April 14, 2017
Project 101.00989.00014

Mr. Christopher Maurer
Washington State Department of Ecology
Toxics Cleanup Program
PO Box 47600
Olympia, Washington 98504-7600

Re: Remedial Investigation Work Plan, FedEx Ground Distribution Center, 18795 Northeast 73rd Street, Redmond, Washington
VCP No. NW3081

Dear Christopher:

SLR International Corporation (SLR) has prepared this work plan to conduct additional remedial investigation activities at the FedEx Ground Distribution Center in Redmond, Washington (the Site). The overall objective of this work is to obtain a "no further action" (NFA) opinion for the Site from Ecology. The objectives of the individual tasks in this work plan are: 1) to further characterize soil and groundwater conditions at the Site, 2) address the Washington State Department of Ecology's (Ecology) comments presented in their opinion letter dated August 25, 2014, and 3) obtain an opinion from Ecology that the proposed scope of work is sufficient to complete characterization of the Site.

SITE DESCRIPTION AND BACKGROUND

The Site is located southwest of the intersection of 188th Avenue Northeast and Northeast 73rd Street in Redmond, Washington. The Site is identified as Tax Parcel No. 0725069129, Lots 5, 6, and 7, and the southern portion of Lot 4 (Figure 1). The property is approximately 24 acres in size and is bounded by Northeast 73rd Street and a Microsoft Connector bus maintenance facility to the north, by the Redmond East Business Campus industrial park to the west, by Genie Industries distribution warehouses to the south, and by 188th Avenue Northeast and Cadman Inc. to the east. The general surrounding area is occupied by a number of properties that have been developed for industrial and commercial purposes and by a residential neighborhood to the southeast.

Between approximately 1950 and 1990, the Site was historically operated as an open-pit sand and gravel mine. The mine was reclaimed by backfilling with fill materials from undocumented sources. The Site was redeveloped in 2013, and is currently used as a FedEx Ground Distribution Center and is improved with an approximately 212,000 square feet (sf) office and warehouse building and associated asphalt-paved loading and parking areas.

SLR International Corporation 22118 - 20th Avenue SE, Ste. G202, Bothell, WA 98021
T: 425-402-8800 **F:** 425-402-8488 **www.slrconsulting.com**
Offices throughout USA, Canada, UK, Ireland, Australia, South Africa, Singapore

PREVIOUS ENVIRONMENTAL INVESTIGATIONS AND REMEDIATION ACTIVITIES

The Watershed Company conducted a wetland evaluation study at the Site during March 2007 and February 2012 to document the presence or absence of wetlands based upon the vegetation, soil, and hydrologic characteristics of the Site. The study identified several surface water features, such as ponds and ditches, which showed characteristics which met the physical and biological definitions of wetland. However, the study determined that these features had been manipulated during mining operations and were intentionally created components of the mining operation. The Watershed Company prepared a Critical Areas Report to document the results of this study. This report concluded that the surface water features were intentionally created from non-wetland areas in a legally-permitted manner and thus were not regulated by the City of Redmond Critical Areas Ordinance (Watershed Company, 2012).

A geotechnical engineering investigation was conducted by The Riley Group, Inc. (RGI) in March 2012 to evaluate subsurface conditions at the Site. The investigation comprised the excavation of 30 test pits to a maximum depth of 18 feet below ground surface (bgs) and the advancement of 10 soil borings to depths ranging from 15 to 50 feet bgs. RGI prepared a *Geotechnical Engineering Report* to document the results of this investigation. This report concluded that the Site was backfilled with soils that included silty sand/sandy silt with varying amounts of gravel, with localized areas of silty and/or sandy gravel, gravelly sand with silt, and silt, and that these fill materials were placed at depths ranging up to 35.5 feet in depth. The fill materials were characterized by their disturbed appearance and by trace amounts of concrete, asphalt, wood, plastic, glass, and organic debris. The report described the native soils beneath the fill materials as sand with silt, silty sand, and silt. The report also described groundwater observed at depths ranging from 1.5 feet to 50 feet at the Site (RGI, 2012a).

RGI conducted a Phase I Environmental Site Assessment (ESA) in April 2012. At the time of the Phase I ESA, the Site was occupied by four different companies: Schnitzer Steel Industries used the eastern portion of the Site as a staging and storage area for empty debris containers; Waste Management used the western portion of the Site for staging and storage of refuse containers; Trepus Demolition used the central portion of the Site and a portion near one of the southern boundaries as storage areas for demolition debris containers, concrete vaults for storage of concrete slurry, and unlabeled, rusty 55-gallon drums containing primarily concrete slurry; and Red-E Topsoil used the northern portion of the Site to store topsoil stockpiles (RGI, 2012b). The Phase I ESA identified the following Recognized Environmental Conditions (RECs) at the Site:

- The Site was reclaimed with fill from unknown sources. RGI identified this as a "potential REC."
- A petroleum sheen was observed in a vegetated drainage ditch in the central portion of the Site. RGI identified this as a "potential REC."
- A white sheen/residue of unknown origin was observed on surface water near Schnitzer Steel Industries debris containers. RGI identified this as a "potential REC."
- Numerous unlabeled, uncovered 55-gallon drums were observed in the area of the Site occupied by Trepus demolition. The drums were observed to contain concrete slurry, rainwater, debris, and oil. RGI identified these drums as a Business Environmental Risk (BER) (RGI, 2012b).

RGI conducted a Preliminary Phase II Subsurface Investigation in April 2012 to evaluate soil and groundwater conditions in the areas where "potential RECs" were identified in the April 2012 Phase I ESA. The investigation included the excavation of 12 test pits (designated TP-1 through TP-10, Geo-TP-10, and Geo-TP11) to depths ranging from approximately 2 to 16 feet bgs and the advancement of 10 soil borings (designated B1 through B10) to depths ranging from 16 to 52 feet bgs. The locations of the test pits and borings are shown on Figure 2.

RGI collected soil samples from each test pit and soil boring, and collected one groundwater sample from a temporary groundwater monitoring well that was installed in one of the soil borings (RGI, 2012c and 2012d). The groundwater sample was not selected by RGI for laboratory analysis. The soil samples were analyzed for one or more of the following contaminants of concern (COCs):

- Total Petroleum Hydrocarbon (TPH) identification by Ecology Method NWTPH-HCID;
- Diesel- and heavy oil-range organics (DRO and HO, respectively) by Ecology Method NWTPH-Dx;
- Gasoline-range organics (GRO) by Ecology Method NWTPH-Gx;
- Volatile organic compounds (VOCs) by EPA Method 8260B;
- Carcinogenic polycyclic aromatic hydrocarbons (cPAHs) by EPA Method 8270D-SIM;
- Model Toxics Control Act (MTCA) metals (lead, arsenic, cadmium, chromium, and mercury) by EPA Methods 200.8 and 1631E.

The soil sample analytical results are summarized in Tables 1 through 3. Based on the soil sample analytical results, RGI's Preliminary Phase II ESA Report provided the following conclusions:

- Soil samples from the vicinity of the petroleum sheen that was observed in the drainage ditch in the central portion of the site did not contain detectable concentrations of COCs;
- Two surface soil samples from the vicinity of the white sheen/residue that was observed on surface water near the Schnitzer Steel Industries debris containers were found to contain HO concentrations that exceeded the MTCA Method A cleanup level [2,000 milligrams per kilogram (mg/kg)];
- Soil samples from locations throughout the Site either did not contain detectable concentrations of COCs or contained concentrations of COCs that were below their respective Method A Cleanup Levels, with the exception of one soil sample (B7-5) which contained a toxicity equivalent concentration of cPAHs (2.887 mg/kg) that exceeded the MTCA Method A cleanup level for industrial properties (2.0 mg/kg); and
- Petroleum odors were observed in two of the test pits. However, soil samples from these test pits did not contain detectable concentrations of COCs or contained concentrations of COCs that were below their respective Method A cleanup levels (RGI, 2012c and 2012d).

RGI conducted a Supplemental Phase II ESI in May 2012 to further delineate the soil conditions associated with the fill material in the northern, central, and southern portions of the Site. The Supplemental Phase II ESI included the excavation of 17 additional test pits

(designated TP-11 through TP-27) to depths ranging from 1.5 to 6.5 feet bgs, the advancement of ten direct-push soil borings (designated PB1 through PB3 and PB7 through PB13) to depths ranging from 4 to 24 feet bgs, and the installation and sampling of two groundwater monitoring wells (designated MW-1 and MW-2) at depths of 62 and 65 feet bgs, respectively. The locations of the test pits, borings, and monitoring wells are shown on Figure 2.

RGI collected soil samples from each test pit and soil boring, and collected a groundwater sample from well MW-1 [Langan Engineering & Environmental Services, Inc. (Langan), 2012]. The soil samples were analyzed for one or more of the following COCs:

- DRO and HO by Ecology Method NWTPH-Dx
- PAHs by EPA Method 8270D
- Naphthalene by EPA Method 8270D-SIM.

The groundwater sample from MW-1 was analyzed for the following COCs:

- DRO and HO by Ecology Method NWTPH-Dx
- VOCs by EPA Method 8260B
- PAHs and naphthalene by EPA Method 8270D-SIM
- Total and dissolved metals (lead, arsenic, cadmium, chromium, and mercury) by EPA Methods 200.8 and 1631E.

The soil and groundwater sample analytical results are summarized in Tables 1 through 5. Based on the soil and groundwater sample analytical results, RGI's Supplemental Phase II ESA provided the following conclusions as reported in the subsequent Level One and Level Two Hydrogeologic Assessment Report prepared by Langan:

- Subsurface soils consisted of undocumented fill materials including gravel, silt, sand, and asphalt fragments to a maximum depth of approximately 35.5 feet.
- HO and cPAH concentrations exceeding Method A cleanup levels for industrial properties were ***present only in surficial soils*** and there was no ongoing release of petroleum hydrocarbons at the Site. The source of HO and cPAH concentrations were likely attributable to historic site operations and concentrations that were present in materials transported to the Site to be used as fill (Langan, 2012).

During review of the analytical results from RGI's Supplemental Phase II ESA, SLR noted that the groundwater sample collected from MW-1 contained total chromium at a concentration [50.2 micrograms per liter (μg/L)] that just slightly exceeded the MTCA Method A groundwater cleanup level (50 μg/L); however the dissolved chromium concentration (2.2 μg/L) from the same sample was well below the Method A cleanup level, indicating that the sampling result was likely due to sediment entrained in the sample from the newly installed well, and therefore was likely not representative of the groundwater conditions at the Site.

Langan prepared a *Level One and Level Two Hydrogeologic Assessment* in June 2012 that presented a mitigation plan for contaminated soils at the Site for implementation during Site

development activities. The mitigation plan was subsequently approved by the City of Redmond in a letter dated July 12, 2012 (Langan, 2012).

Langan prepared a *Soil Management Completion Report* in July 2013 to describe the results of petroleum hydrocarbon- and cPAH-impacted soil removal and sampling activities that were conducted during the development of the Site as the current FedEx Ground Distribution Center. Langan identified nine Areas of Concern (designated AOC 1 through AOC 9), based upon the results of the previous environmental investigations at the Site, that contained soil with concentrations of HO or cPAHs above Method A cleanup levels for industrial properties or were within Ecology's Category IV soil reuse criteria. The locations of the AOCs are shown on Figure 2.

Soil removal from these areas was performed prior to mass construction excavation activities. The excavation contractor excavated these AOCs to total depths ranging up to seven feet bgs during Site development, and Langan collected soil samples from the final extents of the excavated areas for laboratory analysis. Soils excavated from the nine AOCs which contained COCs exceeding MTCA cleanup levels or within Ecology's Category IV reuse criteria for petroleum contaminated soil (PCS) were disposed offsite. Soils which contained COCs within the Ecology Category II and Category III reuse criteria for PCS and soils containing Recycled Asphalt Pavement were blended with Portland cement and used as a paving base material at the Site. A total of approximately 21,337 cubic yards of Category II and Category III soils was placed in the paved portions of the Site. The soil sample analytical results are summarized in Tables 1 through 3. Langan concluded that no further mitigation activities were necessary with respect to the environmental conditions at the Site (Treadwell & Rollo, 2013).

During review of the analytical results from the 2013 *Soil Management Completion Report*, SLR noted that the confirmation sample from the east sidewall of AOC 8 (sample AOC8-E-5) contained dibenzo(a,h)anthracene [D(a,h)A] at a concentration (0.180 mg/kg) that exceeded the MTCA Method B direct contact soil cleanup level (0.137 mg/kg). The eastern extent of the D(a,h)A exceedance was delineated by two soil samples collected at a test pit (TP-18) located immediately to the east of AOC 8. The soil samples collected from TP-18 (TP-18-3 and TP-18-5) either contained [D(a,h)A] at a concentration below the Method B soil cleanup level, or did not contain a concentration above the laboratory's detection limit (see Table 2).

Langan submitted the 2012 *Level One and Level Two Hydrogeologic Assessment Report* and the 2013 *Soil Management Completion Report* to Ecology for review and comment. Following review of the reports, Ecology provided an opinion letter (Ecology, 2013). A summary of Ecology's comments is provided below:

- Trace amount of concrete, asphalt, wood, plastic, metallic debris, and glass were observed in fill material throughout the Site. The thickness of the fill varies throughout the Site with a maximum thickness of approximately 35.5 feet. Geologic cross-sections illustrating the extent and thickness of the fill should be prepared.
- Soil samples from locations PB-2 and PB-3 are both composite samples which are not representative of soil conditions at a discrete depth. Therefore, the maximum petroleum hydrocarbon concentration at these two locations is unknown. Soil samples are needed from just below the vertical extent of each associated excavation to confirm impacted soil is below cleanup levels.

- Total chromium was detected at 50.2 μg/L in the groundwater sample collected from monitoring well MW-1, which exceeds the MTCA Method A cleanup level (50 μg/L). This exceedance may be indicative of Site contaminants leaching to groundwater, and one sampling point is not sufficient to define conditions through the 24-acre property. A sufficient number of additional wells are needed to assess groundwater conditions and establish flow direction. A cross-sectional view should be provided showing the maximum depth of the soil contamination in relation to groundwater depth, and groundwater samples should be collected from beneath the area of the Site where fill is thickest to illustrate fill debris is not leaching contaminants to groundwater.

- The property is in an area zoned Manufacturing Park, the purpose of which is manufacturing and industrial uses; residential use is not allowed. Method A Industrial cleanup levels for soil may be appropriate for the Site. A Terrestrial Ecological Evaluation (TEE) will need to be conducted before it can be determined that the appropriate cleanup levels are being applied. If Method A Industrial cleanup levels are determined to be appropriate for the Site, and environmental covenant must be placed on the property restricting future use to industrial and manufacturing uses only.

Langan prepared and submitted a *Work Plan* that presented a proposed scope of work to address comments received in Ecology's 2013 Opinion Letter. The Work Plan described the following proposed scope of work:

- Preparation of geologic cross sections to depict the extent and thickness of the fill material at the Site.
- Installation of one groundwater monitoring well (designated MW-3) in the area where the thickest fill material is anticipated to ascertain groundwater conditions under the fill.
- Measure groundwater levels and sample groundwater from the newly installed well (MW-3) and the two existing monitoring wells (MW-1 and MW-2) to assess groundwater conditions and establish a groundwater flow direction beneath the Site (Langan, 2014).

Following review of Langan's 2014 Work Plan, Ecology provided an additional opinion letter (Ecology, 2014). A summary of Ecology's comments on Langan's *Work Plan* is provided below:

- Ecology agreed with the planned installation of MW-3 in the area where the area where the thickest fill material, and that the preparation of geologic cross sections would determine the appropriate location.

- Groundwater monitoring wells MW-1 and MW-2 are not sufficient to characterize groundwater at the Site. Both wells are screened at similar depths, however, depth to groundwater encountered at MW-1 was approximately 26.5 feet bgs, and at MW-2 depth to groundwater was approximately 60 feet bgs, indicating that the wells are most likely screened in different hydrostatigraphic zones. One additional well (MW-3) will not be sufficient to characterize groundwater at the Site. Perched groundwater bearing zones must also be characterized. Ecology recommends a minimum of one upgradient well and three downgradient wells to assess groundwater conditions within the perched and deeper aquifers at the Site.

- A conceptual Site model has not been submitted to Ecology nor have any cross sections. Ecology recommends preparing these prior to siting monitoring well locations.

- Soil samples from locations PB-2 and PB-3 are both composite soil samples which are not representative of soil conditions at a discrete depth. Representative soil samples are needed from below the vertical extent of contamination of each associated excavation to confirm petroleum hydrocarbon-contaminated soil has been remediated to below cleanup levels.

- A TEE may be required unless it is determined the Site qualifies for an exclusion.

Following receipt of the Ecology's comments, Langan did not perform the additional work presented in their 2014 Work Plan.

On February 15, 2017, SLR visited the Site to confirm the locations of wells MW-1 and MW-2 and to collect depth to groundwater measurements from each of the wells. SLR was unable to locate the wells, and it appears that the wells MW-1 and MW-2 were either abandoned or destroyed during the redevelopment activities performed at the Site in 2013.

PRELIMINARY CONCEPTUAL SITE MODEL

This section of the Work Plan summarizes the data collected during the previous investigations into a preliminary conceptual site model of preliminary COCs occurrence, movement, and potential exposures.

The following environmental media have, or may have, become contaminated and could be acting as sources of exposure for humans or terrestrial biota:

- Surface soil
- Subsurface soil
- Groundwater

Potential exposure pathways associated with these media are discussed below.

Fate and Transport of Contaminants

This section provides a narrative of potential transport mechanisms for COCs at the Site. After any releases at the Site, the contaminants would initially have been located in surface soils (surface spills) or subsurface soils (e.g., placement of fill).

As rain falls on the ground surface and infiltrates the subsurface, contaminants in surface soils and subsurface soils can dissolve in the rainwater and infiltrate through the subsurface soils (leaching). Some of the contaminant mass remains in the subsurface soils and some of the contaminant mass reaches shallow groundwater. After the property was developed in 2013, pavement or structures over the majority of the site has significantly minimized rainwater infiltration across the property, reducing the leaching of contaminants from soil to groundwater.

A stormwater retention pond and landscaped area occupies the northern portion of the property, and infiltration is likely to be greater in that portion of the property.

Stormwater sheet flow at the Site is limited to the asphalt- or concrete-paved surfaces that cover the majority of the Site. It is highly unlikely that contaminants in surface soil are transported directly to surface water through sheet flow. Stormwater across the Site is directed into catch basins which discharge to the stormwater retention pond in the northern portion of the Site.

There is no evidence to indicated the presence of COCs below the groundwater table; however, potential COCs below the groundwater table would exist primarily in two phases: a dissolved phase and sorbed to the soil particles in the water-bearing zone.

Terrestrial biota that may have accumulated contaminants could also act as exposure media for humans and wildlife. Based on a TEE conducted by SLR for the Site (see below), the Site does not qualify for an exclusion from further evaluation; however, the results of a simplified TEE performed for the Site showed that further evaluation was not required.

There have not been any volatile COCs identified at the Site; therefore, volatile contaminants are not expected to be present in surface and subsurface soil, or soil vapor that may pose a potential ambient air, indoor air, or vapor intrusion risk.

Non-volatile COCs present in surface soil may be transported to ambient air in the form of suspended particulates (i.e., dust). However, due to the majority of the Site being covered by asphalt or concrete pavement, limited use of the unpaved portion of the Site (the stormwater retention pond in the northern portion of the property) and the typically wet climate of the region, dust generation is expected to be minimal.

Potential Receptors

Most of the Site is used to sort and distribute freight, stage and park semi-trailers and delivery vehicles, and for administrative offices. Delivery drivers are present on the property for only a few hours a day, before and after driving their routes, and are primarily in the warehouse or offices when on the property. Distribution center and administrative workers are present on the property for up to approximately 8 hours a day, and are primarily in the warehouse or offices when on the property. Property visitors, such as truck drivers, may also be present occasionally for short periods of time. Currently, trespassers are unlikely to enter the property due to the presence of a fence and locking gates that prevent unauthorized access to the majority of the property.

Since the property is zoned as industrial and is located in an industrial-zoned area, future property uses can be expected to be industrial in nature. Construction workers and site visitors may also be present on the property in the future.

With the exception of the northern part of property (stormwater retention pond), the majority of the property is capped with asphalt- or concrete- pavement. The unpaved portion of the property is covered with a stormwater retention pond or limited vegetation (e.g., trees, shrubs, manicured lawn). The freight distribution operations at the Site, and the industrial operations at

surrounding properties, present a constant human disturbance. At present, the Site offers limited, disturbed terrestrial habitat. Wildlife present at the property likely includes common, non-endangered species such as perching birds and small mammals such as rodents. Ongoing disturbance by human activity makes nesting and breeding at the property unlikely.

Potential Exposures

The human receptors currently present at the property include industrial workers that are assumed to be on the property 5 days a week for standard 8-hour workdays, and delivery drivers that are assumed to be on the property 5 days a week for a few hours per day. Property visitors are also on the property for short periods of time and on an irregular basis.

The property is mostly covered with asphalt or concrete pavement, and the portion that is not paved is used for a stormwater retention pond and manicured landscaping. Therefore, although unlikely, human receptors currently present on the property may be exposed to soils through dermal contact or incidental ingestion. Exposure through inhalation of windblown dust is unlikely for this property since small amount of unpaved property is covered with manicured landscaping and vegetation (e.g., trees, shrubs, lawn). Direct soil contact and inhalation of particulates, therefore, represent potentially complete exposure pathways for current human receptors at the property, although exposures are not expected to be significant.

Volatile COCs were not identified in the soil at the property. Therefore, accumulation of VOCs for both indoor and outdoor air is not expected. Indoor and outdoor vapor inhalation, therefore, may be incomplete exposure pathways for all receptors, but will be fully evaluated during the RI/FS.

Groundwater beneath the northern portion of the property is located within the City of Redmond Critical Aquifer Recharge Area (CARA) Wellhead Protection Zone 3 (10 year time of travel). No drinking water wells are present on the property, and drinking water is supplied by the City of Redmond. The nearest municipal well (Well 5) is located approximately 2,500 feet west of the Site. Based on existing data, groundwater at the down-gradient extent of the property does not appear to be impacted with any COCs that exceed applicable cleanup levels. Consumption of groundwater does not appear to be a complete pathway for human receptors at the property. During the RI, additional data will be collected to further evaluate groundwater conditions.

PROPOSED PRELIMINARY CLEANUP LEVELS

Based on the areas of petroleum hydrocarbon- and metals-impacted soil and/or groundwater at the Site, the impacted soil and groundwater are likely due to historic site operations and/or concentrations that were present in materials transported to the Site to be used as fill. Sources of the contamination were removed during cleanup activities that were conducted during site redevelopment in 2013. The results of previous investigations and the cleanup activities indicate that there are no other current or historic contaminant source areas located at the Site, and there are also no known contaminant releases at hydraulically upgradient properties beyond the Site that are impacting the Site.

Based on the results of previous investigation, the soil COCs at the site are DRO, HO, and cPAHs, and the groundwater COCs include DRO, HO, cPAHs, and chromium. Benzene, toluene, and ethylbenzene were not detected in any of the soil or groundwater samples from the previous investigations or cleanup activities, and the detected total xylenes, arsenic, and lead concentrations were low and below applicable Method A cleanup levels (up to 0.067, 6.42, and 71.9 mg/kg, respectively; see Tables 1 and 2).

The detected total chromium concentration (50.2 μg/L) in the groundwater sample from well MW-1 during the 2012 investigation was only slightly above the MTCA Method A cleanup level (50 μg/L); however the dissolved chromium concentration (2.2 μg/L) from the same sample was well below the Method A cleanup level, indicating that the sampling result was likely due to sediment entrained in the sample from the newly installed well, and therefore was likely not representative of the groundwater conditions. Detected total arsenic and lead concentrations were low and below applicable Method A cleanup levels (4.55 and 5.24 μg/L, respectively; see Table 4).

The COCs have low volatility and the former hydrocarbon-impacted soil above applicable cleanup levels were removed during the 2012 remedial activities, which minimizes any potential hydrocarbon vapor migration pathway into the building. The subject properties and the neighboring properties to the north, south, and west are currently zoned “industrial”, and are used for industrial operations. The ground surfaces of the Site are paved with asphalt, concrete, or are covered by buildings, except for narrow planters and a storm water retention pond in the northern portion of the Site.

There is a small parcel of undeveloped industrial land to the north of the Site that was previously part of a larger sand and gravel mine and later used by Red-E Topsoil to store topsoil stockpiles. The western portion of this parcel was recently developed as a Microsoft Connector bus storage and maintenance facility.

Under WAC 173-340-7491 and -7492, the Site does not qualify for an exclusion from a TEE; therefore, SLR conducted a simplified TEE. The results of the simplified TEE showed that further evaluation was not required based on the following: 1) Following the 2012 remedial activities, the total area of soil contamination at the Site is not more than 350 square feet [WAC 173-340-7492 (2)(a)(i)], 2) industrial land use at the Site and surrounding area make substantial wildlife exposure unlikely [WAC 173-340-7492 (2)(a)(ii)], and 3) concentrations of Site COCs are well below the concentrations for priority chemicals of ecological concern at industrial properties (WAC 173-340, Table 749-2); therefore, the potential exposure pathway analysis is considered incomplete [WAC 173-340-7492 (2)(b)]. The completed simplified TEE spreadsheet is presented in Appendix A.

Based on the zoning and current uses of the Site, the low potential for vapor intrusion into the Site building, and the limited risks to terrestrial ecological receptors at the site, MTCA Method A Soil Cleanup Levels for Industrial Properties (MTCA Table 745-1) or Method B soil cleanup levels are appropriate for the petroleum hydrocarbon-impacted soil at the Site. Method A groundwater cleanup levels based on protection of drinking water are appropriate for the potentially petroleum hydrocarbon- or chromium-impacted groundwater at the Site.

STATISTICAL ANALYSIS

To evaluate if the remaining D(a,h)A concentration identified in one soil sample (AOC8-E-5) at the Site complied with the applicable MTCA Method B cleanup level, SLR performed statistical analyses consistent with WAC 173-340-740(7) for compliance monitoring. The data set for these statistical analyses consisted of the soil sample analytical results from sample locations located at the Site that were not previously excavated during the 2013 cleanup actions (see Table 2). The analytical results from a total of 46 soil samples analyzed for D(a,h)A were used to characterize the remaining D(a,h)A concentrations in soil at the Site.

Consistent with MTCA [WAC 173-340-740(7)(d)(B)(iv)], the upper one-sided 95 percent confidence limit (95% UCL) values of the true mean D(a,h)A concentrations in the soil remaining at the Site were estimated by using updated methods in the United States Environmental Protection Agency's (EPA's) ProUCL 5.1 (ProUCL) software program (EPA, 2015). The ProUCL software uses a variety of statistical methods to calculate 95% UCL values, and recommends the values that are most appropriate based on the distribution and characteristics of the site data. Using the recommended statistical approaches in the ProUCL program, the calculated 95% UCL value of the true mean concentration for D(a,h)A (0.0379 mg/kg) was below the MTCA Method B direct contact soil cleanup level (0.137 mg/kg). The soil sample analytical data used for the statistical analyses are presented in Table 2, and a detailed discussion of the statistical analyses and spreadsheets that show the statistical results are provided in Appendix B.

In addition to the comparison of the 95% UCL of the true mean concentration to the site soil cleanup level, MTCA uses several other criteria to demonstrate compliance with a cleanup level [WAC 173-340-740(7)(e)]. First, no single sample concentration can be more than twice the cleanup level. As shown in Table 2 of the report, the maximum concentration of D(a,h)A in the soil is 0.180 mg/kg, which is less than two times the Method B direct contact soil cleanup level. MTCA also requires that less than 10 percent of the sample concentrations exceed the cleanup level. As shown in Table 2 of the report, only 1 soil sample from the data set of 46 D(a,h)A samples contained concentrations that exceeded the cleanup level (0.02 percent of the samples). Based on the results of the statistical analyses of the D(a,h)A concentrations in the soil at the Site, the remaining D(a,h)A concentrations are in compliance with the Method B direct contact soil cleanup level.

SCOPE OF WORK

To meet the objectives described above, the scope of work is presented in the following tasks.

Drill and Sample Soil Borings

In their opinion letter dated August 25, 2014, Ecology stated that representative soil samples need to be collected at the locations of soil borings PB2 and PB3 to delineate the vertical extent of HO-impacted soil at these locations. Composite soil samples collected at depths between 4 and 6 feet bgs (PB2) and 2 and 6 feet bgs (PB3) were previously collected at these locations. Subsequent excavations performed at the locations of PB2 and PB3 (AOC 6 and

AOC 7, respectively) did not include confirmation soil samples from the bottom of the excavations to demonstrate that the vertical extent of HO-impacted soil had been defined. In response to Ecology's required action, two soil borings (designated SB-1 and SB-2) will be drilled and sampled at the former locations of PB2 and PB3 to assess the soil conditions at depths below the floors of the AOC 6 and AOC 7 excavations. The planned locations of the borings are shown on Figure 2.

Prior to conducting the field activities, SLR will coordinate the work with the property owner to allow access to the Site and to minimize any impacts to the building tenants. SLR will also arrange for public and private utility locates to identify and mark the underground utilities within 50 feet of the planned soil boring locations.

Cascade Drilling, LP (Cascade) of Woodinville, Washington, will use a hydraulic push-probe rig to drill and sample the borings. All of the drilling and sampling activities will be conducted under the direction of an SLR geologist. The bottoms of the AOC 6 and AOC 7 excavations were at depths of approximately 6 and 7 feet bgs, respectively; therefore, each boring will be advanced to depths of approximately 8 feet bgs to assess the current soil conditions below the bottoms of these excavations.

During drilling, soil samples will be collected on a continuous basis by using an acetate liner within the drill rods. SLR personnel will field screen each soil sample for the potential presence of petroleum hydrocarbons by using visual appearance, odor, and photoionization detector (PID) readings. At least one soil sample will be collected from each boring for laboratory analysis. If there is no field evidence of petroleum hydrocarbons in the sampled soil from a boring, then the soil sample collected at a depth of approximately 7 to 8 feet will be submitted to Onsite Environmental, Inc. (Onsite) in Redmond, Washington, for analysis.

If there is field evidence of petroleum hydrocarbons at depths of approximately 7 to 8 feet in a boring, then the sampled soil that contains the greatest evidence of petroleum hydrocarbons will be submitted to Onsite for analysis, and the depth of the boring will be extended until there is no further field evidence of contamination, or 16 feet bgs, whichever is shallower, and a sample collected from the bottom of the boring will also be submitted to Onsite to delineate the vertical extent of the impacted soil, if necessary. The samples will be analyzed for DRO and HO by Ecology Method NWTPH-Dx (after silica gel cleanup), and for PAHs by EPA Method 8270D SIM.

The soil cuttings from the drilling will be temporarily stored at the Site in properly labeled, 55-gallon drums, pending off-site disposal at a licensed facility.

Groundwater Monitoring Well Installation

In their opinion letter dated August 25, 2014, Ecology stated the following:

- Geologic cross-sections have not been submitted to Ecology, and recommended preparing cross-sections prior to siting monitoring well locations.

- Groundwater monitoring wells MW-1 and MW-2 are not sufficient to characterize groundwater at the Site. Both wells are screened at similar depths, however, depth to groundwater encountered at MW-1 was approximately 26.5 feet bgs, and at MW-2 depth to groundwater was approximately 60 feet bgs, indicating that the wells are most likely screened in different hydrostatigraphic zones. One additional well will not be sufficient to characterize groundwater at the Site. Perched groundwater bearing zones must also be characterized. Ecology recommended a minimum of one upgradient well and three downgradient wells to assess groundwater conditions within the perched and deeper aquifers at the Site.
- Ecology agreed with the planned installation of an additional monitoring well in the area of the thickest fill material, and that the preparation of geologic cross sections would determine the appropriate location.

In response to Ecology's comments, SLR prepared geologic cross sections A-A' and B-B' using available soil boring and well logs from previous investigations that were conducted at the Site. The cross sections are shown on Figures 3 and 4, respectively. Based on SLR's evaluation of the boring logs from previous investigations and the prepared cross sections, the areas of the Site with the thickest fill appear to be in the west (approximately 37.5 feet near MW-2), southwest (approximately 32.5 feet near MW-1), east-central (approximately 35 feet near B-1) and east (approximately 35 feet near B-2) areas of the Site.

Based on groundwater elevation maps obtained from the City of Redmond (see Appendix C), depth to groundwater at the Site has historically ranged from approximately 60 to 70 feet bgs (depending upon ground surface elevation), with corresponding seasonal groundwater elevations in the vicinity of the Site generally ranging from 40 to 45 feet relative to the NAVD 88 datum (NAVD88). This groundwater elevation data generally corresponds with the depth to water (approximately 60 feet bgs) and groundwater elevation (approximately 40 feet) observed in monitoring well MW-2 in 2012. The depth to water previously observed in MW-1 (26.5 feet bgs) appears to be an indication of a perched zone that was encountered during drilling, or anomalous as well MW-1 was constructed with a screened interval (approximately 48 to 63 feet bgs) at a depth similar to MW-2.

Historically, the shallow perched groundwater bearing zones at the Site would have primarily been recharged through the infiltration of precipitation through the pervious soils that covered the Site. During the 2013 redevelopment, the majority of the Site was covered in impervious asphalt- or concrete-pavement which significantly limits the amount of precipitation that can infiltrate into the Site subsurface. Therefore, without a source of recharge, SLR believes that the previously observed perched groundwater may no longer be present at the Site. Therefore, SLR does not plan to characterize any perched zones as part of this scope of work. If shallow perched groundwater bearing zones are observed during completion of wells MW-3 through MW-6 (discussed below), the scope of the work may be modified to further assess the perched groundwater at the Site.

Based on the evaluation of locations with the thickest fill, and since monitoring wells MW-1 and MW-2 appear to no longer exist, a total of four groundwater monitoring wells (designated MW-3 through MW-6) will be drilled and installed to facilitate the: 1) characterization of the regional shallow aquifer present beneath the Site at an elevation of approximately 40 to 45 feet NAVD88, and 2) to determine a groundwater flow direction and gradient at the Site. The

proposed locations of the monitoring wells are shown on Figure 2. The locations of wells MW-3 and MW-4 will be installed at similar locations as former wells MW-2 and MW-1, respectively. The actual boring locations will be determined in the field based on relevant property features, locations of utilities, and access.

Prior to conducting the field activities, SLR will coordinate the work with the property owner to allow access to the Site and to minimize any impacts to the building tenants. SLR will also arrange for public and private utility locates to identify and mark the underground utilities within 50 feet of the planned well locations.

Cascade will conduct the drilling activities by using hollow-stem auger methods under the direction of an SLR geologist. The total depth of the wells will be determined in the field based on the observed depth to groundwater. Based on the change in topography at the Site, groundwater is anticipated to be observed at depths of approximately 60 feet bgs in the western portion of the Site (near MW-3 and MW-4), and approximately 80 feet bgs in the southern portion of the Site (near MW-6). To assess the soil conditions above and below the groundwater table, each of the borings will be advanced to a depths ranging from approximately 70 to 90 feet bgs.

During drilling, soil samples will be collected at 10-foot intervals using split-spoon samplers and logged in accordance with the Unified Soils Classification System (USCS). SLR will screen the soil samples for the potential presence of contamination by using visual appearance, odors, and photoionization detector (PID) readings. At least one soil sample will be collected from each boring for laboratory analysis. If there is field evidence of petroleum hydrocarbons, then the sampled soil that contains the greatest evidence of petroleum hydrocarbons will be submitted to Onsite for analysis. If there is no field evidence of petroleum hydrocarbons in the sampled soil from a boring, then the soil sample collected immediately above the water table will be submitted to Onsite for analysis. The samples will be analyzed for DRO and HO by Ecology Method NWTPH-Dx (after silica gel cleanup), and PAHs by EPA Method 8270D SIM.

Cascade will complete each of the soil borings at the Site with a groundwater monitoring well that is constructed with 2-inch-diameter Schedule 40 PVC casing and screen. A 10-foot-long screen (0.010-inch slots) will be installed at a depth (approximately 55 to 65 feet bgs in the western portion of the Site, and approximately 75 to 85 feet bgs in the southern portion of the Site) that intercepts the groundwater table. A filter pack consisting of 10x20 Colorado® silica sand or equivalent will extend from the bottom of the well to at least 12 inches above the uppermost screen slot. A hydrated bentonite seal will be installed above the filter pack to approximately 1 foot bgs. Each well will be completed at ground surface with a flush-grade, traffic-rated, steel monument that is installed in concrete. After installation, Cascade will develop the wells by using surging and bailing methods to ensure hydraulic continuity between the well screens and formation materials. Signature Surveying & Mapping (Signature) of Shoreline, Washington, will survey the top of casing elevations of the monitoring wells relative to NAVD 88.

The soil generated by the drilling activities, purge water generated during well development, and wastewater generated during the decontamination of the drilling and sampling equipment

will be temporarily stored at the Subject Property in properly labeled 55-gallon drums, pending off-site disposal at a Washington State Department of Ecology-approved facility.

Conduct Groundwater Sampling

To assess groundwater conditions within the shallow regional aquifer present beneath the Site and to determine a groundwater flow direction at the Site, SLR will conduct a groundwater sampling event to determine if petroleum hydrocarbons or metals have impacted groundwater beneath the Site. During the sampling event, groundwater samples will be collected from the four newly installed monitoring wells (MW-3 through MW-6).

Prior to the sampling event, SLR personnel will measure the depth to groundwater in each well by using an electronic water level indicator. At least 48 hours after development, SLR will purge and sample each well by using low-flow methods (pumping rate of approximately 0.33 liters per minute) with a bladder pump and dedicated tubing. The intake of the tubing will be placed at approximately two feet below the groundwater level in each well. During purging, field parameters of pH, conductivity, temperature, dissolved oxygen, and oxidation-reduction (redox) potential will be measured every three minutes. Following stabilization of the field parameter readings, each sample will be collected and submitted to Onsite for analysis of DRO and HO by Ecology Method NWTPH-Dx (without silica gel cleanup) and dissolved RCRA 8 Metals (arsenic, barium, cadmium, chromium, mercury, lead, selenium, and silver) by EPA Method 200.8/7470A. Any groundwater samples that contain detectable DRO or HO concentrations will also be analyzed for PAHs by EPA Method 8270D SIM. Groundwater samples collected for analysis of dissolved metals will be filtered in the field using an in-line 0.45 micron disposable filter.

The purge water generated during sampling will be temporarily stored in properly labeled, 55-gallon drums at the Site, pending off-site disposal at a Washington State Department of Ecology-approved facility.

Prepare Soil and Groundwater Sampling Report

After receiving the sample analytical results for the soil and groundwater sampling activities, SLR will prepare a Soil and Groundwater Sampling Report that describes the field activities, presents the soil and groundwater sample analytical results, and details our conclusions regarding the current soil and groundwater conditions at the site. A draft version of the report will be submitted to Franklin-Redmond, LLC for review. After receiving comments, the report will be finalized and submitted to Ecology for review with a request for their opinion under the Voluntary Cleanup Program.

In accordance with Ecology requirements, SLR will enter the soil and groundwater data from this work into Ecology's EIM database.

Abandon Groundwater Monitoring Wells

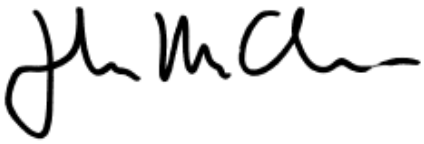
After obtaining an NFA opinion from Ecology, Cascade will abandon each of the groundwater monitoring wells at the Site by filling them with hydrated bentonite. Each of the well vaults will be removed and the ground surface will be patched with asphalt to match the existing ground surface. The well abandonment work will be conducted under the direction of an SLR field geologist. Prior to conducting the work, SLR will coordinate with the owner and Site tenant to ensure that all of the wells will be accessible.

SLR appreciates the opportunity to provide our services. If you have any questions, please call Greg Lish at (425) 420-9876.

Sincerely,

SLR International Corporation

Greg Lish, LG
Senior Geologist



John McCorkle
Principal Scientist

Attachment: Figures
Tables
Appendix A – Terrestrial Ecological Evaluation
Appendix B – Statistical Analysis
Appendix C – City of Redmond Groundwater Contour Maps

REFERENCES

Langan Engineering & Environmental Services Inc. 2012. Level One and Level Two Hydrogeologic Assessment Report, Proposed FedEx Ground Facility, 188th Avenue Northeast, Redmond, Washington 98052. June 28.

Langan Treadwell Rollo. 2014. Work Plan, FedEx Ground Distribution Center, 188th Avenue Northeast, Redmond, WA, VCP No.: NW2766. April 24.

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The Riley Group, Inc. 2012c. Preliminary Phase II Subsurface Investigation, Proposed FedEx Union Hill, 188th Avenue Northeast, Redmond, Washington 98052, RGI Project No. 2012-088. April 4.

The Riley Group, Inc. 2012d. Revised Preliminary Phase II Subsurface Investigation, Proposed FedEx Union Hill, 188th Avenue Northeast, Redmond, Washington 98052, RGI Project No. 2012-088. April 18.

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United States Environmental Protection Agency. 2015. ProUCL Version 5.1.002 Technical Guide. EPA/600/R-07/041. October. https://www.epa.gov/land-research/proucl-software

Washington State Department of Ecology. 2013. Opinion Letter to Mr. John Phillips of Suncap Seattle, LLC, Regarding Comments on Treadwell & Rollo's Soil Management Completion Report, Fed Ex Ground Distribution Center, 188th Avenue and NE 73rd Street, Redmond, WA 98052, Facility/Site No: 11311, VCP Project No. NW2766. November 27.

Washington State Department of Ecology. 2014. Opinion Letter to Mr. John Phillips of Suncap Seattle, LLC, Regarding Comments on Langan Treadwell Rollo's Work Plan, Fed Ex Ground Distribution Center, 188th Avenue and NE 73rd Street, Redmond, WA 98052, Facility/Site No: 11311, VCP Project No. NW2766. August 25.

FIGURES

Legend

Subject Property Boundary

Property Boundary

N

0 250 500 1,000 Feet

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY.
ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

SLR

FEDEX GROUND DISTRIBUTION CENTER
18795 NORTHEAST 73RD STREET
REDMOND, WASHINGTON

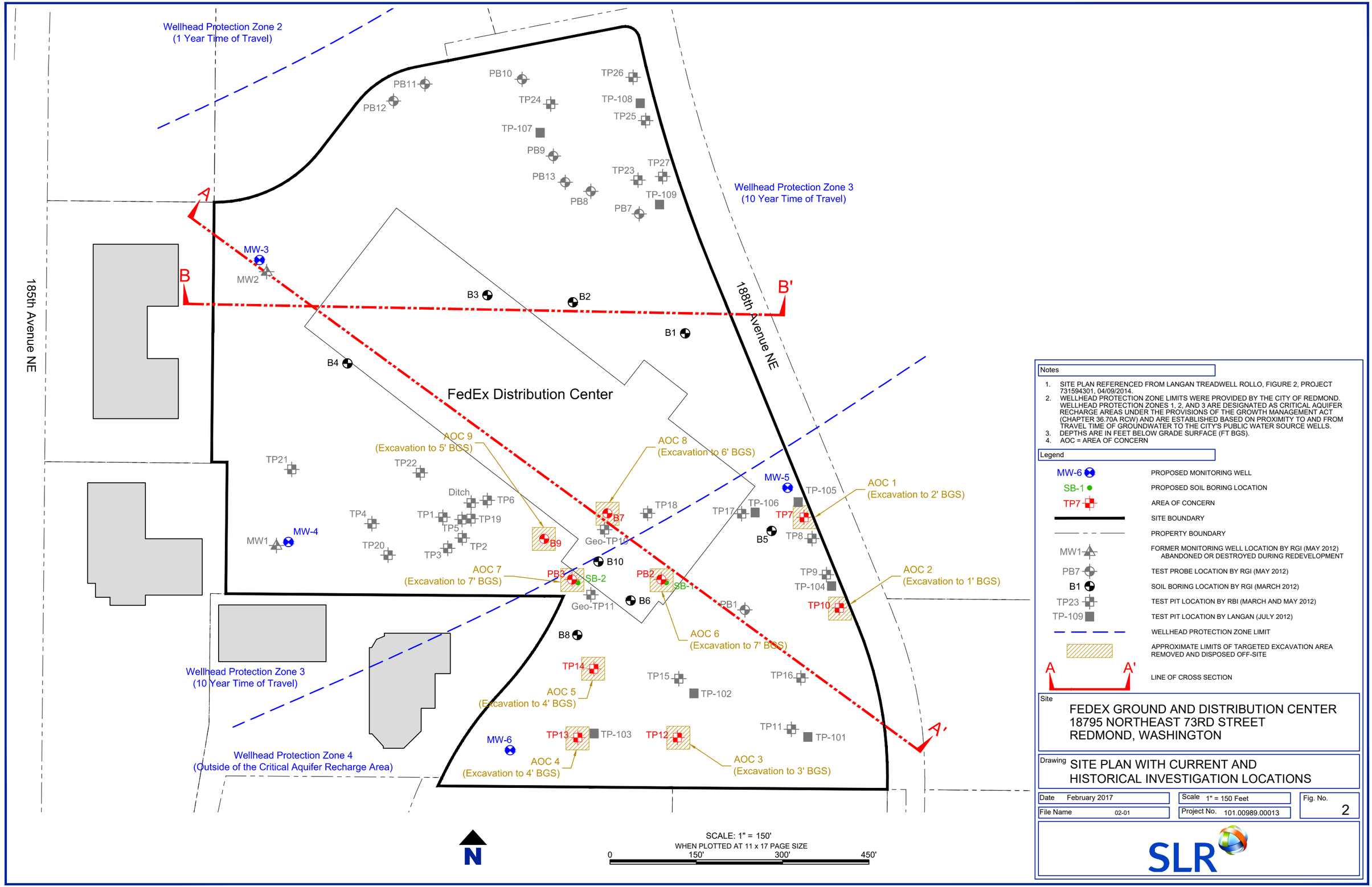
Report

REMEDIAL INVESTIGATION WORK PLAN

Drawing

SITE LOCATION MAP

Date	February 2017	Scale	1 in = 500 Feet	Fig. No. 1
File Name	F1 FedEx Dist Center_17.mxd	Project No.	101.00989.00013	



Notes

1. SITE PLAN REFERENCED FROM LANGAN TREADWELL ROLLO, FIGURE 2, PROJECT 731594301, 04/09/2014.
2. WELLHEAD PROTECTION ZONE LIMITS WERE PROVIDED BY THE CITY OF REDMOND. WELLHEAD PROTECTION ZONES 1, 2, AND 3 ARE DESIGNATED AS CRITICAL AQUIFER RECHARGE AREAS UNDER THE PROVISIONS OF THE GROWTH MANAGEMENT ACT (CHAPTER 36.70A RCW) AND ARE ESTABLISHED BASED ON PROXIMITY TO AND FROM TRAVEL TIME OF GROUNDWATER TO THE CITY'S PUBLIC WATER SOURCE WELLS.
3. DEPTHS ARE IN FEET BELOW GRADE SURFACE (FT BGS).
4. AOC = AREA OF CONCERN

Legend

MW-6	PROPOSED MONITORING WELL
SB-1	PROPOSED SOIL BORING LOCATION
TP7	AREA OF CONCERN
	SITE BOUNDARY
	PROPERTY BOUNDARY
MW1	FORMER MONITORING WELL LOCATION BY RGI (MAY 2012) ABANDONED OR DESTROYED DURING REDEVELOPMENT
PB7	TEST PROBE LOCATION BY RGI (MAY 2012)
B1	SOIL BORING LOCATION BY RGI (MARCH 2012)
TP23	TEST PIT LOCATION BY RBI (MARCH AND MAY 2012)
TP-109	TEST PIT LOCATION BY LANGAN (JULY 2012)
	WELLHEAD PROTECTION ZONE LIMIT
	APPROXIMATE LIMITS OF TARGETED EXCAVATION AREA REMOVED AND DISPOSED OFF-SITE
A A'	LINE OF CROSS SECTION

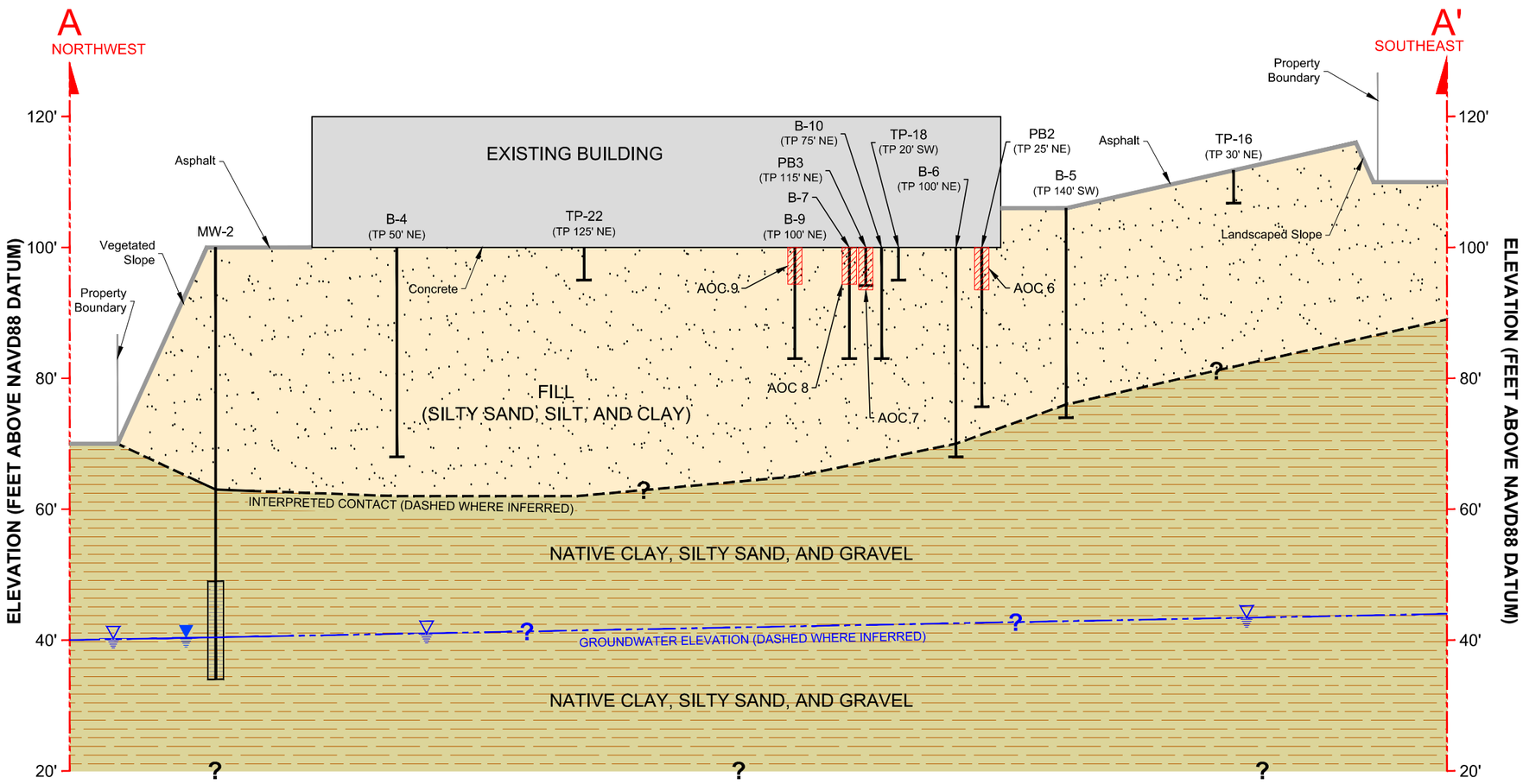
Site
FEDEX GROUND AND DISTRIBUTION CENTER
18795 NORTHEAST 73RD STREET
REDMOND, WASHINGTON

Drawing
SITE PLAN WITH CURRENT AND HISTORICAL INVESTIGATION LOCATIONS

Date February 2017	Scale 1" = 150 Feet	Fig. No. 2
File Name 02-01	Project No. 101.00989.00013	

SLR

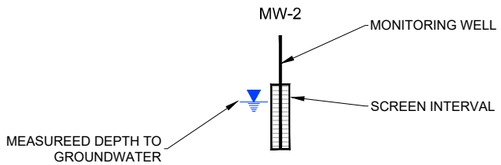
Last Saved: February 23, 2017 10:00:16 AM by dbailey Drawing path: N:\Anchorage\CAD-GIS\PROJECTS\PMF Investments LLC\2017\Fed Ex Dist Center\cad\02-01.dwg



Notes

1. Cross section location is shown on Figure 2.
2. B = Soil Boring Location
3. TP = Test Pit Location
4. MW = Monitoring Well Location

Legend



- INFERRED GROUNDWATER ELEVATION
- GROUNDWATER ELEVATION
- INFERRED LITHOLOGIC CONTACT
- ASPHALT
- FILL (SILTY SAND, SILT, AND CLAY)
- NATIVE CLAY, SILTY SAND, AND GRAVEL
- APPROXIMATE LIMITS OF TARGETED EXCAVATION AREA REMOVED AND DISPOSED OFF-SITE

0 150' 300'
Horizontal Scale: 1 Inch = 150 Feet

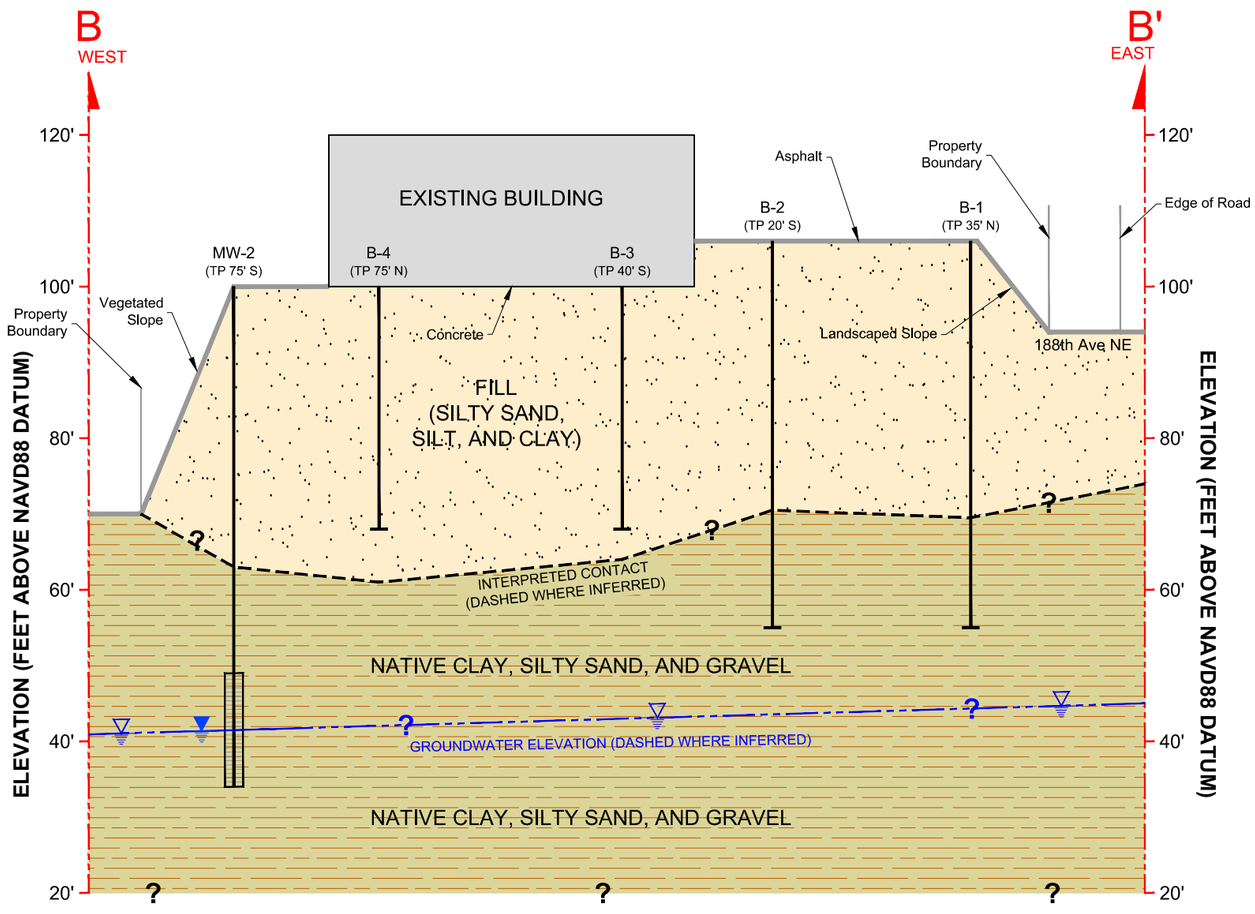
0 20' 40'
Vertical Scale: 1 Inch = 20 Feet
(NAVD88 Vertical Datum)

Site
FEDEX GROUND AND DISTRIBUTION CENTER
18795 NORTHEAST 73RD STREET
REDMOND, WASHINGTON

Drawing
GEOLOGIC CROSS SECTION A - A'

Date February 2017	Scale As Shown	Fig. No. 3
File Name 03-01	Project No. 101.00989.00013	

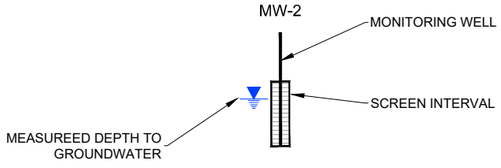
SLR



Notes

1. Cross section location is shown on Figure 2.
2. B = Soil Boring Location
3. TP = Test Pit Location
4. MW = Monitoring Well Location

Legend



- INFERRED GROUNDWATER ELEVATION
- GROUNDWATER ELEVATION
- INFERRED LITHOLOGIC CONTACT
- ASPHALT
- FILL (SILTY SAND, SILT, AND CLAY)
- NATIVE CLAY, SILTY SAND, AND GRAVEL

0 150' 300'
Horizontal Scale: 1 Inch = 150 Feet

0 20' 40'
Vertical Scale: 1 Inch = 20 Feet
(NAVD88 Vertical Datum)

Site
FEDEX GROUND AND DISTRIBUTION CENTER
18795 NORTHEAST 73RD STREET
REDMOND, WASHINGTON

Drawing
GEOLOGIC CROSS SECTION B - B'

Date	February 2017	Scale	As Shown	Fig. No.
File Name	04-01	Project No.	101.00989.00013	4

SLR

TABLES

Table 1
Soil Sample Analytical Results - BTEX and Petroleum Hydrocarbons
FedEx Ground Distribution Center
Redmond, Washington

Soil Boring Number/ Sample Location	Sample ID	Sampled By	Approx. Sample Depth (feet)	Date Collected	BTEX[a]				Petroleum Hydrocarbons		
					Benzene	Toluene	Ethylbenzene	Total Xylenes	Gasoline-Range Organics[b]	Diesel-Range Organics[c]	Heavy Oil-Range Organics[c]
MTCA Method A Cleanup Levels[d]					**0.03**	**7**	**6**	**9**	**100**	**2,000**	**2,000**
TP1	TP1-1	Riley Group	1.0	3/6/2012	ND<0.03	ND<0.05	ND<0.05	ND<0.1	NA	ND<50	ND<250
TP1	TP1-9	Riley Group	9.0	3/6/2012	ND<0.03	ND<0.05	ND<0.05	ND<0.1	NA	ND<50	ND<250
TP2	TP2-1	Riley Group	1.0	3/6/2012	ND<0.03	ND<0.05	ND<0.05	ND<0.1	NA	ND<50	ND<250
TP3	TP3-1	Riley Group	1.0	3/6/2012	ND<0.03	ND<0.05	ND<0.05	ND<0.1	NA	ND<50	ND<250
TP5	TP5-1	Riley Group	1.0	3/6/2012	ND<0.03	ND<0.05	ND<0.05	ND<0.1	NA	ND<50	ND<250
TP7	*TP7-0*	*Riley Group*	*0.0*	*3/6/2012*	*ND<0.03*	*ND<0.05*	*ND<0.05*	*ND<0.1*	*NA*	*300 x*	***2,200***
TP7	*TP7-1*	*Riley Group*	*1.0*	*3/6/2012*	*NA*	*NA*	*NA*	*NA*	*NA*	*450 x*	***3,100***
TP7	TP7-2	Riley Group	2.0	3/6/2012	NA	NA	NA	NA	NA	ND<50	ND<250
TP8	TP8-1	Riley Group	1.0	3/6/2012	NA	NA	NA	NA	NA	ND<50	ND<250
TP8	TP8-2	Riley Group	2.0	3/6/2012	NA	NA	NA	NA	NA	ND<50	ND<250
TP9	TP9-1	Riley Group	1.0	3/6/2012	NA	NA	NA	NA	NA	ND<50	ND<250
TP9	TP9-2	Riley Group	2.0	3/6/2012	NA	NA	NA	NA	NA	ND<50	ND<250
TP10	*TP10-1*	*Riley Group*	*1.0*	*3/6/2012*	*NA*	*NA*	*NA*	*NA*	*NA*	*100 x*	*850*
TP10	TP10-2	Riley Group	2.0	3/6/2012	NA	NA	NA	NA	NA	ND<50	ND<250
Geo-TP10	Geo-TP10-10	Riley Group	10.0	3/6/2012	ND<0.03	ND<0.05	ND<0.05	ND<0.1	ND<2	76 x	ND<250
B1	B1-10	Riley Group	10.0	3/8/2012	ND<0.03	ND<0.05	ND<0.05	ND<0.1	NA	NA	NA
B1	B1-20	Riley Group	20.0	3/8/2012	ND<0.03	ND<0.05	ND<0.05	ND<0.1	NA	NA	NA
B2	B2-5	Riley Group	5.0	3/8/2012	ND<0.03	ND<0.05	ND<0.05	ND<0.1	ND<2	ND<50	ND<250
B2	B2-15	Riley Group	15.0	3/8/2012	ND<0.03	ND<0.05	ND<0.05	ND<0.1	NA	NA	NA
B3	B3-5	Riley Group	5.0	3/8/2012	NA	NA	NA	NA	NA	ND<50	ND<250
B3	B3-10	Riley Group	10.0	3/8/2012	ND<0.03	ND<0.05	ND<0.05	ND<0.1	NA	NA	NA
B4	B4-10	Riley Group	10.0	3/8/2012	ND<0.03	ND<0.05	ND<0.05	0.067	NA	NA	NA
B5	B5-5	Riley Group	5.0	3/9/2012	ND<0.03	ND<0.05	ND<0.05	ND<0.1	ND<2	ND<50	ND<250
B6	B6-7.5	Riley Group	7.5	3/9/2012	NA	NA	NA	NA	NA	ND<50	ND<250
B8	B8-10	Riley Group	10.0	3/9/2012	NA	NA	NA	NA	NA	69 x	460
B9	B9-10	Riley Group	10.0	3/9/2012	NA	NA	NA	NA	NA	75 x	880
B10	B10-7.5	Riley Group	7.5	3/9/2012	NA	NA	NA	NA	NA	ND<50	380
B10	B10-10	Riley Group	10.0	3/9/2012	NA	NA	NA	NA	NA	ND<50	ND<250

Table 1
Soil Sample Analytical Results - BTEX and Petroleum Hydrocarbons
FedEx Ground Distribution Center
Redmond, Washington

Soil Boring Number/ Sample Location	Sample ID	Sampled By	Approx. Sample Depth (feet)	Date Collected	BTEX[a]				Petroleum Hydrocarbons		
					Benzene	Toluene	Ethylbenzene	Total Xylenes	Gasoline-Range Organics[b]	Diesel-Range Organics[c]	Heavy Oil-Range Organics[c]
MTCA Method A Cleanup Levels[d]					**0.03**	**7**	**6**	**9**	**100**	**2,000**	**2,000**
PB-1	PB-1-2	Riley Group	2.0	5/11/2012	NA	NA	NA	NA	NA	ND<50	ND<250
PB-1	PB-1-4	Riley Group	4.0	5/11/2012	NA	NA	NA	NA	NA		
PB-1	PB-1-6	Riley Group	6.0	5/11/2012	NA	NA	NA	NA	NA		
PB-1	PB-1-8	Riley Group	8.0	5/11/2012	NA	NA	NA	NA	NA		
PB-2	*PB-2-4*	*Riley Group*	*4.0*	*5/11/2012*	*NA*	*NA*	*NA*	*NA*	*NA*	*83 x*	*1,000*
PB-2	*PB-2-6*	*Riley Group*	*6.0*	*5/11/2012*	*NA*	*NA*	*NA*	*NA*	*NA*		
PB-3	*PB-3-2*	*Riley Group*	*2.0*	*5/11/2012*	*NA*	*NA*	*NA*	*NA*	*NA*	*140 x*	*1,200*
PB-3	*PB-3-4*	*Riley Group*	*4.0*	*5/11/2012*	*NA*	*NA*	*NA*	*NA*	*NA*		
PB-3	*PB-3-6*	*Riley Group*	*6.0*	*5/11/2012*	*NA*	*NA*	*NA*	*NA*	*NA*		
TP-11	TP-11-2	Riley Group	2.0	5/9/2012	NA	NA	NA	NA	NA	130 x	ND<250
TP-11	TP-11-4	Riley Group	4.0	5/9/2012	NA	NA	NA	NA	NA	NA	NA
TP-12	*TP-12-2*	*Riley Group*	*2.0*	*5/9/2012*	*NA*	*NA*	*NA*	*NA*	*NA*	*170 x*	*1,600*
TP-12	TP-12-5	Riley Group	5.0	5/9/2012	NA	NA	NA	NA	NA	NA	NA
TP-13	*TP-13-3*	*Riley Group*	*3.0*	*5/9/2012*	*NA*	*NA*	*NA*	*NA*	*NA*	*110 x*	*ND<250*
TP-13	TP-13-5	Riley Group	5.0	5/9/2012	NA	NA	NA	NA	NA	NA	NA
TP-14	*TP-14-3*	*Riley Group*	*3.0*	*5/9/2012*	*NA*	*NA*	*NA*	*NA*	*NA*	*180 x*	*1,800*
TP-15	TP-15-2	Riley Group	2.0	5/9/2012	NA	NA	NA	NA	NA	ND<50	ND<250
TP-16	TP-16-3	Riley Group	3.0	5/9/2012	NA	NA	NA	NA	NA	ND<50	ND<250
TP-16	TP-16-5	Riley Group	5.0	5/9/2012	NA	NA	NA	NA	NA		
TP-17	TP-17-3	Riley Group	3.0	5/9/2012	NA	NA	NA	NA	NA	ND<50	340
TP-17	TP-17-5	Riley Group	5.0	5/9/2012	NA	NA	NA	NA	NA	ND<50	ND<250
TP-18	TP-18-3	Riley Group	3.0	5/9/2012	NA	NA	NA	NA	NA	ND<50	ND<250
TP-18	TP-18-5	Riley Group	5.0	5/9/2012	NA	NA	NA	NA	NA	ND<50	460
TP-19	TP-19-3	Riley Group	3.0	5/9/2012	NA	NA	NA	NA	NA	ND<50	ND<250
TP-19	TP-19-5	Riley Group	5.0	5/9/2012	NA	NA	NA	NA	NA		
TP-20	TP-20-3	Riley Group	3.0	5/9/2012	NA	NA	NA	NA	NA	ND<50	ND<250
TP-20	TP-20-5	Riley Group	5.0	5/9/2012	NA	NA	NA	NA	NA	ND<50	ND<250

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FedEx Ground Distribution Center
Redmond, Washington

Soil Boring Number/ Sample Location	Sample ID	Sampled By	Approx. Sample Depth (feet)	Date Collected	BTEX[a]				Petroleum Hydrocarbons		
					Benzene	Toluene	Ethylbenzene	Total Xylenes	Gasoline-Range Organics[b]	Diesel-Range Organics[c]	Heavy Oil-Range Organics[c]
MTCA Method A Cleanup Levels[d]					**0.03**	**7**	**6**	**9**	**100**	**2,000**	**2,000**
Targeted Excavation Locations											
AOC1	AOC1-E-5	Riley Group	1.0	9/11/2012	NA	NA	NA	NA	NA	ND<50	ND<250
	AOC1-N-5	Riley Group	1.0	9/11/2012	NA	NA	NA	NA	NA	ND<50	ND<250
	AOC1-S-5	Riley Group	1.0	9/11/2012	NA	NA	NA	NA	NA	ND<50	ND<250
	AOC1-W-5	Riley Group	1.0	9/11/2012	NA	NA	NA	NA	NA	ND<50	ND<250
AOC2	AOC2-E-5	Riley Group	1.0	9/11/2012	NA	NA	NA	NA	NA	ND<50	ND<250
	AOC2-N-5	Riley Group	1.0	9/11/2012	NA	NA	NA	NA	NA	ND<50	ND<250
	AOC2-S-5	Riley Group	1.0	9/11/2012	NA	NA	NA	NA	NA	ND<50	300
	AOC2-W-5	Riley Group	1.0	9/11/2012	NA	NA	NA	NA	NA	62	980
AOC3	AOC3-E-5	Riley Group	2.0	9/10/2012	NA	NA	NA	NA	NA	ND<50	460
	AOC3-N-5	Riley Group	2.0	9/10/2012	NA	NA	NA	NA	NA	ND<50	ND<250
	AOC3-S-5	Riley Group	2.0	9/10/2012	NA	NA	NA	NA	NA	ND<50	ND<250
	AOC3-W-5	Riley Group	2.0	9/10/2012	NA	NA	NA	NA	NA	ND<50	ND<250
AOC5	AOC5-B(4)	Riley Group	4.0	9/10/2012	NA	NA	NA	NA	NA	ND<50	320
	AOC5-E-5	Riley Group	3.0	9/10/2012	NA	NA	NA	NA	NA	ND<50	330
	AOC5-N-5	Riley Group	3.0	9/10/2012	NA	NA	NA	NA	NA	ND<50	300
	AOC5-S-5	Riley Group	3.0	9/10/2012	NA	NA	NA	NA	NA	ND<50	410
	AOC5-W-5	Riley Group	3.0	9/10/2012	NA	NA	NA	NA	NA	ND<50	420

Table 1
Soil Sample Analytical Results - BTEX and Petroleum Hydrocarbons
FedEx Ground Distribution Center
Redmond, Washington

Soil Boring Number/ Sample Location	Sample ID	Sampled By	Approx. Sample Depth (feet)	Date Collected	BTEX[a]				Petroleum Hydrocarbons		
					Benzene	Toluene	Ethylbenzene	Total Xylenes	Gasoline-Range Organics[b]	Diesel-Range Organics[c]	Heavy Oil-Range Organics[c]
MTCA Method A Cleanup Levels[d]					**0.03**	**7**	**6**	**9**	**100**	**2,000**	**2,000**
Targeted Excavation Locations continued											
AOC6	AOC6-E-5	Riley Group	6.0	9/10/2012	NA	NA	NA	NA	NA	ND<50	ND<250
	AOC6-N-5	Riley Group	6.0	9/10/2012	NA	NA	NA	NA	NA	170	ND<250
	AOC6-S-5	Riley Group	6.0	9/10/2012	NA	NA	NA	NA	NA	ND<50	ND<250
	AOC6-W-5	Riley Group	6.0	9/10/2012	NA	NA	NA	NA	NA	ND<50	ND<250
AOC7	AOC7-E-5	Riley Group	6.0	9/11/2012	NA	NA	NA	NA	NA	ND<50	ND<250
	AOC7-N-5	Riley Group	6.0	9/11/2012	NA	NA	NA	NA	NA	ND<50	ND<250
	AOC7-S-5	Riley Group	6.0	9/11/2012	NA	NA	NA	NA	NA	ND<50	ND<250
	AOC7-W-5	Riley Group	6.0	9/11/2012	NA	NA	NA	NA	NA	ND<50	ND<250
AOC9	AOC9-E-5	Riley Group	4.0	9/11/2012	NA	NA	NA	NA	NA	ND<50	ND<250
	AOC9-N-5	Riley Group	4.0	9/11/2012	NA	NA	NA	NA	NA	ND<50	ND<250
	AOC9-S-5	Riley Group	4.0	9/11/2012	NA	NA	NA	NA	NA	ND<50	ND<250
	AOC9-W-5	Riley Group	4.0	9/11/2012	NA	NA	NA	NA	NA	ND<50	ND<250

Notes:

All values in milligrams per kilogram (mg/kg).

Values in bold represent concentrations above MTCA Method A Cleanup Levels.

Italicized values that are highlighted in grey indicate samples that were overexcavated/removed during cleanup action activities conducted by Langan in 2013

TPH = total petroleum hydrocarbons

ND = Not detected.

NA = Not analyzed.

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

Riley Group = The Riley Group, Inc.

[a] Analyzed by EPA Method 8260C.

[b] Analyzed by Ecology Method NWTPH-Gx.

[c] Analyzed by Ecology Method NWTPH-Dx, after silica gel cleanup.

[d] Ecology's Model Toxics Control Act (MTCA) Cleanup Regulation (Chapter 173-340 WAC), Table 745-1, Method A Soil Cleanup Levels for Industrial Properties

Table 2
Soil Sample Analytical Results - PAHs
FedEx Ground Distribution Center
Redmond, Washington

Soil Boring Number/ Sample Location	Sample ID	Sampled By	Approx. Sample Depth (feet)	Date Collected	PAHs[a]									cPAHs[a]								
					Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)-perylene	Fluoranthene	Fluorene	Naphthalene[b]	Phenanthrene	Pyrene	Benzo(a)-pyrene	Benzo[a]-anthracene	Benzo(b)-fluoranthene	Benzo(j,k)-fluoranthene	Chrysene	Dibenzo(a,h)-anthracene	Indeno(1,2,3-cd)-pyrene	Total cPAHs (U=1/2 MRL)	Total cPAHs (U = 0)
MTCA Method A Cleanup Levels[c]					**4,800[d]**	**NV**	**24,000[d]**	**NV**	**3,200[d]**	**3,200[d]**	**5**	**NV**	**2,400[d]**	**2.0**	**1.37[d]**	**1.37[d]**	**13.7[d]**	**137[d]**	**0.137[d]**	**1.37[d]**	**2.0**	**2.0**
TP7	TP7-0	Riley Group	0	3/6/2012	NA	NA	NA	NA	NA	NA	ND<0.05	NA	NA	0.077	0.0025	0.11	0.0025	0.2	0.0025	0.054	0.09615	0.09615
Geo-TP10	Geo-TP10-10	Riley Group	10.0	3/6/2012	NA	NA	NA	NA	NA	NA	ND<0.05	NA	NA	0.019	0.02	0.021	0.005	0.031	0.005	0.012	0.02561	0.02561
B2	B2-5	Riley Group	5.0	3/8/2012	NA	NA	NA	NA	NA	NA	ND<0.05	NA	NA	0.024	0.019	0.029	0.011	0.022	ND<0.01	0.018	0.03242	0.03192
B3	B3-10	Riley Group	10.0	3/8/2012	NA	NA	NA	NA	NA	NA	ND<0.05	NA	NA	0.017	0.013	0.02	ND<0.01	0.016	ND<0.01	0.014	0.02286	0.02186
B4	B4-10	Riley Group	10.0	3/8/2012	NA	NA	NA	NA	NA	NA	ND<0.05	NA	NA	0.1	ND<0.01	0.1	ND<0.01	ND<0.01	ND<0.01	ND<0.01	0.13050	0.11
B5	B5-5	Riley Group	5.0	3/9/2012	ND<0.01	ND<0.01	ND<0.01	0.018	0.016	ND<0.01	ND<0.01	ND<0.01	0.023	0.021	0.014	0.023	ND<0.01	0.024	ND<0.01	0.014	0.02734	0.02634
TP1	TP1-1[e]	Riley Group	1.0	3/6/2012	-	-	-	-	-	-	ND<0.05	-	-	0.38	0.45	0.47	0.17	0.53	0.062	0.25	0.5255	0.5255
TP2	TP2-1[e]	Riley Group	1.0	3/6/2012	-	-	-	-	-	-	ND<0.05	-	-	0.022	0.015	0.030	0.011	0.02	0.005	0.022	0.0305	0.0305
TP3	TP3-1[e]	Riley Group	1.0	3/6/2012	-	-	-	-	-	-	ND<0.05	-	-	0.029	0.025	0.037	0.013	0.029	0.005	0.024	0.03969	0.03969
TP4	TP4-1[e]	Riley Group	1.0	3/6/2012	-	-	-	-	-	-	ND<0.01	-	-	0.034	0.025	0.043	0.013	0.04	0.005	0.025	0.0455	0.0455
TP5	TP5-1[e]	Riley Group	1.0	3/6/2012	-	-	-	-	-	-	ND<0.05	-	-	0.013	0.005	0.014	0.005	0.012	0.005	0.01	0.01702	0.01702
TP6	TP6-1[e]	Riley Group	1.0	3/6/2012	-	-	-	-	-	-	NA	-	-	0.029	0.024	0.04	0.013	0.032	0.005	0.025	0.04002	0.04002
TP6	TP6-2[e]	Riley Group	2.0	3/6/2012	-	-	-	-	-	-	ND<0.01	-	-	0.27	0.18	0.31	0.100	0.22	0.048	0.2	0.356	0.356
TP7	*TP7-1[e]*	*Riley Group*	*1.0*	*3/6/2012*	*-*	*-*	*-*	*-*	*-*	*-*	*ND<0.1*	*-*	*-*	*0.15*	*0.11*	*0.17*	*0.005*	*0.16*	*0.005*	*0.1*	*0.1906*	*0.1906*
TP7	TP7-2[e]	Riley Group	2.0	3/6/2012	-	-	-	-	-	-	ND<0.01	-	-	0.048	0.037	0.056	0.016	0.049	0.005	0.036	0.06349	0.06349
TP8	TP8-1[e]	Riley Group	1.0	3/6/2012	-	-	-	-	-	-	ND<0.01	-	-	0.041	0.03	0.054	0.017	0.038	0.005	0.033	0.05528	0.05528
TP8	TP8-2[e]	Riley Group	2.0	3/6/2012	-	-	-	-	-	-	ND<0.01	-	-	0.015	0.015	0.017	0.005	0.016	0.005	0.012	0.02056	0.02056
TP9	TP9-1[e]	Riley Group	1.0	3/6/2012	-	-	-	-	-	-	ND<0.01	-	-	0.032	0.017	0.04	0.005	0.051	0.012	0.021	0.04201	0.04201
TP9	TP9-2[e]	Riley Group	2.0	3/6/2012	-	-	-	-	-	-	ND<0.01	-	-	0.097	0.063	0.12	0.046	0.083	0.017	0.075	0.12993	0.12993
TP10	*TP10-1[e]*	*Riley Group*	*1.0*	*3/6/2012*	*-*	*-*	*-*	*-*	*-*	*-*	*ND<0.01*	*-*	*-*	*0.071*	*0.042*	*0.082*	*0.022*	*0.075*	*0.02*	*0.052*	*0.09355*	*0.09355*
TP10	TP10-2[e]	Riley Group	2.0	3/6/2012	-	-	-	-	-	-	ND<0.01	-	-	0.012	0.005	0.012	0.005	0.013	0.005	0.005	0.01533	0.01533
B3	B3-5[e]	Riley Group	5.0	3/8/2012	-	-	-	-	-	-	ND<0.01	-	-	0.015	0.016	0.014	0.005	0.018	0.005	0.005	0.01968	0.01968
B4	B4-15[e]	Riley Group	15.0	3/8/2012	-	-	-	-	-	-	ND<0.01	-	-	0.013	0.013	0.016	0.005	0.016	0.005	0.011	0.01816	0.01816
B7	*B7-5[e]*	*Riley Group*	*5.0*	*3/9/2012*	*-*	*-*	*-*	*-*	*-*	*-*	*0.031*	*-*	*-*	***2.2***	***1.4***	***2.3***	*0.94*	*1.9*	***0.44***	***1.6***	***2.887***	***2.887***
B10	B10-7.5[e]	Riley Group	7.5	3/9/2012	-	-	-	-	-	-	ND<0.01	-	-	0.028	0.022	0.031	0.014	0.029	0.005	0.021	0.0376	0.03759
PB-1	PB-1-2/4/6/8	Riley Group	2.0-8.0	5/11/2012	NA	NA	NA	NA	NA	NA	ND<0.01	NA	NA	0.15	0.1	0.17	0.052	0.13	0.027	0.13	0.19920	0.1992
PB-2	*PB-2-4/6*	*Riley Group*	*4.0-6.0*	*5/11/2012*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*ND<0.01*	*NA*	*NA*	*0.094*	*0.058*	*0.160*	*0.052*	*0.100*	*0.020*	*0.085*	*0.13250*	*0.1325*
PB-3	*PB-3-2/4/6*	*Riley Group*	*2.0-6.0*	*5/11/2012*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*ND<0.01*	*NA*	*NA*	*0.074*	*0.049*	*0.130*	*0.040*	*0.077*	*0.015*	*0.074*	*0.10557*	*0.10557*
TP-11	TP-11-2[e]	Riley Group	2.0	5/9/2012	-	-	-	-	-	-	ND<0.01	-	-	0.420	0.270	0.510	0.140	0.370	0.072	0.340	0.5569	0.5569
TP-12	*TP-12-2*	*Riley Group*	*2.0*	*5/9/2012*	*ND<0.1*	*ND<0.1*	*ND<0.1*	*0.28*	*0.32*	*ND<0.1*	*ND<0.1*	*ND<0.1*	*0.35*	*0.340*	*0.220*	*0.410*	*0.140*	*0.300*	*ND<0.1*	*0.260*	*0.45100*	*0.446*
TP-13	*TP-13-3*	*Riley Group*	*3.0*	*5/9/2012*	*0.80*	*ND<0.5*	*1.6*	*6.4*	*7.1*	*ND<0.5*	*ND<0.5*	*8.0*	*17*	***9.8***	***6.8***	***7.4***	*2.3*	*9.7*	***1.6***	***4.9***	***12.197***	***12.197***
TP-14	*TP-14-3*	*Riley Group*	*3.0*	*5/9/2012*	*ND<0.1*	*ND<0.1*	*ND<0.1*	*ND<0.1*	*0.11*	*ND<0.1*	*ND<0.1*	*ND<0.1*	*0.13*	*0.094*	*ND<0.1*	*0.12*	*ND<0.1*	*0.13*	*ND<0.1*	*ND<0.1*	*0.12730*	*0.1073*
TP-15	TP-15-2	Riley Group	2.0	5/9/2012	ND<0.01	ND<0.01	0.010	0.100	0.110	ND<0.01	ND<0.01	0.054	0.14	0.13	0.081	0.15	0.045	0.11	0.026	0.1	0.1713	0.1713
TP-16	TP-16-3/5	Riley Group	3.0-5.0	5/9/2012	ND<0.01	ND<0.01	ND<0.01	0.026	0.033	ND<0.01	ND<0.01	0.017	0.039	0.031	0.021	0.037	0.016	0.029	ND<0.01	0.026	0.04179	0.04129
TP-17	TP-17-3	Riley Group	3.0	5/9/2012	ND<0.01	ND<0.01	ND<0.01	0.057	0.055	ND<0.01	ND<0.01	0.027	0.076	0.066	0.041	0.083	0.029	0.060	0.013	0.052	0.0884	0.0884
TP-17	TP-17-5	Riley Group	5.0	5/9/2012	ND<0.01	ND<0.01	0.014	0.120	0.140	ND<0.01	ND<0.01	0.076	0.19	0.160	0.120	0.210	0.067	0.160	0.028	0.120	0.2161	0.2161
TP-18	TP-18-3	Riley Group	3.0	5/9/2012	ND<0.01	ND<0.01	0.011	0.041	0.037	ND<0.01	ND<0.01	0.028	0.055	0.061	0.048	0.068	0.025	0.072	0.011	0.039	0.08082	0.08082
TP-18	TP-18-5	Riley Group	5.0	5/9/2012	ND<0.1	ND<0.1	ND<0.1	0.16	0.14	ND<0.1	ND<0.1	ND<0.1	0.18	0.160	0.110	0.019	ND<0.1	0.170	ND<0.1	0.130	0.19760	0.1876

Table 2
Soil Sample Analytical Results - PAHs
FedEx Ground Distribution Center
Redmond, Washington

Soil Boring Number/ Sample Location	Sample ID	Sampled By	Approx. Sample Depth (feet)	Date Collected	PAHs[a]									cPAHs[a]								
					Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)-perylene	Fluoranthene	Fluorene	Naphthalene[b]	Phenanthrene	Pyrene	Benzo(a)-pyrene	Benzo[a]-anthracene	Benzo(b)-fluoranthene	Benzo(j,k)-fluoranthene	Chrysene	Dibenzo(a,h)-anthracene	Indeno(1,2,3-cd)-pyrene	Total cPAHs (U=1/2 MRL)	Total cPAHs (U = 0)
MTCA Method A Cleanup Levels[c]					**4,800[d]**	**NV**	**24,000[d]**	**NV**	**3,200[d]**	**3,200[d]**	**5**	**NV**	**2,400[d]**	**2.0**	**1.37[d]**	**1.37[d]**	**13.7[d]**	**137[d]**	**0.137[d]**	**1.37[d]**	**2.0**	**2.0**
TP-19	TP-19-3/5	Riley Group	3.0-5.0	5/9/2012	ND<0.01	ND<0.01	ND<0.01	ND<0.01	1/0/1900	ND<0.01	ND<0.01	0.011	0.02	ND<0.01	ND<0.01	0.013	ND<0.01	ND<0.01	ND<0.01	ND<0.01	0.00835	0.0013
TP5	TP5-2[e]	Riley Group	2.0	3/6/2012	-	-	-	-	-	-	NA	-	-	-	-	-	-	-	-	-	-	-
B1	B1-10	Riley Group	10.0	3/8/2012	NA	NA	NA	NA	NA	NA	ND<0.05	NA	NA	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	0.00755	0
B1	B1-20	Riley Group	20.0	3/8/2012	NA	NA	NA	NA	NA	NA	ND<0.05	NA	NA	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	0.01510	0
B2	B2-15	Riley Group	15.0	3/8/2012	NA	NA	NA	NA	NA	NA	ND<0.05	NA	NA	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	0.00755	0
TP1	TP1-2[e]	Riley Group	2.0	3/6/2012	-	-	-	-	-	-	ND<0.01	-	-	-	-	-	-	-	-	-	-	ND<0.01
TP1	TP1-9[e]	Riley Group	9.0	3/6/2012	-	-	-	-	-	-	ND<0.05	-	-	-	-	-	-	-	-	-	-	ND<0.01
TP2	TP2-2[e]	Riley Group	2.0	3/6/2012	-	-	-	-	-	-	ND<0.01	-	-	-	-	-	-	-	-	-	-	ND<0.01
TP3	TP3-2[e]	Riley Group	2.0	3/6/2012	-	-	-	-	-	-	ND<0.01	-	-	-	-	-	-	-	-	-	-	ND<0.01
TP4	TP4-2[e]	Riley Group	2.0	3/6/2012	-	-	-	-	-	-	ND<0.01	-	-	-	-	-	-	-	-	-	-	ND<0.01
TP20	TP-20-3	Riley Group	3.0	5/9/2012	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	0.00755	0
TP20	TP-20-5	Riley Group	5.0	5/9/2012	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	0.00755	0
Targeted Excavation Locations																						
AOC4	AOC4-B(4)	Riley Group	4.0	9/10/2012	0.017	ND<0.01	0.019	0.140	0.180	ND<0.01	ND<0.01	0.077	0.210	0.200	0.130	0.240	0.091	0.160	0.033	0.130	0.26400	0.2640
	AOC4-E-5	Riley Group	3.0	9/10/2012	ND<0.01	ND<0.01	ND<0.01	0.047	0.036	ND<0.01	ND<0.01	0.014	0.047	0.049	0.034	0.067	0.017	0.050	ND<0.01	0.034	0.06520	0.0647
	AOC4-N-5	Riley Group	3.0	9/10/2012	ND<0.01	ND<0.01	ND<0.01	0.067	0.075	ND<0.01	ND<0.01	0.027	0.093	0.086	0.054	0.100	0.036	0.074	0.013	0.069	0.11394	0.11394
	AOC4-S-5	Riley Group	3.0	9/10/2012	ND<0.01	ND<0.01	ND<0.01	0.055	0.070	ND<0.01	ND<0.01	0.025	0.095	0.08	0.05	0.091	0.03	0.08	0.01	0.06	0.09915	0.09915
	AOC4-W-5	Riley Group	3.0	9/10/2012	ND<0.01	ND<0.01	ND<0.01	0.078	0.057	ND<0.01	ND<0.01	0.028	0.079	0.064	0.038	0.084	0.026	0.074	0.016	0.056	0.08674	0.08674
AOC8	AOC8-B(6)	Riley Group	6.0	9/11/2012	0.026	ND<0.01	0.026	0.300	0.410	ND<0.01	ND<0.01	0.140	0.520	0.470	0.300	0.530	0.200	0.400	0.070	0.380	0.62200	0.622
	AOC8-E-5	Riley Group	5.0	9/11/2012	0.045	ND<0.01	0.049	0.730	0.710	0.015	0.011	0.260	1.000	0.990	0.590	1.100	0.390	0.760	**0.180**	0.890	1.31260	1.3126
	AOC8-N-5	Riley Group	5.0	9/11/2012	0.011	ND<0.01	0.016	0.200	0.220	ND<0.01	ND<0.01	0.081	0.320	0.280	0.160	0.310	0.110	0.230	0.049	0.240	0.06930	0.3692
	AOC8-S-5	Riley Group	5.0	9/11/2012	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01	0.00755	0
	AOC8-W-5	Riley Group	5.0	9/11/2012	ND<0.01	ND<0.01	ND<0.01	0.040	0.034	ND<0.01	ND<0.01	0.018	0.061	0.048	0.029	0.048	0.014	0.046	ND<0.01	0.040	0.06206	0.06156

Notes:

All values in milligrams per kilogram (mg/kg).

Values in bold represent concentrations above MTCA Method A or B Cleanup Levels.

Italicized values that are highlighted in grey indicate samples that were overexcavated/removed during cleanup action activities conducted by Langan in 2013.

PAHs = polycyclic aromatic hydrocarbons.

cPAHs = carcinogenic polycyclic aromatic hydrocarbons.

ND = Not detected.

NA = Not analyzed.

- = Data not avaliable.

Riley Group = The Riley Group, Inc.

[a] Analyzed by EPA Method 8720D SIM (except as noted).

[b] Analyzed by EPA Method 8270D SIM or 8260C.

[c] Ecology's Model Toxics Control Act (MTCA) Cleanup Regulation (Chapter 173-340 WAC), Table 745-1, Method A Soil Cleanup Levels for Industrial Properties.

[d] Method B cleanup level used because Method A level is not established. Standard formula values, direct contact Method B soil cleanup levels as published on Ecology's Cleanup Level and Risk Calculations (CLARC) on-line database (December 2016).

[e] Laboratory analytical reports were not avaliable for review; reported data was obtained from Table 1 completed by The Riley Group, Inc. and Appendix E completed by The Riley Group, Inc. included in the Level One and Level Two Hydrogeologic Assessment Report prepared by Langan Engineering & Environmental Services, Inc. PC.

Table 3
Soil Sample Analytical Results - Metals
Fed Ex Ground Distribution Center
Redmond, Washington

Soil Boring Number	Sample ID	Sampled By	Approx. Sample Depth (feet)	Date Collected	Metals[a]				
					Arsenic	Cadmium	Chromium	Lead	Mercury
			MTCA Method A Cleanup Levels[b]		20	2.0	2,000[c]	1,000	2.0
TP7	TP7-0	Riley Group	0.0	3/6/2012	3.60	ND<1	15.6	19.1	ND<0.1
Geo-TP10	Geo-TP10-10	Riley Group	10.0	3/6/2012	3.14	ND<1	15.8	14.7	ND<0.1
B1	B1-10	Riley Group	10.0	3/8/2012	4.26	ND<1	21.00	7.07	ND<0.1
B1	B1-20	Riley Group	20.0	3/8/2012	3.28	ND<1	18.4	7.13	ND<0.1
B2	B2-5	Riley Group	5.0	3/8/2012	4.47	ND<1	15.2	5.96	ND<0.1
B2	B2-15	Riley Group	15.0	3/8/2012	3.98	ND<1	23.4	5.28	ND<0.1
B3	B3-10	Riley Group	10.0	3/8/2012	4.81	ND<1	19.3	21.1	ND<0.1
B4	B4-10	Riley Group	10.0	3/8/2012	3.33	ND<1	20.3	8.91	ND<0.1
B5	B5-5	Riley Group	5.0	3/9/2012	2.42	ND<1	12.9	5.45	ND<0.1
PB-1	PB-1-2	Riley Group	2.0	5/11/2012	4.65	ND<1	16.4	18.6	ND<0.1
PB-1	PB-1-4	Riley Group	4.0	5/11/2012					
PB-1	PB-1-6	Riley Group	6.0	5/11/2012					
PB-1	PB-1-8	Riley Group	8.0	5/11/2012					
PB-2	PB-2-4	Riley Group	4.0	5/11/2012	3.31	ND<1	12.9	14.7	ND<0.1
PB-2	PB-2-6	Riley Group	6.0	5/11/2012					
PB-3	PB-3-2	Riley Group	2.0	5/11/2012	3.17	ND<1	10.7	6.34	ND<0.1
PB-3	PB-3-4	Riley Group	4.0	5/11/2012					
PB-3	PB-3-6	Riley Group	6.0	5/11/2012					
TP-11	TP-11-2	Riley Group	2.0	5/9/2012	5.9	ND<1	19.2	29.5	ND<0.1
TP-12	TP-2-2	Riley Group	2.0	5/9/2012	3.96	ND<1	16.3	71.9	ND<0.1
TP-13	TP-13-3	Riley Group	3.0	5/9/2012	5.46	ND<1	15.3	158	ND<0.1
TP-14	TP-14-3	Riley Group	3.0	5/9/2012	3.60	ND<1	13.2	15.8	ND<0.1
TP-15	TP-15-2	Riley Group	2.0	5/9/2012	3.68	ND<1	14.5	20.0	ND<0.1
TP-16	TP-16-3	Riley Group	3.0	5/9/2012	3.35	ND<1	13.2	16.9	ND<0.1
TP-16	TP-16-5	Riley Group	5.0	5/9/2012					
TP-17	TP-17-3	Riley Group	3.0	5/9/2012	3.04	ND<1	11.8	6.31	ND<0.1
TP-17	TP-17-5	Riley Group	5.0	5/9/2012	4.86	ND<1	15.1	23.2	ND<0.1
TP-18	TP-18-3	Riley Group	3.0	5/9/2012	2.05	ND<1	10.1	7.10	ND<0.1
TP-18	TP-18-5	Riley Group	5.0	5/9/2012	2.07	ND<1	8.94	6.74	ND<0.1
TP-19	TP-19-3	Riley Group	3.0	5/9/2012	3.97	ND<1	11.7	5.05	ND<0.1
TP-19	TP-19-5	Riley Group	5.0	5/9/2012					
TP-20	TP-20-3	Riley Group	3.0	5/9/2012	6.42	ND<1	20.3	5.51	ND<0.1
TP-20	TP-20-5	Riley Group	5.0	5/9/2012	5.12	ND<1	22.0	5.54	ND<0.1
TP-21	TP-21-3	Riley Group	3.0	5/9/2012	NA	NA	NA	NA	NA

Notes:

All values in milligrams per kilogram (mg/kg).

Values in bold represent concentrations above MTCA Method A or B Cleanup Levels.

Italicized values that are highlighted in grey indicate samples that were overexcavated/removed during cleanup action activities conducted by Langan in 2013.

ND = Not detected.

NA = Not analyzed.

[a] Metals analyzed by EPA Methods 200.8 and 1631E.

[b] Ecology's Model Toxics Control Act (MTCA) Cleanup Regulation (Chapter 173-340 WAC), Table 745-1, Method A Soil Cleanup Levels for Industrial Properties.

[c] Based on Chromium III.

Table 4
Groundwater Sample Analytical Results - BTEX, Petroleum Hydrocarbons, and Metals
FedEx Ground Distribution Center
Redmond, Washington

Soil Boring/ Well ID	Sample ID	Sampled By	Date Collected	BTEX[a]				Petroleum Hydrocarbons			Total MTCA 5 Metals					Dissolved MTCA 5 Metals				
				Benzene	Toluene	Ethylbenzene	Total Xylenes	Gasoline-Range Organics	Diesel-Range Organics[b]	Heavy Oil-Range Organics[b]	Arsenic[c]	Cadmium[c]	Chromium[c]	Lead[c]	Mercury[d]	Arsenic[c]	Cadmium[c]	Chromium[c]	Lead[c]	Mercury[d]
MTCA Method A Cleanup Levels[e]				**5**	**1,000**	**700**	**1,000**	**800**	**500**	**500**	**5**	**5**	**50**	**15**	**2**	**5**	**5**	**50**	**15**	**2**
MW-1	MW-1	Riley Group	5/14/2012	ND<0.35	ND<1	ND<1	ND<2	NA	ND<50	ND<250	4.55	ND<1	**50.2**	5.24	ND<0.1	1.7	ND<1	2.2	ND<1	ND<0.1
MW-B[f]	MW-B	Riley Group	5/16/2012	NA	NA	NA	NA	NA	ND<50	ND<250	ND<1	ND<1	ND<1	ND<1	ND<0.1	NA	NA	NA	NA	NA

Notes:

All values in micrograms per liter (µg/L).

Values in bold represent concentrations above MTCA Method A Cleanup Levels.

TPH = total petroleum hydrocarbons.

ND = Not detected.

NA = Not analyzed.

Riley Group = The Riley Group, Inc.

[a] Analyzed by EPA Method 8260C.

[b] Analyzed by Ecology Method NWTPH-Dx, after silica gel cleanup.

[c] Analyzed by EPA Method 200.8.

[d] Analyzed by EPA Method 1631E.

[e] Ecology's Model Toxics Control Act (MTCA) Cleanup Regulation (Chapter 173-340 WAC), Table 720-1, Method A Cleanup Levels for Groundwater

[f] No information for sample MW-B could be found and there are no wells at the Site designated as "MW-B". SLR believes this sample is for a quality assurance field or rinsate blank.

Table 5
Groundwater Sample Analytical Results - PAHs
FedEx Ground Distribution Center
Renton, Washington

Soil Boring Number	Sample ID	Sampled By	Date Collected	PAHs[a]			cPAHs[a]								
				1-Methyl-naphthalene	2-Methyl-naphthalene	Naphthalene	Benzo(a)-pyrene	Benzo[a]-anthracene	Benzo(b)-fluoranthene	Benzo(j,k)-fluoranthene	Chrysene	Dibenzo(a,h)-anthracene	Indeno(1,2,3-cd)-pyrene	Total cPAHs (U=1/2 MRL)	Total cPAHs (U = 0)
MTCA Method A Cleanup Levels[b]				**1.5[c]**	**32[c]**	**160**	**0.1**	**0.12[c]**	**0.12[c]**	**1.2[c]**	**12[c]**	**0.012[c]**	**0.12[c]**	**0.1**	**0.1**
MW-1	MW-1	Riley Group	5/14/2012	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	0.0755	0.0000
MW-B[d]	MW-B	Riley Group	5/16/2012	NA	NA	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	0.0755	0.0000

Notes:

All values in micrograms per liter (µg/L).

Values in bold represent concentrations above MTCA Method A or B Cleanup Levels.

PAHs = polycyclic aromatic hydrocarbons.

cPAHs = carcinogenic polycyclic aromatic hydrocarbons.

ND = Not detected.

NA = Not analyzed.

Riley Group = The Riley Group, Inc.

[a] Analyzed by EPA Method 8720D SIM.

[b] Ecology's Model Toxics Control Act (MTCA) Cleanup Regulation (Chapter 173-340 WAC), Table 720-1, Method A Cleanup Levels for Groundwater

[c] Method B cleanup level used because Method A level is not established. Standard formula values, direct contact Method B soil cleanup levels as published on Ecology's Cleanup Level and Risk Calculations (CLARC) on-line database (December 2016).

[d] No information for sample MW-B could be found and there are no wells at the Site designated as "MW-B". SLR believes this sample is for a quality assurance field or rinsate blank.

APPENDIX A
TERRESTRIAL ECOLOGICAL EVALUATION

Table 749-1
Simplified Terrestrial Ecological Evaluation-Exposure Analysis Procedure

Estimate the area of contiguous (connected) undeveloped land on the site or within 500 feet of any area of the site to the nearest 1/2 acre (1/4 acre if the area is less than 0.5 acre).	
1) From the table below, find the number of points corresponding to the area and enter this number in the field to the right.	9
Area (acres) / Points 0.25 or less / 4 0.5 / 5 1.0 / 6 1.5 / 7 2.0 / 8 2.5 / 9 3.0 / 10 3.5 / 11 4.0 or more / 12	
2) Is this an industrial or commercial property? If yes, enter a score of 3. If no, enter a score of 1	3
3)[a] Enter a score in the box to the right for the habitat quality of the site, using the following rating system[b]. High=1, Intermediate=2, Low=3	3
4) Is the undeveloped land likely to attract wildlife? If yes, enter a score of 1 in the box to the right. If no, enter a score of 2.[c]	2
5) Are there any of the following soil contaminants present: Chlorinated dioxins/furans, PCB mixtures, DDT, DDE, DDD, aldrin, chlordane, dieldrin, endosulfan, endrin, heptachlor, benzene hexachloride, toxaphene, hexachlorobenzene, pentachlorophenol, pentachlorobenzene? If yes, enter a score of 1 in the box to the right. If no, enter a score of 4.	4
6) Add the numbers in the boxes on lines 2-5 and enter this number in the box to the right. If this number is larger than the number in the box on line 1, the simplified evaluation may be ended.	12

Notes for Table 749-1

[a] It is expected that this habitat evaluation will be undertaken by an experienced field biologist. If this is not the case, enter a conservative score of (1) for questions 3 and 4.

[b] **Habitat rating system.** Rate the quality of the habitat as high, intermediate or low based on your professional judgment as a field biologist. The following are suggested factors to consider in making this evaluation:

Low: Early successional vegetative stands; vegetation predominantly noxious, nonnative, exotic plant species or weeds. Areas severely disturbed by human activity, including intensively cultivated croplands. Areas isolated from other habitat used by wildlife.

High: Area is ecologically significant for one or more of the following reasons: Late-successional native plant communities present; relatively high species diversity; used by an uncommon or rare species; priority habitat (as defined by the Washington Department of fish and Wildlife); part of a larger area of habitat where size or fragmentation may be important for the retention of some species.

Intermediate: Area does not rate as either high or low.

[c] Indicate "yes" if the area attracts wildlife or is likely to do so. Examples: Birds frequently visit the area to feed; evidence of high use b mammals (tracks, scat, etc.); habitat "island" in an industrial area; unusual features of an area that make it important for feeding animals; heavy use during seasonal migrations.

APPENDIX B
STATISTICAL ANALYSIS

STATISTICAL ANALYSES OF SOIL SAMPLE ANALYTICAL DATA FOR DIBENZO (A,H) ANTHRACENE

To evaluate if the remaining dibenzo(a,h)anthracene [D(a,h)A] concentrations in the soil at the Site complied with the applicable MTCA Method B cleanup level, SLR performed statistical analyses consistent with WAC 173-340-740(7) for compliance monitoring. The data set for these statistical analyses consisted of the soil sample analytical results from sample locations located at the Site that were not previously excavated during the 2013 cleanup actions (see Table 2 of the report). The analytical results from a total of 46 D(a,h)A soil samples were used in the analyses, and the D(a,h)A concentrations in those samples are presented in Table 2 of the report. Only one of the D(a,h)A samples (AOC8-E-5) contained a concentration that exceeded the MTCA Method B soil cleanup level [0.137 milligrams per kilogram (mg/kg)].

The MTCA Method B direct contact soil cleanup level for D(a,h)A is based on exposure through ingestion or dermal contact [Ecology's Cleanup Levels and Risk Calculations (CLARC) Data Tables, July 2015]. MTCA recommends the use of the "true mean soil concentration" when evaluating compliance with soil cleanup levels based on chronic or carcinogenic threats [WAC 173-340-740(7)(c)(iv)(B)]. Because the true mean soil concentration is unknown, SLR calculated a statistical estimate of the upper one-sided 95 percent confidence limit (95% UCL) of the true mean concentration to evaluate compliance with the Method B soil cleanup level. The 95% UCL is a value that has a 95 percent probability of being greater than the true population mean concentration of D(a,h)A in soil. The 95% UCL provides an estimate of the population mean that is biased high to account for the uncertainty introduced by extrapolating from a sample to the population.

MTCA presents several different statistical approaches for estimating the 95% UCL based on the underlying distribution of sample results and the proportion of non-detect concentrations in a data set [WAC 173-340-740(7)(d)]. Many of these statistical approaches are somewhat outdated [United States Environmental Protection Agency (EPA), 2015]. Consistent with MTCA [WAC 173-340-740(7)(d)(B)(iv)], the 95% UCL was estimated by using updated methods in EPA's ProUCL 5.1 (ProUCL) software program.

ProUCL analyzes the data distribution and recommends UCL estimates on the unknown population mean using both distribution-based parametric methods (i.e., normal, lognormal, and gamma distributions) and distribution-free (i.e., non-parametric)

methods. Statistics are calculated using several approaches, and the program recommends the statistic that is most appropriate for a particular dataset. Using the most recent version of ProUCL, non-detect values were entered at the method reporting limit (MRL) and were identified using an indicator variable column. ProUCL uses several different methods to handle non-detect values in the UCL calculation process. Historically, non-detects were typically assigned a value of ½ of the MRL, but this method is no longer recommended and is only included in the ProUCL software for historical and comparison purposes (EPA, 2015).

A total of 46 D(a,h)A sample analytical results were used to characterize the remaining D(a,h)A concentrations in the soil at the Site (see Table 2 of the report). These data were used to calculate the 95% UCL of the true mean concentration. As shown at the bottom of the ProUCL outputs for D(a,h)A (under "Suggested UCL to Use"; see attached), ProUCL recommends the Kaplan-Meier (KM) Chebyshev statistical approach for D(a,h)A to estimate the 95% UCL of the mean. ProUCL guidance (EPA, 2015) provides the details of each these statistical methods. By using the KM Chebyshev statistical method for D(a,h)A, the calculated 95% UCL (0.0379 mg/kg) was below the MTCA Method B direct contact soil cleanup level (see attached spreadsheet).

In addition to the above comparison, MTCA uses several other criteria to demonstrate compliance with a cleanup level [WAC 173-340-740(7)(e)]. First, no single sample concentration can be more than twice the cleanup level. As shown in Table 2 of the report, the maximum concentration of D(a,h)A in the soil is 0.180 mg/kg, which is less than two times the Method B direct contact soil cleanup level. MTCA also requires that less than 10 percent of the sample concentrations exceed the cleanup level. As shown in Table 2 of the report, only 1 soil sample from the data set of 46 D(a,h)A samples contained concentrations that exceeded the cleanup level (0.02 percent of the samples, respectively).

In summary, based on the results of the statistical analyses of the D(a,h)A concentrations in the soil at the Site, the remaining D(a,h)A concentrations are in compliance with the Method B direct contact soil cleanup level.

References

United States Environmental Protection Agency. 2015. ProUCL Version 5.1.002 Technical Guide. EPA/600/R-07/041. October. https://www.epa.gov/land-research/proucl-software

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.12/1/2017 11:23:24 AM
From File	Soil_D(ah)A_Data.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

D(a,h)A

General Statistics

Total Number of Observations	46	Number of Distinct Observations	20
Number of Detects	31	Number of Non-Detects	15
Number of Distinct Detects	18	Number of Distinct Non-Detects	3
Minimum Detect	0.0025	Minimum Non-Detect	0.01
Maximum Detect	0.18	Maximum Non-Detect	0.1
Variance Detects	0.00125	Percent Non-Detects	32.61%
Mean Detects	0.0243	SD Detects	0.0354
Median Detects	0.011	CV Detects	1.453
Skewness Detects	3.175	Kurtosis Detects	12.33
Mean of Logged Detects	-4.367	SD of Logged Detects	1.093

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.61	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.929	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.268	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.156	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.0182	KM Standard Error of Mean	0.00452
KM SD	0.03	95% KM (BCA) UCL	0.0267
95% KM (t) UCL	0.0258	95% KM (Percentile Bootstrap) UCL	0.0258
95% KM (z) UCL	0.0257	95% KM Bootstrap t UCL	0.0314
90% KM Chebyshev UCL	0.0318	95% KM Chebyshev UCL	0.0379
97.5% KM Chebyshev UCL	0.0465	99% KM Chebyshev UCL	0.0632

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	2.007	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.781	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.242	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.163	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

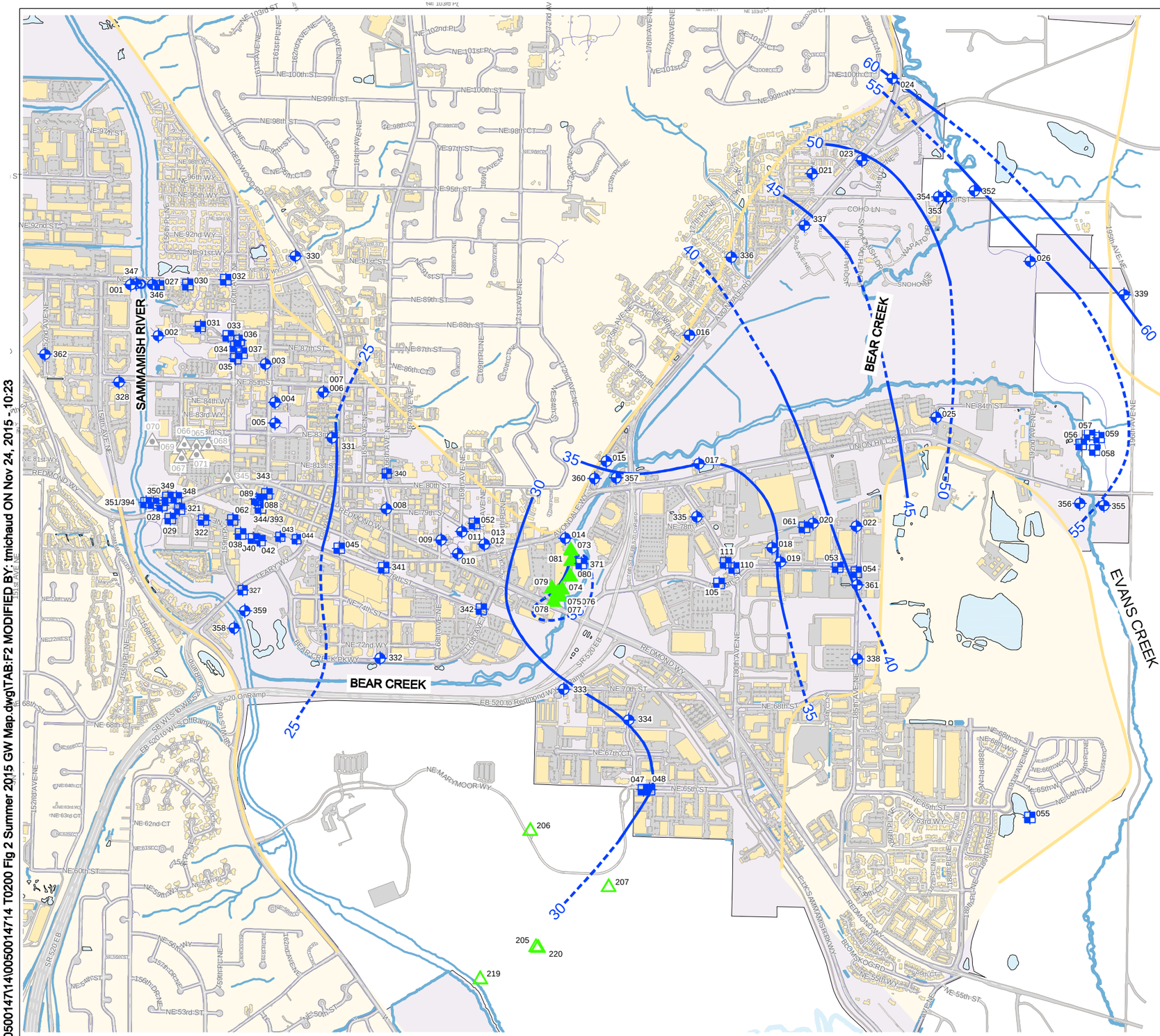
k hat (MLE)	0.897	k star (bias corrected MLE)	0.832
Theta hat (MLE)	0.0271	Theta star (bias corrected MLE)	0.0293
nu hat (MLE)	55.64	nu star (bias corrected)	51.59
Mean (detects)	0.0243		

Gamma ROS Statistics using Imputed Non-Detects

	A	B	C	D	E	F	G	H	I	J	K	L
53	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
54	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
55	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
56	This is especially true when the sample size is small.											
57	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
58					Minimum	0.0025				Mean		0.0197
59					Maximum	0.18				Median		0.01
60					SD	0.0297				CV		1.505
61					k hat (MLE)	1.109				k star (bias corrected MLE)		1.051
62					Theta hat (MLE)	0.0178				Theta star (bias corrected MLE)		0.0187
63					nu hat (MLE)	102				nu star (bias corrected)		96.71
64					Adjusted Level of Significance (β)	0.0448						
65					Approximate Chi Square Value (96.71, α)	75.02				Adjusted Chi Square Value (96.71, β)		74.4
66					95% Gamma Approximate UCL (use when n>=50)	0.0254				95% Gamma Adjusted UCL (use when n<50)		0.0256
67												
68	Estimates of Gamma Parameters using KM Estimates											
69					Mean (KM)	0.0182				SD (KM)		0.03
70					Variance (KM)	9.0254E-4				SE of Mean (KM)		0.00452
71					k hat (KM)	0.368				k star (KM)		0.359
72					nu hat (KM)	33.86				nu star (KM)		32.98
73					theta hat (KM)	0.0495				theta star (KM)		0.0508
74					80% gamma percentile (KM)	0.029				90% gamma percentile (KM)		0.0524
75					95% gamma percentile (KM)	0.0786				99% gamma percentile (KM)		0.145
76												
77	Gamma Kaplan-Meier (KM) Statistics											
78					Approximate Chi Square Value (32.98, α)	20.85				Adjusted Chi Square Value (32.98, β)		20.54
79					95% Gamma Approximate KM-UCL (use when n>=50)	0.0288				95% Gamma Adjusted KM-UCL (use when n<50)		0.0293
80												
81	Lognormal GOF Test on Detected Observations Only											
82					Shapiro Wilk Test Statistic	0.881				Shapiro Wilk GOF Test		
83					5% Shapiro Wilk Critical Value	0.929				Detected Data Not Lognormal at 5% Significance Level		
84					Lilliefors Test Statistic	0.254				Lilliefors GOF Test		
85					5% Lilliefors Critical Value	0.156				Detected Data Not Lognormal at 5% Significance Level		
86	Detected Data Not Lognormal at 5% Significance Level											
87												
88	Lognormal ROS Statistics Using Imputed Non-Detects											
89					Mean in Original Scale	0.0184				Mean in Log Scale		-4.643
90					SD in Original Scale	0.0302				SD in Log Scale		1.031
91					95% t UCL (assumes normality of ROS data)	0.0259				95% Percentile Bootstrap UCL		0.0263
92					95% BCA Bootstrap UCL	0.0293				95% Bootstrap t UCL		0.0315
93					95% H-UCL (Log ROS)	0.0235						
94												
95	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
96					KM Mean (logged)	-4.669				KM Geo Mean		0.00938
97					KM SD (logged)	1.003				95% Critical H Value (KM-Log)		2.331
98					KM Standard Error of Mean (logged)	0.154				95% H-UCL (KM -Log)		0.022
99					KM SD (logged)	1.003				95% Critical H Value (KM-Log)		2.331
100					KM Standard Error of Mean (logged)	0.154						
101												
102	DL/2 Statistics											
103	DL/2 Normal							DL/2 Log-Transformed				
104					Mean in Original Scale	0.0191				Mean in Log Scale		-4.606

	A	B	C	D	E	F	G	H	I	J	K	L
105					SD in Original Scale	0.0306				SD in Log Scale		1.016
106					95% t UCL (Assumes normality)	0.0267				95% H-Stat UCL		0.0239
107	DL/2 is not a recommended method, provided for comparisons and historical reasons											
108												
109	Nonparametric Distribution Free UCL Statistics											
110	Data do not follow a Discernible Distribution at 5% Significance Level											
111												
112	Suggested UCL to Use											
113					95% KM (Chebyshev) UCL	0.0379						
114												
115	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
116	Recommendations are based upon data size, data distribution, and skewness.											
117	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
118	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
119												

APPENDIX C
CITY OF REDMOND GROUNDWATER CONTOUR MAPS



REFERENCE: ALL TOPOLOGY PROVIDED BY CITY OF REDMOND MARCH 2008 INFORMATION SERVICES DEPARTMENT.

LEGEND

- 001 CITY OF REDMOND MONITORING WELL (INSTALLED AS PART OF THE GROUNDWATER MONITORING PROGRAM BETWEEN 2007 AND 2011)
- 027 CITY OF REDMOND MONITORING WELL (INSTALLED DURING OTHER INVESTIGATIONS)
- 079 PRIVATELY OWNED MONITORING WELL
- 205 KING COUNTY MONITORING WELL
- 065 ABANDONED PRIVATELY OWNED MONITORING WELL
- GROUNDWATER LEVEL CONTOUR, BASED ON AUGUST 12, 2015 MEASUREMENTS, ELEVATION IN FEET (NAVD 88), DASHED WHERE INFERRED.
- CITY OF REDMOND LIMITS
- UPLAND AREAS

NOTES:

- 055 THE GROUNDWATER LEVEL IN MW055 WAS ANOMALOUSLY HIGH (94.89 FEET ELEVATION), CONSISTENT WITH IT TAPPING A PERCHED UPLAND AQUIFER, AND NOT THE ALLUVIAL VALLEY AQUIFER.
- 330 THE GROUNDWATER LEVEL IN MW330 WAS ANOMALOUSLY HIGH (64.03 FEET ELEVATION CONSISTENT WITH A PERCHED CONDITION AND NOT REPRESENTATIVE OF THE ALLUVIAL VALLEY AQUIFER.

MONITORING WELL NAMES HAVE BEEN ABBREVIATED TO THE LAST THREE UNIQUE NUMBERS. THE COMPLETE MONITORING WELL NAMES ARE LISTED IN TABLE 1.

REFER TO TABLE 5 FOR A COMPLETE LIST OF MEASURED GROUNDWATER LEVELS AT EACH MONITORING WELL.

N W E S

0 1400' 2800'

GeoEngineers
Earth Science + Technology

THE LOCATIONS OF ALL FEATURES SHOWN ARE APPROXIMATE. THIS FIGURE IS FOR INFORMATIONAL PURPOSES ONLY. IT IS INTENDED TO ASSIST IN THE IDENTIFICATION OF FEATURES DISCUSSED IN A RELATED DOCUMENT. DATA WERE COMPILED FROM SOURCES AS LISTED IN THIS FIGURE. THE DATA SOURCES DO NOT GUARANTEE THESE DATA ARE ACCURATE OR COMPLETE. THERE MAY HAVE BEEN UPDATES TO THE DATA SINCE THE PUBLICATION OF THIS FIGURE. THIS FIGURE IS A COPY OF A MASTER DOCUMENT. THE MASTER DOCUMENT HARD COPY IS STORED BY GEOENGINEERS, INC. AND WILL SERVE AS THE OFFICIAL DOCUMENT OF RECORD.

AUGUST 2015 GROUNDWATER SURFACE CONTOUR MAP CITY OF REDMOND

FIGURE 1

P:\0\05001471\400500147\14 T0200 Fig 2 Summer 2015 GW Map.dwg\TAB:F2 MODIFIED BY: tmichaud ON Nov 24, 2015 - 10:23

Depth-To-Water Sheet D4

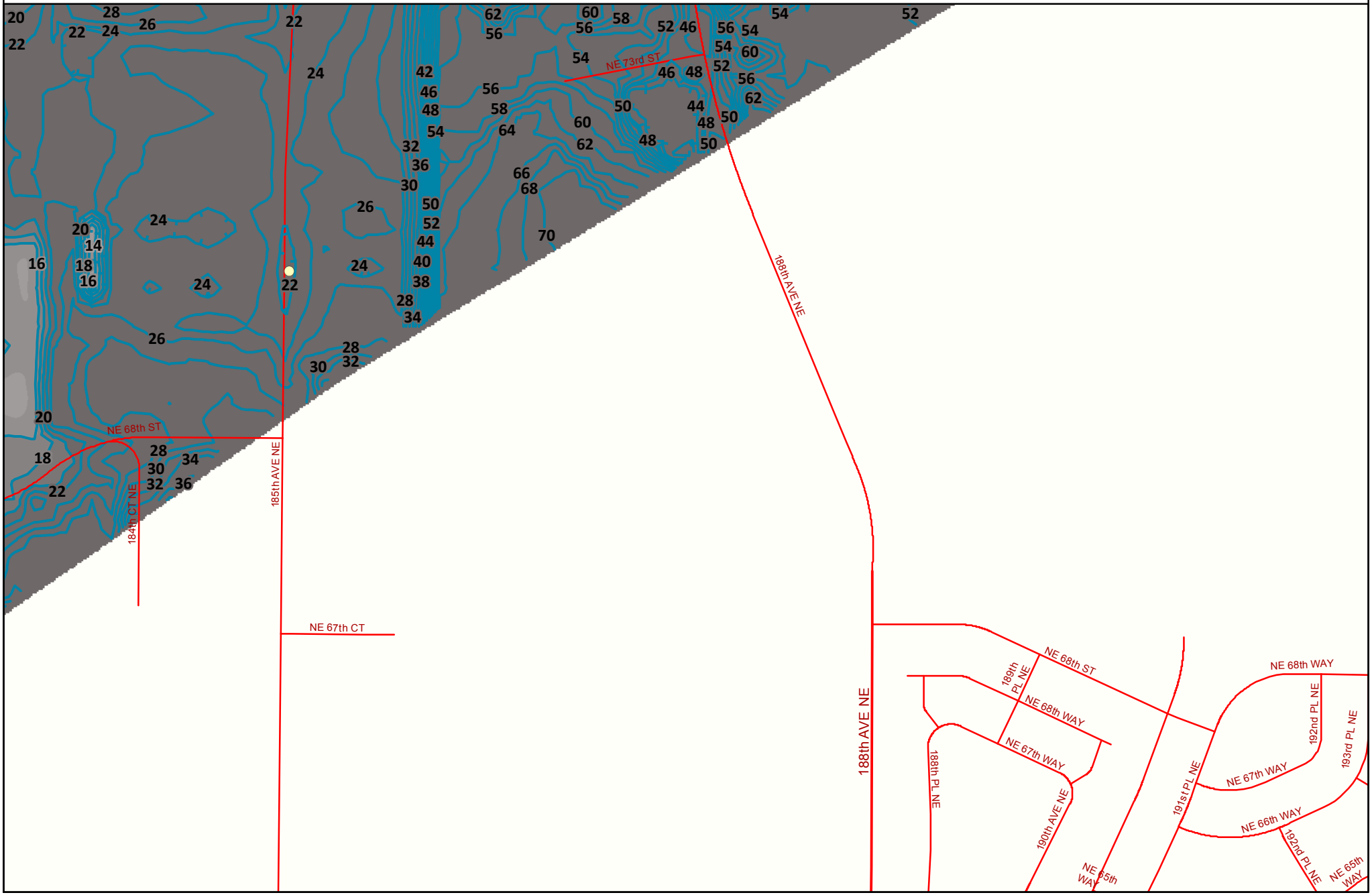
Disclaimer: This map is created and maintained by the Natural Resources Division of the City of Redmond for reference purposed only. The City makes no guarantee as to the accuracy or completeness of the features shown on this map

0 250 500 1,000 Feet

Monitoring Points Used to Create Contours
Depth-to-Water Contours (2ft)
Depth-to-Water Contours (Depressions)
Shallow Groundwater
Deep Groundwater
Open Water

Background Information

This map estimates the shallowest depth to water at a given location. The depth to water data was generated by interpolating a water surface model from the shallowest observed water level at 55 monitoring wells. The vertical distance between this water surface model and the earth's surface was calculating using LiDAR data. This data was contoured and is displayed on this map.



Depth-To-Water Sheet D4

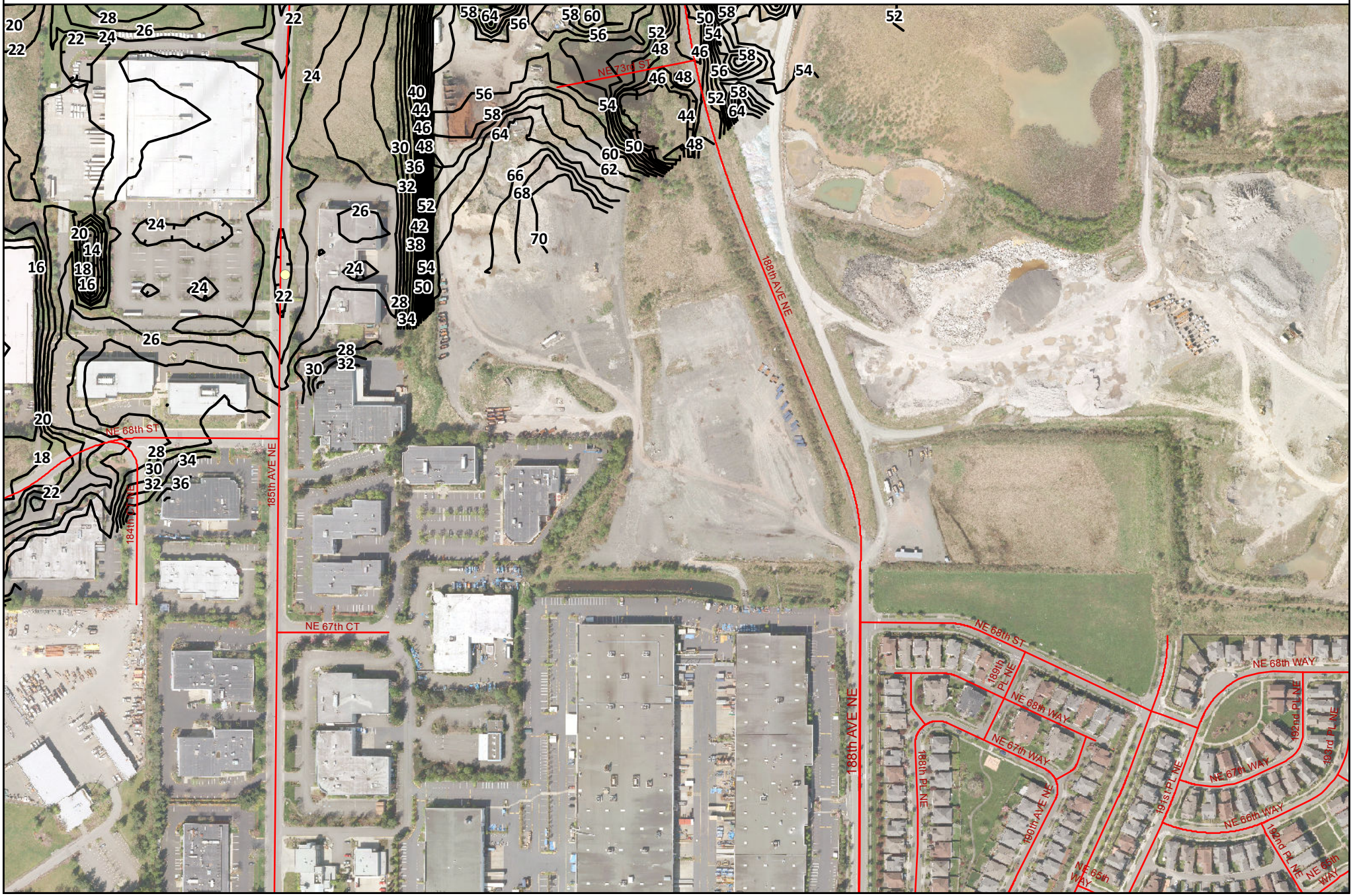
Disclaimer: This map is created and maintained by the Natural Resources Division of the City of Redmond for reference purposed only. The City makes no guarantee as to the accuracy or completeness of the features shown on this map

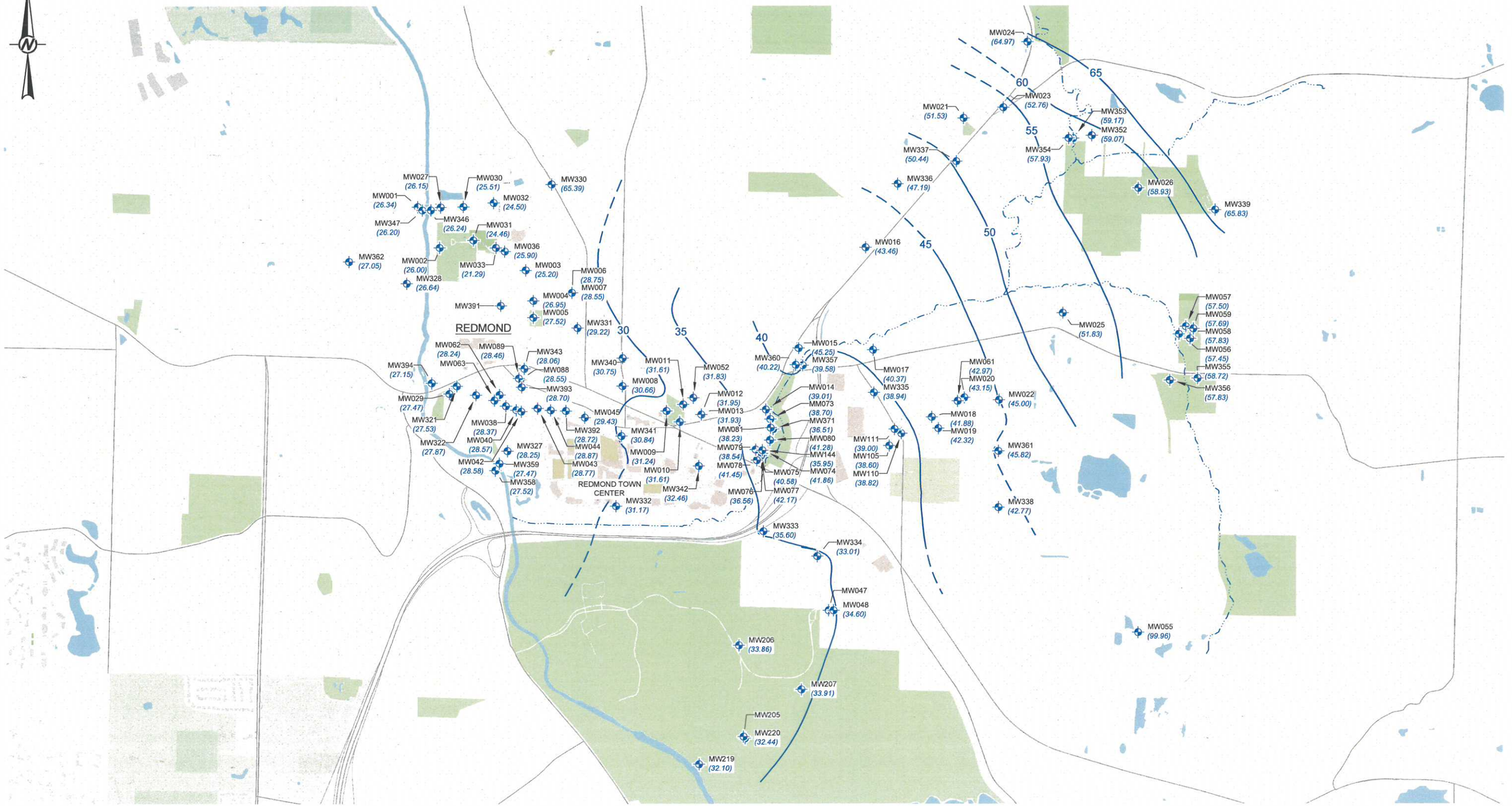
0 250 500 1,000 Feet

- Monitoring Points Used to Create Contours
- Depth-to-Water Contours (2ft)
- Depth-to-Water Contours (Depressions)
- 2012 Aerial Photo
- Open Water

Background Information

This map estimates the shallowest depth to water at a given location. The depth to water data was generated by interpolating a water surface model from the shallowest observed water level at 55 monitoring wells. The vertical distance between this water surface model and the earth's surface was calculating using LiDAR data. This data was contoured and is displayed on this map.





LEGEND

- INTERPRETED GROUNDWATER CONTOUR, 5 FT INTERVAL (NAVD88)
- MW027 (25.96) — REDMOND CITY MONITORING WELL NAME AND LOCATION; GROUNDWATER ELEVATION TAKEN FEBRUARY 2016

NOTE(S)

1. REFER TO TABLE 5 FOR A COMPLETE LIST OF MEASURED GROUNDWATER LEVELS AT EACH MONITORING WELL.
2. MONITORING WELL LOCATIONS MW205, MW206, MW207, MW219, AND MW220 ARE APPROXIMATE.

REFERENCE(S)

1. CITY OF REDMOND (GROUNDWATER MONITORING WELLS)
2. TOPOGRAPHY MAP FROM WORLD TOPO MAP THROUGH GLOBAL MAPPER

0 800 1600
1" = 800' FEET

CLIENT
CITY OF REDMOND

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-04-05
DESIGNED	--
PREPARED	REDMOND
REVIEWED	JSL
APPROVED	JFL

PROJECT
GROUNDWATER MONITORING
WINTER 2016 GROUNDWATER SAMPLING

TITLE
GROUNDWATER CONTOUR MAP - FEBRUARY 2, 2016

PROJECT NO.	PHASE	REV.	FIGURE
1403741600	001	0	1

Path: \\redmond.golder.gds\geomat$\geomatics\City\Redmond\Redmond99_PROJECTS\1403741600_GW_Monitoring\001_GW-Reporting\02_PRODUCTION\DWG\ | File Name: 1403741600_001_R_001.dwg

0 1 in
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D