Draft
Geotechnical Engineering Report
Bellevue Airfield Park Development
(Former Eastgate Landfill)
Bellevue, Washington

June 2, 2016

Prepared for

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1.0 INTRODUCTION

This report summarizes the results of geotechnical engineering services conducted to support design related to the proposed Bellevue Airfield Park (Park) development at the site of the former Eastgate Landfill in Bellevue, Washington as shown on the Vicinity Map on Figure 1. The proposed Park will include two synthetic turf athletic fields, concessions and restroom facilities, play and picnic areas, pedestrian trails, a spray deck, expansion and improvements to existing stormwater management facilities, and lighting and parking improvements.

A portion of the Park site overlies the closed Eastgate Landfill, which has environmental restrictions and ongoing monitoring requirements under the Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) voluntary cleanup program (VCP) and an environmental covenant for the site dated November 12, 2008.

In addition to the geotechnical engineering conclusions and recommendations contained herein, Landau Associates, under subcontract to Walker Macy, is also assisting the design team and the City of Bellevue (City) by providing environmental engineering, permitting support, and landfill cover design services for Phase 1 of the Park development. Evaluations and recommendations related to stormwater management, utilities, civil engineering design, landfill gas management, and air quality monitoring will be provided separately by other members of the Walker Macy design team.

Improvements associated with Phase 1 of the Park development include the Park entry, southern athletic field, concessions and restroom building, stormwater facilities and detention pond, trails, and certain modifications to the groundwater monitoring and landfill gas control systems.

1.1 Site Description

The proposed Bellevue Airfield Park is located adjacent to the I-90 Business Park in Bellevue, Washington (Figure 1). A master plan for the Park, entitled “Bellevue Airfield Park, Eastgate Area Properties Master Plan,” was prepared in 2012 for the City of Bellevue Parks & Community Services Department by The Portico Group (The Portico Group 2012). The Eastgate Area Properties are comprised of three parcels totaling 27.9 acres within the Phantom Lake watershed. The City previously purchased portions of these properties from The Boeing Company (Boeing) and the Bellevue School District with the intent of developing an active-use community park. An access road (SE 30th Place, also referred to as the “Shared Entrance Road”) has already been constructed along the southern side of the proposed Park as part of the Advanta Office Commons development.

The proposed Park site includes the former Eastgate Landfill, which was operated by King County as a municipal solid waste landfill, and accepted household and demolition wastes from 1951 until it was closed and covered in 1964. The Bellevue Airfield runway was subsequently extended over the former landfill, and operated until 1983. After landfill closure, Cabot, Cabot & Forbes purchased property, including most of the landfill, and developed the I-90 Business Park. Boeing acquired portions of the former Eastgate Landfill property and adjacent properties in 1980 and 1983. The Boeing-owned property was partially developed by Boeing in the mid to late 1980s; however, no buildings have been constructed directly over the former landfill to date. Closure activities performed at the landfill by King County; Cabot, Cabot & Forbes; the City of Bellevue; or Boeing include landfill capping with a soil cover, groundwater monitoring, stormwater management, leachate collection, and landfill gas migration control (LAI 2000). Leachate is collected on the north side of the landfill in a French drain that discharges to the King County sanitary sewer. Groundwater monitoring wells and landfill gas extraction monitoring wells are located around the perimeter of the landfill. Monitoring well locations, the gas extraction system, the leachate collection system, and the approximate landfill area are shown on Figure 2.

In 2007 to 2008, the Advanta Office Commons development (including three buildings designated buildings A, B, and C, a parking garage, and the shared entrance road) was constructed by Schnitzer Northwest LLC (Schnitzer) adjacent to the southern end of the landfill. This resulted in construction of relatively low-permeability hardscape surfaces (asphalt roadways and parking areas) over a portion of the southern extent of the landfill.

2.0 SCOPE OF SERVICES

Walker Macy retained Landau Associates to provide geotechnical engineering services to support design of the proposed Park improvements, including the new synthetic turf athletic fields, concessions and restroom facilities, parking area and access roads, retaining walls, and associated projects features for each (i.e., underground utilities, etc.). Our scope of services includes the following specific tasks:

- Collecting and reviewing readily available geotechnical and geologic data for the project area
- Obtaining utility clearances prior to performing field explorations
- Performing a Geophysical Survey to estimate the horizontal and vertical limits of the landfill
- Advancing a series of exploratory borings, test pits, and hand auger borings throughout the Park area in the vicinity of proposed improvements and locations needed to identify existing landfill solid waste deposits underlying the site
- Collecting representative soil samples at selected intervals
- Logging the borings, test pits, and hand auger borings and recording pertinent information including soil sample depths, stratigraphy, soil engineering characteristics, groundwater occurrence, and evidence of potential soil or groundwater contamination
- Conducting limited laboratory testing
- Evaluating data from the subsurface investigation and laboratory testing programs and performing certain engineering analyses
- Developing geotechnical engineering conclusions and recommendations to support design of proposed improvements
- Preparing and submitting this written report summarizing our findings and geotechnical engineering conclusions and recommendations. This report includes:
  - a site plan showing the locations of current and previous subsurface explorations, and other pertinent site features.
  - logs of the current and previous borings and other subsurface information.
  - a summary of subsurface soil and groundwater conditions anticipated in the vicinity of the proposed park improvements, as suggested by current and previous exploration data.
  - an evaluation of the settlement-susceptibility of the site soils due to static loads, including estimated settlement magnitudes under the weight of new fill and structures, and recommendations to limit settlements beneath the proposed improvements to within tolerable levels.
  - recommendations for site preparation for the proposed park improvements, including a discussion related to ground improvement techniques (e.g., preloading) that might be necessary to mitigate settlement risks.
  - design recommendations for applicable foundation support type(s) for the proposed park buildings (i.e., spread footings, mat foundations, etc.), including subgrade

preparation, allowable soil bearing pressures, estimates of settlement, and soil parameters for lateral load resistance.

- site factors for use in seismic design of the structures under the 2012 International Building Code (2012 IBC).
- recommendations for subgrade preparation, including reuse of site soil; criteria for selection, placement, and compaction of structural fill; and a discussion of the effects of weather and/or construction equipment on the native soil.
- a discussion related to expected excavation conditions for site utilities.
- recommended design criteria, including earth pressures, for retaining walls. Included is a discussion on approaches to limit settlements beneath the proposed retaining walls to within tolerable levels.
- recommended pavement sections for parking areas and access roads.
- recommendations for monitoring and testing during construction.

2.1 Site Conditions

This section provides a discussion of the general geologic setting of the project area and describes the surface and subsurface conditions observed at the project site at the time of our investigation. Interpretations of the site conditions are based on the results of our review of available information, and the results of our site reconnaissance, subsurface explorations, and laboratory testing.

2.2 General Geologic Conditions

General geologic information for the project site was obtained from the Geologic Map of King County, Washington (Booth, Troost, and Wisher 2006), published by the University of Washington. According to this geologic map, near-surface deposits in the vicinity of the project site consist of alluvial soils, recessional outwash, glacial till, and advance outwash. Soil defined as alluvium is characterized as a loose to medium dense, moderately sorted mixture of gravel and sand with varying amount of silt and clay and silty fine sand with clayey silt interbeds. Recessional outwash soils are typically described as loose to medium dense, stratified sand and gravel deposits and/or well-bedded silty sand and silty clay. Soil defined as glacial till typically consists of a dense to very dense, unsorted mixture of subrounded boulders, cobbles, gravel, and sand in a matrix of silt and clay. Advance outwash deposits typically include dense to very dense well-bedded sand and gravel.

2.3 Surface Conditions

The surface of the existing soil cap layer over the former Eastgate Landfill exhibits a generally hummocky topography with depressions and ridges that appear to promote surface drainage toward the existing stormwater management facilities. Elevations across the upper portions of the soil cap over the landfill range from 335 to about 350 ft (NAVD 1988). Vegetation across the former landfill typically consists of maintained grass and gravel pathways, with asphalt paved surfaces over the southern portion of the landfill associated with the shared entrance road, parking areas, and the former helicopter pad that is currently used as a basketball court. Along the northern face of the landfill, the site slopes moderately down to the north toward Pond A (the existing three cell stormwater detention pond), with elevations ranging from 340 to about 300 ft. A gravel path circles Pond A, which is located near the bottom of a generally flat north-south trending valley. Moderate to steep slopes covered with heavy vegetation bound the east and west side of the valley where Pond A is located. Existing site topography is illustrated on Figures 3 and 4.

2.4 Subsurface Soil Conditions from Previous Reports

To evaluate the subsurface conditions prior to drilling, we reviewed the following reports and exploration logs:

- Groundwater Investigation, Former Eastgate Landfill, Bellevue, Washington, dated September 26, 2000, prepared by Landau Associates.
- Annual Groundwater Monitoring and Well Construction Detail Report, Former Eastgate Landfill, Bellevue, Washington, dated May 23, 2008, prepared by Landau Associates.
- Groundwater Monitoring Well Logs, dated 2007, prepared by SCS Engineers.
- Gas Probe Monitoring Well Logs, dated 2007, prepared by SCS Engineers.
- Closing Report, Geotechnical Services during Construction, Eastgate Landfill, Landfill Gas Collection System, Bellevue, Washington, dated October 29, 1986, prepared by GeoEngineers.
- Geotechnical and Environmental Studies, Bellevue Airport Site, Bellevue, Washington, dated May 28, 2002, prepared by AMEC Earth & Environmental.
- Report, Site Characterization Study, Portion of Boeing Eastgate Property, Bellevue, Washington, dated December 21, 2004, prepared by Golder Associates.
- Report, Geotechnical Engineering Services, Duct Bank Relocation, Boeing Eastgate Landfill, Bellevue, Washington, dated June 28, 2004, prepared by GeoEngineers.
- Eastgate Landfill Interim Status Report, dated April 22, 1986, prepared by Sweet, Edwards, & Associates.
- Eastgate Landfill Phase II Report, dated June 30, 1986, prepared by Sweet, Edwards, & Associates.
- Eastgate Landfill Summary Report, dated January 17, 1986, prepared by Sweet, Edwards, & Associates.
- Geotechnical Report, Parking Lot Subsidence Investigation, Boeing Computer Center, Bellevue, Washington, dated November 4, 1994, prepared by Converse Consultants NW.

Five geologic units have been previously identified at the site, in addition to the landfill solid waste materials. Previous reports have included borings for a variety of project and site features and have also included figures that show the relative position of the identified units. Approximate locations of selected borings from past studies and site work are shown on Figure 3.

2.5 Other Subsurface Information

Golder Associates (Golder) carried out a geophysical study in 2004 on the southern boundary of the landfill area along the shared entrance road for the Advanta Office Commons development located to the south of the project site (Golder 2004). Golder Associates conducted six induced polarization (IP) surveys and 10 electromagnetic (EM-31) surveys to define the limits of the landfill in this area. The approximate locations of the surveys are shown on Figure 3. Based on the results of their geophysical surveys, Golder reported that the landfill cap in the study area varied in thickness from 2 ft to 15 ft with a typical thickness of about 10 ft. Golder also reported that the landfill deposits extended to depths of up to 40 ft below ground surface (bgs) and provided their interpretation of the landfill boundary along the southern portion of the site. Golder's finding generally confirmed the subsurface soil conditions described in previous reports along the southern portion of the site.

2.6 Subsurface Conditions

Subsurface conditions at the project site were explored by Landau Associates in March 2016. The exploration program consisted of advancing 20 hollow stem auger borings for geotechnical design purposes and determination of the horizontal extent of the landfill solid waste, three test pits for pavement design purposes and 12 test pits to determine the lateral extent of landfill solid waste, and nine hand auger borings for design of pavements and picnic structure foundations in the northwest area at the approximate locations illustrated on Figure 4. A discussion of field exploration procedures, together with edited logs of the exploratory borings, test pits, and hand auger borings, are presented in Appendix A. A discussion of laboratory test procedures, together with the laboratory testing program results, are presented in Appendix B.

Subsurface cross sections indicating the generalized stratigraphy across the project site were developed. The location and orientation of subsurface cross section lines are shown on the Cross Section Alignment Plan (Figure 5), and the subsurface cross sections are presented on Figures 6A through 6F. The extrapolation of subsurface conditions between exploration locations is for illustrative purposes only; actual conditions between explorations may vary from those shown. The exploration logs presented in Appendices A and C provide more detail relative to subsurface conditions observed at specific locations and depths.

Based on the results of the field exploration program and our review of available geologic information and previous geotechnical reports, the site geotechnical condition are summarized below in order of increasing depth from the ground surface.

- **Soil Fill** - Soil fill overlies most of the developed areas of the site and also is present as the soil cap layer over the underlying landfill area. The soil fill generally consists of silty, fine to medium sand with occasional fine gravel. The thickness of the soil fill over the landfill solid waste was typically reported to vary from about 2 to 19 ft across the site.
- **Landfill Solid Waste** - The solid waste fill material below the surficial soil fill generally consists of a mixture of soil and municipal solid waste including brick, timber, asphalt, wood, paper,

metal, plastic, glass and concrete. The solid waste was landfilled between 1951 and 1964 (LAI 2000), so the putrescible portions of the waste would likely be in an advanced state of decay or not present. The solid waste material varies in thickness and was generally encountered to depths of about 2 to 42 ft bgs across the site.

- **Alluvium/Recessional outwash** – Alluvium and recessional outwash underlies the fill materials, and is typically an unconsolidated silty sand with clayey silt interbeds and varying amounts of gravel that underlies the northern area and forms the upper side slopes of the former landfill. The maximum identified thickness of alluvium was 12 ft. The top of the alluvium/recessional outwash is interpreted to be the pre-development ground surface.
- **Glacial Till** – The glacial till is typically a very dense, silty sand containing variable amounts of fine to medium gravel and scattered cobbles. Glacial till was observed to be discontinuous at the site, generally below the southern bottom and side slopes of the landfill and, where encountered in borings, ranged from about 9 to 42 ft thick. It was interpreted to be only sporadically present in the vicinity of detention Pond A.
- **Advance Outwash** – Advance outwash encountered below the glacial till and alluvium is typically a dense, slightly silty to silty, fine to medium sand with minor amounts of gravel. Silt lenses were commonly encountered within the advance outwash deposits. The maximum encountered thickness of advance outwash was greater than 37 ft.
- **Lacustrine Deposits** – Lacustrine deposits underlie the advance outwash unit and apparently becomes finer-grained with depth. The upper portion consists of interbedded sand and silt and the lower portion consists of silt interbedded with thinly laminated sand and silty sand. The lower limit of this unit is below the depth of exploratory borings advanced at the site to date.

The specific conditions and some of the proposed park features are discussed in the following paragraphs.

2.6.1 Sport Fields and Main Park Area within the Former Eastgate Landfill Boundary

Borings B-1-16 through B-3-16, B-6-16 through B-11-16, and B-13-16 through B-16-16 were advanced at strategic locations throughout the site of the former Eastgate Landfill. The borings were advanced to depths ranging from 15 to 56.5 feet bgs. Throughout our explorations, we encountered 2 to 15 ft of fill consisting of very loose to medium dense, very silty to silty sand with varying amounts of gravel, organics, and construction debris and dense to very dense silty, sandy gravel with varying amounts of organics and construction debris to depths that we interpreted to be existing landfill cover soil. Below the fill we encountered landfill solid waste deposits consisting of a mixture of soil and municipal solid waste including brick, timber, asphalt, wood, paper, metal, plastic, glass, and concrete to depths ranging from 2 to 36 ft bgs. Glacial till was encountered below the landfill solid waste deposits throughout the remaining depth explored in borings B-1-16, B-3-16, B-8-16, B-9-16, B-13-16, B-14-16, B-15-16, and B-16-16. Glacial till was generally observed to consist of dense to very dense, silty to very silty sand with gravel. Advance outwash was encountered below the landfill solid waste deposits throughout the remaining depth explored in borings B-2-16, B-6-16, B-7-16, and B-11-16. Advance outwash was generally observed to consist of very loose to dense silty sand with gravel.

2.6.2 Northeast Sport Field outside the Former Eastgate Landfill Boundary

Borings B-4-16, B-5-16, B-17-16, and test pit TP-12-16 were advanced at strategic locations outside the boundary of the former Eastgate Landfill in the northeast sport field area. The borings were advanced to depths ranging from 26.5 to 31.5 ft bgs and the test pit to a depth of 9.5 ft bgs. Boring B-4-16 encountered medium dense silty sand with gravel that we interpreted to be fill overlying glacial till comprised of very silty, gravelly sand to the full depth explored. In boring B-5-16, we encountered 1 inch of asphalt pavement overlying fill consisting of medium dense gravelly sand with trace silt to about 7.5 ft bgs overlying very dense, very silty sand with gravel interpreted to be glacial till. Boring B-17-16 encountered advance outwash consisting of dense to very dense, very silty sand with gravel to about 25 ft bgs overlying glacial till consisting of very dense silty sand with gravel. Test pit TP-12-16 encountered 5.5 ft of fill consisting of loose to medium dense silty to gravelly sand with varying amounts of organics, overlying 2.5 ft of advance outwash consisting of medium dense to dense gravelly sand with trace silt and glacial till consisting of very dense silty gravelly sand to the full depth explored.

2.6.3 Parking Areas

Test pits TP-1-16 and TP-2-16 were advanced at strategic locations outside the boundary of the former Eastgate Landfill in the vicinity of the proposed parking area on the east side of the site and borings B-10-16, B-12-16, B-19-16 and B-20-16 were advanced in the vicinity of the proposed parking area on the west side of the site. The test pits were advanced to depths ranging from 4 to 5 ft bgs while the borings were advanced to depths ranging from 6.5 to 31.5 ft bgs.

Test pits TP-1-16 and TP-2-16 advanced in the east side parking area generally encountered 0.6 ft of topsoil overlying 1 to 3.5 ft of fill consisting of loose to medium dense, silty, gravelly sand with varying amounts of construction debris and organics overlying weathered and unweathered glacial till consisting of medium dense to very dense silty gravelly sand to the full depth explored.

Borings B-10-16 and B-12-16 encountered 1.5 to 2.5 ft of medium dense to dense silty sand with gravel and silty, sandy gravel with trace construction debris that we interpreted to be fill. Underlying the fill was glacial till encountered to the full depth explored consisting of very dense, very silty sand with gravel. Boring B-19-16 encountered 5 inches of asphalt overlying loose to very dense silty sand with gravel that we interpreted to be glacial till. Boring B-20-16 encountered dense to very dense very silty sand with gravel that we interpreted to be glacial till that was encountered to the full depth explored.

2.6.4 Pond A Overlooks

Boring B-18-16 was advanced in the vicinity of the proposed pond overlook located on the west side of Pond A. The boring was advanced to a depth of 21.5 ft bgs and generally encountered 7 ft of loose to dense very silty sand with gravel that we interpreted to be fill. Underlying the fill, we encountered soft silt with iron staining and loose, very silty sand with gravel and iron staining that we interpreted to be weathered glacial till to a depth of about 15 ft bgs. Glacial till was encountered underlying the weathered glacial till consisting of very dense, very silty sand with gravel to the full depth explored.

Previous borings EL-103 (LAI 2000) and B-1-83 (Converse Consultants 1983) were advanced in the vicinity of the proposed south overlook along Pond A. These borings encountered fill mixed with some refuse at depth of 5 to 6.5 ft bgs. This layer of fill mixed with some refuse is approximately 4.5 ft thick in Boring EL-103; however, this layer was greater than 9.5 ft thick in Boring B-1-83, extending below the completion depth of that boring. The landfill perimeter test pits on the north side of the landfill area indicate that this layer of fill mixed with some refuse is isolated from the main landfill, and may be remnants of refuse that were relocated and mixed with soil during installation of the storm drain or other past site work in the Pond A area.

2.6.5 Northwest Picnic Structures and Parking Areas

Hand auger borings HA-1-16 through HA-9-16 were advanced at strategic locations outside the boundary of the former Eastgate Landfill in the vicinity of the proposed picnic structures and parking area on the northwest side of the site. The hand auger borings generally encountered about 1 ft of topsoil overlying recessional outwash consisting of medium dense to dense, silty sand with gravel to the full depth explored.

2.6.6 Limits of Landfill Solid Waste

Test pits TP-5-16 through TP-11-16, and TP 12-16 through TP-15-16 were advanced at strategic locations around the perimeter of the former Eastgate Landfill solid waste deposits to further define the boundary as shown on Figure 4. Test pits were completed by initially excavating near the line where the limits of refuse had been approximated by previous investigation using global positioning system equipment, and then extending the trench length horizontally until the actual horizontal limit of refuse was observed in the test pit. The found limit of the landfill refuse was then staked for final survey as shown on Figure 4. Selected photos of the test pits are included in Appendix A.

2.7 Geophysical Study

Global Geophysics (Global) carried out a geophysical study in January and February 2016 across the former Eastgate Landfill site underlying the majority of the proposed Park improvements. Global conducted 11 electrical resistivity tomography (ERT), induced polarization tomography (IPT), EM61 and ground penetration radar (GPR) surveys to help define the limits of the landfill in this area. An explanation of the geophysical survey methods used and results are provided in Appendix D. The approximate locations of the surveys are shown on Figure 4. Based on the results of their geophysical surveys, Global reported that the landfill cap in the study area varied in thickness from 2 ft to 15 ft. Global also reported that the landfill deposits extended to depths of up to 60 ft bgs and provided their interpretation of the landfill boundary. Global's findings generally confirmed the subsurface soil conditions found by the borings and matched well with what was described in previous reports they had prepared for utility installation along the southern portion of the site (Golder Associates 2014).

2.8 Groundwater Levels

Previous investigations at the site identified two aquifers below the site: a shallow perched aquifer and a deeper advance outwash aquifer (LAI 2015a). The shallow perched aquifer is encountered in the solid waste and alluvial materials, and in some locations, the glacial till underlying the fill and alluvial materials. The advance outwash aquifer is encountered below the glacial till layer that underlies most of the landfill area. The existing site monitoring wells and piezometer are screened in the advance outwash. Groundwater elevations calculated using water level measurements collected from each monitoring well and piezometer, and a surface water level measurement at the staff gauge in Pond A, are used to evaluate groundwater flow direction in the advance outwash aquifer. Groundwater elevation contours are plotted for each monitoring event using the measured groundwater elevations. The 2015 groundwater contours are provided in the Landau Associates Project Summary Report dated October 19, 2015 (LAI 2015b). The contours indicate the groundwater within the advance outwash aquifer has a generally easterly flow, which is consistent with flow direction that has been observed at the landfill since Landau Associates began monitoring activities in 2001. This differs from the flow within the perched aquifer (leachate) in the landfill, which generally flows to the north toward the leachate collection trench. Groundwater levels encountered in our borings at the time of drilling ranged from 15.5 to 34 ft bgs (Elevation 304 to 329) and are shown on the borings logs provided in Appendix A.

3.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the field exploration, laboratory testing, and engineering analyses performed, and our understanding of the proposed Park development project, it is our opinion that the improvements proposed as part of Phase 1 of this project can be constructed at the site generally as planned. Design of the proposed improvements will need to consider the presence of compressible landfill deposits under the planned improvements which may require: 1) preloading/surcharging the proposed improvement area to pre-consolidate foundation soils prior to construction, and/or 2) using ground improvement techniques (e.g., drilled shafts, piles, stone columns, Geopiers, etc.) to reduce the settlement potential of the onsite soils. The presence of old landfill deposits will also require limiting contact and excavation of the solid waste materials, and controlling landfill gas (LFG) and leachate that continue to be produced by the landfill. Leachate production will be limited by installing a geomembrane cover over the landfill and upgrading the existing leachate collection trench to continue to discharge to the onsite sanitary sewer system. LFG will be better contained by the geomembrane cover, and will continue to be removed from the landfill area by upgrading the existing LFG extraction wells and venting system.

Conclusions and recommendations related to environmental considerations, health and safety considerations, contaminated soil handling and disposal, seismic considerations, site preparation, fill and compaction, wet weather earthwork, site settlement, preloading, underground utility installation, foundation support, pavement design, and landfill cover system are presented in the following sections.

3.1 Environmental Considerations

Contaminated soils in the form of landfill deposits are present underlying a significant portion of the site (Figures 2 through 5). Concentrations of dissolved iron, dissolved manganese, and 1,4-dichlorobenzene concentrations above screening levels were detected in water samples collected from the onsite leachate collection system. The existing leachate collection system appears to be adequately fulfilling its intended function. Water in the shallow perched aquifer that has been impacted by the landfill refuse is being captured and discharged directly to the onsite sanitary sewer line. The leachate collection system, along with Pond A, is functioning to protect downstream water quality. No exceedances of State surface water standards have been observed downstream of Pond A. Nonetheless, sampling and analysis of surface water from the leachate collection system will continue to be conducted on an annual schedule during the design phase for the Phase 1 Park development.

Further information on the groundwater monitoring and leachate collection systems and MTCA Compliance analysis can be found in LAI’s Project Startup Summary Report (LAI 2015b).

3.2 Health and Safety Considerations

Excavations for the proposed improvements will likely be within compacted, clean, granular backfill, the existing cover soils overlying the landfill deposits, and/or native soils consisting of advance outwash and glacial till. However, deeper excavations extending below the existing grade may encounter potentially contaminated materials (landfill deposits) that were not encountered at shallower depths during our site investigation activities. Therefore, site excavations extending into existing site soil should be monitored for the presence of contamination. Monitoring should include visual and odor indications of contamination, as well as health and safety monitoring for LFG using a four gas explosivity and photoionization detector (PID) or similar equipment.

Due to the potential for encountering contaminated soil that was not discovered during previous site investigations, site work contractors should be required to prepare and submit a site-specific health and safety plan meeting applicable regulatory requirements prior to the start of construction. The contractor should also identify a Health and Safety Officer whose responsibility will be health and safety monitoring and oversight.

Current and previous field investigations in and around the Bellevue Airfield park site indicate that landfill deposits are present beneath portions of the site, and methane may be generated as a result of its presence and decomposition. Methane has the potential to accumulate in subsurface structures, voids, and vaults at concentrations that could pose a risk for explosion or oxygen depletion. As a result, development planning and design will need to address the potential presence of methane gas, and if present, accumulation in subsurface structures or voids.

3.3 Contaminated Soil Handling and Disposal

Environmental sampling and testing of the soil excavated and managed onsite should be planned as a part of the proposed project in the form of a soil management plan developed as part of the future Environmental Engineering Design Report (EEDR). Although there is no information suggesting contamination of the existing soil cover material, if soil is encountered during construction that visually appears to be contaminated or exhibits an odor (e.g., soil with oily residue or discoloration, visual landfill refuse, strong petroleum-like odors, groundwater with an oily sheen, etc.), the potentially impacted soil should be segregated, stored on plastic, and covered with plastic pending characterization for disposal. Soil samples should be collected from the potentially impacted soil and analyzed at an accredited laboratory for petroleum hydrocarbons and heavy metals. Additionally, if characterization indicates the presence of petroleum hydrocarbons in the heavy oil range, the soil should also be analyzed for PAHs and PCBs. If the concentration of contaminants in the soil is determined to be below the Model Toxics Control Act (MTCA Method A) concentration for unrestricted land use, the soil may be managed onsite as clean soil. If the contaminant concentrations are determined to be above MTCA Method A levels, the soil should be managed consistent with other contaminated materials identified on the site and removed for disposal at an approved offsite facility. Furthermore, if clearly contaminated soil is encountered during excavation activities, the contractor should establish appropriate contamination reduction and exclusion zones to help prevent the spread of contaminated materials on the site.

It is important to recognize that current solid waste regulations (WAC 173-350) may significantly restrict the offsite placement of site soil that contains hazardous substances, even if the concentrations are below MTCA cleanup levels. As a result, no existing site soil should be exported from the site, except to a solid waste landfill, without first determining whether the intended use and destination are allowable under Ecology regulations.

3.4 Seismic Considerations

The following sections present our conclusions and recommendations regarding the seismic hazard risk for the site and project, including design ground motions and the results of our liquefaction assessment.

3.4.1 Ground Motions

The Pacific Northwest is seismically active and the project site could be subject to ground shaking from a moderate to major earthquake. Consequently, moderate levels of earthquake shaking should be anticipated during the design life of the proposed Park improvements. In addition, the proposed improvement should be designed to resist earthquake loading using appropriate design methodology. The recommended ground motion design parameters for both design of structures over native soils and for structures over the landfill refuse are provided below.

Earthquake ground motions were estimated using the US Seismic Design Maps from the US Geological Survey (USGS) website (USGS 2015) in accordance with the 2012 IBC. The 2012 IBC accounts for an earthquake ground motion with a 2 percent probability of exceedance in 50 years (or approximately a 2,475-year return period). The seismic parameters in the 2012 IBC are based on maps prepared by the USGS. According to the USGS, the peak horizontal acceleration at the project site is approximately 0.54 times the acceleration due to gravity (0.54g).

3.4.1.1 Structures Over Fill and Native Soils

Based on the average field standard penetration resistance (N), and according to Chapter 20 of ASCE 7, the site classifies as Site Class D. The following parameters are recommended for design of the proposed structures:

- Spectral Acceleration for short periods (S_S): 133% of gravity (1.331g)
- Spectral Acceleration for a 1-second period (S_1): 51% of gravity (0.509g)

The above values can be modified for Site Class D using 1.000 for site coefficient F_a, and 1.500 for site coefficient F_v. The design spectral response acceleration parameters can be taken as two-thirds of the maximum considered earthquake spectral response acceleration presented above. Using the above site class and design adjustments, the following design spectral acceleration parameters can be used:

- S_{DS} = 0.887
- S_{D1} = 0.509

3.4.1.2 Structures Over the Landfill Refuse

Average shear wave velocities for the landfill solid waste deposits are estimated to range between 250 and 600 ft/s (Zekkos 2014). According to Chapter 20 of ASCE 7, the site classifies as Site Class E, based on the estimated shear wave velocities for the site where underlain by landfill refuse. The following parameters are recommended for design of the proposed structures:

- Spectral Acceleration for short periods (S_S): 133% of gravity (1.329g)
- Spectral Acceleration for a 1-second period (S_1): 51% of gravity (0.509g)

The above values can be modified for Site Class E using 0.900 for site coefficient F_a, and 2.400 for site coefficient F_v. The design spectral response acceleration parameters can be taken as two-thirds of the maximum considered earthquake spectral response acceleration presented above. Using the above site class and design adjustments, the following design spectral acceleration parameters can be used:

- $S_{DS} = 0.797$
- $S_{D1} = 0.814$

Soil liquefaction is generally limited to granular soils located below the water table that are in a relatively loose, unconsolidated condition at the time of a large, nearby earthquake. The landfill solid waste and dense, glacially consolidated deposits that underlie the project site are anticipated to have a low susceptibility to soil liquefaction. Consequently, it is our opinion that no special liquefaction-related design or construction procedures will be necessary for this project.

3.5 Site Preparation

Site preparation and earthwork will include demolition and removal of some existing structures, existing utilities (including parts of the existing LFG collection system), and asphalt concrete pavement. Site preparation and earthwork will also include stripping vegetation, grading the site with cuts and fills ranging from 2 to 13 ft, respectively, and (if encountered) handling and disposal of potentially contaminated soil. Specific conclusions and recommendations related to the handling and disposal of potentially contaminated soil are provided in Section 3.3.

All existing structures, pavement, vegetation, man-made debris, and other deleterious material should be cleared and stripped from all areas to be occupied by the proposed Park improvements and areas to receive fill. Utility lines and appurtenant structures that will be abandoned under future improvements should be completely removed to a point at least 5 ft (measured horizontally) beyond the foundations of proposed structures. Excavations resulting from the removal of abandoned utilities should be backfilled in accordance with the recommendations presented in Section 3.10.5 of this report. Utility lines that will be abandoned under future buildings may be abandoned in place, provided pipes 12 inches in diameter and larger are completely filled with controlled density fill (CDF). It should be noted that large-diameter utility lines that are abandoned in place could create obstructions for operations associated with future site development activities (e.g., building construction, site grading, etc.).

Pipes and appurtenant structures abandoned beyond the footprints of future buildings may be abandoned in place, provided pipes 12 inches in diameter and larger are completely filled with CDF. If the existing pipes are abandoned in this manner, structures such as manholes and vaults should be removed to a minimum depth of 3 ft below finish grade and the remaining portion (if any) of the excavation should be backfilled in accordance with the recommendations presented in Section 3.10.5.

Prior to placement of any structural fill to raise site grades in areas that were not previously preloaded, the exposed subgrade should be proof rolled to a dense and unyielding condition. Proof rolling should be accomplished with a fully-loaded dump truck, large self-propelled vibrating roller, or equivalent piece of equipment so that the upper 12 inches of exposed subgrade is compacted to at least 95 percent of its maximum dry density, as determined using test method ASTM International (ASTM) D 1557 (Modified Proctor). The purpose of this effort is to identify possible loose or soft soil deposits and to recompact the soil exposed during site stripping and demolition activities.

Proof rolling should be carefully observed by geotechnical personnel. Areas exhibiting significant deflection, pumping, or weaving that cannot be readily compacted should be overexcavated to firm or dense soil. Overexcavated areas should be backfilled with compacted granular material in accordance with subsequent recommendations for structural fill. During periods of wet weather, proof rolling or compaction could damage exposed subgrades. Under these conditions, a qualified geotechnical engineer should observe subgrade conditions to determine if proof rolling and compaction is feasible.

Construction in wet weather conditions may not allow proper compaction of the subgrade soils. Recommendations for wet weather earthwork are provided in Section 3.7.

3.6 Fill and Compaction

Structural fill used to raise site grades must be properly placed and compacted. In general, any suitable, non-organic, predominately granular soil may be used for fill material, including portions of the existing site fill, provided the material is properly moisture conditioned prior to placement and compaction, and the specified degree of compaction is obtained. If the existing onsite soil is to be reused for structural fill, pieces of wood or other deleterious material should be removed. Excavated site material containing topsoil, wood, trash, organic or fine-grained material, or construction debris will not be suitable for reuse as structural fill and should be placed in nonstructural areas where several inches of post-construction settlement is tolerable. Alternatively, this material could be exported from the site, provided the material is evaluated for contamination prior to removal from the site. If the material contains hazardous substances, disposal at a solid waste landfill would be required.

The suitability of any fine-grained soil excavated from the site or imported for use as compacted structural fill will depend on the gradation and moisture content of the soil when it is placed. As the amount of fines (that portion passing the US Standard No. 200 sieve) increases, the soil becomes increasingly sensitive to small changes in moisture content and adequate compaction becomes more difficult to achieve. Soil containing more than about 5 percent fines cannot consistently be compacted to a dense, non-yielding condition when the water content is greater than optimum. Optimum moisture content is the moisture content at which the greatest compacted dry density can be achieved. The moisture content of the site soil was observed to be variable. In addition, seasonal variation in the moisture content of shallow site soil should be expected.

The near-surface, onsite fill soil consists primarily of very loose to medium dense, very silty to silty sand with varying amounts of gravel and dense to very dense silty, sandy gravel. These soils will be suitable for use as structural fill under most conditions; however, the siltier portions of the fill soils are expected to be moisture sensitive. Furthermore, if the optimum moisture content of the soil is exceeded, moisture conditioning could be required. Moisture conditioning will also be required if onsite soil is obtained from excavations that encounter groundwater. The contractor should be prepared to segregate portions of the fill soils that contain organics and construction debris.

Structural fill soil should be placed in loose, horizontal lifts less than 8 to 10 inches in thickness and thoroughly compacted. All structural fill under future paved areas should be compacted to at least 95 percent of the maximum dry density, as determined using test method ASTM D 1557 (Modified Proctor). Fill placed within landscaped areas should be compacted to a minimum of 85 percent of its maximum dry density to reduce the potential for excessive settlement. Compaction criteria for trench backfill and excavations is presented in Section 3.10.5.

3.7 Wet Weather Earthwork

Some of the near-surface, onsite soil is considered to be moisture sensitive. As a result, it will be difficult to control the moisture content of these materials during periods of wet weather. If construction is accomplished during wet weather, or under wet conditions, exposed subgrades could be easily disturbed by construction equipment. In addition, stockpiles of onsite materials could become saturated and subject to erosion if not properly protected. Site preparation would be facilitated by scheduling such earthwork during the dry summer and early fall months. If fill is to be placed or earthwork is to be performed in wet weather or under wet conditions, the contractor may reduce soil disturbance by:

- Accomplishing earthwork in small sections
- Limiting construction traffic over unprotected soil
- Sloping excavated surfaces to promote runoff
- Limiting the size and type of construction equipment used
- Providing gravel “working mats” over areas of prepared subgrade

- Removing wet surficial soil prior to commencing fill placement each day
- Sealing the exposed ground surface by rolling with a smooth drum compactor or rubber-tired roller at the end of each working day
- Providing upgradient perimeter ditches or low earthen berms and using temporary sumps to collect runoff and prevent water from ponding and damaging exposed subgrades.

It may be necessary to overexcavate loose and wet surficial soil and replace it with clean, well graded sand and gravel or base-course material in paved areas. The depth of overexcavation required will depend on the condition of the soil at the time of construction, but the depth could be on the order of 6 to 12 inches. If the subgrade is particularly loose or disturbed by construction equipment during wet weather, an even thicker subbase layer or the use of a geotextile in combination with a granular base material may be needed to achieve suitable conditions for the proposed pavement sections and future buildings.

3.8 Site Settlement

The results of the current and previous subsurface exploration programs completed at the site indicate that loose fill and compressible municipal solid waste (MSW) underlie a significant portion of the project site. These soils will experience settlement during and after site grades are raised. Consequently, we recommend that any proposed underground utilities be installed after site grades have been raised and the site has been preloaded and/or improved through the use of other ground improvement techniques in order to reduce the magnitude of post-construction settlement.

Static settlement of the ground following placement of the new fill will depend on the height and width of the new fill, as well as the strength and compressibility characteristics of the underlying bearing soil. Ground settlement is anticipated to occur non-uniformly across the site due to the heterogeneous nature and variable thickness of the MSW, the presence of organic material, and the level of compaction the MSW experienced during original placement.

We estimate that the total amount of static ground settlement associated with the loading from the proposed structures in addition to the fill required to bring the site up to grade will be as much as 9 inches over a service life of 50 years. This amount of settlement is expected if no preloading or ground improvement is provided prior to construction of the Park amenities. The actual static settlements will depend on the rate of filling and the specific soil conditions beneath the new fill, which are expected to be variable across the site. Consequently, actual settlements and the time rate of settlement could potentially be greater or less than estimated herein. Preloading, as further described in Section 3.9, is therefore recommended to pre-consolidate the compressible onsite soils and landfill refuse prior to construction, and to reduce total and differential settlements beneath the proposed structures, Park improvements, and utilities to within acceptable levels.

As fill is being placed, installation and monitoring of settlement plates within the fill is recommended in order to identify the end of primary consolidation. Installation of the planned utilities and hardscaping should be deferred until the end of primary consolidation. If constructed in this manner, the majority of the differential settlement should occur prior to the installation of utilities and hardscaping.

3.9 Preloading

Preloading the landfill area of the site with granular fill is recommended to pre-consolidate the underlying compressible refuse and fill soils prior to construction in order to reduce total and differential post-construction settlements beneath the proposed park ball fields and landscape to within tolerable levels (i.e., less than about 1 to 2 inches).

The areas to be preloaded should be cleared and stripped in accordance with the recommendations in Section 3.5 prior to the preload/surcharge fill being placed. The preload/surcharge fill should consist of a predominately granular material such as sand or sand and gravel to facilitate placement and removal.

For schematic design purposes, it can be assumed that preload fill heights of up to 9 ft above proposed finished site grades will be required, with the fill heights varying with the thickness of underlying landfill solid waste deposits. The preloading program will require on the order of about 9 to 20 months to pre-consolidate the underlying soils to the point where about 95 percent of the primary settlement is achieved. For schematic design, a 2H:1V (horizontal:vertical) maximum preload side slopes may be assumed.

The specific design of the landfill preloading program will be provided in the EEDR. Depending on the height(s) of the preload fill selected, surface settlements on the order of about 7 to 8 inches are expected directly beneath the fill in the areas where underlying landfill refuse deposits are located. This expected settlement could affect the existing LFG system. The following measures could be taken to reduce the potential for affecting the operation of the LFG System and groundwater monitoring wells:

- Relocate existing LFG header pipes located beneath or adjacent to preloaded areas prior to the placement of the preload fill.
- Construct strategically placed temporary walls at the edge of the preload to limit its lateral extent and influence, if needed.
- Add well risers and flexible couplings such that the LFG system and groundwater monitoring wells can undergo the expected settlement without sustaining damage.

The preload grading plan based on the underlying refuse thickness will be provided in the EEDR.

3.10 Underground Utility Installation

Underground utilities will consist of piping for plumbing, stormwater, sanitary sewer, and electrical conduits. Underground utilities should only be installed over the landfill areas after preloading has induced 95 percent of the predicted primary settlement. The following sections provide geotechnical recommendations for design and construction of the proposed utility lines.

3.10.1 Dewatering Considerations

Depths to proposed underground utilities are currently unknown; however, they are expected to be constructed in the new structural fill or existing landfill soil cover material. While groundwater was not observed in our explorations at shallower depths in the landfill soil cover material, it is common for isolated pockets of perched groundwater to occur within more granular zones of the landfill soil cover. This type of groundwater typically results in seepage into an excavation for a period of time after it is encountered and often dissipates once the groundwater is allowed to drain into the excavation.

If groundwater is encountered in trench excavations, it is expected that pumping from sumps will be adequate to control the groundwater and remove it from the construction area to maintain a relatively dry excavation. The contractor should be responsible for the design, installation, monitoring, and maintenance of any required dewatering system(s). Prior to discharging water to King County sewer system, a disposal permit will need to be obtained from King County septage disposal program coordinator. Groundwater to be discharged to the King County sewer system must comply with the Industrial Waste Regulations of King County Code (KCC) 28.84.060. Prior to disposal of any groundwater encountered in excavations, the groundwater should be analyzed at a certified analytical laboratory for the compounds required by King County for discharge to the sanitary sewer system.

3.10.2 Trench Excavation

All trenching deeper than 4 feet bgs will require trench safety designed and approved by a professional engineer licensed in the State of Washington. Excavation for utility trenches should be in accordance with the requirements in Section 7-08 of the 2016 Washington State Department of Transportation (WSDOT) Standard Specifications for Road, Bridge and Municipal Construction (Standard Specifications; WSDOT 2016). Small to medium sized conventional construction equipment should be able to excavate the trench to typical utility trench depths. The contractor should be prepared to handle and dispose of oversized material such as cobbles and boulders. Actual trench configurations and maintenance of safe working conditions, including temporary excavation stability, should be the responsibility of the contractor, as discussed in the Site Preparation and Earthwork section of this report.

Trench boxes should provide suitable support for shallow excavations in fill or native soils, provided that settlement-sensitive structures are not situated immediately adjacent to the excavation. Trench boxes should meet the requirements in Safety Standards for Construction Work, WAC 296-155 Part N and WAC 296-155-657.

Where a trench box is used to support excavations, one or both sides of the trench may cave against the box, especially if loose, granular soil is present. The caving may extend out on either side of the trench for a distance approximately equal to the depth of the trench. Additional bracing or sheeting may be required where the near edge of the trench will be closer than 1.5 times the trench depth to settlement-sensitive utilities or structures. When the trench box is moved, precautions should be taken to minimize disturbance to the pipe, underlying bedding materials, and surrounding soil.

If bracing is needed to support the trench walls, the temporary bracing system should be designed by a structural engineer licensed in the State of Washington, and constructed to support lateral loads exerted by the retained soil mass. It is assumed that temporary shoring would consist of steel plates with internal bracing. Temporary shoring may also be used in conjunction with sloped excavations.

3.10.3 Pipe Foundation Support

Based on conditions observed at the exploration locations and our understanding of the geologic conditions in the area, soil at anticipated trench depths are anticipated to primarily consist of new structural fill or landfill cover soils, and should provide adequate foundation support for the pipes, provided the soil remains in a relatively undisturbed condition and the trench is properly dewatered.

If the trench bottom becomes disturbed due to excavation and/or foot traffic during placement of the pipe, the trench bottom may need to be overexcavated to expose undisturbed foundation soil. Removal and replacement of unsuitable foundation material should be in accordance with Section 7-08.3(1)A of the 2016 WSDOT Standard Specifications. The overexcavation should be backfilled with suitable foundation material to provide a firm trench bottom. Foundation material should meet the requirements for Class B Foundation Material in Section 9-03.12(1)B of the 2016 WSDOT Standard Specifications, and should be thoroughly compacted to provide a firm excavation bottom.

3.10.4 Bedding and Pipe Zone Backfill

To provide uniform support of buried utility pipes, the pipe should be bedded in accordance with Section 7-08.3(1)C of the 2016 WSDOT Standard Specifications. The bedding material should extend 6 inches below the invert of the pipe. Bedding material should extend above the pipe bottom a distance of at least 15 percent of the pipe outside diameter. Pipe zone backfill for rigid pipes should meet the requirements of Section 7.08-3(3) of the 2016 WSDOT Standard Specifications. Pipe zone backfill should extend 6 inches above the crown of the pipe. Pipe bedding material and pipe zone backfill should be brought up evenly around the pipe in relatively horizontal lifts not exceeding 6 inches, and worked under the haunches of the pipe by slicing with a shovel, vibration, or other approved procedures. Pipe zone backfill should be placed in accordance with Section 7-08.3(1)C of the 2016 WSDOT Standard Specifications.

3.10.5 Trench Backfill and Compaction

Most of the subsurface soil exposed in trench excavations is expected to consist of new structural fill or landfill soil cover material. If the excavated soil cannot be used as trench backfill or if additional backfill is needed, an imported material should be used. Imported trench backfill should meet the requirements for Bank Run Gravel for Trench Backfill in Section 9-03.19 of the 2016 WSDOT Standard Specifications. If wet weather construction is anticipated, then the amount of fines should be limited to 5 percent or less based on the fraction of the material passing a US Standard ¾-inch sieve.

Backfilling of trenches should be in accordance with the requirements of Section 7-08.3(3) of the 2016 WSDOT Standard Specifications. Trench backfill should be placed in 6-inch layers and compacted to a relative density of at least 92 or 95 percent maximum dry density, depending on whether the trench is located outside or within structure footprints. Compaction testing should be in accordance with the maximum dry density, as determined using ASTM test method D1557. Flooding and/or jetting of backfill may not be used as a means to consolidate or compact trench backfill. Hand-operated compaction equipment, or other approved methods, should be used to compact the first 18 inches of trench backfill above the pipe. Heavy compaction equipment should not be used for the first 18 inches of backfill above the initial backfill.

3.11 Foundation Support

Although preloading/surcharging the site will effectively force settlement in the underlying landfill refuse prior to construction, methane gas is still being generated by the landfill refuse indicating that decomposition is still occurring, at a very low rate, which could cause future secondary settlement. Foundation support for the proposed bath house structures and water play area underground vault may be provided by a lightly loaded structural slab mat type foundation founded either on existing landfill cover soil or properly placed and compacted structural fill that is underlain by existing landfill cover soils. For foundations that are supported by structural fill, the limits of the overexcavation around the foundation should extend laterally beyond the edge of each side of the footing a distance equal to one-half the depth of the excavation below the base of the structural slab. Alternatively, overexcavation areas could be backfilled to the design footing elevation with CDF or lean concrete, or foundations may be extended to bear on dense to very dense, undisturbed native glacial soils. If CDF or lean concrete is used to backfill the overexcavation, the limits of the overexcavation do not need to extend beyond the width of the footing.

Bearing soil disturbed during foundation excavation should either be properly recompacted or removed. All soil directly below structural slabs should be compacted to at least 95 percent of maximum dry density (ASTM D1557) prior to placement of forms, reinforcing steel, and concrete. The bottom elevation of structural slabs should be founded a minimum of 18 inches below the lowest adjacent final grade.

Assuming the above foundation support criteria are satisfied, structural slab mat type foundations founded directly new structural fill or existing landfill cover soil may be designed using a maximum allowable bearing pressure of 1,500 pounds per square foot (psf) if using a rigid mat method for design, or a maximum modulus of subgrade reaction (k-value) of 125 pounds per cubic inch (pci) if using the flexible method (elastic spring model) for design.

For minor structures such as planned picnic shelters located outside of the landfill area (Figure 4), continuous or isolated spread footings founded directly on medium dense to dense native soils may be proportioned using a maximum net allowable soil bearing pressure of 1,500 psf.

The term “net allowable bearing pressure” refers to the pressure that can be imposed on the soil at foundation level resulting from the total of all dead plus live loads, exclusive of the weight of the footing or any backfill placed above the footing. The net allowable bearing pressures recommended above may be increased by one-third for transient wind or seismic loads.

Passive earth pressures that develop against the sides of building foundations in conjunction with friction developed between the base of the footings and the supporting subgrade, will resist lateral loads transmitted from the structure to its foundation. For design purposes, the passive resistance of well-compacted fill placed against walls or the sides of foundations may be considered equivalent to a fluid with a density of 300 lbs per cubic ft (pcf). The recommended value includes a safety factor of about 1.5 and is based on the assumption that the ground surface adjacent to the structure is level in the direction of movement for a distance equal to or greater than twice the embedment depth. The recommended value also assumes drained conditions that will prevent the buildup of hydrostatic pressure in the compacted fill. In design computations, the upper 12 inches of passive resistance should be neglected if the soil is not covered by floor slabs or pavement. If future plans call for the removal of the soil providing resistance, the passive resistance should not be considered.

An allowable coefficient of friction between concrete and soil of 0.35, applied to vertical dead loads only, may be used to calculate the resistance to sliding at the base of the foundation elements bearing on undisturbed native soil or well-compacted granular fill. However, if passive and frictional resistance are considered together, one-half of the recommended passive soil resistance value should be used because larger strains are required to mobilize the passive soil resistance as compared to frictional resistance. A safety factor of about 1.5 is included in the base friction design value. We do not recommend increasing the coefficient of friction to resist seismic or wind loads.

3.12 Foundation Settlement

Settlement of structural slab mat type foundations depends on foundation size and bearing pressure, as well as the strength and compressibility characteristics of the underlying soil and/or refuse. Assuming construction is accomplished as previously recommended, including preloading/surcharging the site, and for the maximum allowable soil bearing pressures recommended above, we estimate the total settlement of foundations should be less than about 1 inch and differential settlement between two adjacent load-bearing components supported on competent soil should be less than about ½ inch.

Structures that cannot withstand the anticipated settlements or require higher bearing pressures should be supported on deep foundations founded in the underlying till as outlined in Section 3.14. The soil response to applied stresses caused by structural and other loads is expected to be predominately elastic in nature, with most of the settlement occurring during construction as loads are applied.

3.13 Site Drainage

To reduce the potential for groundwater to seep into interior spaces and prevent the buildup of hydrostatic pressure against subsurface walls, we recommend that an exterior footing drain system be constructed around the perimeter of any portion of the building foundations where the interior floor elevation is lower than the exterior grade. The drain should consist of a minimum 4-inch diameter perforated pipe, surrounded by a minimum 12 inches of filtering media and sloped to carry water to a suitable collection and discharge system. The filtering media may consist of open-graded drain rock wrapped by a non-woven geotextile (such as Mirafi 140N, Synthetic Industries 351, or equivalent). The drainage backfill should contain less than 3 percent by weight passing the US Standard No. 200 sieve, based on a wet sieve analysis of that portion passing the US Standard No. 4 sieve. The invert of the footing drain pipe should be placed at approximately the same elevation as the bottom of the footing or 12 inches below the adjacent floor slab grade, whichever is deeper, so that water will not accumulate behind walls or seep through walls or floor slabs. The footing drain should discharge to an approved drain system and include cleanouts to allow periodic maintenance and inspection.

Positive surface gradients should be provided adjacent to the proposed structures to direct surface water away from the foundation and toward suitable discharge facilities. Roof drainage should not be introduced into the perimeter footing drains, but should be discharged directly to the stormwater collection system or other appropriate outlet. Pavement and sidewalk areas should be sloped and drainage gradients should be maintained to carry all surface water away from the building toward the local stormwater collection system. Surface water should not be allowed to pond and soak into the ground surface near the building during or after construction.

3.14 Deep Foundations

Structures that cannot withstand the anticipated settlements or require higher bearing pressures should be supported on deep foundations extending through the landfill deposits and into the underlying glacial till or advance outwash deposits. Deep foundations may include the use of drilled shafts, augercast piles, or driven piles. Under no circumstances should deep foundations tips terminate in the landfill solid waste deposits.

Due to the non-uniform thickness of the landfill solid waste deposits, and if deep foundations are required for the project, Landau Associates will provide specific geotechnical recommendations for deep foundations as structural design details are developed. At a minimum, we require anticipated structural loading requirements, locations of structures and foundation elements, and type of deep foundations to be used.

Installation of drilled shafts or augercast piles can be performed with conventional drill rigs and equipment. Holes advanced for drilled shafts may be susceptible to caving and casing may be required to keep the hole open. In the event that groundwater is encountered, the concrete should be tremied to the bottom of the hole and poured from the bottom up displacing the groundwater out of the top of the hole. Groundwater expelled from the hole will need to be disposed of as described in Section 3.10.1 of this report. Landfill solid waste cuttings generated as a result of drilling operations will need to be disposed of as described in Section 3.3 of this report.

Installation of driven piles using a vibratory hammer will produce ground vibration in the vicinity of the pile installation. While unlikely, ground vibrations associated with installation of driven piles could potentially cause some damage to nearby structures. Ground vibrations could also result in the densification of loose soil and some settlement of the ground surface. Ground vibrations producing densification and settlement are dependent on a complex combination of factors, including energy and amplitude of the vibratory hammer, number of repetitions, soil properties, pile length, location of the water table, type of pile installation, and distance from the pile. The pile foundation axial and lateral capacity can be influenced by the equipment and construction procedures, and the quality of construction is greatly influenced by the experience of the foundation contractor.

3.15 Sport Field Lighting and Luminaire Foundations

According to preliminary plans provided by Walker Macy, luminaires are planned in the parking areas and throughout the Park and along walking areas. Stadium style light standards are planned for illumination of the sports fields.

3.15.1 Luminaire Foundations

Luminaires are planned in the parking areas and throughout the Park and along walking areas. We anticipate that the luminaries will be designed in general accordance with the WSDOT design method. Based on the results of our field exploration, laboratory testing, and engineering analyses, it is our opinion that new luminaries can be supported on drilled shaft foundations. The drilled shafts should be embedded sufficiently to resist lateral forces and the resulting overturning moments.

We anticipate that the luminaire foundations will be founded in properly placed and compacted structural fill overlying existing or recompacted landfill soil cover material. Based on these observations, and assuming the proposed luminaire foundations conform to WSDOT standards for design, we recommend using an allowable lateral bearing stress of 1,500 psf for design of the proposed luminaire standard foundations. Using WSDOT Standard Plan J-28.30-03, we recommend that a Type B foundation (8-foot long drilled shaft) be used. The WSDOT Standard foundation can be used on level ground and on slopes not exceeding 2H:1V.

Should the luminaries not meet WSDOT standards for design, a special foundation design will be required using the Broms Method as recommended in the 2015 WSDOT Geotechnical Design Manual (WSDOT 2015a) and specified in the 2001 AASHTO Standard Specifications for Structural Support for Highway Signs, Luminaires, and Traffic Signals. An allowable lateral bearing stress of 1,500 psf should be used when applying the Broms method to foundation design for luminaries.

If the bottom of the luminaire foundations encounter landfill solid waste, the foundations should be constructed in accordance with Method 2 as shown on WSDOT Standard Plan J-28.30-03.

3.15.2 Sport Field Lighting Foundations

The sports field light systems are expected to experience relatively high lateral loads requiring deep foundations possibly extending into the underlying landfill solid waste deposits, which exhibit very low lateral resistance. Due to these factors, a special foundation design will be required using the Broms Method as recommended in the 2015 WSDOT Geotechnical Design Manual and specified in the 2001 AASHTO Standard Specifications for Structural Support for Highway Signs, Luminaires, and Traffic Signals. The sport field light standards are planned along the north and south side of Sport Field 1 and on the northwest and southeast sides of Sport Field 2. An allowable lateral bearing stress as shown in the table below should be used when applying the Broms Method to foundation design for sport field lighting foundations. Elevations and thicknesses of the soil layers at the proposed field lighting locations are shown on Figure 6B.

Soil Type	Allowable Lateral Bearing Stress, psf
New Structural Fill	2,500
Existing Landfill Cover Soil	1,500
Landfill Solid Waste	750
Glacial Till / Advance Outwash	3,000

Under no circumstances should the sports field light system foundation bottoms be founded in the landfill solid waste deposits underlying the site. We recommend that all sport field lighting foundations extend through the landfill deposits and into the underlying glacial till or advance outwash.

3.16 Retaining Walls

Preliminary plans provided by Walker Macy indicate that retaining walls are planned to consist of gabions or cast in place (CIP) concrete walls. Gabions and CIP walls are considered to be a feasible wall type for both cut and fill retaining walls planned throughout the park, provided that sufficient space is available to accommodate temporary construction slopes. CIP walls are generally constructed with ready-mix concrete and steel reinforcement placed into removable forms erected on site. Gabions are typically made of stacked stone-filled welded wire baskets. Gabion walls are usually battered (angled back towards the slope), or stepped back with the slope, rather than stacked vertically. The combined weight of the gabions or CIP wall is utilized to resist the lateral earth pressure imposed by the retained soil.

3.16.1.1 Retaining Wall Subgrade Preparation

Based on the results of our explorations and the site topography, CIP concrete retaining walls will likely bear on new structural fill or existing landfill cover soil within the landfill area or loose to medium dense native soils outside the landfill area.

Upon reaching the foundation-bearing surface, the wall subgrade should be checked for the presence of loose to medium dense undocumented fill present over the glacial till. If loose fill or loose native deposits are encountered at the foundation-bearing level, we recommend that the loose soils be removed to a maximum depth of 24 inches from beneath the foundation-bearing surface and be scarified, moisture-conditioned to near optimum moisture, and recompacted in accordance with the recommendations in Sections 3.6. The width of the over-excavation should extend at least 2 ft horizontally beyond the outside edge of the facing units and the length of reinforcement. The excavated unsuitable soil should be replaced with Class B Gravel Backfill for Foundations in accordance with the requirements of Section 9-03.12(1)B of the 2016 WSDOT Standard Specifications.

If the foundation-bearing soil is composed of new structural fill, medium dense to dense landfill soil cover material, or medium dense to dense native soils, the need for extensive over-excavation, moisture conditioning, and recompaction is not anticipated, although localized subgrade preparation activities may be needed.

All prepared foundation-bearing surfaces should be free of any loose soil and water. Prepared footing subgrades should be observed by a qualified geotechnical or civil engineer to check that suitable bearing soils are present.

3.16.1.2 Retaining Wall Embedment

The minimum embedment depth (distance from the ground surface at the face of the blocks to the top of the leveling pad shall be based on bearing resistance, settlement, and stability requirements. At a minimum, the embedment shall be the maximum of 2 ft or the value provided in the following table.

Embedment Depth for CIP and Gabion Walls on Slopes

Slope in Front of Wall	Minimum Embedment Depth (ft)
Horizontal	2
4H:1V	H/10
3H:1V	H/10
2H:1V	H/7
1½H:1V	H/5

3.16.1.3 Lateral Earth Pressures

The CIP and gabions wall must be designed to resist active lateral earth pressures. The use of active lateral earth pressures assumes that sufficient deformation (0.1 to 0.2 percent of the wall height) of the soil behind the wall could occur to develop an active earth pressure. This lateral deformation is likely to be accompanied by some vertical settlement, which could be up to about 0.05 percent of the wall height.

We recommend that non-restrained (yielding) walls with level backfill under drained conditions be designed for an equivalent fluid density of 35 pcf for active soil conditions. Nonyielding (restrained at the top) walls with level backfill under drained conditions should be designed for an equivalent fluid density of 55 pcf for at-rest conditions. For undrained conditions, yielding walls with level backfill should be designed to resist an equivalent fluid density of 80 pcf. Nonyielding walls with level backfill under undrained conditions should be designed for an equivalent fluid density of 90 pcf. The equivalent fluid densities recommended for use under undrained conditions include hydrostatic pressure.

The above recommendations regarding active and at-rest earth pressures assume that the backfill placed against the below-grade walls will consist of properly compacted structural fill, and no adjacent surcharge loads due to traffic, staging areas, soil stockpiles, etc. If the subsurface walls will be subjected to the influence of surcharge loading within a horizontal distance equal to or less than the height of the walls, the walls should be designed for the additional horizontal pressure. For rigid walls, a uniformly distributed lateral pressure of 0.44 times the surcharge pressure should be included. For walls free to rotate during loading, a uniformly distributed lateral pressure of 0.28 times the surcharge pressure should be included. A minimum surcharge pressure of 250 psf should be assumed when estimating the additional load on retaining walls adjacent to parking areas, traveled paths for maintenance vehicles, and trafficked areas during construction.

Dynamic lateral earth pressures should be included in the design of below grade walls. A lateral pressure distribution of 8H (H is the vertical height of the wall in feet) should be added to the static lateral earth pressures for all non-restrained (yielding) walls with a level backslope. The recommended lateral earth pressure assumes that the wall will be free to rotate and translate during a strong motion earthquake. A lateral pressure distribution of 17H should be added to the static lateral earth pressures for all restrained (non-yielding) walls with a level backslope. The recommended lateral pressure assumes that the wall is restrained against rotation and translation during a strong motion earthquake.

3.16.1.4 Retaining Wall Allowable Bearing Capacity and Foundation Settlement

Continuous spread footings may be proportioned using an allowable bearing pressure (maximum bearing at the foundation level, which will not lead to a bearing capacity failure, global instability, or excessive settlement) of 1,500 psf, provided the following conditions are met:

- Footings are constructed on new structural fill, medium dense to dense landfill soil cover, or medium dense to dense native soils
- Depth of embedment is equal to at least 2 ft
- Horizontal bench in front of the wall extends at least 4 ft from the toe of the wall.

Settlement of shallow foundations depends on the foundation size and bearing pressure, as well as the strength and compressibility characteristics of the underlying bearing soil. Assuming the foundation for structural earth walls is situated on undisturbed glacially consolidated soils or on a properly prepared subgrade located within existing landfill cover soil or fill, has an effective footing width of 5 ft or less, and has a bearing pressure of 1,500 psf or less, we estimate that the settlement of the retaining wall footings will be less than 1 inch provided the recommendations for the placement and compaction of structural fill and preloading are followed. Differential settlement between two points spaced 100 ft away along the length of the wall will be ½ inch or less. Distortion due to differential settlement along the length of the wall should be less than 1/300 (ft/ft). Most of the settlement will occur during construction. Post-construction settlements should be negligible.

3.16.1.5 Wall Backfill and Drainage Considerations

Free-draining sand and gravel material, meeting the requirements for Gravel Backfill for Geosynthetic Retaining Walls, in Section 9-03.14(4) of the 2016 WSDOT Standard Specifications, should be used as retaining wall backfill. Backfill should be compacted in accordance with Section 3.6. To avoid overstressing of the wall during placement and compaction, backfill placed within 3 ft of the wall face should be compacted to between 90 and 92 percent of the maximum dry density as determined by Section 2-03.3(14)D of the 2016 WSDOT Standard Specifications or by the ASTM D1557 test procedure.

Underdrain pipe for gravity walls should be 6-inch-diameter and conform to Section 9-05.2 of the 2016 WSDOT Standard Specifications. The pipe should be placed with the perforations downward. The pipe should be placed in a minimum 12-inch-thick envelope of gravel meeting the requirements for Gravel Backfill for Drains in Section 9-03.12(4) of the 2016 WSDOT Standard Specifications. The drain gravel should completely surround the perforated drainpipe and be completely surrounded by a non-woven geotextile material with a minimum 12-inch overlap. The geotextile should meet the requirements for Moderate Survivability in Table 1 and for Class B in Table 2 of Section 9-33 of the 2016 WSDOT Standard Specifications. The top of the perforated pipe should be no higher than the top of the adjacent footing. The drain line should discharge into the storm drainage system, or an approved location.

To reduce the possibility of water ponding and infiltrating into the subsurface behind retaining walls, the adjacent ground surface behind the wall should be sloped to promote runoff away from the top of the wall. Alternatively, a line brow ditch could be constructed along the top of the wall to collect surface water runoff and route it to the storm drain system.

3.17 Pavement Design

The pavement section recommendations provided herein assume that the access roadways and parking lot subgrade will be prepared in accordance with the recommendations provided in Sections 3.5 and 3.6 of this report. The pavement section recommendations are also based on assumed traffic loading for parking lots ranging from about 24 to 54 stalls, the results of our field explorations, and an assumed 20-year performance period. Design pavement sections were determined using the 1993 American Association of State Highway and Transportation Officials (AASHTO) design method and procedures recommended in the WSDOT Pavement Policy dated June 2015.

3.17.1 Roadbed Soil Resilient Modulus

Based on the soils encountered in our borings, test pits, and hand auger explorations, subgrade soils will likely consist of silty sand with gravel comprising existing landfill soil cover materials or native advance outwash deposits. These soils correlate to “average” quality subgrade based on information obtained from the WSDOT Pavement Policy with an average resilient modulus of about 10,000 pounds per square inch (psi). A resilient modulus correlates to a CBR of about 11 using correlations by AASHTO (AASHTO 1993) and WSDOT (WSDOT 2015).

3.17.2 Traffic Loading Information

We anticipate that the drive and parking areas will consist primarily of light passenger cars and trucks making several passes throughout the day, seven days per week. Heavier maintenance vehicles, busses, and delivery trucks my occasionally pass over the paved areas depending on Park usage. Based on preliminary project drawings, we understand that the east parking area will have 54 stalls, the west parking area will have 43 stalls, and the northwest parking area will have 24 stalls.

3.17.3 Pavement Sections

Utilizing WSDOT and AASHTO design methodology (AASHTO 1993) for low volume pavement design, the following pavement section recommendations were developed.

In parking areas expected to receive less than 1,000 vehicles per day (light duty), we recommend the following construction sequence and surfacing for the proposed parking lot.

1. Grade the parking area to final subgrade, scarify the subgrade to a depth of 1 ft if cut into existing landfill soil cover, and compact the subgrade soil to at least 95 percent maximum dry density in accordance with Section 2-03.3(14)D of the 2016 WSDOT Standard Specifications

2. Place a minimum of 4 inches of CSBC and compact to at least 95 percent maximum dry density in accordance with Section 2-03.3(14)D of the 2016 WSDOT Standard Specifications

3. Place a minimum of 3 inches of hot mix asphalt (HMA) in one lift. If a thicker HMA pavement is desired, the asphalt should be placed in multiple lifts not less than 1.5 inches in thickness and no thicker than 3 inches.

In parking areas expected to receive more than 1,000 vehicles per day and less than 5,000 vehicles per day (heavy duty) or fire/emergency vehicle access lanes and areas to receive bus or heavy truck traffic, we recommend the following construction sequence and surfacing for the proposed parking lot.

1. Grade the parking area to final subgrade, scarify the subgrade to a depth of 1 ft if cut into existing landfill soil cover, and compact the subgrade soil to at least 95 percent maximum dry density in accordance with Section 2-03.3(14)D of the 2016 WSDOT Standard Specifications

2. Place a minimum of 6 inches of CSBC and compact to at least 95 percent maximum dry density in accordance with Section 2-03.3(14)D of the 2016 WSDOT Standard Specifications

3. Place a minimum of 4 inches of hot mix asphalt (HMA) in two lifts. The asphalt should be placed in multiple lifts not less than 1.5 inches in thickness and no thicker than 3 inches.

The HMA should consist of Class ½-inch PG 64-22 based on the WSDOT Pavement Policy, and meet the requirements in Section 5-04 of the 2016 WSDOT Standard Specifications. The CSBC should meet the gradation requirements in Section 9-03.9(3) of the 2016 WSDOT Standard Specifications. The CSBC should be placed and compacted in accordance with Section 4-04 of the 2016 WSDOT Standard Specifications. If used, the gravel base should meet the gradation requirements in Section 9-03.10 of the 2016 WSDOT Standard Specifications. The gravel base should be placed and compacted in accordance with Section 4-04.3 of the 2016 WSDOT Standard Specifications.

3.17.4 Pavement Subgrade Preparation

Prior to placement of the crushed surfacing base, the prepared subgrade for new surfacing or pavement sections should be compacted to at least 95 percent of its maximum dry density and proof-rolled in the presence of a qualified geotechnical engineer to check for the presence of soft, loose, and/or disturbed areas. If any soft, loose, and/or disturbed areas are revealed during proof-rolling, these areas should be moisture conditioned and recompacted to the required density. Alternatively, areas of soft, loose, and/or disturbed soil could be completely removed and replaced with Gravel Borrow meeting the requirements in Section 9-03.14(1) of the 2016 WSDOT Standard Specifications, and compacted to the required density. Crushed surfacing material should meet the requirements in Section 9-03.9(3) of the 2016 WSDOT Standard Specifications. Gravel base and crushed surfacing should be compacted in accordance with Section 4-04.3(5) of the 2016 WSDOT Standard Specifications. The maximum dry density and optimum moisture content may also be determined by the ASTM D 1557 test procedure (Modified Proctor).

3.18 Infiltration

Infiltration of stormwater will likely be feasible in portions of the site underlain by recessional outwash and possibly fill as these soils will provide more favorable infiltration characteristics. These areas are generally located on the northern area of the site. Areas underlain by glacial till and advance outwash deposits will likely not be favorable for infiltration of stormwater due to their relatively low infiltration characteristics. If the design team opts to include infiltration to manage stormwater, an additional boring will likely be required at the location of each infiltration facility to determine the depth to groundwater and impermeable surface (i.e. glacial till). Additionally, a pilot infiltration test (PIT) or single ring percolation test at the proposed bottom elevation of the infiltration facility will be required at each proposed infiltration facility to determine long term infiltration rates in accordance with the 2016 King County Surface Water Design Manual.

3.19 Cover System

The former Eastgate Landfill located below a portion of the proposed Park development will require a cover system which meets the requirements of the Ecology Minimum Functional Standards for Solid Waste Handling (MFS; Chapter 173-304 WAC). These regulations are the applicable or relevant and appropriate requirements (ARARs) for the site and contain typical closure requirements that are relevant based on the landfill closure dates and waste disposal history of the former Eastgate Landfill. The current refuse regulations, Criteria for Municipal Solid Waste Landfills (Chapter 173-351 WAC), are not applicable for the site because the current solid waste regulations are specifically applicable regulations for landfills that stopped accepting waste after October 9, 1991 (WAC 173-351-010[2][b]).

Per WAC 173-304-460 (3)(e) closure requirements, the landfill cover system shall consist of:

1. At least two feet of 1×10^{-6} cm/sec or lower permeability soil or equivalent shall be placed upon the final lifts. Artificial liners may replace soil covers provided that a minimum of fifty mils thickness is used;

2. The grade of surface slopes shall not be less than two percent, nor the grade of side slopes more than 33 percent; and

3. Final cover of at least 6 inches of topsoil be placed over the soil cover and seeded with grass, other shallow rooted vegetation or other native vegetation.

In addition to these MFS, the landfill cover system will be required to accommodate ballfields and buildings that are to be used by the general public. These end-use considerations will require additional design cover system elements to protect the public health and safety, including a landfill gas collection and control layer and a geogrid layer to help mitigate potential differential settlement. From the bottom up, the landfill cover system is therefore expected to consist of:

- Cut or fill of the existing soil cover material to the desired subgrade elevation
- Geogrid layer (embedded between subgrade and sand and gravel layer above)
- Sand and gravel layer six-inch thick to anchor geogrid
- Landfill gas collection and removal geocomposite layer (typically 200-mil thickness)
- Geosynthetic clay liner (GCL) (typically 100 to 150 mil thickness)
- Geomembrane liner (typically 40-mil thickness)
- Drainage layer geocomposite (typically 200-mil thickness)
- Minimum 2-foot thickness of landscape fill and/or synthetic ballfield surface layers. This depth of cover soil should be adequate to allow for evapotranspiration in natural landscape areas, thickness for synthetic ballfield layers and drainage pipes, and be thick enough to prevent penetration by incidental public activity or burrowing animals.

Combined together, the geosynthetic (geogrid, geocomposites, GCL, and geomembrane) portions of the landfill cover systems will be less than 1 inch thick. The sand and gravel layer and landscaping layer, however, will comprise the majority of the minimum 2-1/2-foot thick landfill cover system on the prepared subgrade. The above landfill cover section should be considered for the schematic design considerations. Specific design of the landfill cover system will be provided in the EEDR. Detailed construction drawings and specifications will be prepared to outline how the landfill cover system will be constructed. General construction considerations are provided in this section.

Per Section 3.9, the entire landfill footprint area will be preloaded/surcharges with soil to a design thickness in order to consolidate the underlying refuse. The settlement will be monitored until the settlement reaches 95 percent of primary settlement which is anticipated to require 9 to 20 months of loading. Once the majority of primary settlement is complete, the preload soil will be removed as necessary for site grading to the design subgrade of the final landfill cover system. The preload fill will need to be placed so that access will be allowed to the landfill gas system and monitoring wells, extending wells with risers, as necessary.

The landfill cover system will then be constructed in layers under the direction and observations of a geotechnical construction quality assurance (CQA) firm working on behalf of the City in order to verify that the cover system layers are constructed and tested according to the construction drawings and specifications. Each layer should be approved before the layer above it is constructed.

4.0 REVIEW OF DOCUMENTS AND CONSTRUCTION OBSERVATIONS

Landau Associates recommends that a geotechnical engineer familiar with the project design review the earthwork portions of the design drawings and specifications. The purpose of the review is to verify that the recommendations presented in this report have been properly interpreted and implemented in the design and specifications.

We recommend that geotechnical and environmental construction observation, testing, and consultation services be provided during trench excavation, fill placement and compaction, subgrade preparation, and other geotechnical related activities. We also recommend that periodic field density testing be performed to verify that an appropriate degree of compaction is obtained. The purpose of these services would be to observe compliance with the design concepts, specifications, and recommendations of this report, and, in the event subsurface conditions differ from those anticipated before the start of construction, provide revised recommendations appropriate to the conditions revealed during construction. Landau Associates would be pleased to provide these services.

5.0 USE OF THIS REPORT

This geotechnical engineering report has been prepared for the exclusive use of Walker Macy and the City of Bellevue for specific application to the proposed Bellevue Airfield Park development at the site of the former Eastgate Landfill in Bellevue, Washington. No other party is entitled to rely on the information included in this document without the express written consent of Landau Associates. Further, the reuse of information provided herein for extensions of the project or for any other project, without review and authorization by Landau Associates, shall be at the user's sole risk. Landau Associates warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

CE/KWW/DAP/rgm

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Data Source: Esri 2012

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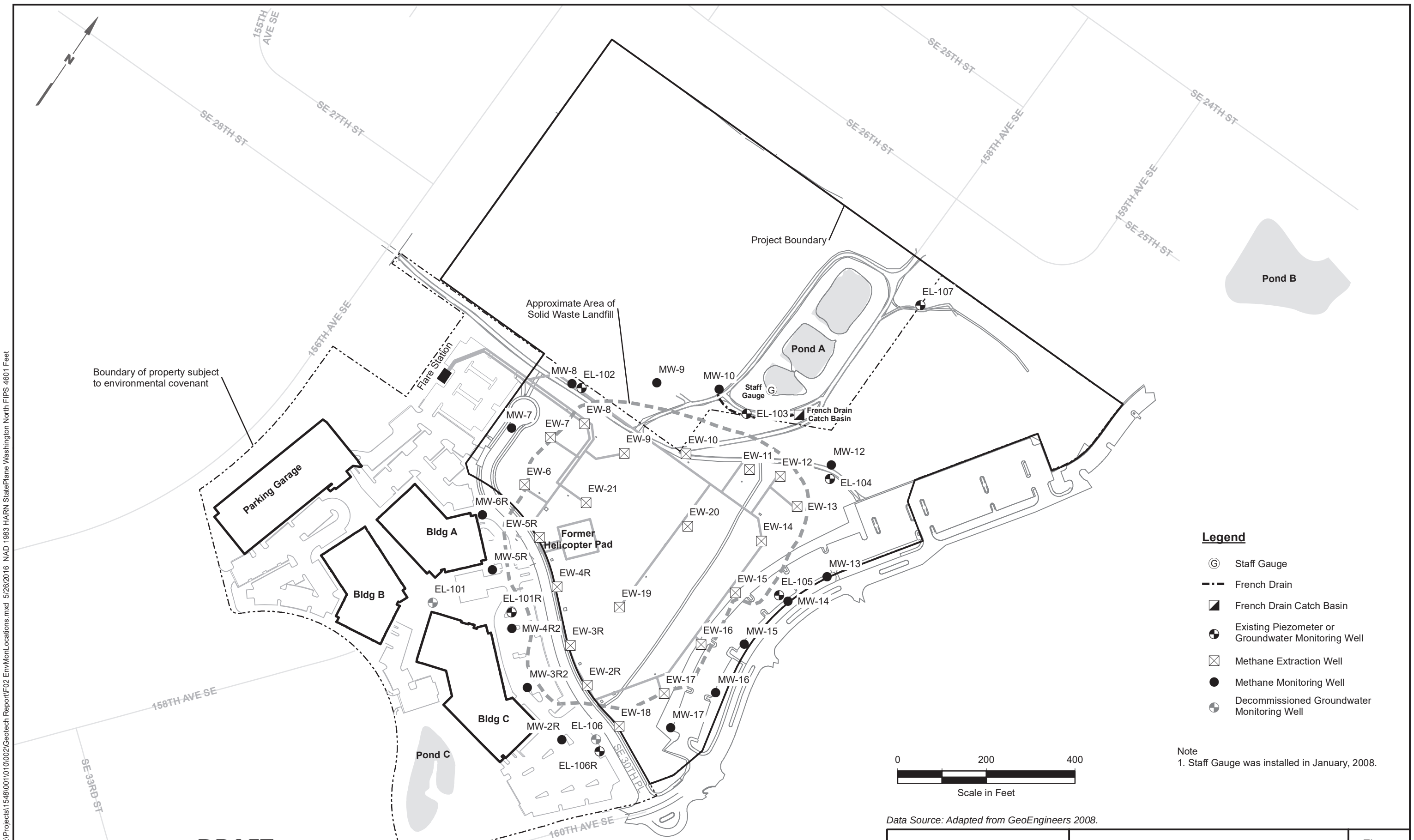
Bellevue Airfield Park Bellevue, Washington	**Vicinity Map**	Figure 1



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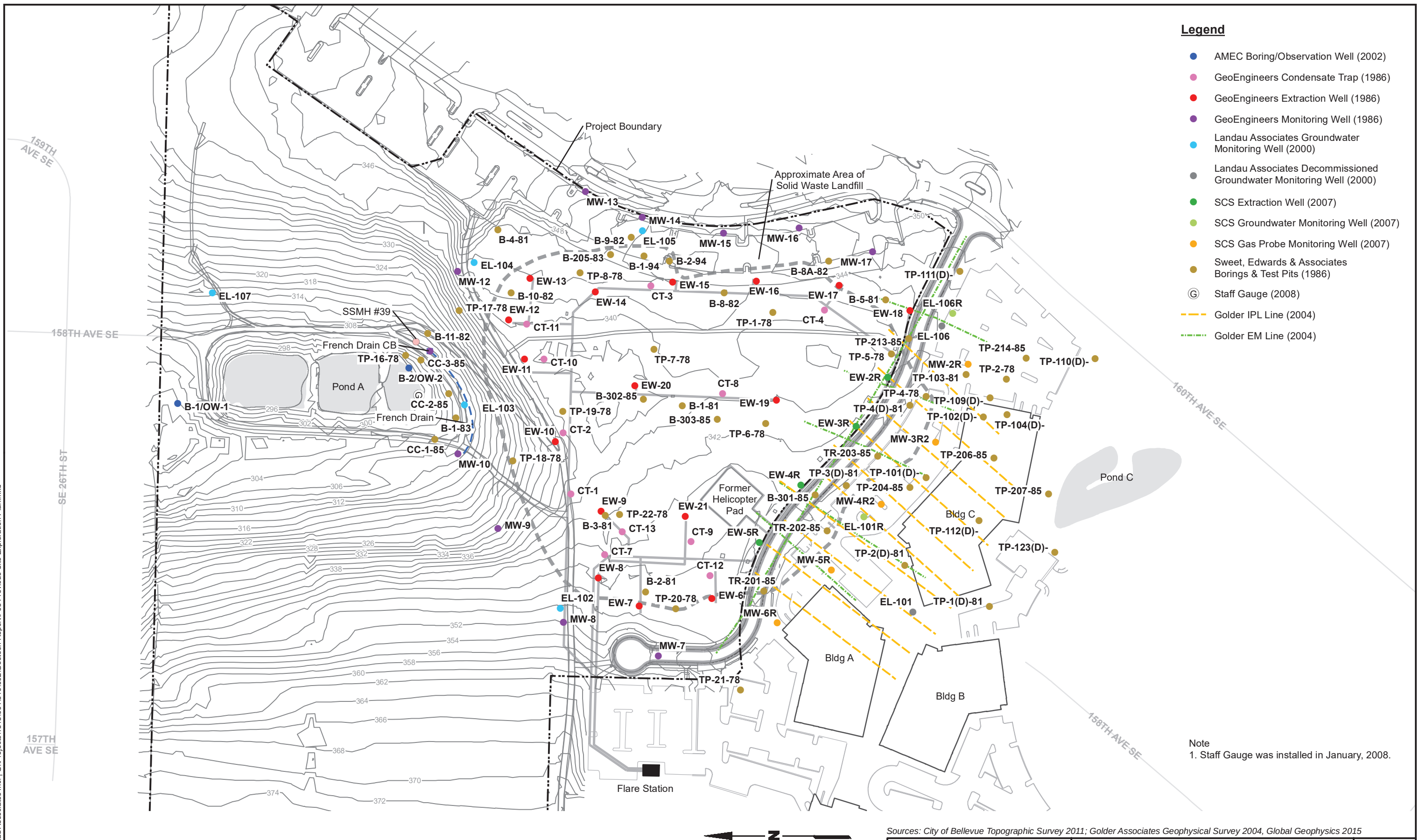
Bellevue Airfield Park
Bellevue, Washington

Environmental Monitoring Locations

Figure
2



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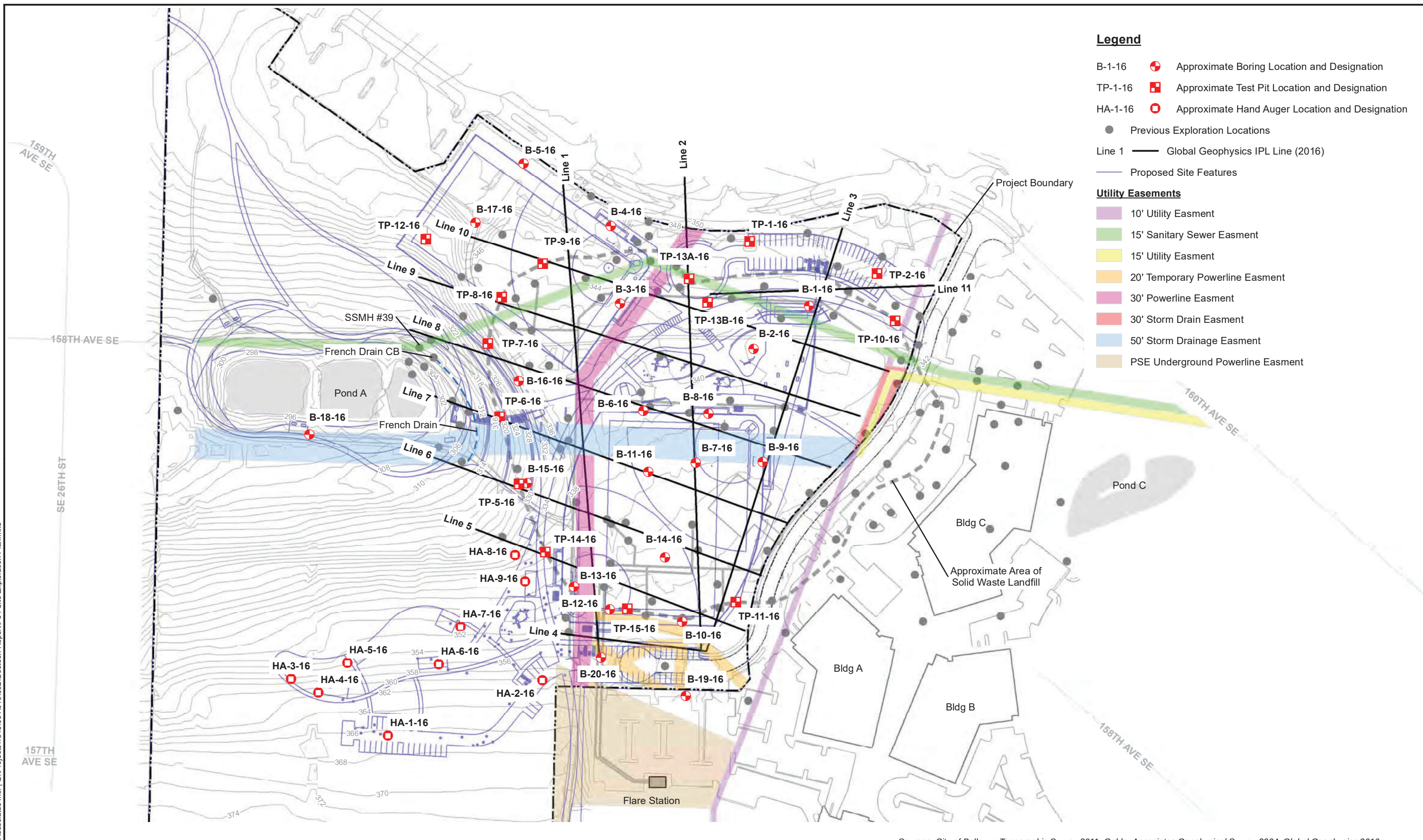
Bellevue Airfield Park
Bellevue, Washington

Previous Site Exploration Plan

Figure
3



Sources: City of Bellevue Topographic Survey 2011; Golder Associates Geophysical Survey 2004, Global Geophysics 2016

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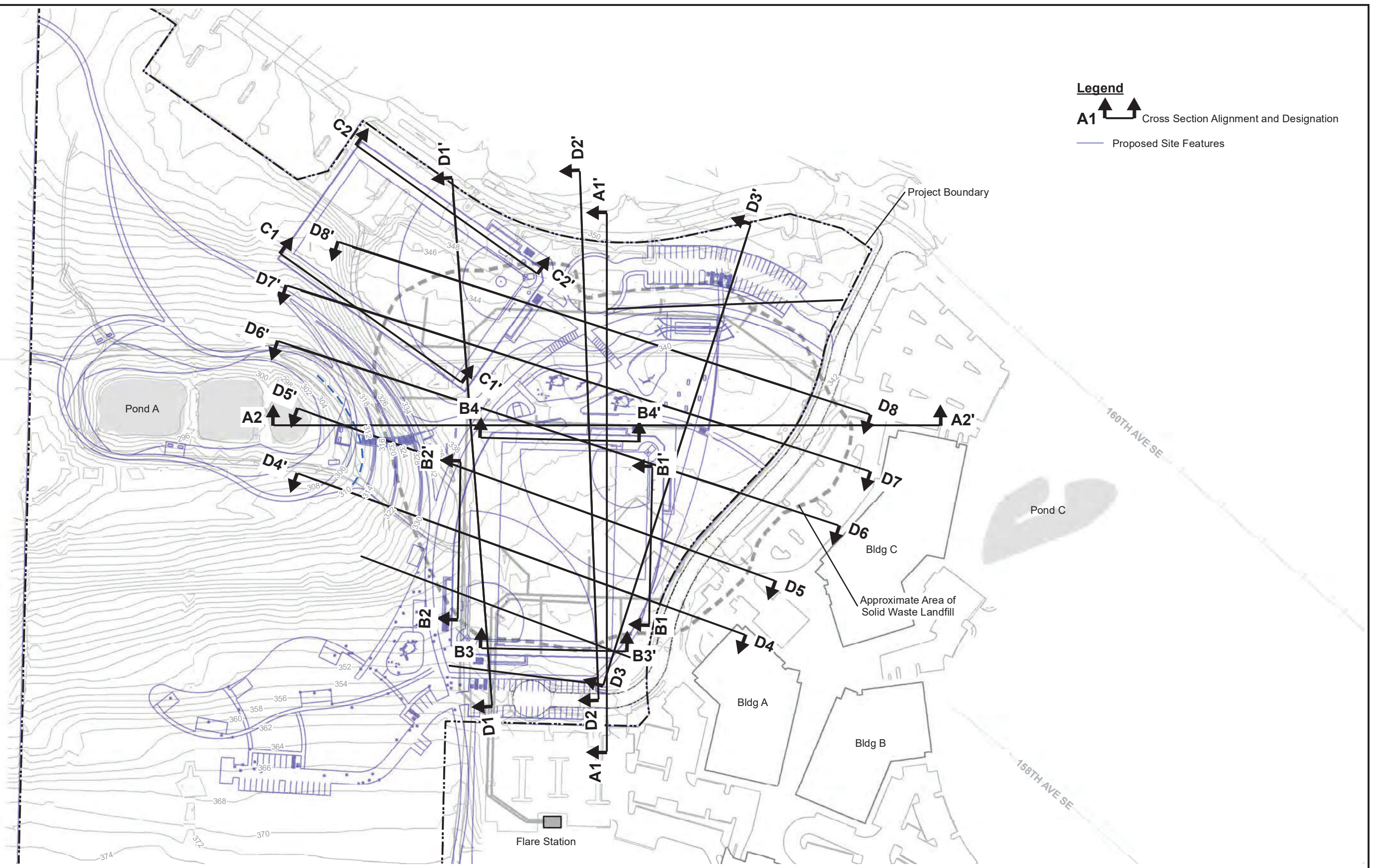
Bellevue Airfield Park
Bellevue, Washington

Site Exploration Plan

Figure
4



Sources: City of Bellevue Topographic Survey 2011; Golder Associates Geophysical Survey 2004, Global Geophysics 2016

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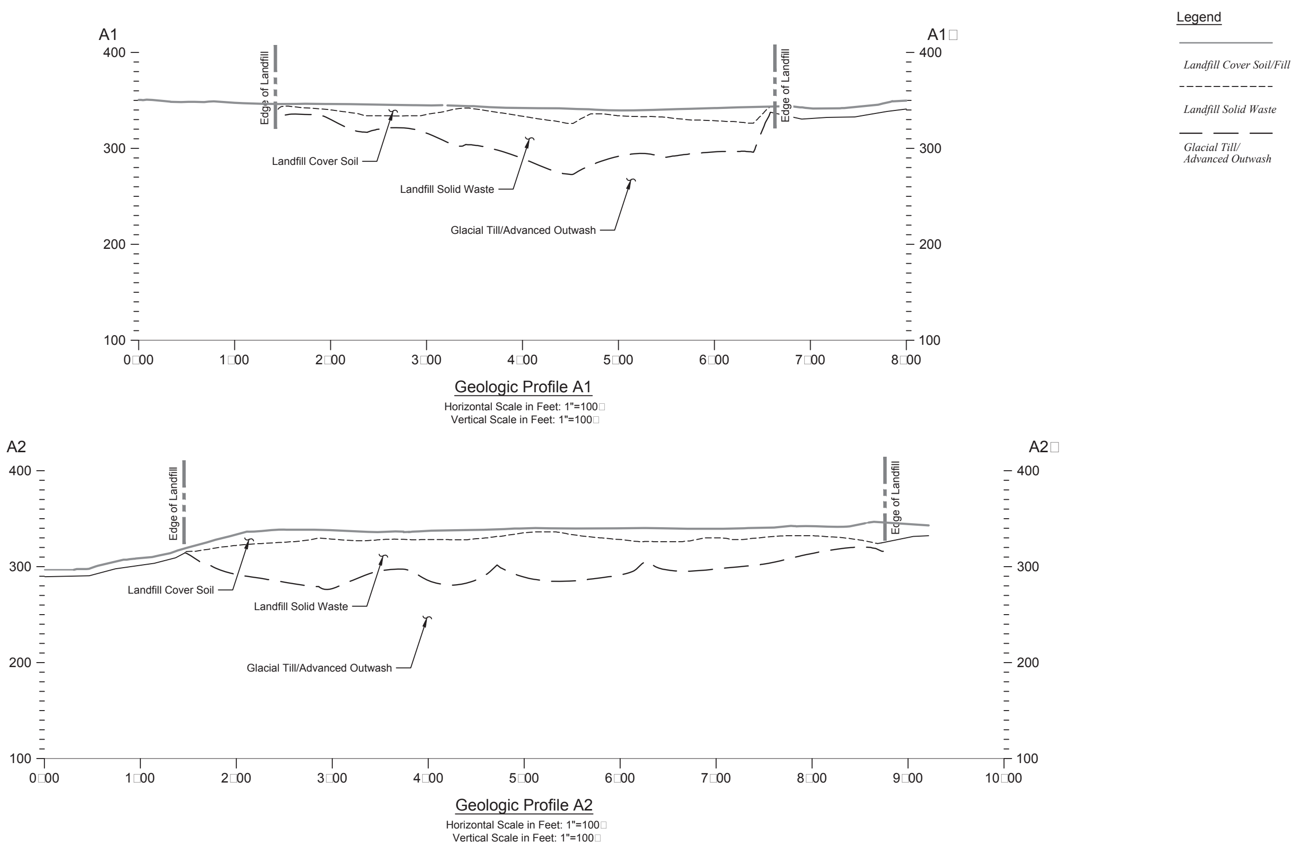
Bellevue Airfield Park
Bellevue, Washington

Cross Section Alignments Plan

Figure 5



LANDA ASSOCIATES, INC. | G:\Projects\1548\001\010\002\Geotech Report\F06-F011 TransectsProfiles.dwg (A) "Figure 6A" 5/27/2016

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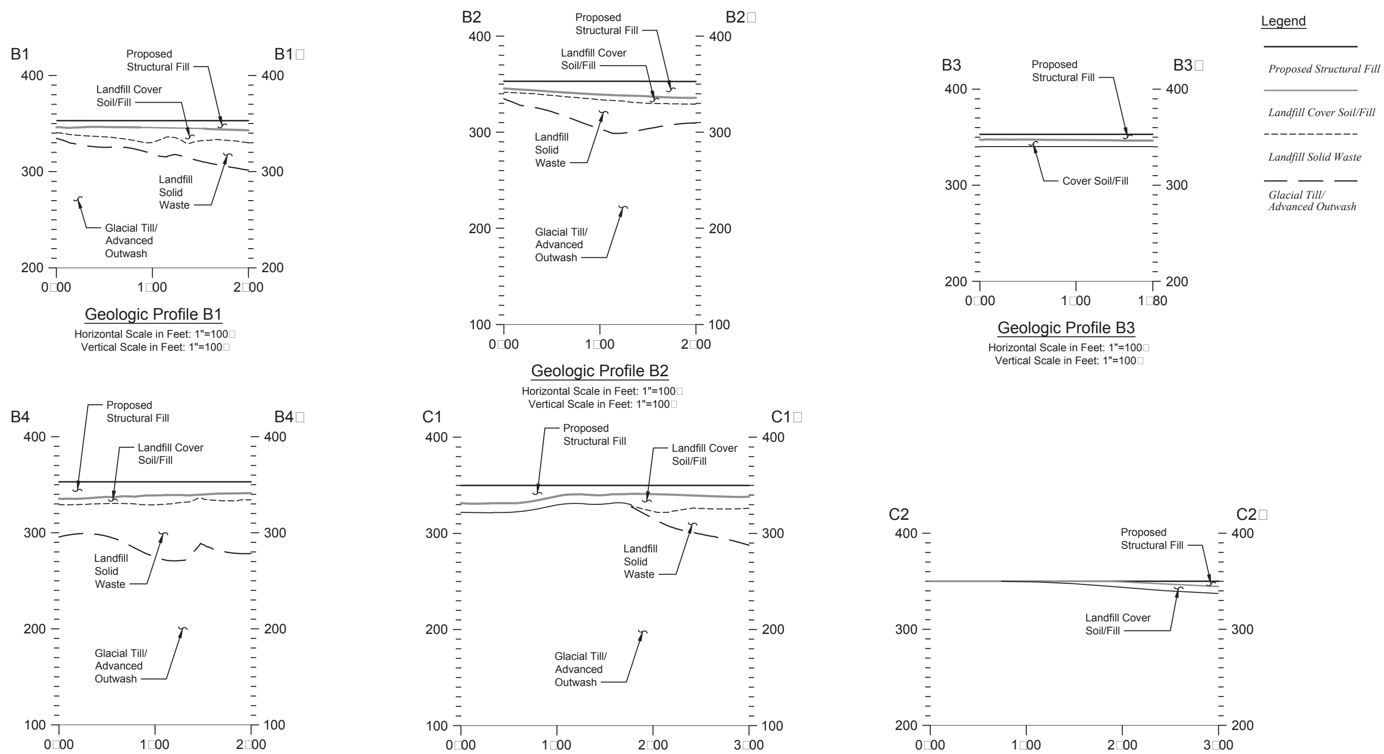
Bellevue Airfield Park Bellevue, Washington	**Cross Sections**	Figure 6A



Geologic Profile B1
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Vertical Scale in Feet: 1"=100□

Geologic Profile B2
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Vertical Scale in Feet: 1"=100□

Geologic Profile B3
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Vertical Scale in Feet: 1"=100□

Geologic Profile B4
Horizontal Scale in Feet: 1"=100□
Vertical Scale in Feet: 1"=100□

Geologic Profile C1
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Vertical Scale in Feet: 1"=100□

Geologic Profile C2
Horizontal Scale in Feet: 1"=100□
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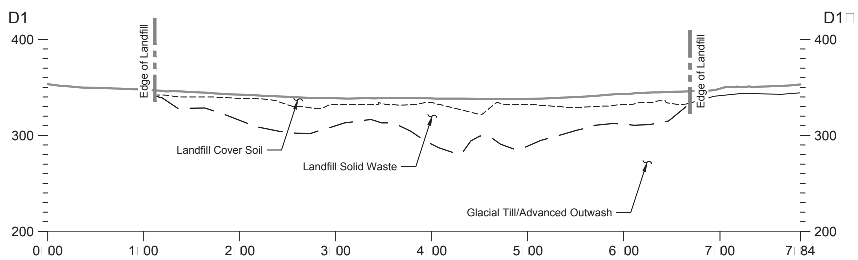
Bellevue Airfield Park
Bellevue, Washington

Cross Sections

Figure
6B



Geologic Cross Section D1

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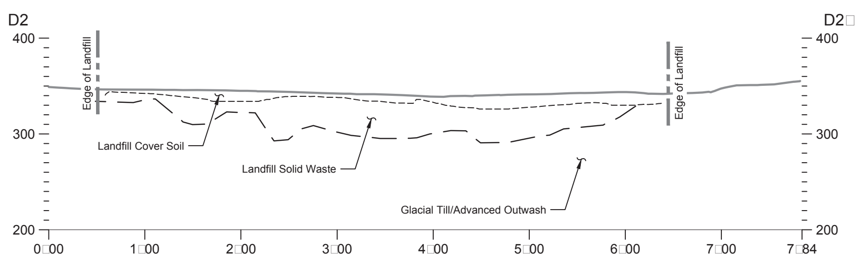

Geologic Cross Section D2

Horizontal Scale in Feet: 1"=100'
Vertical Scale in Feet: 1"=100'

Legend

Landfill Cover Soil/Fill

Landfill Solid Waste

Glacial Till/ Advanced Outwash

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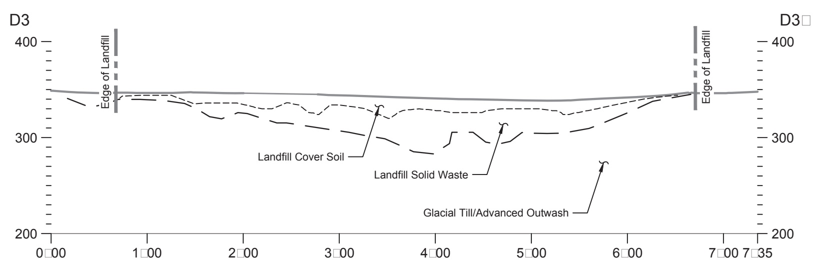
Bellevue Airfield Park
Bellevue, Washington

Cross Sections

Figure
6C



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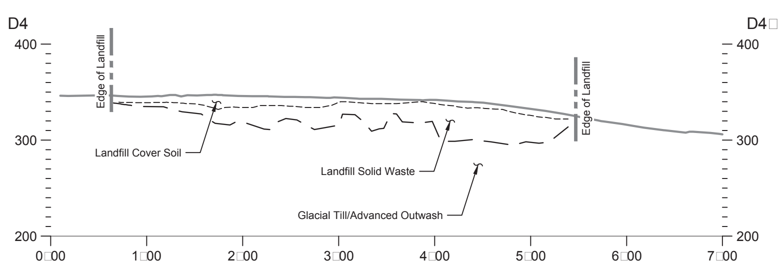

Geologic Cross Section D4
Horizontal Scale in Feet: 1"=100'
Vertical Scale in Feet: 1"=100'

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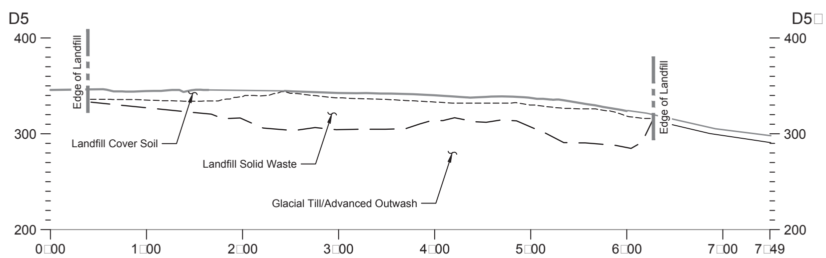
Bellevue Airfield Park Bellevue, Washington	**Cross Sections**	Figure 6D

Legend

Landfill Cover Soil/Fill

Landfill Solid Waste

Glacial Till/ Advanced Outwash



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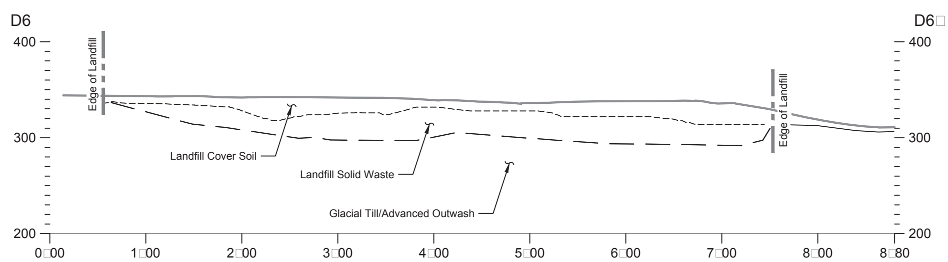

Geologic Cross Section D6

Horizontal Scale in Feet: 1"=100□
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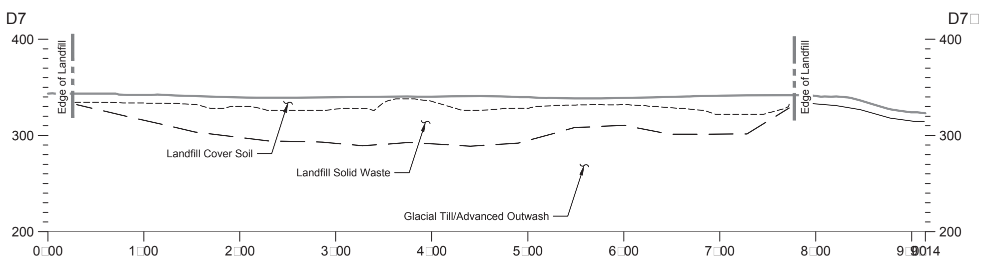
Bellevue Airfield Park Bellevue, Washington	**Cross Sections**	Figure 6E



Geologic Cross Section D7

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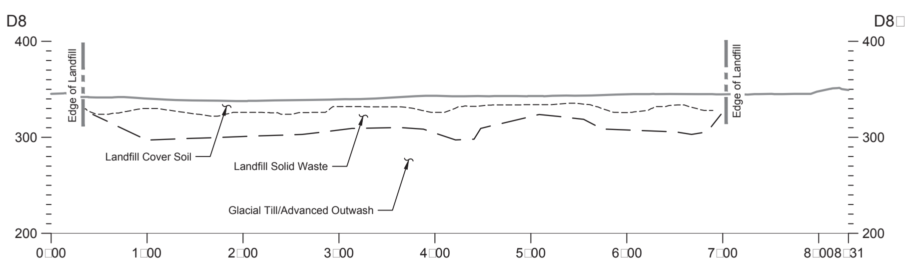

Geologic Cross Section D8

Horizontal Scale in Feet: 1"=100□
Vertical Scale in Feet: 1"=100□

Legend

Landfill Cover Soil/Fill

Landfill Solid Waste

Glacial Till/ Advanced Outwash

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Bellevue Airfield Park Bellevue, Washington	Cross Sections	Figure 6F

APPENDIX A

Boring Logs and Test Pit Photographs

Soil Classification System

MAJOR DIVISIONS			GRAPHIC SYMBOL	USCS LETTER SYMBOL(1)	TYPICAL DESCRIPTIONS (2)(3)
COARSE-GRAINED SOIL (More than 50% of material is larger than No. 200 sieve size)	GRAVEL AND GRAVELLY SOIL (More than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (Little or no fines)		**GW**	Well-graded gravel; gravel/sand mixture(s); little or no fines
				GP	Poorly graded gravel; gravel/sand mixture(s); little or no fines
		GRAVEL WITH FINES (Appreciable amount of fines)		**GM**	Silty gravel; gravel/sand/silt mixture(s)
				GC	Clayey gravel; gravel/sand/clay mixture(s)
	SAND AND SANDY SOIL (More than 50% of coarse fraction passed through No. 4 sieve)	CLEAN SAND (Little or no fines)		**SW**	Well-graded sand; gravelly sand; little or no fines
				SP	Poorly graded sand; gravelly sand; little or no fines
		SAND WITH FINES (Appreciable amount of fines)		**SM**	Silty sand; sand/silt mixture(s)
				SC	Clayey sand; sand/clay mixture(s)
FINE-GRAINED SOIL (More than 50% of material is smaller than No. 200 sieve size)	SILT AND CLAY (Liquid limit less than 50)			**ML**	Inorganic silt and very fine sand; rock flour; silty or clayey fine sand or clayey silt with slight plasticity
				CL	Inorganic clay of low to medium plasticity; gravelly clay; sandy clay; silty clay; lean clay
				OL	Organic silt; organic, silty clay of low plasticity
	SILT AND CLAY (Liquid limit greater than 50)			**MH**	Inorganic silt; micaceous or diatomaceous fine sand
				CH	Inorganic clay of high plasticity; fat clay
				OH	Organic clay of medium to high plasticity; organic silt
	HIGHLY ORGANIC SOIL			**PT**	Peat; humus; swamp soil with high organic content

OTHER MATERIALS	GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
PAVEMENT		**AC** or **PC**	Asphalt concrete pavement or Portland cement pavement
ROCK		**RK**	Rock (See Rock Classification)
WOOD		**WD**	Wood, lumber, wood chips
DEBRIS		**DB**	Construction debris, garbage

Notes:
1. USCS letter symbols correspond to symbols used by the Unified Soil Classification System and ASTM classification methods. Dual letter symbols (e.g., SP-SM for sand or gravel) indicate soil with an estimated 5-15% fines. Multiple letter symbols (e.g., ML/CL) indicate borderline or multiple soil classifications.
2. Soil descriptions are based on the general approach presented in the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), outlined in ASTM D 2488. Where laboratory index testing has been conducted, soil classifications are based on the Standard Test Method for Classification of Soils for Engineering Purposes, as outlined in ASTM D 2487.
3. Soil description terminology is based on visual estimates (in the absence of laboratory test data) of the percentages of each soil type and is defined as follows:

Primary Constituent:	> 50%	- "GRAVEL," "SAND," "SILT," "CLAY," etc.
Secondary Constituents:	> 30% and ≤ 50%	- "very gravelly," "very sandy," "very silty," etc.
	> 15% and ≤ 30%	- "gravelly," "sandy," "silty," etc.
Additional Constituents:	> 5% and ≤ 15%	- "with gravel," "with sand," "with silt," etc.
	≤ 5%	- "with trace gravel," "with trace sand," "with trace silt," etc., or not noted.

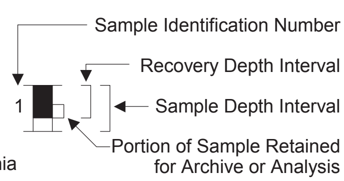
4. Soil density or consistency descriptions are based on judgement using a combination of sampler penetration blow counts, drilling or excavating conditions, field tests, and laboratory tests, as appropriate.

Drilling and Sampling Key

SAMPLER TYPE

Code	Description
a	3.25-inch O.D., 2.42-inch I.D. Split Spoon
b	2.00-inch O.D., 1.50-inch I.D. Split Spoon
c	Shelby Tube
d	Grab Sample
e	Single-Tube Core Barrel
f	Double-Tube Core Barrel
g	2.50-inch O.D., 2.00-inch I.D. WSDOT
h	3.00-inch O.D., 2.375-inch I.D. Mod. California
i	Other - See text if applicable
1	300-lb Hammer, 30-inch Drop
2	140-lb Hammer, 30-inch Drop
3	Pushed
4	Vibrocore (Rotosonic/Geoprobe)
5	Other - See text if applicable

SAMPLE NUMBER & INTERVAL



Field and Lab Test Data

Code	Description
PP = 1.0	Pocket Penetrometer, tsf
TV = 0.5	Torvane, tsf
PID = 100	Photoionization Detector VOC screening, ppm
W = 10	Moisture Content, %
D = 120	Dry Density, pcf
-200 = 60	Material smaller than No. 200 sieve, %
GS	Grain Size - See separate figure for data
AL	Atterberg Limits - See separate figure for data
GT	Other Geotechnical Testing
CA	Chemical Analysis

Groundwater

▽ Approximate water level at time of drilling (ATD)

▼ Approximate water level at time other than ATD

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Bellevue Airfield Park
Bellevue, WA

Soil Classification System and Key

Figure A-1

B- 1-16

LAI Project No: 1548001.010

Drilling Method: Hollow-Stem Auger
Ground Elevation (ft): 341.61
Logged By: DSB Date: 03/25/16

SAMPLE DATA / SOIL PROFILE

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	USCS Symbol	Description	Groundwater
0						SM	Dark brown silty SAND with gravel and organics (medium dense, moist) **(FILL)**	
	340							
5		1	b2	13				
	335					SM/ DB	Brown silty SAND with trace wood (loose, moist) **(MUNICIPAL SOLID WASTE)**	
		2	b2	6				
10		3	b2	7			woody, with trace glass	
	330							
15		4	b2	50/ 6"	W = 11	SM	Gray silty SAND with gravel (very dense, wet) **(GLACIAL TILL)**	
	325							
		5	b2	50/ 3"				
20	320							
		6	b2	89/ 11"		SP	Gray medium SAND with silt and gravel (very dense, wet)	ATD
25		7	b2	50/ 2"				

Moisture Content (%) — Plastic Limit, Liquid Limit: 20 40 60 80
▲ SPT N-Value ▲ (△ Non-Standard N-Value △): 20 40 60 80
× Fines Content (%) ×: 20 40 60 80

50/ 6"
50/ 3"
89/ 11"
50/ 2"

Boring Completed 03/25/16
Total Depth of Boring = 26.5 ft.

30

35

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Bellevue, WA

Log of Boring B- 1-16

Figure A-2

B- 2-16

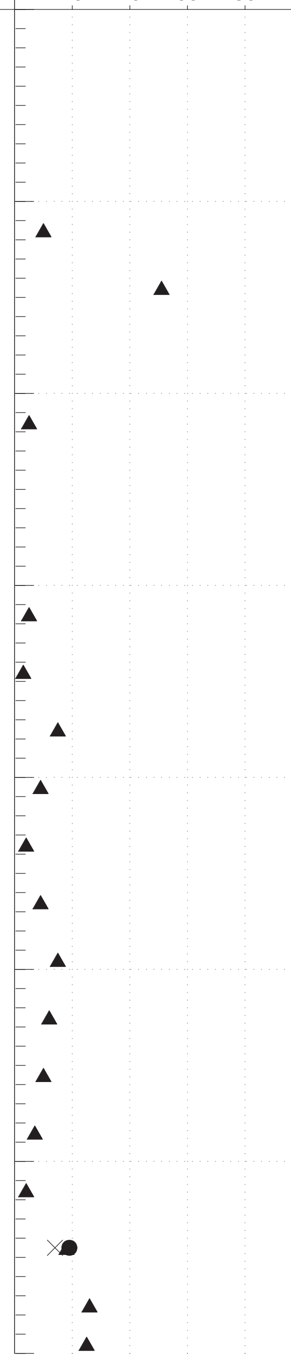
LAI Project No: 1548001.010

SAMPLE DATA | **SOIL PROFILE**

Drilling Method: Hollow-Stem Auger
Ground Elevation (ft): 339.15
Logged By: SMG   Date: 03/29/16

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	USCS Symbol	Description	Groundwater
0						SP	Gray, fine to medium SAND (loose, moist) **(FILL)**	
	335							
5		1	b2	10		SM/DB	Gray to brown silty SAND with gravel and municipal solid waste (very loose to very dense, wet) **(MUNICIPAL SOLID WASTE)**	
		2	b2	51			with wood, trace other waste	
10	330	3	b2	5				
15	325	4	b2	5				
		5	b2	3			predominately wood, plastic, and metal	
		6	b2	15			with glass, metal, and plastic	
20	320	7	b2	9				
		8	b2	4			with rubber	
		9	b2	9				
25	315	10	b2	15				
		11	b2	12				
		12	b2	10			with glass and wood debris	
	310	13	b2	7				
30		14	b2	4		SP	Brown, coarse SAND with silt (very loose to dense, wet) **(ADVANCE OUTWASH)**	ATD
		15	b2	18	W = 19 GS			
	305	16	b2	26				
35		17	b2	25				

Moisture Content (%): Plastic Limit, Liquid Limit; 20 40 60 80
▲ SPT N-Value ▲ △ Non-Standard N-Value △; 20 40 60 80
× Fines Content (%) ×; 20 40 60 80



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2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
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Bellevue, WA

Log of Boring B- 2-16

Figure A-3 (1 of 2)

B- 2-16

LAI Project No: 1548001.010

SAMPLE DATA / SOIL PROFILE

Drilling Method: Hollow-Stem Auger

Ground Elevation (ft): 339.15

Logged By: SMG Date: 03/29/16

Moisture Content (%) — Plastic Limit, Liquid Limit: 20 40 60 80

▲ SPT N-Value ▲ (△ Non-Standard N-Value △): 20 40 60 80

× Fines Content (%) ×: 20 40 60 80

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Description	Groundwater
35							SP	Brown, coarse SAND with silt (very loose to dense, wet) **(ADVANCE OUTWASH)**	
		18	b2	50					
	300								
40		19	b2	41					
		20	b2	28			SM	Gray, silty, coarse SAND (dense to very dense, moist) **(GLACIAL TILL)**	
	295								
45		21	b2	28					
		22	b2	29					
	290								
50		23	b2	56					
	285								
55		24	b2	44					

Boring Completed 03/29/16
Total Depth of Boring = 56.5 ft.

60

65

70

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Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Bellevue, WA

Log of Boring B- 2-16

Figure A-3 (2 of 2)

B- 3-16

LAI Project No: 1548001.010

SAMPLE DATA / SOIL PROFILE

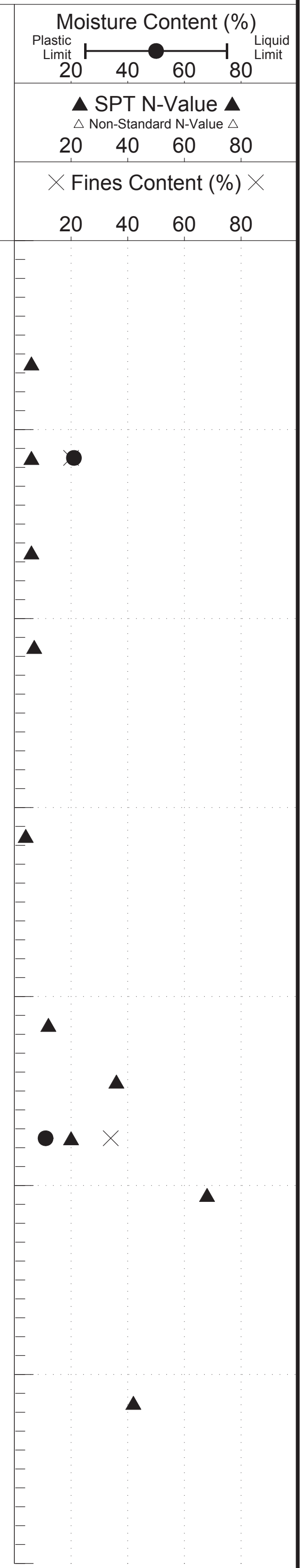
Drilling Method: Hollow-Stem Auger

Ground Elevation (ft): 343.26

Logged By: SMG Date: 03/28/16

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	USCS Symbol	Description
0						SM	Brown, very silty SAND with gravel (loose, moist) **(FILL)**
						SM/ DB	Brown, silty SAND with gravel and wood (very loose to dense, moist to wet) **(MUNICIPAL SOLID WASTE)**
	340	1	b2	6			
5		2	b2	6	W = 21 GS		
	335	3	b2	6			
10		4	b2	7			with wood, trace plastic ~ 6 inches of paper in sampler
	330						
15		5	b2	4			predominately wood with plastic, trace glass
							with wood and plastic
	325	6	c3				
20		7	b2	12			
		8	b2	36			with metal, trace glass
	320	9	b2	20	W = 11 -200 = 34	SM	Gray, very silty SAND with gravel (medium dense to very dense, moist) **(GLACIAL TILL)**
25		10	b2	68			
	315						
30		11	b2	42			
	310						
35							

Groundwater: Groundwater Not Encountered



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2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

1548001.01 5/19/16 N:\PROJECTS\1548001.010.GPJ SOIL BORING LOG WITH GRAPH

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Bellevue Airfield Park
Bellevue, WA

Log of Boring B- 3-16

Figure A-4 (1 of 2)

B- 3-16

LAI Project No: 1548001.010

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Hollow-Stem Auger Ground Elevation (ft): 343.26 Logged By: SMG Date: 03/28/16	Groundwater	Moisture Content (%) / SPT N-Value / Fines Content (%) 20 40 60 80
35		12	b2	49			SM			▲

Boring Completed 03/28/16
Total Depth of Boring = 36.5 ft.

Groundwater Not Encountered

40

45

50

55

60

65

70

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3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Bellevue Airfield Park
Bellevue, WA

Log of Boring B- 3-16

Figure A-4 (2 of 2)

B- 4-16

LAI Project No: 1548001.010

Drilling Method: Hollow-Stem Auger
Ground Elevation (ft): 346.68
Logged By: DSB Date: 03/25/16

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	USCS Symbol	Soil Profile	Groundwater	SPT N-Value
0						SM	Brown silty SAND with gravel (medium dense, moist) **(FILL)**		
		1	b2	11	W = 11 -200 = 26				
						SM	Gray, silty, gravelly SAND (very dense, moist) **(GLACIAL TILL)**		
		2	b2	93/ 9"					93/ 9"
		3	b2	50/ 5"	W = 6 GS				50/ 5"
		4	b2	50/ 3"					50/ 3"
								ATD	
		5	b2	50/ 6"					50/ 6"
		6	b2	50/ 3"			becomes very gravelly		50/ 3"
		7	b2	50/ 5"					50/ 5"

Moisture Content (%): Plastic Limit, Liquid Limit; 20 40 60 80
▲ SPT N-Value ▲ (△ Non-Standard N-Value △): 20 40 60 80
× Fines Content (%) ×: 20 40 60 80

Boring Completed 03/25/16
Total Depth of Boring = 31.5 ft.

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring B- 4-16

Figure A-5

B- 5-16

LAI Project No: 1548001.010

Drilling Method: Hollow-Stem Auger

Ground Elevation (ft): 355.71

Logged By: SMG Date: 03/24/16

SAMPLE DATA

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	SPT N-Value
2.5		1	b2	14		
7.5		2	b2	50/ 6"		50/ 6"
12.5		3	b2	50/ 5"	W = 8	50/ 5"
17.5		4	b2	86		
22.5		5	b2	80/ 11"		80/ 11"
29		6	b2	50/ 5"		50/ 5"

SOIL PROFILE

USCS Symbol	Description
AC	Asphalt Pavement (1 inch thickness) **(ASPHALT)**
GP	Brown, gravelly SAND with trace silt (medium dense, moist) **(FILL)**
SM	Gray, very silty SAND with gravel (very dense, moist to wet) **(GLACIAL TILL)**

Groundwater: ATD

Moisture Content (%) — Plastic Limit / Liquid Limit: 20 40 60 80

▲ SPT N-Value ▲ (△ Non-Standard N-Value △): 20 40 60 80

× Fines Content (%) ×: 20 40 60 80

Boring Completed 03/24/16
Total Depth of Boring = 30.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

B- 6-16

LAI Project No: 1548001.010

SAMPLE DATA / SOIL PROFILE

Drilling Method: Hollow-Stem Auger

Ground Elevation (ft): 336.69

Logged By: SMG Date: 03/28/16

Graph scales: Moisture Content (%) (Plastic Limit – Liquid Limit) 20 40 60 80; ▲ SPT N-Value ▲ (△ Non-Standard N-Value △) 20 40 60 80; × Fines Content (%) × 20 40 60 80

Depth (ft): 0 – 35; Elevation (ft): 335, 330, 325, 320, 315, 310, 305

Sample Number & Interval	Sampler Type	Blows/Foot	Test Data
1	b2	14	W = 4
2	b2	14	
3	b2	3	
4	b2	3	
5	b2	8	
6	b2	3	
7	b2	6	
8	b2	5	
9	b2	6	
10	b2	21	
11	b2	5	

USCS Symbol	Description
SM	Gray, gravelly, silty SAND (medium dense, moist) **(FILL)**
	Brown silty SAND with municipal solid waste (very loose to medium dense, moist to wet) **(MUNICIPAL SOLID WASTE)**
	with gravel, glass, and plastic
	with metal, wood, and plastic
	trace plastic
	with plastic
	with wood, plastic
	Black, coarse SAND with silt and glass (loose, wet)

Groundwater: ATD

DRAFT

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Bellevue Airfield Park
Bellevue, WA

Log of Boring B- 6-16

Figure A-7 (1 of 2)

B- 6-16

LAI Project No: 1548001.010

Drilling Method: Hollow-Stem Auger
Ground Elevation (ft): 336.69
Logged By: SMG Date: 03/28/16

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Soil Profile	Groundwater	SPT N-Value
35		12	b2	3				Black, coarse SAND with silt and glass (loose, wet)		3
	300	13	b2	18			ML	Light gray SILT (medium dense, wet) **(ADVANCE OUTWASH)**		18
40		14	b2	34						34
							SM	Gray, very silty SAND with gravel (dense, wet) **(GLACIAL TILL)**		

Moisture Content (%): Plastic Limit, Liquid Limit — 20 40 60 80
▲ SPT N-Value ▲ △ Non-Standard N-Value △ — 20 40 60 80
× Fines Content (%) × — 20 40 60 80

Depth (ft): 35, 40, 45, 50, 55, 60, 65, 70

Boring Completed 03/28/16
Total Depth of Boring = 41.5 ft.

DRAFT

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3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

1548001.01 5/19/16 N:\PROJECTS\1548001.010.GPJ SOIL BORING LOG WITH GRAPH

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Bellevue Airfield Park
Bellevue, WA

Log of Boring B- 6-16

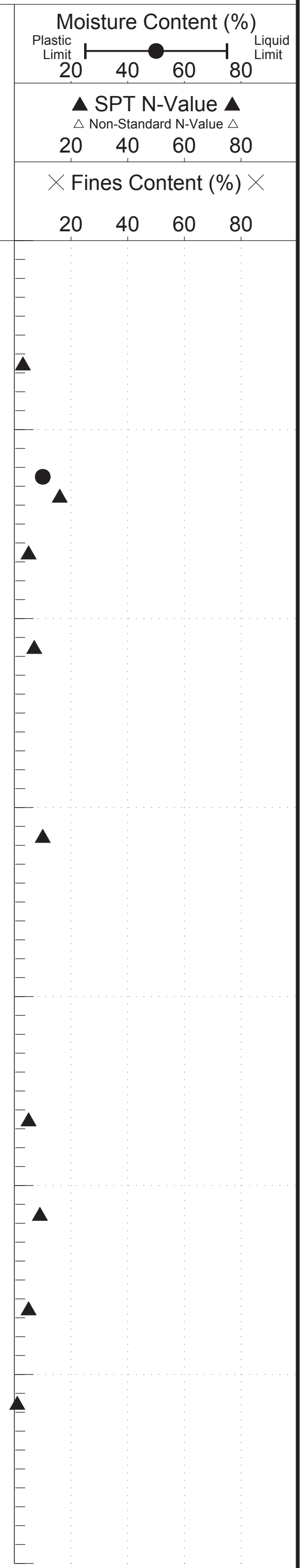
Figure A-7 (2 of 2)

B- 7-16

LAI Project No: 1548001.010

Drilling Method: Hollow-Stem Auger
Ground Elevation (ft): 341.40
Logged By: SMG Date: 03/23/16

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	USCS Symbol	Soil Profile	Groundwater
0						SM	Gray, very silty SAND with gravel and trace wood (very loose to medium dense, wet) **(FILL)**	Groundwater Not Encountered
		1	b2	3				
5	335	2	b2	16	W = 10			
		3	b2	5		SM/DB	Gray and brown silty SAND with municipal solid waste (very loose to loose, wet) **(MUNICIPAL SOLID WASTE)**	
10	330	4	b2	7			with wood, plastic, rubber, trace glass and metal	
15	325	5	b2	10			with plastic and wood	
20	320	6	c3					
		7	b2	5			with wood, trace glass	
25	315	8	b2	9			with decayed organics, wood, plastic, brick pieces	
		9	b2	5			with decayed organics and wood	
30	310	10	b2	1			with decayed organics, porcelain, trace glass	
35								



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Bellevue Airfield Park
Bellevue, WA

Log of Boring B- 7-16

Figure A-8 (1 of 2)

B- 7-16

LAI Project No: 1548001.010

SAMPLE DATA						SOIL PROFILE			Groundwater	Moisture Content (%) / SPT N-Value / Fines Content (%)
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Hollow-Stem Auger Ground Elevation (ft): 341.40 Logged By: SMG Date: 03/23/16		Plastic Limit / Liquid Limit 20 40 60 80
35		11	b2	36				with gravel, trace glass	Groundwater Not Encountered	
	305						SM	Gray, very silty SAND with gravel (dense, wet) **(ADVANCE OUTWASH)**		
40	300	12	b2	42						

Boring Completed 03/23/16
Total Depth of Boring = 41.5 ft.

45

50

DRAFT

55

60

65

70

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

1548001.01 5/19/16 N:\PROJECTS\1548001.010.GPJ SOIL BORING LOG WITH GRAPH

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Bellevue Airfield Park
Bellevue, WA

Log of Boring B- 7-16

Figure A-8 (2 of 2)

B- 8-16

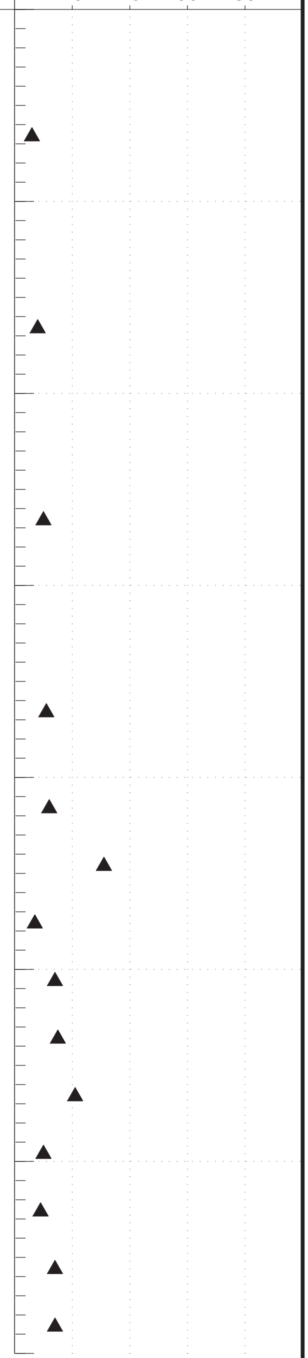
LAI Project No: 1548001.010

Drilling Method: Hollow-Stem Auger
Ground Elevation (ft): 339.98
Logged By: SMG Date: 03/23/16

SAMPLE DATA / SOIL PROFILE

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	USCS Symbol	Description	Groundwater
0						GM	Brown, silty, sandy GRAVEL (loose, moist) **(FILL)**	
						SM/ DB	Brown, silty SAND with gravel and municipal solid waste (very loose to dense, moist to wet) **(MUNICIPAL SOLID WASTE)**	
		1	b2	6				
5	335							
		2	b2	8			with wood, trace plastic	
10	330							
		3	b2	10			with trace glass and paper	
15	325							
		4	b2	11			with trace plastic	
20	320							
		5	b2	12			predominately wood, trace plastic	
		6	b2	31			with wood, plastic, rubber, trace metal	
		7	b2	7				
25	315	8	b2	14				
		9	b2	15			with plastic and paper	ATD
		10	b2	21			with rubber	
30	310	11	b2	10			with wood, trace metal	
		12	b2	9				
		13	b2	14			Black, coarse sand with silt, plastic, wood (very loose to medium dense, wet)	
		14	b2	14				
35	305							

Moisture Content (%) — Plastic Limit, Liquid Limit: 20 40 60 80
▲ SPT N-Value ▲ (△ Non-Standard N-Value △): 20 40 60 80
× Fines Content (%) ×: 20 40 60 80



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

1548001.01 5/19/16 N:\PROJECTS\1548001.010.GPJ SOIL BORING LOG WITH GRAPH

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Bellevue Airfield Park
Bellevue, WA

Log of Boring B- 8-16

Figure A-9 (1 of 2)

B- 8-16

LAI Project No: 1548001.010

Drilling Method: Hollow-Stem Auger

Ground Elevation (ft): 339.98

Logged By: SMG Date: 03/23/16

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Soil Profile	Groundwater	Moisture Content (%) / SPT N-Value / Fines Content (%)
35		15	b2	14				Black, coarse sand with silt, plastic, wood (very loose to medium dense, wet)		
		16	b2	4						
		17	b2	19			ML	Light gray, SILT (very stiff, moist) **(ADVANCE OUTWASH)**		
40	300	18	b2	50/ 5"			SM	Gray, very silty SAND with gravel (very dense, moist) **(Glacial Drift)**		50/ 5"
45	295	19	b2	50/ 6"						50/ 6"

Moisture Content (%): Plastic Limit — Liquid Limit; 20 40 60 80

▲ SPT N-Value ▲ (△ Non-Standard N-Value △): 20 40 60 80

× Fines Content (%) ×: 20 40 60 80

Boring Completed 03/23/16
Total Depth of Boring = 46.5 ft.

Depth scale: 50, 55, 60, 65, 70

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

B- 9-16

LAI Project No: 1548001.010

SAMPLE DATA / SOIL PROFILE

Drilling Method: Hollow-Stem Auger

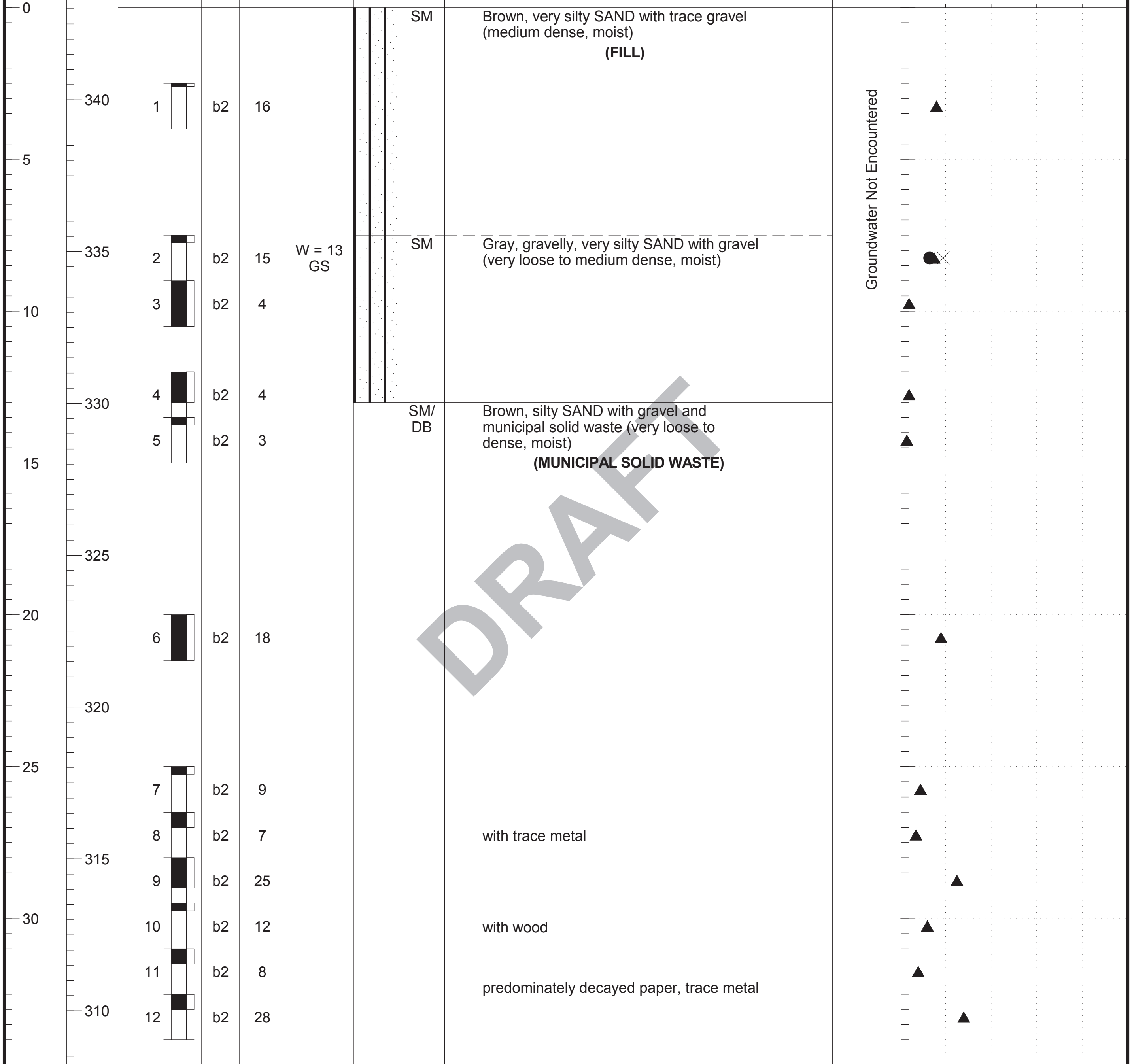
Ground Elevation (ft): 343.04

Logged By: SMG   Date: 03/23/16

Groundwater: Groundwater Not Encountered

Sample Number & Interval	Sampler Type	Blows/Foot	Test Data
1	b2	16	
2	b2	15	W = 13 GS
3	b2	4	
4	b2	4	
5	b2	3	
6	b2	18	
7	b2	9	
8	b2	7	
9	b2	25	
10	b2	12	
11	b2	8	
12	b2	28	

USCS Symbol	Description
SM	Brown, very silty SAND with trace gravel (medium dense, moist) **(FILL)**
SM	Gray, gravelly, very silty SAND with gravel (very loose to medium dense, moist)
SM/DB	Brown, silty SAND with gravel and municipal solid waste (very loose to dense, moist) **(MUNICIPAL SOLID WASTE)**
	with trace metal
	with wood
	predominately decayed paper, trace metal



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

B- 9-16

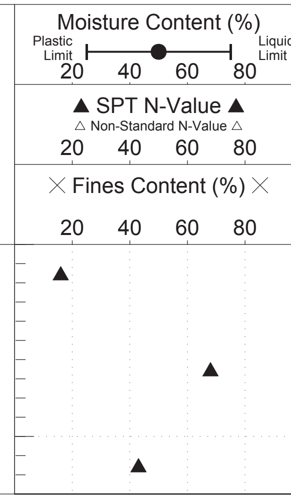
LAI Project No: 1548001.010

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Soil Profile	Groundwater
35		13	b2	16				with wood, trace rubber	
							SM	Gray, very silty SAND (dense to very dense, moist to wet) **(GLACIAL TILL)**	Groundwater Not Encountered
	305	14	b2	68					
40		15	b2	43					

Drilling Method: Hollow-Stem Auger

Ground Elevation (ft): 343.04

Logged By: SMG Date: 03/23/16



Boring Completed 03/23/16
Total Depth of Boring = 41.5 ft.

Depth (ft): 45, 50, 55, 60, 65, 70

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

DRAFT

B-10-16

LAI Project No: 1548001.010

SAMPLE DATA / SOIL PROFILE

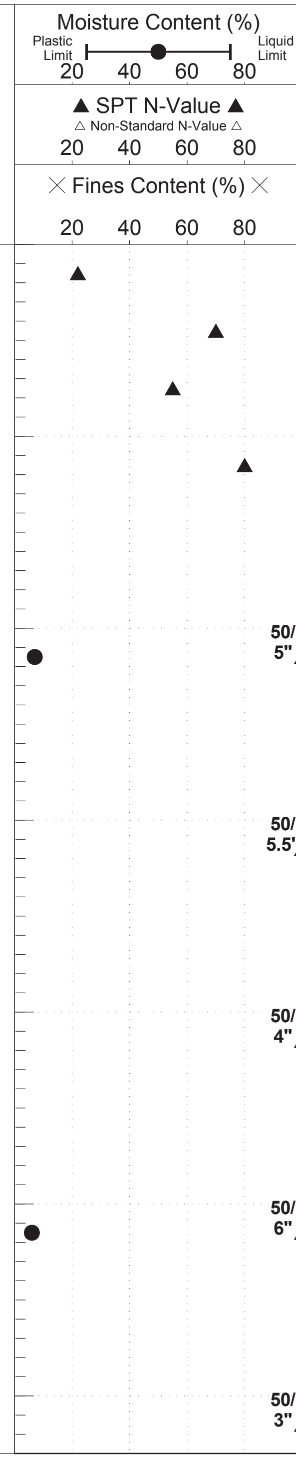
Drilling Method: Hollow-Stem Auger

Ground Elevation (ft): 346.61

Logged By: SMG Date: 03/30/16

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	USCS Symbol	Soil Profile
0		1	b2	22		SM	Brown silty SAND with gravel (medium dense, moist) **(FILL)**
	345	2	b2	70		SM	Gray, very silty SAND with gravel and iron-staining (very dense, moist to wet) **(GLACIAL TILL)**
		3	b2	55			
5		4	b2	80			
	340						
10		5	b2	50/ 5"	W = 7		
	335						
15		6	b2	50/ 5.5"			
	330						
20		7	b2	50/ 4"			
	325						
25		8	b2	50/ 6"	W = 6		
	320						
30		9	b2	50/ 3"			
35							

Groundwater: ATD (approx. 30 ft)



Boring Completed 03/30/16
Total Depth of Boring = 31.5 ft.

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

B-11-16

LAI Project No: 1548001.010

Drilling Method: Hollow-Stem Auger
Ground Elevation (ft): 341.15
Logged By: SMG   Date: 03/29/16

SAMPLE DATA

Sample Number & Interval	Sampler Type	Blows/Foot
1	b2	27
2	b2	5
3	b2	13
4	b2	5
5	b2	25
6	b2	6
7	b2	11
8	b2	11
9	b2	6
10	b2	4
11	b2	10
12	b2	12
13	b2	22
14	b2	39

Depth (ft): 0, 5, 10, 15, 20, 25, 30, 35
Elevation (ft): 340, 335, 330, 325, 320, 315, 310

SOIL PROFILE

USCS Symbol	Description
SM	Brown, silty SAND with trace gravel (dense, moist) **(FILL)**
	Brown, silty SAND with municipal solid waste (very loose to dense, moist to wet) **(MUNICIPAL SOLID WASTE)**
	with metal, glass, and paper
	with trace wood
	with glass, crushed rock, rubber
	with glass ~8" of paper in sampler
	with wood, decayed organics, trace glass
	with decayed organics, trace glass and plastic
	with decayed organics, wood, and plastic
SM	Gray, silty SAND with trace gravel (dense, moist to wet) **(ADVANCE OUTWASH)**

Groundwater: ATD

Moisture Content (%): Plastic Limit — Liquid Limit; 20 40 60 80
▲ SPT N-Value ▲ / △ Non-Standard N-Value △: 20 40 60 80
× Fines Content (%) ×: 20 40 60 80

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

B-11-16

LAI Project No: 1548001.010

Drilling Method: Hollow-Stem Auger
Ground Elevation (ft): 341.15
Logged By: SMG   Date: 03/29/16

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Soil Profile	Groundwater	Moisture Content (%) / SPT N-Value / Fines Content (%) (20 40 60 80)
35	305	15	b2	43			SM			▲

Boring Completed 03/29/16
Total Depth of Boring = 36.5 ft.

Depth scale (ft): 35, 40, 45, 50, 55, 60, 65, 70

Moisture Content (%): Plastic Limit — Liquid Limit; 20 40 60 80
▲ SPT N-Value ▲ (△ Non-Standard N-Value △); 20 40 60 80
× Fines Content (%) ×; 20 40 60 80

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Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

B-12-16

LAI Project No: 1548001.010

Drilling Method: Hollow-Stem Auger
Ground Elevation (ft): 347.02
Logged By: SMG Date: 03/24/16

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	USCS Symbol	Soil Profile	Groundwater	Graph (Moisture Content / SPT N-Value / Fines Content)
0							Brown, silty, sandy GRAVEL with trace construction debris (dense, moist) **(FILL)**		
	345	1	d			SM	Gray, silty SAND with gravel (very dense, moist to wet) **(GLACIAL TILL)**		
5		2	b2	56	W = 9 -200 = 28				
	340								
10		3	b2	86/ 11"					86/ 11"
	335								
15		4	b2	50/ 4"					50/ 4"
	330								
20		5	b2	50/ 3"					50/ 3"
	325								
25		6	b2	50/ 2"	W = 7				50/ 2"
	320								
30		7	b2	50/ 4"				ATD	50/ 4"

Moisture Content (%): Plastic Limit, Liquid Limit; 20 40 60 80
▲ SPT N-Value ▲ (△ Non-Standard N-Value △); 20 40 60 80
× Fines Content (%) ×; 20 40 60 80

Boring Completed 03/24/16
Total Depth of Boring = 31.5 ft.

35

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

DRAFT

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Bellevue Airfield Park
Bellevue, WA

Log of Boring B-12-16

Figure A-13

B-13-16

LAI Project No: 1548001.010

Drilling Method: Hollow-Stem Auger
Ground Elevation (ft): 346.94
Logged By: SMG Date: 03/28/16

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	USCS Symbol	Soil Profile	Groundwater
0						SM	Brown, very silty SAND with gravel (loose, moist) **(FILL)**	Groundwater Not Encountered
	345	1	b2	6	W = 9			
5		2	b2	11			Brown, very silty SAND with gravel and trace landfill waste (medium dense, moist) **(MUNICIPAL SOLID WASTE)**	
		3	b2	50/ 2"		SM		
	340	4	b2	63			Gray, very silty SAND with gravel (very dense, moist) **(GLACIAL TILL)**	
10								
	335							
15		5	b2	79				

Moisture Content (%) — Plastic Limit, Liquid Limit: 20 40 60 80
▲ SPT N-Value ▲ — △ Non-Standard N-Value △: 20 40 60 80
× Fines Content (%) ×: 20 40 60 80
50/ 2"

Boring Completed 03/28/16
Total Depth of Boring = 15.0 ft.

20 25 30 35

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

B-14-16

LAI Project No: 1548001.010

Drilling Method: Hollow-Stem Auger
Ground Elevation (ft): 344.82
Logged By: SMG Date: 03/30/16

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	USCS Symbol	Soil Profile	Groundwater
0						SM	Gray, very silty SAND with gravel (loose, moist) **(FILL)**	Groundwater Not Encountered
5	340	1	b2	9				
		2	b2	3		SM/DB	Brown, silty SAND with trace municipal solid waste (very loose, moist) **(MUNICIPAL SOLID WASTE)**	
		3	b2	1				
10	335	4	b2	4				
		5	b2	63		SM	Gray, very silty SAND with gravel (dense to very dense, moist) **(GLACIAL TILL)**	
15	330	6	b2	34	W = 10			
20	325	7	b2	50/ 3"				
25	320	8	b2	50/ 6"				

Moisture Content (%): Plastic Limit — Liquid Limit; 20 40 60 80
▲ SPT N-Value ▲; △ Non-Standard N-Value △; 20 40 60 80
× Fines Content (%) ×; 20 40 60 80

50/ 3"

50/ 6"

Boring Completed 03/30/16
Total Depth of Boring = 26.5 ft.

30

35

DRAFT

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

1548001.01 5/19/16 N:\PROJECTS\1548001.010.GPJ SOIL BORING LOG WITH GRAPH

LANDAU ASSOCIATES

Bellevue Airfield Park
Bellevue, WA

Log of Boring B-14-16

Figure A-16

B-15-16

LAI Project No: 1548001.010

Drilling Method: Hollow-Stem Auger
Ground Elevation (ft): 327.24
Logged By: DSB   Date: 03/25/16

SAMPLE DATA

Sample Number & Interval	Sampler Type	Blows/Foot	Test Data
1	b2	17	
2	b2	8	
3	b2	2	
4	b2	2	
5	b2	5	
6	b2	4	
7	b2	44	
8	b2	50	
9	b2	50/ 3"	
10	b2	50/ 3"	

Boring Completed 03/25/16
Total Depth of Boring = 31.0 ft.

SOIL PROFILE

USCS Symbol	Description
SM	Brown, very silty SAND with gravel (medium dense, moist) **(FILL)**
SM/ DB	Brown, silty SAND with municipal solid waste (very loose to medium dense, moist to wet) **(MUNICIPAL SOLID WASTE)** with wood, paper, trace plastic with wood, trace plastic with metal
SP/ SM	Gray, fine to medium SAND with silt and trace gravels (very dense, moist to wet) **(GLACIAL TILL)**
SP	Light brown, SAND with silt and gravel (very dense, wet)
SP	Gray, coarse SAND with trace gravel (very dense, wet)

Groundwater: ATD

Moisture Content (%): Plastic Limit / Liquid Limit; ▲ SPT N-Value ▲; △ Non-Standard N-Value △; × Fines Content (%) ×

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

B-16-16

LAI Project No: 1548001.010

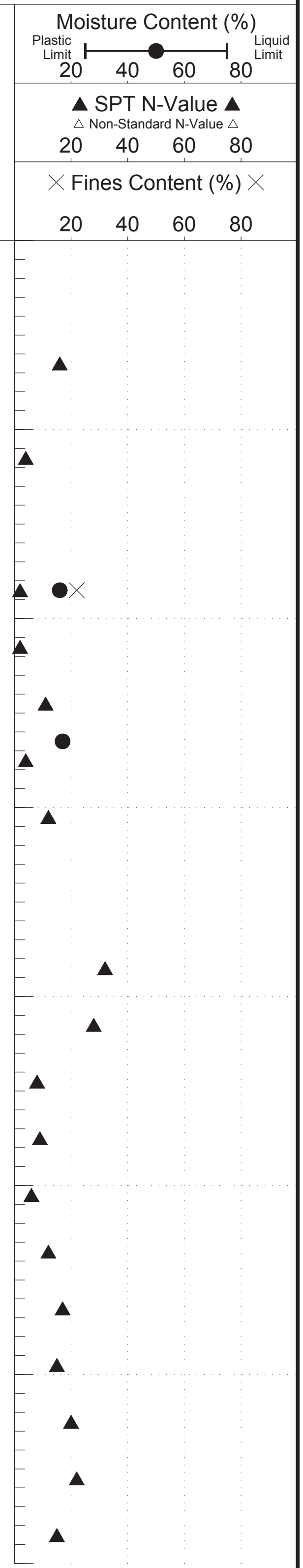
SAMPLE DATA / SOIL PROFILE

Drilling Method: Hollow-Stem Auger

Ground Elevation (ft): 335.84

Logged By: SMG   Date: 03/22/16

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	USCS Symbol	Description	Groundwater
0	335					SM	Brown, silty SAND with gravel (medium dense, moist) **(FILL)**	
		1	b2	16				
5	330	2	b2	4		ML	Gray, SILT with sand and gravel with iron-staining (very loose, moist to wet)	
		3	b2	2	W = 16 -200 = 22	SM	Gray, silty, gravelly SAND (very loose to medium dense, moist to wet)	
10	325	4	b2	2				
		5	b2	11				
		6	b2	4	W = 17			
15	320	7	b2	12		SM/DB	Gray and brown silty SAND with municipal solid waste (loose to dense, moist to wet) **(MUNICIPAL SOLID WASTE)**	ATD
							with trace concrete	
		8	b2	32				
20	315	9	b2	28				
		10	b2	8				
		11	b2	9			with paper, plastic, trace metal	
25	310	12	b2	6				
		13	b2	12			with trace plastic and metal	
		14	b2	17			with paper, plastic, trace glass	
30	305	15	b2	15				
		16	b2	20				
		17	b2	22			with trace glass and plastic	
		18	b2	15				
35								



DRAFT

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

1548001.01 5/19/16 N:\PROJECTS\1548001.010.GPJ SOIL BORING LOG WITH GRAPH

LANDAU ASSOCIATES

Bellevue Airfield Park
Bellevue, WA

Log of Boring B-16-16

Figure A-18 (1 of 2)

B-16-16

LAI Project No: 1548001.010

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Soil Profile	Groundwater	SPT N-Value
35								with trace glass		
	300	19	b2	25			SM	Gray silty SAND with gravel (very dense, moist) **(GLACIAL TILL)**		
40	295	20	b2	50/ 6"						50/ 6"

Drilling Method: Hollow-Stem Auger
Ground Elevation (ft): 335.84
Logged By: SMG Date: 03/22/16

SAMPLE DATA — SOIL PROFILE

Moisture Content (%) — Plastic Limit, Liquid Limit: 20 40 60 80
▲ SPT N-Value ▲ — △ Non-Standard N-Value △: 20 40 60 80
× Fines Content (%) ×: 20 40 60 80

Boring Completed 03/22/16
Total Depth of Boring = 41.5 ft.

Depth scale: 35, 40, 45, 50, 55, 60, 65, 70

DRAFT

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

B-17-16

LAI Project No: 1548001.010

Drilling Method: Hollow-Stem Auger
Ground Elevation (ft): 353.73
Logged By: SMG   Date: 03/22/16

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	USCS Symbol	Description	Groundwater
0						SM	Gray to brown, very silty SAND with fine to coarse gravel (dense to very dense, moist to wet) **(ADVANCE OUTWASH)**	
	350	1	b2	32				
5		2	b2	28				
	345	3	b2	28	W = 11			
10		4	b2	25				
	340							
15		5	b2	60				
	335							
20		6	b2	29	W = 10			
	330							ATD
25		7	b2	50/ 5"		SM	Gray, silty, fine to coarse SAND with gravel (very dense, moist) **(GLACIAL TILL)**	

Moisture Content (%): Plastic Limit – Liquid Limit; 20 40 60 80
▲ SPT N-Value ▲ (△ Non-Standard N-Value △): 20 40 60 80
× Fines Content (%) ×: 20 40 60 80
50/ 5"

Boring Completed 03/22/16
Total Depth of Boring = 26.5 ft.

30

35

DRAFT

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES

Bellevue Airfield Park
Bellevue, WA

Log of Boring B-17-16

Figure A-19

B-18-16

LAI Project No: 1548001.010

Drilling Method: Hollow-Stem Auger
Ground Elevation (ft): 303.81
Logged By: SMG Date: 03/24/16

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	USCS Symbol	Soil Profile	Groundwater
0						SM	Gray to brown, very silty SAND with gravel (loose to dense, moist) **(FILL)**	Groundwater Not Encountered
	300	1	b2	30				
5		2	b2	9				
	295	3	b2	10	W = 28 -200 = 85	ML	Light gray SILT with sand and iron-staining (soft, moist) **(WEATHERED TILL)**	
10		4	b2	10		SM	Light brown, very silty SAND with gravel and iron-staining (loose, moist to wet)	
15	290	5	b2	55	W = 12	SM	Brown to gray, very silty SAND with gravel (very dense, wet) **(GLACIAL TILL)**	
20	285	6	b2	50/ 6"				

Graph columns: Moisture Content (%) (Plastic Limit, Liquid Limit; 20 40 60 80); ▲ SPT N-Value ▲ (△ Non-Standard N-Value △; 20 40 60 80); × Fines Content (%) × (20 40 60 80). 50/ 6"

Boring Completed 03/24/16
Total Depth of Boring = 21.5 ft.

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

B-19-16

LAI Project No: 1548001.010

Drilling Method: Hollow-Stem Auger
Ground Elevation (ft): 354.24
Logged By: DSB   Date: 03/29/16

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Soil Profile	Groundwater
0							AC	Asphalt Pavement (5 inch thickness) **(ASPHALT)**	Groundwater Not Encountered
							SP	Brown silty SAND with gravel (loose to very dense, moist) **(GLACIAL TILL)**	
		1	b2	8					
	350								
5		2	b2	39	W = 7				
		3	b2	50/ 3"					
	345								
10		4	b2	50/ 2"					

Moisture Content (%): Plastic Limit, Liquid Limit; 20 40 60 80
▲ SPT N-Value ▲ (△ Non-Standard N-Value △): 20 40 60 80
× Fines Content (%) ×: 20 40 60 80

50/ 3"

50/ 2"

Boring Completed 03/29/16
Total Depth of Boring = 11.5 ft.

15

20

25

30

35

DRAFT

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Bellevue Airfield Park Bellevue, WA	Log of Boring B-19-16	Figure A-21

B-20-16

LAI Project No: 1548001.010

SAMPLE DATA						SOIL PROFILE			Groundwater	Moisture Content (%) / SPT N-Value / Fines Content (%)
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Hollow-Stem Auger Ground Elevation (ft): 354.52 Logged By: DSB Date: 03/29/16		
0							SM	Brown, very silty SAND with gravel (dense to very dense, moist) **(GLACIAL TILL)**	Groundwater Not Encountered	
		1	b2	36	W = 11 GS					
5	350	2	b2	58						

Boring Completed 03/29/16
Total Depth of Boring = 6.5 ft.

DRAFT

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES

Bellevue Airfield Park
Bellevue, WA

Log of Boring B-20-16

Figure A-22

HA-1-16

LAI Project No: 1548001.010

SAMPLE DATA						SOIL PROFILE			Groundwater	Moisture Content (%) / SPT N-Value / Fines Content (%)
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Hand Auger; Ground Elevation (ft): 366.52; Logged By: SMG; Date: 04/04/16		20 40 60 80
0		1	d				SM	Dark brown, silty SAND with gravel and organics (loose, moist) **(TOPSOIL)**	Groundwater Not Encountered	
	365	2	d				SM	Brown, silty SAND with gravel, trace organics (medium dense, moist) **(ADVANCE OUTWASH)**		

Boring Completed 04/04/16
Total Depth of Boring = 2.0 ft.

DRAFT

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

Landau Associates

Bellevue Airfield Park
Bellevue, WA

Log of Boring HA-1-16

Figure A-23

HA-2-16

LAI Project No: 1548001.010

SAMPLE DATA						SOIL PROFILE				Moisture Content (%) / SPT N-Value / Fines Content (%)
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Hand Auger Ground Elevation (ft): 361.55 Logged By: SMG Date: 04/04/16	Groundwater	20 40 60 80
0		1	d				SM	Dark brown, silty SAND with gravel and organics (loose, moist) **(TOPSOIL)**	Groundwater Not Encountered	
		2	d				SM	Brown, silty SAND with gravel, trace roots (medium dense, moist) **(ADVANCE OUTWASH)**		

Boring Completed 04/04/16
Total Depth of Boring = 1.5 ft.

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35

DRAFT

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES

Bellevue Airfield Park
Bellevue, WA

Log of Boring HA-2-16

Figure A-24

HA-3-16

LAI Project No: 1548001.010

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Soil Profile	Groundwater
0		1	d				SM	Dark brown, silty SAND with gravel and organics (loose, moist) **(TOPSOIL)**	Groundwater Not Encountered
	355	2	d				SM	Brown, silty SAND with gravel, trace roots (medium dense, moist) **(ADVANCE OUTWASH)** becomes gravelly with cobbles	

Drilling Method: Hand Auger

Ground Elevation (ft): 356.49

Logged By: SMG Date: 04/04/16

Moisture Content (%): Plastic Limit — Liquid Limit; 20 40 60 80

▲ SPT N-Value ▲ (△ Non-Standard N-Value △): 20 40 60 80

× Fines Content (%) ×: 20 40 60 80

Depth scale (ft): 0, 5, 10, 15, 20, 25, 30, 35

Boring Completed 04/04/16
Total Depth of Boring = 2.5 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

1548001.01 5/19/16 N:\PROJECTS\1548001.010.GPJ SOIL BORING LOG WITH GRAPH

HA-4-16

LAI Project No: 1548001.010

SAMPLE DATA						SOIL PROFILE				Moisture Content (%) / SPT N-Value / Fines Content (%)
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Hand Auger Ground Elevation (ft): 361.17 Logged By: SMG Date: 04/04/16	Groundwater	Plastic Limit – Liquid Limit 20 40 60 80 ▲ SPT N-Value ▲ (△ Non-Standard N-Value △) 20 40 60 80 × Fines Content (%) × 20 40 60 80
0		1	d				SM	Dark brown, silty SAND with gravel and organics (loose, moist) **(TOPSOIL)**	Groundwater Not Encountered	
	360						SM			
		2	d					Brown, silty SAND with gravel, trace organics **(ADVANCE OUTWASH)** becomes gravelly with cobbles		

Boring Completed 04/04/16
Total Depth of Boring = 4.0 ft.

DRAFT

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

1548001.01 5/19/16 N:\PROJECTS\1548001.010.GPJ SOIL BORING LOG WITH GRAPH

LANDAU ASSOCIATES

Bellevue Airfield Park
Bellevue, WA

Log of Boring HA-4-16

Figure A-26

HA-5-16

LAI Project No: 1548001.010

SAMPLE DATA						SOIL PROFILE					
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Hand Auger Ground Elevation (ft): 353.69 Logged By: SMG Date: 04/04/16	Groundwater	Moisture Content (%) Plastic Limit / Liquid Limit 20 40 60 80; ▲ SPT N-Value ▲ △ Non-Standard N-Value △ 20 40 60 80; × Fines Content (%) × 20 40 60 80
0		1	d				SM	Dark brown, silty SAND with gravel and organics (loose, moist) **(TOPSOIL)**	Groundwater Not Encountered	
		2	d				SM	Brown, silty SAND with gravel, trace organics (medium dense, moist) **(ADVANCE OUTWASH)**		

Boring Completed 04/04/16
Total Depth of Boring = 1.3 ft.

Depth scale (ft): 0, 5, 10, 15, 20, 25, 30, 35

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

HA-6-16

LAI Project No: 1548001.010

SAMPLE DATA						SOIL PROFILE			Groundwater
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Hand Auger Ground Elevation (ft): 356.26 Logged By: SMG Date: 04/04/16	
0		1	d				SM	Dark brown, silty SAND with gravel and organics (loose, moist) **(TOPSOIL)**	Groundwater Not Encountered
		2	d				SM	Brown, silty SAND with gravel, trace organics (medium dense, moist) **(ADVANCE OUTWASH)**	

Moisture Content (%): Plastic Limit — Liquid Limit; 20 40 60 80

▲ SPT N-Value ▲ (△ Non-Standard N-Value △): 20 40 60 80

× Fines Content (%) ×: 20 40 60 80

Boring Completed 04/04/16
Total Depth of Boring = 1.3 ft.

Depth scale (ft): 0, 5, 10, 15, 20, 25, 30, 35

DRAFT

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

1548001.01 5/19/16 N:\PROJECTS\1548001.010.GPJ SOIL BORING LOG WITH GRAPH

LANDAU ASSOCIATES

Bellevue Airfield Park
Bellevue, WA

Log of Boring HA-6-16

Figure A-28

HA-7-16

LAI Project No: 1548001.010

SAMPLE DATA						SOIL PROFILE			Groundwater	Moisture Content (%) / SPT N-Value / Fines Content (%)
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Hand Auger Ground Elevation (ft): 350.85 Logged By: SMG Date: 04/04/16		Plastic Limit – Liquid Limit 20 40 60 80 ▲ SPT N-Value ▲ (△ Non-Standard N-Value △) 20 40 60 80 × Fines Content (%) × 20 40 60 80
0	350	1	d				SM	Dark brown, silty SAND with gravel and organics (loose, moist) **(TOPSOIL)**	Groundwater Not Encountered	
		2	d				SM	Brown, silty SAND with gravel, trace organics (medium dense, moist) **(ADVANCE OUTWASH)**		

Boring Completed 04/04/16
Total Depth of Boring = 1.5 ft.

Depth scale (ft): 0, 5, 10, 15, 20, 25, 30, 35

DRAFT

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

Landau Associates

Bellevue Airfield Park
Bellevue, WA

Log of Boring HA-7-16

Figure A-29

HA-8-16

LAI Project No: 1548001.010

SAMPLE DATA						SOIL PROFILE			Groundwater	Moisture Content (%) / SPT N-Value / Fines Content (%)
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Hand Auger Ground Elevation (ft): 334.49 Logged By: SMG Date: 04/04/16		20 40 60 80
0		1	d				SP	Dark brown, gravelly, silty SAND with organics (loose, moist) **(TOPSOIL)**	Groundwater Not Encountered	
		2	d				SP	Gray, gravelly SAND with silt (medium dense, moist) **(ADVANCE OUTWASH)**		

Boring Completed 04/04/16
Total Depth of Boring = 1.5 ft.

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35

DRAFT

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES

Bellevue Airfield Park
Bellevue, WA

Log of Boring HA-8-16

HA-9-16

LAI Project No: 1548001.010

SAMPLE DATA						SOIL PROFILE			Groundwater	Moisture Content (%) / SPT N-Value / Fines Content (%)
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Hand Auger Ground Elevation (ft): 339.00 Logged By: SMG Date: 04/04/16		Plastic Limit — Liquid Limit 20 40 60 80 ▲ SPT N-Value ▲ △ Non-Standard N-Value △ 20 40 60 80 × Fines Content (%) × 20 40 60 80
0		1	d				SM	Dark brown silty SAND with gravel and organics (loose, moist) **(TOPSOIL)**	Groundwater Not Encountered	
		2	d				SM	Brown silty SAND with gravel, trace organics (medium dense, moist) **(ADVANCE OUTWASH)**		

Boring Completed 04/04/16
Total Depth of Boring = 1.8 ft.

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35

DRAFT

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

1548001.01 5/19/16 N:\PROJECTS\1548001.010.GPJ SOIL BORING LOG WITH GRAPH

LANDAU ASSOCIATES

Bellevue Airfield Park Bellevue, WA	Log of Boring HA-9-16	Figure A-31

TP- 1-16

LAI Project No: 1548001.010

SAMPLE DATA						SOIL PROFILE			Groundwater	Moisture Content (%) / SPT N-Value / Fines Content (%)
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Tracked Excavator Ground Elevation (ft): 343.57 Logged By: BEC Date: 03/23/16		
0		S-1	d5				PT	Topsoil (0.6 feet) (loose, wet) **(TOPSOIL)**	Groundwater Not Encountered	
		S-2	d5				GP	Crushed Rock 5/8 inch minus (medium dense, moist) **(FILL)**		
		S-3	d5		W = 17 GS		SM	Light brown, gravelly, silty, fine to medium SAND (medium dense, moist) **(WEATHERED TILL)**		Moisture ≈ 17
	340	S-4	d5				SM	Gray, gravelly, silty, fine to medium SAND (dense to very dense, moist) **(GLACIAL TILL)**		

Moisture Content (%): Plastic Limit — Liquid Limit; 20 40 60 80
▲ SPT N-Value ▲ (△ Non-Standard N-Value △): 20 40 60 80
× Fines Content (%) ×: 20 40 60 80

Depth scale (ft): 0, 5, 10, 15, 20, 25, 30, 35

Boring Completed 03/23/16
Total Depth of Boring = 4.0 ft.

DRAFT

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

1548001.01 5/19/16 N:\PROJECTS\1548001.010.GPJ SOIL BORING LOG WITH GRAPH

LANDAU ASSOCIATES

Bellevue Airfield Park
Bellevue, WA

Log of Boring TP- 1-16

Figure A-32

TP- 2-16

LAI Project No: 1548001.010

SAMPLE DATA / SOIL PROFILE

Drilling Method: Tracked Excavator

Ground Elevation (ft): 345.09

Logged By: BEC   Date: 03/22/16

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	USCS Symbol	Description	Groundwater
0	345	S-1	d5		W = 18 GS	SM	Brown, gravelly, silty, medium to coarse SAND with plastic and organics (loose, moist) **(FILL)**	Groundwater Not Encountered
		S-2	d5			SM	Reddish brown, gravelly, silty, fine to medium SAND (loose to medium dense, moist)	
		S-3	d5					
		S-4	d5			SM	Gray brown, silty, gravelly, fine to medium SAND (dense, moist) **(GLACIAL TILL)**	
5								

Moisture Content (%): Plastic Limit, Liquid Limit; 20 40 60 80

▲ SPT N-Value ▲ (△ Non-Standard N-Value △): 20 40 60 80

× Fines Content (%) ×: 20 40 60 80

Boring Completed 03/22/16
Total Depth of Boring = 5.0 ft.

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35

DRAFT

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES

Bellevue Airfield Park
Bellevue, WA

Log of Boring TP- 2-16

Figure A-33

TP-12-16

LAI Project No: 1548001.010

SAMPLE DATA / SOIL PROFILE

Drilling Method: Tracked Excavator

Ground Elevation (ft): 339.96

Logged By: BEC Date: 03/23/16

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	USCS Symbol	Soil Profile	Groundwater
0		S-1	d5			PT	Forest Duff (loose, moist)	Groundwater Not Encountered
		S-2	d5			SM	Light brown, silty, fine to medium SAND (loose, moist) **(FILL)**	
		S-3	d5			SM	Light brown and brown, silty, fine to medium SAND with some roots and organics (loose, moist)	
5	335	S-4	d5			SP-SM	Light brown to yellow brown, gravelly, fine to medium SAND with silt (medium dense, moist)	
		S-5	d5		W = 6 -200 = 2	SP	Light brown, gravelly, medium SAND with trace silt (medium dense to dense, damp to moist) **(RECESSIONAL OUTWASH)**	
		S-6	d5		W = 16 GS	SM	Mottled brown and light brown with iron staining, silty, gravelly, fine to medium SAND (very dense, damp) **(GLACIAL TILL)**	

Moisture Content (%): Plastic Limit — Liquid Limit; 20 40 60 80

▲ SPT N-Value ▲ (△ Non-Standard N-Value △): 20 40 60 80

× Fines Content (%) ×: 20 40 60 80

Boring Completed 03/23/16
Total Depth of Boring = 9.5 ft.

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35

DRAFT

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

LANDAU ASSOCIATES

Bellevue Airfield Park
Bellevue, WA

Log of Boring TP-12-16

Figure A-34

Test Pit Photographs

Contact Cover Soil/Landfill Debris and Native Glacial Till Soils

Contact Cover Soil/Landfill Debris and Native Glacial Till Soils

Contact of Cover Soil and Native Glacial Till Soils

Contact of Cover Soil and Native Glacial Till Soils

Test Pit – TP 2-16

Landfill Debris and Contact with Native Outwash Soils

Landfill Debris and Contact with Native Outwash Gravel Soils

Landau Associates	Bellevue Airfield Park Bellevue, Washington	**Test Pit – TP-5-16**

Seepage at Contact with Landfill Debris and Native Glacial Till Soils

Contact with Outwash Gravel Soils

Contact of Cover Soil/Landfill Debris with Native Glacial Till Soils

Landfill Debris and Cover Soils

Contact Cover Soil/Landfill Debris with Native Glacial Till Soils

Contact Cover Soil/Landfill Debris with Native Glacial Till Soils

Contact Cover Soil/Landfill Debris with Native Glacial Till Soils

Contact of Cover Soil/Landfill Debris with Native Glacial Till Soils

Contact of Cover Soil/Landfill Debris with Native Glacial Till Soils

Contact of Cover Soil/Landfill Debris with Native Glacial Till Soils

Contact of Cover Soil/Landfill Debris with Native Glacial Till Soils

Contact of Cover Soil/Landfill Debris with Native Glacial Till Soils

No Waste – Contact of Fill/Outwash and Native Glacial Till Soils

No Waste – Contact of Fill/Outwash and Native Glacial Till Soils

No Waste – Contact Native Glacial Till Soils

No Waste – Contact Native Glacial Till Soils

LANDAU ASSOCIATES

Bellevue Airfield Park Bellevue, Washington	**Test Pit – TP-13A-16**

Contact Cover Soil/Landfill Debris with Native Glacial Till Soils

Contact Cover Soil/Landfill Debris with Native Glacial Till Soils

Contact of Cover Soil/Landfill Debris with Native Glacial Till Soils

Contact of Cover Soil/Landfill Debris with Native Glacial Till Soils

LANDAU ASSOCIATES

Bellevue Airfield Park
Bellevue, Washington

Test Pit – TP-14-16

Contact Cover Soil/Landfill Debris with Native Glacial Till Soils

Contact Cover Soil/Landfill Debris with Native Glacial Till Soils

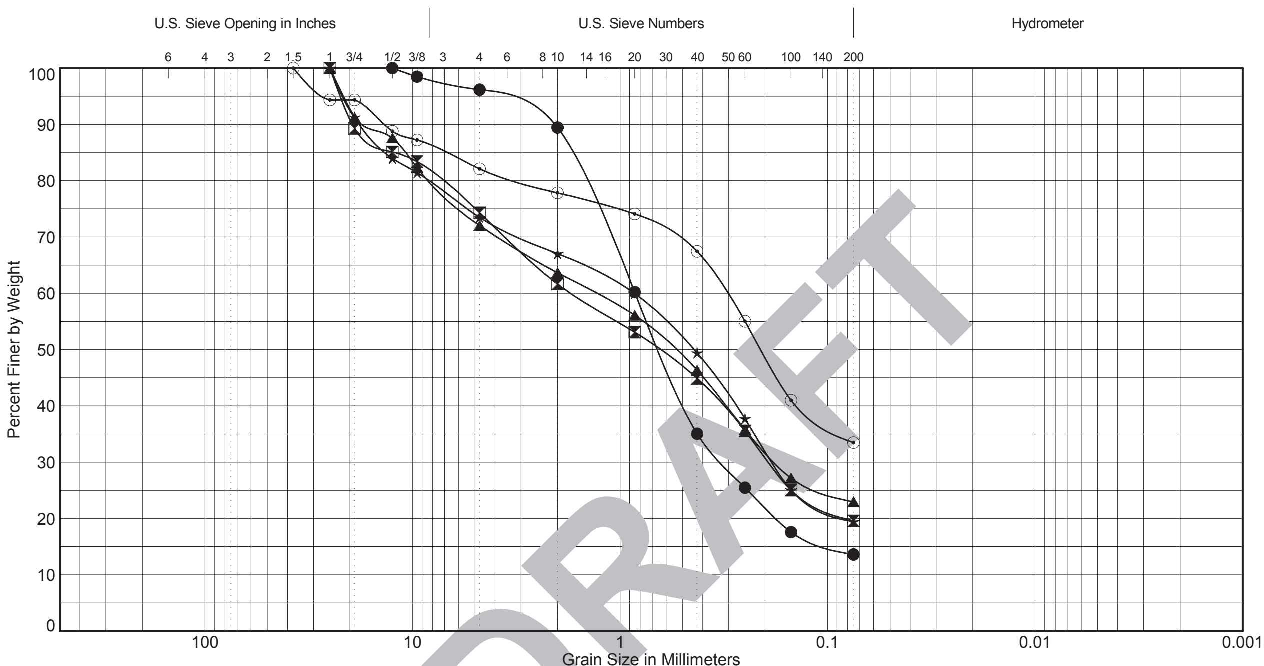
APPENDIX B

Laboratory Test Results

APPENDIX B
LABORATORY SOIL TESTING

The laboratory testing program, which was performed in general accordance with the ASTM International (ASTM) standard test procedures described below, was limited to visual inspection to confirm our field soil descriptions and determination of the natural moisture content and grain size distribution of selected samples. The natural moisture contents of selected soil samples obtained from our exploratory borings were determined in general accordance with ASTM D 2216 test procedures. The results from the natural moisture content determinations are indicated adjacent to the corresponding samples on the summary logs presented in Appendix A. The grain size distributions of selected soil samples obtained from our exploratory borings and test pits were determined in general accordance with ASTM D 422 test procedures. The results are presented in the form of a grain size distribution curves on Figures B-1 through B-2.

1548001.01 5/26/16 N:\PROJECTS\1548001.010.GPJ GRAIN SIZE FIGURE



Cobbles	Gravel		Sand			Silt or Clay
	Coarse	Fine	Coarse	Medium	Fine	

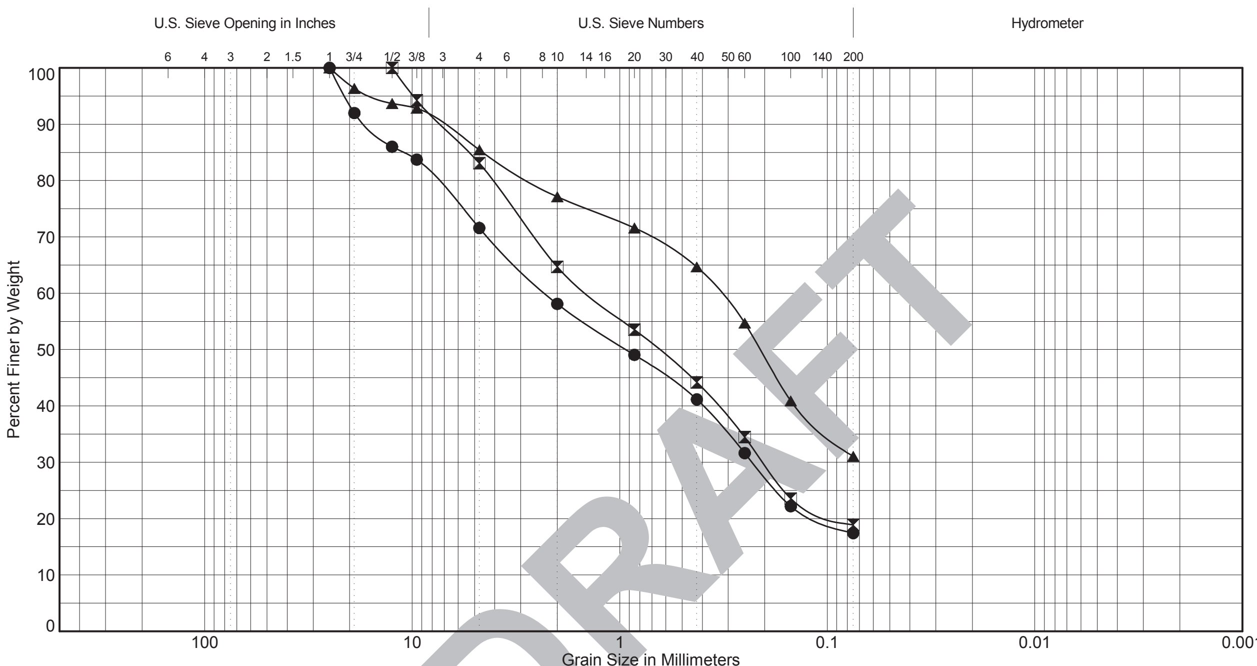
Symbol	Exploration Number	Sample Number	Depth (ft)	Natural Moisture (%)	Soil Description	Unified Soil Classification
●	B- 2-16	15	33.0	19	Brown, coarse SAND with silt	SP
⧗	B- 3-16	2	5.0	21	Brown, silty SAND with gravel and wood	SM/DB
▲	B- 4-16	3	12.5	6	Gray, gravelly, silty SAND	SM
★	B- 9-16	2	7.5	13	Gray, silty, gravelly SAND	SM
⊙	B-20-16	1	2.5	11	Brown, very silty SAND with gravel	SM

LANDAU ASSOCIATES

Bellevue Airfield Park
Bellevue, WA

Grain Size Distribution

Figure
B-1



Cobbles	Gravel		Sand			Silt or Clay
	Coarse	Fine	Coarse	Medium	Fine	

Symbol	Exploration Number	Sample Number	Depth (ft)	Natural Moisture (%)	Soil Description	Unified Soil Classification
●	TP- 1-16	3	1.5	17	Crushed rock, 5/8 inch minus	SP
⧗	TP- 2-16	1	1.0	18	Brown, gravelly, silty, fine to coarse SAND with plastics and organics	SM
▲	TP-12-16	6	8.0	16	Mottled brown and light brown silty, gravelly, fine to medium SAND with iron-staining	

Landau Associates

Bellevue Airfield Park
Bellevue, WA

Grain Size Distribution

Figure
B-2

APPENDIX C

Boring Logs by Others

SCS ENGINEERS

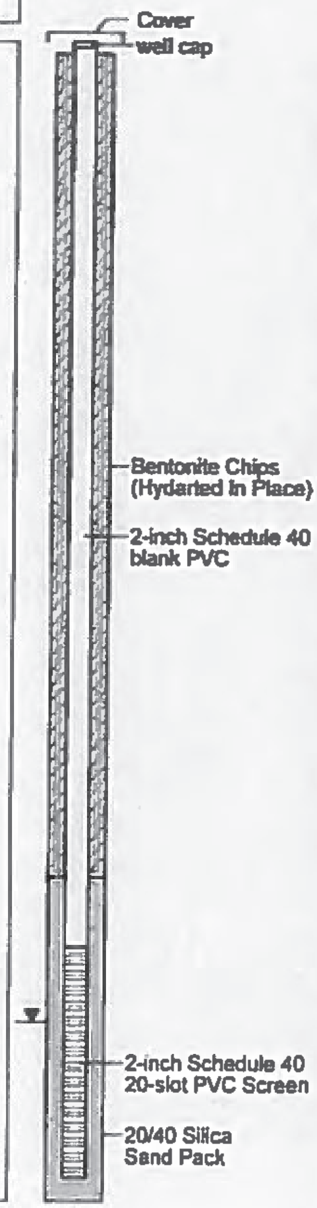
Monitoring Well GW EL-101R

Boeing Eastgate
Bellevue, WA
04206007.00

Started/Completed	: 9/7/07	Drilled By	: Environmental West
Drilling Method	: Air Rotary	Top of Casing Elev.	: 347.85
Diameter	: 6"	Total Depth	: 50.35'
Sampling Device	: Cuttings	Logged By	: Stephen Bond
		Reviewed By	: Ted Massart

Depth (ft)	GRAPHIC	DESCRIPTION	REMARKS	Sample
0				
5				
10		Brown, fine to medium SAND with trace silt, fine gravel and organics		
15		As above		
20		As above		
25		As above		
30		Moist, grey, fine-gravelly, fine to medium SAND with trace silt		
35		Moist, grey, fine to medium SAND with trace silt and fine gravel		
40		Damp, grey, fine to medium SAND with trace fine gravel		
45		Wet, grey, fine to medium SAND with silt		
50				
55				

Well GW EL-101R



07-03-2008 G:\04206007.00\Boeing Logs\EL-101R.bor

SCS ENGINEERS

Monitoring Well GW EL-106R

Boeing Eastgate
Bellevue, WA
04205007.00

Started/Completed	: 9/5/07	Drilled By	: Environmental West
Drilling Method	: Air Rotary	Top of Casing Elev	: 345.65
Diameter	: 6"	Total Depth	: 80'
Sampling Device	: Cuttings	Logged By	: Stephen Bond
		Reviewed By	: Ted Massart

Depth (ft)	GRAPHIC	DESCRIPTION	REMARKS	Sample
0				
5				
10		Brown, fine to medium SAND with silt		
15				
20				
25		Damp, brown, medium to coarse SAND with trace fine gravel and silt		
30		Wet, grey-brown, silty, fine to medium SAND		
35		Wet, grey, silty, fine to coarse SAND		
40		Moist/wet, grey, silty, fine to coarse SAND with trace fine gravel		
45		Moist/wet, grey, silty, medium to coarse SAND		
50		Moist/wet, grey-brown, medium to coarse SAND with silt		
55				
60		Moist/wet, brown, medium to coarse SAND with trace silt		
65				
70		Wet, brown, silty, fine to medium SAND		
75				
80				
85				

Well GW EL-106R

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SCS ENGINEERS

Boeing Eastgate Landfill
Bellevue, WA
04206007.00

Date Start/Complete	: 9/6/07
Hole Diameter	: 8"
Total Depth	: 48'
Drilling Method	: Air Rotary
Drilled By	: Environmental West
Northing Coordinate	: 215527.28
Easting Coordinate	: 1320758.44
Top of Casing Elev.	: 344.19

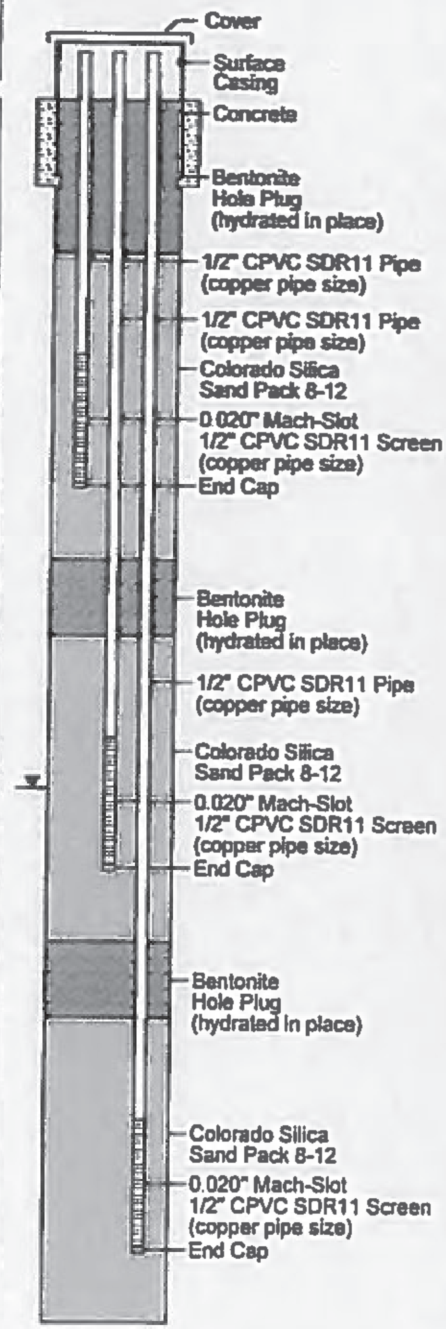
GAS PROBE MW-2R

Logged By	: S. Bond
Reviewed By	: T. Massart
Surveyed By	: Skarzeka

Sample Type
Cuttings Sample

Depth (ft)	DESCRIPTION	REMARKS	Sample
0–15	Grey, fine to medium SAND with silt and fine gravel		Cuttings Sample
	Damp, dark grey, fine to medium SAND with silt and trace fine gravel		Cuttings Sample
15–35	Damp, dark grey, silty, fine to medium SAND with trace fine gravel		Cuttings Sample
	Damp, dark grey, silty fine to medium SAND		Cuttings Sample
	Moist, dark grey, medium to coarse SAND with silt and trace fine gravel		Cuttings Sample
	Moist/wet, grey, silty, fine to coarse SAND with trace fine gravel		Cuttings Sample
35–48	Moist, brown, fine gravelly, medium to coarse SAND with silt		Cuttings Sample
	Moist/wet, brown, medium to coarse SAND with trace silt		Cuttings Sample

Probe1: MW-2Rs 14.90'
Probe2: MW-2Rm 29.75'
Probe3: MW-2Rd 45.05'



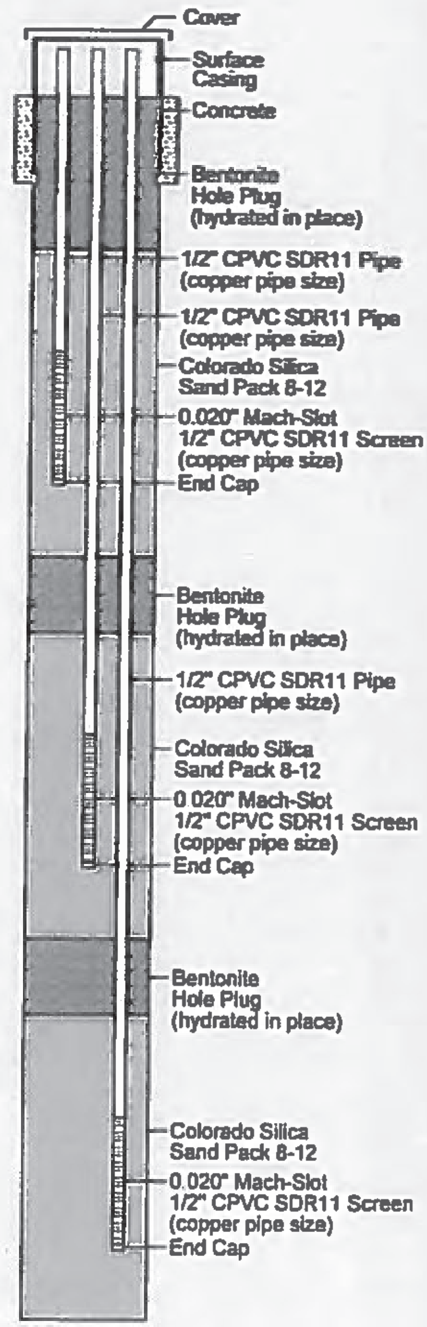
SCS ENGINEERS		
Boeing Eastgate Landfill Bellevue, WA 04206007.00	Date Start/Complete : 9/5/07 Hole Diameter : 8" Total Depth : 48' Drilling Method : Air Rotary Drilled By : Environmental West Northing Coordinate : 215581.20 Easting Coordinate : 1320631.95 Top of Casing Elev. : 348.80	**GAS PROBE MW-3R2** (Page 1 of 1) Logged By : S. Bond Reviewed By : T. Massart Surveyed By : Skanska

Sample Type

Cuttings Sample

Depth (ft)	GRAPHIC	DESCRIPTION	REMARKS	Sample
0–10		Damp, grey, gravelly, silty, fine to medium SAND		Cuttings (5)
10–18		Brown, fine to medium SAND with trace fine gravel		Cuttings (10, 15)
18–30		Damp, grey, fine to medium SAND with trace silt, fine gravel and organics		Cuttings (20)
		Damp/moist, dark grey/black, medium to coarse SAND with fine to medium gravel and trace organics		Cuttings (25)
30–48		Moist, grey, plastic SILT with fine to medium SAND and trace fine gravel		Cuttings (30, 35, 40)
		Moist, grey, fine to medium sandy, plastic SILT with fine gravel		Cuttings (45)

Probe1: MW-3R2s 14.80'
Probe2: MW-3R2m 29.70'
Probe3: MW-3R2d 45.05'



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SCS ENGINEERS

Boeing Eastgate Landfill
Bellevue, WA
04206007.00

Date Start/Complete	: 9/6/07 - 9/7/07
Hole Diameter	: 8"
Total Depth	: 48'
Drilling Method	: Air Rotary
Drilled By	: Environmental West
Northing Coordinate	: 215573.15
Easting Coordinate	: 1320524.63
Top of Casing Elev.	: 349.04

GAS PROBE MW-4R2

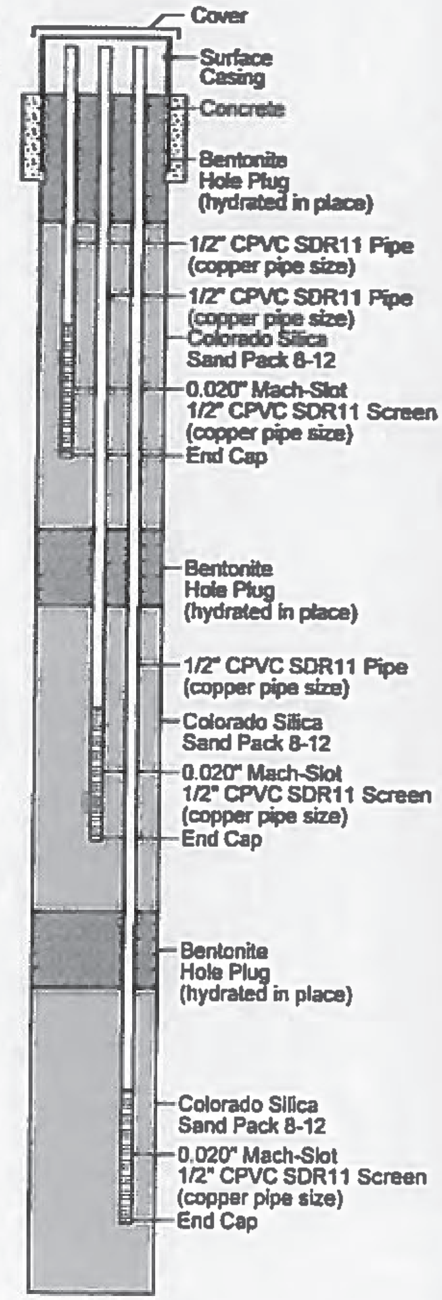
Logged By	: S. Bond
Reviewed By	: T. Massart
Surveyed By	: Skanska

Sample Type

IIIII Cuttings Sample

Depth (ft)	GRAPHIC	DESCRIPTION	REMARKS	Sample
5		Damp, brown, silty, fine to medium SAND		IIIII
10		Damp/dry, brown, fine to medium SAND		IIIII
15		Damp, grey, fine to medium SAND with trace gravel		IIIII
20		Damp, dark brown, fine to medium SAND		IIIII
25		Damp, dark brown, fine to medium SAND with gravel, silt and trace organics		IIIII
30		Moist, grey, fine to medium SAND with silt and trace fine to medium gravel		IIIII
35		Damp, grey, fine to medium SAND with fine gravel		IIIII
40		Damp, grey, fine to medium SAND with fine gravel and silt		IIIII
45			Water encountered at ~45' bgs	IIIII
50				

Probe1: MW-4R2s
Probe2: MW-4R2m
Probe3: MW-4R2d



SCS ENGINEERS

Boeing Eastgate Landfill
Bellevue, WA
04206007.00

Date Start/Complete	: 12-18-2007
Hole Diameter	: 8"
Total Depth	: 28.5'
Drilling Method	: Air Rotary
Drilled By	: Environmental West
Northing Coordinate	: 215753.36
Easting Coordinate	: 1320409.73
Top of Casing Elev	: 348.44

GAS PROBE MW-5R

(Page 1 of 1)

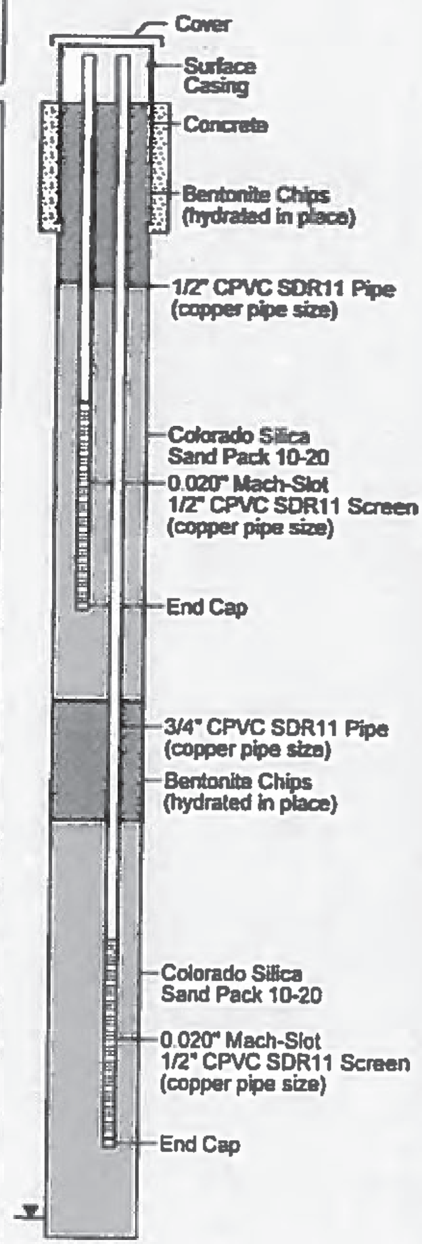
Logged By	: B. Dean
Reviewed By	: T. Massart
Surveyed By	: Skanska

Sample Type

Cuttings Sample

Probe1: MW-5Rs
Probe2: MW-5Rd

Depth (ft)	GRAPHIC	DESCRIPTION	REMARKS	Sample
0		Drilling through fill. Air coming up around outside of casing. Casing spinning with cutting bit. No cuttings to surface.		
5		Grey, fine-grained, silty SAND with organics (small pieces of wood)		
10		Grey, fine-grained, silty SAND Moist to wet @ 28' bgs		
15				
20				
25				
30				



SCS ENGINEERS

Boeing Eastgate Landfill
Bellevue, WA
04206007.00

Date Start/Complete	: 4-28-2008
Hole Diameter	: 8"
Total Depth	: 28'
Drilling Method	: Air Rotary
Drilled By	: Environmental West
Northing Coordinate	: 215541.45
Easting Coordinate	: 1320317.07
Top of Casing Elev.	: 351.16

GAS PROBE MW-6R

(Page 1 of 1)

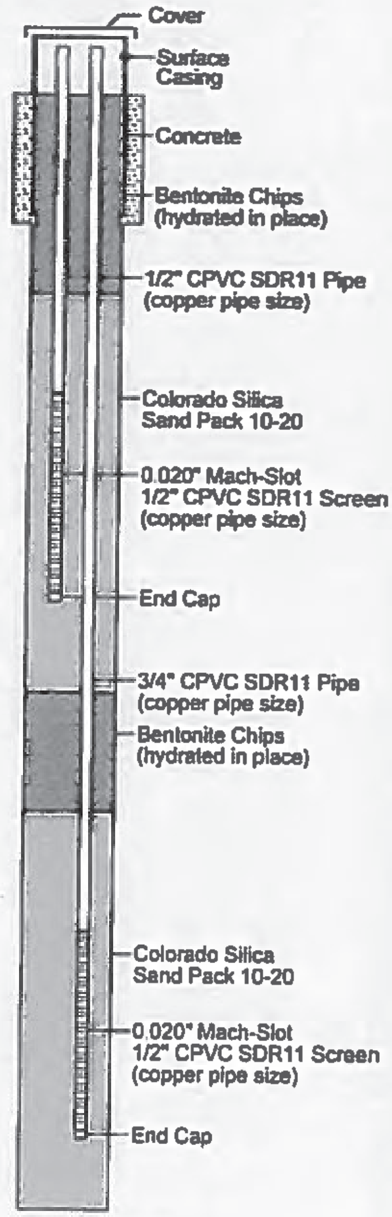
Logged By	: E. Sonstragen
Reviewed By	: T. Massart
Surveyed By	: Skanska

Sample Type

Cuttings Sample

Depth (ft)	DESCRIPTION	REMARKS	Sample
0–10	Moist, brown, silty, coarse-grained SAND		
10–24	Moist, brown to lt. brown, silty SAND with gravel/smooth cobbles up to 2"		
24–28	Sampling terminated at 24' bgs. Boring continues to 28' bgs.		

Probe1: MW-6Rs
Probe2: MW-6Rd



SCS ENGINEERS

Boeing Eastgate Landfill
Bellevue, WA
04206007.00

Date Start/Complete	: 5-24-2007
Hole Diameter	: 30"
Total Depth	: 43'
Drilling Method	: Auger w/11" casing
Drilled By	: DBM
Northing Coordinate	:
Easting Coordinate	:
Top of Casing Elev.	:

EXTRACTION WELL EW-2R

(Page 1 of 1)

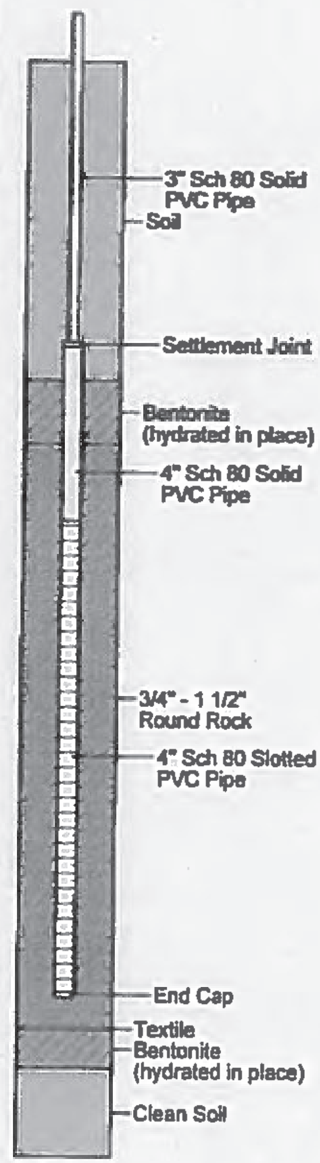
Logged By	: E. Sonsthagen
Reviewed By	: T. Massart
Surveyed By	:

Sample Type

Cuttings Sample

Depth (ft)	DESCRIPTION	REMARKS	Sample
0	Moist to very moist, dark brown to very dark brown, poorly graded gravels (rounded cobbles to 4")		
7	Pea gravel at 7' bgs		
10	Refuse - clayey, meal, glass, black plastic, and textiles	Temp 54.6	
19	Grey clay lense		
20	Refuse - wood, plastics, metal	Temp 57.6	
26	Gravel/sandy layer with interbedded refuse (25-30% wood, plastic)		
28.5	28.5 Slightly moist, orange-brown, poorly graded SAND with gravel		
34	Refuse with interbedded clay - glass metal, plastics, dak bronw grading to black		
38	Slightly moist, grey to dark grey, CLAYEY SAND		

Extraction Well EW-2R



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SCS ENGINEERS

Boeing Eastgate Landfill
Bellevue, WA
04206007.00

Date Start/Complete	: 1-27-2007
Hole Diameter	: 30"
Total Depth	: 36'
Drilling Method	: Solid Stem Auger
Drilled By	: San Diego Drilling
Northing Coordinate	:
Easting Coordinate	:
Top of Casing Elev.	:

EXTRACTION WELL EW-3R

(Page 1 of 1)

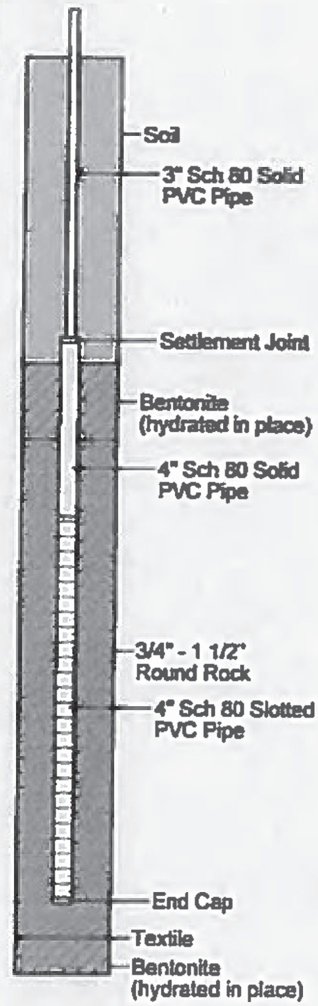
Logged By	: E. Scasthagen
Reviewed By	: T. Massart
Surveyed By	:

Sample Type

[IIIII] Cuttings Sample

Depth (ft)	GRAPHIC	DESCRIPTION	REMARKS	Sample
0–8		Moist to very moist, brown to dark brown, silty, coarse-grained GRAVEL (cobbles to 4") Some concrete at 7' bgs		
8–35		CLAYEY GRAVEL with interbedded refuse (5-10% refuse, very dark grey to black, moist to very moist) CLAYEY GRAVEL with interbedded refuse (5-10% refuse - plastic, textile, glass, very dark grey, saturated)		
35–36		Moist, light grey, CLAYEY SAND		

Extraction Well EW-3R



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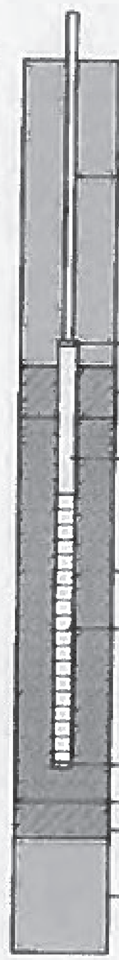
SCS ENGINEERS	Date Start/Complete : 1-25-2007	EXTRACTION WELL EW-4R
Boeing Eastgate Landfill Bellevue, WA 04206007.00	Hole Diameter : 30" Total Depth : 35' Drilling Method : Solid Stem Auger Drilled By : San Diego Drilling Northing Coordinate : Easting Coordinate : Top of Casing Elev :	(Page 1 of 1) Logged By : E. Sonsthagen Reviewed By : T. Massart Surveyed By :

Sample Type

Cuttings Sample

Depth (ft)	GRAPHIC	DESCRIPTION	REMARKS	Sample
0		Moist to very moist, brown to dark brown, silty, coarse-grained GRAVEL (cobbles to 6") with occasional refuse (glass,cans, metal)		
		Grades to dark grey-brown		
10		Refuse - dark brown to black, metal, paper, plastic, rubber, wood, glass,	Temp 54	
20		Refuse - dark brown, metal, plastic, paper, wood, moist to very moist		
25		Refuse - moist, brown to dark brown, glass, wood, paper	Temp 55	
30		Very moist to saturated, grey to dark grey, silty GRAVEL (rounded cobbles to 6")		
35				

Extraction Well EW-4R



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SCS ENGINEERS

Boeing Eastgate Landfill
Bellevue, WA
04206007.00

Date Start/Complete	: 1-26-2007
Hole Diameter	: 30"
Total Depth	: 38'
Drilling Method	: Bucket Auger
Drilled By	: San Diego Drilling
Northing Coordinate	:
Easting Coordinate	:
Top of Casing Elev.	:

EXTRACTION WELL EW-5R

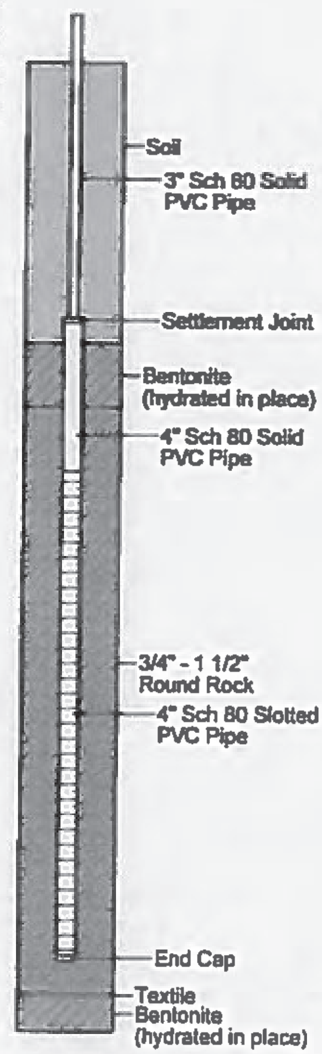
Logged By	: E. Sosshagen
Reviewed By	: T. Massart
Surveyed By	:

Sample Type

IIIII Cuttings Sample

Depth (ft)	DESCRIPTION	REMARKS	Sample
0–9.5	Moist to very moist, brown to dark brown, silty, coarse-grained GRAVEL		
9.5–16	Refuse, textile, paper, wire, plastic, intermittent soil		
16–38	Moist, dark grey to dark grey-brown, silty GRAVEL (rounded cobbles to 4") with sand Grades to light grey	Temp 55	

Extraction Well: EW-5R



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SCS ENGINEERS

Boeing Eastgate Landfill
Bellevue, WA
04206007.00

Date Start/Complete	5-24-2007
Hole Diameter	30"
Total Depth	43'
Drilling Method	Auger w/ 11' casing
Drilled By	DBM
Northing Coordinate	:
Easting Coordinate	:
Top of Casing Elev	:

EXTRACTION WELL EW-2R

(Page 1 of 1)

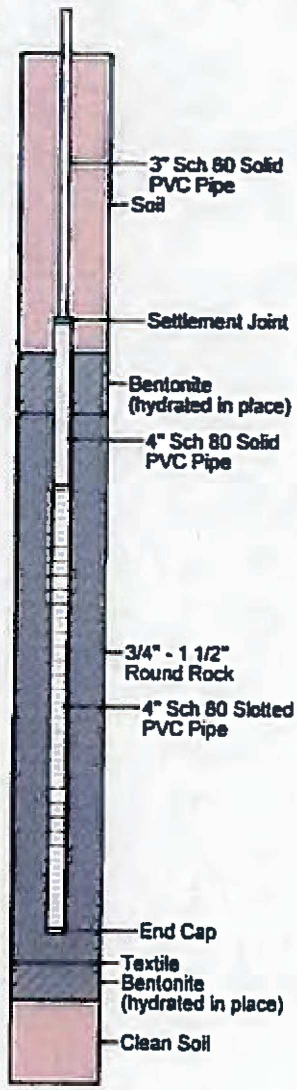
Logged By	E. Sonsthagen
Reviewed By	T. Massart
Surveyed By	:

Sample Type

Cuttings Sample

Depth (ft)	DESCRIPTION	REMARKS	Sample
0	Moist to very moist, dark brown to very dark brown, poorly graded gravels (rounded cobbles to 4")		
	Pea gravel at 7' bgs		
10	Refuse - clayey, meal, glass, black plastic, and textiles	Temp 54.6	
	Grey clay lense		
20	Refuse - wood, plastics, metal	Temp 57.6	
	Gravel/sandy layer with interbedded refuse (25-30% wood, plastic)		
28.5	28.5 Slightly moist, orange-brown, poorly graded SAND with gravel		
34	Refuse with interbedded clay - glass metal, plastics, dak bronw grading to black		
38	Slightly moist, grey to dark grey, CLAYEY SAND		

Extraction Well: EW-2R



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SCS ENGINEERS

Boeing Eastgate Landfill
Bellevue, WA
04206007.00

Date Start/Complete	1-27-2007
Hole Diameter	30"
Total Depth	36'
Drilling Method	Solid Stem Auger
Drilled By	San Diego Drilling
Northing Coordinate	
Easting Coordinate	
Top of Casing Elev	

EXTRACTION WELL EW-3R

(Page 1 of 1)

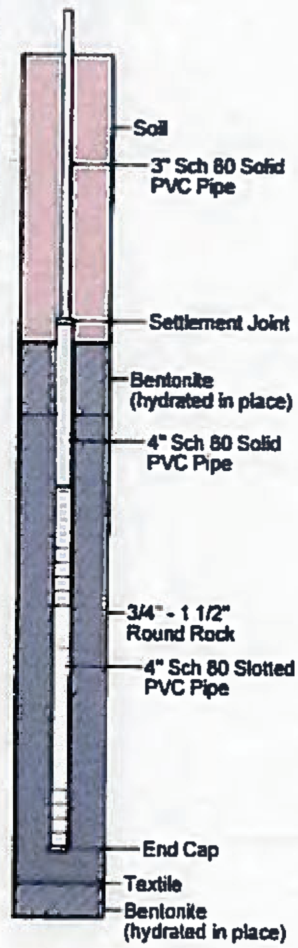
Logged By	E. Sonsthagen
Reviewed By	T. Massart
Surveyed By	

Sample Type

Cuttings Sample

Depth (ft)	GRAPHIC	DESCRIPTION	REMARKS	Sample
0		Moist to very moist, brown to dark brown, silty, coarse-grained GRAVEL (cobbles to 4")		
7		Some concrete at 7' bgs		
8		CLAYEY GRAVEL with interbedded refuse (5-10% refuse, very dark grey to black, moist to very moist)		
32		CLAYEY GRAVEL with interbedded refuse (5-10% refuse - plastic, textile, glass, very dark grey, saturated)		
35		Moist, light grey, CLAYEY SAND		

Extraction Well EW-3R



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SCS ENGINEERS

Boeing Eastgate Landfill
Bellevue, WA
04206007.00

Date Start/Complete	1-26-2007
Hole Diameter	30"
Total Depth	35'
Drilling Method	Solid Stem Auger
Drilled By	San Diego Drilling
Northing Coordinate	
Easting Coordinate	
Top of Casing Elev	

EXTRACTION WELL EW-4R

(Page 1 of 1)

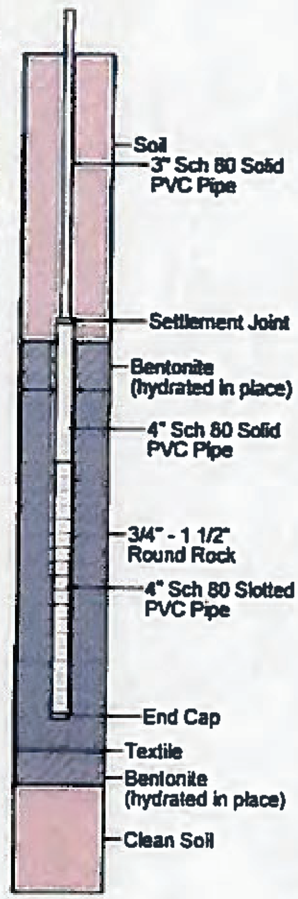
Logged By	E Sandhagen
Reviewed By	T. Massart
Surveyed By	

Sample Type

Cuttings Sample

Depth (ft)	GRAPHIC	DESCRIPTION	REMARKS	Sample
0		Moist to very moist, brown to dark brown, silty, coarse-grained GRAVEL (cobbles to 6") with occasional refuse (glass,cans, metal) Grades to dark grey-brown		
10		Refuse - dark brown to black, metal, paper, plastic, rubber, wood, glass.	Temp 54	
20		Refuse - dark brown, metal, plastic, paper, wood, moist to very moist		
25		Refuse - moist, brown to dark brown, glass, wood, paper	Temp 55	
30		Very moist to saturated, grey to dark grey, silty GRAVEL (rounded cobbles to 6")		
35				
40				
45				
50				

Extraction Well EW-4R



SCS ENGINEERS

Boeing Eastgate Landfill
Bellevue, WA
04206007.00

Date Start/Complete	1-26-2007
Hole Diameter	30"
Total Depth	38'
Drilling Method	Bucket Auger
Drilled By	San Diego Drilling
Northing Coordinate	
Easting Coordinate	
Top of Casing Elev	

EXTRACTION WELL EW-5R

(Page 1 of 1)

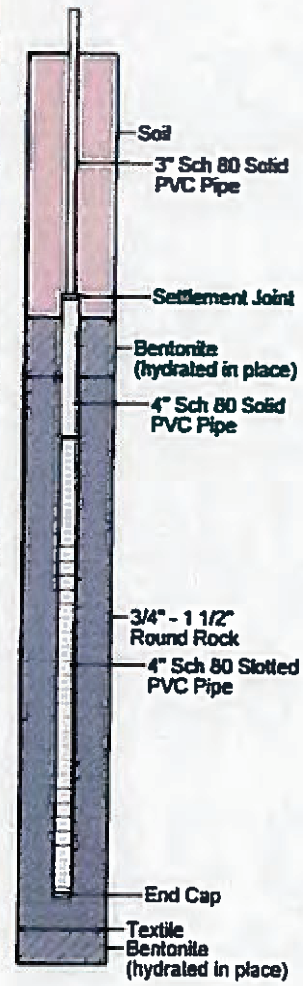
Logged By	E. Scnsttagen
Reviewed By	T. Massart
Surveyed By	

Sample Type

Cuttings Sample

Depth (ft)	GRAPHIC	DESCRIPTION	REMARKS	Sample
0–9.5		Moist to very moist, brown to dark brown, silty, coarse-grained GRAVEL		
9.5–16		Refuse, textile, paper, wire, plastic, intermittent soil		
16–38		Moist, dark grey to dark grey-brown, silty GRAVEL (rounded cobbles to 4") with sand	Temp 55	
		Grades to light grey		

Extraction Well, EW-5R



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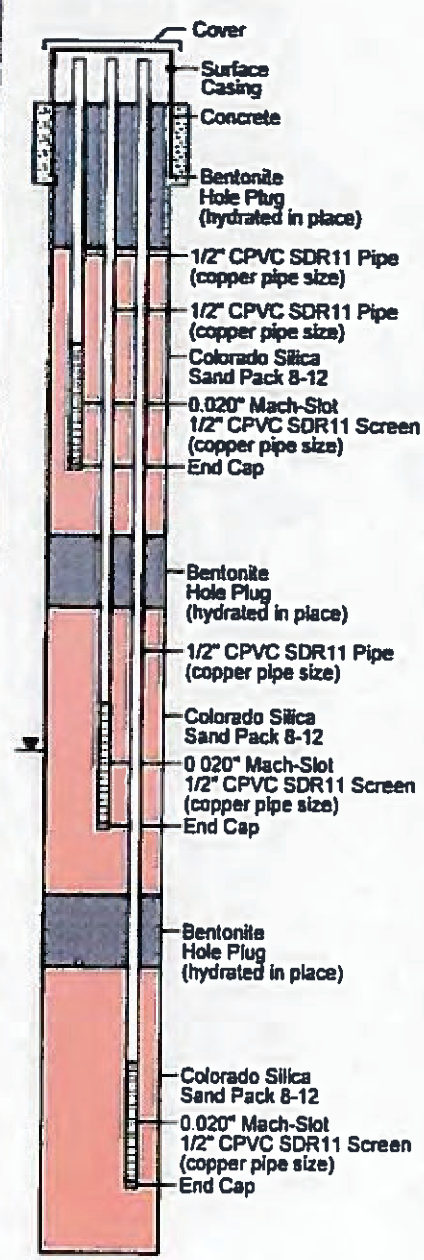
SCS ENGINEERS Boeing Eastgate Landfill Bellevue, WA 04206007.00	Date Start/Complete: 9/6/07 Hole Diameter: 8" Total Depth: 48' Drilling Method: Air Rotary Drilled By: Environmental West Northing Coordinate: 215527.28 Easting Coordinate: 1320758.44 Top of Casing Elev: 344.19	**GAS PROBE MW-2R** (Page 1 of 1) Logged By: S. Bond Reviewed By: T. Massart Surveyed By: Skanska

Sample Type: Cuttings Sample

Depth (ft)	GRAPHIC	DESCRIPTION	REMARKS	Sample
5		Grey, fine to medium SAND with silt and fine gravel		
10		Damp, dark grey, fine to medium SAND with silt and trace fine gravel		
15		Damp, dark grey, silty, fine to medium SAND with trace fine gravel		
20		Damp, dark grey, silty fine to medium SAND		
25		Moist, dark grey, medium to coarse SAND with silt and trace fine gravel		
30		Moist/wet, grey, silty, fine to coarse SAND with trace fine gravel		
35		Moist, brown, fine gravelly, medium to coarse SAND with silt		
45		Moist/wet, brown, medium to coarse SAND with trace silt		



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SCS ENGINEERS			GAS PROBE MW-3R2 (Page 1 of 1)	
Boeing Eastgate Landfill Bellevue, WA 04206007.00	Date Start/Complete	9/6/07	Logged By	S. Bond
	Hole Diameter	8"	Reviewed By	T. Massat
	Total Depth	48'	Surveyed By	Skanska
	Drilling Method	Air Rotary		
	Drilled By	Environmental West		
	Northing Coordinate	215581.20		
	Easting Coordinate	1320631.95		
	Top of Casing Elev	348.60		

Sample Type

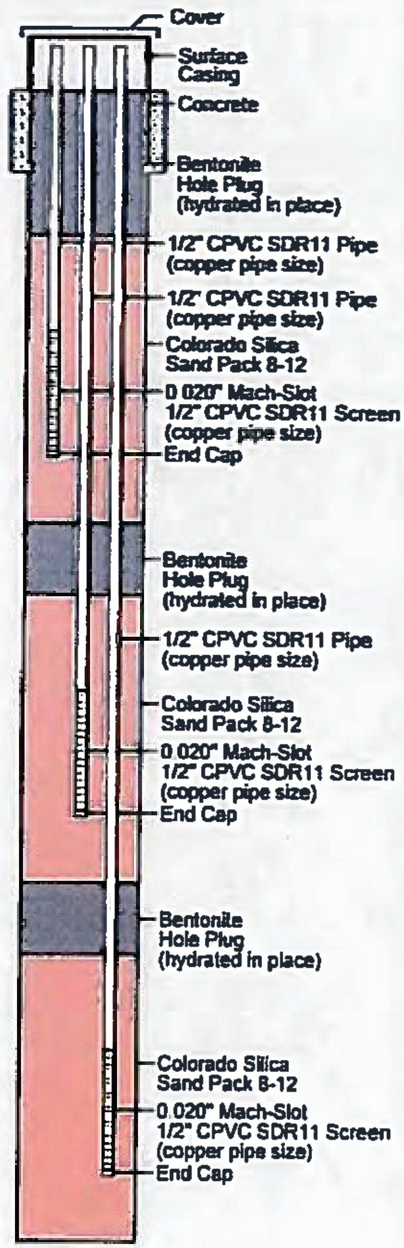
[I I I] Cuttings Sample

Probe1: MW-3R2s 14.80'

Probe2: MW-3R2m 29.70'

Probe3: MW-3R2d 45.05'

Depth (ft)	GRAPHIC	DESCRIPTION	REMARKS	Sample
0–10		Damp, grey, gravelly, silty, fine to medium SAND		Cuttings Sample (5)
10–18		Brown, fine to medium SAND with trace fine gravel		Cuttings Sample (10, 15)
18–30		Damp, grey, fine to medium SAND with trace silt, fine gravel and organics Damp/moist, dark grey/black, medium to coarse SAND with fine to medium gravel and trace organics		Cuttings Sample (20, 25)
30–48		Moist, grey, plastic SILT with fine to medium SAND and trace fine gravel Moist, grey, fine to medium sandy, plastic SILT with fine gravel		Cuttings Sample (30, 35, 40, 45)



SCS ENGINEERS

Boeing Eastgate Landfill
Bellevue, WA
04206007.00

Date Start/Complete	9/6/07 - 9/7/07
Hole Diameter	8"
Total Depth	48"
Drilling Method	Air Rotary
Drilled By	Environmental West
Northing Coordinate	215873.15
Easting Coordinate	1320524.63
Top of Casing Elev.	349.04

GAS PROBE MW-4R2

(Page 1 of 1)

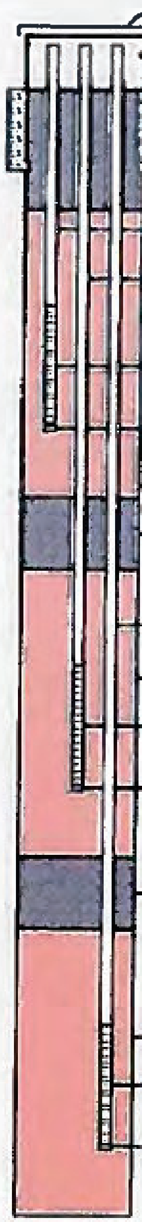
Logged By	S. Bond
Reviewed By	T. Massart
Surveyed By	Skarsfa

Sample Type

Cuttings Sample

Depth (ft)	DESCRIPTION	REMARKS	Sample
0–13	Damp, brown, silty, fine to medium SAND (5)		Cuttings Sample
	Damp/dry, brown, fine to medium SAND (10)		Cuttings Sample
13–20	Damp, grey, fine to medium SAND with trace gravel (15)		Cuttings Sample
20–30	Damp, dark brown, fine to medium SAND (20)		Cuttings Sample
	Damp, dark brown, fine to medium SAND with gravel, silt and trace organics (25)		Cuttings Sample
30–47	Moist, grey, fine to medium SAND with silt and trace fine to medium gravel (30)		Cuttings Sample
	Damp, grey, fine to medium SAND with fine gravel (35)		Cuttings Sample
	Damp, grey, fine to medium SAND with fine gravel and silt (40)		Cuttings Sample
45		Water encountered at ~45' bgs	Cuttings Sample

Probe1: MW-4R2s
Probe2: MW-4R2m
Probe3: MW-4R2d



SCS ENGINEERS

Boeing Eastgate Landfill
Bellevue, WA
04206007.00

Date Start/Complete	12-18-2007
Hole Diameter	8"
Total Depth	28.5
Drilling Method	Air Rotary
Drilled By	Environmental West
Northing Coordinate	215753.36
Easting Coordinate	1320409.73
Top of Casing Elev	348.44

GAS PROBE MW-5R

(Page 1 of 1)

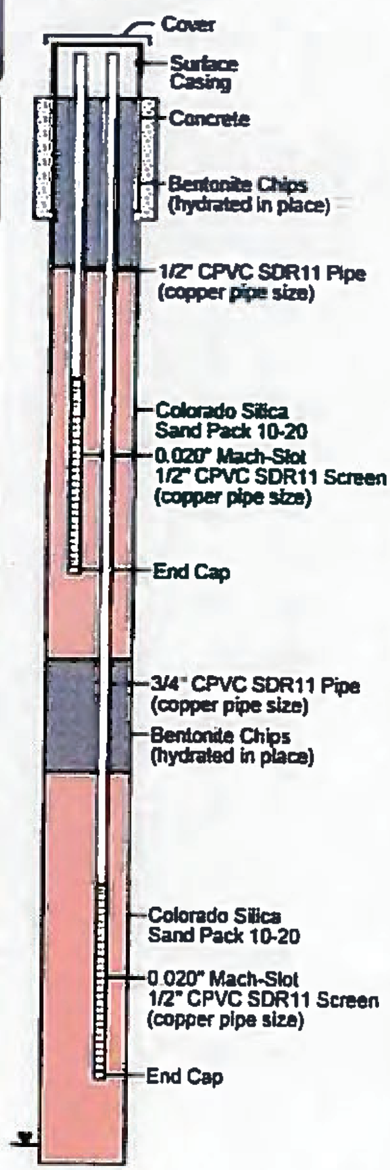
Logged By	B. Dean
Reviewed By	T. Massart
Surveyed By	Skanska

Sample Type

Cuttings Sample

Depth (ft)	GRAPHIC	DESCRIPTION	REMARKS	Sample
0–4		Drilling through fill. Air coming up around outside of casing. Casing spinning with cutting bit. No cuttings to surface.		
4–10		Grey, fine-grained, silty SAND with organics (small pieces of wood)		
10–28.5		Grey, fine-grained, silty SAND Moist to wet @ 28' bgs		

Probe1: MW-5Rs
Probe2: MW-5Rd



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SCS ENGINEERS

Boeing Eastgate Landfill
Bellevue, WA
04206007.00

Date Start/Complete	4-28-2008
Hole Diameter	8"
Total Depth	28'
Drilling Method	Air Rotary
Drilled By	Environmental West
Northing Coordinate	215841.46
Easting Coordinate	1320317.07
Top of Casing Elev	351.16

GAS PROBE MW-6R

(Page 1 of 1)

Logged By	E. Sorsthagen
Reviewed By	T. Massart
Surveyed By	Skeaska

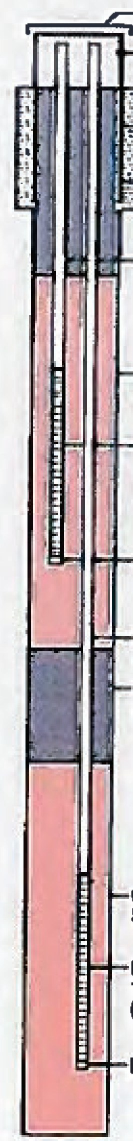
Sample Type

Cuttings Sample

Depth (ft)	GRAPHIC	DESCRIPTION	REMARKS	Sample
0		Moist, brown, silty, coarse-grained SAND		
10		Moist, brown to lt. brown, silty SAND with gravel/smooth cobbles up to 2"		
24		Sampling terminated at 24' bgs. Boring continues to 28' bgs		

Depth scale: 0, 5, 10, 15, 20, 25, 30

Probe1: MW-6Rs
Probe2: MW-6Rd



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A P P E N D I X

GENERALIZED SOIL LOGS

The generalized soil logs for the extraction wells, monitor wells and condensate traps are based on drill cuttings and other observations during construction activities. The soils have been classified visually in general accordance with ASTM D-2487-83.

GENERALIZED EXTRACTION WELL SOIL LOGS

EW-1	0 - 25 FEET	BROWN SILT AND SANDY SILT WITH PIECES OF CONCRETE
	25 - 38 FEET	BROWNISH-GRAY FINE TO COARSE SAND WITH GRAVEL AND OCCASIONAL COBBLES
EW-2	0 - 9 FEET	BROWN SILT WITH PIECES OF CONCRETE
	9 - 33 FEET	LAYERS OF SILTY FINE TO MEDIUM SAND WITH GRAVEL AND OCCASIONAL COBBLES AND LANDFILL DEBRIS (DOMESTIC)
	33 - 35 FEET	BROWN SILTY FINE TO MEDIUM SAND WITH GRAVEL AND OCCASIONAL COBBLES
EW-3	0 - 13 FEET	BROWN SILTY FINE TO MEDIUM SAND WITH OCCASIONAL GRAVEL, COBBLES, RED BRICK AND CONCRETE
	13 - 33 FEET	DARK GRAY SILT WITH LANDFILL DEBRIS (WOOD AND DOMESTIC WASTE)
	33 - 41 FEET	BROWN GRADING TO GRAY SILTY FINE TO MEDIUM SAND WITH A TRACE OF GRAVEL
EW-4	0 - 15 FEET	BROWN SILTY FINE TO MEDIUM SAND WITH GRAVEL AND OCCASIONAL COBBLES AND WOOD WASTE
	15 - 18 FEET	LOG OR TREE STUMP
	18 - 40 FEET	GRAY SILTY FINE TO MEDIUM SAND WITH GRAVEL AND OCCASIONAL COBBLES
EW-5	0 - 6 FEET	BROWN SILTY FINE TO MEDIUM SAND WITH GRAVEL AND OCCASIONAL COBBLES
	6 - 7 FEET	LANDFILL DEBRIS (PRIMARILY DOMESTIC WASTE)
	7 - 42 FEET	GRAY SILTY FINE TO MEDIUM SAND WITH GRAVEL AND OCCASIONAL COBBLES
EW-6	0 - 40 FEET	BROWN SILTY FINE TO MEDIUM SAND WITH GRAVEL AND COBBLES GRADES TO GRAY AT 5 FEET

EW-7	0 - 42 FEET	BROWN FINE TO MEDIUM SAND WITH SILT AND GRAVEL GRADES TO GRAY AT 5 FEET
EW-8	0 - 3 FEET	BROWN SILTY FINE TO MEDIUM SAND WITH OCCASIONAL GRAVEL AND COBBLES
	3 - 5 FEET	LANDFILL DEBRIS (DOMESTIC WASTE) WITH SILTY SAND
	5 - 40 FEET	GRAY SILTY FINE TO MEDIUM SAND WITH OCCASIONAL GRAVEL AND COBBLES
EW-9	0 - 1 FEET	BROWN SILTY FINE TO MEDIUM SAND WITH GRAVEL
	1 - 21 FEET	GRAY SILTY FINE TO MEDIUMS AND WITH LANDFILL DEBRIS
	21 - 37 FEET	GRAY SILTY FINE TO MEDIUM SAND WITH GRAVEL
EW-10	0 - 9 FEET	SILTY SAND WITH GRAVEL
	9 - 31 FEET	LANDFILL DEBRIS (DOMESTIC WASTE)
EW-11	0 - 19 FEET	SILTY SAND WITH GRAVEL
	19 - 32 FEET	LANDFLL DEBRIS (DOMESTIC WASTE)
EW-12	0 - 3 FEET	BROWN SILTY FINE TO MEDIUM SAND WITH GRAVEL
	3 - 20 FEET	GRAY SILTY FINE TO MEDIUM SAND WITH GRAVEL AND OCCASIONAL CONCRETE AND RED BRICK
	20 - 30 FEET	GRAY SILTY FINE TO MEDIUM SAND WITH GRAVEL AND LANDFILL DEBRIS (DOMESTIC WASTE)
	30 - 35 FEET	GRAY SILTY FINE TO MEDIUM SAND WITH A TRACE OF GRAVEL
EW-13	0 - 15 FEET	BROWN SILTY FINE TO MEDIUM SAND WITH OCCASIONAL GRAVEL AND COBBLES
	15 - 20 FEET	DARK GRAY SILTY FINE TO MEDIUM SAND AND LANDFILL DEBRIS (WOOD WASTE)
	20 - 30 FEET	GRAY GRAVELLY FINE TO COARSE SAND WITH A TRACE OF SILT
	30 - 38 FEET	BROWN MEDIUM TO COARSE SAND WITH A TRACE OF GRAVEL AND COBBLES

EW-14	0 - 8 FEET	BROWN SILTY FINE TO MEDIUM SAND WITH OCCASIONAL GRAVEL AND COBBLES
	8 - 25 FEET	LANDFILL DEBRIS (DOMESTIC WASTE)
	25 - 30 FEET	BROWN SILTY FINE TO MEDIUM SAND WITH OCCASIONAL GRAVEL
	30 - 35 FEET	GRAY GRAVELLY MEDIUM TO COARSE SAND
	35 - 39 FEET	GRAY SILTY GRAVEL WITH SAND
EW-15	0 - 3 FEET	PIT RUN FILL
	3 - 13 FEET	DARK GRAY SILTY SAND WITH LANDFILL DEBRIS
	13 - 30 FEET	GRAY SILTY FINE TO MEDIUM SAND WITH GRAVEL AND SOME LANDFILL DEBRIS
	30 - 38 FEET	GRAY FINE TO COARSE SAND WITH GRAVEL SLOW GROUND WATER SEEPAGE AT 3 FEET
EW-16	0 - 5 FEET	GRAY GRAVELLY FINE TO COARSE SAND WITH SILT
	5 - 13 FEET	DARK BROWN TO BLACK SILT AND LANDFILL DEBRIS (DOMESTIC WASTE)
	13 - 28 FEET	GRAY SILTY GRAVELLY FINE TO MEDIUM SAND
	28 - 35 FEET	GRAY FINE TO COARSE SAND WITH GRAVEL AND A TRACE OF SILT
	35 - 37 FEET	BROWN FINE TO MEDIUM SAND WITH A TRACE OF GRAVEL
EW-17	0 - 8 FEET	BROWN SILTY FINE TO MEDIUM SAND WITH GRAVEL AND TREE ROOTS
	8 - 19 FEET	BROWNISH-GRAY FINE TO MEDIUM SAND WITH GRAVEL, OCCASIONAL COBBLES AND A TRACE OF SILT
	19 - 24 FEET	BROWNISH-GRAY SANDY GRAVEL WITH COBBLES
	24 - 37 FEET	BROWNISH-GRAY SILTY FINE TO MEDIUM SAND WITH GRAVEL AND COBBLES
	37 TO 39 FEET	GRAY FINE TO COARSE SAND WITH A TRACE OF SILT
EW-18	0 - 3 FEET	PIT RUN FILL
	3 - 24 FEET	BROWNISH-GRAY FINE TO MEDIUM SAND WITH GRAVEL AND A TRACE OF SILT
	24 - 25 FEET	GRAVEL AND COBBLES
	25 - 38 FEET	BROWNISH-GRAY FINE TO MEDIUM SAND WITH GRAVEL AND A TRACE OF SILT

EW-19	0 - 2 FEET	BROWN SILTY FINE TO MEDIUM SAND WITH GRAVEL
	2 - 15 FEET	DARK GRAY SILTY FINE TO MEDIUM SAND WITH PIECES OF CONCRETE AND ASPHALT
	15 - 36 FEET	DARK GRAY SILTY FINE TO MEDIUM SAND WITH LAYERS OF LANDFILL DEBRIS (DOMESTIC WASTE)
EW-20	0 - 7 FEET	BROWN GRAVELLY FINE TO MEDIUM SAND WITH SILT
	7 - 27 FEET	LAYERS OF GRAY SILTY FINE TO MEDIUM SAND WITH GRAVEL, OCCASIONAL COBBLES AND LANDFILL DEBRIS (DOMESTIC WASTE)
	27 - 33 FEET	GRAY SILTY FINE TO MEDIUM SAND GROUND WATER ENCOUNTERED AT 33 FEET
EW-21	0 - 2 FEET	BROWN FINE TO MEDIUM SAND WITH GRAVEL
	2 - 9 FEET	GRAY SILTY FINE TO MEDIUM SAND WITH GRAVEL AND OCCASIONAL COBBLES
	9 - 19 FEET	DARK GRAY SILTY FINE TO MEDIUM SAND WITH LAYERS OF LANDFILL DEBRIS (DOMESTIC)
	19 - 40 FEET	BROWNISH-GRAY SILTY FINE TO MEDIUM SAND WITH GRAVEL

GENERALIZED MONITOR WELL SOIL LOGS

MW-1	0 - 34 FEET	BROWN FINE TO MEDIUM SAND WITH GRAVEL, A TRACE OF SILT AND OCCASIONAL COBBLES NO GROUND WATER OBSERVED ATD
MW-2	0 - 29 FEET	BROWN FINE TO MEDIUM SAND WITH GRAVEL AND COBBLES AND A TRACE OF SILT
	29 - 32 FEET	BROWN AND GRAY CLAYEY SILT
	32 - 35 FEET	GRAY FINE TO MEDIUM SAND WITH A TRACE OF GRAVEL GROUND WATER LEVEL AT 31 FEET ATD
MW-3	0 - 10 FEET	SILTY SAND AND PIECES OF CONCRETE
	10 - 27 FEET	SILTY SAND WITH GRAVEL
	27 - 30 FEET	LANDFILL DEBRIS (DOMESTIC)
	30 - 43.5 FEET	SILTY SAND WITH GRAVEL NO GROUND WATER OBSERVED ATD
MW-4	0 - 20 FEET	BROWN SILTY SAND WITH GRAVEL AND COBBLES, ABUNDENT ROOTS FROM 15 TO 20 FEET
	20 - 44.5 FEET	GRAY SILTY SAND WITH GRAVEL GROUND WATER LEVEL AT 35 FEET ATD

MW-5	0 - 9 FEET	BROWN SILTY SAND WITH GRAVEL
	9 - 25 FEET	GRAY SILTY SAND WITH A TRACE OF GRAVEL
	25 - 31 FEET	GRAY SAND WITH SILT GROUND WATER LEVEL AT 25 FEET ATD
MW-6	0 - 2 FEET	SILTY SAND WITH GRAVEL
	2 - 38 FEET	GRAY SILTY SAND WITH GRAVEL AND COBBLES
	38 - 45 FEET	GRAY SAND WITH SILT GROUND WATER AT 28 FEET ATD
MW-7	0 - 32 FEET	SILTY SAND WITH GRAVEL
	32 - 41.5 FEET	GRAY SILTY SAND WITH GRAVEL AND SAND WITH SILT GROUND WATER LEVEL AT 34 FEET ATD
MW-8	0 - 48 FEET	GRAY FINE SAND WITH SILT AND A TRACE OF GRAVEL AND OCCASIONAL COBBLES GROUND WATER LEVEL AT 46 FEET ATD
MW-9	0 - 4 FEET	BROWN SILTY SAND WITH GRAVEL
	4 - 22 FEET	GRAY MEDIUM SAND WITH SILT AND A TRACE OF GRAVEL
	22 - 27 FEET	GRAY AND BROWN MEDIUM SAND WITH GRAVEL AND COBBLES NO GROUND WATER OBSERVED ATD
MW-10	0 - 2 FEET	BROWN SILTY SAND WITH GRAVEL AND ROOTS
	2 - 12.5 FEET	GRAY AND BROWN MEDIUM TO COARSE SAND WITH GRAVEL AND OCCASIONAL COBBLES NO GROUND WATER OBSERVED ATD
MW-11	0 - 2 FEET	BROWN SILTY SAND WITH GRAVEL AND ROOTS
	2 - 12 FEET	GRAY AND BROWN MEDIUM TO COARSE SAND WITH GRAVEL AND OCCASIONAL COBBLES NO GROUND WATER OBSERVED ATD
MW-12	0 - 6 FEET	BROWN SILTY SAND WITH GRAVEL
	6 - 34 FEET	GRAY MEDIUM TO COARSE SAND WITH SILT AND GRAVEL AND OCCASIONAL COBBLES
	34 - 41 FEET	GRAY MEDIUM TO COARSE SAND WITH GRAVEL AND COBBLES GROUND WATER LEVEL AT 36 FEET ATD
MW-13	0 - 25 FEET	GRAY SILTY SAND WITH GRAVEL AND COBBLES
	25 - 32 FEET	BROWN SAND WITH SILT AND GRAVEL
	32 - 48 FEET	BROWN MEDIUM TO COARSE SAND WITH A TRACE OF GRAVEL AND OCCASIONAL COBBLES SLIGHT SEEPAGE ENCOUNTERED IN UPPER HALF OF BORING ATD

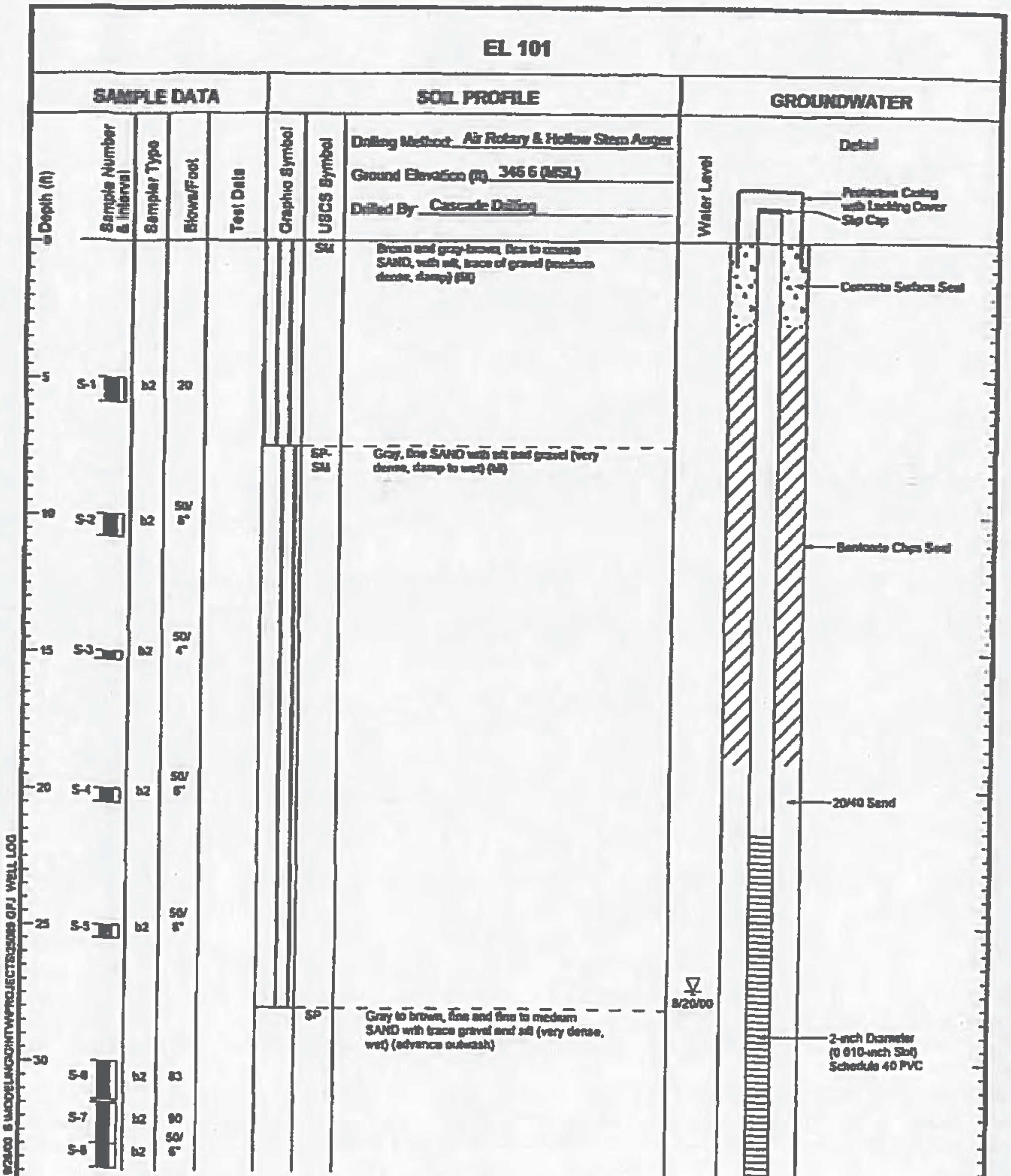
MW-14	0 - 20 FEET	GRAY MEDIUM SAND WITH SILT, GRAVEL AND COBBLES
	20 - 31 FEET	GRAY SILTY SAND WITH GRAVEL
	31 - 45 FEET	BROWN MEDIUM TO COARSE SAND WITH A TRACE OF GRAVEL SLIGHT SEEPAGE AT VARIOUS DEPTHS ATD
MW-15	0 - 20 FEET	GRAY MEDIUM SAND WITH SILT, GRAVEL AND COBBLES
	20 - 35 FEET	GRAY SILTY SAND WITH GRAVEL
	35 - 41 FEET	BROWN MEDIUM TO COARSE SAND GROUND WATER SEEPAGE OBSERVED FROM 4 TO 16 FEET AND 36 TO 41 FEET ATD
MW-16	0 - 3 FEET	BROWN MEDIUM SAND WITH GRAVEL
	3 - 24 FEET	BROWN AND GRAY SILTY SAND WITH GRAVEL
	24 - 46.5 FEET	BROWN MEDIUM SAND WITH GRAVEL AND COBBLES MODERATE SEEPAGE OBSERVED AT 6 FEET ATD
MW-17	0 - 6 FEET	BROWN SILTY SAND WITH GRAVEL
	6 - 25 FEET	GRAY SILTY SAND WITH GRAVEL AND OCCASIONAL COBBLES
	25 - 44.5 FEET	BROWN FINE TO MEDIUM SAND WITH GRAVEL AND OCCASIONAL COBBLES SEEPAGE OBSERVED AT 6 FEET ATD
MW-18	0 - 3 FEET	BROWN MEDIUM SAND
	3 - 25 FEET	BROWN SILTY SAND WITH GRAVEL AND OCCASIONAL COBBLES NO GROUND WATER OBSERVED ATD

GENERALIZED CONDENSATE TRAP SOIL LOGS

CT-1	0 - 5	SILTY SAND WITH GRAVEL
	5 - 10 FEET	SILTY SAND AND LANDFILL DEBRIS (DOMESTIC WASTE)
	10 - 18 FEET	SILTY SAND WITH GRAVEL
CT-2	0 - 9 FEET	SILTY SAND WITH GRAVEL
	9 - 15 FEET	LANDFILL DEBRIS (DOMESTIC WASTE)
CT-3	0 - 8 FEET	SILTY SAND WITH GRAVEL
	8 - 16 FEET	LANDFILL DEBRIS (DOMESTIC WASTE)
	16 - 20 FEET	SILTY SAND WITH GRAVEL

CT-4	0 - 10 FEET	BROWN SILTY FINE TO MEDIUM SAND WITH GRAVEL AND OCCASIONAL COBBLES
	10 - 13.5 FEET	LANDFILL DEBRIS (WOOD WASTE)
	13.5 - 20 FEET	GRAY SILTY FINE TO MEDIUM SAND WITH GRAVEL
CT-5	0 - 13 FEET	BROWN SILTY FINE TO MEDIUM SAND WITH GRAVEL AND OCCASIONAL COBBLES AND CONCRETE
	13 - 17 FEET	DARK GRAY SILTY FINE TO MEDIUM SAND AND LAYERS OF LANDFILL DEBRIS (DEMOLITION AND DOMESTIC)
CT-6	0 - 6 FEET	BROWN SILTY FINE TO EMDIUM SAND WITH GRAVEL
	6 - 21 FEET	DARK GRAY SILTY FINE TO MEDIUM SAND WITH LAYERS OF LANDFILL DEBRIS (DOMESTIC WASTE)
CT-7	0 - 5 FEET	SILTY SAND WITH GRAVEL
	5 - 15 FEET	SILTY SAND AND LANDFILL DEBRIS (DOMESTIC WASTE)
CT-8	0 - 3 FEET	SILTY SAND WITH GRAVEL
	3 - 18 FEET	LANDFILL DEBRIS (DOMESTIC WASTE)
CT-9	0 - 11 FEET	BROWN SILTY FINE TO MEDIUM SAND WITH GRAVEL
	11 - 16 FEET	DARK GRAY SILTY FINE TO MEDIUM SAND WITH LANDFILL DEBRIS
	16 - 17 FEET	GRAY SILTY FINE TO MEDIUM SAND WITH GRAVEL
CT-10	0 - 15 FEET	SILTY SAND WITH GRAVEL
	15 - 17 FEET	LANDFILL DEBRIS (DOMESTIC WASTE)
CT-11	0 - 12 FEET	SILTY SAND WITH GRAVEL
	12 - 16 FEET	LANDFILL DEBRIS (DOMESTIC WASTE)
CT-12	0 - 5 FEET	BROWN SILTY FINE TO MEDIUM SAND WITH GRAVEL
	5 - 13 FEET	GRAY SILTY FINE TO MEDIUM SAND WITH LAYERS OF LANDFILL DEBRIS
	13 - 18 FEET	BROWNISH-GRAY SILTY FINE TO MEDIUM SAND WITH GRAVEL AND OCCASIONAL COBBLES
CT-13	0 - 5 FEET	SILTY SAND WITH GRAVEL
	5 - 15 FEET	LANDFILL DEBRIS (DOMESTIC WASTE)
	15 - 17 FEET	SILTY SAND WITH GRAVEL

EL 101



Notes
1. Stratigraphic contacts are based on field interpretations and are approximate
2. Reference to the text of the report is necessary for a proper understanding of subsurface conditions
3. Refer to Soil Classification System and Key figure for explanation of graphics and symbols

Log of Boring and EL 101

Figure A-2
(1 of 2)

EL 101

Drilling Method: Air Rotary & Hollow Stem Auger
Ground Elevation (ft): 345 6 (MSL)
Drilled By: Cascade Drilling

SAMPLE DATA / SOIL PROFILE

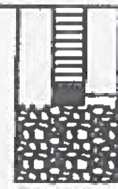
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Description
35	S-9	b2	57			SP	Gray to brown, fine and fine to medium SAND with trace gravel and silt (very dense, wet) (advance outwash)
	S-10	b2	50/ 0 5"				
	S-11	b2	50/ 0 5"				
	S-12	b2	58				
40	S-13	b2	50				
	S-14	b2	85			SP-SM	Gray to gray-brown, silty, fine and fine to medium fine SAND with fine gravel (very dense, damp to moist) (advance outwash)
	S-15	b2	50/ 4"				
45	S-16	b2	83/ 11"				
50	S-17	b2	50/ 4"				
	S-18	b2	50/ 4"				
55	S-19	b2	50/ 6"			GM	Gray to gray-brown silty sandy GRAVEL (very dense, damp to wet) (advance outwash)
	S-20	b2	65/ 3"				
60							
65							

Boring Completed 07/07/00
Total Depth of Boring = 58 3 ft.

GROUNDWATER

Water Level

Detail



Completed 07/18/00
Elevation at Top of Protective Casing = 349 97 ft.
Elevation at Top of Casing = 349 58 ft
Total Depth of = 36 6 ft.

Notes
1. Stratigraphic contacts are based on field interpretations and are approximate
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions
3. Refer to Soil Classification System and Key figure for explanation of graphics and symbols

25068 015 9/26/00 S:\MODELING\GNTW\PROJECT\25068.GPJ WELL LOG

Log of Boring and EL 101

Figure A-2
(2 of 2)

EL 102

SAMPLE DATA / SOIL PROFILE / GROUNDWATER

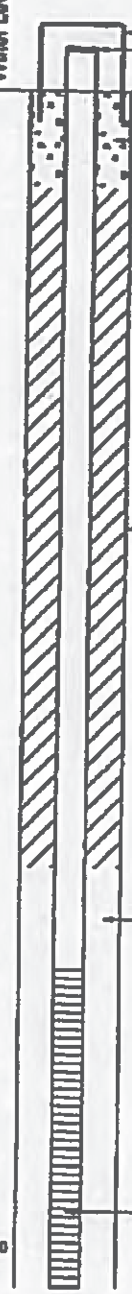
Drilling Method: Hollow-stem Auger

Ground Elevation (ft): 350.3 (MSL)

Drilled By: Cascade Drilling

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Description	Water Level
0						SM	Light brown, gravelly silty fine SAND (very dense, damp) (weathered till)	
	S-1	b2	50/ 5"					
5								
						SM	Gray to brown, silty fine SAND with gravel (dense, moist to damp) (till)	
	S-2	b2	74/ 11"					
10								
	S-3	b2	50/ 6"					
15								
	S-4	b2	50/ 5"					
20								
						SP	Gray, fine to medium SAND with gravel (very dense, moist to wet) (advance sand)	
	S-5	b2	50/ 6"					
25								
	S-6	b2	50/ 5"					
30								
	S-7	b2	50/ 6"					
35								8/20/00

Detail



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions
3. Refer to Soil Classification System and Key figure for explanation of graphics and symbols

25096 018 9/28/00 S:\MODELING\GHT\PROJECTS\25096.GPJ WELL LOG

Log of Boring and EL 102

Figure A-3
(1 of 2)

EL 102

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Soil Profile	Water Level
	S-8	S2	50/ 5"			SP	Gray, fine to medium SAND with gravel (very dense, moist to wet) (advance sand) -with trace silt	
40								
	S-9	S2	50/ 4"			SP-SM	Gray, fine to medium SAND with gravel and silt (very dense, wet) (advance sand)	
45								
50								
55								
60								
65								
70								

SAMPLE DATA / **SOIL PROFILE** / **GROUNDWATER**

Drilling Method: Hollow-stem Auger

Ground Elevation (ft): 350.3 (MSL)

Drilled By: Cascade Drilling

Boring Completed 07/20/00
Total Depth of Boring = 43.9 ft

Detail

Completed 07/20/00
Elevation at Top of Protective Casing = 353.24 ft.
Elevation at Top of Casing = 352.83 ft.
Total Depth of = 42.7 ft

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to Soil Classification System and Key figure for explanation of graphics and symbols.

Log of Boring and EL 102

Figure A-3
(2 of 2)

EL 103

SAMPLE DATA

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data
	S-1	b2	17	
5	S-2	b2	4	
	S-3	b2	12	
10	S-4	b2	12	
	S-5	b2	50/ 6"	
15	S-6	b2	50/ 5"	
	S-7	b2	50/ 4"	
25	S-8	b2	38	

Boring Completed 07/21/00
Total Depth of Boring = 26.5 ft.

SOIL PROFILE

Drilling Method: Hollow-stem Auger

Ground Elevation (ft): 308.2 (MSL)

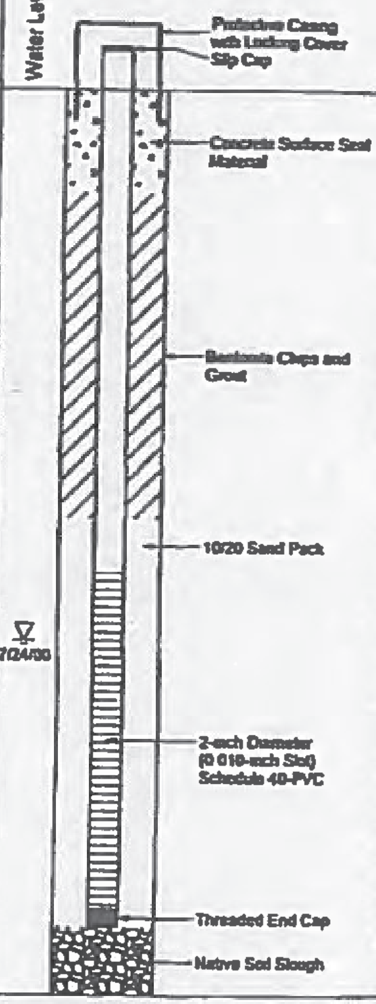
Drilled By: Cascade Drilling

USCS Symbol	Description
SM	Brown and gray mottled, gravelly, silty, fine to medium SAND with trace charcoal-like material (medium dense, moist to wet) (fill)
SM	Brown to dark gray, gravelly, silty, fine to medium SAND with some refuse (brown glass, yellow type print paper, and some wood) (very loose to loose, wet) (mottled fill)
SM/ML	Dark brown to gray mottled, gravelly, fine to medium sandy SILT with trace refuge (plastic, wood, aluminum can) (stiff, wet) (fill)
ML	Light brown to gray-green, clayey SILT, faintly laminated with trace fine roots (stiff, moist to wet) (alluvium)
SP	Gray, fine SAND with gravel with interbedded fine to medium SAND with silt and gravel (very dense, wet)(advance sand)
	-dense

GROUNDWATER

Water Level: 7/24/00

Detail



Completed 07/21/00
Elevation at Top of Protective Casing = 310.75 ft
Elevation at Top of Casing = 310.07 ft
Total Depth of = 24.5 ft

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to Soil Classification System and Key figure for explanation of graphics and symbols.

Log of Boring and EL 103

Figure A-4

EL 104

SAMPLE DATA

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data
~4	S-1	b2	11	
~9	S-2	b2	21	
~14	S-3	b2	14	
~19	S-4	b2	38	
~24	S-5	b2	46	
~28	S-6	b2	88	
~34	S-7	b2	50/ 6"	

SOIL PROFILE

Drilling Method: Hollow-stem Auger

Ground Elevation (ft): 343.1 (MSL)

Drilled By: Cascade Drilling

USCS Symbol	Description
SM	Brown, very silty fine SAND with gravel and fine sandy SILT with gravel (medium dense, moist to wet) (fill)
SM	Gray and mottled brown and dark brown, gravelly, silty, fine to medium SAND with trace fine organics (medium dense, moist to wet) (fill)
SM	Light reddish-brown and gray, gravelly, silty fine SAND (medium dense to dense, moist)(fill)
SP-SM	Brown, gravelly, fine to medium SAND with silt (dense, moist) (fill)
SP-SM	Brown to light reddish-brown, gravelly, fine to medium SAND with silt to silty, gravelly, fine SAND (dense, moist) (fill)
SP-SM	Brown, gravelly, fine to medium SAND with silt (very dense, moist) (advance outwash)

GROUNDWATER

Water Level

Detail

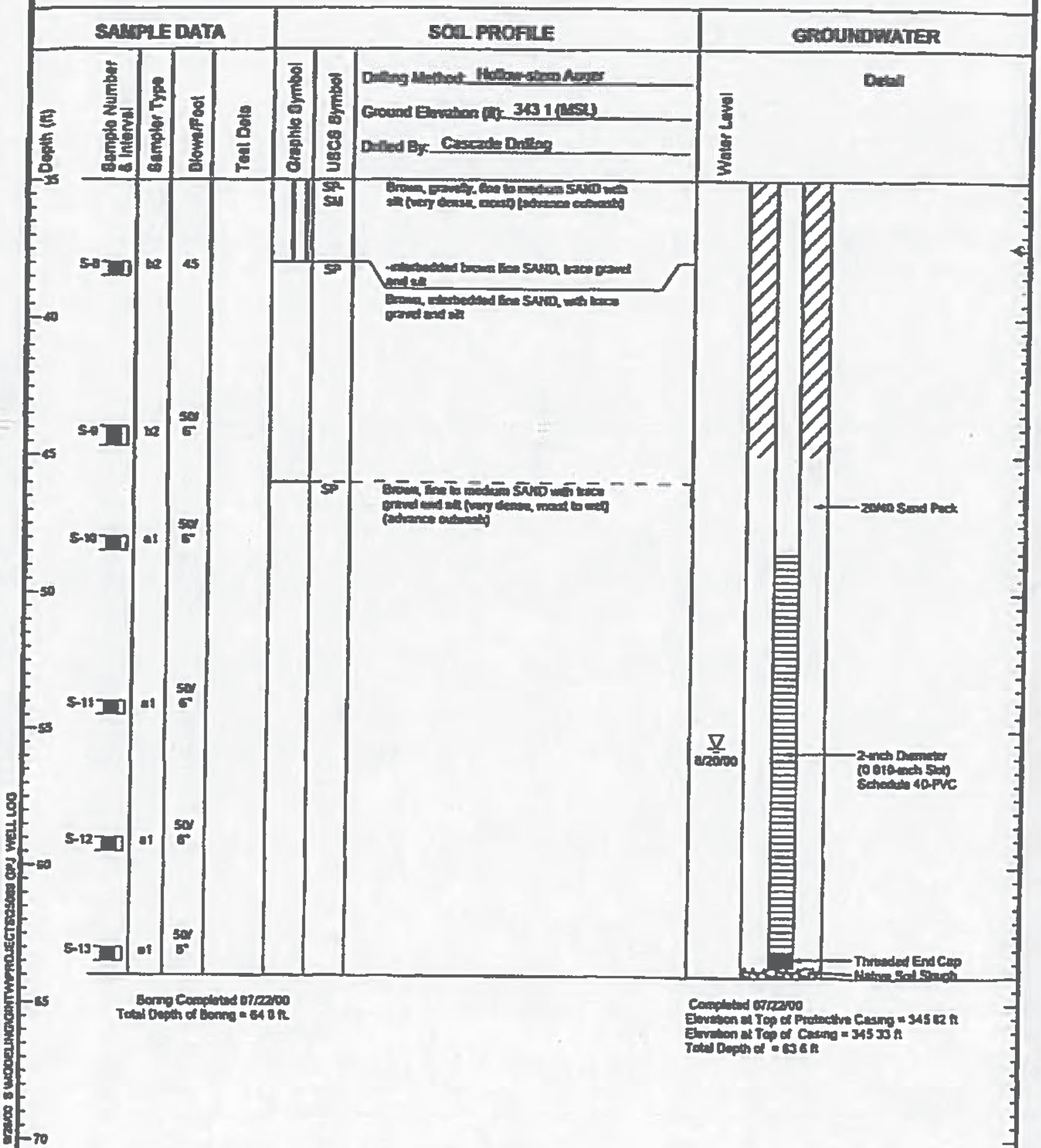
Notes
1 Stratigraphic contacts are based on field interpretations and are approximate.
2 Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3 Refer to Soil Classification System and Key figure for explanation of graphics and symbols

25089 015 9/28/00 S:\MODELING\NTWPROJECT\25089 (GPJ) WELL LOG

Log of Boring and EL 104

Figure A-5
(1 of 2)

EL 104



Notes

1. Stratigraphic contacts are based on field interpretations and are approximate
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions
3. Refer to Soil Classification System and Key figure for explanation of graphics and symbols

Log of Boring and EL 104	Figure A-5 (2 of 2)

EL 105

SAMPLE DATA

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data
5	S-1	b2	50/ 6"	
10	S-2	a1	50/ 4"	
15	S-3	a1	50/ 5"	
20	S-4	a1	50/ 4"	
25	S-5	a1	50/ 4"	
30	S-6	a1	50/ 5"	
35	S-7	a1	50/ 5"	

SOIL PROFILE

Drilling Method: Hollow-stem Auger

Ground Elevation (ft): 344.1 (MSL)

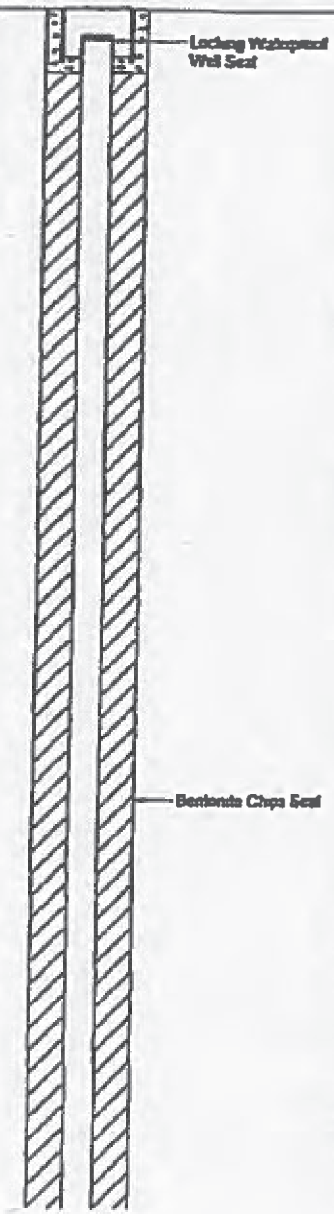
Drilled By: Cascade Drilling

USCS Symbol	Description
AC	Asphalt pavement
SP-SM	Light brown, gravelly, silty, fine SAND, to silty, gravelly, fine to medium SAND (very dense, damp to wet) (fill)
SW SP	Brown to light brown, very gravelly to gravelly, fine to course SAND to fine to medium SAND (very dense, moist to wet) (advance outwash)

GROUNDWATER

Water Level

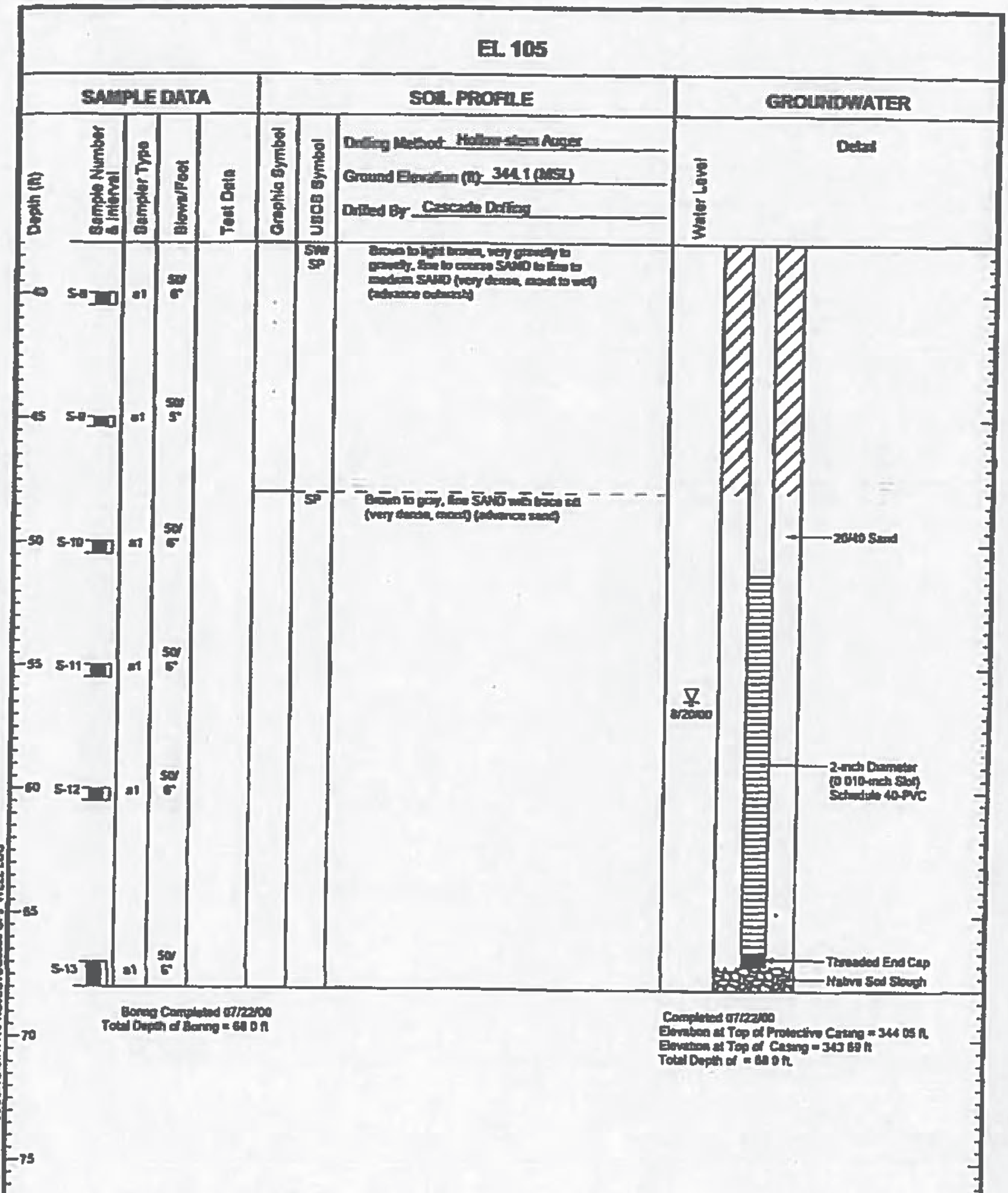
Detail



Notes
1. Stratigraphic contacts are based on field interpretations and are approximate
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions
3. Refer to Soil Classification System and Key figure for explanation of graphics and symbols

Log of Boring and EL 105

Figure A-8 (1 of 2)



Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to Soil Classification System and Key figure for explanation of graphics and symbols.

25088 018 8/28/00 S:\MODELING\GNTW\PROJECTS\25088 (JP) WELL LOG

Log of Boring and EL 105

Figure A-6
(2 of 2)

EL 106

SAMPLE DATA | **SOIL PROFILE** | **GROUNDWATER**

Drilling Method: Hollow-stem Auger

Ground Elevation (ft): 343.4 (MSL)

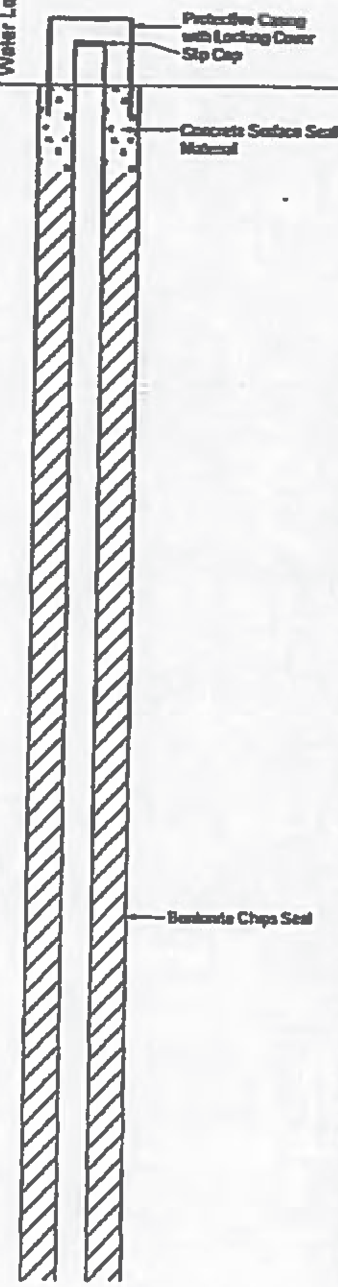
Drilled By: Cascade Drilling

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data
5	S-1	b2	50/ 5"	
10	S-2	b2	50/ 5"	
15	S-3	b2	65/ 5"	
20	S-4	b2	60/ 5"	
25	S-5	b2	70/ 6"	
30	S-6	b2	75/ 4"	
35	S-7	b2	70/ 6"	
40	S-8	b2	75/ 5"	

Graphic Symbol	USCS Symbol	Description
	SM	Dark gray, gravelly, silty, fine to medium SAND (very dense, moist) (fill) with trace fine roots and trace charcoal?
		-increasing SAND, and decreasing SILT
	SP/ SM	Gray to gray-brown, gravelly, silty, fine to medium SAND to silty, gravelly, fine to medium SAND (very dense, moist to wet) (till)
	SW-SM	Brown, gravelly fine to course SAND with silt (very dense, moist to wet) (advance outwash)

Water Level

Detail



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to Soil Classification System and Key figure for explanation of graphics and symbols.

25088 015 8/29/00 S:\MODELING\GINT\PROJECTS\25088.GPJ WELL LOG

Log of Boring and EL 106

Figure A-7
(1 of 2)

EL 106

SAMPLE DATA

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data
45	S-9	b2	N/A	
50	S-10	b2	50/ 5"	
55	S-11	b2	50/ 6"	
60	S-12	b2	50/ 5"	
65	S-13	b2	40	
70	S-14	b2	70	
75	S-15	b2	50/ 6"	

SOIL PROFILE

Drilling Method: Hollow-stem Auger

Ground Elevation (ft): 343.4 (MSL)

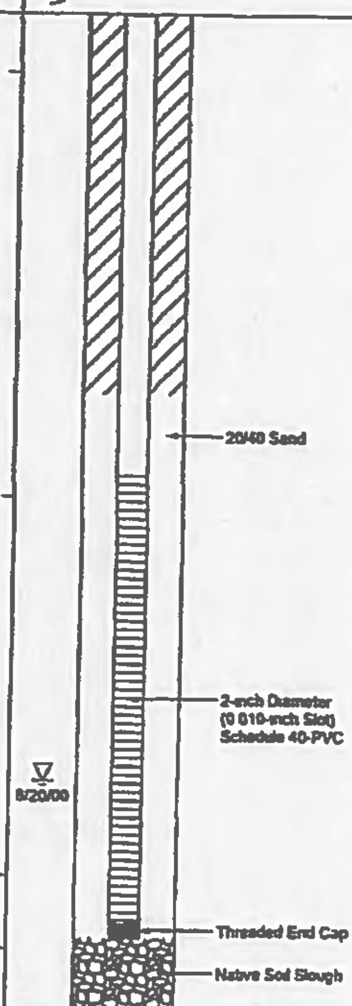
Drilled By: Cascade Drilling

USCS Symbol	Description
SW-SM	Brown, gravelly fine to coarse SAND with silt (very dense, moist to wet) (advance outwash)
SP	Brown, fine to medium SAND with trace fine gravel and coarse sand (very dense, moist to wet) (advance outwash)
SP	Brown, fine SAND with trace silt (dense to very dense, moist to wet) (advance outwash)
SP-SM	Brown, gravelly, fine to medium SAND with silt (very dense, wet) (advance outwash)
SM	Reddish-brown and gray, SILT with fine sand and clay, thin interbedded (very dense, wet) (lacustrine outwash)

Boring Completed 07/21/00
Total Depth of Boring = 75.5 ft.

GROUNDWATER

Water Level | Detail



Completed 07/21/00
Elevation at Top of Protective Casing = 346.21 ft.
Elevation at Top of Casing = 345.55 ft.
Total Depth of = 72.8 ft.

Notes
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to Soil Classification System and Key figure for explanation of graphics and symbols.

Log of Boring and EL 106

Figure A-7 (2 of 2)

PROPOSED I-90/BELLEVUE BUSINESS PARK

BELLEVUE, WASHINGTON PROJECT 78059

FIGURE 2

TP-1-78

TEST PIT 1 (EL. 332±)

DEPTH, FEET	
0.0 - 1.0	LOOSE BROWN SILTY SAND WITH SOME TO TRACE GRAVEL (MOIST) (FILL)
1.0 - 1.5	LOOSE GRAY SILTY SAND WITH SOME GRAVEL (WET) (FILL)
1.5 - 13.0	HOUSEHOLD GARBAGE MIXED WITH SILTY SAND WITH SOME GRAVEL AND LIMBS (WET) (MODERATE TO STRONG ODOR)
	NO GROUNDWATER OBSERVED

TP-2-78

TEST PIT 2 (EL. 312±)

DEPTH, FEET	
0.0 - 3.5	LOOSE BROWN SILTY FINE SAND WITH TRACE GRAVEL (MOIST) (FILL) SMALL TREES ON CONTACT
3.5 - 8.0	MEDIUM DENSE TO DENSE GRAY SILTY SAND WITH SOME GRAVEL TO GRAVELLY SILTY SAND (WET) (FILL)
8.0 - 9.5	MEDIUM DENSE GRAY CLEAN GRAVELLY SAND (WET) (FILL)
	STICKS AT CONTACT
9.5 - 12.5	MEDIUM DENSE BROWN SILTY SAND WITH TRACE TO SOME GRAVEL (WET)
12.5- 14.0	FIRM BROWN AND GRAY MOTTLED SILTY FINE SAND (WET) (BADLY WEATHERED TILL?)
	GROUNDWATER SEEPAGE AT 3.0 AND 14.0 FEET LIGHT ODOR

bucknam associates

LOGS OF TEST PITS

TP-3-78

TEST PIT 3 (EL. 309±)

DEPTH, FEET	
0.0 - 1.5	LOOSE TO VERY LOOSE DARK BROWN SILTY SAND WITH ROOTS (MOIST) (TOPSOIL AND THIN FOREST DUFF LAYER)
1.5 - 4.0	MEDIUM DENSE TO DENSE GRAY AND BROWN MOTTLED SILTY SAND WITH TRACE TO SOME GRAVEL (MOIST WITH SOME WET ZONES) (WEATHERED TILL)
4.0 - 10.0	DENSE TO VERY DENSE GRAY SILTY SAND WITH TRACE TO SOME GRAVEL (MOIST) (GLACIAL TILL) NEAR- REFUSAL OF EXCAVATING EQUIPMENT AT 10.0 FEET
	NO GROUNDWATER OBSERVED

TP-4-78

TEST PIT 4 (EL. 329±)

DEPTH, FEET	
0.0 - 4.0	VERY SOFT TO SOFT BROWN FINE SANDY SILT TO SILTY FINE SAND WITH TRACE GRAVEL (WET) (FILL)
4.0 - 5.5	LOOSE TO MEDIUM DENSE DARK BROWN TO BLACK SILT AND SAND MIXED WITH CONCRETE AND ASPHALT RUBBLE (WET) (FILL)
5.5 - 7.0	CONCRETE RUBBLE
7.0 - 12.0	LOOSE BROWN SILTY SAND WITH TRACE TO SOME GRAVEL AND SCATTERED GARBAGE (WET) (FILL)
	NO GROUNDWATER OBSERVED SLIGHT TO MODERATE ODOR

TP-5-78

TEST PIT 5 (EL. 322±)

DEPTH, FEET	
0.0 - 1.0	LOOSE BROWN SILTY SAND WITH TRACE GRAVEL (WET) (FILL)
1.0 - 12.0	HOUSEHOLD GARBAGE MIXED WITH SILTY SAND LUMBER AND LIMBS (WET) (NEWSPAPER FROM 1963 STILL READABLE)

NO GROUNDWATER OBSERVED
STRONG ODOR

TP-6-78

TEST PIT 6 (EL. 333±)

DEPTH, FEET	
0.0 - 0.5	LOOSE BROWN SILTY SAND WITH TRACE GRAVEL (WET) (FILL)
0.5 - 1.5	LOOSE GRAY SILTY SAND WITH TRACE GRAVEL (WET) (FILL)
1.5 - 13.0	HOUSEHOLD GARBAGE MIXED WITH SAND, SILT, LIMBS AND LUMBER (WET) (1964 NEWSPAPER AT 3.0 FEET STILL READABLE)

VERY HEAVY GROUNDWATER FLOW AT 4.0 FEET, WATER DOES NOT POND IN BOTTOM OF TEST PIT

VERY STRONG ODOR

TEST PIT 7 (EL. 332±)

DEPTH, FEET	
0.0 - 0.2	PEA GRAVEL
0.2 - 5.5	LOOSE TO MEDIUM DENSE BROWN GRAVELLY SAND WITH SOME SILT (MOIST) (FILL)
5.5 - 12.0	HOUSEHOLD GARBAGE MIXED WITH SILTY SAND, LIMBS AND LUMBER (WET) (1962 NEWSPAPER STILL READABLE)

NO GROUNDWATER OBSERVED
STRONG ODOR

TP-8-78

TEST PIT 8 (EL. 329±)

DEPTH, FEET	
0.0 - 7.5	LOOSE TO MEDIUM DENSE BROWN SILTY SAND WITH TRACE TO SOME GRAVEL (MOIST) (FILL)
7.5 - 12.5	HOUSEHOLD GARBAGE MIXED WITH SILTY SAND, CAR PARTS AND OTHER DEBRIS (WET) (1963 NEWSPAPER STILL READABLE)
	MODERATE GROUNDWATER FLOW AT 8.0 FEET STRONG ODOR

TP-9-78

TEST PIT 9 (EL. 341±)

DEPTH, FEET	
0.0 - 0.2	SOD
0.2 - 2.0	LOOSE TO MEDIUM DENSE BROWN SILTY SAND OF SOME GRAVEL (MOIST) (WEATHERED TILL)
2.0 - 6.5	DENSE TO VERY DENSE GRAY WITH MINOR BROWN MOTTLING SILTY SAND WITH SOME GRAVEL (MOIST) (GLACIAL TILL)
	NO GROUNDWATER OBSERVED

TP-10-78

TEST PIT 10 (EL. 336±)

DEPTH, FEET	
0.0 - 0.5	FOREST DUFF
0.5 - 3.0	LOOSE TO MEDIUM DENSE BROWN SILTY SAND (MOIST)
3.0 - 8.0	LOOSE TO MEDIUM DENSE GRAY SAND WITH SOME LENSES OF HARD GRAY SANDY SILT (MOIST)
8.0 - 10.0	DENSE TO VERY DENSE GRAY SILTY SAND WITH SOME GRAVEL AND TRACE TO OCCASIONAL COBBLES (MOIST) (GLACIAL TILL)
	NO GROUNDWATER OBSERVED

TP-16-78

TEST PIT 16 (EL. 300±)

DEPTH, FEET	
0.0 - 0.4	SOD
0.4 - 2.5	MEDIUM DENSE BROWN SILTY SAND WITH SOME GRAVEL (MOIST) (WEATHERED TILL) SLIGHT GROUNDWATER SEEPAGE AT 2.5 FEET
2.5 - 5.0	MEDIUM DENSE GRAY SILTY SAND WITH SOME GRAVEL (MOIST) (WEATHERED TILL)
5.0 - 10.0	VERY DENSE GRAY SILTY SAND WITH SOME GRAVEL (MOIST) (GLACIAL TILL)

TP-17-78

TEST PIT 17 (EL. 314±)

DEPTH, FEET	
0.0 - 5.5	LOOSE BROWN SILTY SAND WITH SOME GRAVEL (WET) (FILL)
5.5 - 6.5	LOOSE GRAY GRAVELLY SILTY SAND TO GRAVELLY SAND WITH SOME SILT (MOIST) (FILL)
6.5 - 11.0	LOOSE TO MEDIUM DENSE BROWN SILTY SAND WITH SOME GRAVEL (MOIST)
11.0- 14.0	MEDIUM DENSE TO DENSE LIGHT BROWN TO GRAY SILTY SAND WITH SOME GRAVEL (MOIST) (WEATHERED TILL)

NO GROUNDWATER OBSERVED

PROPOSED I-90 /BELLEVUE BUSINESS PARK BELLEVUE, WASHINGTON PROJECT 78059	FIGURE 9

78-18-78

TEST PIT 18 (EL. 312±) -78

DEPTH, FEET

0.0 - 0.2	SOD
0.2 - 2.0	LOOSE GRAY AND BROWN LAYERED SILTY SAND WITH SOME GRAVEL (MOIST) (FILL)
2.0 - 3.5	LOOSE BROWN SILTY SAND AND STICKS MIXED WITH HOUSEHOLD GARBAGE (MOIST) (FILL)
3.5 - 5.0	LOOSE TO MEDIUM DENSE BROWN SILTY SAND WITH SOME GRAVEL (MOIST) (WEATHERED TILL)
5.0 - 12.0	DENSE TO VERY DENSE GRAY SILTY SAND WITH SOME GRAVEL (MOIST) (GLACIAL TILL)
	NO GROUNDWATER OBSERVED

78-19-78

TEST PIT 19 (EL. 330±) - 78

DEPTH, FEET

0.0 - 1.5	LOOSE BROWN AND GRAY LAYERED SILTY SAND WITH SOME GRAVEL (MOIST) (FILL)
1.5 - 12.0	HOUSEHOLD GARBAGE MIXED WITH BLUE-GRAY SILTY GRAVELLY SAND, LUMBER AND ASH (WET) (STRONG ODOR)
	MODERATE GROUNDWATER FLOW AT 7.0 TO 8.0 FEET

bucknam associates	LOGS OF TEST PITS

PROPOSED I-90/BELLEVUE BUSINESS PARK BELLEVUE, WASHINGTON PROJECT 78059	FIGURE 10

TP-20-78

TEST PIT 20 (EL. 341±) -78

DEPTH, FEET

0.0 - 0.2	SOD
0.2 - 1.5	LOOSE TO MEDIUM DENSE GRAY SILTY SAND WITH SOME GRAVEL TO GRAVELLY SILTY SAND (MOIST) (FILL)
1.5 - 3.0	HOUSEHOLD GARBAGE AND ASH (WET) (MODERATE ODOR)
3.0 - 4.0	MEDIUM DENSE LIGHT BROWN SILTY SAND WITH SOME GRAVEL (MOIST) (WEATHERED TILL)
4.0 - 9.0	DENSE TO VERY DENSE GRAY SILTY SAND WITH SOME GRAVEL (MOIST) (GLACIAL TILL)
	NO GROUNDWATER OBSERVED

TP-21-78

TEST PIT 21 (EL, 343±) -78

0.0 - 0.1	LOOSE BROWN SILTY SAND WITH SOME GRAVEL (WET) (WEATHERED TILL)
0.1 - 3.0	VERY DENSE GRAY SILTY SAND WITH SOME GRAVEL (MOIST) (GLACIAL TILL)
	NO GROUNDWATER OBSERVED

TP-22-78

TEST PIT 22 (EL. 338±) -78

DEPTH, FEET

0.0 - 2.0	LOOSE TO MEDIUM DENSE BROWN TO GRAY SILTY SAND WITH SOME GRAVEL (WET) (FILL)
2.0 - 12.0	HOUSEHOLD GARBAGE (WET) (STRONG ODOR)
	NO GROUNDWATER OBSERVED

bucknam associates	LOGS OF TEST PITS

TP-23-78

TEST PIT 23 (EL. 340±)

DEPTH, FEET	
0.0 - 0.3	SOD
0.3 - 2.5	LOOSE BROWN SILTY SAND WITH SOME GRAVEL AND "BEDROCK" CHUNKS TO 10 INCHES IN DIAMETER (WET) (FILL)
2.5 - 4.0	LOOSE GRAY SILTY SAND WITH SOME GRAVEL AND STICKS (MOIST) (FILL)
4.0 - 7.0	LOOSE TO MEDIUM DENSE TAN GRADING TO GRAY-BROWN SILTY SAND WITH SOME GRAVEL (MOIST) (WEATHERED TILL)
7.0 - 9.0	VERY DENSE GRAY SILTY SAND WITH SOME GRAVEL (MOIST) (GLACIAL TILL) NEAR-REFUSAL AT 9.0 FEET
	NO GROUNDWATER OBSERVED

TP-24-78

TEST PIT 24 (EL. 348±)

DEPTH, FEET	
0.0 - 2.5	LOOSE TO MEDIUM DENSE BROWN, SILTY SAND WITH SOME GRAVEL (WET TO MOIST) (WEATHERED TILL)
2.5 - 6.0	DENSE TO VERY DENSE GRAY SILTY SAND WITH SOME GRAVEL (MOIST) (GLACIAL TILL)
	NO GROUNDWATER OBSERVED

LOG OF BORING NO. B-1-94

Date drilled 10/19/94 | Sampler / Driving Weight SPT, 140 lb 30"/drop | Elevation (ft) 339.6

This log is part of the report prepared by Converse Consultants NW for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered.

Depth, ft	Elevation	Sample No.	Blows/6"	Graphic Symbol	DESCRIPTION	Monitoring Well	Dry density pcf	Moisture Content, %	Other Tests
					3 1/2 inch Asphalt Pavement				
					FILL GRAVEL; brown, trace silt, fine to coarse; moist				
					SILTY SAND; brown to gray mottled rust, little fine gravel; very dense, moist				
		1	11 15 46						
5	335	2	4 4 5		gray mottled brown, fine to coarse, trace fine gravel; loose				
		3	5 5 6		SILTY SAND WITH GRAVEL AND DEBRIS; brown, fine to coarse; medium dense, moist; with wood chips and glass				
10	330	4	4 5 6		layer of paper at depth 11 feet - 4 inches thick layer of wood chips and peat				
					ATD ▽				
		5	4 2 4		black, pieces of metal, paper, pieces of wire; loose, wet				
15	325	6	7 14 14		GRAVEL WITH DEBRIS; black, fine, debris consists of of rubber, metal and paper; medium dense, wet				
		7	4 5 7		wood fragments, tape and wood chips; medium dense, wet				
	320								

Continued Next Page

Parking Lot Subsidence Investigation

Bellevue, Washington

Boeing Computer Services

Project No. **94-35156-01**

LOG OF BORING NO. B-1-94

Date drilled 10/19/94 Sampler / Driving Weight SPT, 140 lb 30"/drop Elevation (ft) 339.6

This log is part of the report prepared by Converse Consultants NW for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered.

Depth, ft	Elevation	Sample No.	Blows/6"	Graphic Symbol	DESCRIPTION	Monitoring Well	Dry density pcf	Moisture Content, %	Other Tests
		8	3 4 4		SILTY SAND WITH DEBRIS; brown, fine to coarse, trace fine gravel with debris, wood chips, plastic; medium dense, wet layer of newspaper from a depth of 21 to 21-1/4 feet				
		9	3 5 7		SAND AND GRAVEL; brown mottled gray, little silt; medium dense, wet				
25	315	10	6 7 8		little to some silt				
		11	5 50 50		NATIVE DEPOSITS SILTY SAND AND GRAVEL; mottled brown, fine to coarse; very dense, moist				
30	310				Bottom of boring at depth 29 feet Boring backfilled with bentonite chips and concrete cap installed at the ground surface ATD = at the time of drilling				
35	305								
	300								

Parking Lot Subsidence Investigation

Bellevue, Washington

Boeing Computer Services

Project No. 94-35156-01

Converse Consultants NW

Geotechnical Engineering and Applied Earth Sciences

Figure No. A-2

LOG OF BORING NO. B-2-94

Date drilled 10/19/94 | Sampler / Driving Weight **SPT, 140 lb 30"/drop** | Elevation (ft) 339.0

This log is part of the report prepared by Converse Consultants NW for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered.

Depth, ft	Elevation	Sample No.	Blows/6"	DESCRIPTION	Monitoring Well	Dry density pcf	Moisture Content, %	Other Tests
				3 inch Asphalt Pavement				
				FILL SAND AND GRAVEL; brown, fine to coarse; wet grades to sand				
	335	1	8 16 24	SILTY SAND; brown mottled gray; fine to medium, trace fine gravel; dense, moist				
5		2	3 5 6	fine to coarse, scattered organics composed of wood chips, charcoal, peat; medium dense, very moist				
	330	3	2 6 9	SAND; gray, fine to coarse, trace fine gravel, scattered organics; medium dense, wet	ATD			
10		4	2 2 2	GARBAGE; paper, wood chips, plastic; loose, wet small layer of silty gravel				
	325	5	3 3 2	plastic, wood, paper, egg shells, scattered fine gravel; loose, wet				
15		6	3 5 7	metal cans, steel wool, paper, glass, scattered gravel; medium dense, wet; slight oil sheen noted				
	320	7	7 14 19	SILTY SAND; gray mottled, fine to coarse, trace fine gravel, scattered organics; medium dense, wet				

Continued Next Page

Parking Lot Subsidence Investigation

Bellevue, Washington

Boeing Computer Services

Project No. 94-35156-01

LOG OF BORING NO. B-2-94

Date drilled 10/19/94 Sampler / Driving Weight SPT, 140 lb 30"/drop Elevation (ft) 339.0

This log is part of the report prepared by Converse Consultants NW for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented are a simplification of actual conditions encountered.

Depth, ft	Elevation	Sample No.	Blows/6"	Graphic Symbol	DESCRIPTION	Monitoring Well	Dry density pcf	Moisture Content, %	Other Tests
		8	4 5 6		GARBAGE; wood, paper, cardboard, plastic, layered with silty sand, fine to medium; medium dense, wet				
	315	9	6 6 7		SILTY SAND; gray, fine to coarse, little fine gravel, trace organics; medium dense, moist				
25		10	46 50/ 3"		NATIVE DEPOSITS SILTY SAND WITH GRAVEL; gray, fine to coarse sand, fine to coarse gravel; very dense, moist				
					Bottom of boring at depth 26 feet Boring backfilled with bentonite chips and concrete cap installed at the ground surface ATD = at the time of drilling				
	310								
30									
	305								
35									
	300								

Parking Lot Subsidence Investigation

Bellevue, Washington

Boeing Computer Services

Project No. 94-35156-01

Converse Consultants NW

Geotechnical Engineering and Applied Earth Sciences

Figure No. A-3

LOG OF TEST PIT NO. 1 TP-1-80

Location: See Drawing 1 Elevation: Approx. 301'

Surface Conditions:

Depth in feet	Moisture %	Sample	Symbol	DESCRIPTION		REMARKS
1				SILTY GRAVELLY SAND	brown, fine to coarse; moist, loose.	severely weathered Glacial Till.
2						
3				SILT and CLAY	gray-brown, with little sand and scattered gravel; moist, medium stiff.	
4						
5				SILTY SAND	gray-brown, fine to coarse with little gravel, trace clay, scattered cobbles; moist, medium dense to dense.	unweathered Glacial Till.
6						
7						
8						
9				grades to SAND	with trace silt.	
10						
11					wet.	
12						
13				Bottom of test pit at 11.5'. No groundwater encountered. Completed July 22, 1980.		
14						
15						

PROPOSED POND A
Bellevue, Washington
for Cabot, Cabot & Forbes

Project No. 80-5188

ConverseWardDavisDixon Geotechnical Consultants

Drawing No. 2

Approved for publication ____ by ____

LOG OF TEST PIT NO. TP-3D -81

√81

Location: See Drawing 1. **Elevation:** Approx. 343

Surface Conditions: Brush and grass.

Depth In feet	Moisture %	Sample	Symbol	DESCRIPTION		REMARKS
1			ML/CL	SILTY CLAY (Construction Fill)	gray, trace gravel; moist soft.	
2					concrete rubble (up to 4') throughout layer.	
3						
4						Light seepage at 4'.
5					wood debris	
6				SANITARY LANDFILL	silty sand tin cans, bottles, distinct odor.	
7						
8			SM	SAND (Weathered Till)	brown, fine to medium, some silt, little gravel; moist, medium dense.	
9			SM	SAND (Fresh Till)	gray, fine to medium, some silt, little gravel; moist, very dense.	
10						
11						
12					Bottom of test pit at depth 11.0'. Completed March 16, 1981.	
13						
14						
15						

I-90/BELLEVUE BUSINESS PARK, BUILDING 5
Bellevue, Washington
for Cabot, Cabot & Forbes

Project No. 81-5135

Drawing No

ConverseWardDavisDixon Geotechnical Consultants

-81 ✓

LOG OF TEST PIT NO. TP-4 D -81

Location: See Drawing 1. Elevation: Approx. 332

Surface Conditions: Brush and grass.

Depth	Moisture %	Sample	Symbol	DESCRIPTION		REMARKS
			ML/ CL	SILTY CLAY (Construction Fill)	gray, trace gravel; moist, soft.	
					concrete rubble (up to 4') throughout layer.	
					wood debris	
					silty sand	
				SANITARY LANDFILL	tin cans, bottles, distinct odor.	
				Bottom of test pit at depth 12.0'. Completed March 16, 1981.		

I-90/BELLEVUE BUSINESS PARK, BUILDING 5
Bellevue, Washington
for Cabot, Cabot & Forbes

Project No. 81-5135

Drawing No.

ConverseWardDavisDixon Geotechnical Consultants

LOG OF TEST PIT NO. 5 TP-5-81

Location: See Site Plan

Elevation: Approx. 338

Surface Conditions: Wooded Area

Depth in feet	Moisture %	Sample	Symbol	DESCRIPTION		REMARKS
1			SM	SILTY SAND (Forest Duff)	brown, fine to medium, roots; moist, loose	
2			SM/SW	SILTY SAND (Weathered Till)	brown, medium to coarse, some gravel; moist, medium dense	
3				SILTY SAND (Fresh Till)	gray, medium to coarse, some gravel; moist, very dense	roots to 2½' depth
4						
5					cobbles	
6						
7				Bottom of test pit at depth 6.0' No groundwater encountered Completed 10/29/81		
8						
9						
10						
11						
12						
13						
14						
15						

Approved for publication by

BUILDING SITE 1 - I-90 BELLEVUE BUSINESS PARK
Bellevue, Washington
for Cabot, Cabot & Forbes

Project No. 81-5194

ConverseWardDavisDixon Geotechnical Consultants

Drawing No. 6

V-81

LOG OF TEST PIT NO. TP-103D -81

Location: See Drawing 1. **Elevation:** Approx. 318

Surface Conditions: Brush and grass.

Depth In feet	Moisture %	Sample	Symbol	DESCRIPTION		REMARKS
0–1			SM	SILTY SAND (Construction Fill)	brown, fine to medium, little gravel; moist, loose.	
1–2					wood debris	
2–3				grades to		Slight seepage at 2.5'.
3–5				SAND	gray, little gravel, trace silt; moist, medium dense.	
5–10				SANITARY LANDFILL	silty sand, tin cans, paper, and bottles.	
10–15				Bottom of test pit at depth 10.0'. Completed April 21, 1981.		

Depth scale: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15

I-90/BELLEVUE BUSINESS PARK, BUILDING 5
Bellevue, Washington
for Cabot, Cabot & Forbes

Project No. 81-5135

Drawing No

ConverseWardDavisDixon Geotechnical Consultants

LOG OF TEST PIT NO. TP-110 -81

Location: See Drawing 1.

Elevation: Approx. 334

Surface Conditions: Brush and grass.

Depth in feet	Moisture %	Sample	Symbol	DESCRIPTION		REMARKS
1			SM	SILTY SAND (Weathered Till)	reddish brown, little gravel, trace roots; moist, loose.	
2						
3			SM	SILTY SAND (Fresh Till)	gray, fine to medium, little gravel; moist, very dense.	Difficult to excavate below 2½'.
4						
5						
6				Bottom of test pit at depth 5.0'. Completed April 21, 1981.		
7						
8						
9						
10						
11						
12						
13						
14						
15						

I-90/BELLEVUE BUSINESS PARK, BUILDING 5
Bellevue, Washington
for Cabot, Cabot & Forbes

Project No 81-5135

Drawing No

ConverseWardDavisDixon Geotechnical Consultants

DATE DRILLED: 11/2/81

SUMMARY: BORING NO. B-1-81

ELEVATION: Approx. 336

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
0						LANDFILL sand, silt, tin cans, plastic bags, cloth, garbage odor		moist	
5	1A	7, 4, 2							loose
10	XA	2, 11, 10							m.dense
15	2A	19, 20, 20							dense
20	3A	12, 4, 8							loose to m.dense
25	XA	8, 6, 8							m.dense
30	4A	14, 19, 26				sand layer, some wood		11/2/81 wet	dense
35	5A	28, 28, 20				intact wood, smell of creosote			dense
40									

* A. 2' split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D 3-1/2' O.D split barrel sampler
X sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

BOEING METHANE STUDY
Bellevue, Washington
for The Boeing Company

Project No. 81-5186

Drawing No 2

ConverseWardDavisDixon Geotechnical Consultants

DATE DRILLED: 11/2/81

SUMMARY: BORING NO.B-1(Cont.)

ELEVATION: Approx. 336

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION		SYMBOL	MOISTURE	CONSISTENCY
	6A	12 18 18				SAND (Till)	gray, mottled brown, medium to coarse, trace silt, fine gravel		wet	dense
45	7A	14 35 66					to brownish gray			v.dense
50	8A	70								

Bottom of boring at depth 50.5'
Groundwater encountered at depth 31.5'
Piezometer installed to 50.5'
Completed 11/2/81

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

BOEING METHANE STUDY
Bellevue, Washington
for The Boeing Company

Project No. 81-5186

Drawing No. 2a

ConverseWardDavisDixon Geotechnical Consultants

DATE DRILLED: 11/2/81

SUMMARY: BORING NO. B-2-81

ELEVATION: Approx. 342

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED

DEPTH IN FEET	SAMPLE NO.*	SAMPLE	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION		SYMBOL	MOISTURE	CONSISTENCY	DEPTH IN FEET
							GRAVELLY SAND (Fill)	brown, medium to coarse		moist	loose to m. dense	
5							LANDFILL	paper, tin cans, cloth		moist	loose	
							SAND (Till)	brown, medium to coarse, trace of gravel		moist	v.dense	
10	1A		29 50									
							Bottom of boring at depth 11.0' No groundwater encountered Piezometer installed to 11.0' Completed 11/2/81					
15												

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

BOEING METHANE STUDY
Bellevue, Washington
for The Boeing Company

Project No 81-5186

Drawing No 3

ConverseWardDavisDixon Geotechnical Consultants

[redacted]RILLED: 11/2/81

SUMMARY: BORING NO. B-3-81

ELEVATION: Approx. 338

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED

SAMPLE NO.*	SAMPLE	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION		SYMBOL	MOISTURE	CONSISTENCY	DEPTH IN FEET
						LANDFILL	paper, glass, sand, silt, cloth, garbage odor		moist	dense	
1		5 11 31								m.dense	
2		10 11 3									
3A		15 30 50/4"					sand layer, coarse, some gravel			v.dense	
4		9 6 5					intact wood			m.dense	
5A		30 50				SAND (Till)	gray, mottled brown, coarse, some gravel		moist	v.dense	
6A		50					to gray				

Bottom of boring at depth 30.5'
No groundwater encountered
Piezometer installed to 30.5'
Completed 11/2/81

split-spoon sampler
O.D. thin-wall sampler
" O.D. split barrel sampler
C. 3-1/4" O.D. x 2-1/2" liner
X. sample not recovered

**A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

BOEING METHANE STUDY
Bellevue, Washington
for The Boeing Company

Project No. 81-5186

Drawing No. 4

ConverseWardDavisDixon Geotechnical Consultants

SUMMARY: BORING NO. B-4-81

ELEVATION: Approx.

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED

SAMPLE NO.*	SAMPLE	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION		SYMBOL	MOISTURE	CONSISTENCY
						SAND (Fill)	brown, medium, trace silt, some gravel		moist	m.dense
						Bottom of boring at depth 5.0' No groundwater encountered Piezometer installed to 5.0' Completed 11/2/81				

split-spoon sampler
O.D. thin-wall sampler C. 3-1/4" O.D. x 2-1/2" liner
2" O.D. split barrel sampler X. sample not recovered

**A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

BOEING METHANE STUDY
Bellevue, Washington
for The Boeing Company

Project No
81-5186

ConverseWardDavisDixon Geotechnical Consultants

Drawing No
5

DATE DRILLED: 11/2/81

SUMMARY: BORING NO. B-5-81

ELEVATION: Approx. 342

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED

DEPTH IN FEET	SAMPLE NO.*	SAMPLE	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION		SYMBOL	MOISTURE	CONSISTENCY	DEPTH IN FEET
							SAND (Fill)	brown, medium, trace silt, some gravel		moist	m.dense	
							Bottom of boring at depth 5.0' No groundwater encountered Piezometer installed to 5.0' Completed 11/2/81					

A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
. 3-1/2" O.D. split barrel sampler
X. sample not recovered

**A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

BOEING METHANE STUDY
Bellevue, Washington
for The Boeing Company

Project No. 81-5186

Drawing No. 6

ConverseWardDavisDixon Geotechnical Consultants

DATE DRILLED 10/1/82

SUMMARY: BORING NO. 6-82

ELEVATION 332.3

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED

SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION		SYMBOL	MOISTURE	CONSISTENCY
					GRAVELLY SAND	brown, fine to coarse, some silt	SW	moist	very dense
1A	8 25 40		8.1						
2A	14 50/6"					occasional cobbles		wet	very dense
					SILTY SAND (Glacial Till)	gray, fine to medium, little gravel, trace cobbles	SM	moist	very dense
3A	16 18 35		7.3						
4A	50/4"		6.4						
5A	50/5"		10.2			little to some gravel		very moist	
6A	50/5"		5.5					moist	
					GRAVELLY SAND (Advance Outwash)	brown, fine to coarse, clayey silt matrix	SW	moist	very dense
7A	25 50/3"		7.7						
						grades cleaner with less silt, occ. cobbles.			
8A	50/4"		5.8						
					Bottom of boring at depth 38.3'				

DEPTH IN FEET: 0, 5, 10, 15, 20, 25, 30, 35, 40

ELEV: 330, 325, 320, 315, 310, 305, 300, 295

No groundwater encountered

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler X. sample not recovered

**A - Atterberg, C - consolidation, DS - direct shear,
G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE TRUNK SEWER
Bellevue, Washington
for Brown and Caldwell

Project No.
82-5169

Converse Consultants Geotechnical Engineering and Applied Sciences

Drawing No.
~~11~~ 12

DATE DRILLED 10/2/82

SUMMARY: BORING NO. 7-82

ELEVATION: 333.9

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION		SYMBOL	MOISTURE	CONSISTENCY	ELEVATION
0						SILTY SAND (Fill)	brown, fine to medium, some gravel	SM	very moist	medium dense	
	1A	4 6 7		15.6							
5											330
	2A	1 8 17		15.5		SILTY SAND (Sanitary Landfill)	brown, fine to medium, some gravel, trace wood & debris (metal, plastic, cloth), organic odor		very moist	medium dense	
10											325
	3A	5 3 9		21.4			wood fragments (from drill action, occasional pieces of concrete 5.5-16.5' depth)				
15											320
	4A	50/3"		5.7		SAND (Glacial Till)	blue-gray, fine to coarse, some silt and gravel, occasional cobbles	SM	slightly moist	very dense	
20											315
	5A	50/4"		6.1			grades slightly coarser				
25											310
	6A	50/5"		6.1		GRAVELLY SAND (Advance Outwash)	gray, fine to coarse, trace silt, zones of clayey silt matrix	SW	moist	very dense	
30											305
	7A	50/6"		9.2							
35						Bottom of boring at depth 33.5' No groundwater encountered					300

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE TRUNK SEWER
Bellevue, Washington
for Brown and Caldwell

Project No 82-5169

Converse Consultants Geotechnical Engineering and Applied Sciences

Drawing No. 12 13

DATE DRILLED. 10/2/82

SUMMARY: BORING NO. 8-82

ELEVATION 340.4

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED

SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF
1A	6 12 10		10.8	
2A	4 5 8		25.9	
3A	5 17 13		14.1	
4A	50/5"		5.5	
5A	50/3"		4.2	
6A	18 50/5"		9.8	
7A	50/6"		10.1	
8A	25 50/5"		7.8	

DEPTH IN FEET	DESCRIPTION		SYMBOL	MOISTURE	CONSISTENCY	ELEV
0	SILTY SAND (Fill)	brown, organic, little gravel, trace roots	SM	very moist	medium dense	340
5	SILTY SAND (Sanitary Landfill)	black, fine to medium, with paper, wood, plastic, metal & wire, organic odor (from drill action, concrete pieces 5-16.5' depth) grades finer with clayey silt, fabric fragments	ML			335
10						330
15						325
20	SILTY SAND (Glacial Till)	blue-gray, fine to coarse, some gravel, occasional cobbles boulder 20-21' depth (refusal on boulder at 25' depth; redrilled hole 6' north of original location)	SM	moist	very dense	320
25						315
30	SILT (Lacustrine Deposit)	gray, some fine sand, trace gravel, laminated occasional layer of coarse sand	ML	slightly moist	very dense	310
35	SAND (Advance Outwash)	brown, fine to coarse, some silt, trace clayey silt, occasional gravel grades cleaner with less silt	SP	moist	very dense	305
40	(Continued)					

*A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

**A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE TRUNK SEWER
Bellevue, Washington
for Brown and Caldwell

Project No. 82-5169

Converse Consultants Geotechnical Engineering and Applied Sciences

Drawing No. ~~13~~ 14

DATE DRILLED: 10/2/82

SUMMARY: BORING NO. 8 (Cont.)

ELEVATION

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	SAMPLE	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY	ELEV
							SAND (Cont.) brown, fine to coarse, silt matrix, trace gravel		moist	very dense	300
	9A		50/5"		4.8						
45							Bottom of boring at depth 43.5' No groundwater encountered Piezometer installed to depth 43.5', with 2' slotted interval at bottom.				295

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE TRUNK SEWER
Bellevue, Washington
for Brown and Caldwell

Project No. 82-5169

Drawing No. 14 15

Converse Consultants
Geotechnical Engineering and Applied Sciences

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION		SYMBOL	MOISTURE	CONSISTENCY
0						SILTY SAND (Fill)	gray-brown, fine to medium, little gravel, trace wood		moist	medium dense
	1A	7 18 16		9.9						
5						SILTY SAND (Glacial Till)	gray-brown, fine to medium, little gravel, trace to occasional cobbles		moist	very dense
	2A	50/2"		7.5						
10										
	3A	100/4"		7.6						
15										
	4A	75/3"		6.4			with occasional lense of gray, fine to medium sand			
20										
	5A	75/2"		6.2						
25						Refusal at 25.0', restart boring approximately 15' south.				
							very cobbly, 6"-8" diameter			
	6A	75/2"		13.5		SAND (Advance Outwash)	gray, mottled brown and pink, fine to medium, trace gravel & silt, occasional cobble		moist	very dense
30										
	7A	75/3"		11.3			grades to little silt, fine to medium			
35										
	8A	75/5"		11.6						
40						(Continued)				

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE TRUNK SEWER
Bellevue, Washington
for Brown and Caldwell

Project No.
82-5169

Drawing No.
V-6

Converse Consultants
Geotechnical Engineering and Applied Sciences

DATE DRILLED: 2/28/83

SUMMARY: BORING NO. 8A (Cont.) ELEVATION:

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	SAMPLE	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
40							SAND (Cont.) (Advance Outwash) grades to fine to coarse, trace silt and gravel, occasional cobble		moist	very dense
	9A		44 50/5"		9.1					
45										
	10A		50/6"		8.8					
50										
	11A		50/6"		7.4					
55							Bottom of boring at depth 53.5' No groundwater encountered. Methane visible in boring. Methane standpipe installed to depth 53.5' with 20' slotted interval at bottom; gravel backfill to depth 33.0'; backfilled with cuttings to depth 20.0'; bentonite seal from depth 20.0-19.0'; backfilled to surface with cuttings. Completed 2/28/83			

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE TRUNK SEWER
Bellevue, Washington
for Brown and Caldwell

Project No. 82-5169

Converse Consultants
Geotechnical Engineering and Applied Sciences

Drawing No. 17

DATE DRILLED 10/2/82

SUMMARY: BORING NO. 9-62

ELEVATION: 340.2

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY	ELEV
0						0.2' Asphalt Surface SILTY SAND (Fill) brown, fine to medium, little gravel, wood fragments	SM	very moist	medium dense	340
	1A	13 9 18		15.3						
5						SILTY SAND (Glacial Till) brown, fine to medium, little gravel, trace cobbles (refusal at 9' on boulders, redrilled hole 11' east of original location)	SM	moist	very dense	335
	2A	50/5"		6.2						
10										330
	3A	50/5"		10.5		gray		very moist		
15										325
						large cobbles 16-21' (no sample taken in this interval)				
20										320
	4A	50/6"		9.5						
						SILT (Lacustrine) gray, some fine sand, laminated	ML	moist	very dense	
25										315
						SAND (Advance Outwash) gray-brown, fine to coarse, some to trace silt, occasional gravel	SP	moist	very dense	
	5A	50/6"		7.5						
30										310
	6A	50/4"		7.5						
35										305
	7A	50/4"		10.7						
						Bottom of boring at depth 38.3'				
40										

No groundwater encountered

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear,
G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE TRUNK SEWER
Bellevue, Washington
for Brown and Caldwell

Project No
82-5169

Drawing No.
~~15~~ 16

Converse Consultants
Geotechnical Engineering and Applied Sciences

DATE DRILLED: 10/2/82

SUMMARY: BORING NO. 10 ^82

ELEVATION: 340.6

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

Sample No.*	Blows/6"	Other Tests**	Field Moisture % of Dry Weight	Dry Density PCF
1A	4, 4, 5		19.0	
2A	7, 14, 45		5.6	
3X	50/3"			
4A	20, 15, 12		16.6	
5A	7, 12, 15		25.1	
6A	50/6"		4.7	
7A	50/6"		8.3	
8A	23, 23, 30		12.1	

Depth in feet: 0, 5, 10, 15, 20, 25, 30, 35, 40
ELEV: 340, 335, 330, 325, 320, 315, 310, 305

Description		Symbol	Moisture	Consistency
SILTY SAND (Fill)	brown, fine to medium, little gravel, trace wood, organic	SM	very moist	loose
GRAVELLY SAND (Fill)	gray, fine to medium, trace silt	SW	moist	dense
(concrete pieces throughout fill based on cuttings)				
(sample 3 driven on concrete)				
CLAYEY SILT (Sanitary Landfill)	gray, mottled brown, some sand, trace glass, wire & paper	MH	very moist	medium dense
SILTY SAND (Sanitary Landfill)	brown, fine to medium, little gravel, wood	SM	very moist	medium dense
SAND	gray, fine to coarse, trace gravel, trace silt	SP	moist	very dense
	(Continued)		very moist	

*A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler X. sample not recovered

**A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE TRUNK SEWER
Bellevue, Washington
for Brown and Caldwell

Project No. 82-5169

Drawing No. ~~16~~ 19

Converse Consultants
Geotechnical Engineering and Applied Sciences

DATE DRILLED: 12/7/82

SUMMARY: BORING NO. 11-82

ELEVATION: 306.6

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION		SYMBOL	MOISTURE	CONSISTENCY	ELEV
0						SILTY SAND (Fill)	dk. brn., f/m, little gravel, trace roots	SM	wet	loose	306.6
											305
	1A	3 7 1		18.6		SAND (Fill)	gray, fine to medium, trace silt, occasional gravel	SP	wet	loose	
5											
	2A	7 8 30		16.6		SILTY TO CLAYEY SAND (Advance Outwash)	brown, fine to coarse trace to occasional gravel	SM	wet	dense	300
10									12/7/82		INVERT ELEV
						grades to... SAND	rust-brown, fine to coarse, trace silt, occasional gravel	SP			295
	3A	6 28 32		9.2					moist	dense	
15											
						Bottom of boring at depth 14.5' Groundwater encountered during drilling at depth 9.5'					290

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE TRUNK SEWER
Bellevue, Washington
for Brown and Caldwell

Project No. 82-5169

Converse Consultants
Geotechnical Engineering and Applied Sciences

Drawing No. 21

DATE DRILLED 12/7/82

SUMMARY: BORING NO. 12 -82

ELEVATION: 299.1

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION		SYMBOL	MOISTURE	CONSISTENCY	ELEV
0						asphalt					299.1
						SAND (Fill)	gray-brown, f/m, little silt	SM	moist	medium dense	
	1A	18 50/3"		12.2		SILTY SAND (Glacial Till)	gray-brown, fine to medium, little gravel, trace clay	SM	moist	very dense	
5											295
	2A	6 16 37		12.0							
10									1/10/83	3/3/83	290
						SAND (Advance Outwash)	gray-brown, fine to coarse, little gravel, trace silt	SP	wet 12/22/82	very dense	
	3A	12 50/4"		11.2							INVERT ELEV.
15						Bottom of boring at depth 13.9' Groundwater encountered during drilling at depth 10.0' Piezometer installed to depth 13.0' with 1.5' slotted interval at bottom; backfilled with pea gravel to 11.0'; backfilled to surface with cuttings, and bentonite seal at surface.					285

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE TRUNK SEWER
Bellevue, Washington
for Brown and Caldwell

Project No. 82-5169

Converse Consultants
Geotechnical Engineering and Applied Sciences

Drawing No. 22

DATE DRILLED: 4/14/83

SUMMARY: BORING NO. 1-83

ELEVATION:

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED

DEPTH IN FEET	SAMPLE NO.*	SAMPLE	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION		SYMBOL	MOISTURE	▽ 4/14/83 ▽ 4/27/83 ▽ 7/8/83	CONSISTENCY	DEPTH IN FEET
0							SILTY SAND (Fill)	dark greenish-gray, fine to coarse, little gravel	SM	very moist		dense	
	1		18 19										
5							SAND (Fill)	light gray, fine to medium, trace silt					
	2		39 18				SILTY GRAVELLY SAND (Fill)	dark gray, fine to coarse, trace organics (landfill debris?)	SM	wet		dense	
10													
	3		18 50/6'				SILTY SAND (Landfill Debris)	gray, fine to medium, abundant organics & metal debris	SM	wet		dense	
15													

Bottom of boring at depth 14.0'
Piezometer installed (see schematic for details)
Groundwater encountered at depth 7.0' at time of drilling.

* 1. 2" split-spoon sampler
J. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

**A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

▽ water level
impervious seal
piezometer tip

LEACHATE SAMPLING
I-90/Bellevue Business Park
for Cabot, Cabot & Forbes

Project No. 81-5216

Converse Consultants Geotechnical Engineering and Applied Sciences

Drawing No. 2

Date Drilled: 3/26/83

Elevation: Approx. 349

Depth in Feet	Soil Description		Elev. in Feet
0	FILL		349
	SILTY SAND (Glacial Till)	gray-brown, fine to medium, little gravel, tr. clay, occ. cobbles to 6" dia.; moist, very dense	
10			340
20	SILTY SAND (Advance Outwash)	gray-brown, mottled pink, f/c, some gravel, tr. clay; moist, very dense	330
	grades to... GRAVELLY SAND	gray-brown, mottled pink, f/c, some silt, tr. clay; very moist, very dense	
30			320
	grades to... SAND	fine to medium, trace silt; moist, very dense	
40			310
50			300

Graphic of Methane Well Installation*

Bottom of boring at depth 43.5'
No groundwater encountered
Completed 3/26/83
*Methane well consists of 1½" I.D. PVC pipe

SUMMARY: BORING NO. 207-83

METHANE WELL INSTALLATION
Bellevue/I-90 Business Park
for Boeing Computer Services

Project No 83-5116

Drawing No. 9

Converse Consultants
Geotechnical Engineering and Applied Sciences

DATE DRILLED: 6/3/85

SUMMARY: BORING NO. B-301 ~~-85~~ ELEVATION Approx. 342

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
0	1C	6 8 14				SILTY SAND (Fill); mottled black & gray, fine to medium, little gravel, trace wood, concrete	SM	moist	medium dense
5	2C	8 8 43				SILTY SAND (Sanitary Landfill); black, fine to medium, some sanitary refuse: glass, wood, etc., strong organic smell;	SM	moist	medium dense
10	3C	50/3"				grades to debris fill: glass, wood, paper, cans; no soil matrix; visible methane		moist	dense
						Bottom of boring at depth 12.8' 3/4" diameter PVC observation well installed with slotted screen from 7.5' to 12.5', pea gravel backfill from 5.0' to 10.5', backfill with cuttings from 5.0' to 3.0', bentonite seal from 3.0' to surface, and install cast iron monument cover.			

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE LANDFILL WATER SAMPLING
Bellevue, Washington
for Boeing Computer Services

Project No. 85-5104-02

Converse Consultants Geotechnical Engineering and Applied Sciences

Drawing No. 2

DATE DRILLED: 6/3/85

SUMMARY: BORING NO. B-302-85

ELEVATION: Approx. 338

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
0	1C	50/5"				SILTY SAND (Fill); brown, fine to medium, little gravel, trace wood (sampler driving on rock)	SM	moist	medium dense
5	2C	5 3 18				SAND (Fill); gray, fine to medium, trace gravel, wood, & metal debris	SP	moist	medium dense
10	3C	50/6"				SANITARY LANDFILL; consists of wood, glass, plastic, rubber, paper and metal; no soil matrix;		moist	dense
15	4C	8 20 50/4"				occasional lense of sand		very moist	
20	5C	33 17 21				(possible free water)		6/21/85 ▽ 6/7/85 very moist	
25						Bottom of boring at depth 24.0' 3/4" dia. PVC observation well installed with slotted screen from 17.5' to 22.5', pea gravel backfill from 9.0' to 22.5', backfilled with cuttings from 3.0' to 9.0', bentonite seal from 3.0' to surface, and install cast iron monument cover.			

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

▽ water level
impervious seal
piezometer tip

EASTGATE LANDFILL WATER SAMPLING
Bellevue, Washington
for Boeing Computer Services

Project No. 85-5104-02

Converse Consultants
Geotechnical Engineering and Applied Sciences

Drawing No. 3

DATE DRILLED: 6/4/85

SUMMARY: BORING NO. B-303-85

ELEVATION: Approx. 339.9

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
0–5	1C	4, 14, 12				**SILTY SAND** (Fill); gray-brown, fine to medium, little gravel, trace wood	SM	moist	medium dense
5–10	2C	4, 8, 14				grades to black, trace wood, plastic, and metal debris			
10–15	3C	8, 12, 13				**SILTY SAND** (Sanitary Landfill); black, fine to medium, trace gravel, wood, plastic, metal, wire, and paper	SM	very moist	medium dense
15–20	4C	6, 10, 12							
20–25	5C	28, 29, 11							
25–30	6C	8, 13, 22				grades to Sanitary Landfill with little silty sand		moist	
30–35	7C	11, 9, 20							
35–40	8C	13, 19, 50/6"				**SILTY SAND** (Old Soil Horizon/Fill); brown, tr. to little gravel, trace wood & glass	SM	very moist	medium dense

(Continued)

*A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

**A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE LANDFILL WATER SAMPLING
Bellevue, Washington
for Boeing Computer Services

Project No. 85-5104-02

Converse Consultants
Geotechnical Engineering and Applied Sciences

Drawing No. 4

DATE DRILLED: 6/4/85

SUMMARY: BORING NO. B-303-~~85~~ (Cont.)

ELEVATION:

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
40						SILTY SAND (Cont.);	SM		dense
	9C	68 50/3"							
45						SILTY SAND (Weath. Glacial Till); gray, f/m, trace to little gravel	SM	wet	very dense
	10C	57 50/3"							
50						grades to Unweath. Till, with occ. lense of gravelly silty sand and sandy silt	SM	moist	
	11A	60/6"							
55						SAND (Advance Outwash); brown, fine to medium, trace silt, thinly bedded with sandy silt layers	SP	moist	very dense
	12A	60/6"							
60								wet	
	13A	27 50/6"						6/7/85 6/21/85 ▽	
65						SANDY SILT (Lacustrine Sediments); gray, fine sand, thinly laminated with clayey silt and silty fine sand	ML	very moist	very dense
	14A	20 50/6"							
70						SAND; dark gray, very fine, trace to little silt	SM	wet	very dense
	15A	7 13 35							
75						grades fine to medium, thinly bedded to laminated with clayey silt and brown sandy silt		very moist	
	16C	55 50/3"							
80									

(Continued)

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

▽ water level
impervious seal
piezometer tip

EASTGATE LANDFILL WATER SAMPLING
Bellevue, Washington
for Boeing Computer Services

Project No. 85-5104-02

Converse Consultants Geotechnical Engineering and Applied Sciences

Drawing No. 4 (CONT.)

DATE DRILLED: 6/4/85

SUMMARY: BORING NO. B-303 -85 (Cont.)

ELEVATION:

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	SAMPLE	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
80							Bottom of boring at depth 78.2' Groundwater encountered at depth 64' during drilling 2" diameter PVC observation well installed with slotted screen from 55' to 75'; sand backfill from 50' to 71'; grout backfill from 19' to 50'; dry cement backfill from 12' to 19'; backfilled with cuttings from 1' to 12', and cast iron monument cover installed at surface.			

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE LANDFILL WATER SAMPLING
Bellevue, Washington
for Boeing Computer Services

Project No. 85-5104-02

Converse Consultants
Geotechnical Engineering and Applied Sciences

Drawing No. 4 (CONT.)

DATE DRILLED: 4/4/85

SUMMARY: BORING NO. CC-1 -65

ELEVATION: Approx. 302

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
0	1A	6 6 8				GRAVELLY SAND (Fill); brown, fine to medium, trace silt & organics grades to little gravel		slightly moist	medium dense
5	2A	7 7 9				SILTY SAND; mottled gray & light brown, fine to medium, trace clay and gravel		moist	medium dense
	3A	28 48 50/4"				SILTY SAND; gray, fine to medium, little gravel, trace clay		wet	very dense
10	4X	50/4"							
15	5A	50/4"				SILTY SAND (Unweathered Till); light brown, fine to medium, little gravel, trace clay		slightly moist	very dense
	6C	7 15 50/4"							
20	7A	50/4"							
25	8A	4 22 50/4"				SAND (Advance Outwash); brown, fine to medium, trace silt		wet	very dense
30	9A	26 40 50/5"				SAND (Lacustrine); mottled brown & light brown, fine, trace medium, trace silt with thinly laminated to medium bedded silt and sandy silt		slightly moist	very dense
35	10A	25 36 50/4"							

Bottom of boring at depth 36.5'
Groundwater encountered at depth 9' during drilling.
Hole filled with cement/bentonite to surface.

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

SLURRY TRENCH FEASIBILITY STUDY
Boeing Computer Services
Bellevue, Washington

Project No. 85-5104

Converse Consultants Geotechnical Engineering and Applied Sciences

Drawing No. A

DATE DRILLED: 4/4/85

SUMMARY: BORING NO. CC-2 -85

ELEVATION: Approx. 302

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
0						GRAVELLY SAND (Fill); light brown, fine to medium, trace silt		slightly moist	
	1A	17 12 15				GRAVELLY SILTY SAND; mottled brown & light brown, fine to medium		slightly moist	medium dense
5									
	2A	5 7 8				SANDY SILT/CLAYEY SILT (Alluvium); mottled gray-green & light brown, fine, thinly laminated		slightly moist	medium dense
10									
	3A	14 42 29				CLAYEY SAND (Advance Outwash); gray, fine to medium, trace gravel		moist	very dense
15	4A	50/6"				SAND; gray, fine to medium, little silt, trace gravel		moist	very dense
	5A	48 50/5"				grades to trace silt and gravel		▽ 4/17/85	
20	6A	17 26 26				with occ. thin laminations of silty sand		moist to wet	dense
	7A	29 44 50/2"				to mottled gray & light brown		wet	
25	8A	24 37 37				with medium bedded brown silt and thin laminations to thinly bedded silty fine sand		slightly moist	very dense
	9A	34 36 50/5"							
30	10A	14 18 25				SILTY SAND (Lacustrine); dark gray, fine, with thin laminations to thinly bedded silt and fine sand		slightly moist	dense
	11A	21 24 39				SAND; brown, fine to medium, trace silt, with medium bedded fine sandy silt		wet	very dense
35	12A	21 29 43				to gray, fine, med. bedded gray silt, thin lam. of fine sandy silt			
	13A	18 26 42				SILT; dark gray, w/thin laminations to medium bedded sandy silt		wet	very dense
40									

(Continued)

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

▽ water level
impervious seal
piezometer tip

SLURRY TRENCH FEASIBILITY STUDY
Boeing Computer Services
Bellevue, Washington

Project No. 85-5104

Converse Consultants
Geotechnical Engineering and Applied Sciences

Drawing No. B

DATE DRILLED: 4/4/85

SUMMARY: BORING NO. CC-2-85 (Cont.)

ELEVATION:

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	SAMPLE	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
40							SILT (Lacustrine)(Cont.)			
	14A		12 40 50/4"				SAND; mottled dark gray & light brown, fine, trace to little silt, w/thin laminations of fine sandy silt		slightly moist	very dense
45										
	15A		30 50/6"				dark gray, fine, w/thin laminations of silt & occ. thin lamination of peat			
50							SILT; dark gray, w/thin lam. fine sandy silt & occ. thin lam. of peat		slightly moist	very dense
	16A		27 43 50/5"							
55							with thin lamination of silty fine sand			
	17A		22 37 50/5"							
60							Bottom of boring at depth 59.0' Groundwater encountered at depth 8' Two-inch dia. piezometer installed to depth 41', with 0.010 inch screen section from depth 22' to 27', backfilled to 41', sand placed to 15', cement/bentonite seal placed to surface.			

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

SLURRY TRENCH FEASIBILITY STUDY
Boeing Computer Services
Bellevue, Washington

Project No. 85-5104

Converse Consultants — Geotechnical Engineering and Applied Sciences

Drawing No. B (CONT.)

DATE DRILLED: 4/5/85

SUMMARY: BORING NO. CC-3 -65

ELEVATION: Approx. 302

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
0						GRAVELLY SAND (Fill); brown, fine to medium		moist	very dense
	1A	17 34 21				SILTY SAND; mottled brown & light brown, f/m, little gravel, trace fine roots, occasional charcoal		moist	very dense
5	2A	38 50/6"				GRAVELLY SAND; gray, fine to coarse, trace silt		moist	very dense
	3C	40 50/2"				GRAVELLY SILTY SAND; mottled gray & brown, fine to coarse, trace clay & scattered organics			
10	4A	38 50/6"				SILTY SAND; mottled gray & brown, fine to medium, trace gravel, trace clay		slightly moist	very dense
15	5A	11 20 50/3"				CLAYEY SAND (Adv. Outwash); gray-brown, fine to medium, trace gravel, trace silt, occ. woody fragments		very moist	very dense
20	6A	20 50/6"				SAND; gray, fine to medium, trace silt		wet	very dense
25	7A	25 45 50/4"							
30	8A	24 50/5"				mottled gray & light brown, trace silt			
35	9A	20 43 50/3"				grades to gray			
40									

(Continued)

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

SLURRY TRENCH FEASIBILITY STUDY
Boeing Computer Services
Bellevue, Washington

Project No. 85-5104

Drawing No. C

Converse Consultants Geotechnical Engineering and Applied Sciences

DATE DRILLED: 4/5/85

SUMMARY: BORING NO. CC-3-85 (Cont.)

ELEVATION:

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.* SAMPLE	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
40						SAND (Adv. Outwash) (Cont.);		wet	very dense
	10A	21 50/3"				SAND (Lacustrine); gray, fine, trace silt, with med. bedded silt & thin lam. of fine sandy silt		moist	very
45						SILT; dark gray, trace fine sand, w/thin beds of mottled gray & light brown, fine to medium sand and silty sand, & thin lam. fine sandy silt, occ. thin lamination of peat		moist	very ~~dense~~ hard
	11A	26 50/6"							
50									
	12A	25 35 38				w/thin laminations of fine sand		slightly moist	
55						with medium bedded silty fine sand, and thin lamina~~e~~tions of fine sand			
	13A	27 47 50/3"							
60						with thinly bedded silty fine sand, and thin laminations of fine sandy silt			
	14A	27 40 53/3"							
65						mottled dark gray & light brown, trace fine sand, with med. bedded fine sand			
	15A	36 50/3"						moist	
70						Bottom of boring at depth 68.5' Groundwater encountered at depth 20' Hole filled with cement/bentonite slurry from 68.5 to surface.			

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

SLURRY TRENCH FEASIBILITY STUDY
Boeing Computer Services
Bellevue, Washington

Project No. 85-5104

Converse Consultants
Geotechnical Engineering and Applied Sciences

Drawing No. C (CONT.)

LOG OF TEST PIT NO. 201-85

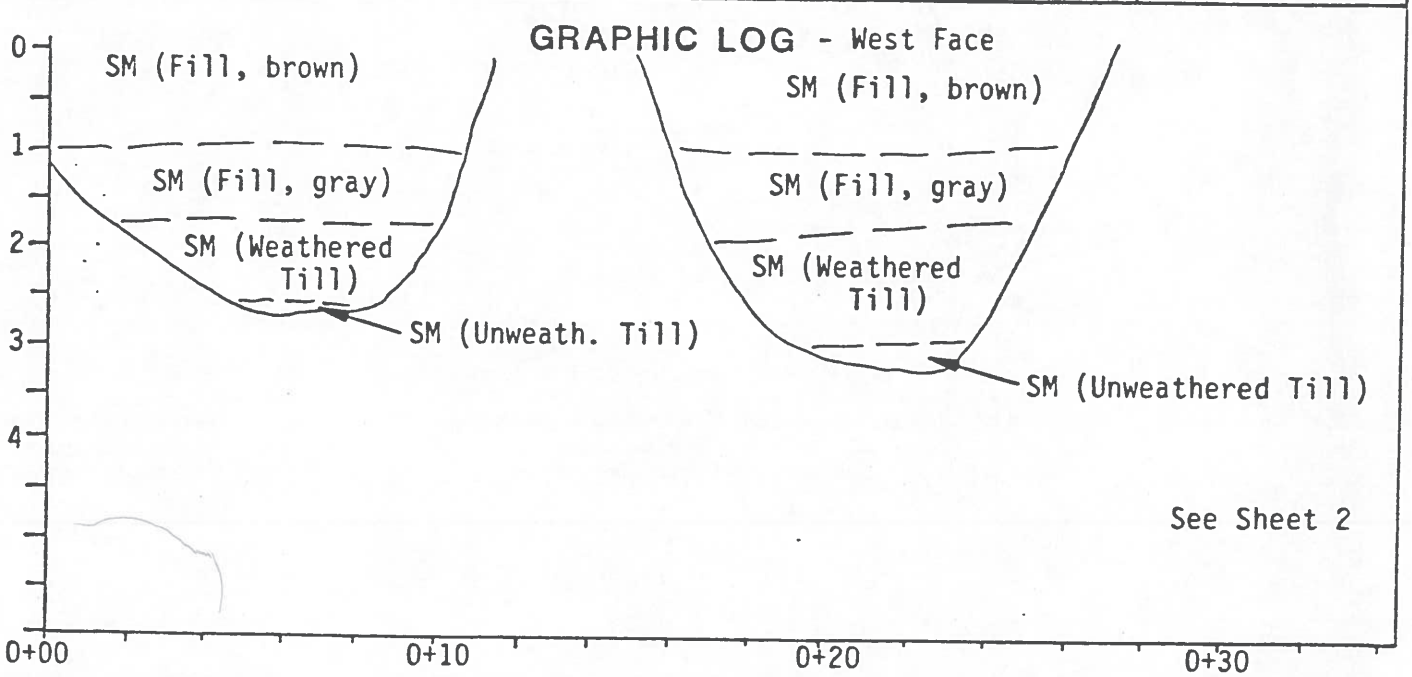
PROJECT: 27.2 Acre Site JOB NO : 85-5156 DATE: 6/20/85

CLIENT: Boeing Computer Services ELEVATION: Approx. 344

FEATURE: LOCATION: See Drawing

GROUNDWATER LEVEL: N/A LOGGED BY: D.A.Y.

DEPTH (ft)	SAMPLE NO.	SOIL SYM.	DESCRIPTION	REMARKS
		SM	SILTY SAND (Fill); brown, fine to medium, little gravel, trace roots; moist, medium dense	
1		SM	SILTY SAND (Fill); gray fine to medium, little gravel, occasional gravel to 4" dia., trace wood; moist, medium dense	
2		SM	SILTY SAND (Weath. Till); brown, fine to medium, little gravel, occ. cobbles to 6"; moist, dense	
3		SM	SILTY SAND (Unweath. Till); gray-brown, fine to medium, little gravel, occ. cobbles; moist, very dense	
4			Bottom of test pit at depth 3.5' No groundwater encountered Completed 6/20/85	



PROPOSED 27.2 ACRE SITE
Bellevue, Washington
for Boeing Computer Services

Project No. 85-5156

Converse Consultants Geotechnical Engineering and Applied Sciences

Drawing No. 1

LOG OF TEST PIT NO. 201-85 (Cont.)

PROJECT: 27.2 Acre Site JOB NO: 85-5156 DATE: 6/20/85

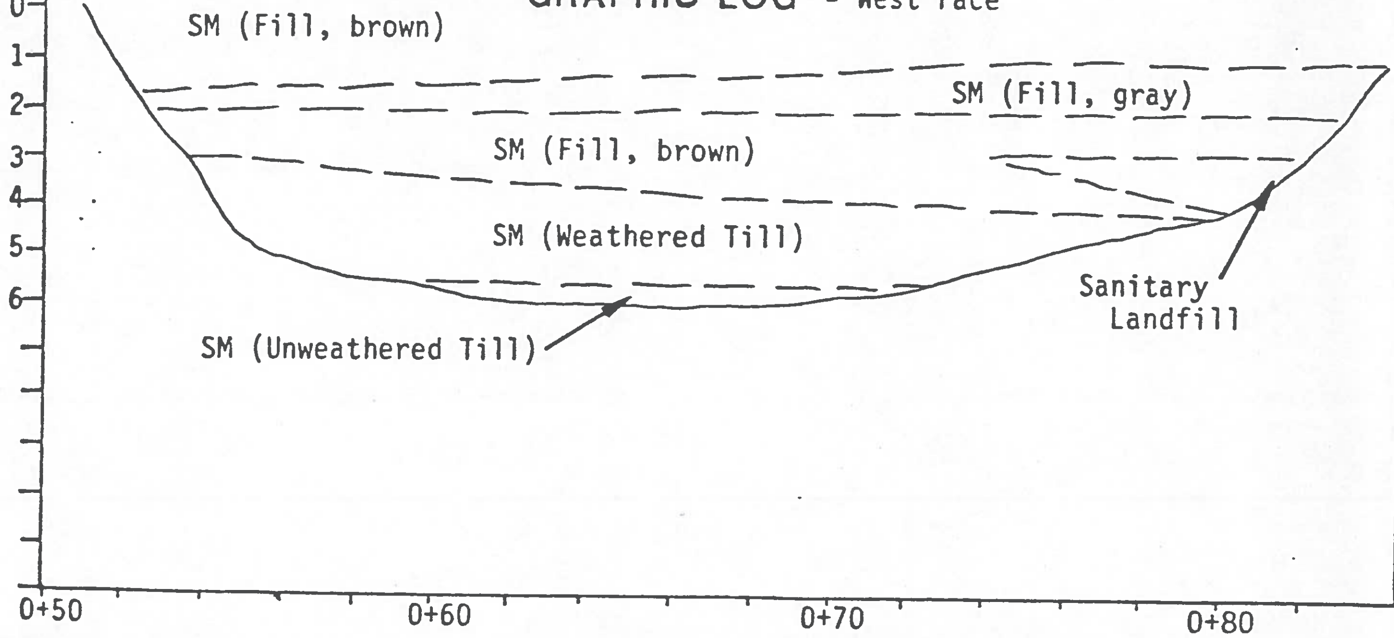
CLIENT: Boeing Computer Services ELEVATION: Approx. 344

FEATURE: LOCATION: See Drawing

GROUNDWATER LEVEL: LOGGED BY: D.A.Y.

DEPTH (ft)	SAMPLE NO.	SOIL SYM.	DESCRIPTION	REMARKS
		SM	SILTY SAND (Fill); brown, fine to medium, little gravel, trace roots; moist, medium dense	
1				
2			color changes to gray	
			color changes to brown	
3			SANITARY LANDFILL; black, household garbage, cans, glass, wire; very moist	strong trash odor throughout
4		SM	SILTY SAND (Weath. Till); brown, fine to medium, little gravel, occasional cobbles; moist, dense	
5				
		SM	(Unweath. Till); gray-brown; moist, very dense	
6			Bottom of test pit at depth 6.0' No groundwater endountered Completed 6/20/85	

GRAPHIC LOG - West Face



PROPOSED 27.2 ACRE SITE
Bellevue, Washington
for Boeing Computer Services

Project No. 85-5156

Converse Consultants Geotechnical Engineering and Applied Sciences

Drawing No. 1 (CONT.)

LOG OF TEST PIT NO. 202-85

PROJECT: 27.2 Acre Site JOB NO: 85-5156 DATE: 6/20/85

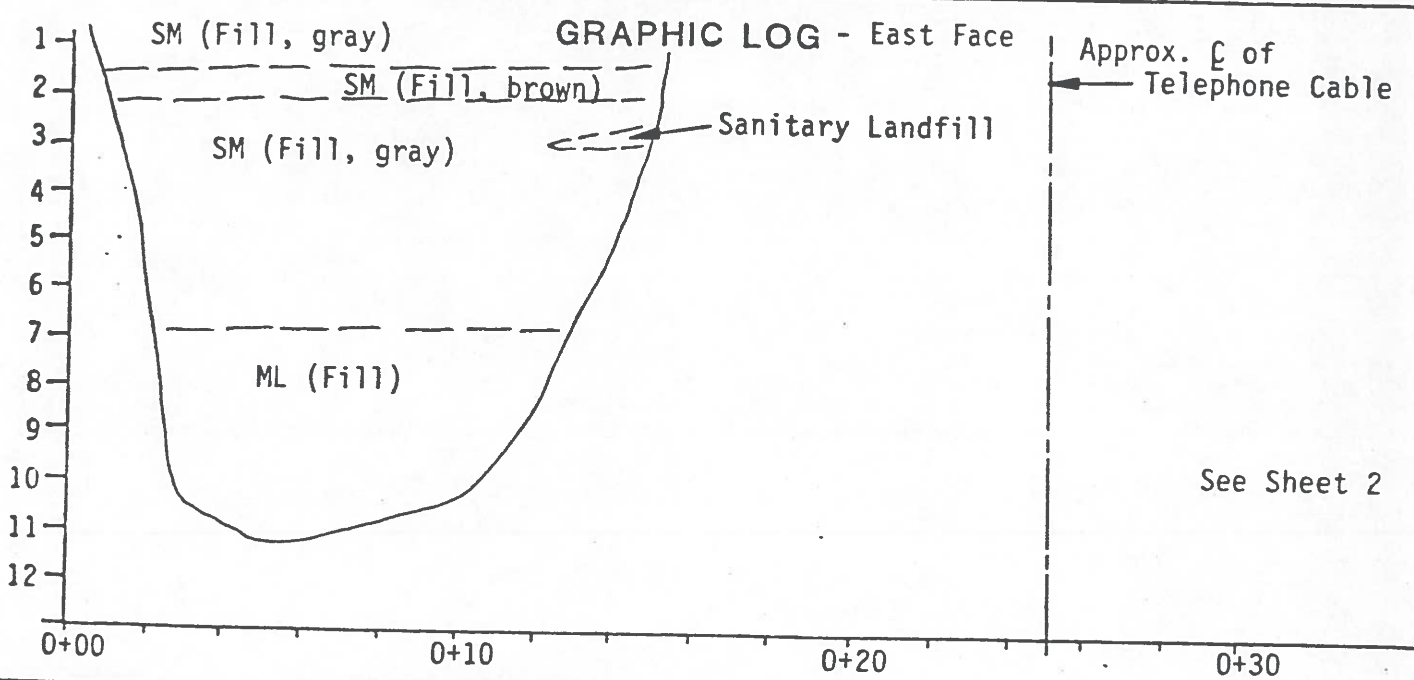
CLIENT: Boeing Computer Services ELEVATION: Approx. 342

FEATURE: LOCATION: See Drawing

GROUNDWATER LEVEL: N.A. LOGGED BY: DAY

DEPTH (ft)	SAMPLE NO.	SOIL SYM.	DESCRIPTION	REMARKS
0–2		SM	SILTY SAND (Fill); gray, fine to medium, little gravel, trace wood; moist, medium dense	
2–3.5			SANITARY LANDFILL: black, household garbage, paper, rags, cans, glass; moist	strong organic odor throughout
3.5–7		SM	SILTY SAND (Fill); gray, fine to medium, little gravel, trace wood; moist, medium dense	
7–11		ML	CLAYEY SILT (Fill); gray, little sand and fine to medium gravel; moist, stiff	
11–12			Bottom of test pit at depth 11.0' No groundwater encountered. Completed 6/20/85	

GRAPHIC LOG - East Face



PROPOSED 27.2 ACRE SITE
Bellevue, Washington
for Boeing Computer Services

Project No. 85-5156

Converse Consultants — Geotechnical Engineering and Applied Sciences

Drawing No. 2

LOG OF TEST PIT NO. 202-85 (Cont.)

PROJECT: 27.2 Acre Site JOB NO: 85-5156 DATE: 6/20/85

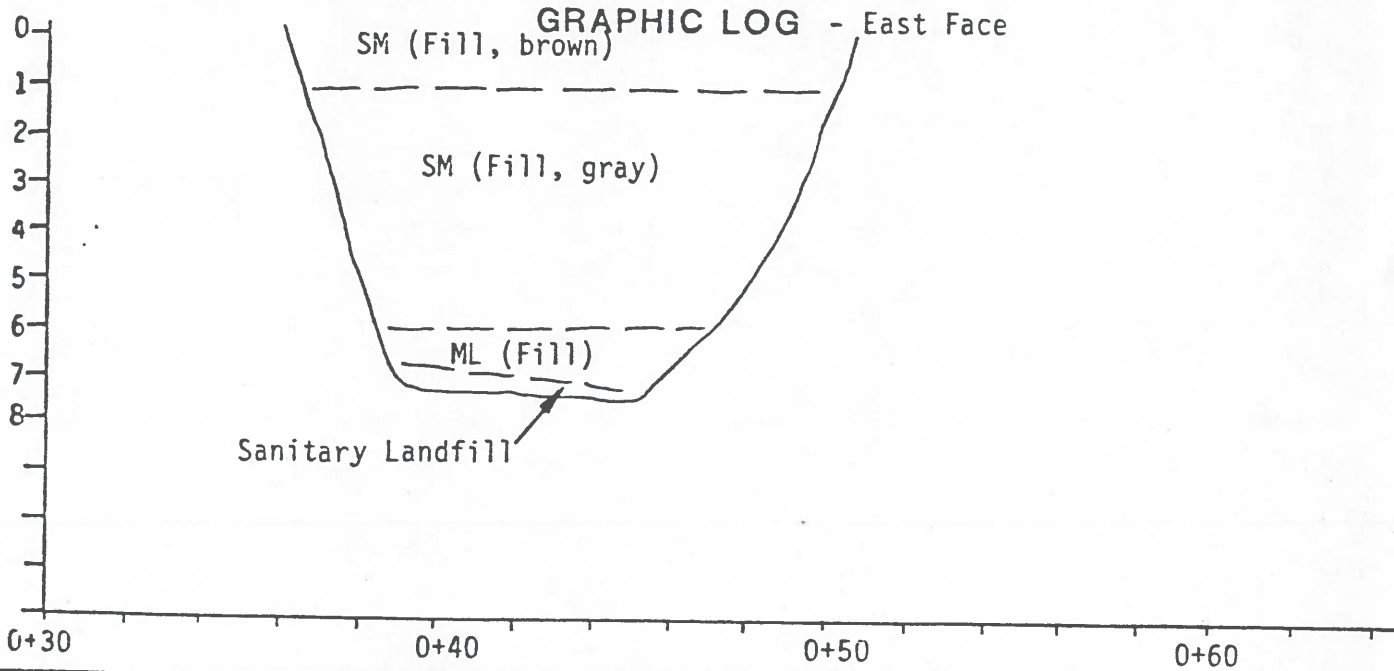
CLIENT: Boeing Computer Services ELEVATION: Approx. 342

FEATURE: LOCATION: See Drawing

GROUNDWATER LEVEL: N.A. LOGGED BY: DAY

DEPTH (ft)	SAMPLE NO.	SOIL SYM.	DESCRIPTION	REMARKS
		SM	SILTY SAND (Fill); brown, fine to medium, little gravel, trace wood; moist, medium dense	
1				
2			grades to gray in color	
3				
4				
5				
6		ML	CLAYEY SILT (Fill); gray, little sand and gravel, trace wood, paper; moist, stiff	strong trash odor throughout
7			SANITRAY LANDFILL; household garbage, paper, rags, cans, glass; moist	
8				
			Bottom of test trench at depth 7.5' No groundwater encountered Completed 6/20/85	

GRAPHIC LOG - East Face



PROPOSED 27.2 ACRE SITE
Bellevue, Washington
for Boeing Computer Services

Project No. 85-5156

Converse Consultants Geotechnical Engineering and Applied Sciences

Drawing No. 2 (CONT.)

LOG OF TEST PIT NO. 203-85

PROJECT: 27.2 Acre Site JOB NO : 85-5156 DATE: 6/21/85

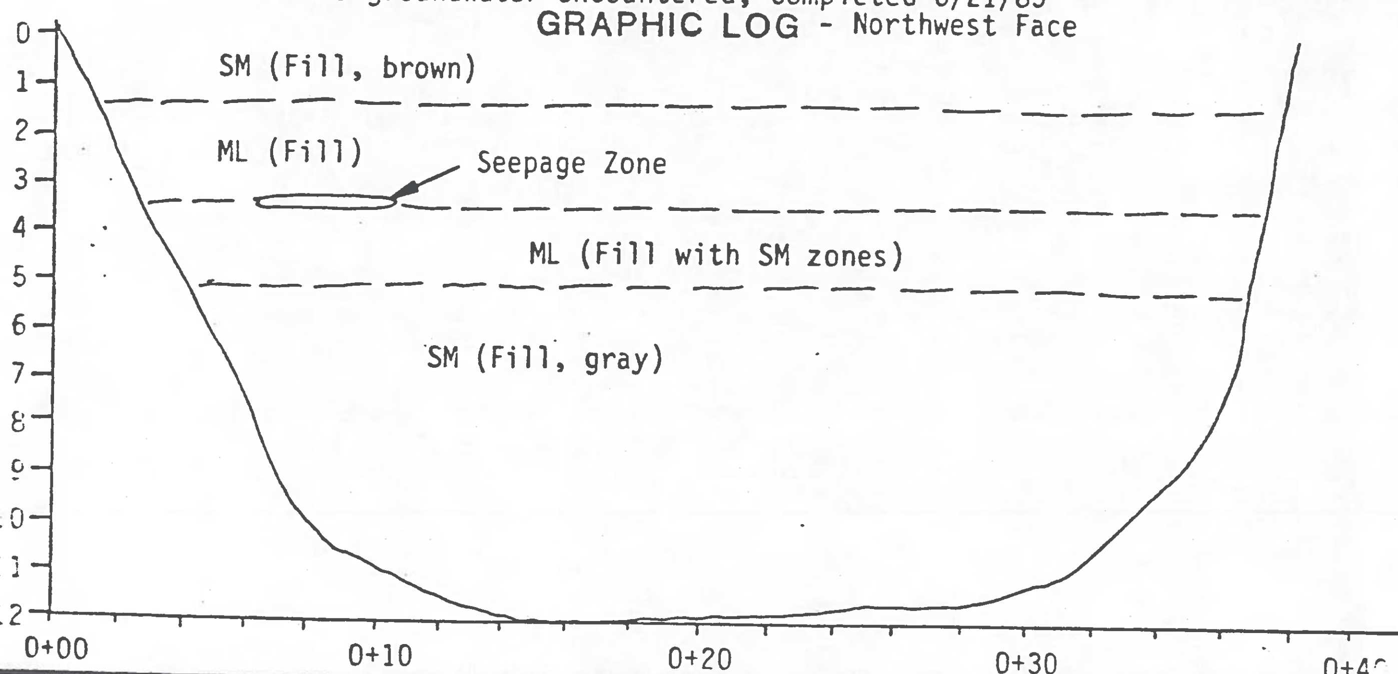
CLIENT: Boeing Computer Services ELEVATION: Approx. 342

FEATURE: LOCATION: See Drawing

GROUNDWATER LEVEL: N.A. LOGGED BY: RAB

DEPTH (ft)	SAMPLE NO.	SOIL SYM.	DESCRIPTION	REMARKS
0–1		SM	SILTY SAND (Fill); brown, fine to medium, little gravel , scattered cobbles; moist, medium dense	
2–4		ML	CLAYEY SILT (Fill); mottled gray-brown, little fine sand, trace cobbles, scattered household garbage; moist to very moist, stiff	
4–5			scattered zones of brown, silty sand concrete rubble (to 4' pieces)	seepage zone
5–12		SM	SILTY SAND (Fill); gray, fine to medium, little gravel, scattered cobbles, scattered household garbage, paper, plastic, and rubber; moist, dense	strong organic odor throughout
12			Bottom of test trench at depth 12.0' No groundwater encountered; Completed 6/21/85	

GRAPHIC LOG - Northwest Face



PROPOSED 27.2 ACRE SITE
Bellevue, Washington
for Boeing Computer Services

Project No. 85-5156

Converse Consultants Geotechnical Engineering and Applied Sciences

Drawing No. 3

LOG OF TEST PIT NO. TP-204-85

Location: See Drawing

Elevation: Approx. 344

Surface Conditions: Flat; sage brush and grass

Depth in feet	Moisture Content-%	Sample	Symbol	DESCRIPTION	REMARKS
0–3			SM	**SILTY SAND** (Fill); brown, fine to coarse, little fine to medium gravel, trace subrounded cobbles, roots and organics; slightly moist, medium dense	
3–5			SM	**SILTY SAND**; brown, fine to medium, trace gravel, trace subrounded cobbles; concrete rubble (to 4'), timbers and wood (to 8"), bicycle tires; moist, dense (Fill)	test pit walls standing vertical
5–12			ML	**CLAYEY SILT**; gray, trace gravel, trace fine to medium sand, scattered small branches, roots, and organics; moist, firm (Fill)	
12				Bottom of test pit at depth 12.0' No groundwater encountered Completed 6/21/85	

PROPOSED 27.2 ACRE SITE
Bellevue, Washington
for Boeing Computer Services

Project No 85-5156

Converse Consultants Geotechnical Engineering and Applied Sciences

Drawing No 4

LOG OF TEST PIT NO. TP-213-85

Location: See Drawing

Elevation: Approx. 338

Surface Conditions: Flat; some small weeds

Depth in Feet	Moisture Content-%	Sample	Symbol	DESCRIPTION	REMARKS
			SM	SILTY SAND (Fill); brown, fine, trace medium to coarse sand, little fine to coarse subrounded gravel; scattered roots, and sticks; moist, medium dense	
3			ML	CLAYEY SILT; gray, trace fine to medium sand, little gravel, scattered small to medium cobbles; concrete rubble to (18"), wood, logs (6"), paper, plastic, and metal scraps; with occasional medium beds of silty sand, brown, fine to medium; moist, firm (Fill)	distinct organic odor
12				Bottom of test pit at depth 12.0' No groundwater encountered Completed 6/21/85	

PROPOSED 27.2 ACRE SITE
Bellevue, Washington
for Boeing Computer Services

Project No 85-5156

Converse Consultants
Geotechnical Engineering and Applied Sciences

Drawing No 13

(OW-1)

PROJECT: *Bellevue Airport / Eastgate Landfill* W.O. *1-91M-14173-0* BORING No. *B-1*

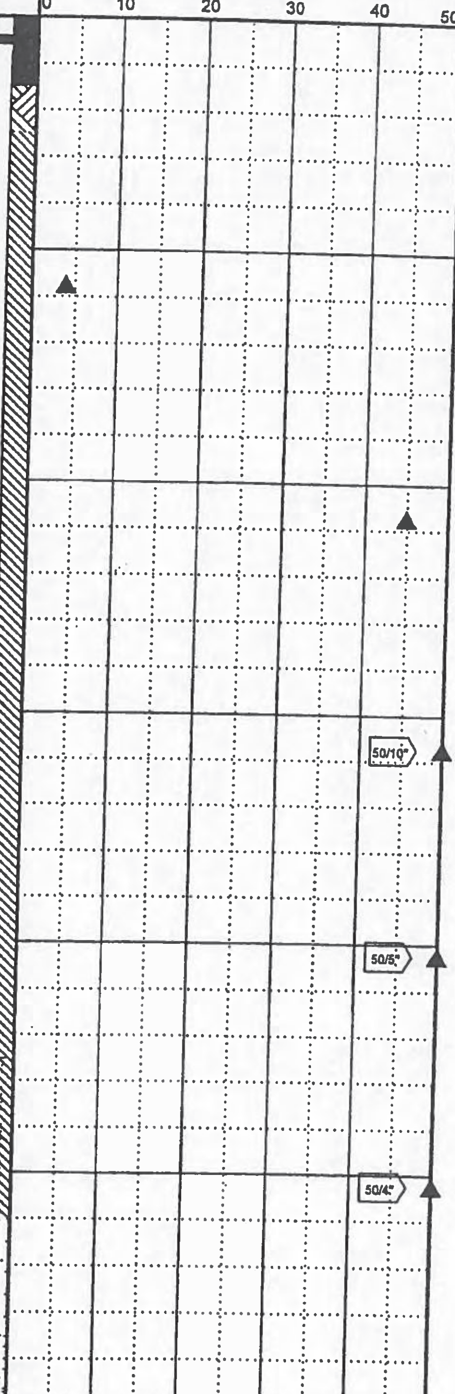
DEPTH (feet)	Soil Description	SAMPLE NUMBER
0	Location: North side of Pond A Approximate ground surface elevation: 305 feet	
	Topsoil	
	Loose, moist, tan, fine to medium SAND, some silt (Embankment Fill)	
5		S1
	Dense, moist, gray, silty fine to medium SAND, some gravel (Alluvium)	
10		S2
15		S3
20		S4
	Dense, saturated, light brown, medium SAND, trace to some silt (Advance Outwash)	
25		S5
	Very dense, saturated, light gray, fine to medium SAND, trace silt (Advanced Outwash)	
30		

USCS/USGS GRAPHICS | SAMPLE TYPE | GROUND WATER | ATD

PENETRATION RESISTANCE

▲ Standard | Blows over inches | △ Other

Blows per foot



Page 1 of 2

TESTING

0 20 40 60 80 100

Plastic Limit | Moisture Content | Liquid Limit

LEGEND

2.00-inch OD split-spoon sampler

ATD Groundwater level at time of drilling

Observation well:

Monument

Bentonite Fill with PVC Pipe

Groundwater Level

Sand Fill with Slotted PVC Pipe

Pipe Cap

Slough at Bottom of Hole

amec

11335 N.E. 122nd Way Suite 100
Kirkland, Washington 98034-6913

A4IN1.GDT 5/28/02

4IN1 B3.G

Drilling Method: HSA Hammer type: Winch Date drilled: *March 27, 2002* Logged By: *KSS*

OW-1

PROJECT: *Bellevue Airport / Eastgate Landfill* W.O. *1-91M-14173-0* BORING No. *B-1*

DEPTH (feet)	Soil Description Location: North side of Pond A Approximate ground surface elevation: 305 feet	USCS/USGS GRAPHICS	SAMPLE TYPE	SAMPLE NUMBER	GROUND WATER	PENETRATION RESISTANCE ▲ Standard / Blows over inches / △ Other Blows per foot 0 10 20 30 40 50	TESTING
30	Very dense SAND (as above)			S6		80/11"	
35	Hard, wet, gray, SILT, some fine sand (Glacial-lacustrine Deposit)			S7		50/4"	
40				S8		70	
	Boring terminated at approximately 41.5 feet below ground surface.						
45							
50							
55							
60							

Page 2 of 2

0 20 40 60 80 100
Plastic Limit — Moisture Content — Liquid Limit

LEGEND

2.00-inch OD split-spoon sampler

ATD Groundwater level at time of drilling

Observation well:
Monument
Bentonite Fill with PVC Pipe
Groundwater Level
Sand Fill with Slotted PVC Pipe
Pipe Cap
Slough at Bottom of Hole

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11335 N.E. 122nd Way Suite 100
Kirkland, Washington 98034-6913

A4IN1.GDT 5/28/02

4IN1 B3.C

Drilling Method: HSA Hammer type: Winch Date drilled: *March 27, 2002* Logged By: *KSS*

OW-2

PROJECT: *Bellevue Airport / Eastgate Landfill* W.O. *1-91M-14173-0* BORING No. *B-2*

DEPTH (feet)	Soil Description	USCS/USGS GRAPHICS	SAMPLE TYPE	SAMPLE NUMBER	GROUND WATER	PENETRATION RESISTANCE (Blows per foot)	TESTING
	Location: South side of Pond A Approximate ground surface elevation: 308 feet					▲ Standard; ##/## Blows over inches; △ Other 0 10 20 30 40 50	
0	Grass over topsoil						
	Medium dense, moist, light-orangish brown, silty fine to medium SAND, with some gravel and cobbles (Fill)						
	Medium dense, moist, light gray, silty SAND, with some gravel (Fill)						
5	Hard, moist, gray fine sandy SILT, with some gravel (Fill)			S1		▲ (~30)	
10				S2		50/6"	
	Alluvium (interpreted from cross-section?)						
15	Dense, moist, gray, silty fine SAND, with some gravel (Advance Outwash)			S3		50/5"	
	Becomes very dense, saturated, gray, fine to medium SAND, trace silt				▼		
20				S4		75"	
25	Becomes brown, medium to coarse SAND			S5		75/11"	
					ATD		
30							

0 20 40 60 80 100

Plastic Limit — Moisture Content — Liquid Limit

LEGEND

- 2.00-inch OD split-spoon sampler
- 3.00-inch OD split-Spoon sampler
- ▼ Observed groundwater level
- ATD Groundwater level at time of drilling

Observation well:

- Monument
- Bentonite Fill with PVC Pipe
- Groundwater Level
- Sand Fill with Slotted PVC Pipe
- Pipe Cap
- Slough at Bottom of Hole

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Kirkland, Washington 98034-6913

4IN1 B3. JA4IN1.GDT 5/28/02

Drilling Method: HSA Hammer type: Winch Date drilled: *March 27, 2002* Logged By: *KSS*

PROJECT: *Bellevue Airport / Eastgate Landfill* W.O. *1-91M-14173-0* BORING No. *B-2*

DEPTH (feet)	Soil Description Location: South side of Pond A Approximate ground surface elevation: 308 feet	USCS/USGS GRAPHICS	SAMPLE TYPE	SAMPLE NUMBER	GROUND WATER	PENETRATION RESISTANCE (Standard ▲, Blows over inches ##/##, Other △; Blows per foot 0–50)	Page 2 of 2 TESTING
30	Dense, wet to saturated, light brown, fine to medium SAND, with some silt (Advance Outwash)			S6		▲	
35				S7		50/5" ▲	
	Hard, moist, gray SILT with some fine sand (Glacio-lacustrine Deposit)						
40				T8		50/5" ▲	
	Boring terminated at approximately 40.5 feet below ground surface						
45							
50							
55							
60							

Moisture content scale: 0 20 40 60 80 100 — Plastic Limit, Moisture Content, Liquid Limit

LEGEND

- 2.00-inch OD split-spoon sampler
- 3.00-inch OD split-Spoon sampler
- Observed groundwater level
- ATD Groundwater level at time of drilling

Observation well:

- Monument
- Bentonite Fill with PVC Pipe
- Groundwater Level
- Sand Fill with Slotted PVC Pipe
- Pipe Cap
- Slough at Bottom of Hole

amec

11335 N.E. 122nd Way Suite 100
Kirkland, Washington 98034-6913

VA4IN1.GDT 5/28/02 4IN1 B3.

Drilling Method: HSA Hammer type: Winch Date drilled: *March 27, 2002* Logged By: *KSS*

PROJECT: *Bellevue Airport / Eastgate Landfill* W.O. *1-91M-14173-0* BORING No. *B-3*

DEPTH (feet)	Soil Description	USCS/USGS GRAPHICS	SAMPLE TYPE	SAMPLE NUMBER	GROUND WATER	PENETRATION RESISTANCE	TESTING
	Location: Southeast corner of Pond C Approximate ground surface elevation: 328 feet					▲ Standard; Blows over inches; △ Other; Blows per foot (0, 10, 20, 30, 40, 50)	Page 1 of 1
0	Grass over topsoil						
	Loose, moist to wet, brown silty, gravelly, fine to medium SAND, with scattered debris, glass shards (Fill)						
5				S1			
	Dense, moist, reddish-tan with scattered rust mottling, gravelly, fine to medium SAND, with some silt (Glacial Till)						
10				S2			
15	Blowcount overstated, bouncing on rock			S3		50/4.5"	
	Medium dense to dense, wet to saturated, gray, gravelly, silty fine to medium SAND (Glacial Till) Very hard drilling						
20				S4	ATD		
25				S5			
	Boring terminated at approximately 26.5 feet below existing ground surface						
30							

LEGEND

2.00-inch OD split-spoon sampler

ATD Groundwater level at time of drilling

Observation well:

- Monument
- Bentonite Fill with PVC Pipe
- Groundwater Level
- Sand Fill with Slotted PVC Pipe
- Pipe Cap
- Slough at Bottom of Hole

0 20 40 60 80 100

Plastic Limit — Moisture Content — Liquid Limit

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Kirkland, Washington 98034-6913

Drilling Method: HSA Hammer type: Cathead Date drilled: *April 10, 2002* Logged By: *KSS*

NA4IN1.GDT 5/28/02

4IN1 B3

PROPOSED I-90/BELLEVUE BUSINESS PARK

BELLEVUE, WASHINGTON

PROJECT 78059

FIGURE 2

TP-1-78

TEST PIT 1 (EL. 332±)

DEPTH, FEET	
0.0 - 1.0	LOOSE BROWN SILTY SAND WITH SOME TO TRACE GRAVEL (MOIST) (FILL)
1.0 - 1.5	LOOSE GRAY SILTY SAND WITH SOME GRAVEL (WET) (FILL)
1.5 - 13.0	HOUSEHOLD GARBAGE MIXED WITH SILTY SAND WITH SOME GRAVEL AND LIMBS (WET) (MODERATE TO STRONG ODOR)
	NO GROUNDWATER OBSERVED

TP-2-78

TEST PIT 2 (EL. 312±)

DEPTH, FEET	
0.0 - 3.5	LOOSE BROWN SILTY FINE SAND WITH TRACE GRAVEL (MOIST) (FILL) SMALL TREES ON CONTACT
3.5 - 8.0	MEDIUM DENSE TO DENSE GRAY SILTY SAND WITH SOME GRAVEL TO GRAVELLY SILTY SAND (WET) (FILL)
8.0 - 9.5	MEDIUM DENSE GRAY CLEAN GRAVELLY SAND (WET) (FILL)
	STICKS AT CONTACT
9.5 - 12.5	MEDIUM DENSE BROWN SILTY SAND WITH TRACE TO SOME GRAVEL (WET)
12.5- 14.0	FIRM BROWN AND GRAY MOTTLED SILTY FINE SAND (WET) (BADLY WEATHERED TILL?)
	GROUNDWATER SEEPAGE AT 3.0 AND 14.0 FEET LIGHT ODOR

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LOGS OF TEST PITS

TP-3-78

TEST PIT 3 (EL. 309±)

DEPTH, FEET	
0.0 - 1.5	LOOSE TO VERY LOOSE DARK BROWN SILTY SAND WITH ROOTS (MOIST) (TOPSOIL AND THIN FOREST DUFF LAYER)
1.5 - 4.0	MEDIUM DENSE TO DENSE GRAY AND BROWN MOTTLED SILTY SAND WITH TRACE TO SOME GRAVEL (MOIST WITH SOME WET ZONES) (WEATHERED TILL)
4.0 - 10.0	DENSE TO VERY DENSE GRAY SILTY SAND WITH TRACE TO SOME GRAVEL (MOIST) (GLACIAL TILL) NEAR- REFUSAL OF EXCAVATING EQUIPMENT AT 10.0 FEET

NO GROUNDWATER OBSERVED

TP-4-78

TEST PIT 4 (EL. 329±)

DEPTH, FEET	
0.0 - 4.0	VERY SOFT TO SOFT BROWN FINE SANDY SILT TO SILTY FINE SAND WITH TRACE GRAVEL (WET) (FILL)
4.0 - 5.5	LOOSE TO MEDIUM DENSE DARK BROWN TO BLACK SILT AND SAND MIXED WITH CONCRETE AND ASPHALT RUBBLE (WET) (FILL)
5.5 - 7.0	CONCRETE RUBBLE
7.0 - 12.0	LOOSE BROWN SILTY SAND WITH TRACE TO SOME GRAVEL AND SCATTERED GARBAGE (WET) (FILL)

NO GROUNDWATER OBSERVED
SLIGHT TO MODERATE ODOR

TP-5-78

TEST PIT 5 (EL. 322±)

DEPTH, FEET	
0.0 - 1.0	LOOSE BROWN SILTY SAND WITH TRACE GRAVEL (WET) (FILL)
1.0 - 12.0	HOUSEHOLD GARBAGE MIXED WITH SILTY SAND LUMBER AND LIMBS (WET) (NEWSPAPER FROM 1963 STILL READABLE)

NO GROUNDWATER OBSERVED
STRONG ODOR

TP-6-78

TEST PIT 6 (EL. 333±)

DEPTH, FEET	
0.0 - 0.5	LOOSE BROWN SILTY SAND WITH TRACE GRAVEL (WET) (FILL)
0.5 - 1.5	LOOSE GRAY SILTY SAND WITH TRACE GRAVEL (WET) (FILL)
1.5 - 13.0	HOUSEHOLD GARBAGE MIXED WITH SAND, SILT, LIMBS AND LUMBER (WET) (1964 NEWSPAPER AT 3.0 FEET STILL READABLE)

VERY HEAVY GROUNDWATER FLOW AT 4.0 FEET, WATER DOES NOT POND IN BOTTOM OF TEST PIT

VERY STRONG ODOR

TEST PIT 7 (EL. 332±)

DEPTH, FEET	
0.0 - 0.2	PEA GRAVEL
0.2 - 5.5	LOOSE TO MEDIUM DENSE BROWN GRAVELLY SAND WITH SOME SILT (MOIST) (FILL)
5.5 - 12.0	HOUSEHOLD GARBAGE MIXED WITH SILTY SAND, LIMBS AND LUMBER (WET) (1962 NEWSPAPER STILL READABLE)

NO GROUNDWATER OBSERVED
STRONG ODOR

TP-8-78

TEST PIT 8 (EL. 329±)

DEPTH, FEET	
0.0 - 7.5	LOOSE TO MEDIUM DENSE BROWN SILTY SAND WITH TRACE TO SOME GRAVEL (MOIST) (FILL)
7.5 - 12.5	HOUSEHOLD GARBAGE MIXED WITH SILTY SAND, CAR PARTS AND OTHER DEBRIS (WET) (1963 NEWSPAPER STILL READABLE)
	MODERATE GROUNDWATER FLOW AT 8.0 FEET STRONG ODOR

TP-9-78

TEST PIT 9 (EL. 341±)

DEPTH, FEET	
0.0 - 0.2	SOD
0.2 - 2.0	LOOSE TO MEDIUM DENSE BROWN SILTY SAND OF SOME GRAVEL (MOIST) (WEATHERED TILL)
2.0 - 6.5	DENSE TO VERY DENSE GRAY WITH MINOR BROWN MOTTLING SILTY SAND WITH SOME GRAVEL (MOIST) (GLACIAL TILL)
	NO GROUNDWATER OBSERVED

TP-10-78

TEST PIT 10 (EL. 336±)

DEPTH, FEET	
0.0 - 0.5	FOREST DUFF
0.5 - 3.0	LOOSE TO MEDIUM DENSE BROWN SILTY SAND (MOIST)
3.0 - 8.0	LOOSE TO MEDIUM DENSE GRAY SAND WITH SOME LENSES OF HARD GRAY SANDY SILT (MOIST)
8.0 - 10.0	DENSE TO VERY DENSE GRAY SILTY SAND WITH SOME GRAVEL AND TRACE TO OCCASIONAL COBBLES (MOIST) (GLACIAL TILL)
	NO GROUNDWATER OBSERVED

TP-16-78

TEST PIT 16 (EL. 300±)

DEPTH, FEET	
0.0 - 0.4	SOD
0.4 - 2.5	MEDIUM DENSE BROWN SILTY SAND WITH SOME GRAVEL (MOIST) (WEATHERED TILL) SLIGHT GROUNDWATER SEEPAGE AT 2.5 FEET
2.5 - 5.0	MEDIUM DENSE GRAY SILTY SAND WITH SOME GRAVEL (MOIST) (WEATHERED TILL)
5.0 - 10.0	VERY DENSE GRAY SILTY SAND WITH SOME GRAVEL (MOIST) (GLACIAL TILL)

TP-17-78

TEST PIT 17 (EL. 314±)

DEPTH, FEET	
0.0 - 5.5	LOOSE BROWN SILTY SAND WITH SOME GRAVEL (WET) (FILL)
5.5 - 6.5	LOOSE GRAY GRAVELLY SILTY SAND TO GRAVELLY SAND WITH SOME SILT (MOIST) (FILL)
6.5 - 11.0	LOOSE TO MEDIUM DENSE BROWN SILTY SAND WITH SOME GRAVEL (MOIST)
11.0- 14.0	MEDIUM DENSE TO DENSE LIGHT BROWN TO GRAY SILTY SAND WITH SOME GRAVEL (MOIST) (WEATHERED TILL)

NO GROUNDWATER OBSERVED

PROPOSED I-90 /BELLEVUE BUSINESS PARK

BELLEVUE, WASHINGTON PROJECT 78059

FIGURE 9

78-18-78

TEST PIT 18 (EL. 312±) -78

DEPTH, FEET	
0.0 - 0.2	SOD
0.2 - 2.0	LOOSE GRAY AND BROWN LAYERED SILTY SAND WITH SOME GRAVEL (MOIST) (FILL)
2.0 - 3.5	LOOSE BROWN SILTY SAND AND STICKS MIXED WITH HOUSEHOLD GARBAGE (MOIST) (FILL)
3.5 - 5.0	LOOSE TO MEDIUM DENSE BROWN SILTY SAND WITH SOME GRAVEL (MOIST) (WEATHERED TILL)
5.0 - 12.0	DENSE TO VERY DENSE GRAY SILTY SAND WITH SOME GRAVEL (MOIST) (GLACIAL TILL)
	NO GROUNDWATER OBSERVED

78-19-78

TEST PIT 19 (EL. 330±) — 78

DEPTH, FEET	
0.0 - 1.5	LOOSE BROWN AND GRAY LAYERED SILTY SAND WITH SOME GRAVEL (MOIST) (FILL)
1.5 - 12.0	HOUSEHOLD GARBAGE MIXED WITH BLUE-GRAY SILTY GRAVELLY SAND, LUMBER AND ASH (WET) (STRONG ODOR)
	MODERATE GROUNDWATER FLOW AT 7.0 TO 8.0 FEET

bucknam associates

LOGS OF TEST PITS

PROPOSED I-90/BELLEVUE BUSINESS PARK BELLEVUE, WASHINGTON PROJECT 78059	FIGURE 10

TP-20-78

TEST PIT 20 (EL. 341±) -78

DEPTH, FEET	
0.0 - 0.2	SOD
0.2 - 1.5	LOOSE TO MEDIUM DENSE GRAY SILTY SAND WITH SOME GRAVEL TO GRAVELLY SILTY SAND (MOIST) (FILL)
1.5 - 3.0	HOUSEHOLD GARBAGE AND ASH (WET) (MODERATE ODOR)
3.0 - 4.0	MEDIUM DENSE LIGHT BROWN SILTY SAND WITH SOME GRAVEL (MOIST) (WEATHERED TILL)
4.0 - 9.0	DENSE TO VERY DENSE GRAY SILTY SAND WITH SOME GRAVEL (MOIST) (GLACIAL TILL)
	NO GROUNDWATER OBSERVED

TP-21-78

TEST PIT 21 (EL, 343±) -78

0.0 - 0.1	LOOSE BROWN SILTY SAND WITH SOME GRAVEL (WET) (WEATHERED TILL)
0.1 - 3.0	VERY DENSE GRAY SILTY SAND WITH SOME GRAVEL (MOIST) (GLACIAL TILL)
	NO GROUNDWATER OBSERVED

TP-22-78

TEST PIT 22 (EL. 338±) -78

DEPTH, FEET	
0.0 - 2.0	LOOSE TO MEDIUM DENSE BROWN TO GRAY SILTY SAND WITH SOME GRAVEL (WET) (FILL)
2.0 - 12.0	HOUSEHOLD GARBAGE (WET) (STRONG ODOR)
	NO GROUNDWATER OBSERVED

bucknam associates	LOGS OF TEST PITS

TP-23-78

TEST PIT 23 (EL. 340±)

DEPTH, FEET	
0.0 - 0.3	SOD
0.3 - 2.5	LOOSE BROWN SILTY SAND WITH SOME GRAVEL AND "BEDROCK" CHUNKS TO 10 INCHES IN DIAMETER (WET) (FILL)
2.5 - 4.0	LOOSE GRAY SILTY SAND WITH SOME GRAVEL AND STICKS (MOIST) (FILL)
4.0 - 7.0	LOOSE TO MEDIUM DENSE TAN GRADING TO GRAY-BROWN SILTY SAND WITH SOME GRAVEL (MOIST) (WEATHERED TILL)
7.0 - 9.0	VERY DENSE GRAY SILTY SAND WITH SOME GRAVEL (MOIST) (GLACIAL TILL) NEAR-REFUSAL AT 9.0 FEET
	NO GROUNDWATER OBSERVED

TP-24-78

TEST PIT 24 (EL. 348±)

DEPTH, FEET	
0.0 - 2.5	LOOSE TO MEDIUM DENSE BROWN, SILTY SAND WITH SOME GRAVEL (WET TO MOIST) (WEATHERED TILL)
2.5 - 6.0	DENSE TO VERY DENSE GRAY SILTY SAND WITH SOME GRAVEL (MOIST) (GLACIAL TILL)
	NO GROUNDWATER OBSERVED

LOG OF TEST PIT NO. 1 TP-1-80

Location: See Drawing 1 Elevation: Approx. 301'

Surface Conditions:

Depth in feet	Moisture %	Sample	Symbol	DESCRIPTION		REMARKS
1				SILTY GRAVELLY SAND	brown, fine to coarse; moist, loose.	severely weathered Glacial Till.
2						
3				SILT and CLAY	gray-brown, with little sand and scattered gravel; moist, medium stiff.	
4						
5				SILTY SAND	gray-brown, fine to coarse with little gravel, trace clay, scattered cobbles; moist, medium dense to dense.	unweathered Glacial Till.
6						
7						
8						
9				grades to SAND	with trace silt.	
10						
11					wet.	
12						
13				Bottom of test pit at 11.5'. No groundwater encountered. Completed July 22, 1980.		
14						
15						

Approved for publication ______ by ______

PROPOSED POND A
Bellevue, Washington
for Cabot, Cabot & Forbes

Project No. 80-5188

ConverseWardDavisDixon Geotechnical Consultants

Drawing No. 2

LOG OF TEST PIT NO. TP-3 D-81

√81

Location: See Drawing 1.

Elevation: Approx. 343

Surface Conditions: Brush and grass.

Depth In feet	Moisture %	Sample	Symbol	DESCRIPTION		REMARKS
1			ML/CL	SILTY CLAY (Construction Fill)	gray, trace gravel; moist soft.	
2					concrete rubble (up to 4') throughout layer.	
3						
4						Light seepage at 4'.
5					wood debris	
6				SANITARY LANDFILL	silty sand tin cans, bottles, distinct odor.	
7			SM	SAND (Weathered Till)	brown, fine to medium, some silt, little gravel; moist, medium dense.	
8						
9			SM	SAND (Fresh Till)	gray, fine to medium, some silt, little gravel; moist, very dense.	
10						
11						
12					Bottom of test pit at depth 11.0'. Completed March 16, 1981.	
13						
14						
15						

I-90/BELLEVUE BUSINESS PARK, BUILDING 5
Bellevue, Washington
for Cabot, Cabot & Forbes

Project No
81-5135

Drawing No

ConverseWardDavisDixon Geotechnical Consultants

LOG OF TEST PIT NO. TP-4 D-81

-81

Location: See Drawing 1. Elevation: Approx. 332

Surface Conditions: Brush and grass.

Depth in Feet	Moisture %	Sample	Symbol	DESCRIPTION		REMARKS
			ML/ CL	SILTY CLAY (Construction Fill)	gray, trace gravel; moist, soft.	
					concrete rubble (up to 4') throughout layer.	
					wood debris	
					silty sand	
				SANITARY LANDFILL	tin cans, bottles, distinct odor.	
					Bottom of test pit at depth 12.0'. Completed March 16, 1981.	

I-90/BELLEVUE BUSINESS PARK, BUILDING 5
Bellevue, Washington
for Cabot, Cabot & Forbes

Project No. 81-5135

Drawing No.

ConverseWardDavisDixon Geotechnical Consultants

LOG OF TEST PIT NO. 5 TP-5-81

Location: See Site Plan

Elevation: Approx. 338

Surface Conditions: Wooded Area

Depth in feet	Moisture %	Sample	Symbol	DESCRIPTION		REMARKS
1			SM	SILTY SAND (Forest Duff)	brown, fine to medium, roots; moist, loose	
2			SM/SW	SILTY SAND (Weathered Till)	brown, medium to coarse, some gravel; moist, medium dense	
3				SILTY SAND (Fresh Till)	gray, medium to coarse, some gravel; moist, very dense	roots to 2½' depth
4						
5					cobbles	
6						
7				Bottom of test pit at depth 6.0' No groundwater encountered Completed 10/29/81		
8						
9						
10						
11						
12						
13						
14						
15						

Approved for publication by

BUILDING SITE 1 - I-90 BELLEVUE BUSINESS PARK
Bellevue, Washington
for Cabot, Cabot & Forbes

Project No. 81-5194

ConverseWardDavisDixon Geotechnical Consultants

Drawing No. 6

V-81

LOG OF TEST PIT NO. TP-103D -81

Location: See Drawing 1. **Elevation:** Approx. 318

Surface Conditions: Brush and grass.

Depth In feet	Moisture %	Sample	Symbol	DESCRIPTION		REMARKS
			SM	SILTY SAND (Construction Fill)	brown, fine to medium, little gravel; moist, loose.	
1						
2					wood debris	
				grades to		Slight seepage at 2.5'.
3				SAND	gray, little gravel, trace silt; moist, medium dense.	
4						
5						
6				SANITARY LANDFILL	silty sand, tin cans, paper, and bottles.	
7						
8						
9						
10						
11				Bottom of test pit at depth 10.0'. Completed April 21, 1981.		
12						
13						
14						
15						

I-90/BELLEVUE BUSINESS PARK, BUILDING 5
Bellevue, Washington
for Cabot, Cabot & Forbes

Project No. 81-5135

Drawing No

ConverseWardDavisDixon Geotechnical Consultants

LOG OF TEST PIT NO. TP-110 -81

Location: See Drawing 1.

Elevation: Approx. 334

Surface Conditions: Brush and grass.

Depth in feet	Moisture %	Sample	Symbol	DESCRIPTION		REMARKS
1			SM	SILTY SAND (Weathered Till)	reddish brown, little gravel, trace roots; moist, loose.	
2						
3			SM	SILTY SAND (Fresh Till)	gray, fine to medium, little gravel; moist, very dense.	Difficult to excavate below 2½'.
4						
5						
6				Bottom of test pit at depth 5.0'. Completed April 21, 1981.		
7						
8						
9						
10						
11						
12						
13						
14						
15						

I-90/BELLEVUE BUSINESS PARK, BUILDING 5
Bellevue, Washington
for Cabot, Cabot & Forbes

Project No
81-5135

Drawing No

ConverseWardDavisDixon Geotechnical Consultants

DATE DRILLED: 11/2/81

SUMMARY: BORING NO. B-1-81

ELEVATION: Approx. 336

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
0						LANDFILL sand, silt, tin cans, plastic bags, cloth, garbage odor		moist	
5	1A	7, 4, 2							loose
10	XA	2, 11, 10							m.dense
15	2A	19, 20, 20							dense
20	3A	12, 4, 8							loose to m.dense
25	XA	8, 6, 8							m.dense
30	4A	14, 19, 26				sand layer, some wood		11/2/81 wet	dense
35	5A	28, 28, 20				intact wood, smell of creosote			dense
40									

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

BOEING METHANE STUDY
Bellevue, Washington
for The Boeing Company

Project No. 81-5186

Drawing No. 2

ConverseWardDavisDixon Geotechnical Consultants

DATE DRILLED: 11/2/81

SUMMARY: BORING NO.B-1(Cont.) ELEVATION: Approx. 336

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION		SYMBOL	MOISTURE	CONSISTENCY
	6A	12 18 18				SAND (Till)	gray, mottled brown, medium to coarse, trace silt, fine gravel		wet	dense
45	7A	14 35 66					to brownish gray			v.dense
50	8A	70								

Bottom of boring at depth 50.5'
Groundwater encountered at depth 31.5'
Piezometer installed to 50.5'
Completed 11/2/81

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

BOEING METHANE STUDY
Bellevue, Washington
for The Boeing Company

Project No. 81-5186

Drawing No. 2a

ConverseWardDavisDixon Geotechnical Consultants

DATE DRILLED: 11/2/81

SUMMARY: BORING NO. B-2-81

ELEVATION: Approx. 342

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED

DEPTH IN FEET	SAMPLE NO.*	SAMPLE	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION		SYMBOL	MOISTURE	CONSISTENCY	DEPTH IN FEET
							GRAVELLY SAND (Fill)	brown, medium to coarse		moist	loose to m. dense	
5							LANDFILL	paper, tin cans, cloth		moist	loose	
10	1A		29 50				SAND (Till)	brown, medium to coarse, trace of gravel		moist	v.dense	
15							Bottom of boring at depth 11.0' No groundwater encountered Piezometer installed to 11.0' Completed 11/2/81					

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

BOEING METHANE STUDY
Bellevue, Washington
for The Boeing Company

Project No
81-5186

Drawing No
3

ConverseWardDavisDixon Geotechnical Consultants

[redacted]ILLED: 11/2/81

SUMMARY: BORING NO. B-3-81

ELEVATION: Approx. 338

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED

SAMPLE NO.*	SAMPLE	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION		SYMBOL	MOISTURE	CONSISTENCY
						LANDFILL	paper, glass, sand, silt, cloth, garbage odor		moist	dense
[illegible]		5 11 31								m.dense
[illegible]		10 11 3								
[illegible]		15 30 50/4"					sand layer, coarse, some gravel			v.dense
[illegible]		9 6 5					intact wood			m.dense
[illegible]		30 50				SAND (Till)	gray, mottled brown, coarse, some gravel		moist	v.dense
5A		50					to gray			

Bottom of boring at depth 30.5'
No groundwater encountered
Piezometer installed to 30.5'
Completed 11/2/81

split-spoon sampler
O.D. thin-wall sampler C. 3-1/4" O.D. x 2-1/2" liner
" O.D. split barrel sampler X. sample not recovered
**A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

BOEING METHANE STUDY
Bellevue, Washington
for The Boeing Company

Project No. 81-5186

Drawing No. 4

ConverseWardDavisDixon Geotechnical Consultants

SUMMARY: BORING NO. B-4-81

ELEVATION: Approx.

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED

SAMPLE NO.*	SAMPLE	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION		SYMBOL	MOISTURE	CONSISTENCY
						SAND (Fill)	brown, medium, trace silt, some gravel		moist	m.dense
						Bottom of boring at depth 5.0' No groundwater encountered Piezometer installed to 5.0' Completed 11/2/81				

split-spoon sampler
O.D. thin-wall sampler C. 3-1/4" O.D. x 2-1/2" liner
2" O.D. split barrel sampler X. sample not recovered

**A - Atterberg, C* - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

BOEING METHANE STUDY
Bellevue, Washington
for The Boeing Company

Project No
81-5186

Drawing No
5

ConverseWardDavisDixon Geotechnical Consultants

DATE DRILLED: 11/2/81

SUMMARY: BORING NO. B-5-81

ELEVATION: Approx. 342

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	SAMPLE	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION		SYMBOL	MOISTURE	CONSISTENCY	DEPTH IN FEET
							SAND (Fill)	brown, medium, trace silt, some gravel		moist	m.dense	
							Bottom of boring at depth 5.0' No groundwater encountered Piezometer installed to 5.0' Completed 11/2/81					

A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
3-1/2" O.D. split barrel sampler
X. sample not recovered

**A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

BOEING METHANE STUDY
Bellevue, Washington
for The Boeing Company

Project No. 81-5186

Drawing No. 6

ConverseWardDavisDixon Geotechnical Consultants

DATE DRILLED 10/1/82

SUMMARY: BORING NO. 6 -82

ELEVATION 332.3

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION		SYMBOL	MOISTURE	CONSISTENCY	ELEV
0						GRAVELLY SAND	brown, fine to coarse, some silt	SW	moist	very dense	
	1A	8, 25, 40		8.1							330
5											
	2A	14, 50/6"					occasional cobbles		wet	very dense	325
10						SILTY SAND (Glacial Till)	gray, fine to medium, little gravel, trace cobbles	SM	moist	very dense	
	3A	16, 18, 35		7.3							320
15											
	4A	50/4"		6.4							315
20											
	5A	50/5"		10.2			little to some gravel		very moist		310
25											
	6A	50/5"		5.5					moist		305
30						GRAVELLY SAND (Advance Outwash)	brown, fine to coarse, clayey silt matrix	SW	moist	very dense	
	7A	25, 50/3"		7.7							300
35							grades cleaner with less silt, occ. cobbles.				
	8A	50/4"		5.8							295
40						Bottom of boring at depth 38.3'					

No groundwater encountered

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler X. sample not recovered

**A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE TRUNK SEWER
Bellevue, Washington
for Brown and Caldwell

Project No.
82-5169

Drawing No.
~~11~~ 12

Converse Consultants Geotechnical Engineering and Applied Sciences

DATE DRILLED 10/2/82

SUMMARY: BORING NO. 7-82

ELEVATION: 333.9

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF
1A	4, 6, 7		15.6	
2A	1, 8, 17		15.5	
3A	5, 3, 9		21.4	
4A	50/3"		5.7	
5A	50/4"		6.1	
6A	50/5"		6.1	
7A	50/6"		9.2	

DESCRIPTION		SYMBOL	MOISTURE	CONSISTENCY
SILTY SAND (Fill)	brown, fine to medium, some gravel	SM	very moist	medium dense
SILTY SAND (Sanitary Landfill)	brown, fine to medium, some gravel, trace wood & debris (metal, plastic, cloth), organic odor wood fragments (from drill action, occasional pieces of concrete 5.5-16.5' depth)		very moist	medium dense
SAND (Glacial Till)	blue-gray, fine to coarse, some silt and gravel, occasional cobbles grades slightly coarser	SM	slightly moist	very dense
GRAVELLY SAND (Advance Outwash)	gray, fine to coarse, trace silt, zones of clayey silt matrix	SW	moist	very dense

Bottom of boring at depth 33.5'
No groundwater encountered

DEPTH IN FEET: 0, 5, 10, 15, 20, 25, 30, 35

ELEV.: 330, 325, 320, 315, 310, 305, 300

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE TRUNK SEWER
Bellevue, Washington
for Brown and Caldwell

Project No 82-5169

Converse Consultants
Geotechnical Engineering and Applied Sciences

Drawing No. 12-15

DATE DRILLED. 10/2/82

SUMMARY: BORING NO. 8-82

ELEVATION 340.4

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF
1A	6 12 10		10.8	
2A	4 5 8		25.9	
3A	5 17 13		14.1	
4A	50/5"		5.5	
5A	50/3"		4.2	
6A	18 50/5"		9.8	
7A	50/6"		10.1	
8A	25 50/5"		7.8	

DESCRIPTION		SYMBOL	MOISTURE	CONSISTENCY
SILTY SAND (Fill)	brown, organic, little gravel, trace roots	SM	very moist	medium dense
SILTY SAND (Sanitary Landfill)	black, fine to medium, with paper, wood, plastic, metal & wire, organic odor (from drill action, concrete pieces 5-16.5' depth) grades finer with clayey silt, fabric fragments	ML		
SILTY SAND (Glacial Till)	blue-gray, fine to coarse, some gravel, occasional cobbles boulder 20-21' depth (refusal on boulder at 25' depth; redrilled hole 6' north of original location)	SM	moist	very dense
SILT (Lacustrine Deposit)	gray, some fine sand, trace gravel, laminated occasional layer of coarse sand	ML	slightly moist	very dense
SAND (Advance Outwash)	brown, fine to coarse, some silt, trace clayey silt, occasional gravel grades cleaner with less silt	SP	moist	very dense

DEPTH IN FEET: 0, 5, 10, 15, 20, 25, 30, 35, 40

ELEV: 340, 335, 330, 325, 320, 315, 310, 305

(Continued)

A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

**A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE TRUNK SEWER
Bellevue, Washington
for Brown and Caldwell

Project No. 82-5169

Converse Consultants
Geotechnical Engineering and Applied Sciences

Drawing No. ~~13~~ 14

DATE DRILLED: 10/2/82

SUMMARY: BORING NO. 8-82 (Cont.) ELEVATION

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	SAMPLE	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY	ELEV
							SAND (Cont.) brown, fine to coarse, silt matrix, trace gravel		moist dry Plate	very dense	300
	9A	■	50/5"		4.8						
45							Bottom of boring at depth 43.5' No groundwater encountered Piezometer installed to depth 43.5', with 2' slotted interval at bottom.				295

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE TRUNK SEWER
Bellevue, Washington
for Brown and Caldwell

Project No 82-5169

Drawing No. ~~14~~ 15

Converse Consultants Geotechnical Engineering and Applied Sciences

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	SAMPLE	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION		SYMBOL	MOISTURE	CONSISTENCY
0							SILTY SAND (Fill)	gray-brown, fine to medium, little gravel, trace wood		moist	medium dense
	1A		7 18 16		9.9						
5							SILTY SAND (Glacial Till)	gray-brown, fine to medium, little gravel, trace to occasional cobbles		moist	very dense
	2A		50/2"		7.5						
10											
	3A		100/4"		7.6						
15											
	4A		75/3"		6.4			with occasional lense of gray, fine to medium sand			
20											
	5A		75/2"		6.2						
25							Refusal at 25.0', restart boring approximately 15' south.				
								very cobbly, 6"-8" diameter			
	6A		75/2"		13.5		SAND (Advance Outwash)	gray, mottled brown and pink, fine to medium, trace gravel & silt, occasional cobble		moist	very dense
30											
	7A		75/3"		11.3			grades to little silt, fine to medium			
35											
	8A		75/5"		11.6						
40							(Continued)				

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE TRUNK SEWER
Bellevue, Washington
for Brown and Caldwell

Project No. 82-5169

Drawing No. V6

Converse Consultants
Geotechnical Engineering and Applied Sciences

DATE DRILLED: 2/28/83

SUMMARY: BORING NO. 8A (Cont.)

ELEVATION:

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.	SAMPLE*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
40							SAND (Cont.) (Advance Outwash) grades to fine to coarse, trace silt and gravel, occasional cobble		moist	very dense
	9A		44 50/5"		9.1					
45										
	10A		50/6"		8.8					
50										
	11A		50/6"		7.4					
55							Bottom of boring at depth 53.5' No groundwater encountered. Methane visible in boring. Methane standpipe installed to depth 53.5' with 20' slotted interval at bottom; gravel backfill to depth 33.0'; backfilled with cuttings to depth 20.0'; bentonite seal from depth 20.0-19.0'; backfilled to surface with cuttings. Completed 2/28/83			

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE TRUNK SEWER
Bellevue, Washington
for Brown and Caldwell

Project No.
82-5169

Drawing No.

Converse Consultants
Geotechnical Engineering and Applied Sciences

DATE DRILLED 10/2/82

SUMMARY: BORING NO. 9-62

ELEVATION: 340.2

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED

DEPTH IN FEET	SAMPLE NO.*	BLOWS 6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY	ELEV
0						0.2' Asphalt Surface SILTY SAND (Fill) brown, fine to medium, little gravel, wood fragments	SM	very moist	medium dense	340
	1A	13 9 18		15.3						
5						SILTY SAND (Glacial Till) brown, fine to medium, little gravel, trace cobbles (refusal at 9' on boulders, redrilled hole 11' east of original location)	SM	moist	very dense	335
	2A	50/5"		6.2						
10										330
	3A	50/5"		10.5		gray		very moist		
15										325
						large cobbles 16-21' (no sample taken in this interval)				
20										320
	4A	50/6"		9.5						
						SILT (Lacustrine) gray, some fine sand, laminated	ML	moist	very dense	
25										315
						SAND (Advance Outwash) gray-brown, fine to coarse, some to trace silt, occasional gravel	SP	moist	very dense	
	5A	50/6"		7.5						
30										310
	6A	50/4"		7.5						
35										305
	7A	50/4"		10.7						
						Bottom of boring at depth 38.3'				
40										

No groundwater encountered

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE TRUNK SEWER
Bellevue, Washington
for Brown and Caldwell

Project No
82-5169

Drawing No.
15 ~~16~~

Converse Consultants
Geotechnical Engineering and Applied Sciences

DATE DRILLED. 10/2/82

SUMMARY: BORING NO. 10 ^b2

ELEVATION. 340.6

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION		SYMBOL	MOISTURE	CONSISTENCY	ELEV
0						SILTY SAND (Fill)	brown, fine to medium, little gravel, trace wood, organic	SM	very moist	loose	340
	1A	4 4 5		19.0							
5											335
						GRAVELLY SAND (Fill)	gray, fine to medium, trace silt	SW	moist	dense	
	2A	7 14 45		5.6							
10						(concrete pieces throughout fill based on cuttings)					330
	3X	50/3"				(sample 3 driven on concrete)					
15						- - - - - - - - - - - -					325
						CLAYEY SILT (Sanitary Landfill)	gray, mottled brown, some sand, trace glass, wire & paper	MH	very moist	medium dense	
	4A	20 15 12		16.6							
20						SILTY SAND (Sanitary Landfill)	brown, fine to medium, little gravel, wood	SM	very moist	medium dense	320
	5A	7 12 15		25.1							
25						SAND	gray, fine to coarse, trace gravel, trace silt	SP	moist	very dense	315
	6A	50/6"		4.7							
30											310
	7A	50/6"		8.3							
35											305
	8A	23 23 30		12.1		(Continued)			very moist		
40											

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE TRUNK SEWER
Bellevue, Washington
for Brown and Caldwell

Project No. 82-5169

Drawing No. ~~16~~ 19

Converse Consultants Geotechnical Engineering and Applied Sciences

DATE DRILLED: 12/7/82

SUMMARY: BORING NO. 11 -82

ELEVATION: 306.6

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION		SYMBOL	MOISTURE	CONSISTENCY	ELEV
0						SILTY SAND (Fill)	dk. brn., f/m, little gravel, trace roots	SM	wet	loose	306.6
											305
	1A	3 7 1		18.6		SAND (Fill)	gray, fine to medium, trace silt, occasional gravel	SP	wet	loose	
5											
						SILTY TO CLAYEY SAND (Advance Outwash)	brown, fine to coarse trace to occasional gravel	SM	wet	dense	300
	2A	7 8 30		16.6							
10						grades to... SAND	rust-brown, fine to coarse, trace silt, occasional gravel	SP	12/7/82 ∇		INVERT ELEV
											295
	3A	6 28 32		9.2					moist	dense	
15											

Bottom of boring at depth 14.5'
Groundwater encountered during drilling at depth 9.5'

290

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE TRUNK SEWER
Bellevue, Washington
for Brown and Caldwell

Project No. 82-5169

Converse Consultants
Geotechnical Engineering and Applied Sciences

Drawing No. 21

DATE DRILLED 12/7/82

SUMMARY: BORING NO. 12-82

ELEVATION: 299.1

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	SAMPLE	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION		SYMBOL	MOISTURE	CONSISTENCY	ELEV
0							asphalt					299.1
							SAND (Fill)	gray-brown, f/m, little silt	SM	moist	medium dense	
	1A		18 50/3"		12.2		SILTY SAND (Glacial Till)	gray-brown, fine to medium, little gravel, trace clay	SM	moist	very dense	
5												295
	2A		6 16 37		12.0							
10										1/10/83	3/3/83	290
							SAND (Advance Outwash)	gray-brown, fine to coarse, little gravel, trace silt	SP	wet 12/22/82	very dense	
	3A		12 50/4"		11.2							INVERT ELEV
15												285

Bottom of boring at depth 13.9'
Groundwater encountered during drilling at depth 10.0'
Piezometer installed to depth 13.0' with 1.5' slotted interval at bottom; backfilled with pea gravel to 11.0'; backfilled to surface with cuttings, and bentonite seal at surface.

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE TRUNK SEWER
Bellevue, Washington
for Brown and Caldwell

Project No. 82-5169

Drawing No. 22

Converse Consultants
Geotechnical Engineering and Applied Sciences

DATE DRILLED: 4/14/83

SUMMARY: BORING NO. 1-83

ELEVATION:

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED

DEPTH IN FEET	SAMPLE NO.	SAMPLE	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	▽ 4/14/83, ▽ 4/27/83, ▽ 7/6/83	CONSISTENCY
0							SILTY SAND (Fill) dark greenish-gray, fine to coarse, little gravel	SM	very moist		dense
	1		18 19								
5							SAND (Fill) light gray, fine to medium, trace silt				
	2		39 18				SILTY GRAVELLY SAND (Fill) dark gray, fine to coarse, trace organics (landfill debris?)	SM	wet		dense
10											
	3		18 50/6"				SILTY SAND (Landfill Debris) gray, fine to medium, abundant organics & metal debris	SM	wet		dense
15											

Bottom of boring at depth 14.0'
Piezometer installed (see schematic for details)
Groundwater encountered at depth 7.0' at time of drilling.

I. 2" split-spoon sampler
J. 3" O.D. thin-wall sampler C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler X. sample not recovered

**A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

LEACHATE SAMPLING
I-90/Bellevue Business Park
for Cabot, Cabot & Forbes

Project No. 81-5216

Converse Consultants Geotechnical Engineering and Applied Sciences

Drawing No. 2

Date Drilled: 3/26/83

Elevation: Approx. 349

Depth in Feet	Soil Description		Graphic of Methane Well Installation*	Elev. in Feet
0	FILL			349
	SILTY SAND (Glacial Till)	gray-brown, fine to medium, little gravel, tr. clay, occ. cobbles to 6" dia.; moist, very dense	cuttings/backfill	
10				340
			bentonite/cement seal	
20	SILTY SAND (Advance Outwash)	gray-brown, mottled pink, f/c, some gravel, tr. clay; moist, very dense		330
	grades to...		gravel backfill	
	GRAVELLY SAND	gray-brown, mottled pink, f/c, some silt, tr. clay; very moist, very dense		
30				320
	grades to...			
	SAND	fine to medium, trace silt; moist, very dense		
40			slotted interval	310
50				300

Bottom of boring at depth 43.5'
No groundwater encountered
Completed 3/26/83
*Methane well consists of 1½" I.D. PVC pipe

SUMMARY: BORING NO. 207-83

METHANE WELL INSTALLATION
Bellevue/I-90 Business Park
for Boeing Computer Services

Project No 83-5116

Converse Consultants
Geotechnical Engineering and Applied Sciences

Drawing No. 9

DATE DRILLED: 6/3/85

SUMMARY: BORING NO. B-301 ~~-85~~

ELEVATION Approx. 342

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	SAMPLE	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
0	1C		6 8 14				SILTY SAND (Fill); mottled black & gray, fine to medium, little gravel, trace wood, concrete	SM	moist	medium dense
5	2C		8 8 43				SILTY SAND (Sanitary Landfill); black, fine to medium, some sanitary refuse: glass, wood, etc., strong organic smell;	SM	moist	medium dense
10	3C		50/3"				grades to debris fill: glass, wood, paper, cans; no soil matrix; visible methane		moist	dense
							Bottom of boring at depth 12.8' 3/4" diameter PVC observation well installed with slotted screen from 7.5' to 12.5', pea gravel backfill from 5.0' to 10.5', backfill with cuttings from 5.0' to 3.0', bentonite seal from 3.0' to surface, and install cast iron monument cover.			

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

**A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE LANDFILL WATER SAMPLING
Bellevue, Washington
for Boeing Computer Services

Project No. 85-5104-02

Converse Consultants Geotechnical Engineering and Applied Sciences

Drawing No. 2

DATE DRILLED: 6/3/85

SUMMARY: BORING NO. B-302-85

ELEVATION: Approx. 338

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
0									
	1C	50/5"				SILTY SAND (Fill); brown, fine to medium, little gravel, trace wood (sampler driving on rock)	SM	moist	medium dense
5									
	2C	5, 3, 18				SAND (Fill); gray, fine to medium, trace gravel, wood, & metal debris	SP	moist	medium dense
10									
	3C	50/6"				SANITARY LANDFILL; consists of wood, glass, plastic, rubber, paper and metal; no soil matrix;		moist	dense
15									
	4C	8, 20, 50/4"				occasional lense of sand		very moist	
20								6/21/85 ▽ 6/7/85	
	5C	33, 17, 21				(possible free water)		very moist	
25									

Bottom of boring at depth 24.0'
3/4" dia. PVC observation well installed with slotted screen from 17.5' to 22.5', pea gravel backfill from 9.0' to 22.5', backfilled with cuttings from 3.0' to 9.0', bentonite seal from 3.0' to surface, and install cast iron monument cover.

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

▽ water level
impervious seal
piezometer tip

EASTGATE LANDFILL WATER SAMPLING
Bellevue, Washington
for Boeing Computer Services

Project No. 85-5104-02

Converse Consultants
Geotechnical Engineering and Applied Sciences

Drawing No. 3

DATE DRILLED: 6/4/85

SUMMARY: BORING NO. B-303-85

ELEVATION: Approx. 339.9

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
0–5	1C	4 14 12				**SILTY SAND** (Fill); gray-brown, fine to medium, little gravel, trace wood	SM	moist	medium dense
5–10	2C	4 8 14				grades to black, trace wood, plastic, and metal debris			
10–15	3C	8 12 13				**SILTY SAND** (Sanitary Landfill); black, fine to medium, trace gravel, wood, plastic, metal, wire, and paper	SM	very moist	medium dense
15–20	4C	6 10 12							
20–25	5C	28 29 11							
25–30	6C	8 13 22				grades to Sanitary Landfill with little silty sand		moist	
30–35	7C	11 9 20							
35–40	8C	13 19 50/6"				**SILTY SAND** (Old Soil Horizon/Fill); brown, tr. to little gravel, trace wood & glass	SM	very moist	medium dense

(Continued)

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE LANDFILL WATER SAMPLING
Bellevue, Washington
for Boeing Computer Services

Project No. 85-5104-02

Converse Consultants — Geotechnical Engineering and Applied Sciences

Drawing No. 4

DATE DRILLED: 6/4/85

SUMMARY: BORING NO. B-303-~~85~~ (Cont.)

ELEVATION:

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
40						SILTY SAND (Cont.);	SM		dense
	9C	68 50/3"							
45						SILTY SAND (Weath. Glacial Till); gray, f/m, trace to little gravel	SM	wet	very dense
	10C	57 50/3"							
50						grades to Unweath. Till, with occ. lense of gravelly silty sand and sandy silt	SM	moist	
	11A	60/6"							
55						SAND (Advance Outwash); brown, fine to medium, trace silt, thinly bedded with sandy silt layers	SP	moist	very dense
	12A	60/6"							
60								wet	
	13A	27 50/6"						6/7/85 6/21/85 ▽	
65						SANDY SILT (Lacustrine Sediments); gray, fine sand, thinly laminated with clayey silt and silty fine sand	ML	very moist	very dense
	14A	20 50/6"							
70						SAND; dark gray, very fine, trace to little silt	SM	wet	very dense
	15A	7 13 35							
75						grades fine to medium, thinly bedded to laminated with clayey silt and brown sandy silt		very moist	
	16C	55 50/3"							
80									

(Continued)

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

▽ water level
impervious seal
piezometer tip

EASTGATE LANDFILL WATER SAMPLING
Bellevue, Washington
for Boeing Computer Services

Project No. 85-5104-02

Converse Consultants — Geotechnical Engineering and Applied Sciences

Drawing No. 4 (CONT.)

DATE DRILLED: 6/4/85

SUMMARY: BORING NO. B-303 ~~85~~ (Cont.)

ELEVATION:

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	SAMPLE	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
80							Bottom of boring at depth 78.2' Groundwater encountered at depth 64' during drilling 2" diameter PVC observation well installed with slotted screen from 55' to 75'; sand backfill from 50' to 71'; grout backfill from 19' to 50'; dry cement backfill from 12' to 19'; backfilled with cuttings from 1' to 12', and cast iron monument cover installed at surface.			

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

EASTGATE LANDFILL WATER SAMPLING
Bellevue, Washington
for Boeing Computer Services

Project No. 85-5104-02

Converse Consultants
Geotechnical Engineering and Applied Sciences

Drawing No. 4 (CONT.)

DATE DRILLED: 4/4/85

SUMMARY: BORING NO. CC-1 -65

ELEVATION: Approx. 302

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
0	1A	6, 6, 8				GRAVELLY SAND (Fill); brown, fine to medium, trace silt & organics grades to little gravel		slightly moist	medium dense
5	2A	7, 7, 9				SILTY SAND; mottled gray & light brown, fine to medium, trace clay and gravel		moist	medium dense
	3A	28, 48, 50/4"				SILTY SAND; gray, fine to medium, little gravel, trace clay		wet	very dense
10	4X	50/4"							
15	5A	50/4"				SILTY SAND (Unweathered Till); light brown, fine to medium, little gravel, trace clay		slightly moist	very dense
	6C	7, 15, 50/4"							
20	7A	50/4"							
25	8A	4, 22, 50/4"				SAND (Advance Outwash); brown, fine to medium, trace silt		wet	very dense
30	9A	26, 40, 50/5"				SAND (Lacustrine); mottled brown & light brown, fine, trace medium, trace silt with thinly laminated to medium bedded silt and sandy silt		slightly moist	very dense
35	10A	25, 36, 50/4"							
						Bottom of boring at depth 36.5' Groundwater encountered at depth 9' during drilling. Hole filled with cement/bentonite to surface.			

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

SLURRY TRENCH FEASIBILITY STUDY
Boeing Computer Services
Bellevue, Washington

Project No. 85-5104

Converse Consultants Geotechnical Engineering and Applied Sciences

Drawing No. A

DATE DRILLED: 4/4/85

SUMMARY: BORING NO. CC-2 -85

ELEVATION: Approx. 302

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
0						GRAVELLY SAND (Fill); light brown, fine to medium, trace silt		slightly moist	
	1A	17, 12, 15				GRAVELLY SILTY SAND; mottled brown & light brown, fine to medium		slightly moist	medium dense
5									
	2A	5, 7, 8				SANDY SILT/CLAYEY SILT (Alluvium); mottled gray-green & light brown, fine, thinly laminated		slightly moist	medium dense
10									
	3A	14, 42, 29				CLAYEY SAND (Advance Outwash); gray, fine to medium, trace gravel		moist	very dense
15	4A	50/6"				SAND; gray, fine to medium, little silt, trace gravel		moist	very dense
	5A	48, 50/5"				grades to trace silt and gravel	▽ 4/17/85		
20	6A	17, 26, 26				with occ. thin laminations of silty sand		moist to wet	dense
	7A	29, 44, 50/2"				to mottled gray & light brown		wet	
25	8A	24, 37, 37							
	9A	34, 36, 50/5"				with medium bedded brown silt and thin laminations to thinly bedded silty fine sand		slightly moist	very dense
30	10A	14, 18, 25				SILTY SAND (Lacustrine); dark gray, fine, with thin laminations to thinly bedded silt and fine sand		slightly moist	dense
	11A	21, 24, 39				SAND; brown, fine to medium, trace silt, with medium bedded fine sandy silt		wet	very dense
35	12A	21, 29, 43				to gray, fine, med. bedded gray silt, thin lam. of fine sandy silt			
	13A	18, 25, 42				SILT; dark gray, w/thin laminations to medium bedded sandy silt		wet	very dense
40									

(Continued)

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

▽ water level
impervious seal
piezometer tip

SLURRY TRENCH FEASIBILITY STUDY
Boeing Computer Services
Bellevue, Washington

Project No. 85-5104

Converse Consultants
Geotechnical Engineering and Applied Sciences

Drawing No. B

DATE DRILLED: 4/4/85

SUMMARY: BORING NO. CC-2-85 (Cont.)

ELEVATION:

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
40						SILT (Lacustrine)(Cont.)			
	14A	12 40 50/4"				SAND; mottled dark gray & light brown, fine, trace to little silt, w/thin laminations of fine sandy silt		slightly moist	very dense
45									
	15A	30 50/6"				dark gray, fine, w/thin laminations of silt & occ. thin lamination of peat			
50						SILT; dark gray, w/thin lam. fine sandy silt & occ. thin lam. of peat		slightly moist	very dense
	16A	27 43 50/5"							
55						with thin lamination of silty fine sand			
	17A	22 37 50/5"							
60						Bottom of boring at depth 59.0' Groundwater encountered at depth 8' Two-inch dia. piezometer installed to depth 41', with 0.010 inch screen section from depth 22' to 27', backfilled to 41', sand placed to 15', cement/bentonite seal placed to surface.			

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

SLURRY TRENCH FEASIBILITY STUDY
Boeing Computer Services
Bellevue, Washington

Project No. 85-5104

Converse Consultants
Geotechnical Engineering and Applied Sciences

Drawing No. B (CONT.)

DATE DRILLED: 4/5/85

SUMMARY: BORING NO. CC-3-85

ELEVATION: Approx. 302

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
0						GRAVELLY SAND (Fill); brown, fine to medium		moist	very dense
	1A	17 34 21				SILTY SAND; mottled brown & light brown, f/m, little gravel, trace fine roots, occasional charcoal		moist	very dense
5	2A	38 50/6"				GRAVELLY SAND; gray, fine to coarse, trace silt		moist	very dense
	3C	40 50/2"				GRAVELLY SILTY SAND; mottled gray & brown, fine to coarse, trace clay & scattered organics			
10	4A	38 50/6"				SILTY SAND; mottled gray & brown, fine to medium, trace gravel, trace clay		slightly moist	very dense
15	5A	11 20 50/3"				CLAYEY SAND (Adv. Outwash); gray-brown, fine to medium, trace gravel, trace silt, occ. woody fragments		very moist	very dense
20	6A	20 50/6"				SAND; gray, fine to medium, trace silt		wet	very dense
25	7A	25 45 50/4"							
30	8A	24 50/5"				mottled gray & light brown, trace silt			
35	9A	20 43 50/3"				grades to gray			
40									

(Continued)

* A. 2" split-spoon sampler B. 3" O.D. thin-wall sampler C. 3-1/4" O.D. x 2-1/2" liner D. 3-1/2" O.D. split barrel sampler X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

SLURRY TRENCH FEASIBILITY STUDY
Boeing Computer Services
Bellevue, Washington

Project No. 85-5104

Drawing No. C

Converse Consultants Geotechnical Engineering and Applied Sciences

DATE DRILLED: 4/5/85

SUMMARY: BORING NO. CC-3-85 (Cont.)

ELEVATION:

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

DEPTH IN FEET	SAMPLE NO.*	SAMPLE	BLOWS/6"	OTHER TESTS**	FIELD MOISTURE % OF DRY WEIGHT	DRY DENSITY PCF	DESCRIPTION	SYMBOL	MOISTURE	CONSISTENCY
40							SAND (Adv. Outwash) (Cont.);		wet	very dense
	10A	I	21 50/3"				SAND (Lacustrine); gray, fine, trace silt, with med. bedded silt & thin lam. of fine sandy silt		moist	very
45	11A	I	26 50/6"				SILT; dark gray, trace fine sand, w/thin beds of mottled gray & light brown, fine to medium sand and silty sand, & thin lam. fine sandy silt, occ. thin lamination of peat		moist	very ~~dense~~ hard
50	12A	I	25 35 38				w/thin laminations of fine sand		slightly moist	
55	13A	I	27 47 50/3"				with medium bedded silty fine sand, and thin laminae/tions of fine sand			
60	14A	I	27 40 53/3"				with thinly bedded silty fine sand, and thin laminations of fine sandy silt			
65	15A	I	36 50/3"				mottled dark gray & light brown, trace fine sand, with med. bedded fine sand		moist	
70							Bottom of boring at depth 68.5' Groundwater encountered at depth 20' Hole filled with cement/bentonite slurry from 68.5 to surface.			

* A. 2" split-spoon sampler
B. 3" O.D. thin-wall sampler
C. 3-1/4" O.D. x 2-1/2" liner
D. 3-1/2" O.D. split barrel sampler
X. sample not recovered

** A - Atterberg, C - consolidation, DS - direct shear, G - grain size, T - triaxial, P - permeability

water level
impervious seal
piezometer tip

SLURRY TRENCH FEASIBILITY STUDY
Boeing Computer Services
Bellevue, Washington

Project No. 85-5104

Converse Consultants
Geotechnical Engineering and Applied Sciences

Drawing No. C (CONT.)

LOG OF TEST PIT NO. 201-85

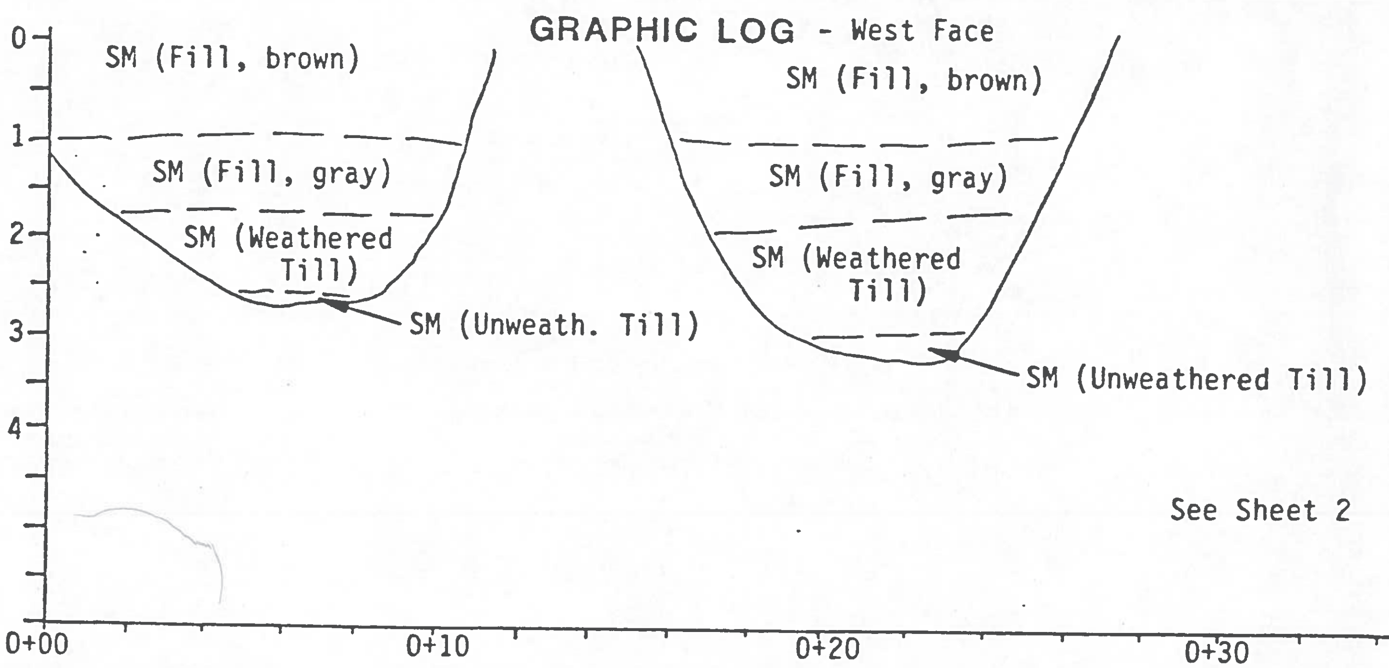
PROJECT: 27.2 Acre Site JOB NO: 85-5156 DATE: 6/20/85

CLIENT: Boeing Computer Services ELEVATION: Approx. 344

FEATURE: LOCATION: See Drawing

GROUNDWATER LEVEL: N/A LOGGED BY: D.A.Y.

DEPTH (ft)	SAMPLE NO.	SOIL SYM.	DESCRIPTION	REMARKS
0–1		SM	SILTY SAND (Fill); brown, fine to medium, little gravel, trace roots; moist, medium dense	
1–2		SM	SILTY SAND (Fill); gray fine to medium, little gravel, occasional gravel to 4" dia., trace wood; moist, medium dense	
2–3		SM	SILTY SAND (Weath. Till); brown, fine to medium, little gravel, occ. cobbles to 6"; moist, dense	
3–3.5		SM	SILTY SAND (Unweath. Till); gray-brown, fine to medium, little gravel, occ. cobbles; moist, very dense	
			Bottom of test pit at depth 3.5' No groundwater encountered Completed 6/20/85	



PROPOSED 27.2 ACRE SITE
Bellevue, Washington
for Boeing Computer Services

Project No. 85-5156

Converse Consultants
Geotechnical Engineering and Applied Sciences

Drawing No. 1

LOG OF TEST PIT NO. 201-85 (Cont.)

PROJECT: 27.2 Acre Site JOB NO: 85-5156 DATE: 6/20/85

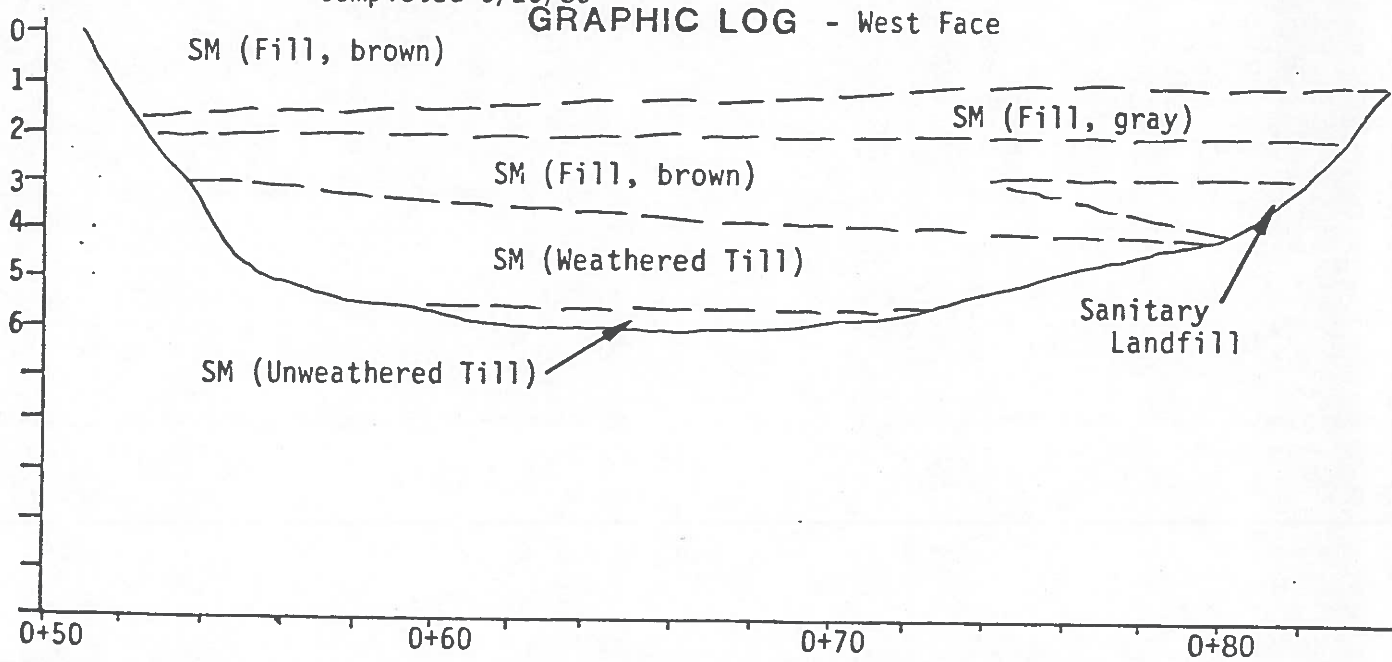
CLIENT: Boeing Computer Services ELEVATION: Approx. 344

FEATURE: LOCATION: See Drawing

GROUNDWATER LEVEL: LOGGED BY: D.A.Y.

DEPTH (ft)	SAMPLE NO.	SOIL SYM.	DESCRIPTION	REMARKS
		SM	SILTY SAND (Fill); brown, fine to medium, little gravel, trace roots; moist, medium dense	
1				
2			color changes to gray	
			color changes to brown	
3			SANITARY LANDFILL; black, household garbage, cans, glass, wire; very moist	strong trash odor throughout
4		SM	SILTY SAND (Weath. Till); brown, fine to medium, little gravel, occasional cobbles; moist, dense	
5				
		SM	(Unweath. Till); gray-brown; moist, very dense	
6			Bottom of test pit at depth 6.0' No groundwater endountered Completed 6/20/85	

GRAPHIC LOG - West Face



PROPOSED 27.2 ACRE SITE
Bellevue, Washington
for Boeing Computer Services

Project No. 85-5156

Converse Consultants Geotechnical Engineering and Applied Sciences

Drawing No. 1 (CONT.)

LOG OF TEST PIT NO. 202-85

PROJECT: 27.2 Acre Site JOB NO: 85-5156 DATE: 6/20/85

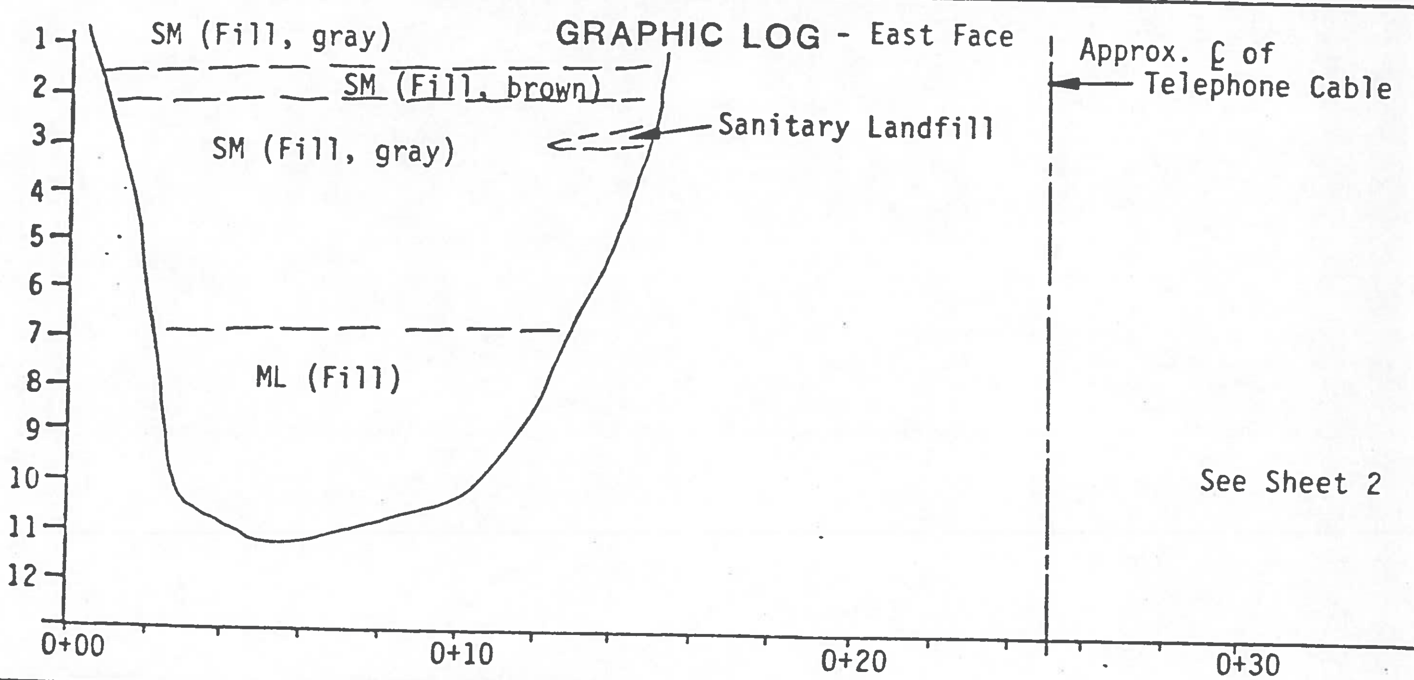
CLIENT: Boeing Computer Services ELEVATION: Approx. 342

FEATURE: LOCATION: See Drawing

GROUNDWATER LEVEL: N.A. LOGGED BY: DAY

DEPTH (ft)	SAMPLE NO.	SOIL SYM.	DESCRIPTION	REMARKS
0–2		SM	SILTY SAND (Fill); gray, fine to medium, little gravel, trace wood; moist, medium dense	
2–3			SANITARY LANDFILL: black, household garbage, paper, rags, cans, glass; moist	strong organic odor throughout
3–7		SM	SILTY SAND (Fill); gray, fine to medium, little gravel, trace wood; moist, medium dense	
7–11		ML	CLAYEY SILT (Fill); gray, little sand and fine to medium gravel; moist, stiff	
11–12			Bottom of test pit at depth 11.0' No groundwater encountered. Completed 6/20/85	

GRAPHIC LOG - East Face



PROPOSED 27.2 ACRE SITE
Bellevue, Washington
for Boeing Computer Services

Project No. 85-5156

Converse Consultants Geotechnical Engineering and Applied Sciences

Drawing No. 2

LOG OF TEST PIT NO. 202-85 (Cont.)

PROJECT: 27.2 Acre Site JOB NO: 85-5156 DATE: 6/20/85

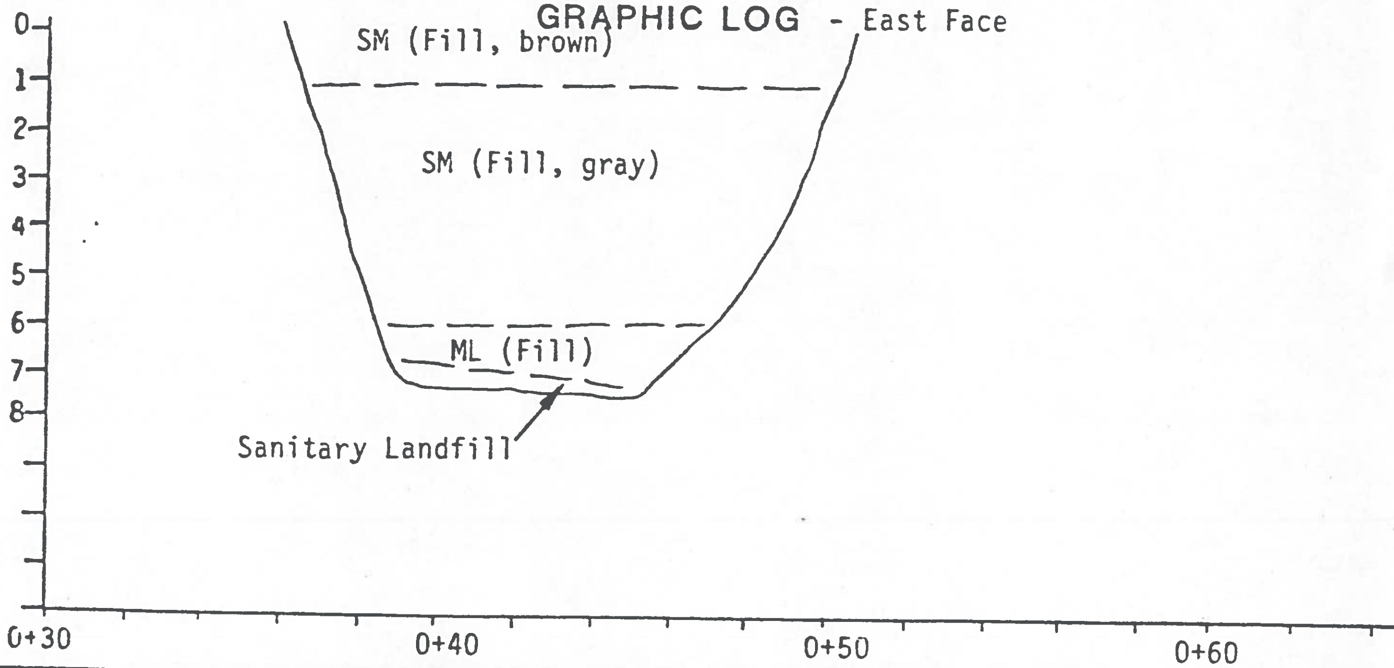
CLIENT: Boeing Computer Services ELEVATION: Approx. 342

FEATURE: LOCATION: See Drawing

GROUNDWATER LEVEL: N.A. LOGGED BY: DAY

DEPTH (ft)	SAMPLE NO.	SOIL SYM.	DESCRIPTION	REMARKS
0–1		SM	SILTY SAND (Fill); brown, fine to medium, little gravel, trace wood; moist, medium dense	
2–5			grades to gray in color	
6		ML	CLAYEY SILT (Fill); gray, little sand and gravel, trace wood, paper; moist, stiff	strong trash odor throughout
7			SANITRAY LANDFILL; household garbage, paper, rags, cans, glass; moist	
8			Bottom of test trench at depth 7.5' No groundwater encountered Completed 6/20/85	

GRAPHIC LOG - East Face



PROPOSED 27.2 ACRE SITE
Bellevue, Washington
for Boeing Computer Services

Project No. 85-5156

Converse Consultants Geotechnical Engineering and Applied Sciences

Drawing No. 2 (CONT.)

LOG OF TEST PIT NO. 203-85

PROJECT: 27.2 Acre Site JOB NO : 85-5156 DATE: 6/21/85

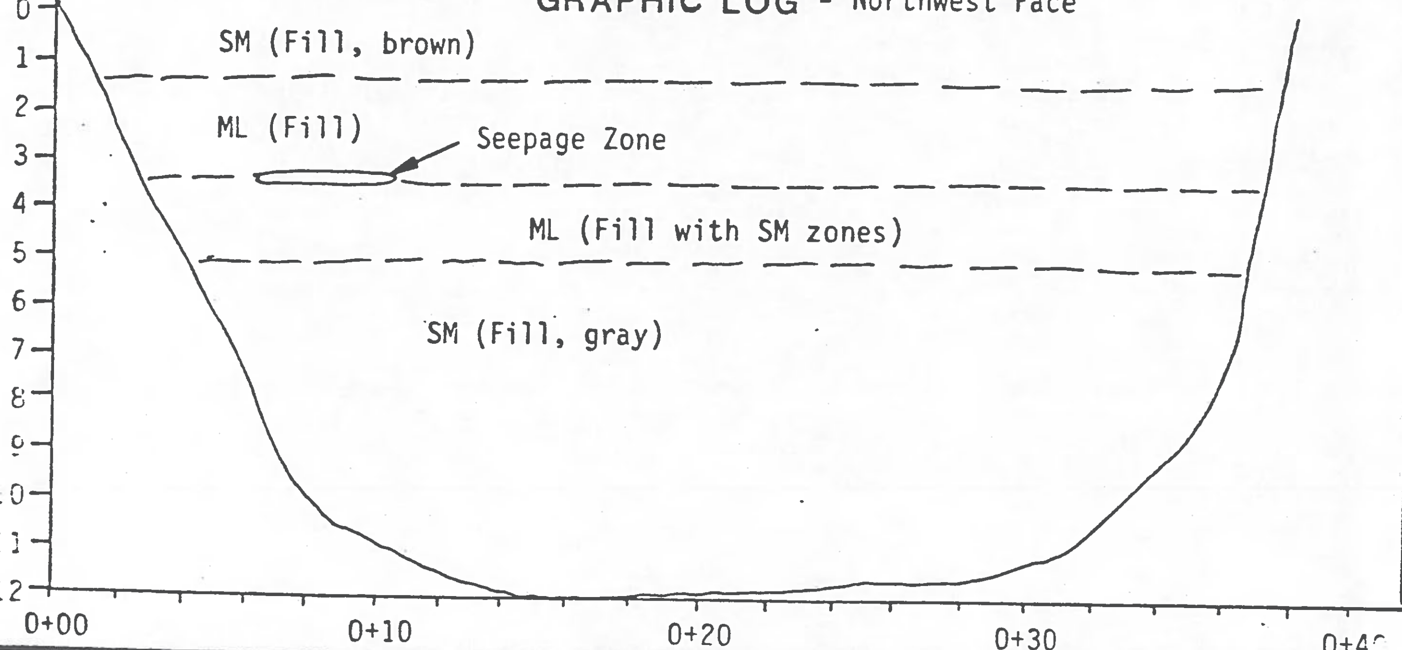
CLIENT: Boeing Computer Services ELEVATION: Approx. 342

FEATURE: LOCATION: See Drawing

GROUNDWATER LEVEL: N.A. LOGGED BY: RAB

DEPTH (ft)	SAMPLE NO.	SOIL SYM.	DESCRIPTION	REMARKS
0–1.5		SM	SILTY SAND (Fill); brown, fine to medium, little gravel , scattered cobbles; moist, medium dense	
1.5–5.5		ML	CLAYEY SILT (Fill); mottled gray-brown, little fine sand, trace cobbles, scattered household garbage; moist to very moist, stiff scattered zones of brown, silty sand concrete rubble (to 4' pieces)	seepage zone
5.5–12		SM	SILTY SAND (Fill); gray, fine to medium, little gravel, scattered cobbles, scattered household garbage, paper, plastic, and rubber; moist, dense	strong organic odor through-out
			Bottom of test trench at depth 12.0' No groundwater encountered; Completed 6/21/85	

GRAPHIC LOG - Northwest Face



PROPOSED 27.2 ACRE SITE
Bellevue, Washington
for Boeing Computer Services

Project No. 85-5156

Converse Consultants Geotechnical Engineering and Applied Sciences

Drawing No. 3

LOG OF TEST PIT NO. TP-204-85

Location: See Drawing

Elevation: Approx. 344

Surface Conditions: Flat; sage brush and grass

Depth in feet	Moisture Content-%	Sample	Symbol	DESCRIPTION	REMARKS
0–3			SM	**SILTY SAND** (Fill); brown, fine to coarse, little fine to medium gravel, trace subrounded cobbles, roots and organics; slightly moist, medium dense	
3–5			SM	**SILTY SAND**; brown, fine to medium, trace gravel, trace subrounded cobbles; concrete rubble (to 4'), timbers and wood (to 8"), bicycle tires; moist, dense (Fill)	test pit walls standing vertical
5–12			ML	**CLAYEY SILT**; gray, trace gravel, trace fine to medium sand, scattered small branches, roots, and organics; moist, firm (Fill)	
12				Bottom of test pit at depth 12.0' No groundwater encountered Completed 6/21/85	

LOG OF TEST PIT NO. TP-213-85

Location: See Drawing Elevation: Approx. 338

Surface Conditions: Flat; some small weeds

Depth, Feet	Moisture Content-%	Sample	Symbol	DESCRIPTION	REMARKS
			SM	SILTY SAND (Fill); brown, fine, trace medium to coarse sand, little fine to coarse subrounded gravel; scattered roots, and sticks; moist, medium dense	
3			ML	CLAYEY SILT; gray, trace fine to medium sand, little gravel, scattered small to medium cobbles; concrete rubble to (18"), wood, logs (6"), paper, plastic, and metal scraps; with occasional medium beds of silty sand, brown, fine to medium; moist, firm (Fill)	distinct organic odor
4					
5					
6					
7					
8					
9					
10					
11					
12				Bottom of test pit at depth 12.0' No groundwater encountered Completed 6/21/85	

PROPOSED 27.2 ACRE SITE
Bellevue, Washington
for Boeing Computer Services

Project No 85-5156

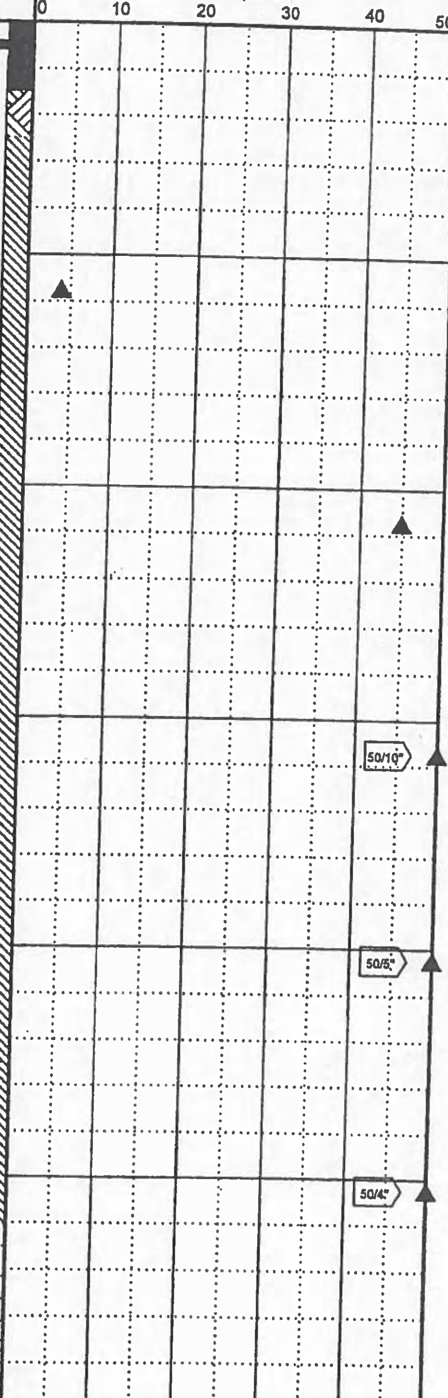
Converse Consultants
Geotechnical Engineering and Applied Sciences

Drawing No 13

(OW-1)

PROJECT: *Bellevue Airport / Eastgate Landfill*   W.O. *1-91M-14173-0*   BORING No. *B-1*

DEPTH (feet)	Soil Description	USCS/USGS GRAPHICS	SAMPLE TYPE	SAMPLE NUMBER	GROUND WATER	PENETRATION RESISTANCE	TESTING
	Location: North side of Pond A Approximate ground surface elevation: 305 feet					▲ Standard; Blows over inches; △ Other Blows per foot 0 10 20 30 40 50	Page 1 of 2
0	Topsoil						
	Loose, moist, tan, fine to medium SAND, some silt (Embankment Fill)						
5				S1			
	Dense, moist, gray, silty fine to medium SAND, some gravel (Alluvium)						
10				S2			
15				S3		50/10"	
20				S4		50/5"	
	Dense, saturated, light brown, medium SAND, trace to some silt (Advance Outwash)				ATD		
25				S5		50/4"	
	Very dense, saturated, light gray, fine to medium SAND, trace silt (Advanced Outwash)						
30							



LEGEND

2.00-inch OD split-spoon sampler

ATD Groundwater level at time of drilling

Observation well:
- Monument
- Bentonite Fill with PVC Pipe
- Groundwater Level
- Sand Fill with Slotted PVC Pipe
- Pipe Cap
- Slough at Bottom of Hole

0 20 40 60 80 100
Plastic Limit — Moisture Content — Liquid Limit

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11335 N.E. 122nd Way Suite 100
Kirkland, Washington 98034-6913

Drilling Method: HSA   Hammer type: Winch   Date drilled: *March 27, 2002*   Logged By: *KSS*

OW-1

PROJECT: *Bellevue Airport / Eastgate Landfill* W.O. *1-91M-14173-0* BORING No. *B-1*

DEPTH (feet)	Soil Description Location: North side of Pond A Approximate ground surface elevation: 305 feet	USCS/USGS GRAPHICS	SAMPLE TYPE	SAMPLE NUMBER	GROUND WATER	PENETRATION RESISTANCE (▲ Standard; Blows over inches; △ Other) Blows per foot 0 10 20 30 40 50	Page 2 of 2 TESTING
30	Very dense SAND (as above)			S6		80/11"	
35	Hard, wet, gray, SILT, some fine sand (Glacial-lacustrine Deposit)			S7		50/4"	
40				S8		70	
	Boring terminated at approximately 41.5 feet below ground surface.						
45							
50							
55							
60							

0 20 40 60 80 100
Plastic Limit — Moisture Content — Liquid Limit

LEGEND

2.00-inch OD split-spoon sampler

ATD Groundwater level at time of drilling

Observation well:
Monument
Bentonite Fill with PVC Pipe
Groundwater Level
Sand Fill with Slotted PVC Pipe
Pipe Cap
Slough at Bottom of Hole

amec

11335 N.E. 122nd Way Suite 100
Kirkland, Washington 98034-6913

A4IN1.GDT 5/28/02

4IN1 B3.C

Drilling Method: HSA Hammer type: Winch Date drilled: *March 27, 2002* Logged By: *KSS*

OW-2

PROJECT: *Bellevue Airport / Eastgate Landfill* W.O. *1-91M-14173-0* BORING No. *B-2*

Location: South side of Pond A
Approximate ground surface elevation: 308 feet

DEPTH (feet)	Soil Description	SAMPLE NUMBER	PENETRATION RESISTANCE (Blows per foot)
0	Grass over topsoil		
	Medium dense, moist, light-orangish brown, silty fine to medium SAND, with some gravel and cobbles (Fill)		
	Medium dense, moist, light gray, silty SAND, with some gravel (Fill)		
5	Hard, moist, gray fine sandy SILT, with some gravel (Fill)	S1	
10		S2	50/6"
	Alluvium (interpreted from cross-section?)		
	Dense, moist, gray, silty fine SAND, with some gravel (Advance Outwash)		
15		S3	50/5"
	Becomes very dense, saturated, gray, fine to medium SAND, trace silt		
20		S4	75
25	Becomes brown, medium to coarse SAND	S5	75/11"
30			

PENETRATION RESISTANCE: ▲ Standard; ##/## Blows over inches; △ Other. Blows per foot 0 10 20 30 40 50. TESTING

Moisture scale: 0 20 40 60 80 100 — Plastic Limit, Moisture Content, Liquid Limit

ATD

LEGEND

- 2.00-inch OD split-spoon sampler
- 3.00-inch OD split-Spoon sampler
- Observed groundwater level
- ATD Groundwater level at time of drilling

Observation well:
- Monument
- Bentonite Fill with PVC Pipe
- Groundwater Level
- Sand Fill with Slotted PVC Pipe
- Pipe Cap
- Slough at Bottom of Hole

amec

11335 N.E. 122nd Way Suite 100
Kirkland, Washington 98034-6913

Drilling Method: HSA Hammer type: Winch Date drilled: *March 27, 2002* Logged By: *KSS*

PROJECT: *Bellevue Airport / Eastgate Landfill* W.O. *1-91M-14173-0* BORING No. *B-2*

Page 2 of 2

DEPTH (feet)	Soil Description Location: South side of Pond A Approximate ground surface elevation: 308 feet	SAMPLE NUMBER	PENETRATION RESISTANCE (Blows per foot)
30	Dense, wet to saturated, light brown, fine to medium SAND, with some silt (Advance Outwash)	S6	
35	Hard, moist, gray SILT with some fine sand (Glacio-lacustrine Deposit)	S7	50/5"
40		T8	50/5"
	Boring terminated at approximately 40.5 feet below ground surface		
45			
50			
55			
60			

Column headings: USCS/USGS GRAPHICS; SAMPLE TYPE; SAMPLE NUMBER; GROUND WATER; PENETRATION RESISTANCE (▲ Standard; ##/## Blows over inches; △ Other; Blows per foot 0 10 20 30 40 50); TESTING

Moisture scale: 0 20 40 60 80 100 — Plastic Limit, Moisture Content, Liquid Limit

LEGEND

- 2.00-inch OD split-spoon sampler
- 3.00-inch OD split-Spoon sampler
- Observed groundwater level
- ATD Groundwater level at time of drilling

Observation well:
- Monument
- Bentonite Fill with PVC Pipe
- Groundwater Level
- Sand Fill with Slotted PVC Pipe
- Pipe Cap
- Slough at Bottom of Hole

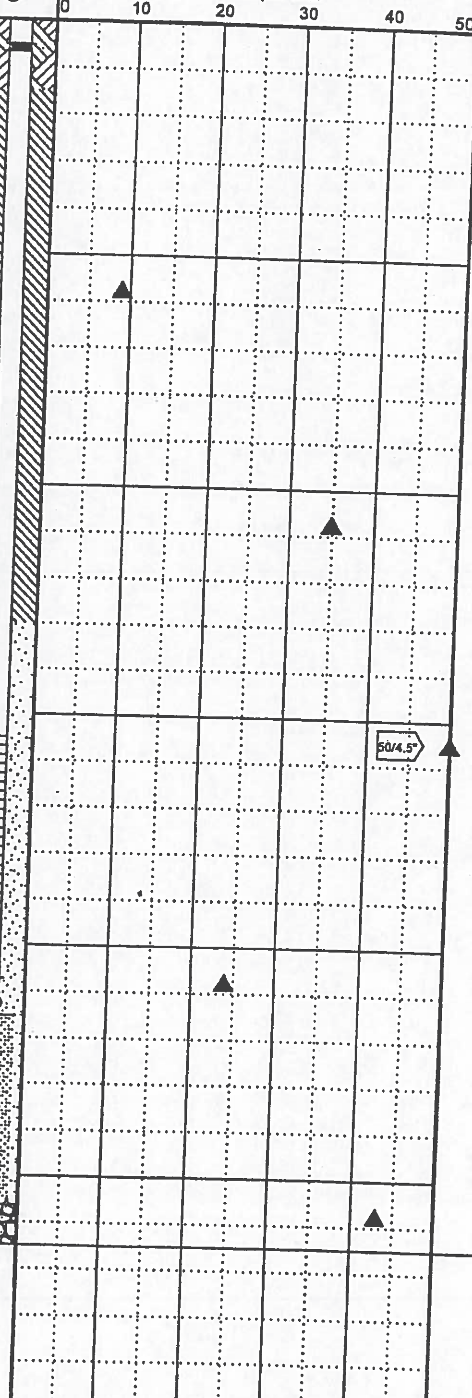
amec
11335 N.E. 122nd Way Suite 100
Kirkland, Washington 98034-6913

4IN1 B3. VA4IN1.GDT 5/28/02

Drilling Method: HSA Hammer type: Winch Date drilled: *March 27, 2002* Logged By: *KSS*

PROJECT: *Bellevue Airport / Eastgate Landfill* W.O. *1-91M-14173-0* BORING No. *B-3*

DEPTH (feet)	Soil Description	USCS/USGS GRAPHICS	SAMPLE TYPE	SAMPLE NUMBER	GROUND WATER	PENETRATION RESISTANCE ▲ Standard · Blows over inches · △ Other — Blows per foot (0, 10, 20, 30, 40, 50)	Page 1 of 1 TESTING
	Location: Southeast corner of Pond C Approximate ground surface elevation: 328 feet						
0	Grass over topsoil						
	Loose, moist to wet, brown silty, gravelly, fine to medium SAND, with scattered debris, glass shards (Fill)						
5				S1			
	Dense, moist, reddish-tan with scattered rust mottling, gravelly, fine to medium SAND, with some silt (Glacial Till)						
10				S2			
15	Blowcount overstated, bouncing on rock			S3		50/4.5"	
	Medium dense to dense, wet to saturated, gray, gravelly, silty fine to medium SAND (Glacial Till)						
	Very hard drilling						
20				S4	ATD		
25				S5			
	Boring terminated at approximately 26.5 feet below existing ground surface						
30							



LEGEND

2.00-inch OD split-spoon sampler

ATD Groundwater level at time of drilling

Observation well:

Monument

Bentonite Fill with PVC Pipe

Groundwater Level

Sand Fill with Slotted PVC Pipe

Pipe Cap

Slough at Bottom of Hole

0 20 40 60 80 100

Plastic Limit — Moisture Content — Liquid Limit

amec

11335 N.E. 122nd Way Suite 100
Kirkland, Washington 98034-6913

NA4IN1.GDT 5/28/02

4IN1 B3

Drilling Method: HSA Hammer type: Cathead Date drilled: *April 10, 2002* Logged By: *KSS*

APPENDIX D

Report on the Geophysical Surveys at the Eastgate Landfill, Bellevue, Washington by Global Geophysics

Global Geophysics

P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321
Fax: 360-805-0259

March 1, 2016 Our Ref.: 105-0904.000

Landau Associates, Inc.
130 2nd Avenue S
Edmonds, WA 98020

Attention: Mr. Kent Wiken

RE: REPORT ON THE GEOPHYSICAL SURVEYS AT THE EASTGATE LANDFILL, BELLEVUE, WA

Dear Mr. Wiken:

Global Geophysics conducted electrical resistivity tomography (ERT), induced polarization tomography (IPT), EM61 and ground penetration radar (GPR) surveys across the Eastgate landfill in Bellevue, WA. The proposed objective of the geophysical investigation is to assist in delineating the vertical and lateral extents of the landfill materials.

METHODOLOGY AND INSTRUMENTATION

Electrical resistivity tomography and induced polarization tomography (IPT) were used for this study. The following paragraphs describe the methods and field procedures.

Electrical Resistivity Tomography (ERT)

The electrical resistivity tomography technique maps differences in the electrical properties of geologic materials. These differences can result from variations in lithology, water content, and pore-water chemistry. The method involves transmitting an electric current into the ground between two electrodes and measuring the voltage between two other electrodes. The direct measurement is an apparent resistivity of the area beneath the electrodes that includes deeper layers as the electrode spacing is increased. Recent advances in technology permit rapid collection of multiple soundings, using up to 56 electrodes for each spread. The data are modeled to create a 2-D geo-electric cross-section that is useful for mapping both vertical and horizontal variations of the subsurface strata.

The data were acquired with an AGI SuperSting R8 using up to 112 electrodes spaced at a 5-7 feet interval. Once the electrode array was installed in the ground, multiple soundings were automatically carried out by the control unit. Downloading and routine modeling of the data was done on-site to provide preliminary analysis and QA/QC of the data. These results were displayed on a color monitor as cross-section that highlight changes in resistivity with depths along the transects.

Induced Polarization Tomography (IPT)

The IPI method studies the decaying potential difference as a function of time. In this method the geophysicist looks for portions of the earth where current flow is maintained for a short time after the applied current is terminated.

When a metal electrode is immersed in a solution of ions of a certain concentration and valence, a potential difference is established between the metal and the solution sides of the interface. This difference in potential is an explicit function of the ion concentration, valence, etc. When an external voltage is applied across the interface, a current is caused to flow and the potential drop across the interface changes from its initial value. The change in interface voltage is called the "over voltage" or "polarization" potential of the electrode. Over voltages are due to an accumulation of ions on the electrolyte side of the interface. The time constant of buildup and decay is typically several tenths of a second.

The IP data were collected at the same time as the resistivity data.

Time Domain Electromagnetic (EM61)

The time-domain electromagnetic system is capable of detecting buried metal objects. It transmits a pulsed electromagnetic field into the ground, which induces eddy currents in buried metallic objects. These eddy currents generate secondary electromagnetic fields that are detected by the system. The time duration or decay rate, of the secondary EM field is related to the electrical conductivity characteristics of the buried object.

A four-channel (gate) high sensitivity metal detector, Geonics EM61 Mk2, was used to collect the data along the traverses at a 20 ft interval. The low channel number (1) represents anomalies produced by shallow objects and the high channel number (4) represents anomalies produced by deeper objects. The subsurface depth range is from approximately 1 to 15 feet. The data was stored digitally and downloaded after the survey for analysis and mapping

Ground Penetrating Radar

The GPR method uses electromagnetic pulses, emitted at regular intervals by an antenna to map subsurface features. The electromagnetic pulses are reflected where changes in electrical properties of materials occur such as changes in lithology or where underground utilities are present. The reflected electromagnetic energy is received by an antenna, converted into an electrical signal, and recorded on the GPR unit. The data is recorded and viewed in real time on a graphical display that depicts a continuous profile or cross-section image of the subsurface directly beneath the path of the antenna.

The depth of penetration of the GPR signal varies according to antenna frequency and the conductivity of the subsurface material. The depth of subsurface penetration with GPR decreases with an increase in the frequency of the antenna and an increase in soil conductivity. Low frequency antennas (50 to 500 MHz) provide the best compromise between obtaining good subsurface penetration and resolution.

The data were collected along the same EM transects at a 20 foot interval using Geophysical Survey Systems, Inc. (GSSI) SIR 2000 GPR system with antennas having a center frequency of 80, 100 and 200 MHz. The data was digitally recorded for post processing.

RESULTS

The ERT and IPT data were collected along 11 transects. The locations of these lines are shown in Figure 1. The interpreted resistivity and IP profiles are shown in Figures 2-3. The borehole logs and test pit logs were used to calibrate the interpretation.

The landfill materials are inhomogeneous comparing to native soil. The interpreted bottom of the landfill material is based on the borehole logs and IP responses of the landfill materials.

- The bottom of the interpreted cover layer is represented by the dashed pink line. And the bottom of the interpreted landfill is presented by the dashed blue line. The thickness of this landfill varies between 0 and 60 ft.
- The zones with resistivity less than 28 ohm-m are interpreted as leachate saturated soil.
- The EM61 data contour plan with interpreted boundary (in dashed res line) is presented in Figure 4.

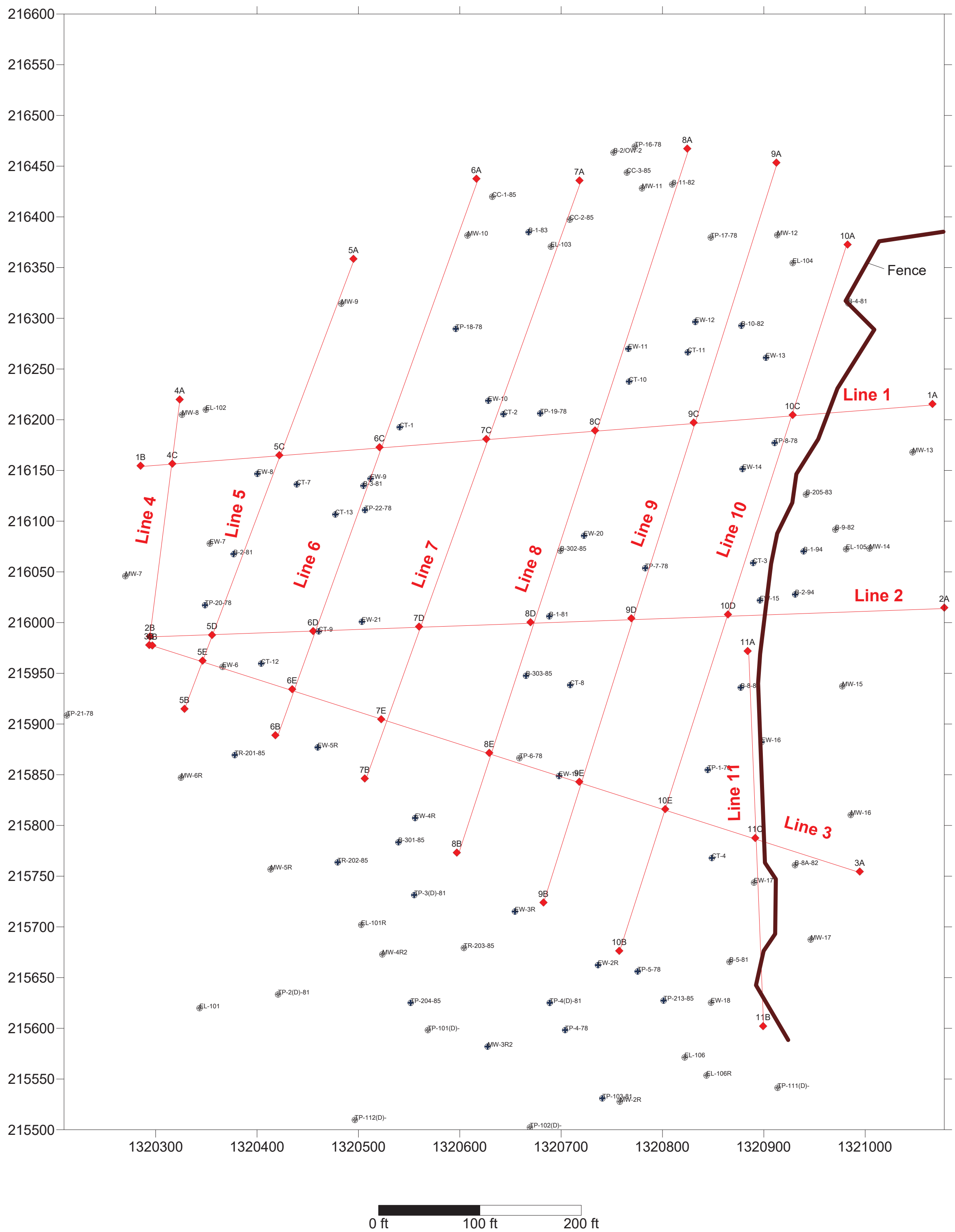
LIMITATIONS OF THE GEOPHYSICAL METHOD

Global geophysics services are conducted in a manner consistent with the level of care and skill ordinarily exercised by other members of the geophysical community currently practicing under similar conditions subject to the time limits and financial and physical constraints applicable to the services. ERT, IPT, EM61 and GPR are remote sensing geophysical methods that may not detect all subsurface conditions due to the limitations of the methods and soil conditions. In general, the errors in the interpreted depths, dependent on the resolution of the technique, are estimated to be approximately ±10 % of the true depths.

Sincerely,

Global Geophysics

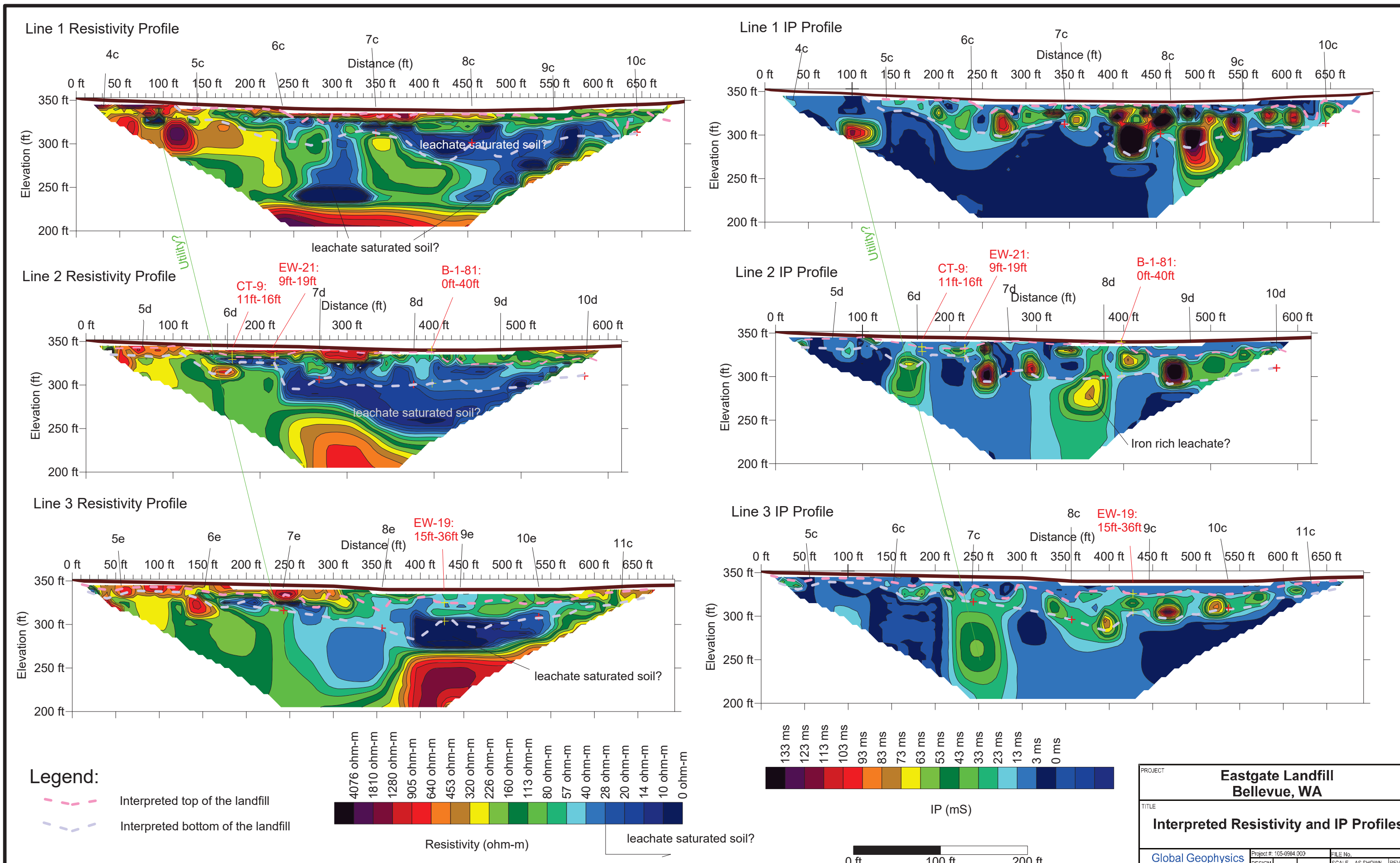
John Liu, Ph.D., R.G.
Principal Geophysicist



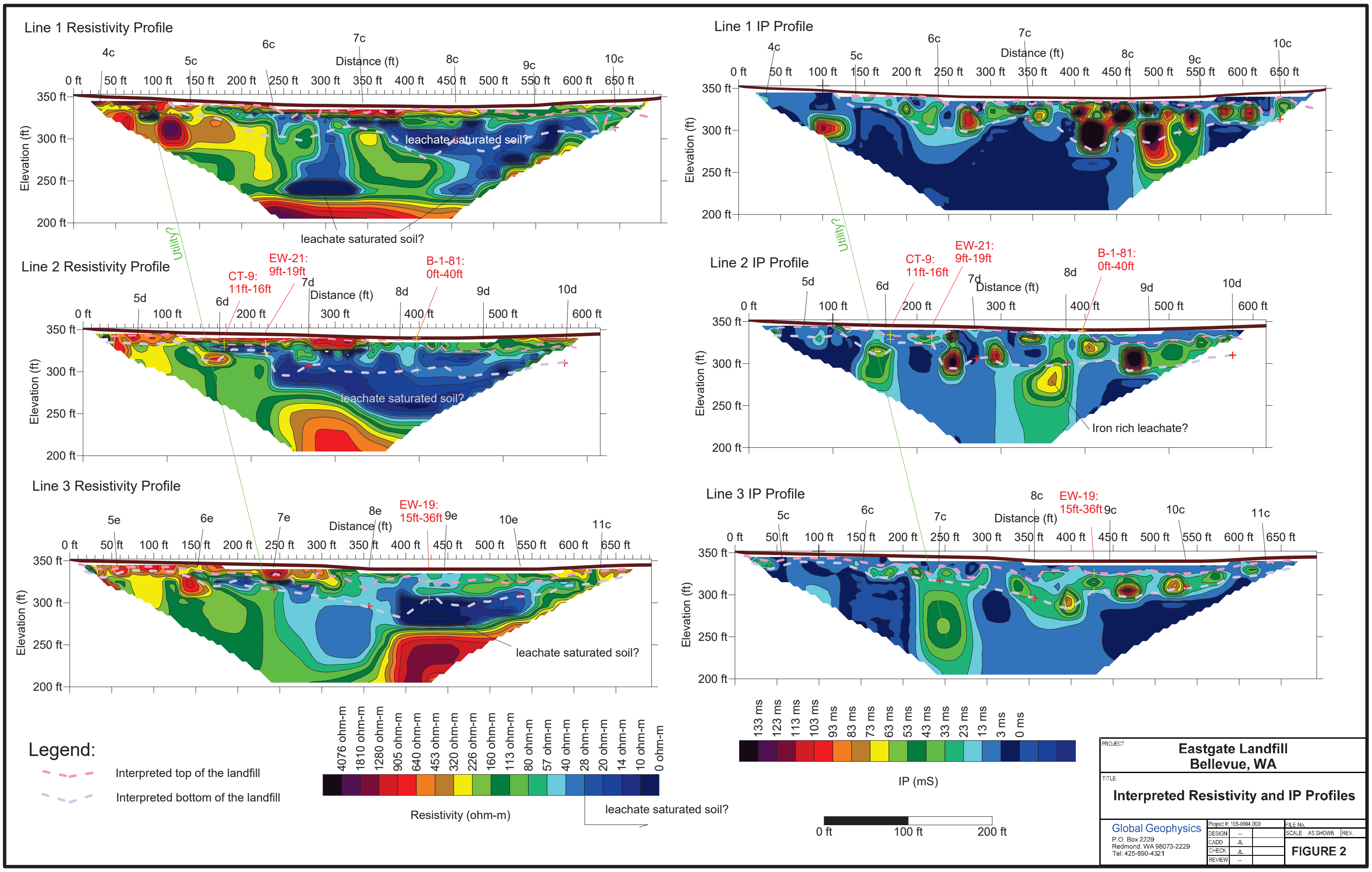
PROJECT	Eastgate Landfill Bellevue, WA
TITLE	Site Plan Line Locations

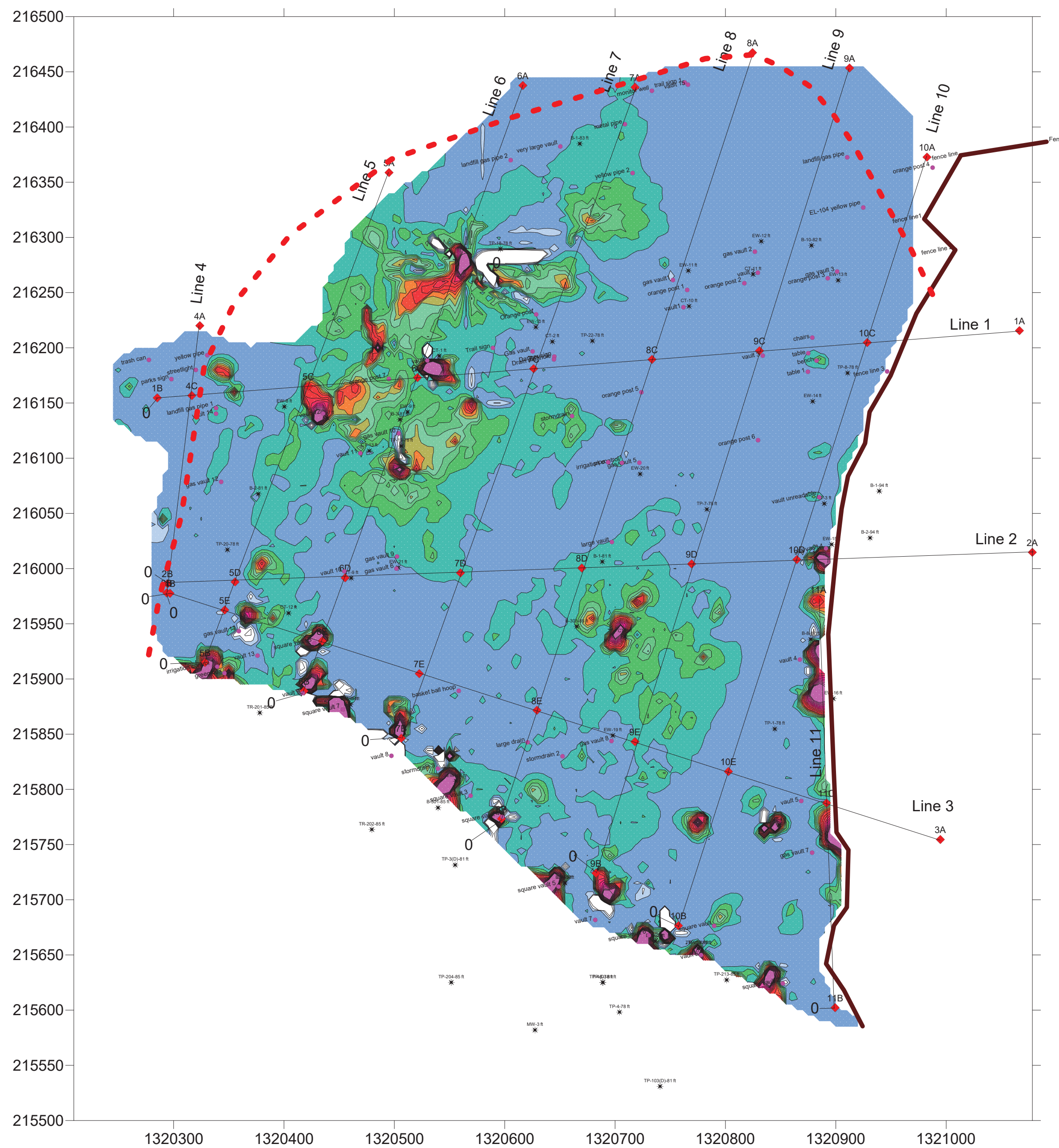
Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321

Project #: 105-0984.000		FILE No. GPR EW	
DESIGN	--	SCALE AS SHOWN	REV.
CADD	JL	FIGURE 1	
CHECK	JL		
REVIEW	--		



PROJECT	Eastgate Landfill Bellevue, WA		
TITLE	Interpreted Resistivity and IP Profiles		
Global Geophysics P.O. Box 2229 Redmond, WA 98073-2229 Tel: 425-890-4321	Project #: 105-0904.000	FILE No.	
	DESIGN --	SCALE AS SHOWN	REV.
	CADD JL	FIGURE 2	
	CHECK JL		
	REVIEW --		


Line 1 Resistivity Profile
Line 1 IP Profile
Line 2 Resistivity Profile
Line 2 IP Profile
Line 3 Resistivity Profile
Line 3 IP Profile
Distance (ft)
Elevation (ft)
leachate saturated soil?
Iron rich leachate?
Utility?
EW-21: 9ft-19ft
CT-9: 11ft-16ft
B-1-81: 0ft-40ft
EW-19: 15ft-36ft
Legend:
Interpreted top of the landfill
Interpreted bottom of the landfill
Resistivity (ohm-m)
4076 ohm-m
1810 ohm-m
1280 ohm-m
905 ohm-m
640 ohm-m
453 ohm-m
320 ohm-m
226 ohm-m
160 ohm-m
113 ohm-m
80 ohm-m
57 ohm-m
40 ohm-m
28 ohm-m
20 ohm-m
14 ohm-m
10 ohm-m
0 ohm-m
IP (mS)
133 ms
123 ms
113 ms
103 ms
93 ms
83 ms
73 ms
63 ms
53 ms
43 ms
33 ms
23 ms
13 ms
3 ms
0 ms
0 ft
100 ft
200 ft
Eastgate Landfill
Bellevue, WA
Interpreted Resistivity and IP Profiles
Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321
FIGURE 2



3000 mV/V, 2800 mV/V, 2600 mV/V, 2400 mV/V, 2200 mV/V, 2000 mV/V, 1800 mV/V, 1600 mV/V, 1400 mV/V, 1200 mV/V, 1000 mV/V, 900 mV/V, 800 mV/V, 700 mV/V, 600 mV/V, 500 mV/V, 400 mV/V, 300 mV/V, 200 mV/V, 100 mV/V, 0 mV/V

0 ft 100 ft 200 ft

Legend:

Interpreted landfill lateral boundary

PROJECT **Eastgate Landfill Bellevue, WA**

TITLE **EM-61 Data Contour Plan Channel 1**

Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321

Project #: 105-0904.000		FILE No. GPR EW	
DESIGN	--	SCALE AS SHOWN	REV.
CADD	JL	**FIGURE 4**	
CHECK	JL		
REVIEW	--		