEngineers.
- Workers involved in excavation or handling of Contaminated or Contained-In soils and groundwater shall be in compliance with HAZWOPER Training in accordance with WAC 296-843. Workers shall be trained in the purpose, proper selection, fitting, use, and limitations of personal protective equipment (PPE), including gloves, protective clothing and respirators.

6.0 CONSTRUCTION DEWATERING EFFLUENT HANDLING

Groundwater has been measured at depths of 3 to 21 feet bgs at the Site. PCE was detected in groundwater samples at concentrations greater than MTCA Method A cleanup levels in groundwater beneath the Site. The PCE groundwater plume ranges from approximately 150 to 250 feet wide and extends from the northwest corner to the southeast corner of the Site. Groundwater will be encountered during soldier pile drilling, mass excavation in the Courthouse and trenching for deep utilities in the north portion of the Site. We understand HSW will prepare a dewatering effluent management plan addressing appropriate water containment and treatment methodologies. HSW has applied for a Construction Dewatering permit from King County to dispose of dewatering effluent in the combined sewer. The Contractor will install and operate a dewatering effluent management system on site to store and potentially treat (if necessary) stormwater and groundwater effluent prior to discharge. GeoEngineers will collect water samples from the effluent containment tanks and submit the samples for testing of contaminants based on the requirements of the Discharge Permit. Any effluent discharge must comply with the discharge quality conditions stated in the Discharge Permit. Water quality test results will need to be compared to the discharge limits allowed by the King County Discharge Permit.

7.0 CONTACT INFORMATION

If unexpected potentially contaminated soil is discovered during construction activities, the Contractor will notify the appropriate project team members. The table below presents those contacts.

PROJECT CONTACTS

Name	Title	Cell Phone	Office Phone	Email
Howard S. Wright				
Mike Levison	General Superintendent	206.618.8909	206.447.7654	levisonm@hswc.com
Neal Schaefer	Senior Superintendent	206.375.0832	206.447.7654	schaefern@hswc.com
GeoEngineers				
Dave Cook	Environmental Principal	206.372.7637	206.239.3229	dcook@geoengineers.com
Jim Roth	Environmental Project Manager	425.681.0686	206.239.3243	jroth@geoengineers.com
Matthew Smith	Geotechnical Principal	206.963.0862	425.861.6072	msmith@geoengineers.com

8.0 LIMITATIONS

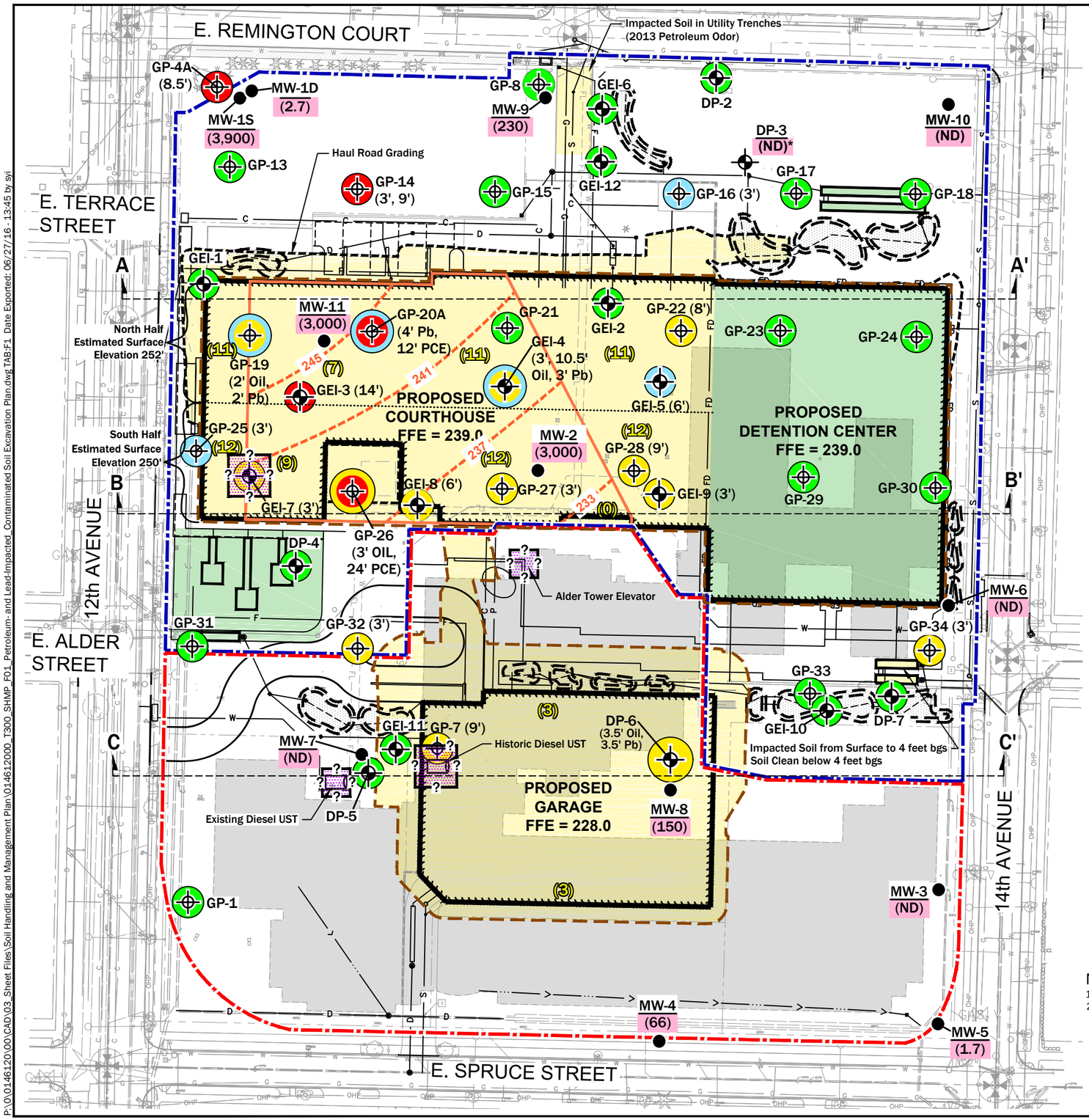
We have prepared this Plan for the exclusive use of Howard S. Wright and their authorized agents. Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this Plan was prepared. No warranty or other conditions, express or implied, should be understood.

Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

Please refer to Appendix C, titled "Report Limitations and Guidelines for Use," for additional information pertaining to use of this document.

FIGURES

GeoEngineers



Legend

- MW-1S (3,900) — Monitoring Well; PCE Concentration (in Groundwater). Cleanup Level = 5µg/L. *TCE Detected at 0.44µg/L. Cleanup Level = 5µg/L
- GEI-1 — Auger Boring (GeoEngineers, 2015)
- DP-6 — Direct-Push Boring (GeoEngineers, 2015)
- GP-1 — Probe (Herrera, 2013)
- PCE in Soil (Sample Depth)
- Oil/Diesel in Soil (Sample Depth)
- Lead (Pb) in Soil at Elevated Levels (Sample Depth)
- Contamination Not Detected in Soil
- Phase I Redevelopment
- Phase II Redevelopment
- Estimated Extent of Petroleum and Lead-Impacted Soil
- Estimated Extent of Non-impacted Soil (Clean Soil)
- Estimated Extent of Contaminated Soil excavations at GEI-7, Alder Tower Elevator, and USTs
- Outline of Estimated PCE-Contaminated Soil Extent in Courthouse Mass Excavation
- 245 — Estimated Top Elevation of PCE-Contaminated Soil. Assumes PCE-contaminated soil extends 2' above March 2014 (high) groundwater table. PCE-contaminated soil is present below elevation 236 in orange outlined area (see Figure 2 for detailed PCE soil extent and thickness).
- (11) — Estimated Thickness (Feet) of Petroleum and Lead-Impacted Soil to be excavated. Impacted soil is present from ground surface to depth (thickness) shown.
- Approximate Limit of Mass Excavation
- (14') — Depth of contaminated soil sample in feet bgs
- bgs — below existing ground surface
- FFE — Finished Floor Elevation
- UST — Underground Storage Tank
- A — A' — Cross-Section Location (See Figures 3, 4 and 5)

Site Features

Description

- Proposed Building Footprint
- Existing Buildings
- Proposed Bio-Retention Cell

N W E S

80 0 80 FEET

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. cannot 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.

Data Source:
Sheets C-1.10 and C-1.20 Grading and Utilities plans provided by AHBL, Inc. on 6-6-16.

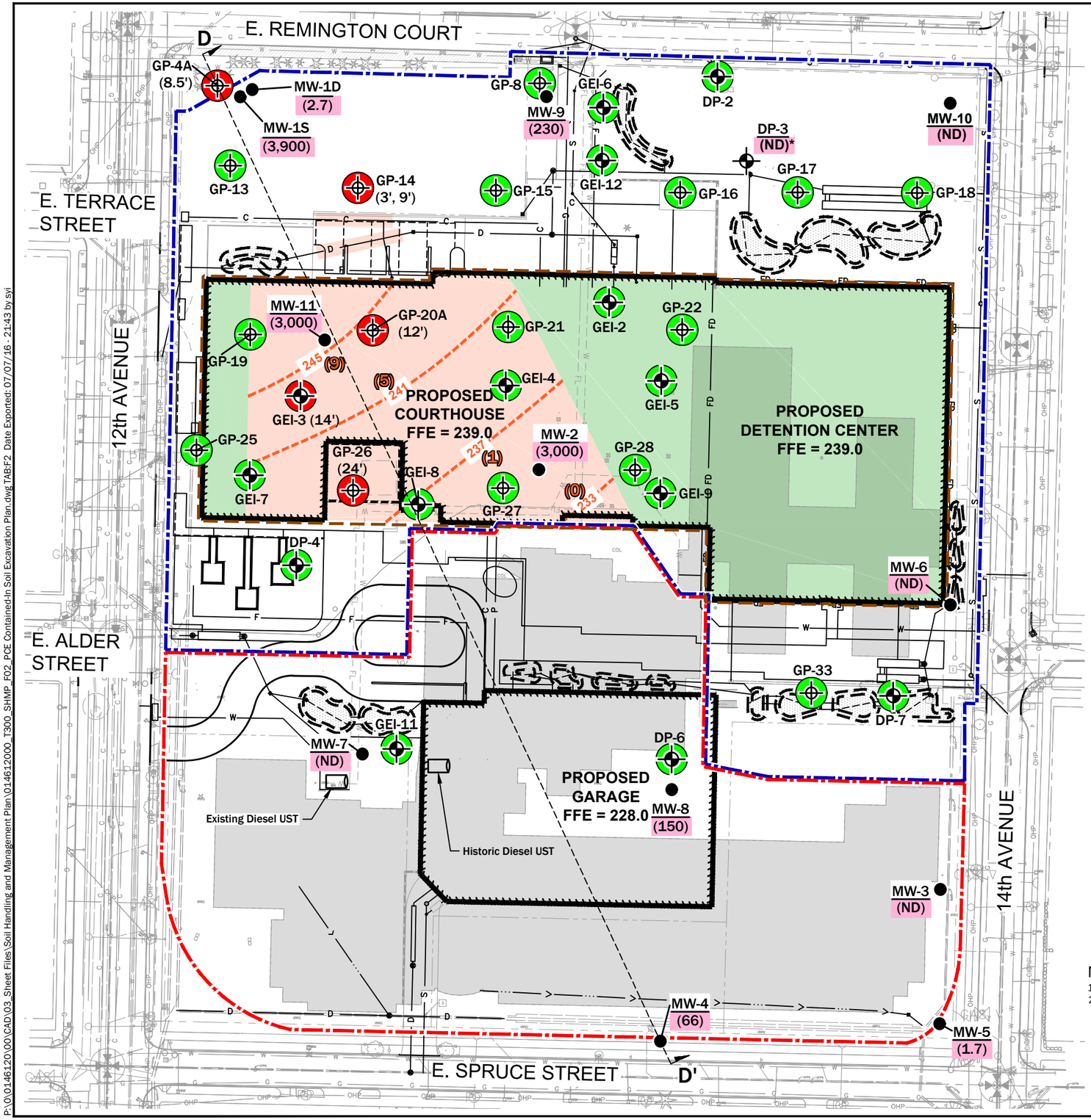
Petroleum- and Lead-Impacted/ Contaminated Soil Excavation Plan

King County Children and Family Justice Center
Seattle, Washington

GeoEngineers

Figure 1

P:\0\0146120\00\CAD\03_Sheet Files\Soil Handling and Management Plan\0146120000_T300_SHMP_F01_Petroleum- and Lead-Impacted_Contaminated Soil Excavation Plan.dwg TAB:F1 Date Exported: 06/27/16 - 13:45 by syi



Legend

- MW-1S ● — Monitoring Well
- (3,900) — PCE Concentration (in Groundwater)
  - Cleanup Level = 5µg/L
  - *TCE Detected at 0.44µg/L
  - Cleanup Level = 5µg/L
- GEI-3 — Auger Boring (GeoEngineers, 2015)
- DP-6 — Direct-Push Boring (GeoEngineers, 2015)
- GP-2 — Probe (Herrera, 2013)
- PCE in Soil (Sample Depth)
- PCE Not Detected in Soil
- Phase I Redevelopment
- Phase II Redevelopment
- Estimated PCE Contained-In Soil Extent in Courthouse Mass Excavation and Utility Trenches
- Estimated Extent of Soil with no PCE Contamination
- 245 — Estimated Top Elevation of PCE-Contaminated Soil. Assumes PCE-contaminated soil extends 2' above March 2014 (high) groundwater table.
- (9) — Estimated Thickness (Feet) of PCE-Contaminated Soil to be Excavated. Based on elevation 236, bottom of mass excavation. PCE-contaminated soil is present below elevation 236 in orange shaded area.
- Approximate Limit of Mass Excavation
- (14') — Depth of contaminated soil sample in feet bgs
- bgs — below existing ground surface
- FFE — Finished Floor Elevation
- UST — Underground Storage Tank
- D — D' — Cross-Section Location (See Figure 6)

Site Features

Description	
Proposed Building Footprint	
Existing Buildings	
Proposed Bio-Retention Cell	

N, W, E, S

80 0 80
FEET

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. cannot 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.

Data Source:
Sheets C-1.10 and C-1.20 Grading and Utilities plans provided by AHBL, Inc. on 6-6-16.

PCE Contained-In Soil Excavation Plan

King County Children and Family Justice Center
Seattle, Washington

GeoEngineers

Figure 2

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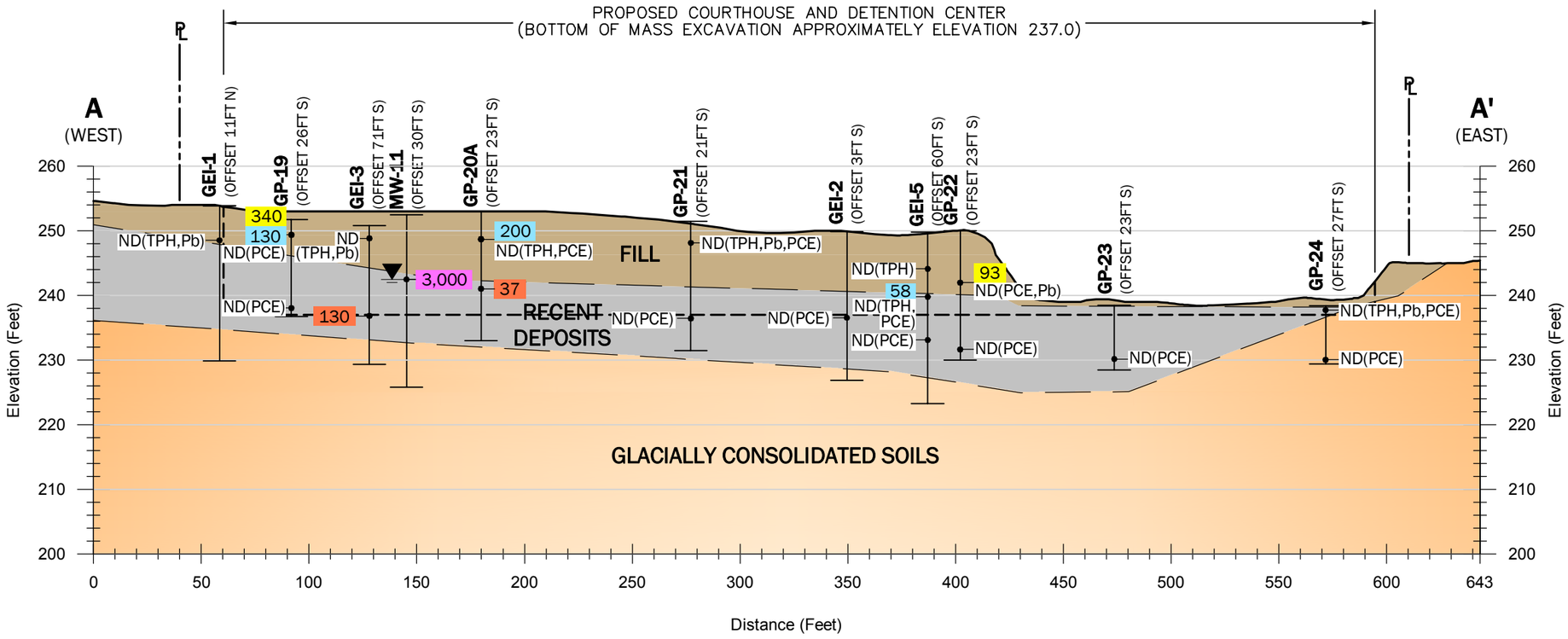

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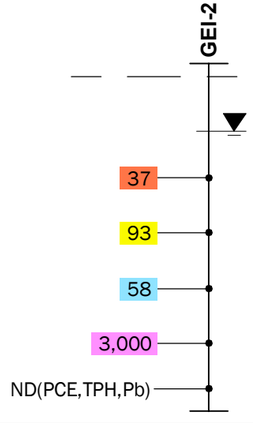


- Boring
- Inferred Soil Contact
- Groundwater Level Observed in Monitoring Well (March 2014)
- PCE in Soil (ppb) MTCA Cleanup Level = 50 ppb
- Total Petroleum Hydrocarbons (TPH) in Soil (ppb) MTCA Cleanup Level = 2,000 ppm
- Lead (Pb) in Soil (ppm) MTCA Cleanup Level = 250 ppm
- PCE in Groundwater (ppb) MTCA Cleanup Level = 5.0 ppb
- Contamination Not Detected (ND) in Soil

- Fill
- Recent Deposits
- Glacially Consolidated Soils

ppm = Parts per Million
ppb = Parts per Billion
ND = Not Detected
MTCA = Model Toxics Control Act

60 0 60
Horizontal Scale in Feet

20 0 20
Vertical Scale in Feet
Vertical Exaggeration:3X

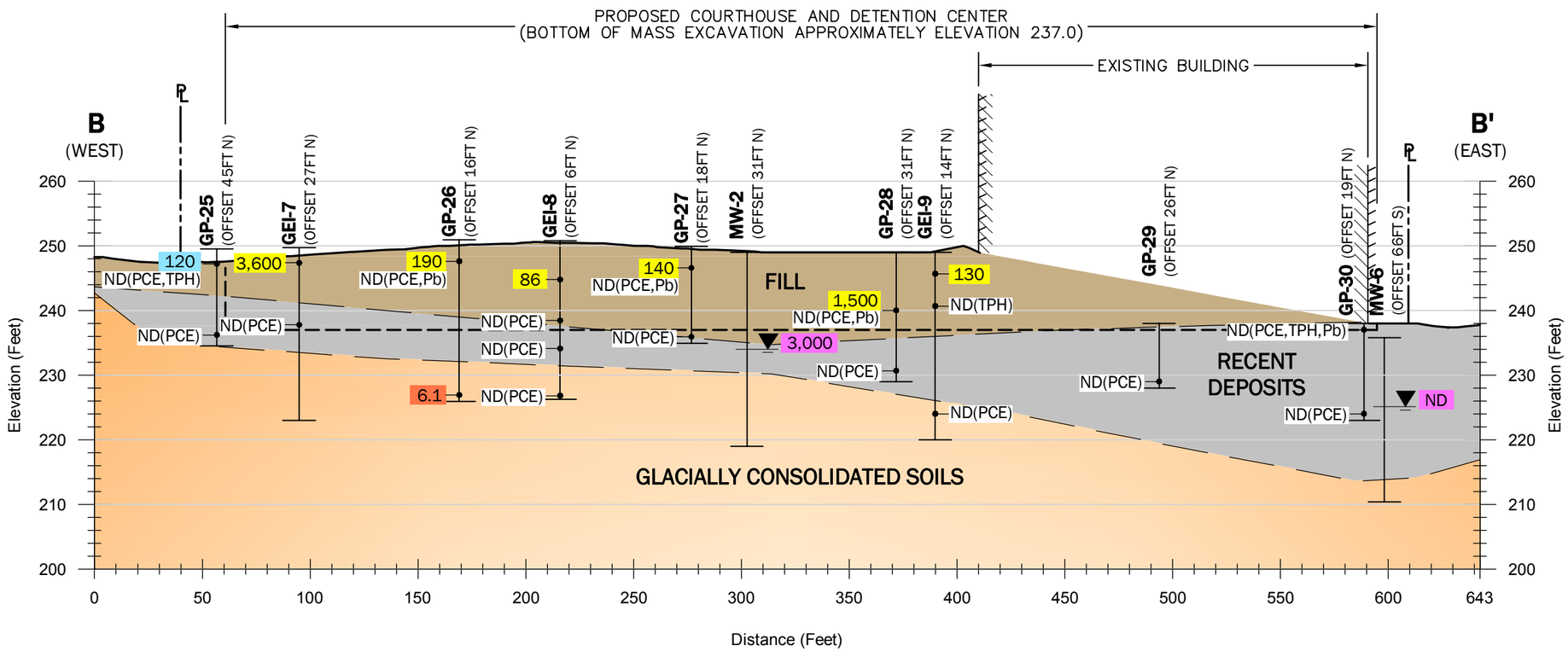
Notes:
1. The subsurface conditions shown are based on interpolation between widely spaced explorations and should be considered approximate; actual subsurface conditions may vary from those shown.
2. Refer to Figure 3 for location of Cross Section. Approximate elevations are based on Civil Utility Plan by AHBL, Inc.
3. This figure is for informational purposes only. It is intended to assist in the identification of features discussed in a related document. Data were compiled from sources as listed in this figure. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this figure. This figure is a copy of a master document. The master hard copy is stored by GeoEngineers, Inc. and will serve as the official document of record.

Cross-Section A-A'
PCE, Petroleum and Lead Detections in Soil

King County Children and Family Justice Center
Seattle, Washington

GeoEngineers

Figure 3



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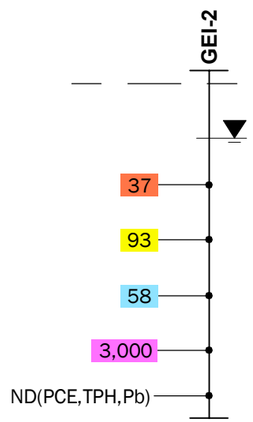

- Boring
- Inferred Soil Contact
- Groundwater Level Observed in Monitoring Well (March 2014)
- PCE in Soil (ppb) MTCA Cleanup Level = 50 ppb
- Total Petroleum Hydrocarbons (TPH) in Soil (ppm) MTCA Cleanup Level = 2,000 ppm
- Lead (Pb) in Soil (ppm) MTCA Cleanup Level = 250 ppm
- PCE in Groundwater (ppb) MTCA Cleanup Level = 5.0 ppb
- Contamination Not Detected (ND) in Soil

- Fill
- Recent Deposits
- Glacially Consolidated Soils

ppm = Parts per Million
ppb = Parts per Billion
ND = Not Detected
MTCA = Model Toxics Control Act

60 0 60
Horizontal Scale in Feet

20 0 20
Vertical Scale in Feet
Vertical Exaggeration:3X

Notes:
1. The subsurface conditions shown are based on interpolation between widely spaced explorations and should be considered approximate; actual subsurface conditions may vary from those shown.
2. Refer to Figure 3 for location of Cross Section. Approximate elevations are based on Civil Utility Plan by AHBL, Inc.
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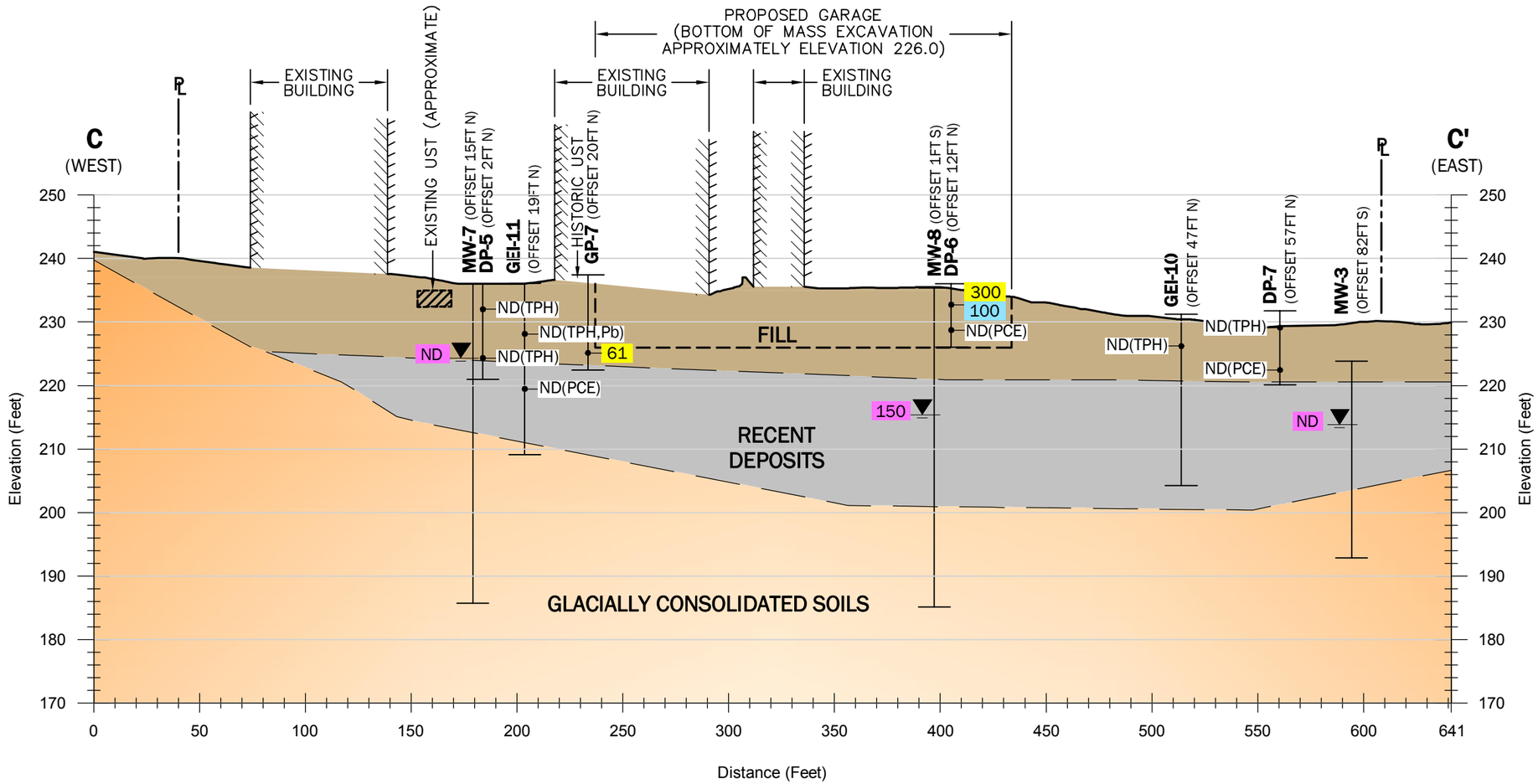
Cross-Section B-B'
PCE, Petroleum and Lead Detections in Soil

King County Children and Family Justice Center
Seattle, Washington

GeoEngineers

Figure 4



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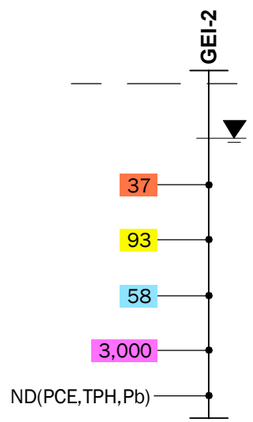


- Boring
- Inferred Soil Contact
- Groundwater Level Observed in Monitoring Well (March 2014)
- PCE in Soil (ppb) MTCA Cleanup Level = 50 ppb
- Total Petroleum Hydrocarbons (TPH) in Soil (ppm) MTCA Cleanup Level = 2,000 ppm
- Lead (Pb) in Soil (ppm) MTCA Cleanup Level = 250 ppm
- PCE in Groundwater (ppb) MTCA Cleanup Level = 5.0 ppb
- Contamination Not Detected (ND) in Soil

- Fill
- Recent Deposits
- Glacially Consolidated Soils

ppm = Parts per Million

ppb = Parts per Billion

ND = Not Detected

MTCA = Model Toxics Control Act

60 0 60
Horizontal Scale in Feet

20 0 20
Vertical Scale in Feet
Vertical Exaggeration:3X

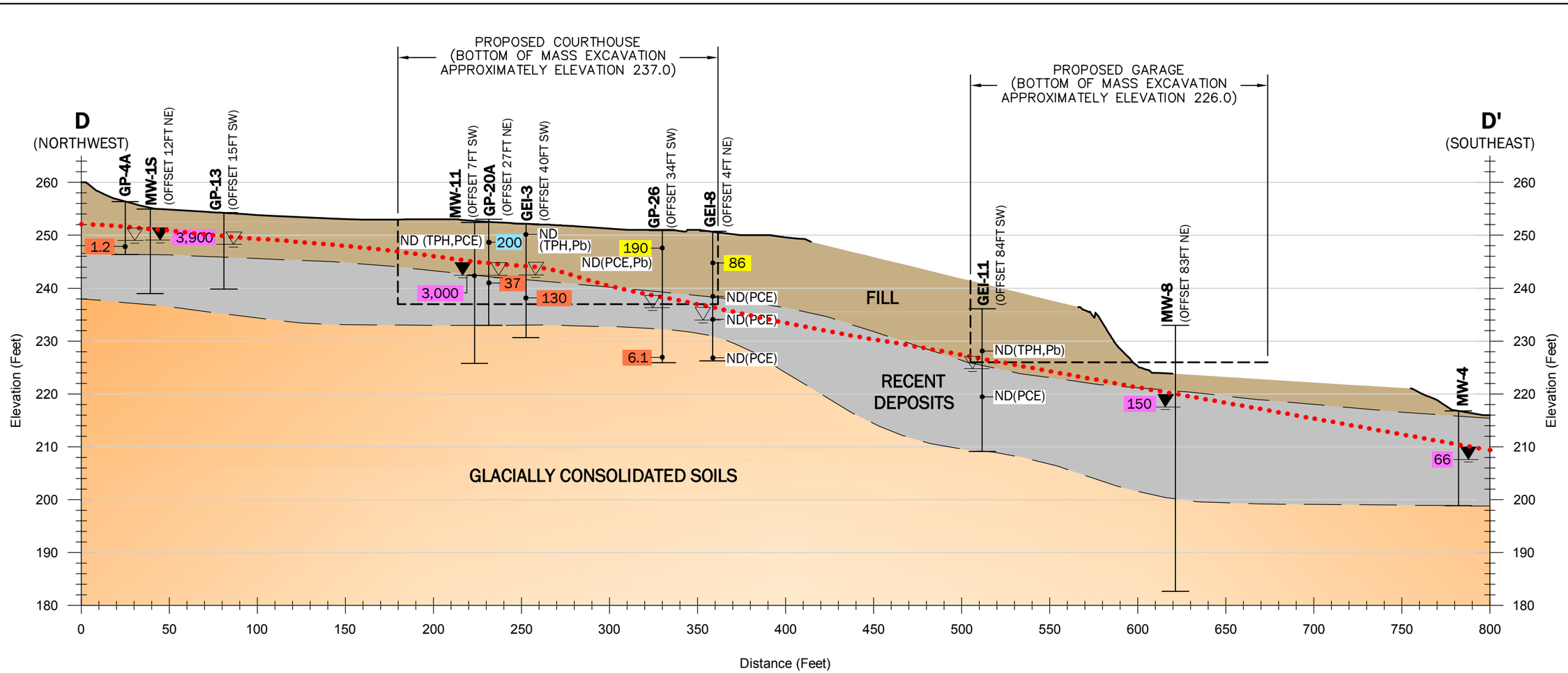
Notes:
1. The subsurface conditions shown are based on interpolation between widely spaced explorations and should be considered approximate; actual subsurface conditions may vary from those shown.
2. Refer to Figure 3 for location of Cross Section. Approximate elevations are based on Civil Utility Plan by AHBL, Inc.
3. This figure is for informational purposes only. It is intended to assist in the identification of features discussed in a related document. Data were compiled from sources as listed in this figure. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this figure. This figure is a copy of a master document. The master hard copy is stored by GeoEngineers, Inc. and will serve as the official document of record.

Cross-Section C-C'
PCE, Petroleum and Lead Detections in Soil

King County Children and Family Justice Center
Seattle, Washington

GeoEngineers

Figure 5



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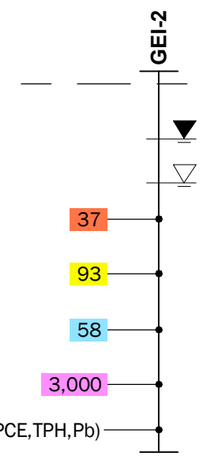

- Boring
- Inferred Soil Contact
- Groundwater Level Observed in Monitoring Well (March 2014)
- Inferred Groundwater Level
- PCE in Soil (ppb) MTCA Cleanup Level = 50 ppb
- Total Petroleum Hydrocarbons (TPH) in Soil (ppm) MTCA Cleanup Level = 2,000 ppm
- Lead (Pb) in Soil (ppm) MTCA Cleanup Level = 250 ppm
- PCE in Groundwater (ppb) MTCA Cleanup Level = 5.0 ppb
- Contamination Not Detected (ND) in Soil

- Fill
- Recent Deposits
- Glacially Consolidated Soils

ppm = Parts per Million

ppb = Parts per Billion

ND = Not Detected

MTCA = Model Toxics Control Act

- Estimated Top Elevation of PCE-Contaminated Soil. Assumes PCE-contaminated soil extends 2' above March 2014 (high) groundwater table.

60 0 60
Horizontal Scale in Feet

20 0 20
Vertical Scale in Feet
Vertical Exaggeration:3X

Notes:
1. The subsurface conditions shown are based on interpolation between widely spaced explorations and should be considered approximate; actual subsurface conditions may vary from those shown.
2. Refer to Figure 2 for location of Cross Section. Approximate elevations are based on Civil Utility Plan by AHBL, Inc.
3. This figure is for informational purposes only. It is intended to assist in the identification of features discussed in a related document. Data were compiled from sources as listed in this figure. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this figure. This figure is a copy of a master document. The master hard copy is stored by GeoEngineers, Inc. and will serve as the official document of record.

Cross-Section D-D'
PCE, Petroleum and Lead Detections in Soil

King County Children and Family Justice Center
Seattle, Washington

GeoEngineers

Figure 6

E. TERRACE STREET

12th AVENUE

14th AVENUE

E. ALDER STREET

PROPOSED COURTHOUSE FFE = 239.0

PROPOSED DETENTION CENTER FFE = 239.0

Legend

- Phase I Redevelopment
- Phase II Redevelopment
- PCE Contained-In Soil
- Petroleum and Lead-Impacted Soil
- Estimated Extent of Non-impacted Soil (Clean Soil)
- FFE — Finished Floor Elevation
- Proposed Soldier Pile

N W E S

50 0 50
FEET

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. cannot 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.

Data Source:
Sheets C-1.10 and C-1.20 Grading and Utilities plans provided by AHBL, Inc. on 6-6-16.

Soldier Piles Drill Cuttings Management Plan

King County Children and Family Justice Center
Seattle, Washington

GeoEngineers

Figure 7

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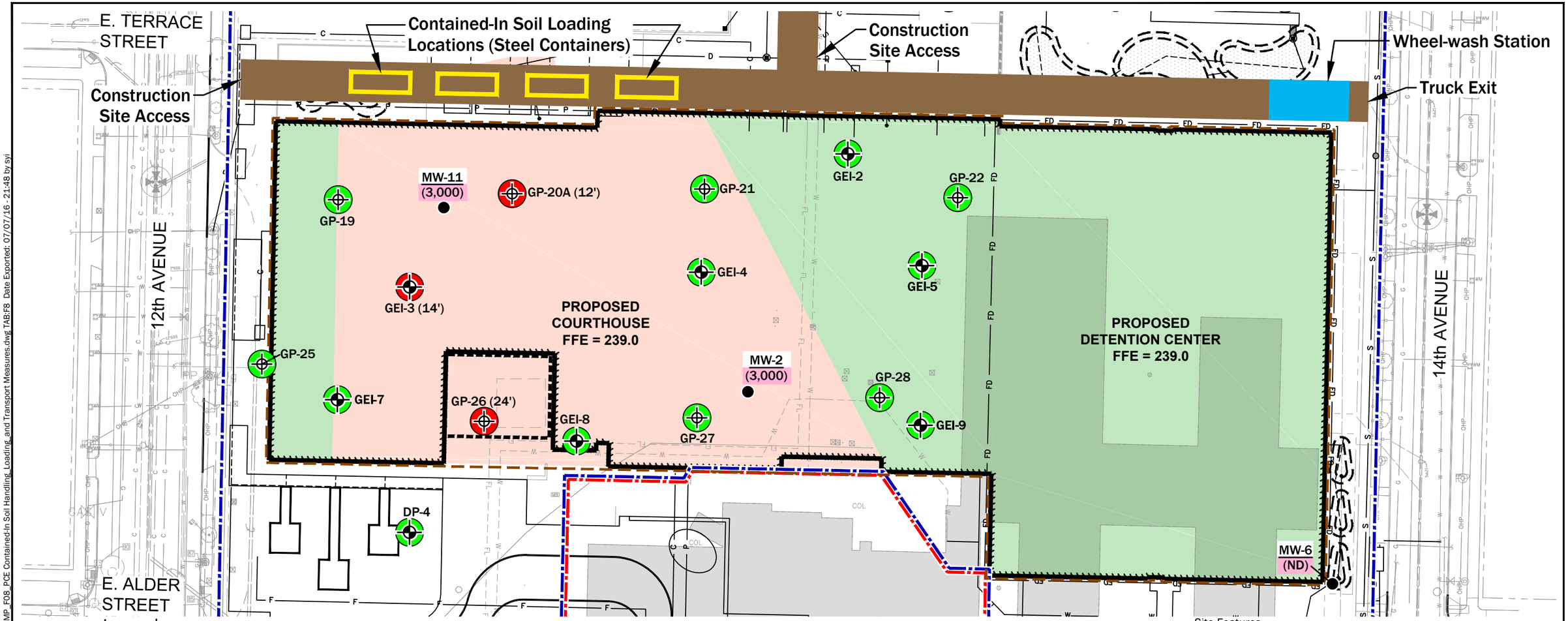

Legend

- MW-1S ● / (3,900) — Monitoring Well; PCE Concentration (in Groundwater); Cleanup Level = 5µg/L; *TCE Detected at 0.44µg/L; Cleanup Level = 5µg/L
- GEI-3 — Auger Boring (GeoEngineers, 2015)
- DP-4 — Direct-Push Boring (GeoEngineers, 2015)
- GP-19 — Probe (Herrera, 2013)
- PCE in Soil (Sample Depth)
- PCE Not Detected in Soil
- PCE — Tetracholorethene
- (14') — Depth of contaminated soil sample in feet bgs
- bgs — below existing ground surface
- FFE — Finished Floor Elevation
- Phase I Redevelopment
- Phase II Redevelopment
- Estimated PCE Contained-In Soil Extent in Courthouse Mass Excavation
- Estimated Extent of Soil with no PCE Contamination
- Approximate Limit of Mass Excavation

Site Features

Description

- Proposed Building Footprint
- Existing Buildings
- Proposed Bio-Retention Cell

N / W / E / S

50 0 50 FEET

Contaminated Soil Screening, Handling, and Disposal

Soil Screening:

1. Approximate extent of PCE contaminated soil is based on chemical data from 2013 and 2015 environmental borings.
2. Additional soil sampling/chemical testing will be completed during construction to refine the boundary between contaminated and clean soil.

Soil Handling:

1. PCE-contaminated soil excavated from the proposed Courthouse footprint will be placed in plastic-lined steel containers provided by the disposal facility.
2. Approximate location of the haul road and the locations where the steel containers will be loaded with contaminated soil are shown on this figure.
3. Stockpiling of PCE-contaminated soil is not planned during construction. If contaminated soil is stockpiled temporarily, it will be placed on plastic sheeting and covered by plastic sheeting in accordance with best management practices.
4. The Contractor shall implement best management practices to avoid cross-contamination of clean soil with contaminated soil.
5. A wheel-wash station will be installed as shown this figure to avoid tracking of contaminated soil to offsite rights-of way.
6. All workers that handle contaminated soil shall be HAZWOPER trained.
7. Temporary dewatering/water treatment notes are provided on Sheet C200.

Soil Disposal:

1. The steel containers will be hauled to a permitted contaminated soil transfer station in Seattle.
2. PCE-contaminated soil excavated from the Courthouse footprint will be disposed offsite at an approved Subtitle D landfill based on a PCE Soil Contained-In Determination that will be received from the Washington State Department of Ecology.

Notes:

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Data Source:
Sheets C-1.10 and C-1.20 Grading and Utilities plans provided by AHBL, Inc. on 6-6-16.

PCE Contained-In Soil Handling, Loading, and Transport Measures

King County Children and Family Justice Center
Seattle, Washington

GeoEngineers

Figure 8

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APPENDICES

GeoEngineers

APPENDIX A
Field Procedures

APPENDIX A
FIELD PROCEDURES

Soil Sampling Procedures

A representative of our staff will visit the Site on as-needed basis during excavation activities to evaluate the extent of contamination, field screen samples, assist the contractor in segregating clean, impacted and contaminated soil and to obtain characterization and confirmation soil samples from the excavations for chemical analyses. Soil sampling will consist of the following:

- Soil samples obtained directly from the walls and base of the excavation or from the excavator bucket will be placed into clean glass sample jars provided by the analytical laboratory. Sample containers shall be filled completely to minimize headspace.
- Sample depths may be selected based on the final lateral and vertical limits of the remedial excavation.
- A distinct sample identification will be assigned to each sample and will typically include sample depth.
- The samples will be placed in an iced cooler pending transport to the analytical laboratory. Standard chain-of-custody procedures will be followed in transporting the samples to the laboratory.

Field Screening of Soil Samples

Soil samples obtained from the remedial excavation areas will be evaluated for evidence of possible contamination using field screening techniques. Field screening results can be used as a general guideline to delineate areas of possible petroleum- or volatile organic compound (VOC)-related contamination in soils. In addition, screening results are often used as a basis for selecting soil samples for chemical analysis. The screening methods employed included: (1) visual examination, (2) water sheen testing, and (3) headspace vapor testing using a photoionization detector (PID).

Visual screening consists of observing 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 when hydrocarbon concentrations are high. Sheen screening is a more sensitive screening method that can be effective in detecting petroleum-based products.

Water sheen testing involves placing soil in water and observing the water surface for signs of sheen. Sheens are classified 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 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 the PID is inserted into the

bag. The PID measures the concentration of photoionizable gases and vapors in the sample bag headspace. The PID is designed to quantify photoionizable gases and vapors up to 2,000 parts per million (ppm), and is calibrated with isobutylene. A lower threshold of significance of 1 ppm is used in application.

Field screening results are site-specific. The results may vary with temperature, moisture content, soil lithology, organic content and type of contaminant. The presence or absence of sheen does not necessarily confirm the presence or absence of contaminants in a sample.

APPENDIX B
PCE Soil Contained-In Determination Letter

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Northwest Regional Office • 3190 160th Ave SE • Bellevue, WA 98008-5452 • 425-649-7000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

July 26, 2016

Mr. Joe Hicker
King County Admin Building
500 4th Avenue
Room 820
Seattle, WA 98104

Re: Contained-in Determination for Contaminated Soils from the King County Youth Service Center Site in Seattle, Washington (Ecology Cleanup Site: 12668)

Reference:
1. Letter Report from J. Roth, GeoEngineers to B. Maeng, Department of Ecology submitted via electronic mail on June 7, 2016
2. Telephone Conversation with J. Roth, GeoEngineers on June 15, 2016
3. Electronic Mail from J. Roth, GeoEngineers to B. Maeng, Department of Ecology on June 20, 2016

Dear Mr. Hicker:

The Washington State Department of Ecology (Ecology) received a contained-in determination request from your environmental consultant, GeoEngineers for contaminated soils to be excavated during construction activities at the King County Youth Service Center located at 1211 East Alder Street in Seattle, Washington (Reference 1).

Analytical data and the supplemental information for approximately 12,500 tons of contaminated soils were submitted to Ecology (References 1, 2 and 3) to determine if these soils contaminated with listed dangerous waste constituents (F002) may be exempt from management as dangerous wastes per the "Contained-In Policy[1]". Ecology understands that these contaminated soils do not designate under federal characteristics (WAC 173-303-090) or State-only criteria (WAC 173-303-100).

Based on the information received and reviewed, Ecology has determined that these soils are contaminated with F002 listed dangerous waste constituents at concentrations that do not warrant management as dangerous wastes, and Ecology will not require disposal of these soils as listed dangerous wastes at a RCRA permitted dangerous waste treatment, storage and disposal (TSD) facility, provided that all of the following conditions are implemented. This contained-in determination applies only to the contaminated soils, and does not pertain to contaminated water or any mixture of contaminated soils and drilling fluids.

[1] Washington State Department of Ecology Contained-in Policy, dated February19, 1993

You or your consultant, GeoEngineers shall:

- Ensure that no standing water is present within each of the drums/containers holding the contaminated soils. All water must be removed to the maximum extent possible from each of the drums/containers and managed as F002 dangerous wastes or as otherwise allowed under Chapter 173-303 WAC;

- Directly deliver the soils to a solid waste landfill permitted under WAC 173-351 inside Washington State or permitted under RCRA Subtitle D outside Washington State. Do not consolidate these contaminated soils with other soils that do not pertain to this contained in determination;

- Dispose of the contaminated soils at the solid waste landfill by December 31, 2017 or within 90 days after excavation. This contained-in determination letter is no longer valid after December 31, 2017, and the contaminated soils must be managed as dangerous wastes after this date unless you request an extension of the soil disposal deadline and Ecology approves this request. During this extended soil excavation and disposal period, Ecology has no control of the construction site including potential migration of contaminated groundwater into the construction site which may result in contamination in capillary zone and saturated zone soils, accidental spill/releases of hazardous chemicals, etc. Therefore, the construction site must be secured by fencing until the soil excavation and disposal is complete, and as agreed by GeoEngineers (Reference 2), during this extended soil excavation and disposal period, additional soil sampling data must be submitted to Ecology to make sure the soil characteristics are still the same as when this contained-in determination was issued. You must update Ecology of the soil excavation and disposal status at least once every 3 months;

- Notify Ecology before disposal of the soil if the amount exceeds the approved amount in this letter. Ecology needs to make sure that the additional soil qualifies for this contained-in determination;

- Provide copies of all signed solid waste landfill receipts or a certificate of disposal issued by the receiving landfill for these contaminated soils to Ecology, attention of Byung Maeng, within 15 days of your receipt. This is an important verification step for you and your consultant to follow in order for this Ecology decision to be valid;

- Take measures to prevent unauthorized contact with these soils at all times;

- During transport, take adequate measures to prevent spills and dispersion due to wind erosion;

- Provide instructions to the landfill operator that these soils are not to be used for daily, intermediate, or final cover;

- Provide copies of all soil analytical data to the landfill operator, upon request; and

- Do not send these contaminated soils to any incinerator, thermal desorption unit or recycling facility unless that facility is a RCRA Subtitle C permitted dangerous waste TSD facility.

Ecology issued this determination based on the information provided and reviewed to date. This written decision only applies to 12,500 tons of soils to be excavated from the peach color shaded areas indicated in Figure 2 attached to this letter, and does not apply to any other area or other media. Any data used for this contained-in determination is intended for use in determining the proper disposal of the soils according to the Washington State Dangerous Waste Regulations (Chapter 173-303 WAC) and the Ecology Contained-in Policy. This letter is not an Ecology approval for dangerous waste designation or disposal of contaminated soils that may be generated or already excavated from other areas in this property.

This letter is not a No Further Action (NFA) letter and not written approval for any cleanup action plan you may have submitted. Instead, this letter only addresses the procedures for disposal of the contaminated soils according to the Washington State Dangerous Waste Regulations (Chapter 173-303 WAC). Regulatory decisions regarding the cleanup action, applicable soil and groundwater cleanup levels and any other cleanup issues must comply with the requirements under Ecology Model Toxics Control Act (Chapter 173-340 WAC). Local agencies may have the authority to impose additional requirements on this waste stream.

If you fail to comply with the terms of this letter, Ecology may issue an administrative order and/or penalty as provided by the Revised Code of Washington, Sections 70.105.080 and/or .095 (Hazardous Waste Management Act).

If you have any questions concerning this letter, please feel free to contact me at (425) 649-7253 or bmae461@ecy.wa.gov.

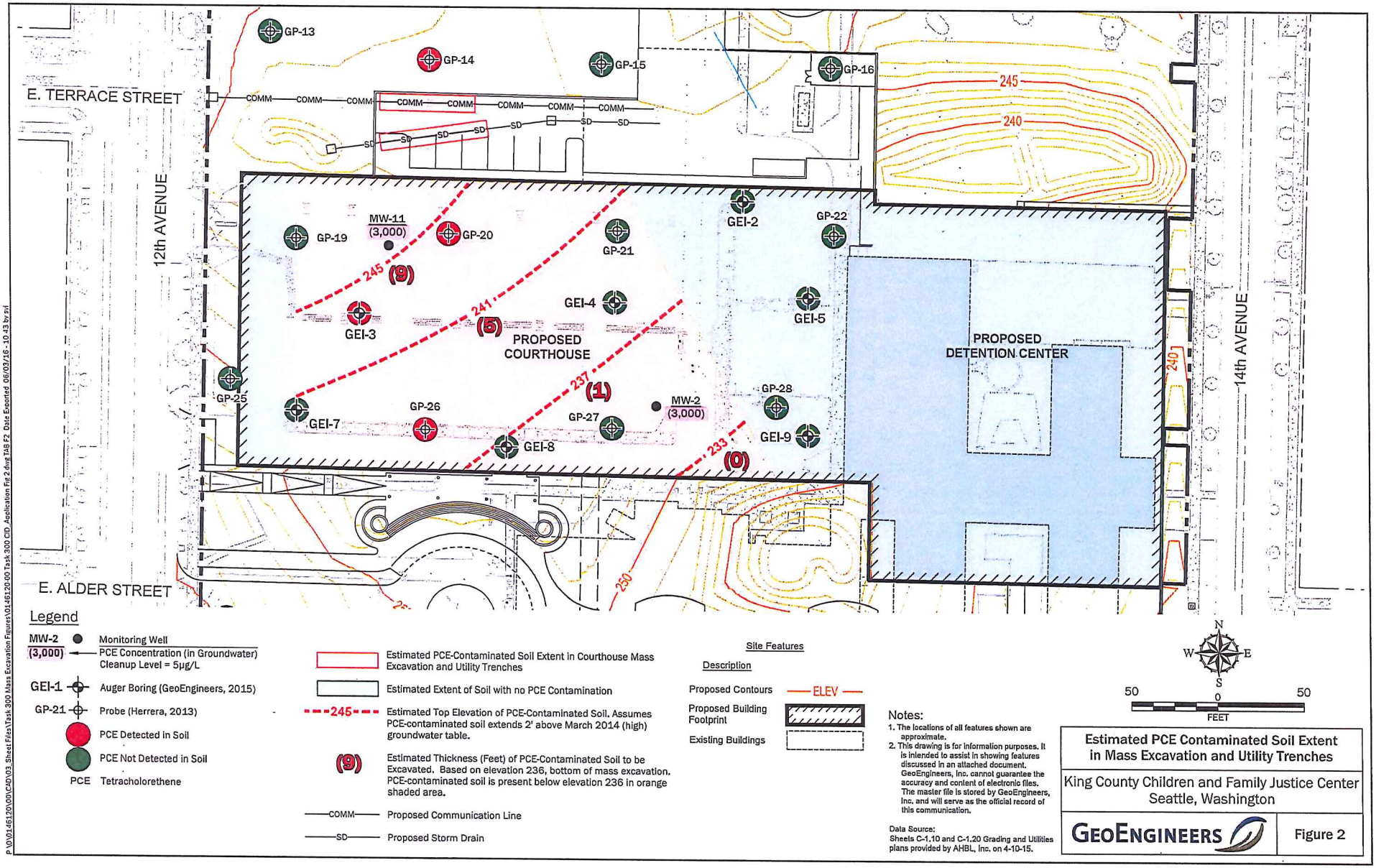
Sincerely,

Byung Maeng, PE
Hazardous Waste and Toxics Reduction Program

Attachment: Figure 2 Estimated PCE Contaminated Soil Extent in Mass Excavation and Utility Trenches

By certified mail: 9171 9690 0935 0106 9638 17

ecc: Jim Roth, GeoEngineers (jroth@geoengineers.com)
Donna Musa, Ecology-TCP
Lisa Brown, Ecology-ERO
Greg Caron, Ecology-CRO
Dean Yasuda, Ecology-NWRO
Chuck Hoffman, Ecology-SWRO
Mindy Collins, Ecology-BFO
David Christensen, Seattle-King County Public Health (david.christensen@kingcounty.gov)
Darshan Dhillon, Seattle-King County Public Health (darshan.dhillon@kingcounty.gov)



Legend

- MW-2 (3,000) — Monitoring Well; PCE Concentration (in Groundwater) Cleanup Level = 5µg/L
- GEI-1 — Auger Boring (GeoEngineers, 2015)
- GP-21 — Probe (Herrera, 2013)
- PCE Detected in Soil
- PCE Not Detected in Soil
- PCE — Tetracholorethene
- Estimated PCE-Contaminated Soil Extent in Courthouse Mass Excavation and Utility Trenches
- Estimated Extent of Soil with no PCE Contamination
- 245 — Estimated Top Elevation of PCE-Contaminated Soil. Assumes PCE-contaminated soil extends 2' above March 2014 (high) groundwater table.
- (9) — Estimated Thickness (Feet) of PCE-Contaminated Soil to be Excavated. Based on elevation 236, bottom of mass excavation. PCE-contaminated soil is present below elevation 236 in orange shaded area.
- COMM — Proposed Communication Line
- SD — Proposed Storm Drain

Site Features

Description

- Proposed Contours — ELEV
- Proposed Building Footprint
- Existing Buildings

N, W, E, S

50 0 50
FEET

Notes:

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2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot 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.

Data Source:
Sheets C-1.10 and C-1.20 Grading and Utilities plans provided by AHBL, Inc. on 4-10-15.

Estimated PCE Contaminated Soil Extent in Mass Excavation and Utility Trenches

King County Children and Family Justice Center
Seattle, Washington

GeoEngineers

Figure 2

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APPENDIX C
Report Limitations and Guidelines for Use

APPENDIX C
REPORT LIMITATIONS AND GUIDELINES FOR USE[2]

This Appendix provides information to help you manage your risks with respect to the use of this plan.

Read These Provisions Closely

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering, geology and environmental science) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory "limitations" provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these "Report Limitations and Guidelines for Use" apply to your project or site.

Environmental Services Are Performed for Specific Purposes, Persons and Projects

This Soil Management Plan has been prepared for the exclusive use of Howard S. Wright and its authorized agents. This plan is not intended for use by others, and the information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, an environmental site assessment or remedial action study conducted for a property owner may not fulfill the needs of a prospective purchaser of the same property. Because each environmental study is unique, each environmental report is unique, prepared solely for the specific client and project site. No one except Howard S. Wright and its authorized agents should rely on this plan without first conferring with GeoEngineers. This plan should not be applied for any purpose or project except the one originally contemplated.

This Environmental Report Is Based on a Unique Set of Project-Specific Factors

This plan applies to the proposed King County Children and Family Justice Center located at 1211 East Alder Street in Seattle, Washington. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and plan. Unless GeoEngineers specifically indicates otherwise, do not rely on this plan if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

If important changes are made after the date of this Soil Management Plan, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

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[2] Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org.

Reliance Conditions for Third Parties

No third party may rely on the product of our services unless GeoEngineers agrees in advance, and in writing to such reliance. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions.

Environmental Regulations Are Always Evolving

Some substances may be present in the site vicinity in quantities or under conditions that may have led, or may lead, to contamination of the subject site, but are not included in current local, state or federal regulatory definitions of hazardous substances or do not otherwise present current potential liability. GeoEngineers cannot be responsible if the standards for appropriate inquiry, or regulatory definitions of hazardous substance, change or if more stringent environmental standards are developed in the future.

Uncertainty May Remain after Completion of Remedial Activities

Remediation activity completed in a portion of a site cannot wholly eliminate uncertainty regarding the potential for contamination in connection with a property. Our interpretation of subsurface conditions in this plan is based on field observations and chemical analytical data from widely spaced sampling locations. It is always possible that contamination exists in areas that were not explored, sampled or analyzed.

Subsurface Conditions Can Change

This plan is based on conditions that existed at the time the environmental studies were performed. The guidelines of this plan may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, by new releases of hazardous substances, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Always contact GeoEngineers before applying this plan to determine if it is still applicable.

Soil and Groundwater End Use

The cleanup levels referenced in this plan are site- and situation-specific. The cleanup levels may not be applicable for other sites or for other on-site uses of the affected media (soil and/or groundwater). Note that hazardous substances may be present in some of the site soil and/or groundwater at detectable concentrations that are less than the referenced cleanup levels. GeoEngineers should be contacted prior to the export of soil or groundwater from the subject site or reuse of the affected media on site to evaluate the potential for associated environmental liabilities. We cannot be responsible for potential environmental liability arising out of the transfer of soil and/or groundwater from the subject site to another location or its reuse on site in instances that we were not aware of or could not control.

Most Environmental Findings Are Professional Opinions

Our interpretations of subsurface conditions are based on field observations and chemical analytical data from widely spaced sampling locations at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ – sometimes significantly – from those indicated in this plan. Our plan, interpretations and soil and groundwater handling guidelines should not be construed as a warranty of the subsurface conditions.

Geotechnical, Geologic and Geoenvironmental Reports Should Not Be Interchanged

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.

Biological Pollutants

GeoEngineers' Scope of Work specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. Accordingly, this plan does not include any interpretations, recommendations, findings, or conclusions regarding the detecting, assessing, preventing or abating of Biological Pollutants and no conclusions or inferences should be drawn regarding Biological Pollutants, as they may relate to this project. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts.

If the client desires these specialized services, they should be obtained from a consultant who offers services in this specialized field.

Have we delivered World Class Client Service?

Please let us know by visiting **www.geoengineers.com/feedback**.

GeoEngineers