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CLEANUP ACTION WORK PLAN

SLAG DISPOSAL BECKWITH PROPERTY SITE
SOUTH 218TH STREET AND 90TH AVENUE SOUTH
KENT, WASHINGTON

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For:
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1.0 INTRODUCTION

This Cleanup Action Work Plan (Work Plan) has been prepared on behalf of Earle M. Jorgensen Company (EMJ) for the cleanup action at the property located at the southeastern corner of South 218th Street and 90th Avenue South in Kent, Washington (herein referred to as the Site) (Figure 1). The cleanup action will be conducted under Consent Decree No. 95-2-15301-1 (Consent Decree) entered into by the Washington State Department of Ecology (Ecology) and EMJ. This Work Plan has been prepared in accordance with the Washington State Model Toxics Control Act Cleanup Regulation (MTCA) as established in Chapter 173-340 of the Washington Administrative Code (WAC 173-340) and meets the requirements of an Engineering Design Report as established in Section 400(4)(a) of WAC 173-340. The implementation, compliance monitoring, and maintenance of the cleanup action will be conducted for EMJ, the current owner of the Site.

Secondary steel slag contains lime ash that reacts with water to increase the pH (herein referred to as slag) was placed as fill on the Site between 1984 and 1990. Cleanup actions were conducted at the Site in 1995 through 1996 (SECOR International Incorporated [SECOR] 1997) and in 2002 (SECOR 2002) to mitigate the discharge of surface water with a pH above 8.5 from the stormwater detention pond located on the northeastern corner of the Site (Figure 2). Ecology (2007) confirmed that the requirements of the Consent Decree had been met and that further monitoring was no longer required.

The City of Kent measured pH levels of 12.5 to 12.8 in surface water discharging from seeps on the north and northwest sides of the Site in March 2009 (Ecology 2009a). Based on the pH levels measured in surface water leaving the Site in March 2009, Ecology required implementation of an interim action under the existing Consent Decree to mitigate discharge of surface water with a pH above 8.5. The interim action consists of capturing surface water for pre-treatment and disposal to the sanitary sewer system. The results of investigations conducted at the Site concluded that infiltration of precipitation and surface water bypassing the interceptor drain and barrier system (constructed as part of the previous cleanup actions at the Site, further discussed herein) react with the lime ash in the slag, elevating the pH in surface water that discharges from the seeps (Farallon Consulting, L.L.C. [Farallon] 2009a).

The cleanup action presented in this Work Plan to mitigate the discharge of surface water with a pH above 8.5 is removal of the slag with lime ash that reacts with surface water for off-Site disposal. Approximately 16,500 cubic yards of the slag will be removed from the Site. Ecology has reviewed and agreed to the selected cleanup action.

1.1 PURPOSE

The purpose of the cleanup action is to permanently eliminate the source of lime ash that reacts with surface water, thereby reducing the pH of surface water discharging from the Site to less than 8.5 as defined in the Consent Decree. The cleanup action will result in a permanent solution to protect human health and the environment and will meet Ecology requirements for closure and de-listing the Site from the Ecology Confirmed and Suspected Contaminated Sites List.

1.2 CLEANUP ACTION WORK PLAN ORGANIZATION

The Work Plan has been organized into the following sections.

- **Section 1—Introduction**: This section provides the purpose of the Work Plan.
- **Section 2—Site Description**: This section provides a description of the Site and vicinity, Site topography, soil and water conditions, and wetlands.
- **Section 3—Previous Investigations and Cleanup Actions**: This section summarizes the results of previous subsurface investigations, cleanup actions, and interim actions conducted at the Site.
- **Section 4—Technical Elements**: This section provides a description of the applicable or relevant and appropriate requirements (ARARs), media and constituent of concern, cleanup levels, and points of compliance.
- **Section 5—Cleanup Action Design and Implementation**: This section provides a description of the cleanup alternatives evaluation and the selected cleanup action.
- **Section 6—Sampling and Analysis Plan**: This section summarizes the procedures for sample collection and analysis, and performance and compliance monitoring to be conducted during the cleanup action.
- **Section 7—Documentation Requirements**: This section describes the documentation to be provided for the cleanup action, including the construction plans and specifications, weekly reporting, manifest and waste disposal tracking, and the Final Closure/As-Built Report.
- **Section 8—Quality Assurance Project Plan**: This section defines the data quality objectives (DQOs) for the cleanup action and outlines the procedures for sampling, laboratory analysis, data management, and quality control.
- **Section 9 –Deliverables and Schedule:** This section describes the documentation to be provided for the cleanup action and the schedule of the cleanup action.
- **Section10—References:** This section lists the references cited in this Work Plan.

2.0 SITE DESCRIPTION AND HISTORY

This section presents a description of the Site location, topography, surface water, soil, groundwater, and wetlands at the Site. More detailed discussions of the Site are provided in the documents cited herein and listed in Section 10, References.

2.1 SITE DESCRIPTION

The Site is located at the southeastern corner of South 218th Street and 90th Avenue South in Kent, Washington within Section 7, Township 22 North, Range 5 East, at the eastern edge of the Kent Valley approximately 200 feet east of State Route 167 (Figures 1 and 2). The Site consists of a vacant 4.7-acre parcel located at the base of a north-south-trending, west-facing steep slope. The area where the slag was placed currently is covered with brush, small trees, and a gravel access road that extends from an entrance off 90th Avenue South on the south to the center of the Site (Figure 2).

2.2 TOPOGRAPHY

The area where the slag was placed as fill is relatively flat, ranging from 60 to 70 feet above mean sea level. A steep, heavily vegetated west-facing slope approximately 50 feet high is located east of the slag. A heavily vegetated slope west of the slag drops off steeply to 90th Avenue South approximately 20 feet below (Figure 2). The slope to the east of the Site is greater than 40 percent, with a vertical relief of more than 10 feet. Kent City Code, Chapter 11.06 Critical Areas (Ordinance 3746, § 3, 4-19-05) defines the slope east of the Site as a Landslide Hazard Area (see Section 5.3.3, Critical Slope Protection Area, for additional discussion of the slope areas).

2.3 SURFACE WATER

Surface water occurs on the Site in the interceptor drain located in the east drainage ditch and in the stormwater detention pond on the northeastern corner of the Site; in drainage ditches on the north of the Site, on the south side of South 218th Street, and in ditches on the Site on the east side of 90th Avenue South; and in seeps on the north and northwest sides of the Site (Figure 2). Surface water has been observed flowing onto the Site in a small stream flowing from the east on the northern portion of the Site and from a small stream flowing from the east on the southern edge of the Site. Surface water runoff from the hillside east of the Site and water from seeps observed along the northern portion of the Site flow into a ditch along the northern and western portion of the Site into the west drainage ditch and into a culvert that extends beneath 90th Avenue South (Figure 2).

The east drainage ditch captures surface water from the hillside. The northern portion of the east drainage ditch discharges into the detention pond located on the northern portion of the Site (Figure 2). Stormwater in the detention pond discharges through a culvert that extends beneath South 218th Street into Garrison Creek. Surface water collected in the southern portion of the

east drainage ditch follows the land topography and drains along the southern portion of the Site to a small stream.

2.4 SOIL

The slag is overlain by an approximately 3-foot-thick cap placed as part of the cleanup action conducted by SECOR (1995). The cap consists of Class B pit-run gravel and Class A 3-way mix top soil. The slag consists of a dark grey to black, dense, granular, coarse-grained material that is relatively permeable. Within the slag are concrete-like cobbles and a white powder (lime ash). The slag is underlain by a native silt-sandy silt that is reddish-grey to grey, stiff, and not saturated (SECOR 1992). The contact of the slag with underlying silt ranges from 4 feet below ground surface (bgs) on the western and eastern sides to 14 feet bgs in the central portion of the area filled with slag (Figure 3).

2.5 GROUNDWATER

Groundwater occurs in a perched water-bearing zone within the relatively permeable slag and in a regional water-bearing zone approximately 40 feet bgs. The depth to the perched water-bearing zone has been measured in monitoring wells that were located on the Site within the slag at a depth of 0.42 foot to 24.23 feet bgs, depending on the location within the slag, and extends to the contact with native silt at approximately 14 feet bgs (SECOR 2003a). The depth to perched groundwater is at or near the elevation of several of the seeps that currently discharge surface water on the northern portion of the Site (Farallon 2009a). Regional groundwater occurs in the water-bearing zone under confined conditions within a deep aquifer that is reported to be greater than 40 feet bgs. A cross-section showing the slag and groundwater elevation is provided on Figure 3.

The depth to perched groundwater typically is highest during the rainy months from September to March. Groundwater elevation calculations indicate that the direction of flow within the perched groundwater is toward the north-northwest at a gradient of approximately 0.03 foot per foot (SECOR 1995). The hydraulic conductivity of native soils within 50 feet of the ground surface is estimated to be on the order of 0.08 to 0.8 foot per day (SECOR 1992).

2.6 WETLANDS

A wetland delineation survey was performed at the Site in 1995 by Springwood Associates, Inc. (Springwood) (1995) prior to implementation of the 1995 through 1996 cleanup action by SECOR (1997) and updated by ESA Adolfson (Adolfson) (2006). Springwood (1995) identified, delineated, and classified two wetlands at the Site in accordance with the City of Kent Code, Chapter 11.05 Wetlands Management (Ordinance 3109, Section 1, May 18, 1993). The stormwater detention pond at the northern end of the Site, the east drainage ditch, and a portion of the east hillside were designated by Springwood (1995) as a Category III Wetland (Wetland AB). A copy of mapped wetland areas identified at the Site by Springwood is included in Appendix A.

Wetland AB is approximately 0.3 acre and meets the City of Kent Code Chapter 11.05 Wetlands Management criteria for a Category III Wetland because it supports an emergent wetland and a scrub/shrub wetland and is less than 1 acre in size. The surface water in Wetland AB originates from seeps located on the east hillside and flows into the east drainage ditch and north to the stormwater detention pond. Flow in the ditch was estimated to be approximately 1 gallon per minute at the time of the site visit in 1995. The water level in Wetland AB is controlled by the inlet elevation of the vertical culvert in the stormwater detention pond (Springwood 1995).

A small depressed area and stream channel near the entrance to the Site was designated by Springwood (1995) as a Category II Wetland (Wetland CD) (Appendix A). Wetland CD covers approximately 0.1 acre and meets the City of Kent Code Chapter 11.05 Wetlands Management criteria for a Category II Wetland because it supports a forested wetland and is less than 1 acre in size. The stream had an estimated flow through the wetland of 1 gallon per minute at the time of the Site visit in 1995. The origin of the stream was not determined, but likely originates from the seeps on the slope above the wetland (Springwood 1995).

The City of Kent Public Works retained Adolfson (2006) to delineate wetland boundaries and wetland buffer impacts within the proposed South 224th Street roadway improvement proposed by the City of Kent that included the Site. The wetland delineation survey was performed in accordance with the 1997 Ecology Manual, Washington State Wetlands Identification and Delineation Manual to determine the presence and extent of wetlands along the area of proposed road improvements. The City of Kent (2006) approved the wetland delineation boundaries established by Adolfson on January 12, 2006.

Six wetland areas identified by Adolfson (2006) as Wetlands C, D, I, J, L, M, and N are located within or adjacent to the projected cleanup action area on the Site. Each wetland area is summarized below and shown on Figure 4.

Wetland C is 0.12 acre in size and located on the west side of 90th Avenue South. This wetland receives water from surface water flow from both State Route 167 and 90th Avenue South, and from groundwater.

Wetland D is located on the northeast corner of the Site and is considered part of the approximately 20-acre Middle Fork Garrison Creek Wetland Complex.

Wetland I is 0.03 acre in size and includes the stormwater detention pond at the north end of the Site. Surface water enters the wetland from the south through the polyvinyl chloride (PVC) pipe in the eastern drainage ditch and exits through a culvert to the north when the water level in the pond is high enough to enter the culvert. Water in the culvert then flows north beneath South 218th Street into Wetland J.

Wetland J is located north of South 218th Street and is considered part of the approximately 20-acre Middle Fork Garrison Creek Wetland Complex.

Wetland L is 0.04 acre in size and located in a roadside ditch along the east side of the north end of 90th Avenue South. Groundwater and surface water runoff from the adjacent road is the main

contributor of this wetland's hydrology. Vegetation in this wetland generally is disturbed by road maintenance activities.

Wetland M is a small wetland, 0.004 acre in size, located along the east side of 90th Avenue South directly north of the Site entrance. Sources of this wetland's hydrology include groundwater and surface water runoff from the adjacent road.

Wetland N is 0.30 acre in size and located in a ditch along the east side of 90th Avenue South directly south of the Site entrance, extending up the slope along two small drainage courses. Two small streams flow through the wetland and into the roadside ditch. Groundwater is the main contributor of this wetland's hydrology.

Wetland I, the stormwater detention pond, was identified by Springwood (1995) as Wetland AB (Appendix A). However, the portion of Wetland AB consisting of the east drainage ditch and the portion of the east hillside were not designated by Adolfson (2006) as a wetland area. The depressed area and stream channel south of the Site entrance were identified as wetland areas by both Springwood (1995) and Adolfson (2006). However, the wetland boundary for both varies in area. As discussed with the City of Kent, the most current wetland delineation performed by Adolfson (2006) will be used for purposes of the cleanup action.

Standard buffer widths were determined by Adolfson (2006) based on the wetland category and the habitat score for each wetland. Wetlands are classified as Category I, II, III, or IV based on the Washington State Wetland Rating System for Western Washington, in accordance with the Kent City Code for Critical Areas, KCC 11.06 Critical Areas (Ordinance 3746, Section 3, April 19, 2005). Wetland J, located approximately north and across South 218th Street from the Site, is part of the Middle Fork Garrison Creek Wetland Complex, which has a standard buffer width of 125 feet as a Category II Wetland and contains a habitat score between 20 and 28 (Figure 4). All other designated wetlands on the Site have a standard buffer width of 50 feet as Category IV Wetlands and have habitat scores of less than 20 (Adolfson 2006).

3.0 PREVIOUS INVESTIGATIONS AND CLEANUP ACTIONS

Investigations have been conducted at the Site by SECOR (2002), EFI Global Inc. (EFI) (2006), and Farallon (2009a). Cleanup actions were conducted at the Site in 1995 and 1996 (SECOR 1997) and in 2002 (SECOR 2003b) under the Consent Decree to mitigate the discharge of surface water with pH levels above 8.5 from the stormwater detention pond. Ecology (2007) confirmed that the requirements of the Consent Decree had been met and that further monitoring was no longer required. Monitoring at the Site was discontinued in 2007.

3.1 PREVIOUS INVESTIGATIONS

A chronological summary of previous investigations conducted at the Site is provided below.

3.1.1 Focused Remedial Investigation/Feasibility Study (1992)

The Focused Remedial Investigation/Feasibility Study (FRI/FS) conducted by SECOR (1992) determined the slag thickness to average approximately 4.4 feet, with an estimated maximum thickness of 14 feet. Concentrations of arsenic, antimony, beryllium, and nickel above background levels were detected in the slag. SECOR (1992) concluded that these metals were immobile, did not leach to surface water or groundwater, and did not require active cleanup, but that water coming into contact with the slag reacted with the lime ash in the slag, increasing the pH to levels above regulatory limits for surface water. SECOR (1992) concluded that remediation was necessary to mitigate the elevated pH in surface water discharging from the stormwater detention pond on the northeast corner of the Site.

3.1.2 EFI Global Inc. (2006)

EFI (2006) collected samples of native soil to determine the background pH levels of native soil proximate to the Site. EFI suspected that native soils proximate to the Site had a pH of less than 6.0, which resulted in lower pH values of the regional groundwater beneath the Site. The potential presence of these lower pH soils resulted in groundwater compliance not being achieved. The results of the soil sampling confirmed that the mean pH for native soil was 5.97 proximate to the Site (EFI 2006). EFI (2006) requested a variance in the regulatory limit for pH established in the Consent Decree for groundwater from 6.0 to 5.5 based on the mean pH of the native soil types found on the Site. Ecology (2006) approved the pH variance in the Consent Decree for groundwater from 6.0 to 5.5. Based on the pH variance approval, 8 quarters of compliance groundwater monitoring and sampling had been achieved and EFI proposed no further groundwater monitoring. Ecology concurred and the groundwater compliance sampling was terminated (Ecology 2006).

3.1.3 Seep Water Investigation (2009)

Farallon (2009a) conducted a seep water investigation at the Site to determine the source of the water discharging from the seeps on the north of the Site with a pH above 8.5. Farallon (2009a) concluded that infiltration of rainwater falling on the Site and surface water bypassing the interceptor drain and barrier system (constructed as part of the previous cleanup actions at the Site, further discussed below) react with the lime ash in the slag, elevating the pH in the water

discharging from the seeps. The elevations of the seeps appear to be at or below the approximate elevation of the slag-silt contact and are consistent with the average elevation of perched groundwater in the slag material measured in monitoring wells located on the Site. The perched water-bearing zone, measured at a depth of 0.42 to 24.23 feet bgs, is not contiguous with regional groundwater, measured at 40 feet bgs. Therefore, regional groundwater is not affected by the slag material. Farallon (2009a) concluded that water resides within the slag for a very short time below the ground surface and above the native silt prior to discharge from the seeps (Figure 3).

3.1.4 Test Pit Investigation (2009)

Farallon recently observed the excavation of five test pits at the Site on January 25 and 26, 2010 to determine the elevation of the slag and the underlying native soil, and the lateral extent of the slag. Overburden on top of the slag ranged from 3 to 5.5 feet bgs, and slag depths ranged from 8 to 12 feet bgs in the test pits observed. Professional Land Surveyors, Inc. of Issaquah, Washington surveyed the surface elevation at each of the test pit locations to determine the elevation of the slag-native soil contact. A sample of slag was collected from each test pit and analyzed for total RCRA 8 metals by U.S. Environmental Protection Agency (EPA) 6000/7000 Series methods for the purpose of waste disposal characterization. The sample with the highest overall metal concentrations was selected and further analyzed by Toxicity Characteristic Leaching Procedures (TCLP). The analytical results, summarized in Table 1, are consistent with the analytical results reported in the FRI/FS (SECOR 1992) and did not exceed TCLP limits defined in the Dangerous Waste Regulations (WAC 173-303-090[8][c]). Testing of the slag for pH during the test pit investigation was not required. As discussed in Section 6.0, Sampling and Analysis Plan, the pH of the slag ranges from 11.9 to 12.4 (SECOR 1992). Copies of the laboratory analytical results are presented in Appendix B. Test pit logs are included in Appendix C.

3.2 CONSENT DECREE

Consent Decree No. 95-2-15301-1 was entered into by Ecology and EMJ in June 1995. The Consent Decree required EMJ to conduct a cleanup action at the Site to protect human health and the environment in accordance with the Final Cleanup Action Plan dated July 5, 1994 prepared by Ecology (1994). The cleanup action was implemented at the Site in 1995 and 1996 and is described in Section 3.3, Previous Cleanup Actions.

3.3 PREVIOUS CLEANUP ACTIONS

Cleanup actions were implemented at the Site by SECOR (1995, 2003b) under the Consent Decree. The cleanup actions were designed to impede surface and groundwater from contacting the slag and reacting with the lime ash. A summary of the cleanup actions completed to date is provided below.

3.3.1 Cap and Site Drainage Improvements

The cleanup action completed at the Site in 1995 and 1996 (SECOR 1997) was designed to impede surface and shallow groundwater from contacting the slag and to mitigate the high pH levels in perched groundwater within the slag and surface water migrating from the slag off the

Site. Regional groundwater beneath the slag did contain an elevated pH. A subsurface water interceptor drain was constructed on the eastern edge of the slag at the toe of the steep slope to direct surface water and shallow groundwater around the slag. The northern portion of the interceptor drain discharges to a stormwater detention pond constructed on the northeast corner of the Site. The southern portion of the interceptor drain discharges to the drainage ditch at the southwestern corner of the Site (Figure 2). The surface of the slag was covered with an organic soil cap and vegetated.

The interceptor drain consists of a trench constructed to a depth of approximately 6 feet bgs backfilled with gravel and lined with 60-mil high-density polyethylene (HDPE) placed vertically on the western (slag) side. A 4-inch-diameter perforated PVC drainpipe was placed in the trench at approximately 4.5 feet bgs. The trench was backfilled with pea gravel to approximately 3.5 feet bgs, and 1.25-inch minus crushed rock was placed above the pea gravel to the surface (SECOR 1997). SECOR (1997) noted that some pea gravel was placed between the HDPE liner and the slag to facilitate liner installation on the west sidewall of the interceptor trench. Profiles of the subsurface interceptor drain are provided in Appendix D.

Surface water captured in the interceptor drain discharges to the stormwater detention pond in the northeastern portion of the Site, through a culvert under South 218th Street, to Springbrook Creek adjacent to State Route 167 (SECOR 2003b). The stormwater detention pond was enlarged to provide sufficient stormwater residence time for solids to settle out prior to discharge.

Slag material and sediment were excavated from the stormwater detention pond down to the native soil interface. Excavated slag was placed on top of the slag surface prior to re-grading and vegetation activities. A 2- to 3-foot lift of 6- to 8-inch-diameter quarry spalls was placed on top of the native soils at the base of the pond excavation. A 60-mil HDPE liner was placed on the west side of the stormwater detention pond and covered with a 2-foot lift of clean soil and a 1-foot lift of 4- to 6-inch-diameter quarry spalls (SECOR 1997).

The surface of the slag area was re-graded and covered with approximately 2.5 feet of compacted Class B pit-run fill. Approximately 6 inches of a Class A 3-way mix topsoil was placed over the compacted pit-run fill. After completion of the re-grading and placement of the cap, the area was hydroseeded.

3.3.2 Drainage Improvements Repair and Tree Planting

Compliance monitoring and sampling conducted between 1995 and 2001 measured pH levels above the regulatory limits in surface water discharging from the stormwater detention pond. SECOR (2003b) determined that reconstruction of the northern portion of the interceptor drain and stormwater detention pond was necessary to reduce pH levels in surface water discharge to below the regulatory limit.

An impermeable clay barrier was installed to preclude contact between the slag and surface water. The northern portion of the interceptor drain and stormwater detention pond was excavated and reconstructed to include an impermeable clay barrier (Figure 2). Vegetation, pea gravel, perforated 4-inch-diameter PVC pipe, and the liner installed in 1996 were removed from

the interceptor drain area beginning at a point approximately 150 feet south of the stormwater detention pond, extending to the north side of the pond.

The interceptor drain was excavated at least 1 to 2 feet into the underlying silt, and approximately 6 to 12 inches of high-clay-content impermeable backfill (i.e., permeability between 10^{-7} and 10^{-9} centimeters per second) was placed in the bottom of the excavation to provide an impermeable barrier. A new 60-mil HDPE liner was placed on top of the clay backfill that extended along the western side of the excavation. High-clay-content backfill was placed on the HDPE liner to within 2 to 3 feet of the surface. A soil cover was placed from the top of the clay to the surface.

The portion of the interceptor drain east of the clay barrier was reconstructed with a new 4-inch-diameter perforated PVC drainpipe placed at a lower elevation in the trench. A liner was placed beneath the drainpipe, and pea gravel was used to backfill around the pipe (SECOR 2003b).

The clay barrier extends along the western and northern sides of the stormwater detention pond in the northeastern portion of the Site (Figure 2). The stormwater detention pond was deepened and widened as part of the cleanup action. Existing culvert seals were inadequate, allowing seepage from the slag pile to discharge directly into the outfall without entering the stormwater detention pond. A concrete catch basin was installed and the culvert was reconfigured to prevent water from bypassing the stormwater detention pond (SECOR 2003b).

Approximately 2 feet of the slag area cover material placed in 1996 was removed prior to placement of the excavated slag material. The slag material excavated for placement of the clay barrier was placed in an unlined containment area constructed on the southwestern portion of the slag area. The slag containment pile was then covered with the high-clay-content material used to construct the clay barrier.

Trees, shrubs, and grasses were planted in December 2002 to re-vegetate the areas of the Site disturbed by the cleanup action. A mix of herbaceous water plants that produce an organic muck layer were planted in the stormwater detention pond to assist in attenuating the elevated pH levels. Soil additives expected to acidify soils were used during the re-vegetation activities.

Ecology (2007) confirmed that the requirements of the Consent Decree had been met and that no further monitoring was required. Monitoring at the Site was discontinued in 2007.

3.4 CURRENT INTERIM ACTION

In March 2009, pH levels above the 8.5 regulatory limit defined in the Consent Decree were measured in surface water in the drainage ditch along the south side of South 218th Street and the east side of 90th Avenue South, adjacent to the north and west property boundaries. A coffer dam, sump, and pumps were installed in the ditch on the east side of 90th Avenue South by LFR Global of Seattle, Washington to capture and transfer the surface water to a 20,000-gallon aboveground storage tank (AST) (Figure 5). The water stored in the AST was transported off the Site for disposal by Marine Vacuum Services, Inc. of Seattle, Washington (MarVac).

In April 2009, Farallon assumed operation of the sump system installed by LFR Global. The coffer dam and sump captured surface water with a pH above 8.5 that had discharged from seeps and commingled with regional surface water runoff having a normal pH, resulting in a large volume of water requiring disposal off the Site. To decrease the volume of water requiring off-Site disposal, three additional sumps were installed to capture high-pH surface water directly at the seeps on the north and northwest ends of the Site before it commingles with regional surface water runoff (Figure 2). Approximately 43,500 gallons of high-pH water was transported off the Site by MarVac for disposal between April 17 and May 1, 2009.

In April 2009, Farallon installed a water treatment system that injects carbon dioxide into the water captured from the sumps prior to discharge into the AST to reduce the pH. King County Industrial Waste Program Major Discharge Authorization No. 4170-01 was received on April 29, 2009 allowing direct discharge of treated wastewater in the AST to the City of Kent sanitary sewer system. The discharge authorization limits the pH of the discharge water to between 5.5 and 12.0. The carbon dioxide injection system reduced the pH to within this range. The discharge authorization was revised on May 7, 2009 to Authorization No. 4170-02 to increase the permitted daily maximum discharge from 5,000 to 15,000 gallons per day. A second revision was made on January 12, 2010, to Authorization No. 4170-03, extending the expiration date of the discharge authorization to December 31, 2010 (King County Wastewater Treatment Division 2010).

3.5 CITY OF KENT ROADWAY IMPROVEMENT

The City of Kent has been evaluating a roadway improvement in the vicinity of the Site since at least 1995, which was discussed in the Consent Decree. As part of the evaluation, the City of Kent prepared an Environmental Impact Statement (EIS) dated February 2008. According to the EIS, the proposed roadway improvement consists of four alternative alignments, one of which includes reducing the sharpness of the turn from South 218th onto 90th Avenue South. The proposed South 218th Street improvement alternative includes using a portion of the Site for straightening South 218th Street. The EIS process involved performing wetland delineations in the vicinity of each of the four alternative alignments, including the Site. The results are summarized in Section 2.6, Wetlands. The proposed alternatives are still being considered by the City of Kent and a formal decision has not been made.

4.0 TECHNICAL ELEMENTS

This section presents the technical elements applicable to the cleanup action for the Site. Described below are the applicable or relevant and appropriate requirements (ARARs), medium and constituent of concern, and cleanup standards applicable to the cleanup action in accordance with MTCA.

4.1 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Applicable laws and regulations provide the framework for the cleanup action. WAC 173-340-360(2) and 173-340-710(1)(a) require that cleanup actions conducted under MTCA comply with applicable state and federal laws. Applicable laws are defined as requirements that are legally applicable and those determined by Ecology to be both relevant and appropriate. The applicable laws and regulations applicable to the cleanup action at the site include the following:

- MTCA (Chapter 70.105D of the Revised Code of Washington [RCW 70.105D]);
- MTCA Cleanup Regulations (WAC 173-340);
- City of Kent Critical Area Ordinance KC 11.06 (Kent City Code Chapter 11.06); and
- Substantive requirements of the City of Kent for grade and fill activities and street use as applicable

MTCA is the primary ARAR for the cleanup action.

Because the cleanup action will be conducted under the Consent Decree, the substantive requirements of the City of Kent Grading and Fill Permit will need to be met. A Construction Stormwater General Permit will be obtained prior to mobilizing to the Site. Since the cleanup action will not encroach into the mapped wetlands areas, a Clean Water Act Section 404 Permit is not required.

A State Environmental Policy Act (SEPA) checklist has been submitted to Ecology. Ecology has issued a Determination of Nonsignificance for this project. The SEPA checklist and Determination of Nonsignificance and are included in Appendix E.

4.2 MEDIA AND CONTAMINANT OF CONCERN

The media of concern for the cleanup action are soil, surface water, and perched groundwater. Elevated pH levels occur in surface water at the Site, and may occur in perched groundwater from reaction with the lime ash in the slag. The contaminant of concern is pH greater than 8.5 in surface water and/or perched groundwater. The source of the elevated pH in surface water and/or perched groundwater is lime ash intermixed with the slag. The migration of lime ash to soil adjacent to the slag is also a concern. This may result in a soil to groundwater pathway if there is sufficient lime ash in the soil. Therefore, the Indicator Hazardous Substance (IHS) to be used to guide the cleanup is slag or soil with pH greater than 8.5.

4.3 CLEANUP LEVELS

The cleanup level for pH defined in the Consent Decree and a subsequent variance is that pH in groundwater and surface water is between 5.5 and 8.5.

4.4 POINTS OF COMPLIANCE

The point of compliance for the cleanup action is all surface water on the Site and for groundwater from the uppermost level of the saturated zone extending vertically to the lowest most depth which could potentially be affected by the Site. The point of compliance for soil is throughout the site. Following excavation of the slag and prior to backfilling, soil samples shall be collected from the bottom and sides of the excavation on 25 foot centers and tested for pH as described in Section 6.3. All samples must show a pH between 5.5 and 8.5.

After the excavation has been backfilled the surface water will be monitored at five locations currently designated to be the discharge culvert north of the Site across South 218th Street, the discharge culvert on the western boundary of the Site near 90th Avenue South, the seep location near sump 3, the southern end of the drainage ditch, and the southern end of the west drainage ditch (Figure 6). The final number and location of points of compliance monitoring locations may be modified after removal of the slag based on the surface water drainage pattern. Modification requires Ecology approval. The method and schedule for compliance monitoring is provided in Section 6, Sampling and Analysis Plan.

The combination of performance soil and surface water sampling during slag removal and surface water compliance monitoring is sufficient when surface water pH is between 5.5 and 8.5 for four consecutive monitoring events after completion of the slag removal.

5.0 CLEANUP ACTION DESIGN AND IMPLEMENTATION

This section describes the technically feasible cleanup action alternatives that were evaluated by Farallon (2009b). A detailed discussion of the selected cleanup action follows.

5.1 EVALUATION OF CLEANUP ALTERNATIVES

Farallon (2009b) evaluated five technically feasible cleanup alternatives to mitigate pH levels above 8.5 in surface water discharging from the Site that meet or would likely meet the MTCA Threshold Requirements defined in WAC 173-340-360 (2)(a)(b). Each of the technically feasible cleanup alternatives was evaluated using the Evaluation Criteria defined in WAC 173-340-360(3)(f). The Threshold Requirements used for the evaluation include: protection of human health and the environment; compliance with cleanup standards; compliance with applicable state and federal laws; provision for compliance monitoring; permanence to the maximum extent practicable; provision for a reasonable restoration time frame; and consideration of public concerns.

5.1.1 Alternative 1—Surface Water Collection, Treatment, and Discharge

This alternative would expand and enhance the existing surface water collection, treatment, and discharge system by constructing enlarged concrete sumps and a utility building to house treatment equipment, placing utilities and piping underground, installing remote controls and monitoring, and providing ongoing operation and maintenance and water quality monitoring. Continued treatment would include injecting carbon dioxide into recovered water to reduce the pH to within the allowable King County and City of Kent sanitary sewer discharge limits. No modification of the existing slag cover or the interceptor drain and barrier system would be made.

5.1.2 Alternative 2—Excavation and Off-Site Disposal

This alternative would involve excavation and off-Site disposal of approximately 16,500 cubic yards of slag and restoration of the Site. Following excavation, the Site would be restored and graded to allow surface water to drain approximately as it did prior to slag removal activities. Site restoration would include hydroseeding areas impacted by construction, and construction of drainage features to manage stormwater runoff.

5.1.3 Alternative 3—Containment as a Non-Solid Waste Management Unit

This alternative would be designed to eliminate contact of precipitation and surface water runoff with the slag by implementation of improvements to the up-gradient interceptor barrier and drain system, and construction of an impervious cap over the slag. Improvements would include construction of a low-permeability slurry wall keyed into the underlying low-permeability native silt, and modification of the existing drain system to mitigate groundwater mounding caused by the impermeable wall. This alternative would include installation of a cap system comprising an impermeable membrane, a geocomposite layer and an 18-inch seeded and graded soil cover to facilitate drainage away from the cap system and minimize erosion.

5.1.4 Alternative 4—Containment as a Solid Waste Management Unit

In correspondence with Farallon in 2009, Ecology (2009b) stated that the slag placed as fill on the Site may meet the definition of industrial solid waste under WAC 173-350-100/ WAC 173-304-100. Therefore, the Site may be considered a landfill (WAC 173-350-100), and the Minimum Functional Standards For Solid Waste Handling (WAC 173-304) would apply to future cleanup of the Site. Alternative 4 incorporated measures to meet the solid waste landfill closure/post-closure requirements defined in WAC 173-304.

This alternative is similar to Alternative 3 and would be designed to eliminate contact of precipitation and surface water runoff with the slag by implementation of improvements to the up-gradient interceptor barrier and drain system, and construction of an impervious cap over the slag. Improvements would include construction of a low-permeability slurry wall keyed into the underlying low-permeability native silt, and modification of the existing drain system to mitigate groundwater mounding caused by the impermeable wall. Additional measures incorporated to meet the solid waste landfill closure/post-closure requirements include a thickened soil cover (24 inches), a leachate collection and treatment system, and a groundwater monitoring network consisting of at least five monitoring wells.

5.1.5 Alternative 5—Solidification

This alternative would consist of in-place solidification of the slag by pressure grout or in-place mixing with cement and bentonite using a large-diameter mixing auger to reduce the permeability of the slag. Improvements would be made to the up-gradient interceptor drain and barrier system to further prevent water from infiltrating the slag area, and a 24-inch soil cover would be placed over the slag area and seeded. This alternative would include ongoing operation and maintenance and surface water monitoring.

5.2 SELECTED CLEANUP ACTION

Alternative 2, Excavation and Off-Site Disposal, is the selected cleanup action alternative for the Site (Farallon 2009b). The selected cleanup action will meet the MTCA Threshold Requirements defined in WAC 173-340-360 (2)(a)(b).

5.3 CLEANUP ACTION COMPONENTS

A summary of the selected cleanup action components is provided below. Included is a description of pre-construction activities, water treatment system operation, critical slope area protection, excavation, soil sampling, surface water and groundwater control, and Site restoration. Detailed excavation design drawings are included in Appendix D. A Site-specific Health and Safety Plan has been prepared for the Site and is included in Appendix F.

5.3.1 Pre-Construction Activities

The following pre-construction activities will be performed prior to excavation of the slag:

- The substantial equivalence requirements of a City of Kent Grading and Fill Permit, a Construction Stormwater General Permit, a Street Use Permit, and a Wetland Mitigation

Plan will be obtained prior to mobilization. The substantive requirements of the grading and fill permit, street use permit, and wetland mitigation plan will be provided to Ecology for review and approval prior to mobilization to the Site.

- Site control will be established by fencing the Site and establishing a construction entrance.
- Erosion control measures will be installed.
- Truck access and a turnaround area will be constructed.
- Decontamination facilities will be constructed.
- A Site-control survey will be performed.
- Contractor office trailer facilities will be installed.
- Two signs will be placed at the periphery of the Site, one on the west and one on the north, notifying the public of the activities being carried out and specifying where information on the work can be obtained (web links and public repositories). The signs will contain information on who to contact for questions or concerns regarding construction activities and the contact information for the Ecology site manager. The sign will include a brief paragraph on the Site background and a general schedule of activities.

5.3.2 Water Treatment System Operation

The existing surface water treatment system will continue operation during the slag removal action in compliance with King County Industrial Waste Program Major Discharge Authorization 4170-03 to treat surface water with a pH above 8.5 (Figure 5). The treatment system currently is located in the excavation area and will be relocated, as necessary, to enable completion of the excavation. Excavation operations will be sequenced to accommodate this move in a manner that provides for continuous treatment of surface water throughout the project duration.

5.3.3 Critical Slope Area Protection

Results from subsurface investigations conducted at the Site have determined that the slag does not extend into the steep slope areas (slopes greater than 40 percent) east and west of the Site (Appendix D). The steep slope areas will be clearly marked to protect these areas from disturbance during construction. If during excavation, slag is determined to extend into the steep slope area, a Professional Geotechnical Engineer licensed in the State of Washington will determine the appropriate precautions to protect the slope and facilitate slag removal.

Based on March 19, 2010 discussions between the City of Kent, Farallon, and Geotechnical Engineer Mr. Gary Flowers, it was agreed that a 30-foot setback from the steep slope area on the west side of the Site will be maintained with stakes and clearly marked as a "No Stockpile Area" (Appendix D, Sheet 4). A 15-foot setback east of the eastern edge of the slag excavation will be denoted on the sheet set as an "Excavation Caution Area" (Appendix D). This area will be

staked, and a Geotechnical or Engineering Geologist will be present on the Site to monitor the work that extends near or into the Excavation Caution Area.

5.3.4 Excavation

The known limits of the slag will be staked before excavation activities are initiated. Approximately 11,500 cubic yards of overburden material was placed as a cap on the slag and will be excavated, stockpiled, and reused as backfill on the Site. Approximately 6 inches of topsoil covers the existing cap. The topsoil will be stripped and retained for use as a cover over disturbed areas following Site grading and backfill compaction. The overburden will be removed and segregated from the underlying slag. Soil samples will be collected from the bottom of the overburden layer on 25-foot centers, starting at a random location and analyzed for pH to confirm that slag containing lime ash is not used as backfill. The soil samples will be analyzed in the field with an Oakton pH 310 series hand-held meter, as described in Section 6.3, Soil Sample Collection and Handling Procedures.

Suitable overburden soil and topsoil will be stockpiled in separate stockpiles on the Site for reuse as backfill and topsoil. Stockpiles will be covered to mitigate erosion. Due to the limited availability of stockpile areas, the excavation will be conducted in sections and will progress from the Site access road at the south toward the north. For excavation of a section, the topsoil will be stripped followed by stripping the remainder of the overburden to the underlying slag, as verified by the analytical results of soil samples. Topsoil and overburden stockpiles will be stored on an area not yet excavated.

Slag will be removed until the underlying native soil is encountered, based on visual evidence and the results of performance samples collected at the base of the excavation. Performance samples will be collected when visual evidence of native soil is observed and analyzed for pH. If the pH of the soil samples exceeds the performance level of 8.5, additional soil will be excavated. The performance monitoring procedures are provided in Section 6, Sampling and Analysis Plan. If the pH of the soil samples is less than 5.5, Ecology will be notified and appropriate measures discussed.

Following removal of the slag and verification from soil sampling that the pH of the soil will not cause an exceedance of pH greater than 8.5 in surface water (as discussed in Section 6, Sampling and Analysis Plan) the overburden will be placed as backfill in the excavated section. The next section will then be excavated in a similar manner. The number and size of sections used in excavating the slag will be determined in the field with the contractor.

Previous cleanup actions have removed slag from the wetland areas and excavation in the wetland areas will not be required. The interceptor drain, clay barrier, and liner beneath Wetland I will remain on the Site. The City of Kent has confirmed that the interceptor drain and clay barrier are not required to be removed.

5.3.5 Waste Disposal

The estimated 16,500 cubic yards of slag containing lime ash will be excavated and disposed of off Site. The slag is a Solid Waste that meets the definition of "Special Waste" with a

Conditional Exclusion of a Special Waste (Waste Management 2010). This exclusion allows for the disposal of the slag in a landfill unit permitted under WAC 173-303-800 through 173-303-840 or under Part 258 or 270 of Title 40 of the Code of Federal Regulations and not undergoing any Corrective Actions. Waste Management (2010) has confirmed that the slag can be taken to a permitted Subtitle D facility regardless of the pH of the solids. However, if the pH of free liquids, using the "Paint Filter" test, exceeds 12.5, the material will be considered dangerous waste based on the characteristic of corrosivity for disposal at a Subtitle C landfill. The slag will be direct loaded into roll-off boxes or trucks for transport to the landfill. If free liquid is observed or the material is loaded in a saturated condition, solidification of the material will occur by using cement or other absorbent material prior to off-Site disposal.

5.3.6 Surface Water and Groundwater Control

The interceptor drain constructed to collect surface water from east of the Site will be maintained during and after construction to prevent migration of surface water onto the Site. If the interceptor drain cannot be maintained, alternate provisions will be made to direct surface water drainage around the slag and/or the excavation area. Surface water with pH above 8.5 will be collected, treated by the water treatment system, and discharged to the sanitary sewer.

Perched groundwater that may be encountered during slag excavation will be collected and pumped to the interim action water treatment system for pre-treatment prior to disposal to the sewer system. The water treatment system is permitted to discharge up to 15,000 gallon per day of treated water to the City of Kent sanitary sewer. There is sufficient disposal volume available for collection and treatment of surface and groundwater that may be encountered during the excavation.

5.3.7 Site Restoration

Following completion of the removal of the slag and confirmation sampling, the excavation will be backfilled with stockpiled overburden material in 1-foot loose lifts and compacted to a minimum of 85 percent of maximum density as determined by the standard Proctor test (ASTM D698), as verified by state of the practice field testing methods and frequencies. The City of Kent does not require compaction under the existing permit requirements. The backfill will be graded to approximately match pre-excavation drainage patterns and will be approximately 8 feet lower in elevation than the pre-excavation grade. The final grading plan is shown on Figure 7 of Appendix D. It is anticipated that existing overburden will be sufficient for re-grading of the Site and maintaining existing drainage patterns and that additional fill will not be required for final grading. Additional backfill material, if needed, will be provided by the contractor from a permitted borrow pit approved by the Engineer and Ecology.

Site drainage features impacted by construction, including the ditch along the east side of the Site and the stormwater detention pond and culvert at the northern end of the Site, will be re-constructed to match pre-existing conditions (Figure 2). A new drainage ditch will be constructed on the southwestern portion of the Site near the access road to assist in surface drainage (Appendix D). Installation of culverts will not be required. Surface water flow to wetlands M and N will be consistent with pre-excavation conditions.

The surface water treatment system will continue to operate following completion of the slag removal if surface water with a pH above 8.5 is encountered in areas outside the slag excavation area. The surface water treatment system will be decommissioned and removed from the Site after results from the surface water compliance monitoring confirm that the pH levels in surface water are below 8.5. Decommissioning the water treatment system will include the cleaning and removing of the 20,000-gallon AST and removal of the four sumps, underground and aboveground piping, and associated electrical and control components.

The existing cap consists of approximately six inches of topsoil and Class B pit run material. The contractor will attempt to strip topsoil and stockpile on Site separately from the remainder of the overburden material. Topsoil will be used as cover over disturbed areas following Site grading and backfill compaction. The contractor will shred and chip turf and wood debris and blend into the stripped topsoil. Disturbed areas will be hydroseeded with a hydroseed-mulch mix that includes a bonded fiber matrix to prevent erosion. Hydroseeding will be performed immediately after the backfill has been placed, compacted, and a final grade attained. Disturbed areas to be left uncovered for more than 7 days will be covered with mulch.

Excavation activities in the northern portion of the Site will be conducted within the existing 50 foot wetland buffer zones for Wetland I and near the buffer zones for Wetlands L and M (Figure 4). Excavation activities will not impact Wetland N or its buffer. Exact buffer zones will be further evaluated and discussed with the City of Kent during the permitting process. A Wetland Buffer Enhancement/Restoration Plan is being prepared by Anchor QEA, L.L.C. (Anchor) in coordination with the City of Kent and will be approved by Ecology prior to mobilization to the Site. Wetland buffer enhancement will occur in wetland buffer areas impacted by the excavation. The proposed wetland buffer enhancement/restoration for Wetland I includes planting species commonly found in wetland buffer habitats of the Pacific Northwest and removing invasive species. The Wetland Buffer Enhancement/Restoration Plan will include scheduled inspections to confirm the survival of the plantings.

5.3.8 Property Use Restrictions

Following the completion of the cleanup action, the restrictive covenant currently attached to the deed will no longer be applicable and will be removed. A copy of the existing restrictive covenant is included as Appendix G. As-built details of the clay barrier, interceptor drain, and backfilled excavation will be filed and an easement will be recorded for the critical areas and critical area buffers as required by the City of Kent. The easement will be prepared in accordance with the City of Kent requirements.

6.0 SAMPLING AND ANALYSIS PLAN

This section provides specific details pertaining to soil and surface water sampling and analysis for the cleanup action at the Site and meets the requirements for a Sampling and Analysis Plan as defined in WAC 173-340-820. This section summarizes the procedures to be followed for soil sample collection and analysis, and compliance monitoring of surface water following the excavation activities.

Slag containing lime ash is defined as the IHS that will be used to guide the excavation. The slag is granular, coarse-grained, reddish grey to grey and contains a pH between 11.9 and 12.4 (SECOR 1992). The native silt underlying the slag is non-granular, fine- to very fine-grained, tan to light brown, and has a pH below 8.5. Performance monitoring soil samples collected during the cleanup action will be observed for visual evidence of slag versus native soil. Performance soil samples will be collected from the bottom of the excavation and analyzed for pH.

6.1 FIELD-SCREENING AND PERFORMANCE MONITORING

The objective of performance monitoring of soil is to confirm that the slag has been removed to the underlying native soil to guide the excavation. The objective of performance monitoring of surface water is to confirm that surface water with a pH above 8.5 does not discharge from the Site during the excavation. Performance monitoring will be conducted throughout the excavation process to assist in segregating clean overburden material from the slag, to confirm that the slag has been removed to the underlying native soil, and to confirm that surface water with a pH above 8.5 does not discharge from the Site.

Field-screening will consist of visual observation of the slag-native soil contact and collection of soil samples on 25 foot centers from the limits of the excavation based on the visual observations. If no slag is present based on visual observation, performance monitoring soil samples will be collected according to the procedure outlined in the following sections. Performance monitoring of surface water will consist of collecting surface water samples for analysis for pH during the excavation from locations where water is flowing off the Site to ensure the water has a pH below 8.5. Samples of water that accumulates within the excavation area will be collected for analysis to determine whether the water requires treatment and disposal to the sanitary sewer system.

Field-screening will be performed by visually observing the physical characteristics of the soil to determine whether the soil consists of slag or is native silt. The slag is distinct and unique from the overburden and underlying silt. The overburden material is primarily silty sand to sandy silt and tan to dark brown in color. The underlying native soil is silty and tan to light brown.

The excavation will be observed for evidence of slag material, which consists of the following:

- Granular, coarse-grained to sand-size material;
- Dense, concrete-like cobbles;

- White powder or large porous black cobbles; and
- Debris such as concrete, bricks, or rebar.

To confirm that surface water with a pH above 8.5 is not discharging from the Site, performance surface water samples will be collected and field-tested for pH using an Oakton pH 310 series hand-held meter, as described in the following sections.

6.2 SOIL PERFORMANCE SAMPLING FREQUENCY AND LOCATIONS

The excavation will be observed for evidence of slag material as outlined above. Performance soil samples will be collected at the limits of the excavation once visible evidence indicates that the slag has been removed and pH testing indicates the slag has been removed.

The field personnel will establish a 25- by 25-foot grid within the excavation area (Figure 7). At a minimum, performance soil samples will be collected from the bottom layer of the overburden and from the native soil underlying the slag at a rate of one grab soil sample within each grid. The number of performance soil samples will depend on the final excavation limits. In addition, samples will be collected from the top, middle, and bottom thirds of the side slopes of the excavation along lines on 25 foot centers or less.

The performance level for pH in soil is 8.5. Excavation will continue until the pH of soil is below 8.5. Overburden soil with a pH below 8.5 will be reused as backfill.

6.2.1 Soil Sample Collection and Handling Procedures

Soil samples collected for field-screening of pH will adhere to the following procedure that is in general accordance with EPA Method 9045D, which is included in Appendix H:

- The soil samples will be collected directly from the limit of the excavation using either a stainless steel or plastic sampling tool. All non-dedicated sampling equipment will be decontaminated between uses, as appropriate.
- Each soil sample will be transferred immediately into laboratory-supplied 4 ounce sample container and filled half way. Stones will be removed and soil clumps will be crushed to prevent damage to the pH meter.
- Sample collection information will be documented during soil sampling, including at a minimum: sample depth; Unified Soil Classification System description; soil density (borings only), color, moisture, and occurrence of groundwater; and physical indications of slag (e.g., color, presence of slag).
- Twenty grams of soil will be weighed and mixed with 20 ml of reagent-grade deionized water in a four ounce jar. Accuracy of the soil mass will be that which can be achieved by a laboratory scale with a minimum gradation of 0.1 gram. Accuracy of the water volume will be that which can be achieved with a graduated cylinder with a minimum gradation of 0.1 ml. Greater masses of soil may be used so long as the ratio of the mass of soil to the mass of water remains 1:1.

- The four ounce jar will be covered and shaken or stirred continuously for a minimum of 5 minutes to mix the soil slurry and the mixture allowed to settle and equilibrate for a minimum of 10 minutes following cessation of shaking or stirring. After 10 minutes pH readings will be taken every 10 minutes until two successive pH readings are less than 8.5 or until the pH is considered 8.5 or greater. If a pH of less than 5.5 is measured, Ecology will be notified and appropriate measures discussed.
- If there is a limited clear aqueous phase, the sample may be filtered and the aqueous phase retained for pH measurement with an Oakton pH 310 series handheld meter.
- The pH meter electrode will be immersed just below the surface into the aqueous phase of the soil slurry. The stabilized pH value and temperature will be recorded.
- The electrode must be rinsed thoroughly and dried before the next sample is analyzed.
- Each sample container will be labeled with the media, date, time sampled, and sample identification.
- Samples will be stored in a cooler until the end of the day.
- The sample location within the sample grid will be documented using a measuring tape or other measuring device, and the soil sample location will be plotted on a scaled map.

6.3 SURFACE WATER PERFORMANCE SAMPLING FREQUENCY AND LOCATIONS

Surface water samples will be monitored daily during excavation activities at four locations outside the excavation area currently designated as the discharge culvert north of the Site across 218th Street, the discharge culvert to the western boundary of the Site near 90th Avenue South, the seep location near sump 3, and the southern end of the drainage ditch (Figure 6). Surface water samples will also be collected from standing water that accumulates within the excavation area. If any of the surface water has a pH greater than 8.5 then the water will be collected, and treatment and disposal to the sewer system will be necessary.

6.4 SURFACE WATER SAMPLE COLLECTION AND HANDLING PROCEDURES

The following surface water samples procedures will be used for field-screening of pH:

- The surface water samples will be collected in a laboratory supplied sample container.
- Sample collection information will be documented during surface water sampling, including at a minimum: sample location, time.
- The Oakton pH 310 series handheld meter electrode will be immersed just below the surface into the liquid and the stabilized pH value and temperature will be recorded.
- The electrode will be rinsed thoroughly and dried before the next sample is analyzed.
- Samples will be stored in a cooler until the end of the day and discarded to the water treatment system.

All non-reusable sampling supplies and health and safety supplies and equipment will be discarded in a waste dumpster at the Site.

6.5 PERFORMANCE SAMPLE IDENTIFICATION

Each performance soil sample will be assigned a unique sample identifier and number based on the location within the excavation. The soil sample number will include the alphanumeric grid designator from where the soil sample was collected, a consecutive number, and the date. For example, a soil sample collected on August 15th, 2010 that was the third sample collected from grid B10 would be labeled "B10-03-081510".

Each surface water sample will be assigned a unique sample identifier and number. There are five surface water sample locations identified as SW1 through SW5 (Figure 6). Surface water samples collected will included the identifier from where the sample was collected, a consecutive number, and the date. For example, a sample collected on September 5th, 2010 that was the tenth sample collected from SW3 would be labeled "SW3-10-090510". Surface samples collected within the excavation will include the alphanumeric grid designator from where the sample was collected instead of the location identifier of SW1 through SW5.

6.6 FIELD EQUIPMENT CALIBRATION

Performance soil and surface water samples will be analyzed for pH with an Oakton pH 310 series handheld meter. To ensure accurate readings, the meter will be calibrated at the beginning of the day and undergo continuing calibration verification.

Calibration protocols will be performed in accordance to the manufacturer's instructions. At a minimum, a two point calibration will be performed using internationally-recognized buffer standards. The buffers selected will bracket the expected pH range and will be approximately three pH units or more apart. The slag material is anticipated to have a pH range between 11.9 to 12.4 and native soil between 6.0 and 7.5. Buffer standards are available for a pH of 4.01, 7.00, 10.00, and 12.45 and will be chosen appropriately depending on the performance monitoring scope for each day's activities. To verify the calibration was performed properly, the pH of a buffer that was not used in the initial calibration, but falls within the calibration range should be measured. If the result is greater than 0.05 pH units from its expected value, recalibration is required. Buffer standards will be replaced at least once a month.

During performance monitoring, the pH meter will undergo continuing calibration verification after every 10 samples and at the end of each day. The pH probe will be submerged into one of the fresh buffer standards that is close to the pH range of the samples being analyzed. The result must be within 0.05 pH units of the expected value. If the discrepancy is larger than 0.05 pH units the pH probe should be re-calibrated according to the manufacturer's instructions and samples bracketed by the failing calibration verification must be reanalyzed.

The Oakton pH 310 series meter is capable of taking measurements with automatic temperature compensation. Performance monitoring will occur with the automatic temperature compensation option turned on to avoid temperature fluctuations that would cause measurement error.

6.7 QUALITY ASSURANCE/QUALITY CONTROL

Soil and surface water QA/QC samples will be collected and analyzed with the other samples to provide for data validation during the course of the cleanup action. The QA/QC samples will include field duplicates. The exact number of QA/QC samples will depend on the number of samples collected during the slag removal action. The anticipated frequency is 1 QA/QC sample per 20 samples collected for pH analysis (i.e., 5 percent).

The QA/QC samples will be assigned a unique sample identifier. The sample number will include the prefix "FD" for field duplicate, the alphanumeric grid designator from where the soil sample was collected, a consecutive number, and the date. For example, a field duplicate collected on August 9, 2010 that was collected from grid C3 would be labeled "FD-C3-02-080910."

6.8 CONFIRMATIONAL MONITORING

The following confirmational monitoring requirements will confirm that slag or soil will not lead to a pH greater than 8.5 or less than 5.5 in surface water:

- One soil sample collected from each 25-foot grid from the bottom of the overburden and the limit of the slag removal excavation.
- No visible evidence of slag within the overburden used for backfill or within the native soil underlying the slag.
- Performance soil samples with a pH below 8.5 and above 5.5.

6.9 COMPLIANCE MONITORING

Following completion of the cleanup action at the Site, compliance monitoring will be performed to ensure that the cleanup levels for pH in surface water have been met at the points of compliance. Surface water will be monitored at five locations: the discharge culvert north of the Site across South 218th Street; the discharge culvert on the west boundary of the Site near 90th Avenue South; the seep location near sump 3; the southern end of the east drainage ditch; and the southern end of the west drainage ditch, or as determined after completion of the excavation (Figure 6). After completion of the cleanup action, surface water samples from each of the five monitoring locations will be collected starting in November and after sufficient rain has fallen that the seep location is active and within three days following a significant (e.g. greater than 0.1 inches in 24 hours) rain event. Surface water samples will be field tested for pH by using an Oakton pH 310 series hand-held meter calibrated per the manufacturer's instructions. After the first sampling event, a three additional series of surface water samples will be collected following a significant rain events spaced at least six weeks apart. Compliance monitoring will continue for up to one year or until four consecutive sampling events confirm that the cleanup levels ($5.5 < pH < 8.5$) have been met. Alternative options for additional cleanup will be discussed with Ecology if the pH is out of range after the one year time period. After compliance monitoring has demonstrated that cleanup levels have been met, the water treatment system will be decommissioned upon Ecology approval.

7.0 DOCUMENTATION REQUIREMENTS

Documentation of the cleanup action is required to meet MTCA requirements. After client review and approval, applicable and relevant documentation generated for the cleanup action will be submitted to Ecology. Copies of the documents will be retained in Farallon's files for a minimum of 3 years after completion of the cleanup action.

7.1 CONSTRUCTION PLANS AND SPECIFICATIONS

The construction plans and specifications for the cleanup action to be completed at the Site are presented in Appendix D. As required by WAC 173-340-400(4)(b), the documents include the following information, as applicable:

- A description of the work;
- A Site location map and a map of existing conditions; and
- Detailed plans, procedures, and specifications for the work.

A Professional Engineer licensed in the State of Washington will approve the plans and specifications listed above prior to commencement of the work. Ecology approval also is required.

7.2 DOCUMENTATION MANAGEMENT

The document control system to be implemented during the cleanup action includes the following elements, as appropriate: field documentation, boring and well logs, well purging and sampling documentation, compaction documentation, sampling event data documentation, Chain of Custody forms, waste inventory documentation, waste management labels, and sample labels. A sample of each of these documents is provided in Appendix I. Disposal manifests for the wastes generated at and disposed of from the Site will be maintained and submitted with project documentation.

7.3 WEEKLY REPORTING

Daily field reports and field notebooks documenting the cleanup action will be completed by Farallon field personnel. Copies of the field reports will be kept on the Site during cleanup activities, with originals retained in the project file at the Farallon office.

Monthly progress reports will be submitted to Ecology via e-mail correspondence throughout the duration of the project. These reports will include a status update of the slag removal, available analytical data from performance and compliance sampling, available waste manifests, and any deviation from the Cleanup Action Work Plan or supporting documents (e.g., HASP) due to changes associated with Site conditions. The submittal schedule may be amended with Ecology approval.

7.4 MANIFEST AND WASTE DISPOSAL TRACKING

Specific documentation requirements will be met for the transport and disposal of soil generated from the cleanup action. The waste disposal tracking documentation requirements for soil include collecting copies of transporter bills of lading for each load of soil removed from the Site. The corresponding waste disposal facility receiving documents will be collected and compared to bills of lading to confirm disposal.

7.5 FINAL CLOSURE/AS-BUILT REPORT

A final Closure Report, including as-built drawings, will be prepared following completion of the excavation, restoration, and cleanup activities. At a minimum, the Closure Report will include:

- A description of the Site preparation activities and soil excavation;
- Documentation of waste disposal tracking for the excavated soil;
- A summary of the performance sampling results for soil and surface water collected during the cleanup action, including summary tables;
- Documentation of soil compaction results:
- A written opinion of the Professional Engineer to confirm that the cleanup action was completed in substantial compliance with the Work Plan; and
- A figure depicting the limits of the excavation, the soil and surface water sample locations, and pH sample results.

8.0 QUALITY ASSURANCE PROJECT PLAN

The Quality Assurance Project Plan presented in this section identifies the QA/QC protocols to be implemented in association with the Sampling and Analysis Plan for the Site. Specified in this section are the DQOs and the criteria for the sample collection and analysis to be conducted during the cleanup action to ensure that the DQOs are achieved. These criteria include sampling and analytical procedures, data management, QA/QC procedures, performance audits, data assessment, and corrective action procedures. Both quantitative and qualitative measures of data quality are included to ensure that the DQOs for the cleanup action are achieved.

8.1 DATA QUALITY OBJECTIVES

The DQOs for this project are to develop and implement procedures to ensure that data are of sufficient quality to accurately identify the cleanup of the COC at the Site. Observations and measurements will be made and recorded in such a manner as to yield results representative of the media and conditions observed and/or measured. The quality of the analytical data will be assessed by precision, representativeness, completeness, and comparability. Definitions of these parameters and the applicable quality control procedures are described in sections 8.1.1 through 8.1.4 below. Quantitative DQOs for applicable parameters (e.g., precision, completeness) are provided following each definition.

8.1.1 Precision

Precision measures the reproducibility of measurements under a given set of conditions. Specifically, precision is a quantitative measure of the variability of two or more measurements compared to their average values. Precision is calculated from results of duplicate sample analyses. Precision is quantitatively expressed as the relative percent difference (RPD), and is calculated as follows:

$$RPD = \frac{(C_1 - C_2)}{(C_1 + C_2)/2} x\,100$$

Where:

C_1 = the larger of the two duplicate results (i.e., the highest detected concentration); and

C_2 = the smaller of the two duplicate results (i.e., the lowest detected concentration).

Quantitative RPD criteria for duplicate results have been developed by EPA for inorganic chemical analysis. The criteria are ±20 percent for water samples, and ±35 percent for soil. There are no specific RPD criteria for organic chemical analyses. Analytical data collected for the cleanup action at the Site will be composed primarily of analyses for pH.

8.1.2 Representativeness

Representativeness is a qualitative measure of how closely the measured results reflect the actual concentration or distribution of the constituent concentrations in the matrix sampled. The

sampling plan design, sampling collection techniques, sample handling protocols, sample analysis methods, and data review procedures have been developed to ensure that the results obtained are representative of Site conditions.

8.1.3 Completeness

Completeness is defined as the percentage of measurements judged to be valid. Results will be considered valid if they are not rejected during data validation. Completeness is calculated as follows:

$$Completeness = \frac{(Number\ of\ Valid\ Measurements)}{(Total\ Number\ of\ Measurements)} x\ 100$$

The target completeness goal for this work will be 90 percent for a given analysis.

8.1.4 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. Use of standard EPA and Ecology methods and procedures for both sample collection and sample analysis will make the data collected during the cleanup action comparable to data collected during previous investigations by Farallon.

8.2 CALIBRATION PROCEDURES

Procedures that will be used to calibrate the field equipment used during performance monitoring are described in Section 6, Sampling and Analysis Plan. All calibration protocols will be performed in accordance to the manufacturer's instructions. Calibration procedures will be modified if necessary to satisfy amendments to current regulations, methods, or guidelines.

8.3 SAMPLING PROCEDURES

Procedures that will be used to collect samples are described in Section 6, Sampling and Analysis Plan. All sampling protocols will be performed in accordance with generally accepted environmental practices and will meet or exceed current regulatory standards and guidelines. Sampling procedures may be modified if necessary to satisfy amendments to current regulations, methods, or guidelines.

8.4 ANALYTICAL PROCEDURES

Chemical and physical analyses to be conducted during the cleanup action are discussed in Section 6, Sampling and Analysis Plan. The container types, holding times, analytical methods, practical quantitation limits, and method detection limits will be in accordance with current regulatory guidelines, and will be modified if necessary to satisfy amendments to current regulations, methods, or guidelines.

8.5 DATA MANAGEMENT, REDUCTION, REVIEW, AND REPORTING

This section outlines the procedures to be followed for the inventory, control, storage, and retrieval of data collected during performance of the cleanup action. The procedures are designed to ensure that the integrity of the collected data is maintained for subsequent use. Moreover, project-tracking data (e.g., schedules, progress reports) will be maintained to monitor, manage, and document the progress of the cleanup action.

Farallon will maintain the project files according to the procedures outlined in this document. Data generated during field activities and by laboratory analyses will be submitted directly to Farallon. Documentation from the analytical laboratories will be maintained in Farallon's project file for purposes of validating analytical data collected during the cleanup action.

8.5.1 Data Types

A variety of data will be generated by this cleanup action, including sampling and analytical data, progress reports, and calculation results based on mathematical expressions. These data will be scrutinized and maintained in a manner consistent with the procedures described below and current and applicable regulatory requirements.

8.5.2 Data Transfer

Procedures controlling the receipt and distribution of incoming data packages to Farallon and outgoing data and reports from Farallon are outlined below.

8.5.2.1 Receipt of Data and Reports

Incoming documents will be date-stamped, and filed as follows:

- Correspondence and transmittal letters for reports, maps, and data will be filed chronologically; and
- Data packages such as those from field personnel, contractors, and surveyors (e.g., survey data and geologic observations) will be filed by project number, subject heading, and date.

8.5.2.2 Outgoing Data and Reports

A transmittal sheet will be attached to outgoing project data and reports. A copy of each transmittal sheet will be kept in the project file. The Project Manager and Project QA/QC Officer will review outgoing correspondence, reports, maps, data, and other documentation. For distribution to multiple parties, the appropriate number of copies will be made and distributed. Original documents will not be distributed to project personnel.

8.5.3 Data Inventory

Procedures for the filing, storage, and retrieval of project data and reports are discussed below.

8.5.3.1 Document Filing and Storage

Project files and raw data files will be maintained at the Farallon office. Files will be organized chronologically by subject heading and maintained by the Document Control Clerk at Farallon.

8.5.3.2 Access to Project Files

Access to project files will be controlled by the Document Control Clerk and limited to the property owner, authorized representatives of the property owner, Ecology, and Farallon personnel. If a file is removed for use, a sign-out procedure will be used by the Document Control Clerk to track custody.

If a document is to be used for a long period, a copy of the document will be made, and the original will be returned to the project file.

8.5.4 Data Reduction and Analysis

The Project Manager and Project QA/QC Officer are responsible for data review and validation. The particular type of analyses and presentation method selected for any given data set will depend on the type, quantity, quality, and prospective use of the data. Analysis of project data is likely to require data reduction for preparation of tables, charts, and maps. To ensure that data are accurately transferred during the reduction process, the Project QA/QC Officer or designee (someone other than the person who prepared the map, table, or chart) will check all reduced data. Any incorrect transfer of data will be highlighted and corrected.

8.5.4.1 Data Reporting Formats

The physical and chemical characterization information developed during implementation of the cleanup action will be presented in the Closure Report in the following format:

- **Summary Tables.** Sampling and analysis data for each media will be sorted several ways, including by sample point number, constituent, and date of sample collection. The parameters chosen for sorting will depend on the determination of the most appropriate format and the utility of that format in demonstrating the physical and chemical characteristics of interest.
- **Maps.** Plan maps needed to illustrate results of the cleanup action will be assembled or prepared. They may include but are not limited to plan maps of the Site showing chemical concentrations for individual chemicals and groups of chemicals, groundwater level maps, and the extent of excavated areas.
- **Cross-Sections.** Vertical profiles, or cross-sections, may be generated from field data to display Site stratigraphy or other aspects of the cleanup action.
- **Environmental Information Management.** The pH data collected during the cleanup action will be submitted in both printed and electronic form capable of being transferred into Ecology's data management system, consistent with procedures specified by Ecology Toxic Cleanup Program Policy 840. As required

by Ecology, a study name will be assigned for the project which will be Slag Disposal Beckwith.

8.5.5 Telephone Logs, Meeting Notes, and Field Notes

The Project Manager will maintain notes from project meetings and telephone conversations in the project file. Project field personnel will submit field notes to the Project Manager throughout the field program for review and filing in the project file.

8.6 QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES

The QA/QC procedures for the cleanup action include the field and data quality control procedures described below.

8.6.1 Field Quality Control

Field quality control samples (e.g., field duplicate samples) to be collected for the cleanup action are described in Section 6, Sampling and Analysis Plan.

8.6.2 Data Quality Control

All data will undergo QA/QC evaluation by Farallon for both analytical data and field data. The analytical data will be validated at the Farallon office under supervision of the Project QA/QC Officer, as described in Section 8.5.4. The following types of quality control information will be reviewed, as appropriate:

- Method deviations;
- Method reporting limits;
- Duplicate samples (precision);and
- Percent completeness.

Farallon will review field records and results of field observations and measurements to ensure that procedures were properly performed and documented. The review of field procedures will include:

- Completeness and legibility of field logs and sampling forms;
- Preparation and frequency of field quality control samples; and
- Equipment calibration and maintenance.

8.7 PERFORMANCE AND SYSTEM AUDITS

Performance audits will be completed for both sampling and analysis work. Field performance will be monitored through regular review of field notebooks, sampling forms, and field duplicate sampling and analysis. The Project Manager and/or the Project QA/QC Officer also may perform periodic on-Site review of work in progress.

8.8 DATA ASSESSMENT PROCEDURES

The Project Manager and Project QA/QC Officer are responsible for data review and validation. Upon receipt of each performance monitoring sampling results, calculations using the equations presented for precision and completeness will be performed. Results will be compared to the qualitative DQOs.

8.9 CORRECTIVE ACTION

Corrective action will be the joint responsibility of the Project Manager and the Project QA/QC Officer. Corrective procedures may include:

- Identifying the source of the violation;
- Re-sampling and analyzing;
- Evaluating and amending sampling and analytical procedures; and/or
- Qualifying data to indicate the level of uncertainty.

During field sampling activities, the Project Manager and field team members will be responsible for identifying and correcting protocols that may compromise the quality of the data. The Project Manager and/or Project QA/QC Officer will be notified verbally to obtain approval to proceed prior to implementing a corrective action. All corrective action taken will be documented in the Field Report form.

9.0 DELIVERABLES AND SCHEDULE

This section discusses the documentation to be provided for the cleanup action, including Progress Reports, Final Closure/As-Built Report, and De-Listing Petition. The anticipated schedule for the project is also discussed in the following section.

9.1 PRE-MOBILIZATION DOCUMENTS

Prior to installation of erosion control features (Line 46 on the schedule provided in Appendix J), the Ecology approval will be obtained for the following substantive requirements:

- City of Kent Grading and Fill Permit
- City of Kent Street Use Permit
- City of Kent Wetland Buffer Mitigation Requirements

In addition, prior to installation of erosion control features (Line 46 on the schedule provided in Appendix J, a Construction Stormwater General Permit will be obtained.

9.2 PROGRESS REPORTS

Progress reports will be prepared on a monthly basis and submitted via e-mail to Ecology by the 10th of the month. Progress reports will include a summary of field activities, meetings, and upcoming or submitted deliverables. The submittal schedule may be amended with Ecology approval.

9.3 FINAL CLOSURE/AS-BUILT REPORT

A final Closure Report, including as-built drawings, will be prepared following completion of the excavation, restoration, and cleanup activities. At a minimum, the Closure Report will include:

- A description of the Site preparation activities and soil excavation;
- Documentation of waste disposal tracking for the excavated soil;
- Documentation of field compaction testing results;
- A summary of the performance sampling results for soil and surface water collected during the cleanup action, including summary tables;
- A written opinion of the Professional Engineer to confirms that the cleanup action was completed in substantial compliance with the Work Plan; and
- A figure depicting the limits of the excavation, the soil and surface water sample locations, and pH sample results.

9.4 DE-LISTING PETITION

Following the cleanup action and submittal of the Final Closure/As-Built Report, a de-listing petition will be prepared and submitted to Ecology requesting that the Site be removed from the Ecology Confirmed and Suspected Contaminated Sites list.

9.5 EASEMENT FILING

As discussed in Section 5.3.8, following the completion of the cleanup action, the restrictive covenant currently attached to the deed will no longer be applicable and will be removed. As-built details of the clay barrier and interceptor drain will be filed and an easement will be recorded for critical areas and critical area buffers as required by the City of Kent. The easement will be prepared in accordance with the City of Kent requirements.

9.6 SCHEDULE

A summary of the schedule is provided below. The detailed schedule is provided in Appendix J.

9.6.1 Construction

- Contractor bidding and selection process: May 2010
- Excavation preparation activities: July 2010
- Soil excavation: August and September 2010
- Backfill excavation and Site restoration: October and November 2010

9.6.2 Compliance Monitoring

- First event: November 2010
- Subsequent events spaced at least six weeks apart and after a significant rain event.

9.6.3 Final Closure/As-Built Report

- Prepare report: December 2010 and January 2011
- Submit draft report to Ecology: March 2011
- Submit final report to Ecology: 45 days after receipt of Ecology's comments on draft report.

9.6.4 De-Listing Petition

- Submit Petition: 60 days after confirmational monitoring has shown $5.5 < pH < 8.5$ for four consecutive sampling events.

10.0 REFERENCES

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Table 1
Test Pit Investigation - Slag Analytical Results
Kent Slag Site
Kent, Washington
Farallon PN: 831-022

Sample Number	Test Pit Identification	Sample Date	Depth[1] (feet)	Analytical Results (milligrams/kilogram)[2]							
				Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
TP8-8	TP8	1/25/2010	8	<13	65	<0.63	970	190	<0.31	<13	<1.3
TP9-8	TP9	1/25/2010	8	<13	62	<0.63	950	32	<0.32	<13	<1.3
TP10-5	TP10	1/25/2010	5	<15	<3.8	<0.77	13	18	<0.38	<15	<0.77
TP11-8	TP11	1/26/2010	8	<15	110	<0.74	610	27	<0.37	<15	<0.74
TP12-5	TP12	1/26/2010	5	<13	94	<0.67	510	40	<0.33	<13	<0.67
MTCA Cleanup Levels				**20 [4]**	**16,000 [5]**	**2 [4]**	**19 [4, 6]/2,000 [4, 7]**	**250 [4]**	**2 [4]**	**400 [5]**	**400 [5]**

Sample Number	Test Pit Identification	Sample Date	Depth[1] (feet)	Analytical Results (milligrams/liter)[3]							
				Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
TP8-8	TP8	1/25/2010	8	<0.40	0.29	<0.20	<0.040	<0.20	<0.0050	<0.40	<0.020
TCLP Limits [8]				**5.0**	**100**	**1.0**	**5.0**	**5.0**	**0.2**	**1.0**	**5.0**

NOTES:

Results are for solid slag material

Results in **bold** denote concentrations above applicable cleanup levels.

< denotes analyte not detected at or above the reporting limit listed.

MTCA = Washington State Model Toxics Control Act Cleanup Regulation

TCLP = Toxicity Characteristic Leaching Procedure

[1]Depth in feet below ground surface.

[2]Analyzed by U.S. Environmental Protection Agency Method 6010B/7471A.

[3]Analyzed by Toxicity Characteristic Leaching Procedures using U.S. Environmental Protection Agency Method 6010B/7471A.

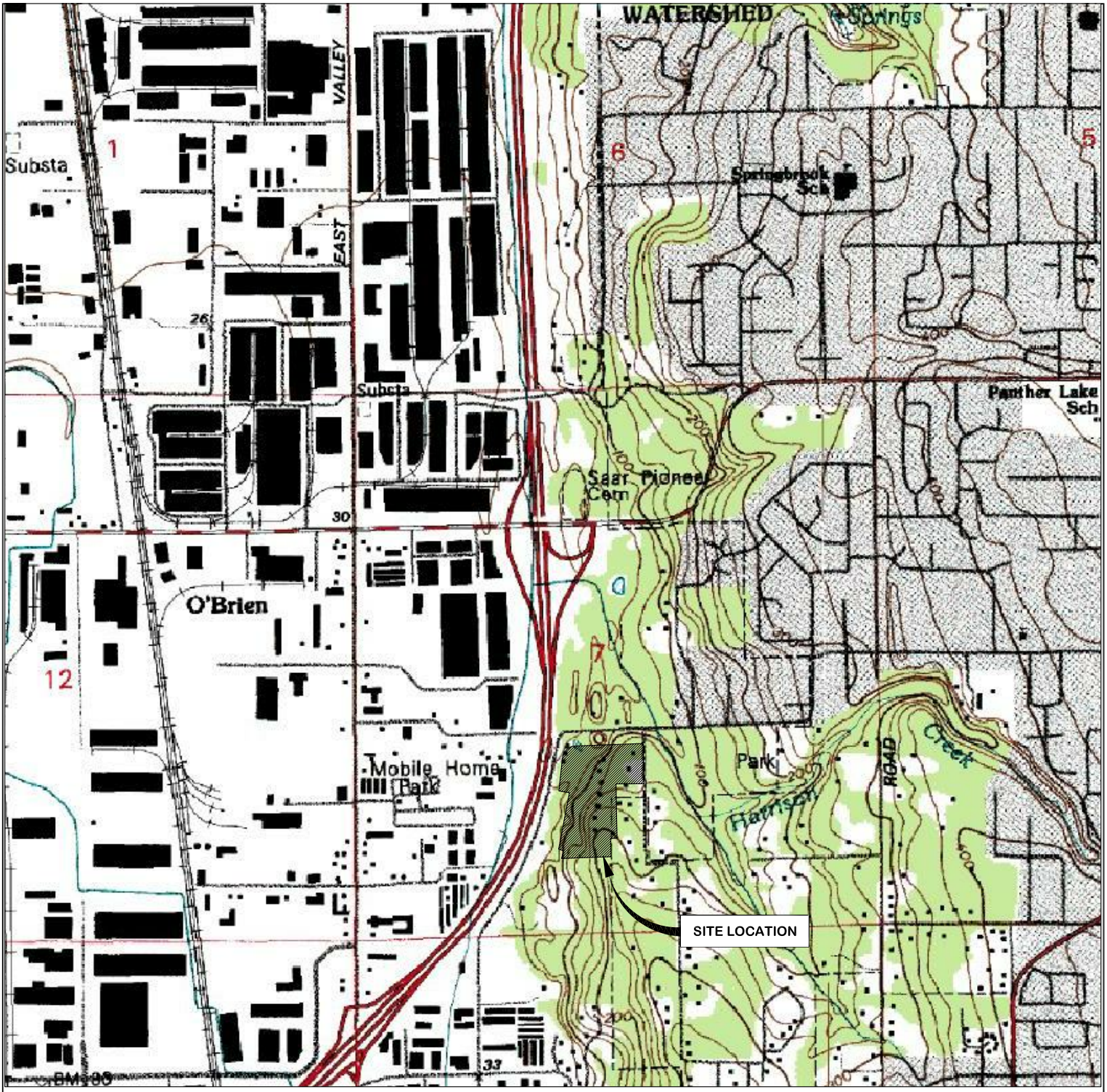
[4]Washington State Model Toxics Control Act Cleanup Regulation Method A Soil Cleanup Levels for Unrestricted Land Uses, Table 740-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, as revised November 2007.

[5] MTCA Cleanup Levels and Risk Calculations Method B for Soil, Unrestricted Land Use.

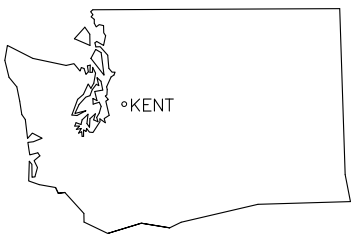
[6] Cleanup level for Chromium VI

[7] Cleanup level for Chromium III

[8] Dangerous Waste Regulations Chapter 173-303-090(8)(c) Toxicity Characteristics List



REFERENCE: 7.5 MINUTE USGS QUADRANGLE KENT, WASHINGTON. DATED 1994



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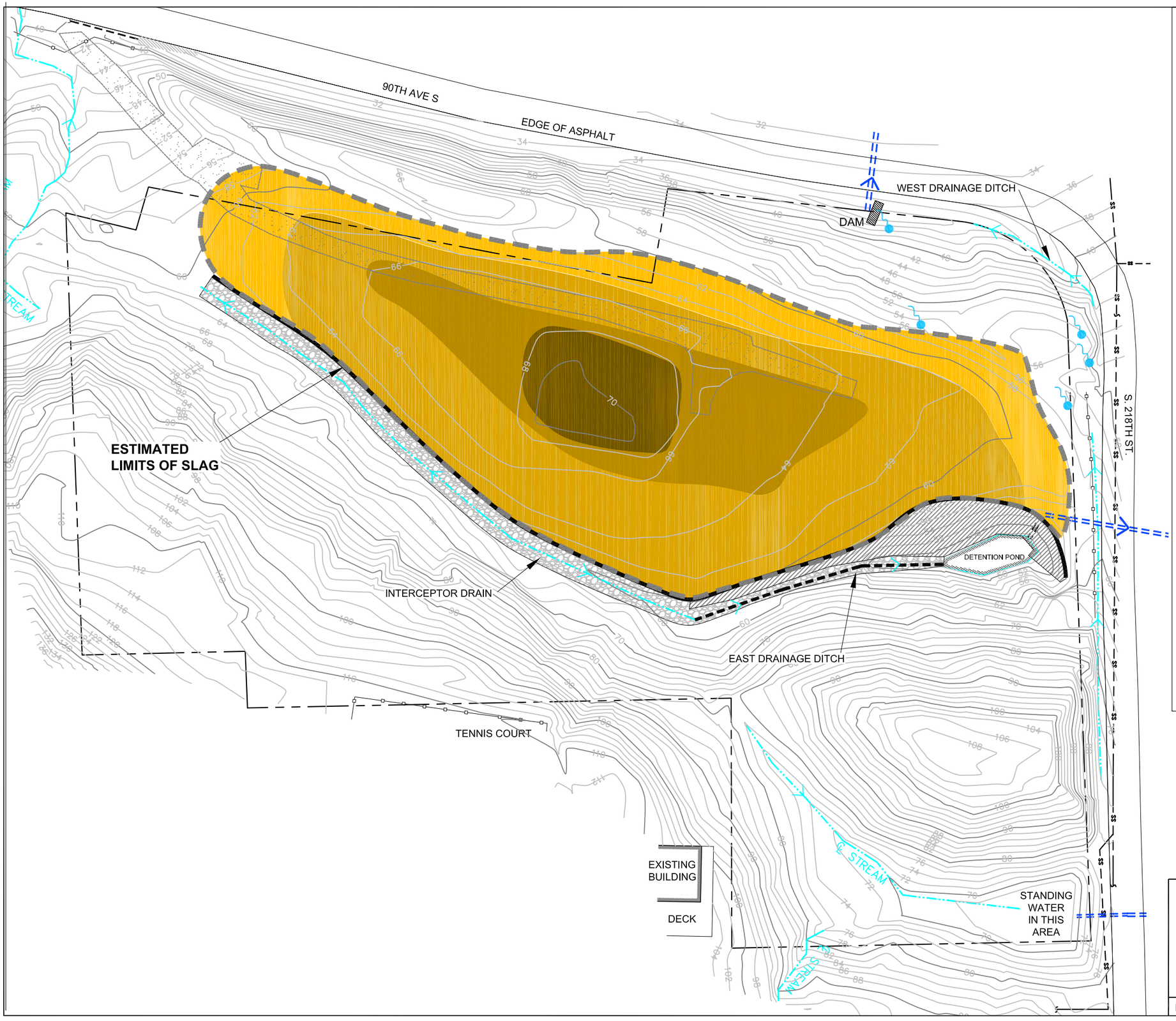
975 5th Avenue Northwest
Issaquah, WA 98027

FIGURE 1

SITE LOCATION MAP
SLAG SITE
KENT, WASHINGTON

FARALLON PN: 831-022

Drawn By: DEW	Checked By: JP	Date: 4/6/10	Disk Reference: 831022



LEGEND

- SITE BOUNDARY
- CULVERT
- CENTER LINE OF STORM/DRAINAGE DITCH, FLOW DIRECTION
- SS — SANITARY SEWER CONNECTION
- FENCE
- 60 ml HDPE LINER
- 4" PVC PIPE
- CLAY BARRIER
- PERMEABLE GRAVEL
- EDGE OF WATER
- GRAVEL SURFACE
- SEEP

APPROXIMATE SLAG THICKNESS IN FEET

- <4'
- 4'-8'
- 8'-10'
- 10'-14'

NOTES:

1. TOPOGRAPHIC SURVEY MAP PROVIDED BY PLS, INC. DATED MAY 20, 2009
2. LATERAL EXTENT AND THICKNESS OF SLAG INTERPRETED FROM SECOR 1992 AND 2003.

N

0 60

APPROXIMATE SCALE IN FEET

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Issaquah, WA 98027

FIGURE 2

SITE MAP WITH LATERAL EXTENT AND THICKNESS OF SLAG
SLAG SITE
KENT, WASHINGTON

FARALLON PN: 831-022

Drawn By: DEW	Checked By: AED	Date: 6/15/10	Disk Reference: 831022b

90TH AVE S

EDGE OF ASPHALT

WEST DRAINAGE DITCH

DAM

TP11

TP12

TP10

TP8

TP9

A

A'

ESTIMATED
LIMITS OF SLAG

INTERCEPTOR DRAIN

EAST DRAINAGE DITCH

DETENTION POND

STANDING WATER

℄ STREAM

EXISTING BUILDING

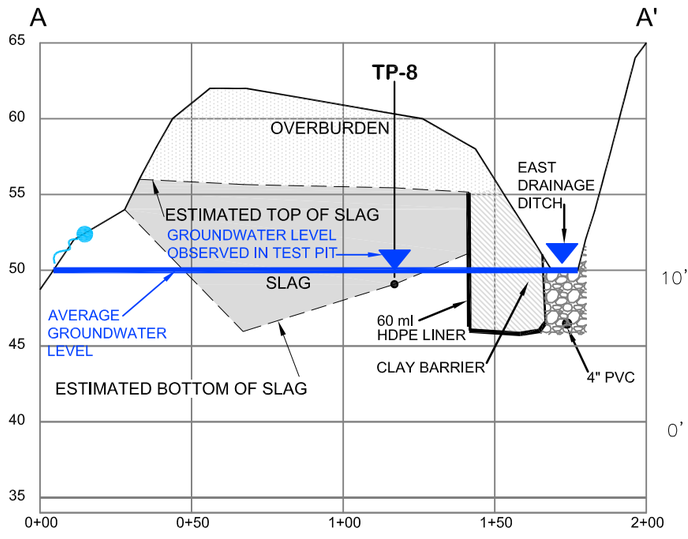
10'
0'
0'
50'

LEGEND

A A'	LINE OF CROSS-SECTION
	SITE BOUNDARY
	CULVERT
	CENTER LINE OF STORM/DRAINAGE DITCH, FLOW DIRECTION
SS	SANITARY SEWER CONNECTION
	FENCE
	60 ml HDPE LINER
	4" PVC PIPE
	CLAY BARRIER
	PERMEABLE GRAVEL
	EDGE OF WATER
	GRAVEL SURFACE
	SEEP
TP-1	FARALLON TEST PIT LOCATION

NOTES:

1. TOPOGRAPHIC SURVEY MAP PROVIDED BY PLS, INC. DATED MAY 20, 2009



0 50
APPROXIMATE SCALE IN FEET

FARALLON CONSULTING
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Issaquah, WA 98027

FIGURE 3

SITE MAP WITH
LINE OF CROSS-SECTION A-A'
SLAG SITE
KENT, WASHINGTON

FARALLON PN: 831-022

Drawn By: DEW	Checked By: AED	Date: 6/15/10	Disk Reference: 831022b

N

M

90TH AVE S

EDGE OF ASPHALT

C

WEST DRAINAGE DITCH

DAM

L

S. 218TH ST.

ESTIMATED
LIMITS OF SLAG

INTERCEPTOR DRAIN

DETENTION POND

I

J

EAST DRAINAGE DITCH

TENNIS COURT

EXISTING
BUILDING

DECK

STANDING
WATER
IN THIS
AREA

D

0 60

APPROXIMATE SCALE IN FEET

LEGEND

- SITE BOUNDARY
- CULVERT
- CENTER LINE OF STORM/DRAINAGE DITCH, FLOW DIRECTION
- FENCE
- 60 ml HDPE LINER
- 4" PVC PIPE
- PRELIMINARY WETLAND BUFFER ZONE
- C — WETLAND BOUNDARY
- CLAY BARRIER
- PERMEABLE GRAVEL
- EDGE OF WATER
- GRAVEL SURFACE
- SEEP

NOTES:

1. TOPOGRAPHIC SURVEY MAP PROVIDED BY PLS, INC. DATED MAY 20, 2009.
2. WETLAND BOUNDARIES WERE PROVIDED IN THE WETLAND TECHNICAL REPORT PREPARED BY ESA ADOLFSON DATED SEPTEMBER 21, 2006.
3. BUFFER ZONE WIDTHS WILL BE CONFIRMED THROUGH THE CITY OF KENT.

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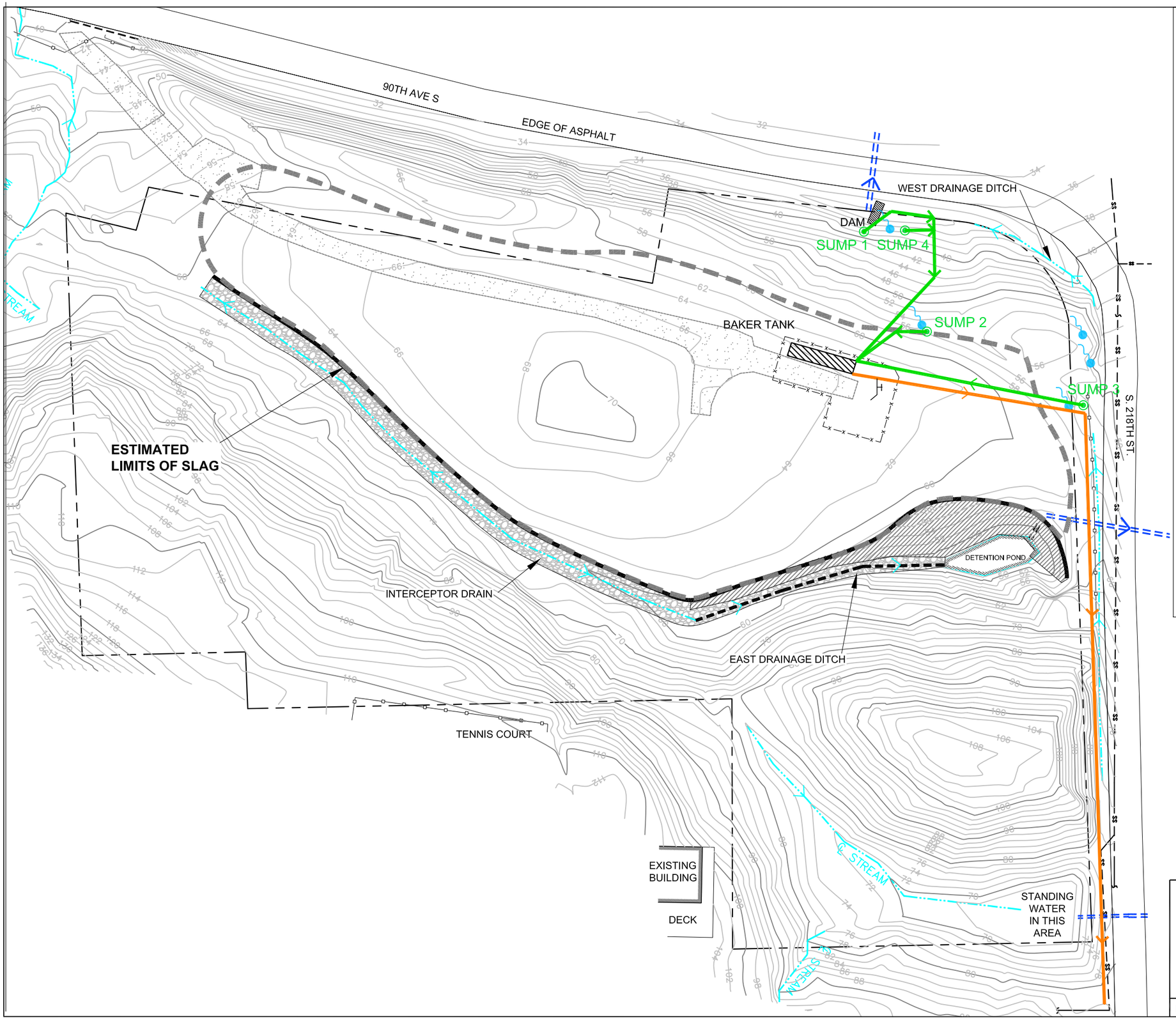
Issaquah, WA 98027

FIGURE 4

SITE MAP WITH
WETLAND BOUNDARIES
SLAG SITE
KENT, WASHINGTON

FARALLON PN: 831-022

Drawn By: DEW	Checked By: AED	Date: 6/15/10	Disk Reference: 831022b



LEGEND

- SITE BOUNDARY
- CULVERT
- CENTER LINE OF STORM/DRAINAGE DITCH, FLOW DIRECTION
- SS — SANITARY SEWER CONNECTION
- FENCE
- 60 ml HDPE LINER
- 4" PVC PIPE
- TEMPORARY FENCE
- WASTEWATER PIPING
- TREATED WATER DISCHARGE PIPING
- CLAY BARRIER
- PERMEABLE GRAVEL
- EDGE OF WATER
- GRAVEL SURFACE
- SUMP
- MONITORING PORT

NOTES:

1. TOPOGRAPHIC SURVEY MAP PROVIDED BY PLS, INC. DATED MAY 20, 2009

N

0 60

APPROXIMATE SCALE IN FEET

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Issaquah, WA 98027

FIGURE 5

SITE MAP SHOWING
WATER TREATMENT SYSTEM
SLAG SITE
KENT, WASHINGTON

FARALLON PN: 831-022

Drawn By: DEW	Checked By: AED	Date: 6/15/10	Disk Reference: 831022b

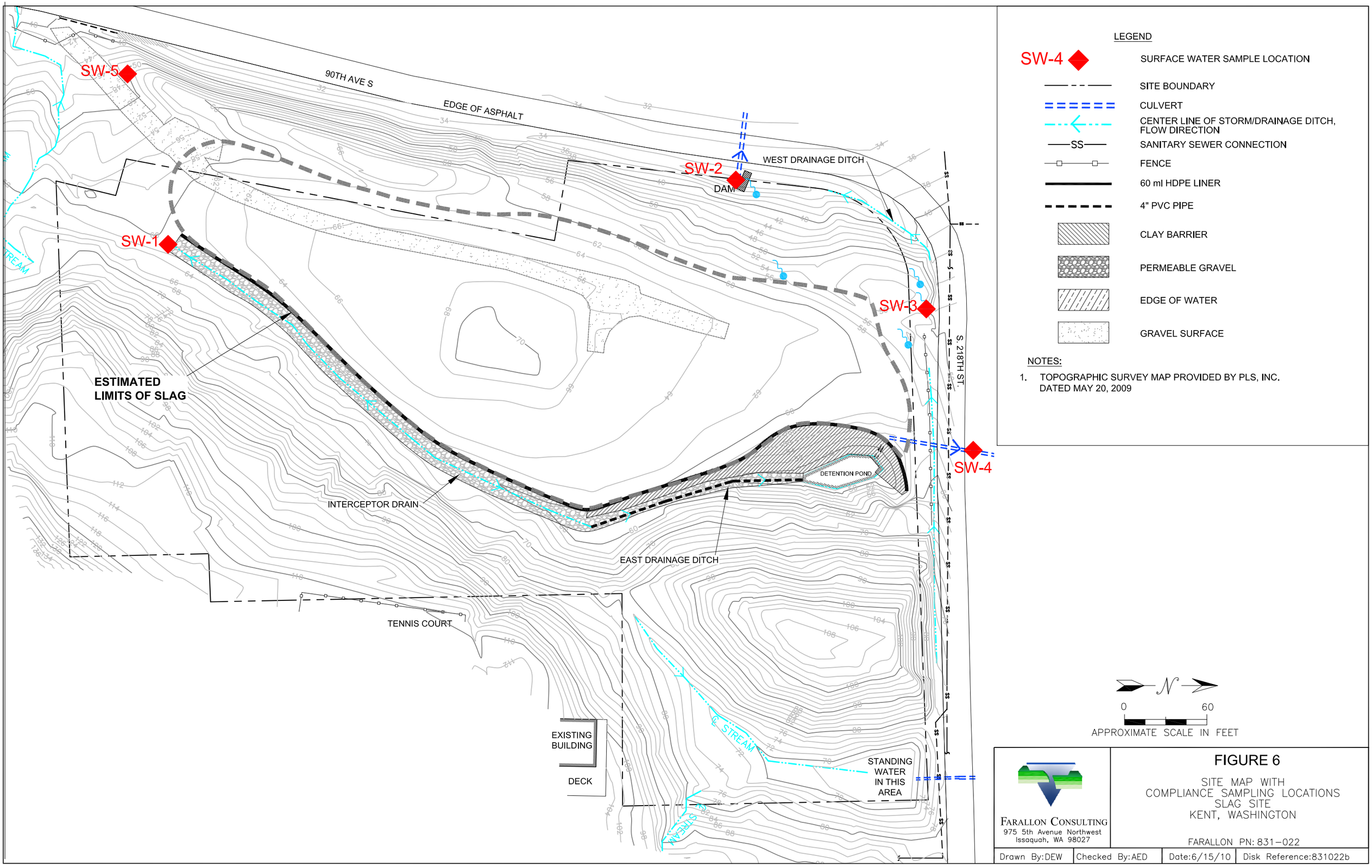

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FIGURE 6

SITE MAP WITH
COMPLIANCE SAMPLING LOCATIONS
SLAG SITE
KENT, WASHINGTON

FARALLON PN: 831-022

Drawn By: DEW	Checked By: AED	Date: 6/15/10	Disk Reference: 831022b

90TH AVE S

EDGE OF ASPHALT

WEST DRAINAGE DITCH

DAM

S. 218TH ST.

STREAM

ESTIMATED
LIMITS OF SLAG

INTERCEPTOR DRAIN

DETENTION POND

EAST DRAINAGE DITCH

TENNIS COURT

EXISTING
BUILDING

DECK

STANDING
WATER
IN THIS
AREA

0 60
APPROXIMATE SCALE IN FEET

LEGEND

- SAMPLING GRID (A / 1)
- SITE BOUNDARY
- CULVERT
- CENTER LINE OF STORM/DRAINAGE DITCH, FLOW DIRECTION
- FENCE
- 60 ml HDPE LINER
- 4" PVC PIPE
- CLAY BARRIER
- PERMEABLE GRAVEL
- EDGE OF WATER
- GRAVEL SURFACE

NOTES:

1. TOPOGRAPHIC SURVEY MAP PROVIDED BY PLS, INC. DATED MAY 20, 2009

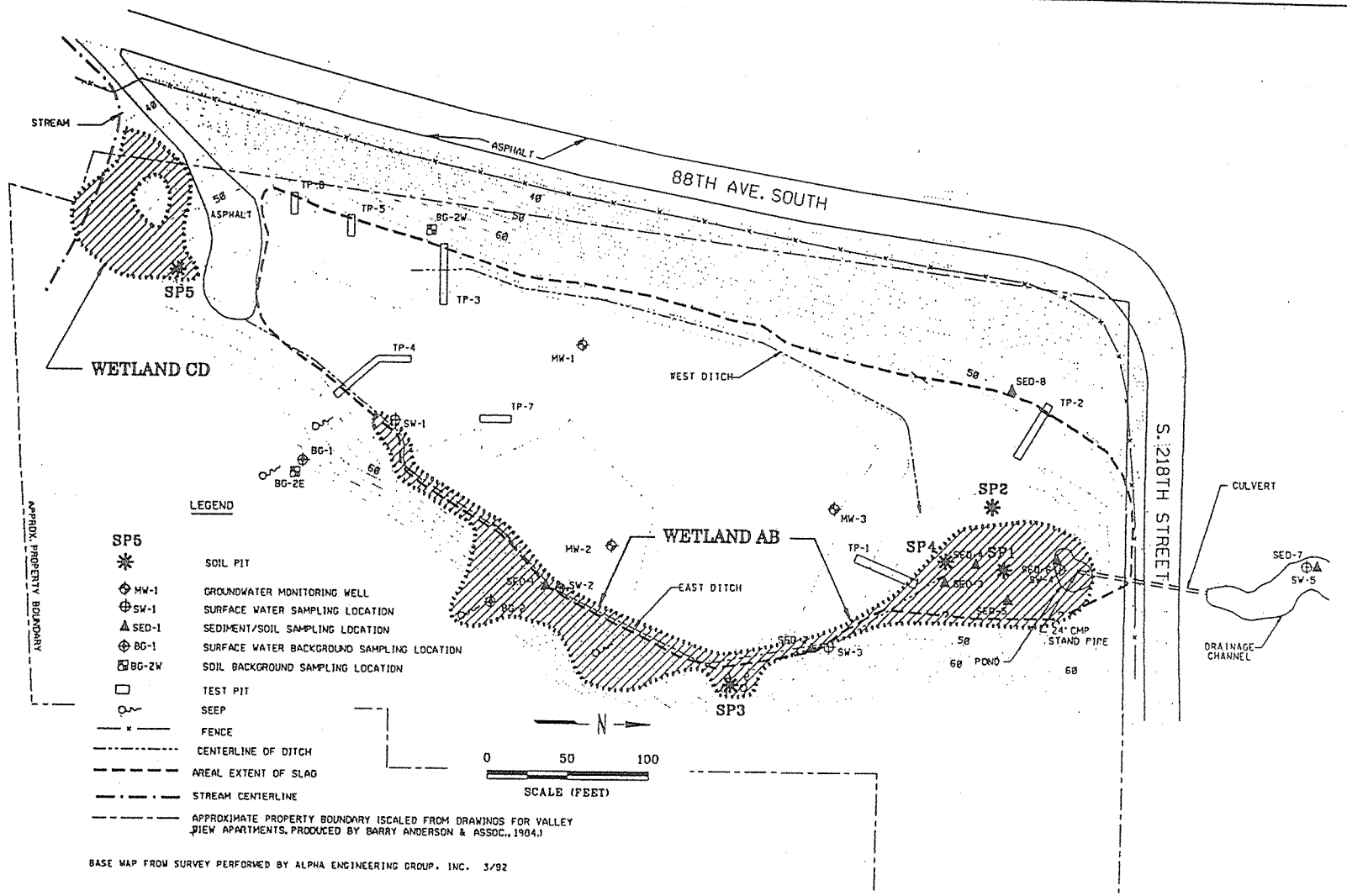
FARALLON CONSULTING
975 5th Avenue Northwest
Issaquah, WA 98027

FIGURE 7

SITE MAP WITH
SAMPLING GRID
SLAG SITE
KENT, WASHINGTON

FARALLON PN: 831-022

Drawn By: DEW	Checked By: AED	Date: 6/15/10	Disk Reference: 831022b



Job No. 95104	Date May 16, 1995
springwood associates, inc. 3644 Albion Place North Seattle, Washington 98103	FIGURE # 4. WETLAND AREAS

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

February 4, 2010

Amy Essig Desai
Farallon Consulting, LLC
975 5th Avenue NW
Issaquah, WA 98027

Re: Analytical Data for Project 831-022
Laboratory Reference No. 1001-159

Dear Amy:

Enclosed are the analytical results and associated quality control data for samples submitted on January 27, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: February 4, 2010
Samples Submitted: January 27, 2010
Laboratory Reference: 1001-159
Project: 831-022

Case Narrative

Samples were collected on January 25 and 26, 2010, and received by the laboratory on January 27, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C except as noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Total Metals EPA 6010B/7471A Analysis

The practical quantitation limit for Silver is elevated in samples TP8-8 and TP9-8 due to interferences present in the samples.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: February 4, 2010
Samples Submitted: January 27, 2010
Laboratory Reference: 1001-159
Project: 831-022

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	01-159-01					
Client ID:	**TP8-8**					
Arsenic	**ND**	13	6010B	2-1-10	2-2-10	
Barium	**65**	3.1	6010B	2-1-10	2-2-10	
Cadmium	**ND**	0.63	6010B	2-1-10	2-2-10	
Chromium	**970**	6.3	6010B	2-1-10	2-2-10	
Lead	**190**	6.3	6010B	2-1-10	2-2-10	
Mercury	**ND**	0.31	7471A	2-2-10	2-2-10	
Selenium	**ND**	13	6010B	2-1-10	2-2-10	
Silver	**ND**	1.3	6010B	2-1-10	2-2-10	
Lab ID:	01-159-02					
Client ID:	**TP9-8**					
Arsenic	**ND**	13	6010B	2-1-10	2-2-10	
Barium	**62**	3.2	6010B	2-1-10	2-2-10	
Cadmium	**ND**	0.63	6010B	2-1-10	2-2-10	
Chromium	**950**	6.3	6010B	2-1-10	2-2-10	
Lead	**32**	6.3	6010B	2-1-10	2-2-10	
Mercury	**ND**	0.32	7471A	2-2-10	2-2-10	
Selenium	**ND**	13	6010B	2-1-10	2-2-10	
Silver	**ND**	1.3	6010B	2-1-10	2-2-10	

Date of Report: February 4, 2010
Samples Submitted: January 27, 2010
Laboratory Reference: 1001-159
Project: 831-022

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	01-159-03					
Client ID:	**TP10-5**					
Arsenic	**ND**	15	6010B	2-1-10	2-2-10	
Barium	**ND**	3.8	6010B	2-1-10	2-2-10	
Cadmium	**ND**	0.77	6010B	2-1-10	2-2-10	
Chromium	**13**	0.77	6010B	2-1-10	2-2-10	
Lead	**18**	7.7	6010B	2-1-10	2-2-10	
Mercury	**ND**	0.38	7471A	2-2-10	2-2-10	
Selenium	**ND**	15	6010B	2-1-10	2-2-10	
Silver	**ND**	0.77	6010B	2-1-10	2-2-10	
Lab ID:	01-159-04					
Client ID:	**TP11-8**					
Arsenic	**ND**	15	6010B	2-1-10	2-2-10	
Barium	**110**	3.7	6010B	2-1-10	2-2-10	
Cadmium	**ND**	0.74	6010B	2-1-10	2-2-10	
Chromium	**610**	0.74	6010B	2-1-10	2-2-10	
Lead	**27**	7.4	6010B	2-1-10	2-2-10	
Mercury	**ND**	0.37	7471A	2-2-10	2-2-10	
Selenium	**ND**	15	6010B	2-1-10	2-2-10	
Silver	**ND**	0.74	6010B	2-1-10	2-2-10	

Date of Report: February 4, 2010
Samples Submitted: January 27, 2010
Laboratory Reference: 1001-159
Project: 831-022

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	01-159-05					
Client ID:	**TP12-5**					
Arsenic	**ND**	13	6010B	2-1-10	2-2-10	
Barium	**94**	3.3	6010B	2-1-10	2-2-10	
Cadmium	**ND**	0.67	6010B	2-1-10	2-2-10	
Chromium	**510**	0.67	6010B	2-1-10	2-2-10	
Lead	**40**	6.7	6010B	2-1-10	2-2-10	
Mercury	**ND**	0.33	7471A	2-2-10	2-2-10	
Selenium	**ND**	13	6010B	2-1-10	2-2-10	
Silver	**ND**	0.67	6010B	2-1-10	2-2-10	

Date of Report: February 4, 2010
Samples Submitted: January 27, 2010
Laboratory Reference: 1001-159
Project: 831-022

TOTAL METALS
EPA 6010B
METHOD BLANK QUALITY CONTROL

Date Extracted: 2-1-10
Date Analyzed: 2-1-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0201S3

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	1.0

Date of Report: February 4, 2010
Samples Submitted: January 27, 2010
Laboratory Reference: 1001-159
Project: 831-022

TOTAL METALS
EPA 7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	2-2-10
Date Analyzed:	2-2-10
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0202S1

Analyte	Method	Result	PQL
Mercury	7471A	**ND**	0.25

Date of Report: February 4, 2010
Samples Submitted: January 27, 2010
Laboratory Reference: 1001-159
Project: 831-022

TOTAL METALS
EPA 6010B
DUPLICATE QUALITY CONTROL

Date Extracted: 2-1-10
Date Analyzed: 2-1-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 01-188-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**30.1**	**31.4**	4	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**14.5**	**13.7**	6	0.50	
Lead	**51.0**	**43.3**	16	5.0	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	1.0	

Date of Report: February 4, 2010
Samples Submitted: January 27, 2010
Laboratory Reference: 1001-159
Project: 831-022

TOTAL METALS
EPA 7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 2-2-10
Date Analyzed: 2-2-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 01-182-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**ND**	**ND**	NA	0.25	

Date of Report: February 4, 2010
Samples Submitted: January 27, 2010
Laboratory Reference: 1001-159
Project: 831-022

TOTAL METALS
EPA 6010B
MS/MSD QUALITY CONTROL

Date Extracted: 2-1-10
Date Analyzed: 2-1-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 01-188-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**92.1**	92	**94.7**	95	3	
Barium	100	**130**	100	**128**	98	2	
Cadmium	50	**45.4**	91	**48.0**	96	6	
Chromium	100	**107**	93	**110**	96	3	
Lead	250	**250**	80	**285**	94	13	
Selenium	100	**96.7**	97	**99.1**	99	2	
Silver	25	**21.9**	88	**22.5**	90	3	

Date of Report: February 4, 2010
Samples Submitted: January 27, 2010
Laboratory Reference: 1001-159
Project: 831-022

TOTAL METALS
EPA 7471A
MS/MSD QUALITY CONTROL

Date Extracted: 2-2-10
Date Analyzed: 2-2-10

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 01-182-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	0.50	**0.529**	106	**0.496**	99	6	

Date of Report: February 4, 2010
Samples Submitted: January 27, 2010
Laboratory Reference: 1001-159
Project: 831-022

% MOISTURE

Date Analyzed: 2-2-10

Client ID	Lab ID	% Moisture
TP8-8	01-159-01	20
TP9-8	01-159-02	21
TP10-5	01-159-03	35
TP11-8	01-159-04	32
TP12-5	01-159-05	25

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in the diesel range are impacting the lube oil range result.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Page 1 of 1

Company: FARALLON
Project Number: 831-022
Project Name: JORG-SLAG
Project Manager: Amy Essig DESAI
Sampled by: Ken Scott

Turnaround Request (in working days)

(Check One)

- ☐ Same Day ☐ 1 Day
- ☐ 2 Day ☐ 3 Day
- ☒ Standard (7 working days) (TPH analysis 5 working days)
- ☐ _____ (other)

Laboratory Number: 01-159

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D / SIM	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	% Moisture
1	TP8-8	1/25/10	1045	S	1											X			X
2	TP9-8		1215	S	1											X			
3	TP10-5		1415	S	1											X			
4	TP11-8	1/26/10	850	S	1											X			
5	TP12-5		1110	S	1											X			
							X5												

	Signature	Company	Date	Time
Relinquished by	Ken Scott	FARALLON		
Received by		CORE	11/27/10	1125
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:
RUN TCLP ON SAMPLES ABOVE RCRA & MTCA.

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Client Copy

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

March 24, 2010

Amy Essig Desai
Farallon Consulting, LLC
975 5th Avenue NW
Issaquah, WA 98027

Re: Analytical Data for Project 831-022
Laboratory Reference No. 1001-159B

Dear Amy:

Enclosed are the analytical results and associated quality control data for samples submitted on January 27, 2010.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: March 24, 2010
Samples Submitted: January 27, 2010
Laboratory Reference: 1001-159B
Project: 831-022

Case Narrative

Samples were collected on January 25 and 26, 2010, and received by the laboratory on January 27, 2010. They were maintained at the laboratory at a temperature of 2°C to 6°C except as noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

TCLP Metals EPA 1311/6010B/7470A Analysis

Mercury analysis was requested and performed outside of holding time.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: March 24, 2010
Samples Submitted: January 27, 2010
Laboratory Reference: 1001-159B
Project: 831-022

TCLP Metals
EPA 1311/6010B/7470A

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	01-159-01					
Client ID:	**TP8-8**					
Arsenic	**ND**	0.40	6010B	3-16-10	3-16-10	
Barium	**0.29**	0.20	6010B	3-16-10	3-16-10	
Cadmium	**ND**	0.020	6010B	3-16-10	3-16-10	
Chromium	**ND**	0.040	6010B	3-16-10	3-16-10	
Lead	**ND**	0.20	6010B	3-16-10	3-16-10	
Mercury	**ND**	0.0050	7470A	3-18-10	3-18-10	
Selenium	**ND**	0.40	6010B	3-16-10	3-16-10	
Silver	**ND**	0.020	6010B	3-16-10	3-16-10	

Date of Report: March 24, 2010
Samples Submitted: January 27, 2010
Laboratory Reference: 1001-159B
Project: 831-022

TCLP Metals
EPA 1311/6010B
METHOD BLANK QUALITY CONTROL

Date Prepared:	3-15-10
Date Extracted:	3-16-10
Date Analyzed:	3-16-10
Matrix:	TCLP Extract
Units:	mg/L (ppm)
Lab ID:	MB0316T2

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	0.40
Barium	6010B	**ND**	0.20
Cadmium	6010B	**ND**	0.020
Chromium	6010B	**ND**	0.040
Lead	6010B	**ND**	0.20
Selenium	6010B	**ND**	0.40
Silver	6010B	**ND**	0.020

Date of Report: March 24, 2010
Samples Submitted: January 27, 2010
Laboratory Reference: 1001-159B
Project: 831-022

TCLP Metals
EPA 1311/7470A
METHOD BLANK QUALITY CONTROL

Date Prepared:	3-15-10
Date Extracted:	3-18-10
Date Analyzed:	3-18-10
Matrix:	TCLP Extract
Units:	mg/L (ppm)
Lab ID:	MB0318T1

Analyte	Method	Result	PQL
Mercury	7470A	**ND**	0.0050

Date of Report: March 24, 2010
Samples Submitted: January 27, 2010
Laboratory Reference: 1001-159B
Project: 831-022

TCLP Metals
EPA 1311/6010B
DUPLICATE QUALITY CONTROL

Date Prepared: 3-15-10
Date Extracted: 3-16-10
Date Analyzed: 3-16-10

Matrix: TCLP Extract
Units: mg/L (ppm)

Lab ID: 03-099-03

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	0.40	
Barium	**0.494**	**0.507**	3	0.20	
Cadmium	**ND**	**ND**	NA	0.020	
Chromium	**ND**	**ND**	NA	0.040	
Lead	**ND**	**ND**	NA	0.20	
Selenium	**ND**	**ND**	NA	0.40	
Silver	**ND**	**ND**	NA	0.020	

Date of Report: March 24, 2010
Samples Submitted: January 27, 2010
Laboratory Reference: 1001-159B
Project: 831-022

TCLP Metals
EPA 1311/7470A
DUPLICATE QUALITY CONTROL

Date Prepared: 3-15-10
Date Extracted: 3-18-10
Date Analyzed: 3-18-10

Matrix: TCLP Extract
Units: mg/L (ppm)

Lab ID: 01-159-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**ND**	**ND**	NA	0.0050	

Date of Report: March 24, 2010
Samples Submitted: January 27, 2010
Laboratory Reference: 1001-159B
Project: 831-022

TCLP Metals
EPA 1311/6010B
MS/MSD QUALITY CONTROL

Date Prepared: 3-15-10
Date Extracted: 3-16-10
Date Analyzed: 3-16-10

Matrix: TCLP Extract
Units: mg/L (ppm)

Lab ID: 03-099-03

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	4.0	**4.02**	101	**3.98**	99	1	
Barium	4.0	**4.27**	95	**4.19**	93	2	
Cadmium	2.0	**1.92**	96	**1.88**	94	2	
Chromium	4.0	**3.85**	96	**3.78**	95	2	
Lead	10	**9.53**	95	**9.33**	93	2	
Selenium	4.0	**4.19**	105	**4.07**	102	3	
Silver	1.0	**0.990**	99	**0.976**	98	1	

Date of Report: March 24, 2010
Samples Submitted: January 27, 2010
Laboratory Reference: 1001-159B
Project: 831-022

TCLP Metals
EPA 1311/7470A
MS/MSD QUALITY CONTROL

Date Prepared: 3-15-10
Date Extracted: 3-18-10
Date Analyzed: 3-18-10

Matrix: TCLP Extract
Units: mg/L (ppm)

Lab ID: 01-159-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	0.050	**0.0454**	91	**0.0451**	90	1	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

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L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in the diesel range are impacting the lube oil range result.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

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T - The sample chromatogram is not similar to a typical _____.

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U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

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X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

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Page 1 of 1

Company: FARALLON
Project Number: 831-022
Project Name: JORG-SLAG
Project Manager: Amy Essig DESAI
Sampled by: Ken Scott

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Day
- ☐ 3 Day
- ☒ Standard (7 working days) (TPH analysis 5 working days)
- ☐ _____ (other)

Laboratory Number: 01-159

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D / SIM	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	% Moisture
1	TP8-8	1/25/10	1045	S	1											X	⊗		X
2	TP9-8		1215	S	1											X			
3	TP10-5		1415	S	1											X			
4	TP11-8	1/26/10	850	S	1											X			
5	TP12-5		1110	S	1											X			
							KS												

	Signature	Company	Date	Time
Relinquished by	Ken Scott	FARALLON		
Received by		CORE	1/27/10	1125
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

RUN TCLP ON SAMPLES ABOVE RCRA & MTCA.

⊗ Added 3/15/10. DB (STA)

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Client Copy

FARALLON consulting
975 5th Avenue Northwest
Issaquah, Washington 98027

Log of Test Pit: TP8

Client: Earle M. Jorgensen Company
Project: EMJ Slag Site
Location: Kent, WA

Farallon PN: 831-022

Logged By: Ken Scott

Date/Time Started: 1/25/10 @ 9:40
Date/Time Completed: 1/25/10 @ 11:20
Equipment: John Deere 135D
Excavating Company: Glacier
Excavating Foreman: Dave Hanka
Excavating Method: Excavation

Sampler Type: Bucket
Depth of Water (ft bgs): 11'
Total Excavation Depth (ft bgs): 15'

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	PID (ppm)	Sample ID	Sample Analyzed
0		0-3.0' Silty SAND (60% sand, 30% silt, 10% gravel), fine to medium sand, fine to coarse gravel, tan, moist, no odor. Observed black plastic liner about 3' bgs.	SM	NM		
		3.0-8.0' Silty SAND (70% sand, 25% silt, 5% gravel), fine to medium sand, fine to coarse gravel, dark brown, moist. Slag observed at 5.5' bgs, white powder-like substance mixed with soil at 6-8' bgs.	SM	NM		
5						
		8.0-13.5' Silty SAND (70% sand, 25% silt, 5% gravel), fine to medium sand, fine to coarse gravel, brown, moist. Mixed with slag (est. 40% slag and 60% sand). Water observed at 11' bgs.	SM	NM	TP8-8 @ 1045	X
10						
		13.5-15.0' SILT (80% silt, 10% sand, 10% clay), fine sand, brown, wet.	ML	NM		
15						

FARALLON consulting
975 5th Avenue Northwest
Issaquah, Washington 98027

Log of Test Pit: TP9

Client: Earle M. Jorgensen
Project: EMJ Slag Site
Location: Kent, WA

Farallon PN: 831-022

Logged By: Ken Scott

Date/Time Started: 1/25/10 @ 11:35
Date/Time Completed: 1/25/10 @ 13:35
Equipment: John Deere 135D
Excavating Company: Glacier
Excavating Foreman: Dave Hanka
Excavating Method: Excavation

Sampler Type: Bucket
Depth of Water (ft bgs): 9'
Total Excavation Depth (ft bgs): 15'

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	PID (ppm)	Sample ID	Sample Analyzed
0		0-0.5' SILT (90% silt, 10% sand), fine to medium sand, dark brown, moist, no odor.	ML			
		0.5-1.0 Silty SAND (80% sand, 20% silt), fine to medium sand, tan, moist, no odor.	SM			
		1.0-1.2' SAND (95% sand, 5% silt), fine to medium sand, black, moist, no odor.	SP	NM		
		1.2-4.0' Silty SAND with gravel (60% sand, 20% silt, 20% gravel), fine sand, fine to coarse gravel, dark brown, moist, no odor. Observed black plastic liner about 4' bgs. Mixed with slag beginning at 1.5' bgs (est. 80% slag and 20% sand), metal debris and white powder-like substance.	SM			
5		4.0-12.0' Silty SAND with gravel (70% sand, 15% silt, 15% gravel), fine to medium sand, fine to coarse gravel, brown to tan, moist to wet, odor. Mixed with black slag (est. 70% slag and 30% sand). Water observed at 9' bgs.	SM	NM		
	X			NM	TP9-8 @ 1215	X
10						
		12.0-15.0' SILT (90% silt, 10% clay), grey to reddish-orange mottling, wet, no odor.	ML	NM		
15						

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975 5th Avenue Northwest
Issaquah, Washington 98027

Log of Test Pit: TP10

Client: Earle M. Jorgensen Company
Project: EMJ Slag Site
Location: Kent, WA

Farallon PN: 831-022

Logged By: Ken Scott

Date/Time Started: 1/25/10 @ 13:45
Date/Time Completed: 1/25/10 @ 14:45
Equipment: John Deere 135D
Excavating Company: Glacier
Excavating Foreman: Dave Hanka
Excavating Method: Excavation

Sampler Type: Bucket
Depth of Water (ft bgs): 8.5'
Total Excavation Depth (ft bgs): 12'

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	PID (ppm)	Sample ID	Sample Analyzed
0		0- 0.8' SILT (90% silt, 10% sand), fine to medium sand, dark brown, moist, no odor.	ML			
		0.8-1.2' Silty SAND (80% sand, 20% silt), fine to medium sand, tan, moist, no odor.	SM			
		1.2-9.0' Silty SAND with gravel (60% sand, 20% silt, 20% gravel), fine sand, fine to coarse gravel, brown to tan, moist. Mixed with slag beginning at 3.5' bgs (est. 25% slag and 75% sand). Pea-gravel observed at 3.5-4.2' bgs. White powder-like substance observed at 5-5.4' bgs. Water observed at 8.5' bgs.	SM	NM		
5	X			NM	TP10-5 @ 1415	X
				NM		
		9.0-12.0' SILT (90% silt, 10% clay), grey to reddish-orange mottling, wet, no odor.	ML			
10						

FARALLON consulting
975 5th Avenue Northwest
Issaquah, Washington 98027

Log of Test Pit: TP11

Client: Earle M. Jorgensen Company
Project: EMJ Slag Site
Location: Kent, WA

Farallon PN: 831-022

Logged By: Ken Scott

Date/Time Started: 1/25/10 @ 15:05
Date/Time Completed: 1/26/10 @ 10:00
Equipment: John Deere 135D
Excavating Company: Glacier
Excavating Foreman: Dave Hanka
Excavating Method: Excavation

Sampler Type: Bucket
Depth of Water (ft bgs): 11.0'
Total Excavation Depth (ft bgs): 15'

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	PID (ppm)	Sample ID	Sample Analyzed
0		0-0.5' SILT (90% silt, 10% sand), fine to medium sand, dark brown, moist, no odor.	ML			
		0.5-1.5' Silty SAND (80% sand, 20% silt), fine to medium sand, tan, moist, no odor.	SM			
		1.5-3.5' Silty SAND with gravel (60% sand, 20% silt, 20% gravel), fine sand, fine to coarse gravel, tan, moist, no odor.	SM	NM		
		3.5-11.0' Silty SAND with gravel (60% sand, 20% silt, 20% gravel), fine sand, fine to coarse gravel, dark brown, moist, slight odor. Mixed with slag beginning at 4' bgs (est. 25% slag and 75% sand). White powder-like substance observed at 4-4.8' bgs. Plastic and concrete debris at 8-9' bgs. Water observed at 11' bgs. Native soil without slag observed at western edge of test pit.	SM			
5				NM		
				NM	TP11-8 @ 8;50	X
10						
		11.0-15.0' SILT (90% silt, 10% clay), grey to reddish-orange mottling, wet, no odor.	ML			
				NM		
15						

FARALLON consulting
975 5th Avenue Northwest
Issaquah, Washington 98027

Log of Test Pit: TP12

Client: Earle M. Jorgensen Company
Project: EMJ Slag Site
Location: Kent, WA

Farallon PN: 831-022

Logged By: Ken Scott

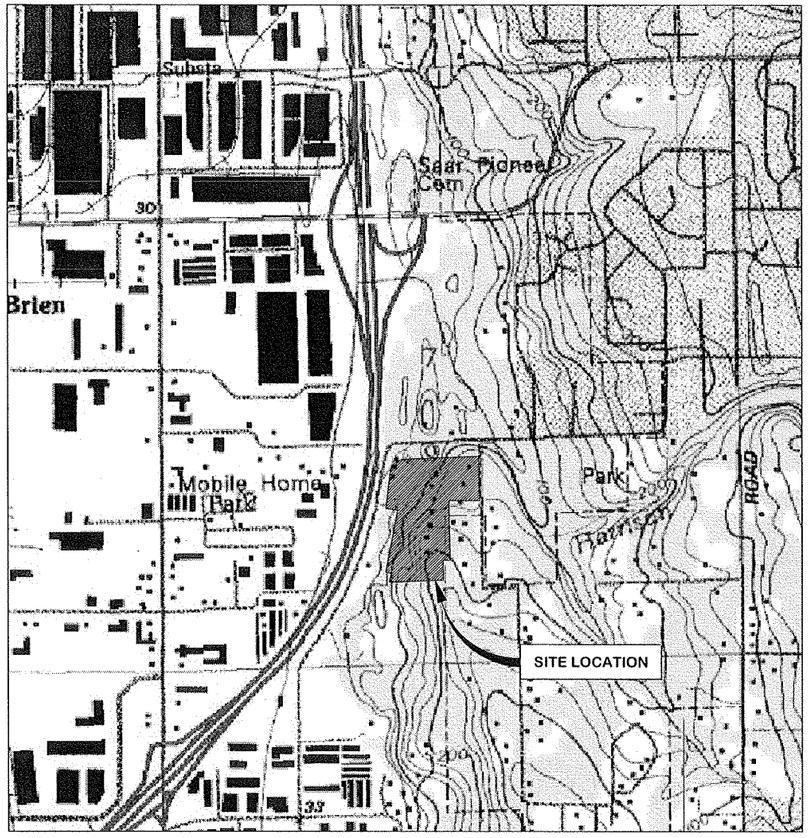
Date/Time Started: 1/26/10 @ 10:20
Date/Time Completed: 1/26/10 @ 11:45
Equipment: John Deere 135D
Excavating Company: Glacier
Excavating Foreman: Dave Hanka
Excavating Method: Excavation

Sampler Type: Bucket
Depth of Water (ft bgs): N/A
Total Excavation Depth (ft bgs): 17.5'

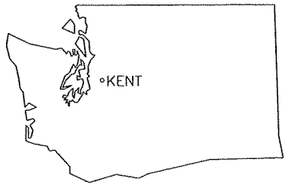
Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	PID (ppm)	Sample ID	Sample Analyzed
0		0.0-0.9' Sandy SILT with gravel (60% silt, 20% sand, 20% gravel), fine to medium sand, fine to coarse gravel, brown, moist, no odor.	ML	NM	TP12-5 @ 11:10	X
		0.9-2.5' Silty SAND (80% sand, 20% silt), fine to medium sand, tan, moist, no odor.	SM			
		2.5-3.2' SAND (95% sand, 5% silt), fine to medium sand, black, moist, no odor.	SP			
		3.2-5.0' Silty SAND with gravel (60% sand, 20% silt, 20% gravel), fine to medium sand, fine to coarse gravel, brown, moist, odor. Mixed with slag (est. 30% slag).	SM			
5		5.0-7.0' Slag fill, black, dense metal slag with large pores, moist, odor. Solid 2' lens of 100% slag.	FILL			
		7.0-8.0' Silty SAND with gravel (50% sand, 25% silt, 25% gravel), fine to medium sand, fine to coarse gravel, tan moist, odor. Observed bricks, debris, and about 30% slag . Observed empty, white plastic container (~5-gallon size).	SM			
		8.0-8.5' SILT (90% silt, 10% sand), fine sand, oxidized red, moist, slight odor.	ML			
		8.5-13.0' SILT (90% silt, 10% clay), grey, moist, no odor.	ML			
10						

SLAG DISPOSAL BECKWITH PROPERTY SITE EXCAVATION PROJECT

SLAG DISPOSAL BECKWITH PROPERTY SITE
SOUTH 218TH STREET AND 90TH AVENUE SOUTH
KENT, WASHINGTON



REFERENCE: 7.5 MINUTE USGS QUADRANGLE KENT, WASHINGTON. DATED 1994



WASHINGTON

DRAWING INDEX

	6/16/10	ISSUED FOR CONSTRUCTION	DEW	HF	RM
	DATE	DESCRIPTION	BY	CKD.	APP.

PREPARED BY
FARALLON CONSULTING
975 5th Avenue Northwest
Issaquah, WA 98027

PREPARED FOR
EARLE M. JORGENSEN COMPANY
10650 ALAMEDA STREET
LYNWOOD, CALIFORNIA 90262

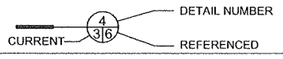
SLAG DISPOSAL BECKWITH PROPERTY EXCAVATION PROJECT
KENT, WASHINGTON
TITLE SHEET, SITE LOCATION MAP, AND DRAWING INDEX

SCALE: AS SHOWN
PROJECT NO.: 831-022
FILE NAME: SHEET SET5.dwg
SHEET NO.: 1 OF 12

ELECTRICAL ABBREVIATIONS

A/AMP	AMP
AC	ALTERNATING CURRENT
BD	BUS DUCT
C	CURRENT
CB	CIRCUIT BREAKER
CLG	CEILING
DC	DIRECT CURRENT
DIS	DISCONNECT
DP	DOUBLE POLE
DT	DOUBLE THROW
EG	ENCLOSED AND GASKETED
E(OH)	ELECTRICAL (OVERHEAD)
E(UG)	ELECTRICAL (UNDERGROUND)
EMER	EMERGENCY
EPO	EMERGENCY POWER OFF
EMT	ELECTRICAL METALLIC TUBING
EXP	EXPOSED
FBO	FURNISHED BY OTHERS
FLEX	FLEXIBLE METAL CONDUIT
FRN	DUAL ELEMENT FUSE
GEN	GENERATOR
GFIC	GROUND FAULT INTERRUPTER
GND	GROUND
GRC	GALVANIZED RIGID CONDUIT
HOA	HAND-OFF-AUTO SWITCH
IRD	INFRARED DETECTOR
HP	HORSE POWER
HZ	CYCLES PER SECOND
JB	JUNCTION BOX
LFMC	LIQUID TIGHT FLEXIBLE METAL CONDUIT
M	MOTOR/MOTOR STARTER COIL
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NF	NON-FUSED
NO	NORMALLY OPEN
OL	OVERLOADS
PBS	PUSHBUTTON
PF	POWER FACTOR
PL	PILOT LIGHT
PLC	PROGRAMMABLE LOGIC CONTROLLER
RC	RIGID CONDUIT
RCPT	RECEPTACLE
SN	SOLID NEUTRAL
SP	SINGLE POLE
ST	SINGLE THROW
SW	SWITCH
TF/TRAN	TRANSFORMER
UF	UNDERFLOOR
UG	UNDERGROUND
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
VP	VAPOR PROOF
WHT	WHITE
WP	WEATHER PROOF
XP	EXPLOSION PROOF

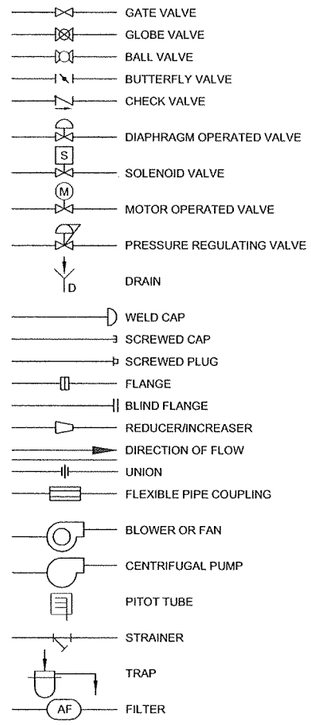
STANDARD SYMBOLS

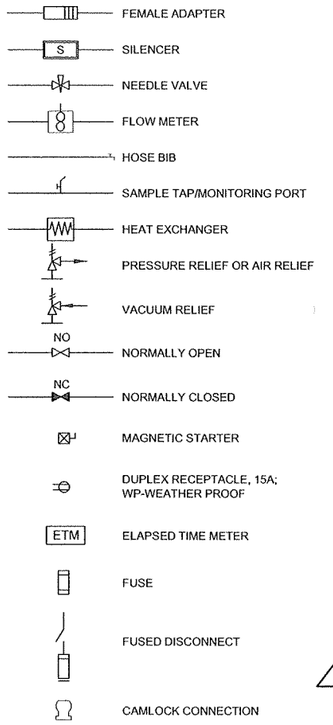


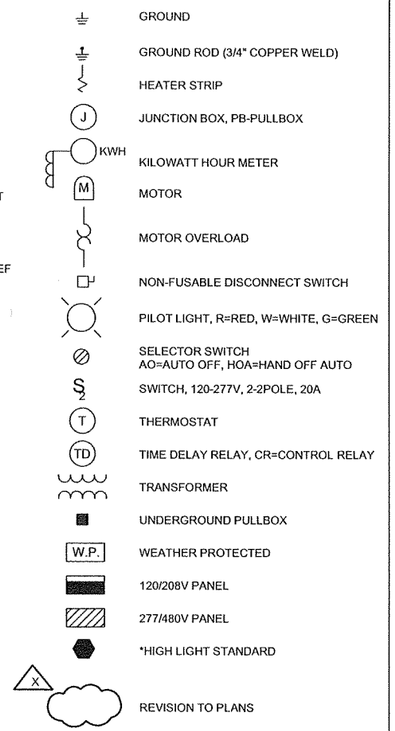
STANDARD ABBREVIATIONS

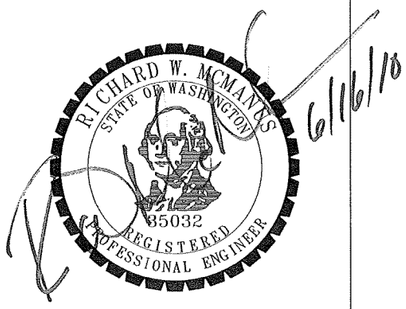
AF	AIR FILTER
AB	AGGREGATE BASE
AC	ASPHALTIC CONCRETE
APPROX	APPROXIMATELY
AF	AIR FILTER
AS	AIR SPARGE
BF	BLIND FLANGE
B.G.S.	BELOW GROUND SURFACE
BLDG	BUILDING
BOP	BOTTOM OF PIPE
BV	BALL VALVE
CONC	CONCRETE
CPLG	COUPLING
℄ /CL	CENTERLINE
CV	CONTROL VALVE/CHECK VALVE
DC	DOUBLE CONTAINED
Ø/DIA	DIAMETER
DWG	DRAWING
DP	DUAL PHASE
DPI	DIFFERENTIAL PRESSURE INDICATOR
EF	EACH FACE
EL/ELEV	ELEVATION
ELEC	ELECTRICAL
ELB	ELBOW
EPDM	ETHYLENE PROPYLENE RUBBER
EXIST/(E)	EXISTING
EXP	EXPANSION
EW	EACH WAY
EA	EACH
FC	FAIL CLOSE
FO	FAIL OPEN
FLXC	FLEXIBLE CONNECTION
FM	FLOW METER
FL	FLOW LINE
FT	FOOT
FUT	FUTURE
FIN GR	FINISHED GRADE
FE	FLANGED END
FNPT	FEMALE NATIONAL PIPE THREAD
GA	GAUGE
GAC	GRANULAR ACTIVATED CARBON
GALV	GALVANIZED
GI	GALVANIZED IRON
GPM	GALLONS PER MINUTE
GR	GRADE
GND	GROUND
GSKT	GASKET
GW	GROUNDWATER
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE
HORIZ	HORIZONTAL
HP	HORSEPOWER/HIGH PRESSURE
HR	HOUR
HS	HOSE
HYD	HYDRANT
HOA	HAND OFF AUTOMATIC
ID	INSIDE DIAMETER
IN	INCHES
INV	INVERT
IPS	IRON PIPE SIZE
JT	JOINT
JB	JUNCTION BOX
KO	KNOCK OUT
LSHH	LEVEL SWITCH
M	MOTOR
MAX	MAXIMUM
MH	MANHOLE
MJ	MECHANICAL JOINT
MIN	MINUTE/MINIMUM
MISC	MISCELLANEOUS
MNPT	MALE NATIONAL PIPE THREAD
MP	METER PUMP
MON.PORT	MONITORING PORT
MW	MONITORING WELL
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NO.	NUMBER
N	NEW
NTS	NOT TO SCALE
NPDES	NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM
OC	ON CENTER
OD	OUTSIDE DIAMETER
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
OVHD	OVERHEAD
#/LB	POUND
PB	PULL BOX
PBF	PROVIDED BY FARALLON
PC	PORTLAND CEMENT
PCC	PORTLAND CEMENT CONCRETE
PG	PRESSURE GAS
PL	PROPERTY LINE/PIPE LINE
PO	PUMP OUT
P	PRESSURE
PRV	PRESSURE RELEASE VALVE
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH, ABSOLUTE
PSIG	POUNDS PER SQUARE INCH, GAUGE
PTW	PRESSURE TREATMENT
PVC	POLYVINYL CHLORIDE
PV	PROCESS VARIABLE
PR	PAIR
PUE	PUBLIC UTILITY EASEMENT
R	RADIUS/RISER
RC	REINFORCED CONCRETE
REQ	REQUIRED
REF	REFERENCE
SCH	SCHEDULE
SDR	STANDARD DIMENSION RATIO
SECT	SECTION
SHT	SHEET
SPEC	SPECIFICATION
SQ	SQUARE
STA	STATION
STD	STANDARD
STL	STEEL
SBO	SUPPLIED BY OWNER
ST	SAMPLE TAP
STR	STRAINER
SS	STAINLESS STEEL
STL	STEEL
SVE	SOIL VAPOR EXTRACTION
SW	SWITCH
TYP	TYPICAL
TOC	TOP OF CASING/CURB
TOS	TOP OF STEEL
TOW	TOP OF WALL
UBC	UNIFORM BUILDING CODE
UGPS	UNDERGROUND PULL SECTION
UTIL	UTILITY
V	VALVE/VENT/VOLTS
VAC	VACUUM
VAR	VARIES/VARIABLE
VERT	VERTICAL
VP	VAPOR
VRV	VACUUM RELIEF VALVE
W/	WITH
W/O	WITHOUT
WS	WATER SURFACE/WATER STOP

PIPING, ELECTRICAL AND EQUIPMENT SYMBOLS

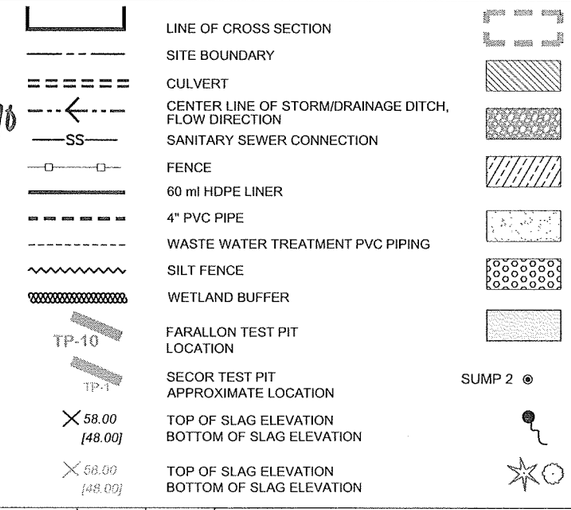








LEGEND



GENERAL NOTES

1. A COPY OF THE PROJECT DESIGN DRAWINGS AND SPECIFICATIONS SHALL BE MAINTAINED ON THE JOB SITE AT ALL TIMES.
2. COPIES OF ALL PERMITS SHALL BE MAINTAINED ON THE JOB SITE AT ALL TIMES. THE CONTRACTOR SHALL COMPLY WITH ALL PERMIT REQUIREMENTS.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS.
4. BURIED UTILITIES SHOWN ON THE DRAWINGS ARE FOR GENERAL INFORMATION ONLY. UTILITY LOCATIONS ARE APPROXIMATE AND MAY NOT BE INCLUSIVE OF ALL UTILITIES THAT EXIST ON THE PROPERTY.
5. THE CONTRACTOR SHALL HAVE A PRIVATE UTILITY LOCATE SERVICE VERIFY ALL UTILITIES AND MARK THEIR LOCATIONS ON THE GROUND PRIOR TO STARTING CONSTRUCTION. FARALLON SHALL BE CONTACTED IMMEDIATELY IF A CONFLICT IS FOUND BETWEEN EXISTING UTILITIES AND THE PROJECT DESIGN.
6. FARALLON SHALL BE NOTIFIED OF DISCREPANCIES BETWEEN CONTRACT DRAWINGS AND ACTUAL SITE CONDITIONS.
7. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR THE JOB SITE CONDITIONS AND ENSURE THE SAFETY OF ALL PERSONS AND PROPERTY FOR THE DURATION OF ON SITE PROJECT WORK. THE CONTRACTOR SHALL PROTECT STRUCTURES, UTILITIES, AND PAVING FROM DAMAGE, DIRECT OR INDIRECT, RESULTING FROM THE WORK. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY OVER THE DURATION OF ON SITE ACTIVITIES AND NOT BE LIMITED TO NORMAL WORKING HOURS.
8. ALL EXCAVATIONS SHALL BE PERFORMED IN STRICT ACCORDANCE WITH APPLICABLE U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND THE WASHINGTON INDUSTRIAL SAFETY AND HEALTH ACT (WISHA) REGULATIONS. THE CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR THE SAFETY OF ALL CONSTRUCTION OPERATIONS.
9. NO TRENCHES SHALL BE LEFT OPEN WHEN WORK IS NOT IN PROGRESS. ALL OPEN EXCAVATIONS SHALL BE FENCED.

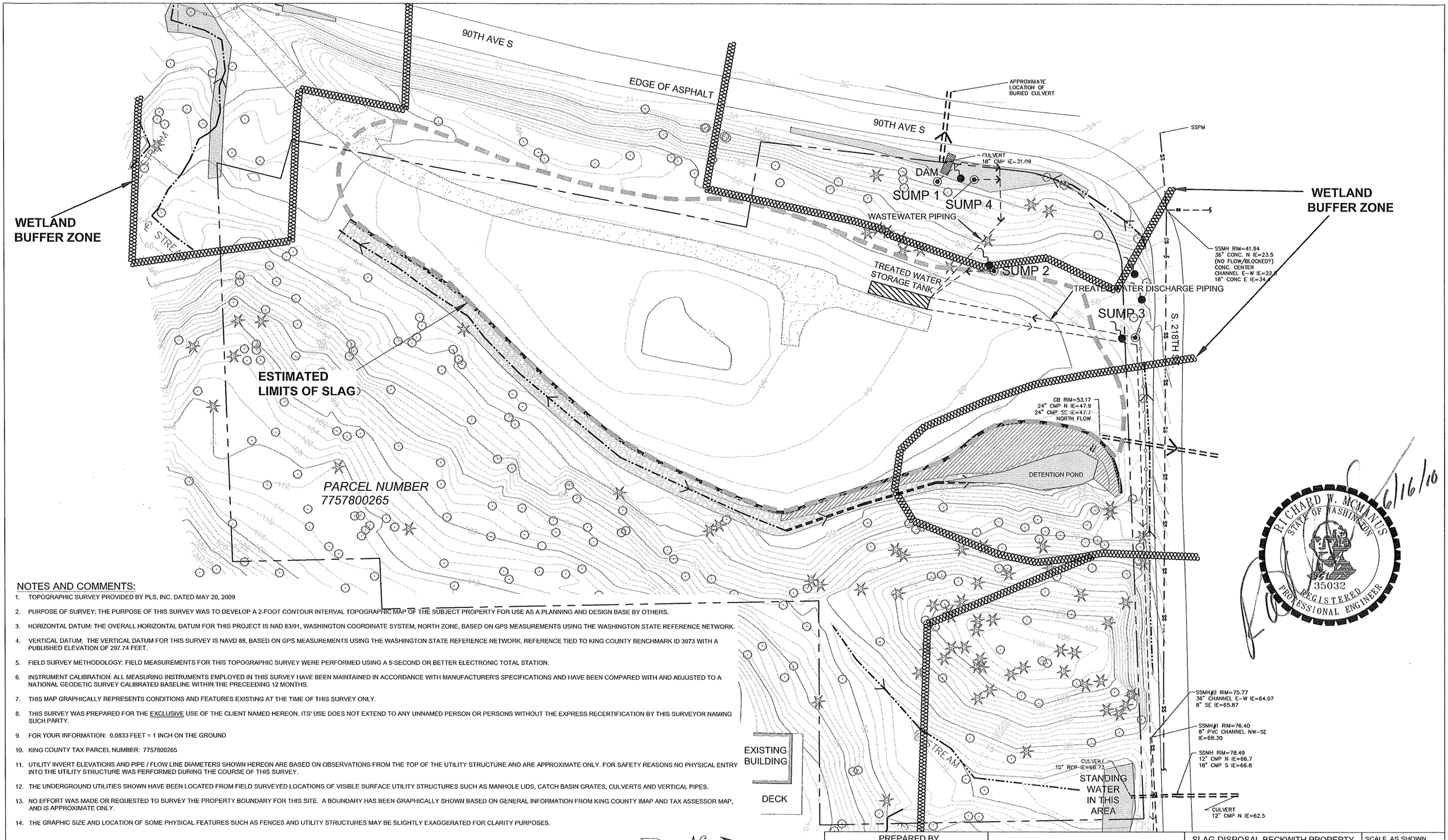
	6/16/10	ISSUED FOR CONSTRUCTION	DEW	HF	RM	
	DATE	DESCRIPTION	BY	CKD.	APP.	

PREPARED BY
FARALLON CONSULTING
975 5th Avenue Northwest
Issaquah, WA 98027

PREPARED FOR
EARLE M. JORGENSEN COMPANY
10650 ALAMEDA STREET
LYNWOOD, CALIFORNIA 90262

SLAG DISPOSAL BECKWITH PROPERTY
EXCAVATION PROJECT
KENT, WASHINGTON
GENERAL NOTES, LEGEND,SYMBOLS, AND ABBREVIATIONS

SCALE: AS SHOWN
PROJECT NO.: 831-022
FILE NAME: SHEET SET5.dwg
SHEET NO.: 2 OF 12



NOTES AND COMMENTS:

1. TOPOGRAPHIC SURVEY PROVIDED BY PLS, INC. DATED MAY 20, 2009
2. PURPOSE OF SURVEY: THE PURPOSE OF THIS SURVEY WAS TO DEVELOP A 2-FOOT CONTOUR INTERVAL TOPOGRAPHIC MAP OF THE SUBJECT PROPERTY FOR USE AS A PLANNING AND DESIGN BASE BY OTHERS.
3. HORIZONTAL DATUM: THE OVERALL HORIZONTAL DATUM FOR THIS PROJECT IS NAD 83/91, WASHINGTON COORDINATE SYSTEM, NORTH ZONE, BASED ON GPS MEASUREMENTS USING THE WASHINGTON STATE REFERENCE NETWORK.
4. VERTICAL DATUM: THE VERTICAL DATUM FOR THIS SURVEY IS NAVD 88, BASED ON GPS MEASUREMENTS USING THE WASHINGTON STATE REFERENCE NETWORK. REFERENCE TIED TO KING COUNTY BENCHMARK ID 3973 WITH A PUBLISHED ELEVATION OF 297.74 FEET.
5. FIELD SURVEY METHODOLOGY: FIELD MEASUREMENTS FOR THIS TOPOGRAPHIC SURVEY WERE PERFORMED USING A 5-SECOND OR BETTER ELECTRONIC TOTAL STATION.
6. INSTRUMENT CALIBRATION: ALL MEASURING INSTRUMENTS EMPLOYED IN THIS SURVEY HAVE BEEN MAINTAINED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND HAVE BEEN COMPARED WITH AND ADJUSTED TO A NATIONAL GEODETIC SURVEY CALIBRATED BASELINE WITHIN THE PRECEEDING 12 MONTHS.
7. THIS MAP GRAPHICALLY REPRESENTS CONDITIONS AND FEATURES EXISTING AT THE TIME OF THIS SURVEY ONLY.
8. THIS SURVEY WAS PREPARED FOR THE EXCLUSIVE USE OF THE CLIENT NAMED HEREON. ITS' USE DOES NOT EXTEND TO ANY UNNAMED PERSON OR PERSONS WITHOUT THE EXPRESS RECERTIFICATION BY THIS SURVEYOR NAMING SUCH PARTY.
9. FOR YOUR INFORMATION: 0.0833 FEET = 1 INCH ON THE GROUND
10. KING COUNTY TAX PARCEL NUMBER: 7757800265
11. UTILITY INVERT ELEVATIONS AND PIPE / FLOW LINE DIAMETERS SHOWN HEREON ARE BASED ON OBSERVATIONS FROM THE TOP OF THE UTILITY STRUCTURE AND ARE APPROXIMATE ONLY. FOR SAFETY REASONS NO PHYSICAL ENTRY INTO THE UTILITY STRUCTURE WAS PERFORMED DURING THE COURSE OF THIS SURVEY.
12. THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEYED LOCATIONS OF VISIBLE SURFACE UTILITY STRUCTURES SUCH AS MANHOLE LIDS, CATCH BASIN GRATES, CULVERTS AND VERTICAL PIPES.
13. NO EFFORT WAS MADE OR REQUESTED TO SURVEY THE PROPERTY BOUNDARY FOR THIS SITE. A BOUNDARY HAS BEEN GRAPHICALLY SHOWN BASED ON GENERAL INFORMATION FROM KING COUNTY IMAP AND TAX ASSESSOR MAP, AND IS APPROXIMATE ONLY.
14. THE GRAPHIC SIZE AND LOCATION OF SOME PHYSICAL FEATURES SUCH AS FENCES AND UTILITY STRUCTURES MAY BE SLIGHTLY EXAGGERATED FOR CLARITY PURPOSES.

CONTOUR INTERVAL: 2 FOOT

	DATE	DESCRIPTION	BY	CKD.	APP.
	6/16/10	ISSUED FOR CONSTRUCTION	DEW	HF	RM

RICHARD W. MCMANUS
STATE OF WASHINGTON
35032
REGISTERED PROFESSIONAL ENGINEER
6/16/10

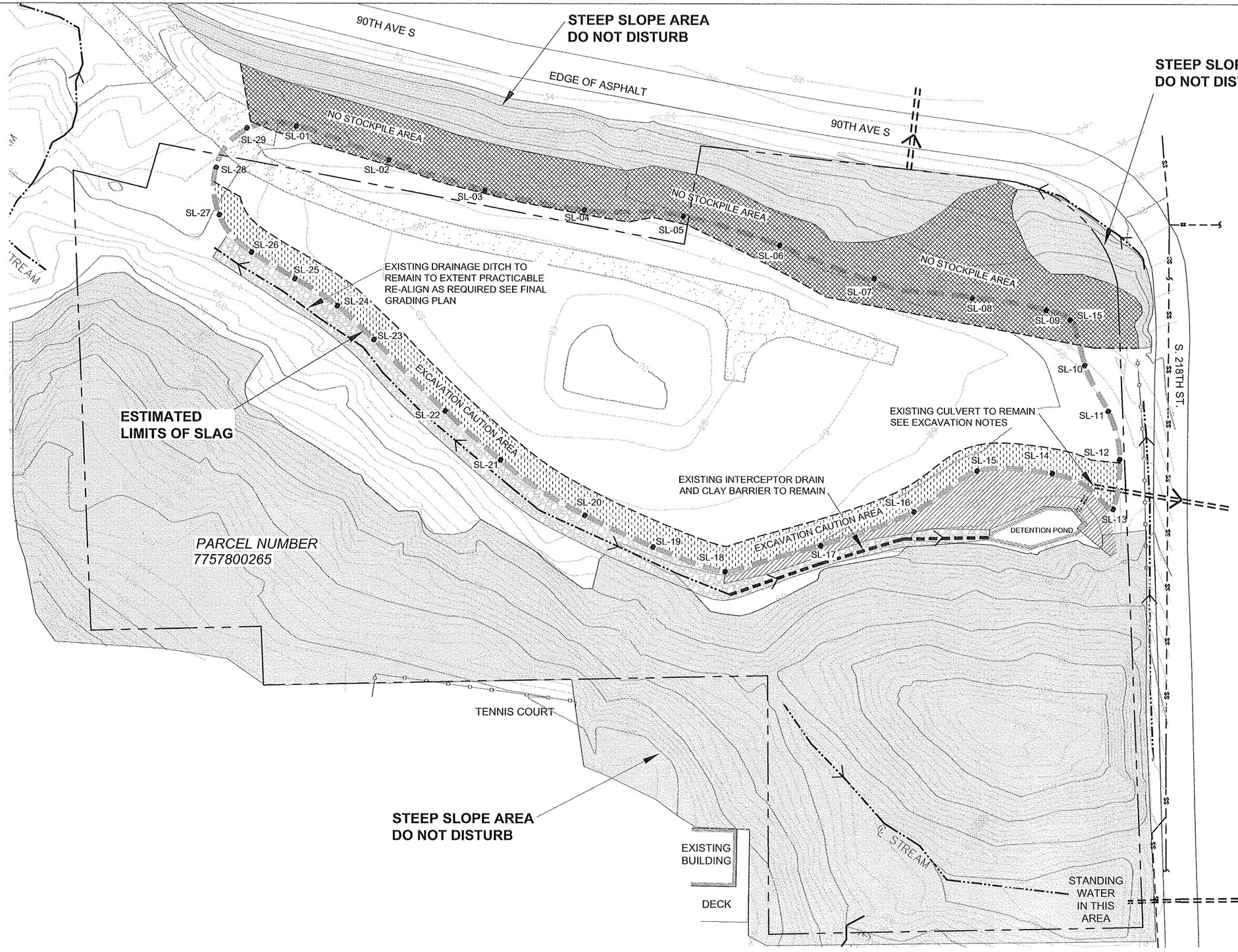
PREPARED BY
FARALLON CONSULTING
975 5th Avenue Northwest
Issaquah, WA 98027

PREPARED FOR
EARLE M. JORGENSEN COMPANY
10650 ALAMEDA STREET
LYNWOOD, CALIFORNIA 90262

SLAG DISPOSAL BECKWITH PROPERTY EXCAVATION PROJECT
KENT, WASHINGTON

SITE PLAN

SCALE AS SHOWN
PROJECT NO. 831-022
FILE NAME: SHEET SET5.dwg
SHEET NO. 3 OF 12



ESTIMATED LIMITS OF SLAG CONTROL POINTS

POINT #	X (EASTING)	Y (NORTHING)
SL-01	150912.57	1297048.81
SL-02	150967.54	1297069.00
SL-03	151024.52	1297086.95
SL-04	151083.96	1297098.49
SL-05	151142.89	1297102.26
SL-06	151200.16	1297119.28
SL-07	151256.45	1297138.88
SL-08	151314.76	1297150.40
SL-09	151358.75	1297157.56
SL-10	151381.69	1297190.45
SL-11	151395.63	1297217.81
SL-12	151402.32	1297246.57
SL-13	151398.46	1297276.15
SL-14	151362.24	1297254.95
SL-15	151317.45	1297253.51
SL-15	151373.00	1297163.40
SL-16	151279.94	1297277.99
SL-17	151224.40	1297298.28
SL-18	151167.51	1297313.92
SL-19	151124.54	1297299.19
SL-20	151083.97	1297280.39
SL-21	151033.89	1297247.44
SL-22	151000.90	1297218.26
SL-23	150958.63	1297175.69
SL-24	150936.92	1297155.60
SL-25	150911.68	1297139.54
SL-26	150885.88	1297123.78
SL-27	150866.90	1297101.62
SL-28	150864.91	1297073.61
SL-29	150883.11	1297050.07

N

0 60

Scale in feet

CONTOUR INTERVAL: 2 FOOT

	6/16/10	ISSUED FOR CONSTRUCTION	DEW	HF	RM
	DATE	DESCRIPTION	BY	CKD.	APP.

PREPARED BY

FARALLON CONSULTING
975 5th Avenue Northwest
Issaquah, WA 98027

PREPARED FOR

EARLE M. JORGENSEN COMPANY
10650 ALAMEDA STREET
LYNWOOD, CALIFORNIA 90262

SLAG DISPOSAL BECKWITH PROPERTY
EXCAVATION PROJECT

KENT, WASHINGTON

EXCAVATION PLAN

SCALE
AS SHOWN

PROJECT NO.
831-022

FILE NAME:
SHEET SET5.dwg

SHEET NO. 4 OF 12

CROSS SECTION CONTROL POINTS		
POINT #	X (EASTING)	Y (NORTHING)
AA' 0+00	150830.69	1297101.32
AA' 1+50	150977.07	1297143.04
AA' 3+50	151165.44	1297196.72
AA' 5+00	151309.61	1297237.80
AA' 6+00	151404.61	1297264.27
BB' 0+50	150989.89	1297092.27
BB' 1+50	150965.42	1297189.23
CC' 0+25	151187.44	1297118.85
CC' 2+25	151133.07	1297311.34
DD' 0+25	151334.64	1297148.98
DD' 1+50	151300.85	1297269.35

90TH AVE S

EDGE OF ASPHALT

90TH AVE S

S. 218TH ST.

A 5/6

B 5/6

C 5/6

D 5/6

A' 5/6

B' 5/6

C' 5/6

D 5/6

AA' 0+00

AA' 1+50

AA' 3+50

AA' 5+00

AA' 6+00

BB' 0+50

BB' 1+50

CC' 0+25

CC' 2+25

DD' 0+25

DD' 1+50

TP-1 58.00 [48.00]

TP-2 56.00 [46.00]

TP-3 59.00 [49.00]

TP-4 60.00 [52.50]

TP-5 58.00 [54.00]

TP-6 56.00 [54.50]

TP-7 62.00 [54.00]

TP8 55.73 [49.23]

TP9 58.38 [52.38]

TP10 59.65 [55.15]

TP11 60.56 [53.56]

TP12 58.16 [53.16]

ESTIMATED LIMITS OF SLAG

PARCEL NUMBER 7757800265

DETENTION POND

TENNIS COURT

RICHARD W. MCMANUS STATE OF WASHINGTON 35032 REGISTERED PROFESSIONAL ENGINEER 6/16/10

	6/16/10	ISSUED FOR CONSTRUCTION	DEW	HF	RM
	DATE	DESCRIPTION	BY	CKD.	APP.

N

0 50

Scale in feet

CONTOUR INTERVAL: 2 FOOT

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Issaquah, WA 98027

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10650 ALAMEDA STREET
LYNWOOD, CALIFORNIA 90262

SLAG DISPOSAL BECKWITH PROPERTY
EXCAVATION PROJECT

KENT, WASHINGTON

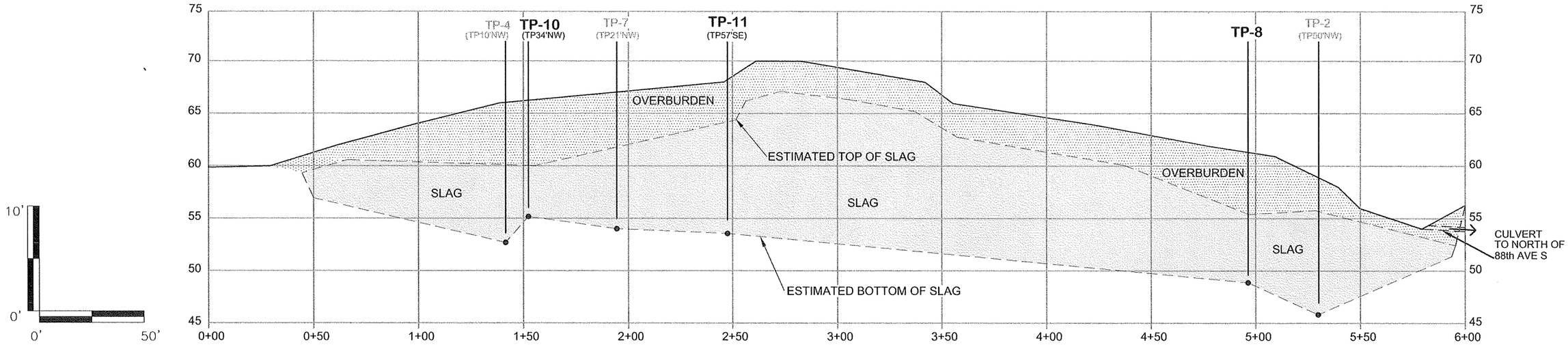
SLAG FILL
LINE OF CROSS SECTIONS

SCALE: AS SHOWN

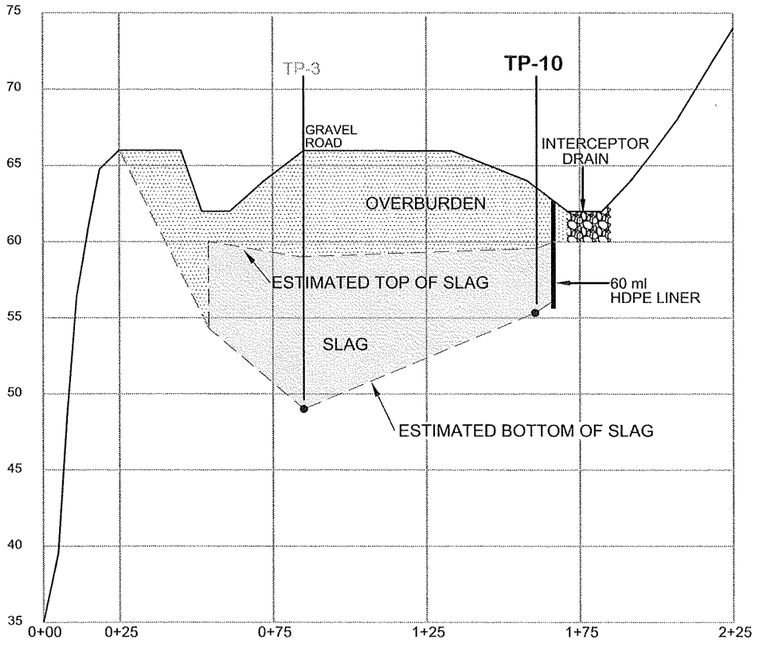
PROJECT NO.: 831-022

FILE NAME: SHEET SET5.dwg

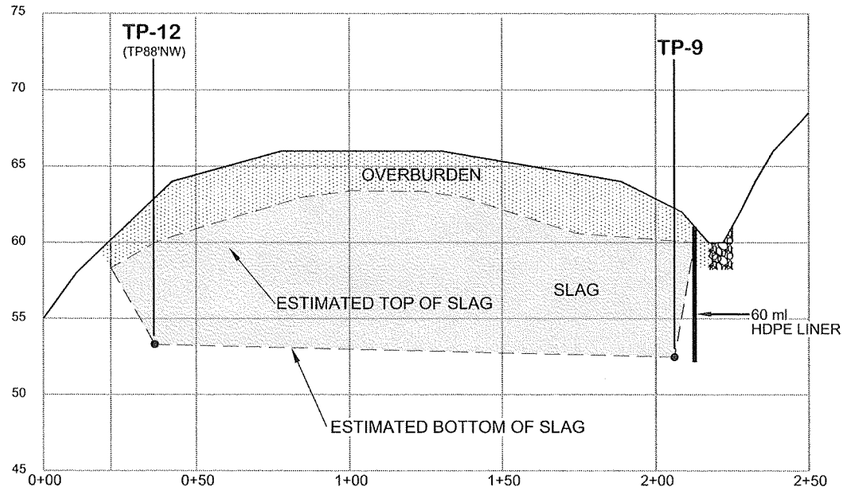
SHEET NO.: 5 OF: 12



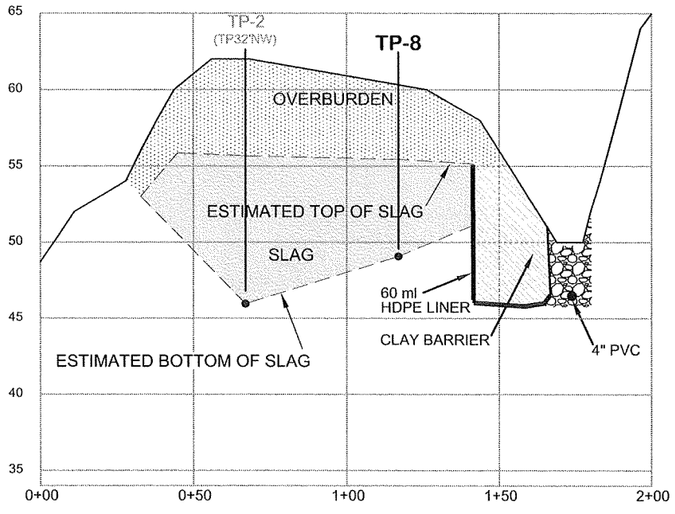
A-A' 6|5 CROSS SECTION A-A'



B-B' 6|5 CROSS SECTION B-B'



C-C' 6|5 CROSS SECTION C-C'



D-D' 6|5 CROSS SECTION D-D'

RICHARD W. MCMANUS
STATE OF WASHINGTON
35032
REGISTERED
PROFESSIONAL ENGINEER
6/16/10

	6/16/10	ISSUED FOR CONSTRUCTION	DEW	HF	RM
	DATE	DESCRIPTION	BY	CKD.	APP.

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PREPARED FOR
EARLE M. JORGENSEN COMPANY
10650 ALAMEDA STREET
LYNWOOD, CALIFORNIA 90262

SLAG DISPOSAL BECKWITH PROPERTY
EXCAVATION PROJECT
KENT, WASHINGTON

SLAG FILL CROSS SECTIONS

SCALE
AS SHOWN
PROJECT NO.
831-022
FILE NAME:
SHEET SET5.dwg
SHEET NO. 6 OF 12

90TH AVE S

EDGE OF ASPHALT

90TH AVE S

RE-CONSTRUCT EXISTING DRAINAGE DITCH AS REQUIRED

3 / 7 | 11

SUMP 1

SUMP 4

WASTEWATER PIPING

SUMP 2

TREATED WATER STORAGE TANK

TREATED WATER DISCHARGE PIPING

SUMP 3

S. 218TH ST.

ACCESS ROAD

4 / 7 | 11

EXISTING CULVERT TO REMAIN SEE EXCAVATION NOTES

RE-ALIGNED DRAINAGE DITCH AS REQUIRED

3 / 7 | 11

WETLAND BUFFER RESTORATION AREA

EXISTING INTERCEPTOR DRAIN AND CLAY BARRIER TO REMAIN

DETENTION POND

PARCEL NUMBER
7757800265

TENNIS COURT

EXISTING BUILDING

DECK

℄ STREAM

STANDING WATER IN THIS AREA

0 60

Scale in feet

CONTOUR INTERVAL: 2 FOOT

RICHARD W. MCMANUS
STATE OF WASHINGTON
35032
REGISTERED
PROFESSIONAL ENGINEER

6/16/10

	DATE	DESCRIPTION	BY	CKD.	APP.
	6/16/10	ISSUED FOR CONSTRUCTION	DEW	HF	RM

PREPARED BY

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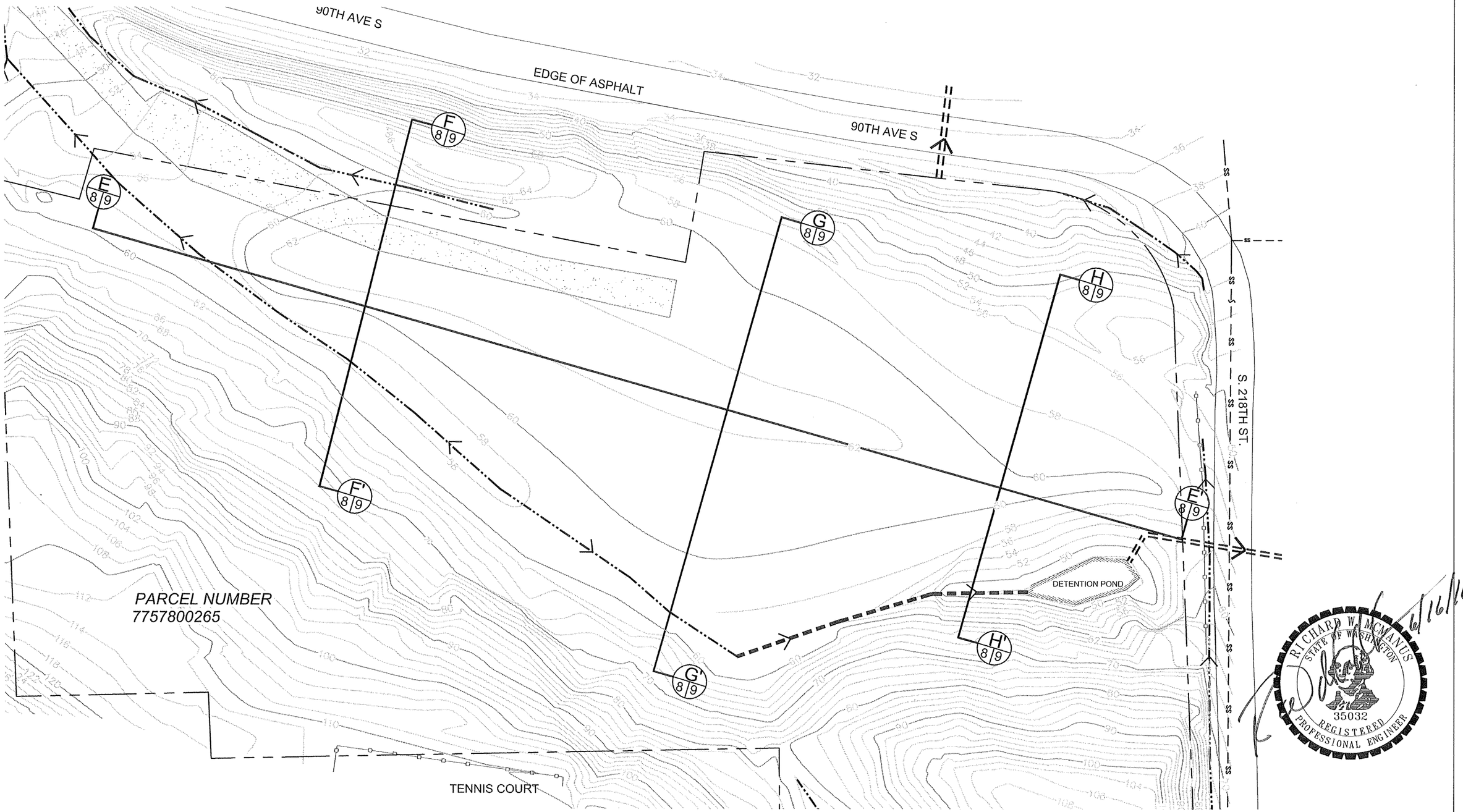
10650 ALAMEDA STREET
LYNWOOD, CALIFORNIA 90262

SLAG DISPOSAL BECKWITH PROPERTY
EXCAVATION PROJECT
KENT, WASHINGTON

FINAL GRADING PLAN

SCALE: AS SHOWN
PROJECT NO.: 831-022
FILE NAME: SHEET SET5.dwg
SHEET NO.: 7 OF 12



RICHARD W. MCMANUS
STATE OF WASHINGTON
35032
REGISTERED
PROFESSIONAL ENGINEER

6/16/10

	6/16/10	ISSUED FOR CONSTRUCTION	DEW	HF	RM
	DATE	DESCRIPTION	BY	CKD.	APP.

N

0 50

Scale in feet

CONTOUR INTERVAL: 2 FOOT

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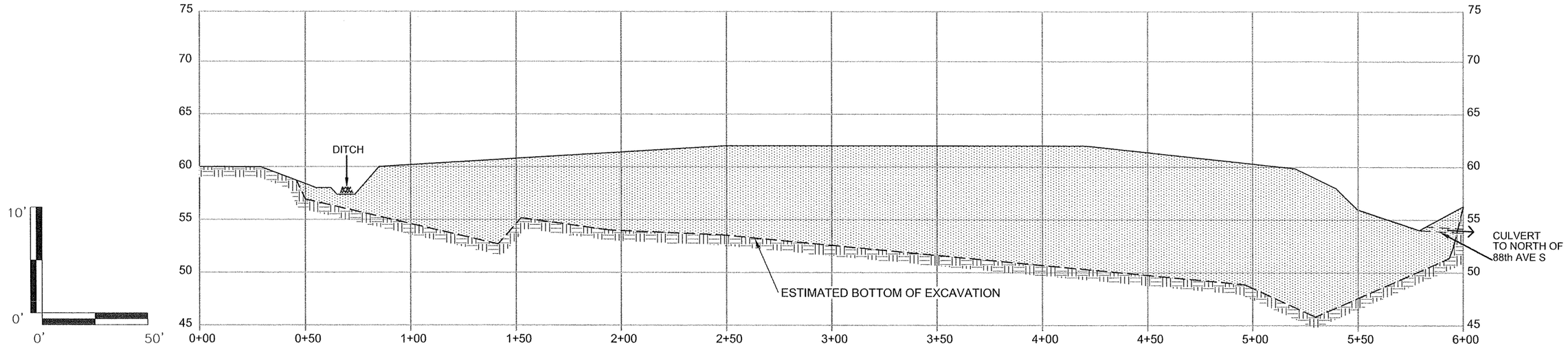
PREPARED FOR

EARLE M. JORGENSEN COMPANY
10650 ALAMEDA STREET
LYNWOOD, CALIFORNIA 90262

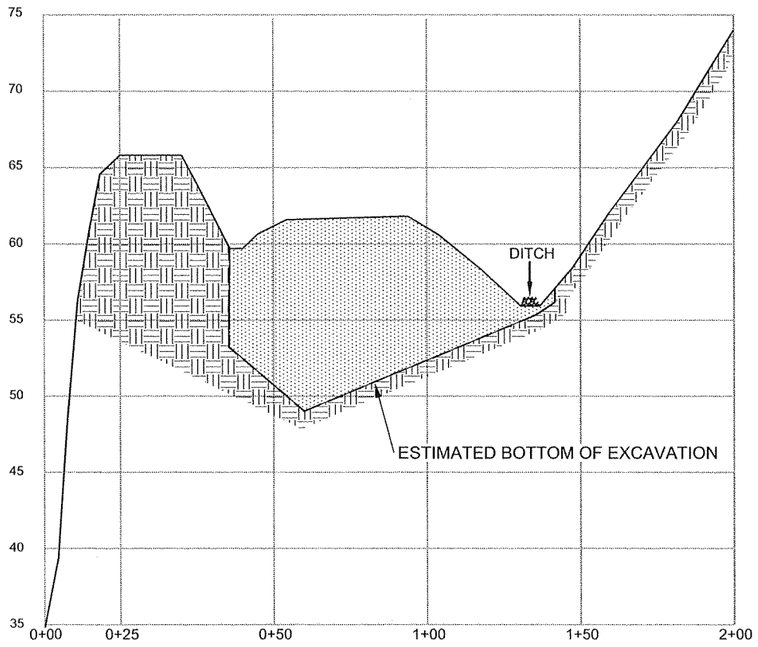
SLAG DISPOSAL BECKWITH PROPERTY
EXCAVATION PROJECT
KENT, WASHINGTON

FINAL GRADE LINE OF CROSS SECTIONS

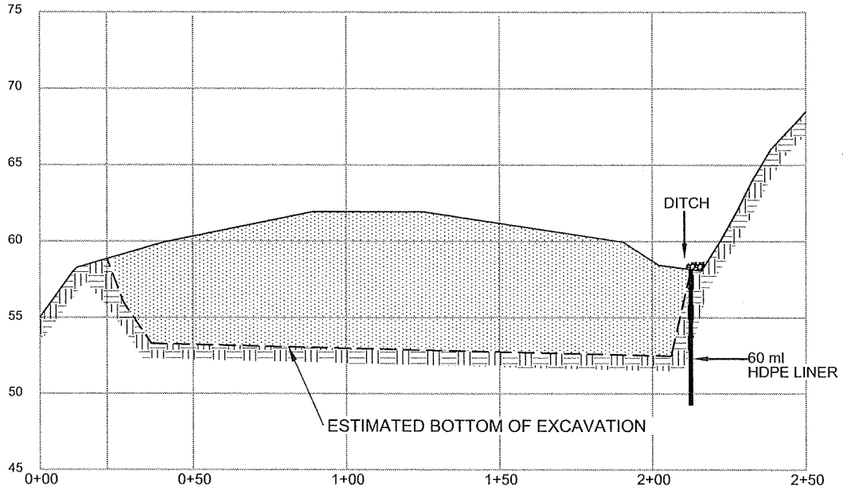
SCALE: AS SHOWN
PROJECT NO.: 831-022
FILE NAME: SHEET SET5.dwg
SHEET NO.: 8 OF 12



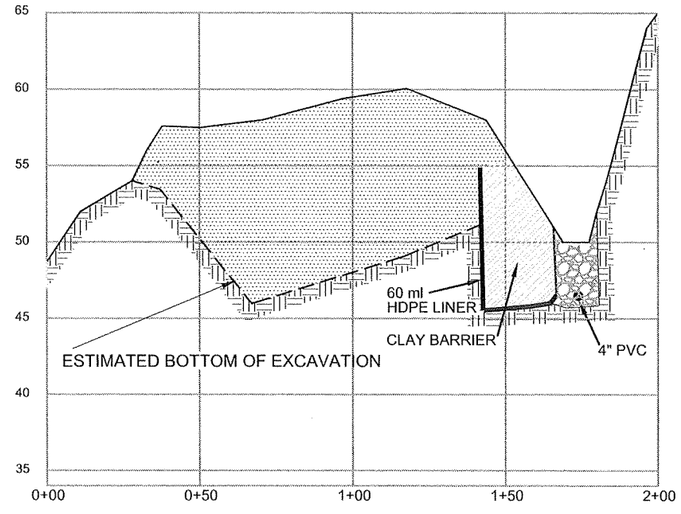
E-E' 9 8 CROSS SECTION E-E'



F-F' 9 8 CROSS SECTION F-F'



G-G' 9 8 CROSS SECTION G-G'



H-H' 9 8 CROSS SECTION H-H'

RICHARD W. MCMANUS
STATE OF WASHINGTON
35032
REGISTERED
PROFESSIONAL ENGINEER
6/16/10

	6/16/10	ISSUED FOR CONSTRUCTION	DEW	HF	RM
	DATE	DESCRIPTION	BY	CKD.	APP.

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10650 ALAMEDA STREET
LYNWOOD, CALIFORNIA 90262

SLAG DISPOSAL BECKWITH PROPERTY
EXCAVATION PROJECT
KENT, WASHINGTON

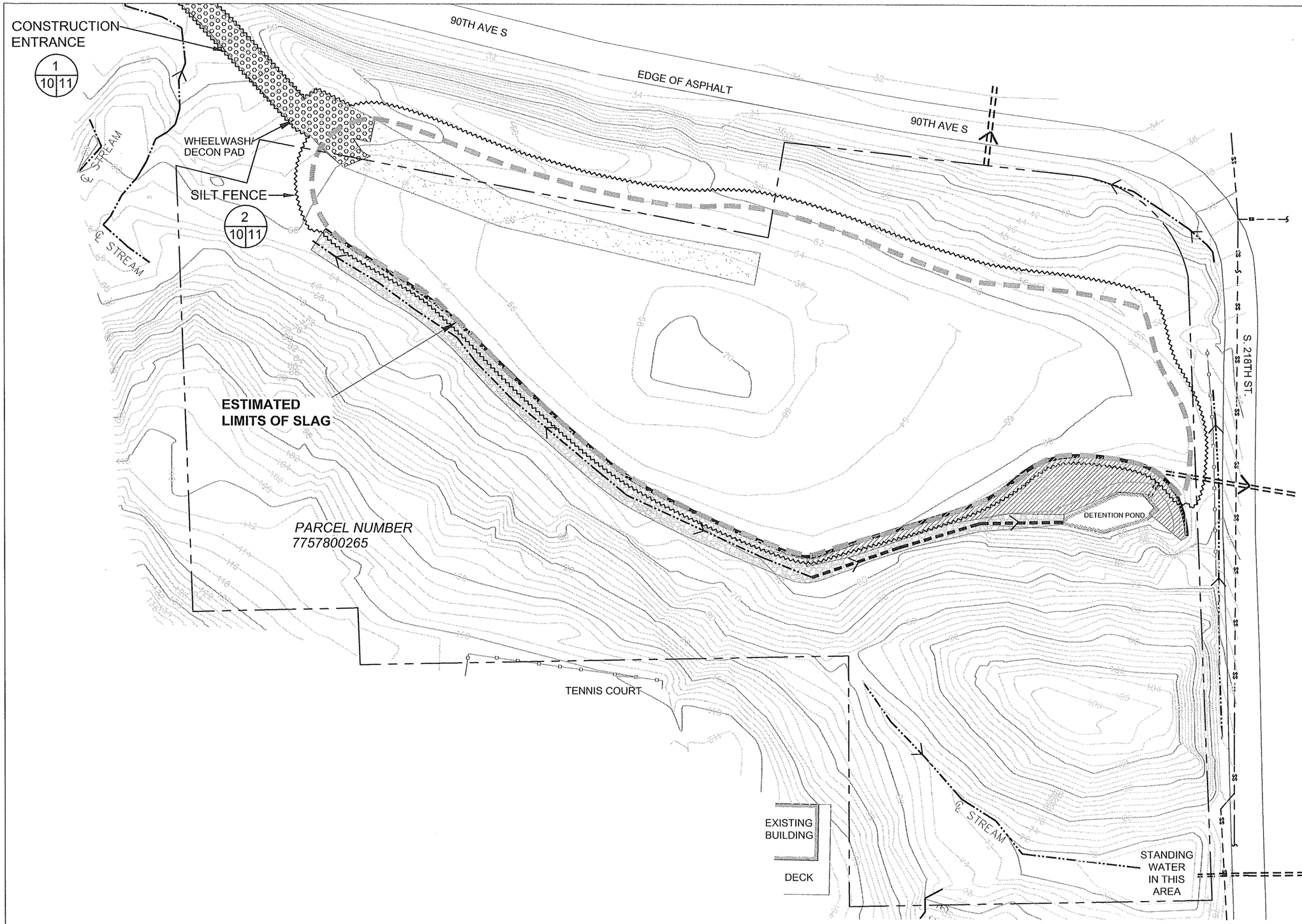
FINAL GRADE CROSS SECTIONS

SCALE
AS SHOWN

PROJECT NO.
831-022

FILE NAME:
SHEET SET5.dwg

SHEET NO. 9 OF 12



RICHARD W. MCMANUS
STATE OF WASHINGTON
35032
REGISTERED PROFESSIONAL ENGINEER
6/16/10

	6/16/10	ISSUED FOR CONSTRUCTION	DEW	HF	RM
	DATE	DESCRIPTION	BY	CKD.	APP.

N
0 60
Scale in feet
CONTOUR INTERVAL: 2 FOOT

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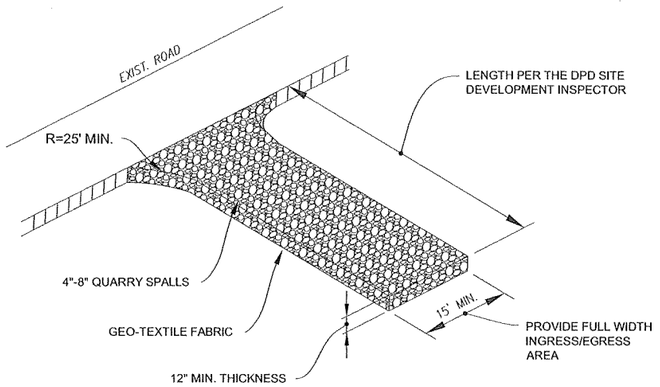
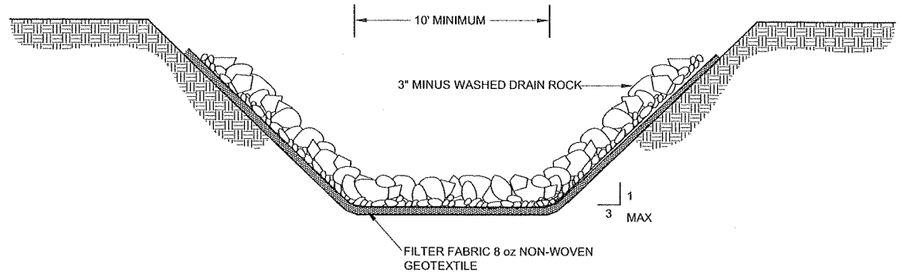
SLAG DISPOSAL BECKWITH PROPERTY EXCAVATION PROJECT
KENT, WASHINGTON
EROSION CONTROL PLAN

SCALE AS SHOWN
PROJECT NO. 831-022
FILE NAME: SHEET SET5.dwg
SHEET NO. 10 OF 12

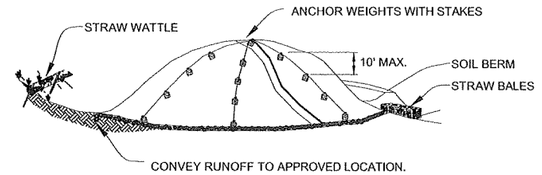


STABILIZED ACCESS SHALL BE USED IN ALL AREAS OF THE SITE WITH VEHICLE TRAFFIC AND PARKING, INCLUDING PLANTING STRIPS. OTHER MEANS OF PROVIDING STABILIZED ACCESS WILL BE CONSIDERED.

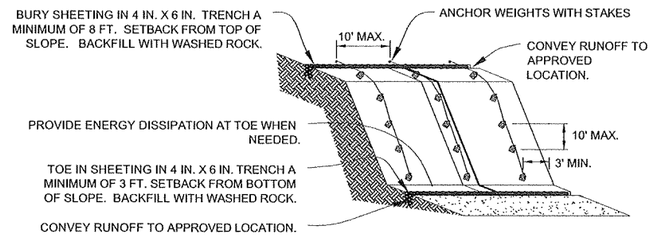
1 / 11|10 TYPICAL CONSTRUCTION ENTRANCE
NOT TO SCALE



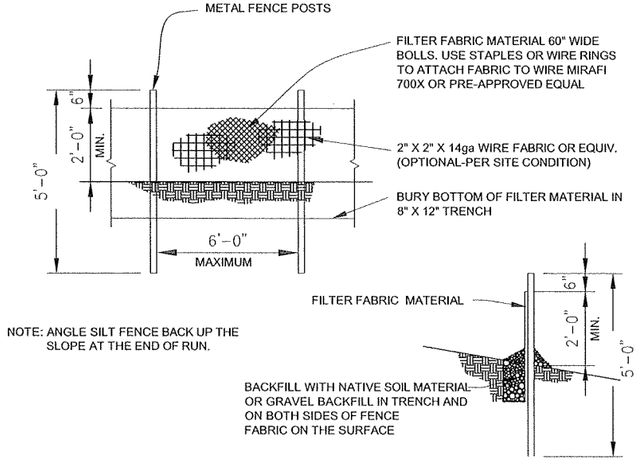
3 / 11|7 DITCH DETAIL
NOT TO SCALE



CUT SLOPES

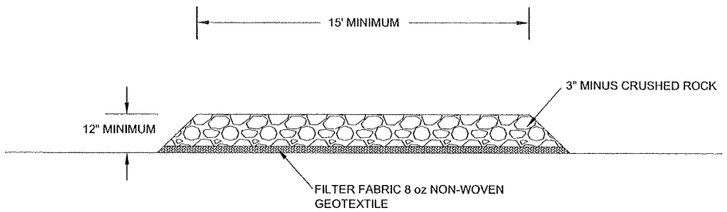


TYPICAL STOCKPILE
NOT TO SCALE



NOTE: ANGLE SILT FENCE BACK UP THE SLOPE AT THE END OF RUN.

2 / 11|10 TYPICAL SILT FENCE
NOT TO SCALE



4 / 11|7 ACCESS ROAD
NOT TO SCALE

	6/16/10	ISSUED FOR CONSTRUCTION	DEW	HF	RM
	DATE	DESCRIPTION	BY	CKD.	APP.

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975 5th Avenue Northwest
Issaquah, WA 98027

PREPARED FOR
EARLE M. JORGENSEN COMPANY
10650 ALAMEDA STREET
LYNWOOD, CALIFORNIA 90262

SLAG DISPOSAL BECKWITH PROPERTY EXCAVATION PROJECT
KENT, WASHINGTON
DETAILS

SCALE: AS SHOWN
PROJECT NO.: 831-022
FILE NAME: SHEET SET5.dwg
SHEET NO.: 11 OF 12

EXCAVATION NOTES

1. CALL THE UNDERGROUND LOCATE LINE 1-800-424-5555 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATIONS.
2. ALL UTILITIES SHOWN ON THE DRAWINGS ARE PRESENTED FOR GENERAL INFORMATION ONLY. THE UTILITIES SHOWN MAY NOT BE INCLUSIVE OF ALL UTILITIES THAT EXIST ON THE PROPERTY. UTILITY LOCATIONS ARE APPROXIMATE AND ARE NOT TO BE RELIED UPON DURING CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE ACTUAL LOCATIONS OF ALL UTILITIES.
3. PERFORM SITE SURVEY TO ESTABLISH HORIZONTAL AND VERTICAL CONTROL AND MARK ESTIMATED EXCAVATION LIMITS BASED ON "ESTIMATED LIMITS OF SLAG CONTROL POINTS" TABLE, SHEET 4 OF 12. SURVEY SHALL BE PERFORMED BY A LICENSED SURVEYOR.
4. THE ESTIMATED LIMITS OF SLAG INDICATED ON THE DRAWINGS WAS DETERMINED BY EXCAVATION OF TEST PITS AND IS APPROXIMATE. THE ACTUAL EXTENT OF EXCAVATION REQUIRED TO REMOVE THE SLAG WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.
5. DO NOT DISTURB AREAS WITHIN 10 FEET OF STEEP SLOPES AS INDICATED ON THE DRAWINGS.
6. INSTALL CONSTRUCTION STAKING AND FLAGGING TO DENOTE 10-FOOT BUFFER ZONE AROUND STEEP SLOPE AREAS. DO NOT IMPACT EXISTING VEGETATION WITHIN THE BUFFER ZONE OR STEEP SLOPE AREAS. IF SLAG IS DETERMINED TO EXTEND INTO BUFFER ZONE AT ANY LOCATION NOTIFY THE ENGINEER.
7. OVERBURDEN DETERMINED NOT TO HAVE BEEN IMPACTED BY THE SLAG, AS DESIGNATED BY THE ENGINEER, SHALL BE USED AS BACKFILL.
8. TURF AND WOOD DEBRIS OVERBURDEN SHALL BE SHREDDED AND CHIPPED PRIOR TO BEING USED AS BACKFILL
9. OVERBURDEN STOCKPILES SHALL BE COVERED WITH 8 MIL SHEET PLASTIC, AND WEIGHTED TO PREVENT WIND DISTURBANCE AND SEDIMENTATION.
10. IMPLEMENT DUST CONTROL MEASURES AS REQUIRED TO PREVENT VISIBLE DUST FROM LEAVING THE SITE.
11. SLOPE EXCAVATION SIDEWALLS AS REQUIRED BY WASHINGTON ADMINISTRATIVE CODE 296-155-PART N, SAFETY STANDARDS FOR CONSTRUCTION WORK, EXCAVATION, TRENCHING, AND SHORING.
12. CONTRACTOR SHALL ASSIST THE ENGINEER IN COLLECTING SOIL SAMPLES FOR TESTING AS REQUIRED. SOIL SAMPLING WILL BE PERFORMED ON A 25-FOOT BY 25-FOOT CONTROL GRID. CONTRACTOR SHALL ESTABLISH AND MAINTAIN THE CONTROL GRID AT THE DIRECTION OF THE ENGINEER.
13. MAINTAIN THE EXISTING INTERCEPTOR DRAIN ON THE EAST SIDE OF THE SITE OR MAKE ALTERNATE PROVISIONS TO DIRECT DRAINAGE AROUND THE SLAG.
14. EXISTING SURFACE WATER DRAINAGE SHALL BE MANAGED TO PREVENT CONTACT WITH SLAG TO THE EXTENT PRACTICABLE. SURFACE WATER THAT CONTACTS THE SLAG SHALL BE COLLECTED AND TREATED WITH THE EXISTING WATER TREATMENT SYSTEM.
15. GROUNDWATER ENCOUNTERED DURING SLAG EXCAVATION SHALL BE COLLECTED AND TREATED WITH THE EXISTING WATER TREATMENT SYSTEM.
16. WHERE EXISTING 60-MIL HDPE VERTICAL LINER AT EAST SIDE OF SLAG IS ENCOUNTERED REMOVE DOWN TO 2-FEET BELOW FINAL GRADE.
17. DO NOT DISTURB THE EXISTING DETENTION POND OR CLAY BARRIER.
18. DO NOT DISTURB EXISTING 4-INCH PVC DRAIN PIPE DISCHARGING TO THE DETENTION POND.
19. EXISTING DETENTION POND DISCHARGE CULVERT TO REMAIN. EXTENT OF SLAG IN THIS AREA IS UNKNOWN. IF CULVERT IS DAMAGED OR REMOVED DURING EXCAVATION OPERATIONS, IT IS TO BE REPLACED IN-KIND.
20. SLAG REMOVAL IN THE 'EXCAVATION CAUTION AREA' MAY EXTEND CLOSE TO THE 'STEEP SLOPE AREA'. AN OWNER PROVIDED GEOTECHNICAL ENGINEER OR ENGINEERING GEOLOGIST MUST BE PRESENT TO MONITOR THE WORK WHEN EXCAVATING IN THIS AREA. THE CONTRACTOR MAY BE REQUIRED TO EXCAVATE AND BACKFILL THIS AREA IN SECTIONS TO PREVENT IMPACTS TO STEEP SLOPES
21. CONTRACTOR SHALL PROVIDE THE ENGINEER WITH THE NAME OF THE PROPOSED DISPOSAL FACILITY FOR REVIEW PRIOR TO REMOVING ANY SLAG FROM THE SITE. THE CONTRACTOR IS ENCOURAGED TO PURSUE DISPOSAL AND RECYCLING ALTERNATIVES.
22. APPROXIMATELY 6-INCHES OF TOPSOIL COVERS THE EXISTING CAP. THE TOPSOIL SHALL BE STRIPPED AND RETAINED FOR USE IN SITE RESTORATION. THE CONTRACTOR SHALL BLEND TURF AND WOOD DEBRIS INTO THE STRIPPED TOPSOIL (SEE NOTE 8).
23. SECURITY SIREN AND FLASHING STROBE SHALL BE MAINTAINED BY THE CONTRACTOR
24. NIGHT TIME SECURITY PATROLS PROVIDED BY OWNER.

WATER TREATMENT NOTES

1. TWO WEEKS FOLLOWING NOTICE TO PROCEED THE CONTRACTOR SHALL BECOME RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF THE EXISTING WATER TREATMENT SYSTEM. RESPONSIBILITY FOR RENTAL OF THE 20,000 GALLON WATER STORAGE TANK, 25KVA GENERATOR, TEMPORARY TOILET, AND TEMPORARY COMPOUND FENCING WILL BE TRANSFERRED TO THE CONTRACTOR. THE CONTRACTOR SHALL PROVIDE 25 FEET OF JERSEY BARRIERS, FUEL TANK, AND FUEL FOR THE WATER TREATMENT SYSTEM OPERATION. THE WATER TREATMENT SYSTEM GENERATOR USES APPROXIMATELY 400 GALLONS OF FUEL PER MONTH. THE OWNER SHALL REMAIN RESPONSIBLE FOR RENTAL OF WATER TREATMENT SYSTEM INJECTOR EQUIPMENT, CO2 STORAGE EQUIPMENT, ELECTRONIC CONTROLS AND SUPPLY OF THE CO2.
2. CONTRACTOR SHALL COLLECT AND TREAT SURFACE WATER AND GROUNDWATER IMPACTED BY CONTACT WITH THE SLAG UTILIZING THE EXISTING WATER TREATMENT SYSTEM MODIFIED BY THE CONTRACTOR AS REQUIRED.
3. WATER TREATMENT SYSTEM SHALL BE OPERATED IN COMPLIANCE WITH KING COUNTY INDUSTRIAL WASTE PROGRAM MAJOR DISCHARGE AUTHORIZATION NUMBER 4170-03, ISSUED JANUARY 12, 2010.
4. CONSTRUCTION SHALL BE SEQUENCED TO MAINTAIN CONTINUOUS WATER TREATMENT OPERATIONS.
5. WATER TREATMENT SYSTEM, INCLUDING SUMPS, SHALL BE MAINTAINED OPERATIONAL FOR A PERIOD OF 2 MONTHS FOLLOWING REMOVAL OF ALL SLAG MATERIAL.
6. WATER TREATMENT SYSTEM OPERATION AND MAINTENANCE IS PERFORMED WEEKLY. WEEKLY VISITS ARE ESTIMATED TO BE 1-2 HOURS AND REQUIRE ONE LABORER.
7. THE WATER TREATMENT SYSTEM MAY BE RELOCATED TO ANY LOCATION ON THE SITE THAT IS AWAY FROM THE ROAD AND NOT LOCATED WITHIN THE STEEP SLOPE AREAS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE RE-WIRING ELECTRICAL COMPONENTS OF THE WATER TREATMENT SYSTEM DURING SYSTEM RELOCATIONS.
9. UPON COMPLETION OF THE EXCAVATION ACTIVITIES, THE WATER TREATMENT SYSTEM PIPING AND ELECTRICAL CONDUIT SHALL BE BURIED.

SITE GRADING AND RESTORATION NOTES

1. FOLLOWING REMOVAL OF THE SLAG, AS CONFIRMED BY SOIL SAMPLING AND ANALYSIS PERFORMED BY THE ENGINEER, THE SITE SHALL BE BACKFILLED AND GRADED USING STOCKPILED NON-SLAG IMPACTED OVERBURDEN MATERIAL.
2. BACKFILL OPERATIONS MAY BE SEQUENCED TO BACKFILL PORTIONS OF THE SITE WHILE EXCAVATING OTHERS.
3. BACKFILL SHALL BE PLACED IN 1-FOOT LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 85% OF MAXIMUM DENSITY AS DETERMINED BY THE STANDARD PROCTOR TEST (ASTM D698).
4. THE SITE SHALL BE REGRADED TO FOLLOW THE DRAINAGE PATTERN SHOWN ON THE DRAWINGS. IT IS ANTICIPATED THAT FINAL GRADE MAY VARY FROM THE LINES AND GRADES SHOWN ON THE DRAWING DUE TO VARIATIONS IN ACTUAL EXCAVATION QUANTITIES FROM ESTIMATED QUANTITIES.
5. DRAINAGE DITCHES SHALL BE INSTALLED TO DIRECT SURFACE WATER RUNOFF AS SHOWN.
6. HYDROSEED ALL DISTURBED AREAS USING A HYDROSEED/MULCH BLEND DESIGNED FOR USE IN WESTERN WASHINGTON. THE HYDROSEED/MULCH MIX SHALL INCLUDE A BONDED FIBER MATRIX TO PREVENT EROSION. SUBMIT PROPOSED HYDROSEED/MULCH BLEND FOR APPROVAL BY ENGINEER PRIOR TO APPLICATION.
7. FOLLOWING COMPLETION OF WATER TREATMENT OPERATIONS (ESTIMATED TO BE 2 MONTHS AFTER THE COMPLETION OF THE SLAG REMOVAL) DEMOBILIZE TREATMENT EQUIPMENT, REMOVE ALL SUMPS, CONDUIT AND PIPING INCLUDED ALL BURIED PIPING, RESTORE DISTURBED AREAS, AND HYDROSEED.
8. FOLLOWING SITE GRADING AND BACKFILL COMPACTION, THE CONTRACTOR SHALL SPREAD THE RETAINED TOPSOIL IN AN EVEN SIX INCH COVER OVER DISTURBED AREAS. ANY EXCESS TOPSOIL WILL BE PLACED IN WETLAND RESTORATION AREA.
9. THE SOURCE OF ALL IMPORT MATERIAL, INCLUDING DRAIN ROCK, CRUSHED ROCK, AND ANY OTHER FILL MATERIAL MUST BE APPROVED BY THE ENGINEER TWO WEEKS PRIOR TO PLACEMENT. THE ENGINEER MAY REQUIRE TESTING PRIOR TO MATERIAL ACCEPTANCE. THE COST OF ANY TESTING REQUIRED FOR MATERIAL ACCEPTANCE IS NOT INCLUDED IN THE CONTRACT PRICE.
10. THE CONTRACTOR SHALL PREPARE AN AS-BUILT SURVEY AT THE COMPLETION OF THE SITE RESTORATION WORK. THE AS-BUILT SURVEY SHALL BE PREPARED BY A LICENSED SURVEYOR.
11. THE ACCESS ROAD WIDTH SHALL NOT EXTEND BEYOND THE EXISTING FOOTPRINT.

EROSION CONTROL NOTES

1. ON-SITE EROSION CONTROL MEASURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. IN CASE EROSION OR SEDIMENTATION OCCURS TO ADJACENT PROPERTY, ALL CONSTRUCTION WORK WITHIN THE SITE THAT WILL AGGRAVATE THE SITUATION MUST CEASE AND THE CONTRACTOR SHALL IMMEDIATELY COMMENCE ON-SITE RESTORATION OR MITIGATION MEASURES. RESTORATION ACTIVITY SHALL CONTINUE UNTIL SUCH TIME AS THE PROBLEM IS RECTIFIED.
3. ALL EROSION AND SEDIMENTATION CONTROL DEVICES SHOWN ON THE DRAWINGS SHALL BE INSTALLED PRIOR TO OR AS PART OF THE FIRST STAGE OF SITE PREPARATION.
4. SHOULD THE TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES AS SHOWN ON THIS DRAWING NOT PROVE ADEQUATE TO CONTROL EROSION AND SEDIMENTATION, THE CONTRACTOR SHALL INSTALL ADDITIONAL FACILITIES AS NECESSARY TO PROTECT ADJACENT PROPERTIES, SENSITIVE AREAS, NATURAL WATER COURSES, AND/OR STORM DRAINAGE SYSTEMS.
5. ALL NECESSARY EROSION CONTROL FACILITIES SHALL BE PROPERLY MAINTAINED TO PREVENT DEBRIS, DUST, AND MUD FROM ACCUMULATING ON THE PUBLIC RIGHT-OF-WAY.
6. SHOULD ANY DEBRIS, DUST, OR MUD ACCUMULATE IN THE PUBLIC RIGHT-OF-WAY THE CONTRACTOR SHALL PROVIDE FOR SWEEPING SERVICES AS REQUIRED TO CLEAN THESE AREAS.
7. ALL LAND DISTURBING ACTIVITY IS SUBJECT TO PROVISIONS OF THE CITY OF KENT STORMWATER MANAGEMENT REGULATIONS. SPECIFIC REQUIREMENTS TO BE FOLLOWED AT THE SITE INCLUDE:
   a) PROTECT ADJACENT PROPERTIES FROM ANY INCREASED RUNOFF OR SEDIMENTATION DUE TO THE CONSTRUCTION THROUGH THE USE OF BEST MANAGEMENT PRACTICES (BMPs), INCLUDING BUT NOT LIMITED TO, SEDIMENT TRAPS, SEDIMENT PONDS, FILTER FABRIC FENCES, VEGETATIVE BUFFER STRIPS AND BIO-ENGINEERED SWALES.
   b) CONSTRUCTION ACCESS TO THE SITE SHALL BE LIMITED TO ONE ENTRANCE CONSTRUCTED AT THE SOUTHWEST CORNER OF THE SITE. STABILIZE THE ENTRANCE WITH QUARRY SPALLS TO PREVENT SEDIMENT FROM LEAVING THE SITE OR ENTERING STORM DRAINS.
   c) INSTALL AND OPERATE A DECONTAMINATION PAD AS REQUIRED TO CLEAN VEHICLES LEAVING THE SITE AND PREVENT SEDIMENT FROM LEAVING SITE OR ENTERING STORM DRAINS.
   d) PREVENT SEDIMENT, CONSTRUCTION DEBRIS, PAINTS, SOLVENTS, ETC. OR OTHER TYPES OF POLLUTION FROM ENTERING STORMWATER DRAINAGE SYSTEMS.
   e) ALL EXPOSED SOILS SHALL REMAIN DENUDED FOR NO LONGER THAN SEVEN (7) DAYS AND SHALL BE STABILIZED WITH MULCH, HAY OR THE APPROPRIATE GROUND COVER. ALL EXPOSED SOILS SHALL BE COVERED IMMEDIATELY DURING ANY RAIN EVENT.
   f) HYDROSEED AND MULCH ENTIRE SITE UPON COMPLETION OF WORK OR IF WORK CEASES FOR MORE THAN TEN (10) DAYS. OTHER PROTECTION MEASURES MAY BE ACCEPTABLE IF APPROVED BY THE CITY OF KENT.
8. CONTRACTOR SHALL BE AVAILABLE FOR A PRE-CONSTRUCTION CONFERENCE WITH A CITY OF KENT REPRESENTATIVE TO DISCUSS IMPLEMENTATION AND MAINTENANCE OF PROJECT EROSION CONTROL FEATURES.
9. ALL EROSION CONTROL MEASURES AND FACILITIES SHALL BE CLEANED OF ALL CONSTRUCTION DEPOSITS OR DEBRIS PRIOR TO FINAL COMPLETION OF THE CLEANUP ACTION.
10. A CONSTRUCTION STORMWATER GENERAL PERMIT APPLICATION WILL BE SUBMITTED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING TO ALL PERMIT REQUIREMENTS WHICH INCLUDE PREPARING THE STORMWATER POLLUTION PREVENTION PLAN AND PROVIDING A CERTIFIED EROSION AND SEDIMENT CONTROL LEAD TO PERFORM SITE INSPECTIONS WEEKLY OR WITHIN 24 HOURS OF ANY DISCHARGE FROM THE SITE

SILT FENCE CONSTRUCTION NOTES

1. FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL AND CUT TO THE LENGTH OF THE BARRIER TO AVOID USE OF JOINTS. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6-INCH OVERLAP, AND SECURELY FASTENED AT BOTH ENDS TO POSTS.
2. POSTS SHALL BE SPACED A MINIMUM OF 6 FEET APART AND DRIVEN SECURELY INTO THE GROUND (MINIMUM OF 30 INCHES).
3. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 8 INCHES WIDE AND 12 INCHES DEEP ALONG THE LINE OF POSTS AND UPSLOPE FROM THE BARRIER. THIS TRENCH SHALL BE BACKFILLED WITH WASHED GRAVEL, OR COMPACTED NATIVE SOIL.
4. WHEN STANDARD STRENGTH FILTER FABRIC IS USED, A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY-DUTY WIRE STAPLES AT LEAST 1 INCH LONG, TIE WIRES, OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 4 INCHES AND SHALL NOT EXTEND MORE THAN 24 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
5. STANDARD STRENGTH FILTER FABRIC SHALL BE STAPLED OR WIRED TO THE FENCE, AND 20 INCHES OF THE FABRIC SHALL BE EXTENDED INTO THE TRENCH. THE FABRIC SHALL NOT EXTEND MORE THAN 24 INCHES ABOVE THE ORIGINAL GROUND SURFACE. FILTER FABRIC SHALL NOT BE STAPLED TO EXISTING TREES.
6. WHEN EXTRA-STRENGTH FILTER FABRIC AND CLOSER POST SPACING IS USED, THE WIRE MESH SUPPORT FENCE MAY BE ELIMINATED. IN SUCH A CASE, THE FILTER FABRIC IS STAPLED OR WIRED DIRECTLY TO THE POSTS WITH ALL OTHER PROVISIONS OF ABOVE NOTES APPLYING.
7. FILTER FABRIC FENCES SHALL NOT BE REMOVED BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.
8. CLEAN AND PROVIDE REGULAR MAINTENANCE OF THE SILT FENCE. THE SILT FENCE IS TO REMAIN VERTICAL AND IS TO FUNCTION PROPERLY THROUGH THE DURATION OF THE PROJECT.

RICHARD W. MCMANUS
STATE OF WASHINGTON
35032
REGISTERED
PROFESSIONAL ENGINEER

6/16/10

	6/16/10	ISSUED FOR CONSTRUCTION	DEW	HF	RM
	DATE	DESCRIPTION	BY	CKD.	APP.

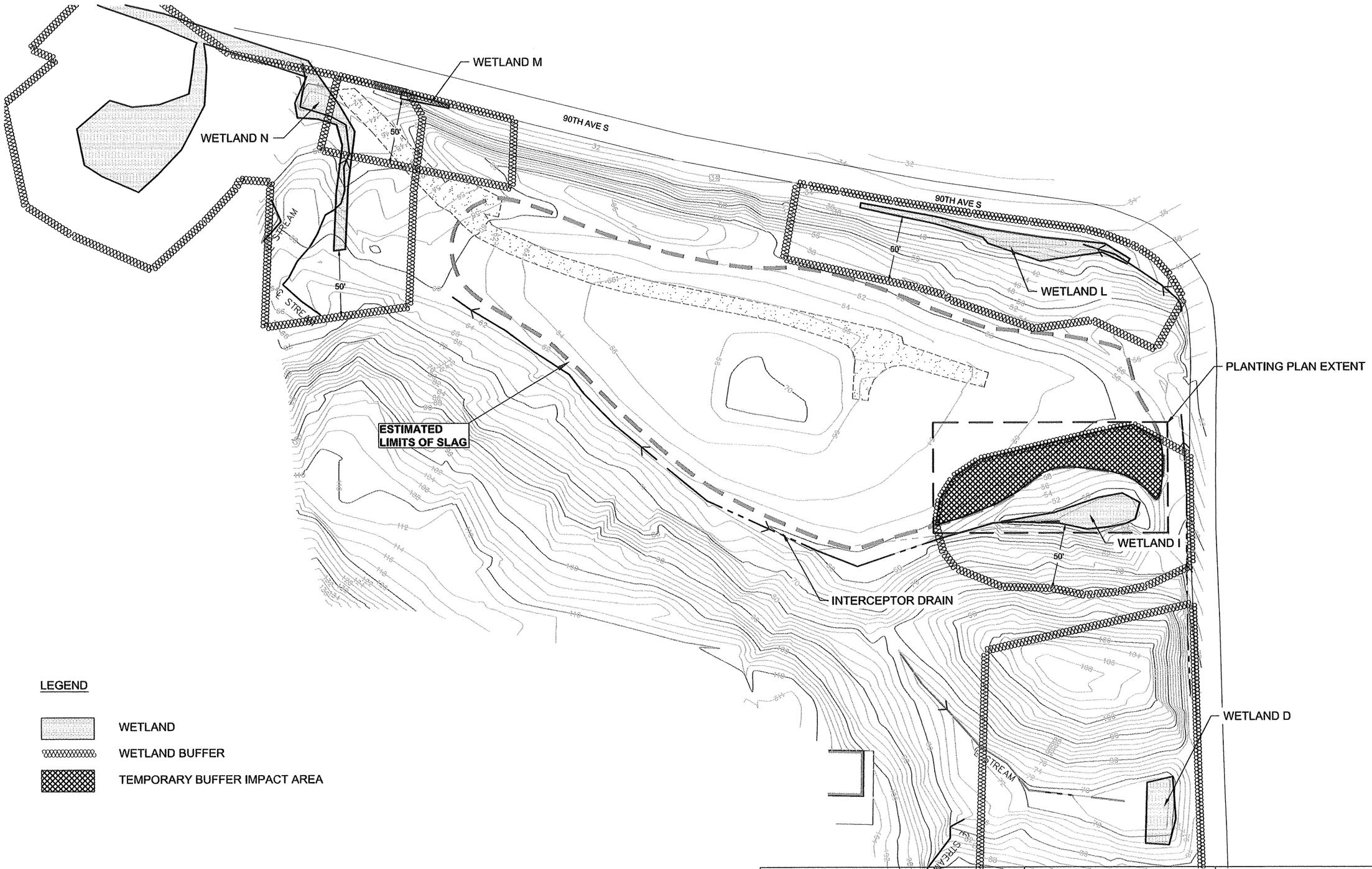
PREPARED BY
FARALLON CONSULTING
975 5th Avenue Northwest
Issaquah, WA 98027

PREPARED FOR
EARLE M. JORGENSEN COMPANY
10650 ALAMEDA STREET
LYNWOOD, CALIFORNIA 90262

SLAG DISPOSAL BECKWITH PROPERTY EXCAVATION PROJECT
KENT, WASHINGTON

NOTES

SCALE: AS SHOWN
PROJECT NO.: 831-022
FILE NAME: SHEET SET5.dwg
SHEET NO.: 12 OF 12



LEGEND

- WETLAND
- WETLAND BUFFER
- TEMPORARY BUFFER IMPACT AREA

0 70

Scale in feet

CONTOUR INTERVAL: 2 FOOT

	6/15/10	ISSUED FOR CONSTRUCTION	BMB	PH	6/15/10
	DATE	DESCRIPTION	BY	CKD.	APP.

STATE OF WASHINGTON
REGISTERED LANDSCAPE ARCHITECT
PETER C. HUMMEL
CERTIFICATE NO. 422

PREPARED BY
FARALLON CONSULTING
ANCHOR QEA

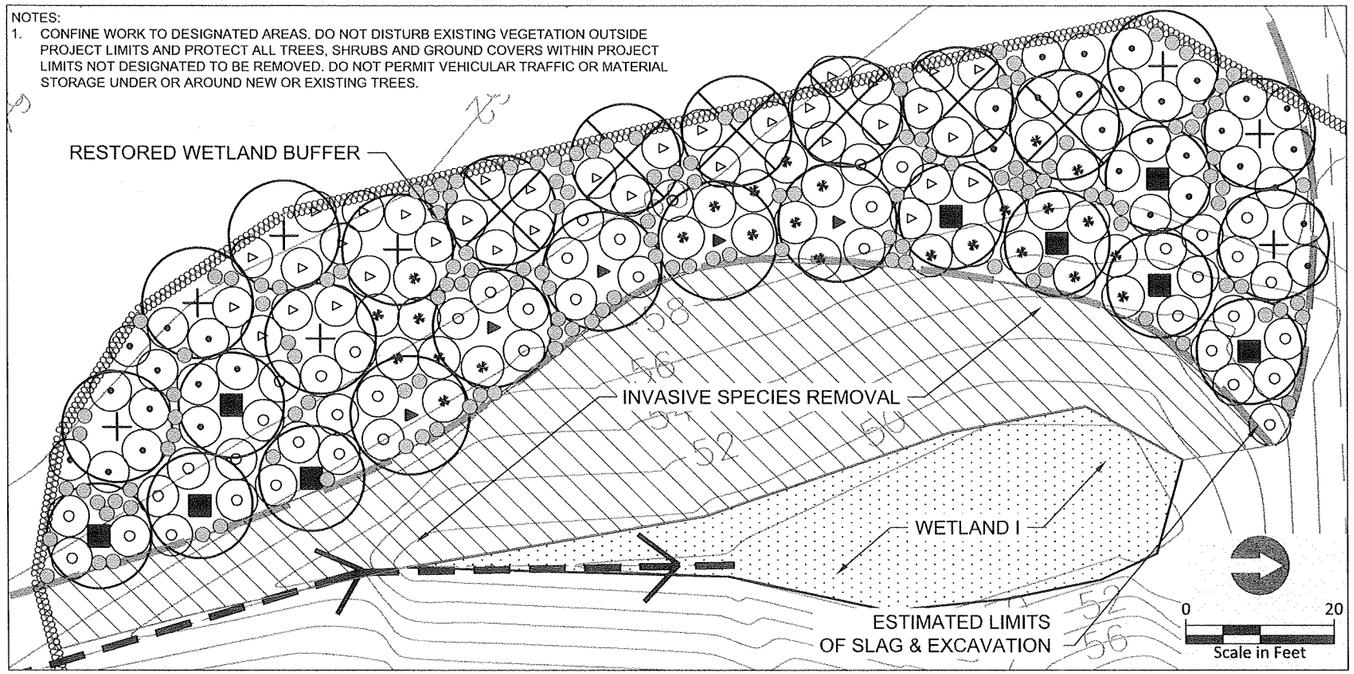
PREPARED FOR
EARLE M. JORGENSEN COMPANY
10650 ALAMEDA STREET
LYNWOOD, CALIFORNIA 90262

SLAG DISPOSAL BECKWITH PROPERTY SITE
KENT, WASHINGTON

WETLAND BUFFER PLAN

SCALE AS SHOWN
PROJECT NO. 831-022
FILE NAME: 100224-PL-001.dwg
SHEET NO. W1 OF 3

NOTES:
1. CONFINE WORK TO DESIGNATED AREAS. DO NOT DISTURB EXISTING VEGETATION OUTSIDE PROJECT LIMITS AND PROTECT ALL TREES, SHRUBS AND GROUND COVERS WITHIN PROJECT LIMITS NOT DESIGNATED TO BE REMOVED. DO NOT PERMIT VEHICULAR TRAFFIC OR MATERIAL STORAGE UNDER OR AROUND NEW OR EXISTING TREES.



PLANTING PLAN

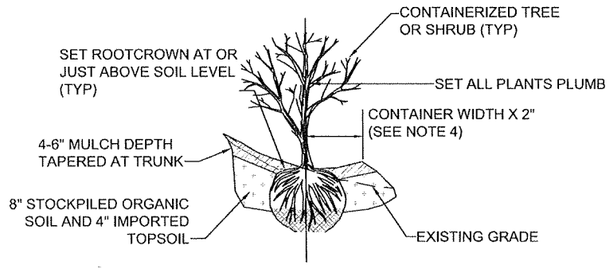
PLANTING SEQUENCE / NOTES:

1. STRIP ORGANIC SOIL AND STOCKPILE SEPARATELY FROM SLAG AND OVERBURDEN.
2. RIP, DISC, OR SCARIFY SUBGRADE SOILS TO A MINIMUM DEPTH OF 12 INCHES. DO NOT SCARIFY WITHIN DRIP LINE OF EXISTING TREES TO BE RETAINED.
3. PLACE 8" OF STOCKPILED SOILS AND 4" OF IMPORTED TOPSOIL WTIHIN WETLAND BUFFER PLANTING AREA.
4. DIG PLANTING PIT THAT IS AT LEAST TWICE THE DIAMETER OF CONTAINER. REMOVE ALL ROCKS, ROOTS, STICKS AND OTHER DEBRIS LARGER THAN 1" DIAMETER. SCARIFY THE PLANTING PIT BOTTOM AND SIDES TO A DEPTH OF 4 INCHES.
5. SET PLANT MATERIAL IN THE PLANTING PIT TO PROPER GRADE AND ALIGNMENT. SET PLANTS UPRIGHT, PLUMB, AND FACED TO GIVE THE BEST APPEARANCE OR RELATIONSHIP TO EACH OTHER. SET CROWN OF PLANT MATERIAL AT THE FINISH GRADE. NO FILLING WILL BE PERMITTED AROUND TRUNKS OR STEMS. BACKFILL THE PLANTING PIT WITH SOIL, DO NOT USE MUDDY MIXTURES FOR BACKFILLING.
6. SPACE PLANTS USING TRIANGULAR SPACING IN ACCORDANCE WITH PLANT SCHEDULE DIMENSIONS. PLANT GROUND COVERS TO WITHIN 18" OF THE TRUNKS OF TREES AND SHRUBS WITHIN PLANTING AREA AND TO WITHIN 12" OF THE EDGE OF PLANTING AREA. PLANT SHRUBS WITHIN 5' OF THE TRUNKS OF TREES WITHIN PLANTING AREA AND TO WITHIN 3' OF THE EDGE OF PLANTING AREA.
7. SHAPE SOIL TO PROVIDE WATERING RING WITH A DIAMETER EQUAL TO 2X THE CONTAINER WIDTH.
8. MULCH PLANTING BEDS IMMEDIATELY AFTER PLANTING. THOROUGHLY WATER MULCHED AREA. AFTER WATERING, RAKE MULCH TO PROVIDE A UNIFORM FINISHED SURFACE.

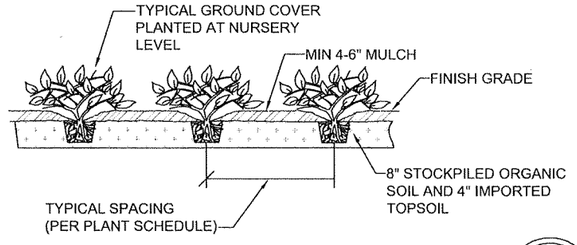
PLANTING SCHEDULE / LEGEND

Common Name	Scientific Name	Size	Spacing	Quantity
TREES				
Red Alder	*Alnus rubra*	5 gal.	15' O.C.	9
Big leaf Maple	*Acer macrophyllum*	5 gal.	15' O.C.	6
Douglas Fir	*Pseudotsuga menziesii*	5 gal.	15' O.C.	8
Western Red Cedar	*Thuja plicata*	5 gal.	15' O.C.	5
SHRUBS				
Indian Plum	*Oemleria cerasiformis*	1 gal.	6' O.C.	36
Salmonberry	*Rubus spectabilis*	1 gal.	6' O.C.	45
Nootka Rose	*Rosa nutkana*	1 gal.	6' O.C.	28
Snowberry	*Symphoricarpos albus*	1 gal.	6' O.C.	35
GROUNDCOVER				
Western Sword Fern	*Polystichum munitum*	1 gal.	As Shown	147

EXISTING WETLAND PREVIOUSLY RESTORED WITH NATIVE PLANTS



1 - TREE & SHRUB PLANTING ON SLOPES
SCALE:NTS



2 - GROUNDCOVER PLANTING
SCALE:NTS

STATE OF WASHINGTON
REGISTERED
LANDSCAPE ARCHITECT
PETER C. HUMMEL
CERTIFICATE NO. 422

	6/15/10	ISSUED FOR CONSTRUCTION	BMB	PH	6/15/10
	DATE	DESCRIPTION	BY	CKD.	APP.

CONTOUR INTERVAL: 2 FOOT

PREPARED BY
FARALLON CONSULTING
ANCHOR QEA

PREPARED FOR
EARLE M. JORGENSEN COMPANY
10650 ALAMEDA STREET
LYNWOOD, CALIFORNIA 90262

SLAG DISPOSAL BECKWITH PROPERTY SITE
KENT, WASHINGTON

PLANTING PLAN

SCALE AS SHOWN
PROJECT NO. 831-022
FILE NAME: 100224-PL-002.dwg
SHEET NO. W2 OF 3

PLANTING SPECIFICATIONS

Submittals:

1. Topsoil analysis results of a 5 pound bag from soils testing laboratory, indicate source and obtain Owner's approval before hauling topsoil to site.
2. Source of the mulch supply and a 1 gallon sample for approval before installation.
3. List of nurseries supplying all plant species with Name and phone number of contact person. Submit representative color, dated photographs of each plant species.

Notifications:

Notify the Owner at least five working days prior to the installation of plant material.

Products:

Topsoil:

The Topsoil shall consist of 60 percent Sand Component and 40 percent Composted Organic Amendment by volume and shall meet or exceed the following specifications:

The Sand Component shall meet the following specifications within reasonable variations:

Screen Size	Percent Passing
6.35 mm	95
#10	85
#30	50
#60	40
#100	20
#200	10

The Composted Organic Soil Amendment shall consist of 100 percent decomposed organic mulch material, and shall consist of yard waste debris or other organic waste materials that have been sorted, ground up, aerated, and aged, and shall be fully composted, stable, and mature (non-aerobic). The composting process shall be for at least 6 months' time and the organic amendment shall have a uniform dark, soil-like appearance and consist of 100 percent recycled content. In addition, the organic amendment shall have the following physical characteristics:

1. Shall be certified by the Process to Further Reduce Pathogens (PFRP) guideline for hot composting as established by EPA. Shall be fully mature and stable before usage.
2. Shall be screened using a sieve no finer than 1/4-inch and no greater than 1/2-inch. Based on dry weight of total organic amendment sample, it must comply with the following percent by weight passing:

Sieve Size	Maximum %	Minimum %
12.7 mm (1/2 inch)	0	100
6.35 mm (1/4 inch)	100	95
4.76 mm	100	90
2.38 mm	100	75
1.00 mm	45	70
500 micron	30	0

3. Meets "composted materials" definition in WAC 173-350 Section 220, available at: http://www.ecy.wa.gov/programs/swfa/compost/
4. Has Organic Matter Content 35 to 65 percent and Carbon to Nitrogen ratio of 25:1.
5. Shall have heavy metal concentrations below the Washington State Department of Agriculture (WSDA) per year load limits as follows:

Metal	WSDA-Maxium pounds per acre per year
Arsenic	0.297
Cadmium	0.079
Cobalt	0.594
Lead	1.981
Mercury	0.019
Molybdenum	0.079
Nickel	0.713
Selenium	0.055
Zinc	7.329

6. Shall be certified by PFRP guidelines for composting as established by the U.S. Environmental Protection Agency (EPA).

PLANTING SPECIFICATIONS CONTINUED

The topsoil mix shall also have the following characteristics:

1. The pH range shall be from 5.5 to 7.5.
2. The Sodium Adsorption Ratio shall be less than 6.0.
3. The Saturation Extract Concentration of Boron shall be less than 1.0 part per million (ppm).
4. The Water Percolation/Infiltration Rate of the disturbed soil sample shall be a minimum of 0.4 inches per hour.
5. The Soil Structure shall be loose, friable, and not subject to consolidation or compaction.
6. The soil mix shall contain less than 100 plant parasitic nematodes per 100 cubic centimeters (cc) of soil.
7. The soil mix shall be relatively free of soil-borne plant pathogens.
8. Minimal weed seed shall be present, based on germination testing of a representative sample.
9. Non-soil components shall be less than 1 percent by volume (i.e., plastic, sticks, glass, etc.).
10. The Final Topsoil Mix shall contain sufficient quantities of available nitrogen, phosphorus, potassium, calcium, magnesium, sulfate, copper, zinc, manganese, iron, and boron to support normal plant growth. In the event of nutrient inadequacies, provisions shall be made to add required materials prior to planting.

Mulch:

Bark or wood chip mulch shall be derived from Douglas fir, pine, or hemlock species. It shall be ground so that a minimum of 95% of the material will pass through a 2-inch sieve and no more than 25%, by loose volume, will pass through a No. 4 sieve. The mulch shall not contain resin, tannin, or other compounds in quantities that would be detrimental to plant life. Sawdust or wood shavings shall not be used as mulch.

Plants:

All plants shall by nursery grown and from a nursery with similar climatic conditions to the locality of the project. Stock furnished shall be at least the minimum size indicated.

Provide only sound, healthy, vigorous plants free from weeds, defects, sunscald injuries, and abrasions of the bark, plant diseases, insect eggs, borers, and all forms of infestation. All plants shall have a fully developed form without voids, open spaces, broken branches, flush cuts or stubs. No plants shall be loose in the container or pot bound.

Plants shall be packed and transported with care. If plants cannot be planted immediately upon delivery, properly protect them with soil, wet peat moss, or in a manner acceptable to the Owner. Water heeled in plantings daily.

Plant material shall be inspected and approved by the Consultant and the Owner on site prior to installation. Remove unsatisfactory material from the site immediately.

Stock shall not be installed when ambient temperatures are below 35 degrees F or above 80 degrees, or when wind velocity exceeds 30 miles per hour.

Warrant plant material to remain alive and be in healthy, vigorous condition for a period of one year after the date of Physical Completion.

Maintenance:

Maintain planting until acceptance by Owner. Maintenance shall include cultivating, weeding, watering, pruning (only as directed), and application of appropriate insecticides and fungicides necessary to maintain plants free of insects and disease.

Reset settled plants to proper grade and position. Restore planting watering ring and adjacent material and remove dead material.

Water trees, shrub, and ground cover beds within the first 24 hours of initial planting, and not less than twice per week (including rain) until Physical Completion.

Physical Completion:

Inspection to determine Physical Completion of planted areas will be made by the Owner, upon the Contractor's request. Provide notification at least 10 working days before requested inspection date.

Planted areas will be accepted provided all requirements, including the maintenance period have been complied with and plant materials are alive and in a healthy vigorous condition.

Upon Physical Completion, the Owner will assume plant maintenance.

STATE OF WASHINGTON
REGISTERED
LANDSCAPE ARCHITECT
PETER C. HUXMEL
CERTIFICATE NO. 422

	6/15/10	ISSUED FOR CONSTRUCTION	BMB	PH	6/15/10
	DATE	DESCRIPTION	BY	CKD.	APP.

CONTOUR INTERVAL: 2 FOOT

PREPARED BY
FARALLON CONSULTING
ANCHOR QEA

PREPARED FOR
EARLE M. JORGENSEN COMPANY
10650 ALAMEDA STREET
LYNWOOD, CALIFORNIA 90262

SLAG DISPOSAL BECKWITH PROPERTY SITE
KENT, WASHINGTON

PLANTING SPECIFICATIONS

SCALE AS SHOWN
PROJECT NO. 831-022
FILE NAME: 100224-PL-002.dwg
SHEET NO. W3 OF 3

WAC 197-11-960 Environmental checklist.

ENVIRONMENTAL CHECKLIST

Purpose of checklist:

The State Environmental Policy Act (SEPA), chapter 43.21C RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. An environmental impact statement (EIS) must be prepared for all proposals with probable significant adverse impacts on the quality of the environment. The purpose of this checklist is to provide information to help you and the agency identify impacts from your proposal (and to reduce or avoid impacts from the proposal, if it can be done) and to help the agency decide whether an EIS is required.

Instructions for applicants:

This environmental checklist asks you to describe some basic information about your proposal. Governmental agencies use this checklist to determine whether the environmental impacts of your proposal are significant, requiring preparation of an EIS. Answer the questions briefly, with the most precise information known, or give the best description you can.

You must answer each question accurately and carefully, to the best of your knowledge. In most cases, you should be able to answer the questions from your own observations or project plans without the need to hire experts. If you really do not know the answer, or if a question does not apply to your proposal, write "do not know" or "does not apply." Complete answers to the questions now may avoid unnecessary delays later.

Some questions ask about governmental regulations, such as zoning, shoreline, and landmark designations. Answer these questions if you can. If you have problems, the governmental agencies can assist you.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Use of checklist for nonproject proposals:

Complete this checklist for nonproject proposals, even though questions may be answered "does not apply." IN ADDITION, complete the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D).

For nonproject actions, the references in the checklist to the words "project," "applicant," and "property or site" should be read as "proposal," "proposer," and "affected geographic area," respectively.

A. BACKGROUND

1. Name of proposed project, if applicable:
   Slag Removal from Slag Disposal Beckwith Property Cleanup Site
2. Name of applicant:
   Earle M. Jorgensen Company
3. Address and phone number of applicant and contact person:

Applicant:

E. *Gilbert Leon Jr.*
Earle M. Jorgensen Company
10650 Alameda Street
Lynwood, California 90262
(323) 923-6120

Contact Person:

c/o Amy Essig Desai
Farallon Consulting, L.L.C.
975 5th Avenue Northwest
Issaquah, Washington
(425) 295-0800

4. Date checklist prepared:
   April 14, 2010

5. Agency requesting checklist:

Washington State Department of Ecology

6. Proposed timing or schedule (including phasing, if applicable):

The cleanup action is scheduled to begin in the summer of 2010. The cleanup action will be completed approximately 4 months from the start date of the project.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

No.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

City of Kent Public Works. 2008. Final Environmental Impact Statement, South 224 Street Project. February.

ESA Adolfson. 2006. South 224th Street Extension Wetland Technical Report. Prepared for City of Kent. September 21.

Farallon Consulting, L.L.C. (Farallon). 2009a. Seep Water Investigation. Prepared for Earle M. Jorgensen Company. August 10.

———. 2009b. Cleanup Alternatives Evaluation, pH in Surface Water. Prepared for Earle M. Jorgensen Company. October 9.

———. 2010a. Cleanup Action Work Plan, Kent Slag Site, South 218th Street and 88th Avenue South, Kent, Washington. Prepared for Earle M. Jorgensen Company. April.

———. 2010b. Kent Slag Site Excavation Project, Kent Slag Site, South 218th Street and 88th Avenue South, Kent, Washington. Drawing Sheets 1 through 12. Prepared for Earle M. Jorgensen Company. April.

King County Wastewater Treatment Division. 2010. Issuance of Wastewater Discharge Authorization No. 4170-03 to Earle M. Jorgenson Company – Kent Slag Site. January 12.

SECOR International Incorporated (SECOR). 1992. Focused Remedial Investigation and Feasibility Study for Slag Disposal/Beckwith Property, Kent Washington. Prepared for Earle M. Jorgensen Company. September 29.

———. 1995. Remediation Work Plan and Engineering Design Report for Slag Disposal/Beckwith Property, Kent Washington. Prepared for the Washington State Department of Ecology. August 23.

———. 1997. Remediation Construction Summary Report for Slag Disposal/Beckwith Property, Kent Washington. Prepared for the Washington State Department of Ecology. January 21.

———. 2002. Subsurface Investigation and pH Treatment Alternative Analysis. Prepared for Earle M. Jorgensen Company. June 12.

Springwood Associates, Inc. 1995. Beckwith Property Slag Disposal Site, Final Wetland Delineation Report. Prepared for SECOR International, Inc. July 10.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

No

10. List any government approvals or permits that will be needed for your proposal, if known.

The cleanup action is being conducted under Consent Decree 95-2-15301-1 entered into by the Washington State Department of Ecology and Earle M. Jorgensen Company in accordance with MTCA(Chapter 70.105D of the Revised Code of Washington [RCW 70.105D]). Per RCW 70.105D.090, the applicant is exempt from the procedural requirements of local permits or approval. However, the applicant will meet the substantive requirements of the following local permits:

- *City of Kent Critical Area Ordinance KC 11.06*
- *Critical Areas for Wetlands (Kent City Code Chapter 11.06)*
- *Grading and Fill Permit, City of Kent*
- *Construction Stormwater General Permit, Washington State Department of Ecology*

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

The purpose of the cleanup action is to remove lime ash that reacts with water to elevate the pH above 8.5. The cleanup action will protect human health and the environment when completed. The cleanup action includes excavation and off-Site disposal of approximately 16,500 cubic yards of slag and restoration of the Site (See Attachment A, Figure 2). Following excavation, the Site would be restored and graded to allow surface water to drain approximately as it did prior to slag removal activities. Site restoration would include hydroseeding areas impacted by construction and construction of surface drainage features.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The Site is located at the southeastern corner of South 218th Street and 88th Avenue South in Kent, Washington within Section 7, Township 22 North, Range 5 East, at the eastern edge of the Kent Valley approximately 200 feet east of State Route 167 (Attachment A, Figures 1 and 2). The Site consists of a vacant 4.7-acre parcel located at the base of a north-south-trending, west-facing steep slope. The area where the slag was placed currently is covered with brush, small trees, and a gravel access road that extends from an entrance off 88th Avenue South on the south to the center of the Site (Attachment A, Figure 2).

B. ENVIRONMENTAL ELEMENTS

1. **Earth**

a. General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other . . . . . .

The portion of the site containing the slag fill is relatively flat ranging from 60 to 70 feet above mean sea level. A steep west-facing slope approximately 50 feet high is located east of the slag pile. West of the slag pile is a steep west-facing slope that drops off steeply to 88th Avenue South approximately 20 feet below. Sections of both the west and east slopes are considered steep slope sensitive areas that have slopes greater than 40-percent. The slope east of the Site is defined as a Landslide Hazard Area per City of Kent Critical Area Ordinance KD 11.06. Drainage ditches are present on the eastern boundary of the slag pile and the western boundary of the site.

b. What is the steepest slope on the site (approximate percent slope)?

Approximately 1H:1V grade on the west embankment, 100-percent slope.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.

The slag material is a granular, coarse, sand-size material that is relatively permeable. The slag is overlain by an approximately 3-foot-thick cap which consists of pit-run gravel and 3-way mix top soil which is primarily silty sand to sandy silt. The slag is underlain by a native sandy silt that is reddish grey to grey, stiff, and not saturated.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

Sections of the slopes east and west of the slag pile are considered steep slope sensitive areas because they contain slopes greater than 40-percent (Attachment A, Figure 2). The slope east of the site is defined as a Landslide Hazard Area according to City of Kent Critical Area Ordinance KD 11.06. Results from subsurface investigations conducted at the Site have determined that the slag does not extend into steep slope areas identified east and west of the Site. The steep slope areas will be clearly marked to protect these areas from disturbance during construction. If during excavation, slag is determined to extend into the steep slope area, a Professional Geotechnical Engineer licensed in the State of Washington will determine the appropriate precautions to protect the slope and facilitate slag removal.

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

Approximately 16,500 cubic yards of slag will be excavated and disposed of offsite to eliminate the source of surface water with pH above the regulatory limit. Approximately 11,600 cubic yards of overburden overlying the slag will be excavated, stockpiled temporarily on site, and re-used as fill at the Site for regrading. Documentation indicates the overburden consists of pit-run gravel and 3-way mix top soil which is primarily silty sand to sandy silt. The backfilled overburden will be placed in 1-foot loose lifts and compacted with a drum roller to a non-yielding state. The backfill will be graded to approximately match pre-excavation drainage patterns and will be approximately 6 feet lower in elevation than the existing topography.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Yes. Best Management Practices (BMPs) will be used to address erosion during the excavation. BMPs will be implemented as described in the construction contractor's Stormwater Management Plan and in the Erosion Control Plan included in the Kent Slag Site Excavation Project drawings.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Zero percent.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

A detailed Erosion Control Plan has been prepared and includes; cover and containment of stock piles with plastic sheeting and straw bales; rocked construction entrance with a truck wash; and silt fencing around the Site perimeter.

a. ***Air***

a. What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.

Minor amounts of airborne dust may be generated during the excavation, backfilling, and regrading phases. (Dust may contain lime ash during slag excavation.) Dust control measures will be implemented to prevent visible dust from leaving the Site. Minor exhaust emissions will occur from the construction equipment during the construction phase. Following completion of the proposed excavation activities, there will be no emissions.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

No.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

During the project construction, if visible dust is observed work will be stopped until dust is controlled. Dust will be controlled through the use of proper engineering controls that will include applying water to the ground surface to control fugitive dust and capturing wash down water used to remove dust and debris from equipment operating at the Site. Only the necessary amount of water will be used to control dust containing lime ash to avoid creating excessive amounts of run-off water. If run-off water is created, it will be collected and treated through the on-site water treatment system.

3. **Water**

a. Surface:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

Surface water occurs on the Site in the interceptor drain, located in the east drainage ditch and in the stormwater detention pond on the northeastern corner of the Site; in drainage ditches on the north of the Site on the south side of South 218th Street and in ditches on the Site on the east side of 88th Avenue South; and in seeps on the north and northwest sides of the Site (Attachment A, Figure 2). Surface water has been observed flowing onto the Site in a small stream flowing from the east on the northern portion of the Site and from a small stream flowing from the east on the southern edge of the Site. Surface water runoff from the hillside east of the Site and water from seeps observed along the northern portion of the Site flow into a ditch along the northern and western portion of the Site into the west drainage ditch and into a culvert that extends beneath 88th Avenue South (Attachment A, Figure 2).

The east drainage ditch captures surface water from the hillside. The northern portion of the east drainage ditch discharges into the detention pond located on the northern portion of the Site (Attachment A, Figure 2). Stormwater in the detention pond discharges through a culvert that extends beneath South 218th Street into Garrison Creek. Surface water collected in the southern portion of the east drainage ditch follows the land topography and drains along the southern portion of the Site to a small stream.

Wetlands are present within the stormwater detention pond; a roadside ditch along the east side of the northern portion of 88th Avenue South, along a small creek located south of the Site entrance; and to the north of South 218th Street. Excavation activities in the northern portion of the Site will be conducted within the currently established buffer zones identified for the mapped wetland areas (Adolfson 2006) (Attachment A, Figure 4). This cleanup action may meet the requirements for reduced buffer widths as described in KCC 11.06.600 if all applicable disturbance mitigation measures are implemented. A wetland buffer mitigation plan will be developed during the permitting process, as necessary, in coordination with the City of Kent and Department of Ecology.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

The construction work will be performed directly adjacent to the intermittent streams referenced in response to Question 3(a)(1).

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

It is not anticipated that material will be excavated from, or placed in, the current drainage ditches and detention pond.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

Yes, high pH surface water will be collected in sumps, treated by the water treatment system, and discharged to the City of Kent sanitary sewer system. Surface water that contacts the slag during the excavation will be collected and treated through the water treatment system. It is estimated that between 300 and 3,000 gallons per day of water may be collected and treated through the water treatment system. Surface water withdrawal or diversion will not be required after completion of the cleanup action.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

No.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No waste materials are anticipated to be discharged to surface waters.

b. Ground:

1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.

Perched groundwater occurs within the slag that will be exposed by excavation. Exposed perched groundwater with pH above 8.5 will be collected and treated through the water treatment system for disposal to the City of Kent sanitary sewer system. Groundwater withdrawal or discharge to groundwater will not occur after completion of the cleanup action.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

No waste material will be discharged into the ground.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Surface water runoff is generated from seeps in the hillside east of the Site and precipitation on the Site. The east drainage ditch captures surface water from the east hillside. The northern portion of the east drainage ditch discharges into the detention pond. From the detention pond, water flows through a culvert that extends beneath South 218th Street to Garrison Creek. The southern portion of east drainage ditch drains along the southern portion of the Site to a small stream. Surface water with elevated pH discharging from the seeps located on the north and northwest sides of the Site are collected, treated through the water treatment system, and discharged to the City of Kent sanitary sewer system. Precipitation that falls on the Site follows the land topography and is either collected in the east or west drainage ditch. After excavation activities are complete, the Site will be re-graded to maintain existing drainage patterns. No impermeable surfaces will be created by the cleanup action. The existing surface water drainage pattern is expected to be similar after completion of the cleanup action.

2) Could waste materials enter ground or surface waters? If so, generally describe.

Yes, during the cleanup action surface water may come in react with the slag elevating the pH. Water that reacts with the slag will be collected in sumps, treated by the water treatment system, and discharged to the City of Kent sanitary sewer. Following the cleanup action, the slag will be removed and no waste materials will enter ground and surface water.

d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

BMPs will be used to reduce or control surface water that may come in contact with slag during the excavation. The BMPs will be implemented as described in the construction contractor's stormwater management plan.

4. **Plants**

a. Check or circle types of vegetation found on the site:

X deciduous tree: alder, maple, aspen, other

X evergreen tree: fir, cedar, pine, other

X shrubs

X grass

_____ pasture

_____ crop or grain

X wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other

_____ water plants: water lily, eelgrass, milfoil, other

_____ other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

The vegetation present on the overburden material will be removed during construction activities. This vegetation includes small trees, shrubs, grass, weeds, and berries.

c. List threatened or endangered species known to be on or near the site.

None known to exist.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

The area impacted by the construction will be hydroseeded.

5. **Animals**

a. Circle any birds and animals which have been observed on or near the site or are known to be on or near the site:

birds: hawk, heron, eagle, **songbirds**, other:
mammals: **deer**, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other:

b. List any threatened or endangered species known to be on or near the site.

None known to exist.

c. Is the site part of a migration route? If so, explain.

No.

d. Proposed measures to preserve or enhance wildlife, if any:

Construction activities area designed to eliminate the source of surface water with pH above the regulatory limit which will likely enhance wildlife at the Site.

6. **Energy and natural resources**

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

None required.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

None.

7. **Environmental health**

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

The risk of exposure to high pH surface water and lime ash dust exists at the Site during the cleanup action. There will be no environmental hazards at the Site after completion of the cleanup action.

1) Describe special emergency services that might be required.

First aid may be required by exposure of eyes or skin to high-pH water or slag.

2) Proposed measures to reduce or control environmental health hazards, if any:

A site-specific Health and Safety Plan (HASP) will be prepared in accordance with Washington State Model Toxics Control Act (MTCA) and Part 1910.120 of Title 29 of the Code of Federal Regulations. Personal protective equipment will be used during the cleanup action in accordance with the HASP. The Site will be fenced and secured during the cleanup action.

b. **Noise**

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

None.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

During the cleanup action, noise will be generated by the operation of equipment on the project site. The project hours will be between 8:00 am and 6:00 pm. Construction noise, particularly backup horns, may impact residents to the east.

3) Proposed measures to reduce or control noise impacts, if any:

Excavation and construction activities will be conducted on weekdays during daylight hours between 8:00 am and 6:00 pm.

8. **Land and shoreline use**

a. What is the current use of the site and adjacent properties?

The Site is currently undeveloped and adjacent properties are predominantly residential. State Route 167 is located west of the Site.

b. Has the site been used for agriculture? If so, describe.

No.

c. Describe any structures on the site.

None.

d. Will any structures be demolished? If so, what?

No.

e. What is the current zoning classification of the site?

The Site is currently zone as SR-4.5, standard residential.

f. What is the current comprehensive plan designation of the site?

Not known.

g. If applicable, what is the current shoreline master program designation of the site?

Does not apply.

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

See response to Question B1. Wetlands are present within the stormwater detention pond; a roadside ditch along the east side of the northern portion of 88th Avenue South, along a small creek located south of the Site entrance; and to the north of South 218th Street.

i. Approximately how many people would reside or work in the completed project?

None.

j. Approximately how many people would the completed project displace?

None.

k. Proposed measures to avoid or reduce displacement impacts, if any:

Not applicable.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The cleanup action will eliminate discharge of surface water with a pH above 8.5 by removal of the lime ash which reacts with surface water.

9. **Housing**

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

None.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

None.

c. Proposed measures to reduce or control housing impacts, if any:

Not applicable.

10. **Aesthetics**

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

Not applicable.

b. What views in the immediate vicinity would be altered or obstructed?

None.

c. Proposed measures to reduce or control aesthetic impacts, if any:

Not applicable.

11. **Light and glare**

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

None.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

Not applicable.

c. What existing off-site sources of light or glare may affect your proposal?

None.

d. Proposed measures to reduce or control light and glare impacts, if any:

Not applicable.

12. **Recreation**

a. What designated and informal recreational opportunities are in the immediate vicinity?

None.

b. Would the proposed project displace any existing recreational uses? If so, describe.

No.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

None.

13. **Historic and cultural preservation**

a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.

None known.

b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.

None known.

c. Proposed measures to reduce or control impacts, if any:

Not applicable.

14. **Transportation**

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

The site is bordered by to the north by South 218th Street and to the west by 88th Avenue South, with Site access from 88th Avenue South. Site access will continue to be from 88th Avenue South during construction activities.

b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

No.

c. How many parking spaces would the completed project have? How many would the project eliminate?

None.

d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).

No.

e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

No.

f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

None.

g. Proposed measures to reduce or control transportation impacts, if any:

None.

15. **Public services**

a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.

The Site will remain undeveloped.

b. Proposed measures to reduce or control direct impacts on public services, if any.

Not applicable.

16. **Utilities**

a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.

None.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

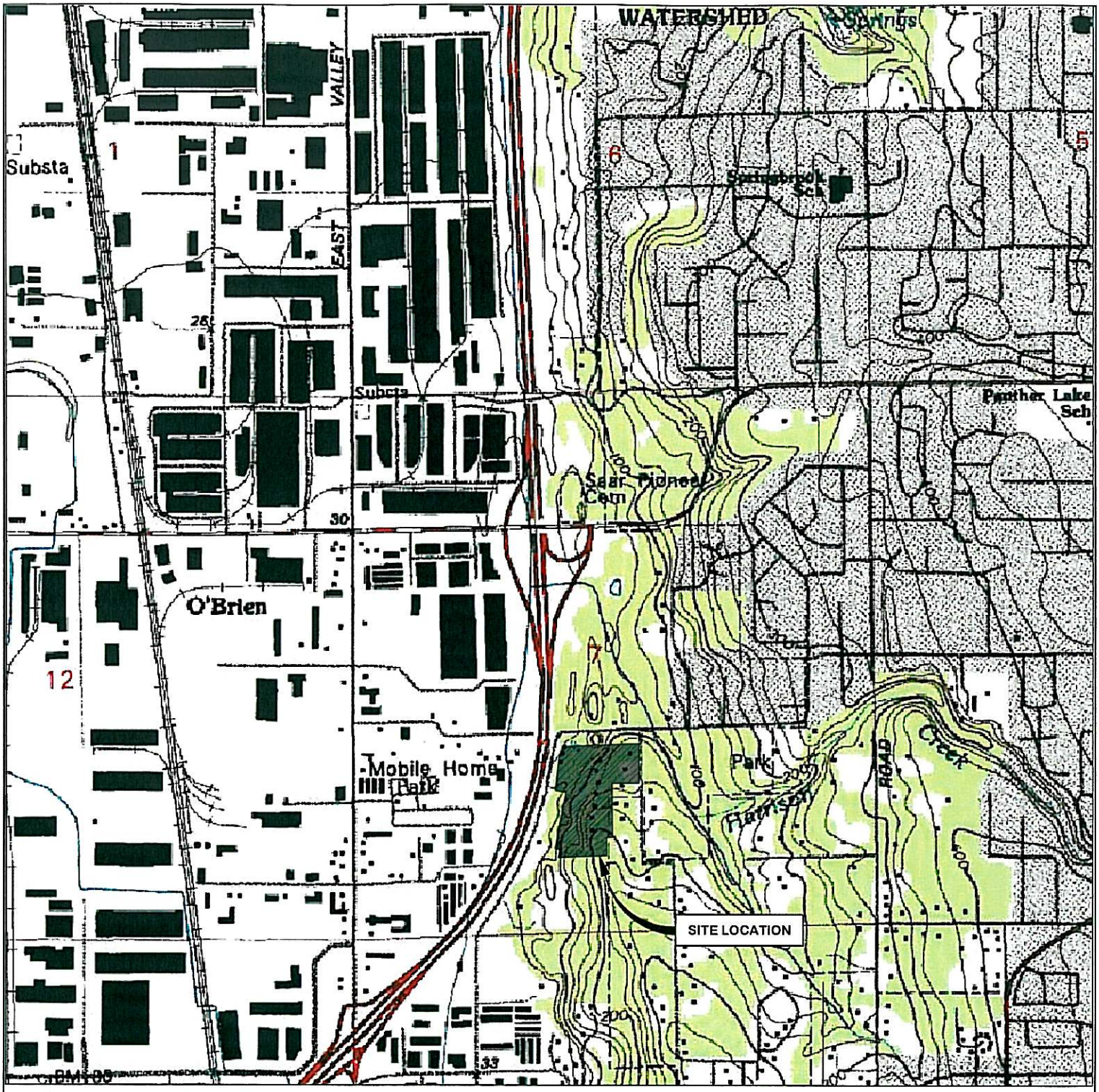
None.

C. SIGNATURE

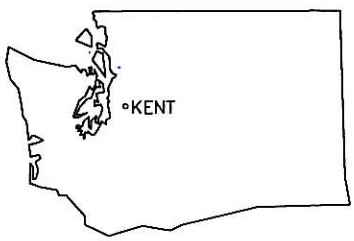
The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: .....

Date Submitted: 5/24/10



REFERENCE: 7.5 MINUTE USGS QUADRANGLE KENT, WASHINGTON. DATED 1994



WASHINGTON

FARALLON CONSULTING
975 5th Avenue Northwest
Issaquah, WA 98027

FIGURE 1

SITE LOCATION MAP
SLAG SITE
KENT, WASHINGTON

FARALLON PN: 831-022

Drawn By: DEW	Checked By: JP	Date: 4/6/10	Disk Reference: 831022

88TH AVE S

EDGE OF ASPHALT

WEST DRAINAGE DITCH

DAM

S. 218TH ST.

ESTIMATED LIMITS OF SLAG

INTERCEPTOR DRAIN

DETENTION POND

EAST DRAINAGE DITCH

TENNIS COURT

EXISTING BUILDING

DECK

STREAM

STANDING WATER IN THIS AREA

STREAM

STREAM

LEGEND

- SITE BOUNDARY
- CULVERT
- CENTER LINE OF STORM/DRAINAGE DITCH, FLOW DIRECTION
- SS — SANITARY SEWER CONNECTION
- FENCE
- 60 ml HDPE LINER
- 4" PVC PIPE
- CLAY BARRIER
- PERMEABLE GRAVEL
- EDGE OF WATER
- GRAVEL SURFACE
- SEEP

APPROXIMATE SLAG THICKNESS IN FEET

- <4'
- 4'-8'
- 8'-10'
- 10'-14'

NOTES:

1. TOPOGRAPHIC SURVEY MAP PROVIDED BY PLS, INC. DATED MAY 20, 2009
2. LATERAL EXTENT AND THICKNESS OF SLAG INTERPRETED FROM SECOR 1992 AND 2003.

N

0 60

APPROXIMATE SCALE IN FEET

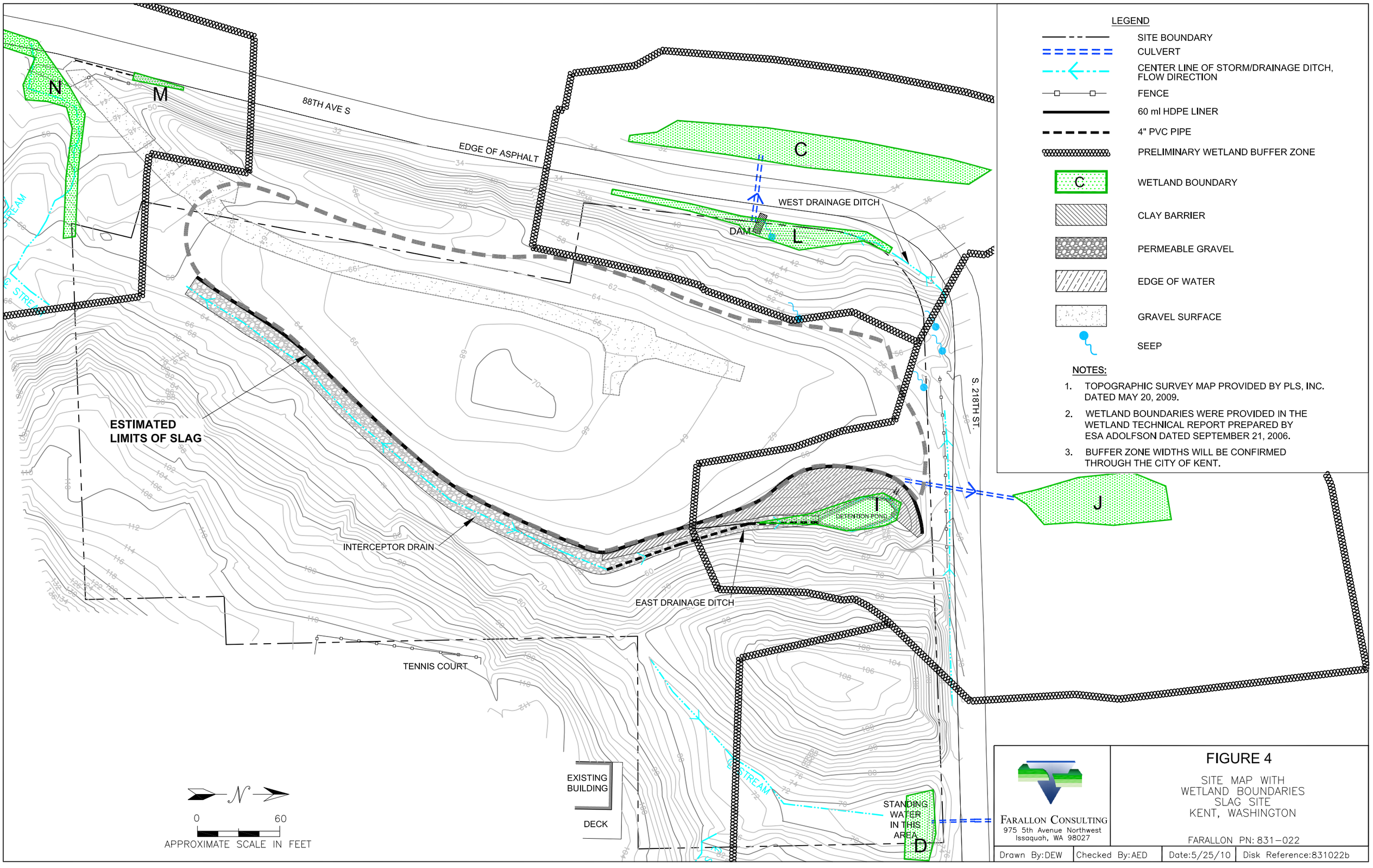
FARALLON CONSULTING
975 5th Avenue Northwest
Issaquah, WA 98027

FIGURE 2

SITE MAP WITH LATERAL EXTENT AND THICKNESS OF SLAG
SLAG SITE
KENT, WASHINGTON

FARALLON PN: 831-022

Drawn By: DEW	Checked By: AED	Date: 4/6/10	Disk Reference: 831022b



LEGEND

- SITE BOUNDARY
- CULVERT
- CENTER LINE OF STORM/DRAINAGE DITCH, FLOW DIRECTION
- FENCE
- 60 ml HDPE LINER
- 4" PVC PIPE
- PRELIMINARY WETLAND BUFFER ZONE
- C — WETLAND BOUNDARY
- CLAY BARRIER
- PERMEABLE GRAVEL
- EDGE OF WATER
- GRAVEL SURFACE
- SEEP

NOTES:

1. TOPOGRAPHIC SURVEY MAP PROVIDED BY PLS, INC. DATED MAY 20, 2009.
2. WETLAND BOUNDARIES WERE PROVIDED IN THE WETLAND TECHNICAL REPORT PREPARED BY ESA ADOLFSON DATED SEPTEMBER 21, 2006.
3. BUFFER ZONE WIDTHS WILL BE CONFIRMED THROUGH THE CITY OF KENT.

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975 5th Avenue Northwest
Issaquah, WA 98027

FIGURE 4

SITE MAP WITH
WETLAND BOUNDARIES
SLAG SITE
KENT, WASHINGTON

FARALLON PN: 831-022

Drawn By: DEW	Checked By: AED	Date: 5/25/10	Disk Reference: 831022b

WAC 197-11-970

DETERMINATION OF NONSIGNIFICANCE

Description of proposal: It is proposed to remove secondary steel slag from the Slag Disposal Beckwith Property Cleanup Site. The slag contains lime ash. The lime ash reacts with water to elevate pH to above 8.5. The cleanup action will protect human health and the environment by removing approximately 16,500 cubic yards of slag and disposing of it in a properly permitted landfill. The site will be restored by hydroseeding and graded to allow surface water to drain in approximately as it did prior to slage removal. The restored site will have an elevation approximately six feet lower than at present. The work is scheduled to begin in the summer of 2010 and will take about four months.

Proponent: Mr. E. Gilbert Leon, Jr., Earle M. Jorgensen Company, 10650 Alameda Street, Lynwood, California 9026.

Location of proposal, including street address, if any: Southeast corner of the intersection of 90th Avenue South and South 218th Street, Kent, Washington.

Lead agency: Washington State Department of Ecology

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030 (2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

☐ There is no comment period for this DNS.

☐ This DNS is issued after using the optional DNS process in WAC 197-11-355. There is no further comment period on the DNS.

☒ This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for 14 days from the date below. Comments must be submitted by _____.

Responsible official: Robert W. Warren

Position/title: Section Manager, Toxics Cleanup Program, Northwest Regional Office **Phone:** 426-649-7054

Address:

Date: May 26, 2010 **Signature:** _____

(OPTIONAL)

☐ You may appeal this determination to (name) _____
at (location) _____
no later than (date) _____
_____ by (method) .....

You should be prepared to make specific factual objections.
Contact _____to read or ask about the procedures for SEPA appeals.

☒ There is no agency appeal.

HEALTH AND SAFETY PLAN

EXCAVATION CLEANUP, ALTERNATIVE PRE-DESIGN ACTIVITIES AND WATER TREATMENT SYSTEM OPERATION AND MAINTENANCE EMJ SLAG SITE SOUTHEAST CORNER OF SOUTH 218TH STREET AND 88TH AVENUE SOUTH KENT, WASHINGTON

Submitted by:
Farallon Consulting, L.L.C.
975 5th Avenue Northwest
Issaquah, Washington 98027

Farallon PN: 831-022

For:
Earle M Jorgensen Company
10650 Alameda Street
Lynwood, California 90262

June 7, 2010

HEALTH AND SAFETY PLAN
REVIEW AND APPROVAL

Client: Earle M Jorgensen Company
Project Name: EMJ Slag Site **Project Number:** 831-022
Start Date: June 2010 **End Date:** June 2011

Plan Expiration Date: June 2011 (*Last day of expected fieldwork or no longer than 6 months*)

APPROVED BY:

Amy Essig Desai
Project Manager
Signature *Date* 6-7-10

Richard McManus
Office Health and Safety Coordinator
Signature *Date* 6/7/10

Ken Scott
Site Health and Safety Officer
Signature *Date* 06-07-2010

Peter Jewett
Principal-in-Charge
Signature *Date* 6/7/10

This Health and Safety Plan (HASP) was written for the use of Farallon Consulting, L.L.C. (Farallon) and its employees. It may be used also by trained and experienced Farallon subcontractors as a guidance document. However, Farallon does not guarantee the health or safety of any person entering this Site.

Due to the potentially hazardous nature of the site and the activities occurring thereon, it is not possible to discover, evaluate, or provide protection for all possible hazards that may be encountered. Strict adherence to the health and safety guidelines set forth herein will reduce, but does not eliminate, the potential for injury. The health and safety guidelines in this HASP were prepared specifically for this site, its conditions, purposes, dates of field work, and personnel, and must be amended if conditions change.

Farallon claims no responsibility for the use of this HASP by others. This HASP will provide useful information to subcontractors and will assist them in developing their own HASP, but it should not be construed as a substitute for their own HASP. Subcontractors should sign this HASP (see *Health and Safety Plan Acknowledgment and Agreement Form*, Attachment 1) as an acknowledgement of hazard information and as notice that this HASP does not satisfy their requirement to develop their own HASP.

CONTENTS

ATTACHMENTS

1.0 SCOPE OF WORK

This HASP was prepared for the use of Farallon personnel while performing the following tasks:

- Task 1: Operation and maintenance of the water treatment system;
- Task 2: Excavation of test pits to a depth of 15 feet below ground surface to confirm the depth and location of the slag material; and
- Task 3: Excavation and removal of secondary steel slag that reacts with surface water to elevate pH, including off-Site disposal of approximately 16,500 cubic yards of the slag.

The tasks will be conducted in a manner consistent with the methods and assumptions outlined in the draft *Cleanup Action Work Plan, Slag Disposal Beckwith Property Site, South 218th Street and 88th Avenue South, Kent, Washington* dated May 2010 and the *Wastewater Treatment, Monitoring, and Discharge Plan, Slag Disposal/Beckwith Property, Water Remediation System, 88th Avenue South and South 218th Street, Kent, Washington* dated December 4, 2009, both prepared by Farallon.

2.0 BACKGROUND INFORMATION

This cleanup action is being performed on behalf of Earle M. Jorgensen Company (EMJ) at the property located at the southeastern corner of South 218th Street and 88th Avenue South in Kent, Washington (herein referred to as the Site). The cleanup action will be conducted under Consent Decree No. 95-2-15301-1 (Consent Decree) entered into by the Washington State Department of Ecology (Ecology) and EMJ.

Secondary steel slag that contains lime ash that reacts with water to increase the pH (herein referred to as slag) was placed as fill on the Site between 1984 and 1990. Cleanup actions were conducted at the Site in 1995 through 1996 and in 2002 to mitigate the discharge of surface water with a pH above 8.5 from the stormwater detention pond located on the northeastern corner of the Site. Ecology confirmed that the requirements of the Consent Decree had been met and that further monitoring was no longer required.

The City of Kent measured pH levels of 12.5 to 12.8 in surface water discharging from seeps on the north and northwest sides of the Site in March 2009. Based on the pH levels measured in surface water leaving the Site in March 2009, Ecology required implementation of an interim action under the existing Consent Decree to mitigate discharge of surface water with a pH above 8.5. The interim action consists of capturing surface water for pre-treatment and disposal to the sewer system. The results of investigations conducted at the Site concluded that infiltration of precipitation and surface water bypassing the interceptor drain and barrier system (constructed as part of the previous cleanup actions at the Site, further discussed herein) react with the lime ash in the slag, elevating the pH in surface water that discharges from the seeps.

The cleanup action, presented in the Cleanup Action Work Plan prepared by Farallon to mitigate the discharge of surface water with a pH above 8.5, is removal of the slag with lime ash that reacts with surface water for off-Site disposal. Approximately 16,500 cubic yards of the slag will be removed from the Site. Ecology has reviewed and agreed to the selected cleanup action. The cleanup work is scheduled to begin in summer 2010.

3.0 DRUG AND ALCOHOL POLICY

It is Farallon's policy to maintain a drug-free workplace. Farallon has a responsibility to all of its staff members to provide a safe and inoffensive work environment, and a responsibility to its clients to provide accurate and consistent service. For these reasons, Farallon prohibits the following behavior by staff members in the field:

- Use of tobacco in any form by any person at any time in sensitive or hazardous areas that may pose a health and safety or environmental risk. The Site Health and Safety Officer (SHSO) may designate an area away from hazards that is safe for tobacco use;
- Possession or consumption of alcohol, or being under the influence of alcohol during field activities;
- Abuse of prescription and/or over-the-counter drugs in such a manner as to negatively impact performance or field safety; and
- Possession, use, sale, or being under the influence of illicit drugs while in the field or during any work hours.

Violation of any of the above codes of conduct is grounds for immediate removal from the project site and discipline in accordance with Farallon company policy. If an incident occurs as a result of an employee's actions, drug and alcohol testing will be performed in accordance with Farallon company policy.

4.0 WEAPONS POLICY

Farallon employees, contractors, subcontractors, and their employees working at the site are to ensure that they do not bring weapons onto the work site. Weapons include but are not limited to guns, knives, and explosives. Tools that are used during the course of field events, including but not limited to box knives, are exempt from this weapons policy. All vehicles and persons can be subjected to search while working at the property.

Failure to comply with the weapons policy can result in disciplinary action for the individual(s) involved in accordance with Farallon company policy.

5.0 INCIDENT PREPAREDNESS AND RESPONSE

Farallon employees and subcontractors working on site must be prepared to respond appropriately to an incident involving injury, illness, death, spills, or utility breaches. This section outlines the degree of preparedness required for employees at a work site, and describes the actions to be taken in the event of a health and safety incident.

5.1 HEALTH AND SAFETY PREPAREDNESS

All individuals working at the site are required to be familiar with the contents of this HASP. Additionally, the items on the following health and safety preparedness list should be reviewed prior to the commencement of work and during daily health and safety meetings:

- The directions to the hospital (provided in Attachment 2);
- The locations of first aid kits, personal eye washes, and fire extinguishers;
- The locations of the keys to site vehicles; and
- Hand sign language providing for the immediate stoppage of work (such as a horizontal hand movement in front of the neck).

Additional topics for daily health and safety meetings are included in Attachment 3, Potential Topics for Daily Health and Safety Meeting. Participation in daily health and safety meetings should be documented in the Daily Health and Safety Briefing Log (Attachment 4).

5.2 INJURY OR ILLNESS

If an injury or illness occurs, the following actions should be taken, regardless of the severity of the injury or illness:

- Stop work.
- Determine whether emergency response staff (e.g., fire, ambulance) are necessary. If so, dial 911 on a cell phone or the closest available telephone. Describe the location of the injured person and provide other details as requested. If an individual requires non-emergency medical care at a hospital, follow the directions to the nearest hospital, which are provided in Attachment 2. IF EMERGENCY MEDICAL CARE IS NEEDED CALL 911.
- Administer first aid to the individual immediately, using the first aid kit provided in the site vehicle. Use the bloodborne pathogens kit and personal eyewash, as needed.
- Notify the SHSO immediately. The SHSO is responsible for preparing and submitting an Incident Report form to Farallon's Health and Safety Coordinator (HSC) within 24 hours of the incident, and for notifying the employee's supervisor and the Principal in Charge. The Incident Report form is provided in Attachment 5.

- ***All incidents must be reported to the HSC within 24 hours; however, the actual investigation need not be completed within 24 hours.*** **A telephone message that includes the date, time, and general incident circumstances should be left at one of the following numbers if the HSC cannot be reached directly:**
  - HSC work phone: (425) 295-0800
  - HSC cell phone: (425) 466-1032
  - If the HSC cannot be located contact the Principal-in-Charge.
- The SHSO will assume responsibility during a medical emergency until emergency response personnel arrive at the site.

5.3 REPORTING PROCEDURES FOR MINOR CUTS, SCRATCHES, BRUISES, ETC.

Every occupational illness or injury is to be reported immediately by the employee to the SHSO. The SHSO is to complete the Incident Report form provided in Attachment 5, and report the incident to the HSC.

5.4 NEAR MISSES

A near miss is defined as an incident in which no personal injury is sustained and no property damage is incurred, but where injury and/or property damage could have occurred under slightly different timing or location.

In the event of a near miss, the following actions are to be taken:

- Stop work.
- Report the near miss to an SHSO immediately.
- The SHSO is to report the near miss to the HSC and complete the Near Miss Report form in Attachment 6.
- Resume work upon satisfactory resolution of the near-miss condition and documentation of the corrective action(s) taken by the SHSO.

5.5 MEDICAL INCIDENTS NOT REQUIRING AMBULANCE SERVICE

Medical incidents not requiring ambulance services include injuries and conditions such as minor lacerations, and sprains. In the event of an injury, an illness, or a condition that does not require ambulance service, the following actions are to be taken:

- Stop work.
- Administer first aid as necessary to stabilize the individual for transport to the hospital.
- The SHSO is to facilitate prompt transportation of the individual to the hospital. Directions to the nearest hospital are provided in Attachment 2.

- A representative of Farallon or the subcontractor is to drive the individual to the medical facility and remain at the facility until the individual is able to return to the jobsite, or arrangements for further care have been established.
- If the driver is not familiar with the route to the hospital, a second person who is familiar with the route is to accompany the driver and the injured employee to the hospital.
- If it is necessary for the SHSO to accompany the injured employee to a medical facility, provisions must be made for another employee who is trained and certified in first aid to act as the temporary SHSO before work at the jobsite can resume.
- If the injured employee is able to return to the jobsite the same day, he/she is to bring a statement from the doctor that provides the following information:
  - Date of incident
  - Employee's name
  - Diagnosis
  - Date he/she is able to return to work, and whether regular or light duty
  - Date he/she is to return to the doctor for a follow-up appointment, if necessary
  - Signature and address of doctor
- The SHSO is to complete the Incident Report form provided in Attachment 5, and report the incident to the HSC.
- If the injured employee is unable to return to the jobsite the same day, the employee who transported him/her should bring the statement from the doctor back to the jobsite. The information on this statement should be reported to the HSC immediately.

5.6 EMERGENCY CASES REQUIRING AMBULANCE SERVICE

In the event of an injury or illness that requires emergency response and transport to a hospital by ambulance the following actions should be taken:

- **Dial 911** to request ambulance service.
- Notify the SHSO.
- Administer first aid until the ambulance service arrives.
- One designated company representative should accompany the injured employee to the medical facility and remain there until final diagnosis, treatment plan, and other relevant information has been obtained.
- The SHSO is to complete the Incident Report form provided in Attachment 5, and report the incident to the HSC immediately.

5.7 EMPLOYEE DEATH, OR HOSPITALIZATION OF THREE OR MORE EMPLOYEES

The procedures outlined in Section 6.2 should be followed in the event of an employee injury or illness. If an employee fatality occurs, the HSC, local emergency personnel and the coroner must be notified **immediately**. **The HSC will initiate the required State of Washington Deportment of Labor and Industries and Occupational Safety and Health Administration (OSHA) notifications within 8 hours of a fatality or the hospitalization of three or more employees.**

5.8 RESPONSE TO SPILLS OR UTILITY BREACHES

The location of underground utilities (e.g., product, sewer, telephone, fiber optic) and facilities (e.g., USTs, septic tanks, utility vaults) is to be noted prior to commencement of intrusive subsurface work activities. Use the public and private locate services as required and complete the Utility Clearance Log (Attachment 7). If a utility line or tank is breached or a spill or release occurs, the event is to be documented on the Incident Report form provided in Attachment 5 as soon as possible. The date, time, name of the person(s) involved, actions taken, and discussions with other affected parties are to be included. The SHSO, Project Manager (PM), and client are to be notified immediately. The PM is to notify the regulatory authority and/or utility company, as necessary.

In the event of a spill or release, the following actions should be taken:

1. Stay upwind of the spill or release.
2. Don appropriate personal protective equipment (PPE).
3. Turn off equipment and other sources of ignition.
4. Turn off pumps and shut valves to stop the flow or leak.
5. Plug the leak or collect drippings, when possible.
6. Use sorbent pads to collect the product and impede its flow, if possible.
7. Dial 911 or telephone the local fire department immediately if a fire or another emergency situation develops.
8. Inform the Farallon PM of the situation.
9. Determine whether the client would like Farallon to repair the damage or would rather use an emergency repair contractor.
10. Advise the client of spill discharge notification requirements, and establish who will complete and submit the required forms. ***Do not report or submit information to an agency without the client's consent.*** Document each interaction with the client and regulators, and note in writing names, titles, authorizations, refusals, decisions, and commitments to any action.

11. Do not transport or approve transportation of contaminated soils or product until proper manifests have been completed and approved. Be aware that soil and/or product may meet criteria for hazardous waste.
12. Do not sign manifests as a generator of wastes. Contact the PM to discuss waste transportation.

5.9 NOTIFICATIONS

A spill or release requires completion of an Incident Report form (provided in Attachment 5) per Farallon's Health and Safety program. **The PM must involve the client and/or generator in the incident reporting process. The client and/or generator is under obligation to report the incident to the appropriate government agency(ies). If the spill extends into waterways, the Coast Guard and the National Response Center must be notified immediately by the client or with his permission (800 424-8802).**

5.10 SHUTOFF VALVES AND/OR SWITCHES FOR UTILITIES AND PRODUCTS

Before starting work locate and list below the location of utility and product line shutoff valves and switches on the project site. Review the location of shutoff valves and switches with field personnel before beginning work.

The shutoff valves and/or switches for electrical, natural gas, gasoline, water lines, etc. are as follows:

To shut down the waste water treatment system, turn the generator off. The off switch is located inside the generator panel next to where the system power is plugged into the generator.

6.0 EMERGENCY RESPONSE AND EVACUATION PLAN

Farallon personnel and subcontractors working on site are to be aware of site-specific emergency and evacuation procedures, including alarm systems and evacuation plans and routes. If an incident occurs that requires emergency response, such as a fire or spill, **CALL 911 and request assistance**. Farallon staff, subcontractors, and/or others working in an area where an emergency occurs are to evacuate to a safe location away from the incident area, preferably upwind, and take attendance.

For this project, the emergency evacuation gathering location is as follows:

There are two gathering places for an emergency (such as a spill):

- At the northeast corner of the Site along South 218th Street; or
- At the southeast corner of the Site at the gravel entrance.

If the emergency obstructs the route, Farallon personnel and subcontractors are to move to an open area upwind of the hazard area and remain there until instructed by emergency response personnel (e.g., police, fire, ambulance personnel, paramedics) to do otherwise.

Subcontractors have the responsibility to account for their own employees and provide requested information to emergency response personnel immediately upon request. Farallon staff, subcontractors, and/or contractors may not reenter the scene of the emergency without specific approval from emergency response personnel.

7.0 LOCAL EMERGENCY CONTACT NAMES AND TELEPHONE NUMBERS

Local emergency response personnel can be contacted at the following numbers. Directions and a map to the hospital are included in Attachment 2.

Emergency Contact	Name and Location	Telephone No.
Hospital	**Valley Medical Center** **24920 104th Avenue Southeast** **Kent, Washington**	**(253) 395-2000**
Police	**Kent Police Department** **220 4th Avenue South** **Kent, Washington**	**911** or **(253) 856-5800**
Fire	**Kent Fire Department** **24611 116th Avenue Southeast** **Kent, Washington**	**911** or **(253) 856-4300**
National Response Center		**1-800-424-8802**
Washington State Department of Ecology		**(360) 407-6300**
Poison Control		**1-800-424-5555**

8.0 PROJECT PERSONNEL AND RELEVANT INFORMATION

Questions about this project that are posed by neighbors, the press, or other interested parties should be directed to the Principal in Charge at Farallon: (425) 295-0800.

EMJ Slag Site 831-022	General Project Responsibilities	Field Personnel Training Dates			Medical Surveillance Date
		40-Hour HAZWOPER	8-Hour Refresher	CPR/ First Aid	
Site Health and Safety Officer Ken Scott Office: (425) 295-0800 Cell: (425) 765-1134	Implement this HASP. Has authority to stop work. Perform air quality tasks. Take charge of all incidents. Perform excavation, test-pitting, and water quality work at Site. Review subcontractor's HASP.	09-1995	01/ 18/10	11/08	11/5/2009
Farallon Personnel Heidi Fischer Office (425) 295-0800 Cell: (425) 463-6022	Be familiar with HASP requirements and the Farallon Accident Prevention Program and Hazardous Waste Operations Program	07-19-2007	01/ 18/10	11/08	11-12-2009
Project Manager Amy Essig Desai Office: (425) 295-0810 Cell: (425) 241-1540	Oversee work of staff. Provide immediate support upon notice of any incident.	NA	NA	NA	NA
Principal-in-Charge Peter Jewett Office (425) 295-0800 Cell: (425) 765-3356	Provide immediate support upon notice of any incident.	NA	NA	NA	NA
Health and Safety Coordinator Richard McManus Office (425) 295-0800 Cell: (425) 466-1032	Provide support in implementing HASP. Provide immediate support upon notice of any incident.	NA	NA	NA	NA
Client Contact Gilbert Leon Office: (323) 923-6120	Provide known analytical data from work performed by others. Provide notice of site hazards. Provide access to site. Provide information regarding available emergency supplies at the site.	NA	NA	NA	NA

9.0 POTENTIAL AIRBORNE CONTAMINANTS

The potential airborne contaminants of concern are listed in the table on the following page, and the scope for airborne contaminant sampling is provided below. The table should be reviewed, and any questions directed to the SHSO.

Personal air monitoring will be conducted on employees participating in activities that involve excavation and handling slag. This air monitoring will be performed in accordance with the Air Monitoring Plan (Attachment 8). The Air Monitoring Plan outlines detailed procedures for the following air monitoring protocol:

- Employee breathing zone air sampling will be performed using personal battery-powered sampling pumps fitted with pre-weighed filters in accordance with applicable NIOSH/OSHA/WISHA sampling protocols whenever dust-generating work is being performed. These samples will be analyzed for total dust (mg/m^3) and lime dust. Concurrently, breathing zone dust sampling will be conducted with a personal real-time dust monitor.
- During initial work activities that involve slag excavation and handling, employees will use Level C PPE that includes air purifying respirators equipped with dust particulate filters.
- Data derived from breathing zone air sampling will be used to downgrade or upgrade PPE requirements. In addition, the laboratory analytical results for total dust and lime dust will be compared with the real-time total dust results to establish a correlation between real-time total dust concentrations and 8-hour time-weighted average total metals/total dust samples. Based on the strength of this correlation, real-time dust concentrations may then be used to establish exposure control limits for upgrading/downgrading PPE.

POTENTIAL AIRBORNE CHEMICALS ON SITE FOR THIS PROJECT REVIEW THIS TABLE AND CONTACT THE SHSO WITH ANY QUESTION						
Chemical (or Class)	**OSHA PEL ACGIH TLV**	**Other Pertinent Limits**	**Monitoring Equipment**	**Routes of Exposure or Irritation**	**Acute Health Effects**	**Chronic Health Effects/ Target Organs**
Hydrated Lime Dust	PEL 5 mg/m^3	Level for Respirator not available. Level of Work Stoppage ½ IDLH not available.	Filter/Sample Pump	Eye, skin, nose, and respiratory system; ingestion	Eye irritant, skin burns, cough, shortness of breath, vomiting, diarrhea	Chemical bronchitis/lungs, skin irritation or dermatitis, blindness
Dust	PEL 15 mg/ m^3 total 5 mg/ m^3 respirable	Level for Respirator Use 25 mg/m^3 as total dust and 15 mg/m^3 as respirable dust; Level of Work Stoppage ½ IDLH – Not Available	Laser particle counter	Eye irritant, skin, nose, throat, conjunctivitis	Dyspnea (breathing difficulty), cough, copious sputum, chest pain, fever, cyanosis.	Cardiovascular system, respiratory system, eyes, throat, nose, skin. Pulmonary edema.

NOTES:
ACGIH = American Conference of Governmental Industrial Hygienists
IDLH = immediately dangerous to life or health
mg/m^3 = milligrams per cubic meter
OSHA = Occupation Safety and Health Administration
PEL = permissible exposure limit (time weighted average based on a 10-hour workday or 40-hour work week).
Skin = skin absorption
TLV = threshold limit value set by ACGIH

10.0 POTENTIAL SITE HAZARDS AND APPROPRIATE PRECAUTIONS

The following tables list potential hazards and appropriate precautions associated with planned field work.

10.1 WATER TREATMENT SYSTEM OPERATION AND MAINTENANCE

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
Mobilize with proper equipment/supplies for O&M.	Safety glasses or goggles, hard hat, steel-toed and -shank boots, hearing protection, gloves.	Vehicle accident. Lifting hazards. Delay or improper performance of work due to improper equipment on site.	Follow safe driving procedures. Employ safe lifting procedures. Make sure subcontractors are aware of their responsibilities for labor, equipment, and supplies. Review HASP and permit conditions and gather necessary PPE.
Set up necessary traffic control.	Safety glasses or goggles, hard hat, steel-toed and -shank boots, hearing protection, gloves.	Struck by vehicle during placement. Vehicle accident as a result of improper traffic control equipment placement.	Use buddy system for placing traffic control, if necessary. Reference traffic control plan section of HASP (may include specific requirements based on permits).
Unload and set up test equipment.	Safety glasses or goggles, hard hat, steel-toed and -shank boots, hearing protection, gloves.	Struck by vehicle. Trip hazards. Accident when maneuvering equipment. Lifting hazard. Electrical hazard. Adverse impacts to station sales.	Place equipment away from pump islands or other high traffic areas. Store hoses and electrical cords neatly and protect with traffic control equipment (e.g., cones, barricades). Provide hand signals and guidance to driver, as needed, when placing testing equipment trailers or other large equipment. Visually inspect equipment (e.g., fire extinguisher on board/available on site, no damaged hoses or electrical lines, pressurized hoses secured with whip-checks or adequate substitute, all vapor and/or water hoses firmly connected, equipment grounded). Use proper lifting techniques. Use GFIC on generators or other electrical equipment; inspect cords.
Set up exclusion zone(s) and work station.	Safety glasses or goggles, hard hat, steel-toed and -shank boots, hearing protection, gloves.	Struck by vehicle during setup. Slip/fall hazards.	Implement exclusion zone setup instructions of HASP. Set up work station with clear walking paths to all testing locations. Face oncoming traffic.

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
Gauge water levels and product thickness (where applicable).	Safety glasses or goggles, hard hat, steel-toed and -shank boots, hearing protection, gloves.	Back strain, inhalation, or dermal exposure to chemical hazards. Repetitive motion. Eye injury from back pressure in wells. Traffic hazards.	Wear any additional PPE and initiate air quality monitoring in accordance with HASP. Maintain safe distance from wellheads. Bend at knees, rather than waist. Decontaminate equipment between measurements. Face oncoming traffic.
Commence performing O&M.	Safety glasses or goggles, hard hat, steel-toed and -shank boots, hearing protection, gloves.	Explosion or fire. Trip hazards. Unauthorized release of contaminants. Eye injury from pressurized air or shrapnel from burst piping. Burn from heated piping or motors. Clothing caught on turning vanes on compressor and shaft. Exposure to contaminants (e.g., inhalation, dermal contact). Noise. Electrical hazards.	Follow equipment-specific operation instructions. Ensure that connections with barbed fittings on pressure gauges are secure. Be conscious of amount of torque placed on PVC connections to avoid breaking. Monitor pressure conditions; do not exceed pressure ratings for any component involved. Watch proximity to heated piping and contact with mufflers, motors, manifolds. Monitor influent vapor and oxygen concentrations, if applicable. Keep work area tidy and free of loose equipment. Monitor treatment system and collect data to ensure discharge is within permit parameters and capacity of any storage containers (e.g., concentrations, flow rates). Wear PPE in accordance with HASP (including ear protection, as necessary). Ensure lockout/tagout of all electrical equipment that may be handled. Use GIFC; inspect cords.
Shut down system (if necessary).	Safety glasses or goggles, hard hat, steel-toed and -shank boots, hearing protection, gloves.	Unauthorized release of contaminants from back pressure. Eye injury from pressurized air or shrapnel from burst piping. Burn from heated piping or motors. Exposure to contaminants (e.g., inhalation, dermal contact).	
Collect samples in	Safety glasses or goggles, hard hat,	Cross-contamination,	Label samples in accordance with sampling plan.

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
accordance with sampling plan.	steel-toed and -shank boots, hearing protection, gloves.	improper sample labeling or storage, exposure to site contaminants. Repetitive motion. Cuts from colorimetric tubes. Body position.	Keep samples stored in proper containers, at correct temperature, and away from work area. Perform air monitoring and wear proper PPE.
Store waste (e.g., water, carbon canisters) in accordance with site-specific requirements.	Safety glasses or goggles, hard hat, steel-toed and -shank boots, hearing protection, gloves	Back strain. Traffic hazard. Improper storage or disposal. If disposing through on-site treatment system, damage or injury from improper use of equipment.	Use proper equipment to transport waste containers (e.g., pumps, drum dollies). Have proper storage containment and labeling available on site. Place materials in isolated location away from traffic and other site functions. Label waste. Coordinate proper disposal off site (where applicable). Review instructions for use of on-site treatment systems.
Clean site/demobilize.	Safety glasses or goggles, hard hat, steel-toed and -shank boots, hearing protection, gloves.	Traffic hazard. Lifting hazards. Safety hazard left on site.	Use buddy system, as necessary, to remove traffic control. Use proper lifting techniques. Leave site clean of refuse and debris. Notify station personnel of departure and location of any stored waste.

10.2 EXCAVATION ACTIVITIES

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
Clear excavation locations.	Reflective vest, steel-toed and -shank shoes, hard hat, safety glasses with side shields, ear plugs or ear muffs, work gloves.	Traffic hazards, overhead and underground installations, product releases, property damage, dealer inconvenience.	• Refer to Utility Clearance Log. • Coordinate with facility contact (or designee) to minimize potential conflicts. • Review proposed locations against available construction drawings and known utilities, tanks, product lines, etc. • Mark out the proposed excavation locations. • Call the underground utility locating service for public line location clearance. Obtain a list of utilities being contacted. If necessary, coordinate private line locator for private property.
Set up necessary traffic control.	Reflective vest, steel-toed and -shank shoes, hard hat, safety glasses with side shields, ear plugs or ear muffs, work gloves.	Being struck by vehicle during placement. Vehicle accident as a result of improper traffic control equipment placement.	• Use buddy system to place traffic control. • Implement traffic control plan as required.
Set up exclusion zone(s) and stockpile area and establish work areas/heavy equipment pathways.	Reflective vest, steel-toed and -shank shoes, hard hat, safety glasses with side shields, ear plugs or ear muffs, work gloves.	Injury or exposure to public or other onsite personnel. Slip or fall hazards. Onsite vehicular accident with heavy equipment.	• Implement exclusion zone set-up instructions. • Establish clear walking paths between work stations.
Hand digging/post-holing where necessary to expose and protect underground installations as needed.	Reflective vest, steel-toed and -shank shoes, hard hat, safety glasses with side shields, ear plugs or ear muffs, work gloves. Respirator with organic vapor cartridges, chemical-resistant gloves, chemical-resistant apron as required.	Damage to lines and associated physical hazards or property damage. Back strain. Injury or vehicle damage from falling into a hole.	• Use hand tools whenever possible. • Use proper lifting techniques. • Barricade or cover holes until job has been completed.

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
Assist with set up of heavy equipment.	Reflective vest, steel-toed and -shank shoes, hard hat, safety glasses with side shields, ear plugs or ear muffs, work gloves.	Damage caused by heavy equipment while accessing set-up location. Being struck by equipment.	• Verify a clear pathway to excavation and stockpiling locations. • Provide hand signals and guidance to driver as needed to place rig. • Visually inspect equipment (fire extinguisher on board, no oil or other fluid leaks, cabling and associated equipment in good condition, pressurized hoses secured with whip-checks or adequate substitute, jacks in good condition). • Maintain eye contact with operator.
Commence excavation.	Reflective vest, steel-toed and -shank shoes, hard hat, safety glasses with side shields, ear plugs or ear muffs, work gloves. Respirator with dust cartridges and gloves as required.	Heat or cold exposure. Exposure to chemical hazards. Hitting an underground or overhead utility. Flammable or oxygen-deficient atmosphere from accumulated vapors. Trip or fall. Side wall cave-in. Equipment failure. Noise.	• Monitor weather conditions and take breaks as needed for cold or hot weather. Conduct air monitoring as presented in Attachment 8. Include Lower Explosive Limit (LEL) and oxygen (O_2) monitoring. If >10% LEL or O_2 <19.5%, discontinue work or ventilate area with explosion-proof equipment. • Maintain required excavation set-backs for workers and equipment. Monitor condition of side walls and surrounding ground conditions. • Keep work area clear of tripping or slipping hazards. Perform periodic visual inspections of heavy equipment and keep equipment a minimum of 5 feet from excavation edge, or one foot away from the edge for every foot of depth, if greater than 5 feet deep. • Perform necessary soil classification. Slope or bench walls, or shore excavation to prevent cave-in. Keep all spoils > 2 feet from excavation edge. Keep excavation entry controlled and equipped with required ladders and crosswalks.
Collect samples in accordance with sampling plan.	Reflective vest, steel-toed and -shank shoes, hard hat, safety glasses with side shields, ear plugs or ear muffs, work gloves. Respirator with organic vapor cartridges, chemical-resistant gloves, chemical-resistant apron as required.	Cave-in of side wall if entering excavation. Injury from heavy equipment. Exposure to site contaminants.	• Stay out of excavation whenever possible (collect samples from backhoe bucket). • Use agreed-upon hand signals with heavy equipment operators. • Monitor air around excavation in accordance with the protocol presented in Attachment 8.

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
Store excavated materials according to site-specific requirements.	Reflective vest, steel-toed and -shank shoes, hard hat, safety glasses with side shields, ear plugs or ear muffs, work gloves. Respirator with organic vapor cartridges, chemical-resistant gloves, chemical-resistant apron as required.	Exposure to public. Traffic hazard, obstruction, or inconvenience to business operation. Improper storage or disposal.	• Have necessary storage containment and labeling available onsite. • Place materials in isolated location away from traffic and other site functions. • Stockpile excavated materials on suitable plastic or in appropriately designed container. Cover with plastic, and barricade access to waste in accordance with local regulations. • Coordinate proper disposal offsite, where applicable.
Backfill excavation.	Reflective vest, steel-toed and -shank shoes, hard hat, safety glasses with side shields, ear plugs or ear muffs, work gloves. Respirator with dust cartridges and gloves as required.	Being struck by heavy equipment. Side wall collapse. Damage or accidents resulting from subsequent subsidence.	• Use agreed-upon hand signals with heavy equipment operators. • Compact soils to meet specifications. • Maintain eye contact with equipment operators.
Clean site. Demobilize.	Reflective vest, steel-toed and -shank shoes, hard hat, safety glasses with side shields, ear plugs or ear muffs, work gloves.	Traffic. Safety hazard left on site. Lifting hazards.	• Use buddy system to remove traffic control, as necessary. • Leave site clear of refuse and debris. • Notify business personnel of departure. • Use proper lifting techniques or use mechanical assistance.
Package and deliver samples to laboratory.		Back strain. Traffic accidents	• Handle and pack bottles carefully (e.g., bubble wrap bags). • Use proper lifting techniques. • Apply safe driving practices

Job Steps	Personal Protective Equipment	Potential Hazard	Critical Actions
General			
Typical work.	Steel-toed and -shank shoes, hard hat, safety glasses with side shields, hearing protection, reflective safety vest, and leather gloves for non-chemical aspects of the work. If equipment contamination is suspected, wear chemical-resistant gloves during decontamination of equipment.	Weather-related incidents: automobile accidents, slips, or falls.	• Check weather reports daily. Project visits are not to be performed during inclement weather. Sampling may be performed during light rain mist. Wear raincoats. • Drive at the speed limit or less as needed to keep safe distance from vehicle in front. Avoid short stops.
No eating, drinking, or smoking on-site. No contact lenses to be worn on-site. No facial hair that would interfere with respirator fit.			
A safety meeting will be held each day, even if only one person is working on the project on any given day.			• Topics are always to include the work scheduled for that day, and restatement of hazards and the means to avoid them. Other topics may include sampling in general, and advances in technology and how they may be applied to the project. Use the *Daily Health and Safety Briefing Log* provided in Attachment 4 to log the topics discussed.

11.0 WASTE CHARACTERISTICS

Waste anticipated to be generated on the project site:

Type(s): ☒ Liquid ☒ Solid ☐ Sludge ☒ Slag & Lime Ash

The approximate volume for each anticipated waste stream:

Waste: Groundwater with high pH and metals. Approximate Volume: 2,000-6,000 gal/day

Waste: Soil with high pH Approximate Volume: 16,500 cubic yards

Waste: Approximate Volume:

Characteristics:

■ Corrosive ☐ Flammable/Ignitable ☐ Radioactive ☐ Toxic

☐ Reactive ☐ Unknown ☐ Other *(specify)*_____

ATTACHMENT 1
HEALTH AND SAFETY PLAN ACKNOWLEDGEMENT AND AGREEMENT FORM

HEALTH AND SAFETY PLAN
Excavation Cleanup, Alternative Pre-Design Activities,
and Water Treatment System Operation and Maintenance
EMJ Slag Site
Kent, Washington

Farallon PN: 831-022

HEALTH AND SAFETY PLAN ACKNOWLEDGMENT AND AGREEMENT FORM

(All Farallon and subcontractor personnel must sign)

This Health and Safety Plan (HASP) has been developed for the purpose of informing Farallon employees of the hazards they are likely to encounter on the project site, and the precautions they should take to avoid those hazards. Subcontractors and other parties at the site must develop their own HASP to address the hazards faced by their own employees. Farallon will make a copy of this HASP available to subcontractors and other interested parties to fully disclose hazards we may be aware of, and to satisfy Farallon's responsibilities under the Occupational Safety and Health Administration (OSHA) Hazard Communication standard. Similarly, subcontractors and others on site are required to inform Farallon of any hazards they are aware of or that their work on site might possibly pose to Farallon employees, including but not limited to Material Safety Data Sheets for chemicals brought on site. This plan should NOT be understood by contractors to provide information pertaining to all of the hazards that a contractor's employees may be exposed to as a result of their work.

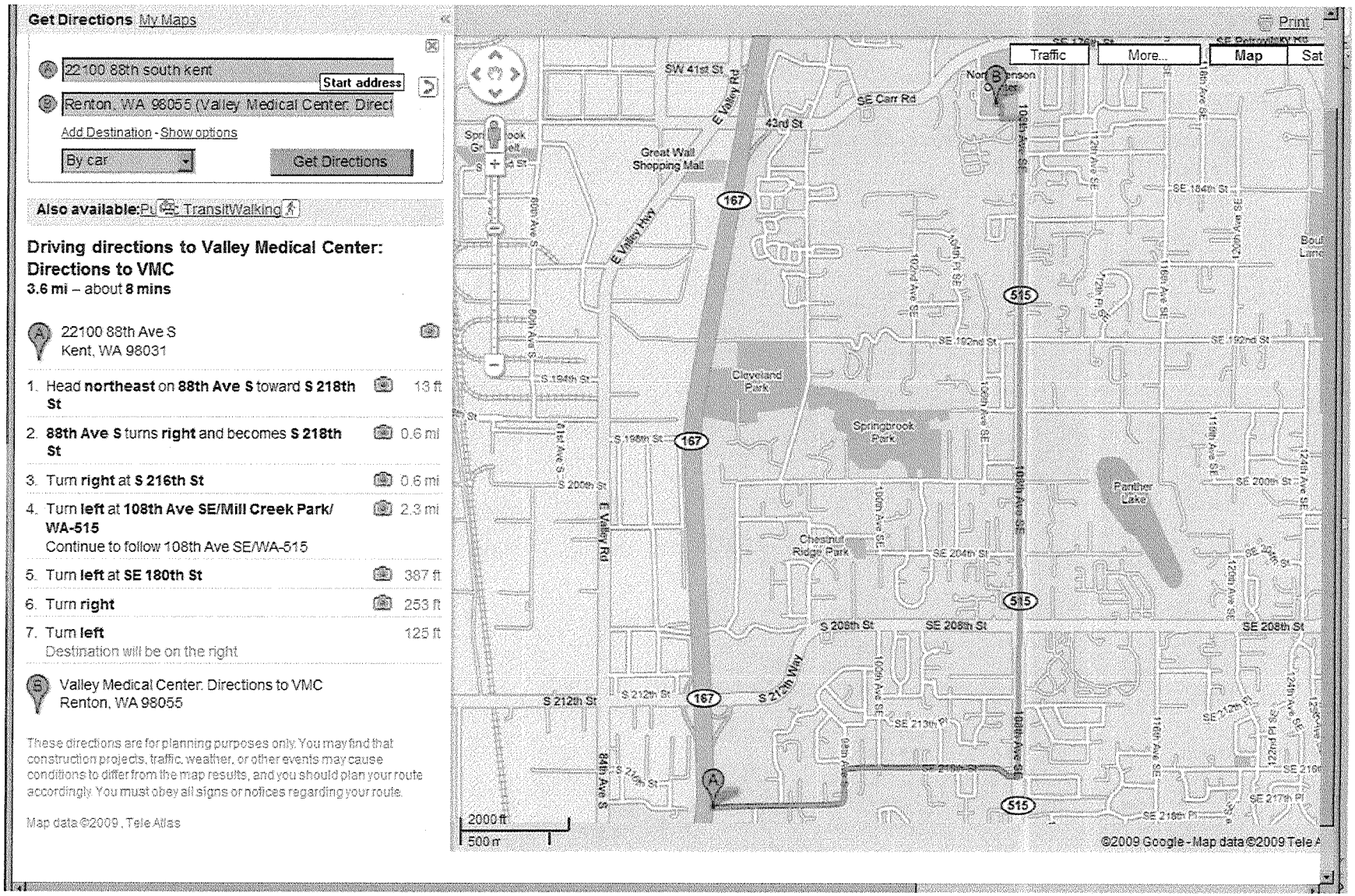
All parties conducting site activities are required to coordinate their activities and practices with the project Site Health and Safety Officer (SHSO). Your signature below affirms that you have read and understand the hazards discussed in this HASP, and that you understand that subcontractors and other parties working on site must develop their own HASP for their employees. Your signature also affirms that you understand that you could be prohibited by the SHSO or other Farallon personnel from working on this project for not complying with any aspect of this HASP.

Name	Title	Signature	Company	Date

ATTACHMENT 2
DIRECTIONS TO HOSPITAL

HEALTH AND SAFETY PLAN
Excavation Cleanup, Alternative Pre-Design Activities,
and Water Treatment System Operation and Maintenance
EMJ Slag Site
Kent, Washington

Farallon PN: 831-022



ATTACHMENT 3
POTENTIAL TOPICS FOR DAILY HEALTH AND SAFETY MEETING

HEALTH AND SAFETY PLAN
Excavation Cleanup, Alternative Pre-Design Activities,
and Water Treatment System Operation and Maintenance
EMJ Slag Site
Kent, Washington

Farallon PN: 831-022

POTENTIAL TOPICS FOR DAILY HEALTH AND SAFETY MEETING

- ☐ Emergency response plan, emergency vehicle (full of fuel) and muster point
- ☐ Route to medical aid (hospital or other facility)
- ☐ Work hours. Is night work planned?
- ☐ Hand signals around heavy equipment
- ☐ Traffic control
- ☐ Pertinent legislation and regulations
- ☐ Above- and below-ground utilities (energized or de-energized)
- ☐ Material Safety Data Sheets
- ☐ Reporting an incident: to whom, what, why, and when to report
- ☐ Fire extinguisher and first aid kit locations
- ☐ Excavations, trenching, sloping, and shoring
- ☐ Personal protective equipment and training
- ☐ Safety equipment and training
- ☐ Emergency telephone location(s) and telephone numbers (in addition to 911)
- ☐ Eye wash stations and washroom locations
- ☐ Energy lock-out/tag-out procedures. Location of "kill switches," etc.
- ☐ Weather restrictions
- ☐ Site security. Site hazards. Is special waste present?
- ☐ Traffic and people movement
- ☐ Working around machinery (both static and mobile)
- ☐ Sources of ignition, static electricity, etc.
- ☐ Stings, bites, large animals, and other nature-related injuries and conditions
- ☐ Working above grade
- ☐ Working at isolated sites
- ☐ Decontamination procedures (for both personnel and equipment)
- ☐ How to prevent falls, trips, sprains, and lifting injuries
- ☐ Right to refuse unsafe work
- ☐ Adjacent property issues (e.g., residence, business, school, daycare center)

ATTACHMENT 4
DAILY HEALTH AND SAFETY BRIEFING LOG

HEALTH AND SAFETY PLAN
Excavation Cleanup, Alternative Pre-Design Activities,
and Water Treatment System Operation and Maintenance
EMJ Slag Site
Kent, Washington

Farallon PN: 831-022

DAILY HEALTH AND SAFETY BRIEFING LOG

Date	
Start Time	
Issues Discussed	
1.Contaminants of concern (lime ash, metals, pH)	
2. Wearing proper PPE (hardhat, safety glasses, steel toe boots, reflective safety vest).	
3. Slip, trip, and fall hazards	
4. Excavator safety, making eye contact with excavator operator.	
5. Hospital route, and first-aid kit locations	
Attendees	
Print Name	**Signature**
Meeting Conducted by: Ken Scott	
Name (Site Health and Safety Coordinator)	**Signature**

ATTACHMENT 5
INCIDENT REPORT FORM

HEALTH AND SAFETY PLAN
Excavation Cleanup, Alternative Pre-Design Activities,
and Water Treatment System Operation and Maintenance
EMJ Slag Site
Kent, Washington

Farallon PN: 831-022

INCIDENT REPORT

NEAR MISS, ACCIDENTAL INJURY, OCCUPATIONAL ILLNESS, OR WORK PLACE INCIDENT

INCIDENT TYPE (TO BE COMPLETED BY HEALTH AND SAFETY COORDINATOR) | **INCIDENT DATE**

- ☐ FATALITY
- ☐ LOST WORKDAY (LW)
- ☐ LW RESTRICTED DUTY
- ☐ OSHA MEDICAL OR ILLNESS WITHOUT LW
- ☐ FIRST AID
- ☐ INDUSTRIAL NON-RECORDABLE
- ☐ NON-INDUSTRIAL
- ☐ OFF-THE-JOB INJURY
- ☐ MOTOR VEHICLE ACCIDENT
- ☐ FIRE
- ☐ SPILL/LEAK
- ☐ PRODUCT INTEGRITY
- ☐ EQUIPMENT
- ☐ BUSINESS INTERRUPTION
- ☐ GENERAL LIABILITY
- ☐ CRIMINAL ACTIVITY
- ☐ NOTICE OF VIOLATION
- ☐ NEAR MISS

This report must be completed by the employee or Health and Safety Coordinator immediately upon learning of the incident. The completed report must be reviewed and signed by a Farallon Principal within 24 hours of the incident, even if employee is not available to review and sign. Employee or employee's doctor must submit a copy of the doctor's report, and any subsequent exams, to Richard McManus at Farallon within 24 hours of the initial exam. After hours or weekends, telephone Mr. McManus via cell phone: (425) 466-1032.

EMPLOYEE INFORMATION

LAST NAME	FIRST NAME AND MIDDLE INITIAL	TITLE	DATE OF BIRTH

EMPLOYMENT STATUS ☐ FULL-TIME ☐ PART-TIME ☐ HOURLY-AS-NEEDED | LENGTH OF EMPLOYMENT

DATE OF INJURY OR ONSET OF ILLNESS (MM/DD/YYYY) | TIME OF EVENT OR EXPOSURE ☐ AM ☐ PM

INJURY OR ILLNESS INFORMATION

EXACT LOCATION OF INCIDENT (GEOGRAPHICAL LOCATION, FLOOR, BUILDING, ETC.)

COUNTY | ON EMPLOYER'S PREMISES? ☐ YES ☐ NO

COMPLETE DESCRIPTION OF INCIDENT; INCLUDE SPECIFIC ACTIVITY AT TIME OF INCIDENT (e.g., Lifting, Pushing, Walking)

DESCRIBE THE EQUIPMENT, MATERIALS, OR CHEMICALS THAT DIRECTLY HARMED THE EMPLOYEE (e.g., the machine that the employee struck or that struck the employee; the vapor inhaled; the material swallowed; what the employee was lifting or pulling)

DESCRIBE THE SPECIFIC INJURY OR ILLNESS (e.g., cut, strain, fracture, skin rash)

BODY PART(S) AFFECTED (e.g., back, left wrist, right eye)

DATE EMPLOYER NOTIFIED | TO WHOM REPORTED

MEDICAL PROVIDER INFORMATION (e.g., hospital, doctor, clinic)

NAME AND ADDRESS OF MEDICAL CARE PROVIDER | TELEPHONE NO.

TREATED IN EMERGENCY ROOM? ☐ NO ☐ YES | HOSPITALIZED OVERNIGHT AS INPATIENT? ☐ NO ☐ YES

INCIDENT REPORT, CONTINUED

SEVERITY OF INJURY OR ILLNESS	TIME LOSS (Check all that apply)	PHASE OF WORKDAY
☐ NO TREATMENT REQUIRED	☐ NO TIME LOSS	☐ PERFORMING NORMAL WORK DUTIES
☐ FIRST AID ONLY	☐ RETURN TO WORK THE NEXT DAY	☐ MEAL PERIOD
☐ MEDICAL TREATMENT	☐ RESTRICTED ACTIVITY:	☐ REST PERIOD
☐ FATALITY (ENTER DATE):	BEGIN DATE	☐ ENTERING/LEAVING
	RETURN DATE	☐ CHRONIC EXPOSURE
	☐ LOST WORKDAY, NOT AT WORK:	☐ OTHER (SPECIFY):
	BEGIN DATE	
	RETURN DATE	

MOTOR VEHICLE ACCIDENT			
		PROFESSIONAL DRIVER? ☐ YES ☐ NO	
TOTAL YEARS DRIVING	COMPANY VEHICLE? ☐ YES ☐ NO	VEHICLE TYPE	
NO. OF VEHICLES TOWED	NO. OF INJURIES	NO. OF FATALITIES	

THIRD PARTY INCIDENTS		
NAME OF OWNER	ADDRESS	TELEPHONE NO.
DESCRIPTION OF DAMAGE		
INSURANCE INFORMATION		
WITNESS NAME	ADDRESS	PHONE NO.
WITNESS NAME	ADDRESS	PHONE NO.

REVIEWED BY			
NAME (PRINT)	SIGNATURE	TITLE	DATE

ATTACHMENT 6
NEAR MISS REPORT FORM

HEALTH AND SAFETY PLAN
Excavation Cleanup, Alternative Pre-Design Activities,
and Water Treatment System Operation and Maintenance
EMJ Slag Site
Kent, Washington

Farallon PN: 831-022

NEAR MISS REPORT

This report is to be filled out by any employee involved in or witnessing a near miss. A near miss is an incident that did not result in any personal injury, property damage, or work interruption. It is a very important indicator of potentially harmful future accident.

Project No. _____ Project Name _____

Project Address _____

Date of incident: _____ Time:_____ ☐ AM ☐ PM

Exact location of incident _____

_____

Description of incident or potential hazard _____

_____

_____

_____

_____

_____

_____

Corrective action taken _____

_____

_____

_____

_____

_____

Employee Signature _____ Date _____

Printed Name _____

Supervisor Signature _____ Date _____

Printed Name _____

ATTACHMENT 7
UTILITY CLEARANCE LOGS

HEALTH AND SAFETY PLAN
Excavation Cleanup, Alternative Pre-Design Activities,
and Water Treatment System Operation and Maintenance
EMJ Slag Site
Kent, Washington

Farallon PN: 831-022

UTILITY CLEARANCE LOG

Project: _____ **Project Number**: _____

Location: _____ **Date**: _____

Instructions: This log must be completed by a Farallon staff member prior to any Farallon-directed excavation (e.g., test pit excavation) or drilling operations.

DRILLING OR EXCAVATION WORK MAY NOT PROCEED UNTIL UTILITY LOCATES HAVE BEEN COMPLETED.

(See One-Call Notification Procedure on Reverse Side of This Form)

Farallon is responsible for having underground utilities and structures located and marked when drilling or directing test pit excavation operations. Any drilling or excavation within two feet of a marked utility must be done with hand tools.

Owners of underground utilities are required by law to mark underground facilities on public and private property. Owners of underground utilities are **not required** to mark existing service laterals or appurtenances. Utility owners in Washington are required to subscribe to the one call service.

Private utility locate services must be hired to locate service laterals and other buried utilities (e.g., on-site electric distribution lines, irrigation pipes) on private property.

Remark after 10 days or maintain as appropriate.

Locate Check List

Map attached showing drilling or excavation sites and known utilities ☐

Attach copy of One-Call Utility Notification Ticket (http://www.searchandstatus.com/) ☐

One-Call Utility Notification Ticket Number: _____

Attach copy of Private Locate Receipt ☐

Photos taken of all excavation/drilling locations (Download to project file) ☐

Facility Contact/Manager Approval: Name _____ Signature _____

Utilities and Structures

Type	Utility Name	Public Utilities Marked	Private Utilities/Laterals Marked	How Marked[1]
Petroleum product lines				
Natural gas line				
Water line				
Sewer line				
Storm drain				
Telephone cable				
Electric power line				
Product tank				
Septic tank/drain field				
Other				

[1]Flags, paint on pavement, wooden stakes, etc.

Farallon Consulting, L.L.C.

Field Team Leader _____ Date _____

Electric	*Gas-Oil-Steam*	*Comm-CATV*	*Water*	*Sewer*	*Temp Survey*
RED	**YELLOW**	**ORANGE**	**BLUE/PURPLE**	**GREEN**	**PINK**

ONE-CALL UTILITY LOCATE REQUEST PROCEDURE

THE ONE-CALL UTILITY LOCATE CENTER REQUIRES 48 HOURS TO MARK UTILITIES BEFORE YOU CAN DIG OR DRILL

In Washington Call 1-800-424-5555 In Oregon Call 1-800-332-2344

Washington state law requires that "before commencing **any** excavation" that the excavator or driller provide notice to all owners of underground utilities by use of the one-call locator service. Further, the law requires that the excavator/driller shall not dig/drill until all known utilities are marked. To fully comply with the law the following utility locate procedure is required:

1. **Call before you dig or drill** – Notify the One-Call Utility Notification Center (OCUNC) a minimum of two full business days before digging or drilling. Document your notification on a Utility Locate Telecon Form. Provide the following information (Bold indicates required information):
    a. **Your name, phone number, company name, mailing address, Farallon Account Number #25999**
    b. The name and phone number of an alternate contact person
    c. If the work is taking place within 10 feet of any overhead power lines.
    d. What type or work is being done.
    e. Who the work is being done for.
    f. The county and city the work is taking place in.
    g. **The address or the street where the work is taking place.**
    h. The nearest cross street.
    i. The distance and direction of the worksite from the intersection.
    j. **Marking instructions, (specific instructions as to where the work is taking place).**
    k. Township, range, section, and quarter section of the worksite.
2. **Record the utilities that will be notified** – OCUNC will tell you what utilities are on or adjacent to the site based on their database. Record the name of the utility on the reverse side of this form.
3. **Confirm the utilities notified have marked the utilities in the field** – Before digging or drilling walk the site and confirm that the utilities that were notified marked the utilities in the field.
4. **If a locate appears to be missing** – If a utility locate appears to be missing, and the utility has not notified you that there are no utilities in the area, call OCUNC and:
    a. **Provide the OCUNC locate number**
    b. **Clearly state which utility has not been marked. The call is being recorded.**
    c. **Ask for a contact at that utility.**
5. **Call contact(s) for missing utility(s)** – Call the contacts for missing utility locates and determine why no locate appears in field.
6. **Record reason(s) for missing locate(s)** – There may be reasons that locates do not appear in the field (e.g., no utilities are located on the site, utility has been abandoned).

Electric	*Gas-Oil-Steam*	*Comm-CATV*	*Water*	*Sewer*	*Temp Survey*
RED	**YELLOW**	**ORANGE**	**BLUE/PURPLE**	**GREEN**	**PINK**

Record the reason given. IF THEY ARE LATE – YOU WAIT TO DRILL OR DIG. If the utility failed to mark within the required two days they are liable for delay costs.

7. **Hand dig within two feet** – When digging or drilling within two feet of any marked utility the utility must be exposed first by using hand tools.

Electric	*Gas-Oil-Steam*	*Comm-CATV*	*Water*	*Sewer*	*Temp Survey*
RED	**YELLOW**	**ORANGE**	**BLUE/PURPLE**	**GREEN**	**PINK**

FARALLON CONSULTING, L.L.C.
975 5th Avenue Northwest
Issaquah, Washington
98027

TELEPHONE CONVERSATION
Date:_____ **Time:**_____
Project Name:_____
Job No:_____
Phone No:1-800-424-5555 WA, 1-800-332-2344
OR_____
Prepared By/Initials: _____
Call: ☐ **Placed** ☐ **Received**

Contact/Title:_____

Agency/Region: One-Call Utility Notification Center

PROJECT:_____

1. Your name and the Farallon Account Number #25999_____

2. What is the type of work being conducted? (Environmental drilling, test pit excavation)

_____

3. Who is the property owner? _____

4. County and city were work is being done?_____

5. Address or street where work is taking place?_____

Q-S-T-R **SW-7-22-5**_____

6. Nearest cross street?_____

7. Distance and direction of the worksite from the intersection?_____

8. Marking Instructions (Generally locate on entire site including rights-of-way and easements):_____

_____

9. What time and date will the locate be completed?_____

10. Utility Locate Request Number?_____

11. Utilities that will be notified?_____

_____

12. Any Overhead Concerns? No_____

_____

cc:_____ **Page**_____ **of**_____

Note: Bold indicates required information

ATTACHMENT 8
AIR MONITORING PLAN

HEALTH AND SAFETY PLAN
Excavation Cleanup, Alternative Pre-Design Activities,
and Water Treatment System Operation and Maintenance
EMJ Slag Site
Kent, Washington

Farallon PN: 831-022

AIR MONITORING PLAN

ATTACHMENT 8 OF THE
EXCAVATION CLEANUP, ALTERNATIVE PRE-DESIGN ACTIVITIES
AND WATER TREATMENT SYSTEM OPERATION AND MAINTENANCE
EMJ SLAG SITE
SOUTHEAST CORNER OF SOUTH 218TH STREET AND 88TH AVENUE SOUTH
KENT, WASHINGTON

Submitted by:
Farallon Consulting, L.L.C.
975 5th Avenue Northwest
Issaquah, Washington 98027

Farallon PN: 831-022

Prepared for
Earle M Jorgensen Company
10650 Alameda Street
Lynwood, California 90262

June 7, 2010

CONTENTS

TABLE

EXHIBITS

ABBREVIATIONS AND ACRONYMS

%R	percent recovery
AMP	Air Monitoring Plan
COCs	constituents of concern
DQO	data quality objectives
EMJ	Earle M. Jorgensen Company
EPA	U.S. Environmental Protection Agency
Ecology	Washington State Department of Ecology
Farallon	Farallon Consulting, L.L.C.
MCE	Mix Cellulose Ester
mg	milligram
mg/m^3	milligrams per cubic meter
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
PARCC Parameters	precision, accuracy, representativeness, completeness, and comparability
PVC	polyvinyl chloride
QA	quality assurance
QA/QC	quality assurance/quality control
RPD	relative percent difference

1.0 INTRODUCTION

Farallon Consulting, L.L.C. (Farallon) has prepared this Air Monitoring Plan (AMP) on behalf of Earle M. Jorgensen Company (EMJ) to provide specific requirements for air monitoring and sampling during the cleanup action at the property located at the southeastern corner of South 218th Street and 88th Avenue South in Kent, Washington (herein referred to as the Site). The air monitoring and sampling is being conducted to protect worker health and safety. The selected cleanup action for the Site consists of excavation and off-Site disposal of approximately 16,500 cubic yards of secondary steel slag.

The purpose of the AMP is to provide specific requirements for ambient air monitoring procedures, sample collection, and analytical activities in accordance with technically acceptable protocols. The ambient air monitoring procedures are designed to ensure that workers at the Site are protected from exposure to concentrations of airborne constituents of concern (COCs) above applicable Occupational Safety and Health Administration (OSHA) permissible exposure limits (Table 1) and to monitor the effectiveness of Contractor dust control measures.

ORGANIZATION

The Air Monitoring Plan is organized as follows:

- **Section 2—Site Description.** Section 2 provides a brief summary of background information for the Site.
- **Section 3—Cleanup Action Design.** Section 3 presents the components of the cleanup action.
- **Section 4—Ambient Air Monitoring.** Section 4 presents the components of ambient air monitoring for the cleanup action, including personal air monitoring, perimeter air monitoring, and sample handling.
- **Section 5—Quality Assurance/Quality Control (QA/QC).** Section 5 presents QA/QC protocols for ambient air monitoring for the cleanup action, including field and laboratory QA/QC procedures, performance and system audits, and data assessment procedures.
- **Section 6—References:** Section 6 lists the documents cited in the AMP.

2.0 SITE DESCRIPTION

This cleanup action is being performed on behalf of Earle M. Jorgensen Company (EMJ) at the property located at the southeastern corner of South 218th Street and 88th Avenue South in Kent, Washington (herein referred to as the Site). The cleanup action will be conducted under Consent Decree No. 95-2-15301-1 (Consent Decree) entered into by the Washington State Department of Ecology (Ecology) and EMJ.

Secondary steel slag that contains lime ash that reacts with water to increase the pH (herein referred to as slag) was placed as fill on the Site between 1984 and 1990. Cleanup actions were conducted at the Site in 1995 through 1996 and in 2002 to mitigate the discharge of surface water with a pH above 8.5 from the stormwater detention pond located on the northeastern corner of the Site. Ecology confirmed that the requirements of the Consent Decree had been met and that further monitoring was no longer required.

The City of Kent measured pH levels of 12.5 to 12.8 in surface water discharging from seeps on the north and northwest sides of the Site in March 2009. Based on the pH levels measured in surface water leaving the Site in March 2009, Ecology required implementation of an interim action under the existing Consent Decree to mitigate discharge of surface water with a pH above 8.5. The interim action consists of capturing surface water for pre-treatment and disposal to the sewer system. The results of investigations conducted at the Site concluded that infiltration of precipitation and surface water bypassing the interceptor drain and barrier system (constructed as part of the previous cleanup actions at the Site, further discussed herein) react with the lime ash in the slag, elevating the pH in surface water that discharges from the seeps.

The cleanup action, presented in the Cleanup Action Work Plan prepared by Farallon to mitigate the discharge of surface water with a pH above 8.5, is removal of the slag with lime ash that reacts with surface water for off-Site disposal. Approximately 16,500 cubic yards of the slag will be removed from the Site. Ecology has reviewed and agreed to the selected cleanup action. The cleanup work is scheduled to begin in summer 2010.

3.0 CLEANUP ACTION DESIGN

The cleanup action at the Site includes excavation and off-Site disposal of approximately 16,500 cubic yards of the slag. Following excavation, the Site will be restored and graded to allow surface water to drain approximately as it did prior to slag removal activities. Site restoration will include hydroseeding areas impacted by construction, and construction of drainage features to manage stormwater runoff. The cleanup will be conducted under the authority of Consent Decree No. 95-2-15301-1 between Ecology and Earle M. Jorgensen Company.

4.0 AMBIENT AIR MONITORING

The following section includes a description of the ambient air monitoring and sampling planned during the cleanup action at the Site. The objectives of air monitoring and sampling during the cleanup action are to document that contractor dust mitigation measures are effective in preventing dust migration off the Site, and that workers are not exposed to concentrations of COCs contained in dust above permissible exposure limits (Table 1).

To meet these objectives, perimeter air monitoring and personal air monitoring will be performed. This section describes the air monitoring program in detail, including worker breathing-zone air monitoring and Site perimeter air monitoring.

4.1 PERSONAL AIR MONITORING

Personal air monitoring will be accomplished by real time dust monitoring and breathing-zone air sampling. Dust monitoring and breathing-zone air sampling will be used to assure that workers are not exposed to concentrations of COCs above applicable OSHA permissible exposure limits. Where dust or COC concentrations are determined to approach or exceed permissible exposure limits, corrective actions will be implemented as described in this section.

4.1.1 Breathing-Zone Dust Monitoring

Breathing-zone dust monitoring will be performed to provide real time measurement of dust concentrations in the breathing zone to assure workers are not exposed to concentrations of dust above action levels. The frequency, action levels, and equipment needed are described below.

- Frequency – At a minimum, one worker will carry a dust monitor on their person each day during the first week of construction activities, when construction operations change, or when worker activities potentially expose the worker to dust. The worker with the greatest exposure to construction operations that generate dust will wear the dust monitor. Following the first week of construction operations, the field worker with the greatest exposure to construction operations that generate dust will wear the dust monitor a minimum of one day per week.
- Action Levels – Concentrations of total dust in the breathing zone should not exceed the OSHA nuisance dust permissible exposure limit (respirable fraction) of 5 milligrams per cubic meter (mg/m^3) as total dust (Table 1).
- Equipment – Dust monitoring will be performed using the MIE MiniRam Sun Shield Model PDM-SNS or equivalent dust-monitoring device.

4.1.2 Breathing-Zone Air Sampling

Worker breathing-zone air samples will be collected and analyzed to correlate total dust monitoring data to concentrations of COCs in the air to assure worker exposures are below applicable OSHA permissible exposure limits. The frequency, sample analysis, action levels, and equipment needed are described below.

- Frequency – At a minimum, one worker will wear a breathing-zone air sampler each day during the first week of construction activities and when construction operations change. The worker with the greatest exposure to construction operations that generate dust will wear the breathing-zone air sampler. Samples collected during the first week of construction operations will be sent for analysis at the end of each workday and analyzed on an expedited turnaround basis. Following the first week of construction operations, the field worker with the greatest exposure to construction operations that generate dust will wear the air sampler a minimum of one day per week.
- Sample Analysis – The samples collected during the first week of construction activities will be analyzed for total dust.
- Action Levels – Concentrations of COCs in the ambient air should not exceed OSHA permissible exposure limits (Table 1).
- Equipment – Breathing-zone air sampling will be performed using the SKC-West Model PCXR8 or equivalent instrument.

4.1.3 Corrective Actions

If breathing-zone total dust concentrations exceed action levels, workers will don respirators equipped with dust cartridges and/or the Contractor will be required to implement additional dust control methods to reduce worker exposure to acceptable levels.

4.2 PERIMETER AIR MONITORING

Perimeter air monitoring will be performed to confirm that the Contractor's dust control methods are effective in preventing off-Site migration of dust generated from construction operations. To accomplish this, hourly visual monitoring of dust will be performed at the perimeter of the Site upwind and downwind of construction operations. Visual monitoring will continue daily throughout remedial operations, unless a significant precipitation event occurs, at which time dust monitoring may be suspended. Dust observations will be logged on the Visible Dust Monitoring Log (Exhibit A), making note of the time the observations were obtained, whether visible dust was observed, the weather conditions, the prevailing wind direction, and the general site conditions and activities. If visible dust is observed migrating beyond the perimeter of the Site, dust suppression methods (i.e., water spray) will be implemented to reduce airborne dust levels.

4.3 SAMPLE HANDLING

This section describes sample handling protocols.

4.3.1 Air Sample Designation and Labeling

Each air sample collected will be given a unique sample identification number to provide a tracking mechanism using the numbering system described below. The air sample identification number will include the site name code, sample type, sampling date, and a three-digit number unique to that sample. For the Site, the site name code will be "EMJS." The sample type will be designated with a two-letter code: PA (personal air sample). The sampling date will be six digits without hyphens or slashes; for example, July 1, 2010 will be designated 070110. Following is an example of sample identification numbers:

- A Site personal air sample from July 1, 2010 will be labeled "EMJS-PA-070110-001."

Field blank samples will be labeled in a similar manner, with the addition of the letter "F" at the end of the sample number. Sample numbers for field blanks will be recorded in the Air Sample Data Sheet (Appendix A).

Mix cellulose ester (MCE) and polyvinyl chloride (PVC) cassette filters sample labels will be written using waterproof indelible ink and attached to the exterior of the cassette. The following information will be placed on sample container labels:

- Project number;
- Sample identification number;
- Date and time of sampling; and
- Name(s) of sampling personnel.

4.3.2 Laboratory Analysis

The personal ambient air samples collected from the Site will be analyzed for COCs using the following analytical methods:

- Total dust using National Institute for Occupational Safety and Health (NIOSH) Method 0500; and
- Lime dust using NIOSH Method 7020.

4.3.3 Field Documentation

The primary purpose of field documentation is to provide a record of sample collection procedures. The field sampling forms will become permanent records of collection procedures. The field team will be responsible for monitoring compliance with field-sample collection protocols. At a minimum, field sampling forms will include the following:

- Sample date and time;
- Name(s) of sampling personnel;
- Sample number and work area;
- Person carrying personal air sampler during work day, where applicable;
- Site conditions;

- Beginning and ending pump flow rate, where applicable; and
- Beginning and ending time of sampling period.

All sampling data will be written in waterproof indelible ink. All information will be recorded on the Field Sample Data Sheet (Exhibit A).

4.3.4 Field Chain of Custody

The primary purpose of the chain-of-custody procedures is to document possession of the samples through collection, storage and analysis, and reporting. Chain-of-Custody forms will become permanent records of sample handling and shipment. The field team will be responsible to the Project Manager for monitoring compliance with chain-of-custody procedures.

Field sampling personnel are responsible for the care and security of field and laboratory samples from the time the samples are collected until they have been turned over to the shipper. A sample is considered to be in custody if it is in plain view at all times, in the physical possession of the sampler, or stored in a locked place where tampering is prevented.

A Chain-of-Custody form will accompany a batch of samples stored at the Site or sent to the analytical laboratory. At a minimum, each Chain-of-Custody form will contain the following information:

- Sample identification number and location of sampling point;
- Date and time of sampling;
- Type of sample and number of containers of samples from each sampling point;
- List of analyses requested;
- Names and signatures of sampling personnel;
- Shipping air bill number; and
- Spaces for transfer-of-custody acknowledgment.

When the Chain-of-Custody form has been completed or when all samples that will make up a batch have been collected, the field team member will cross-check the form for possible errors and sign the Chain-of-Custody form. Any corrections to the form will be made with a single strike mark, dated, and initialed. The signed Chain-of-Custody form will be sealed in a plastic bag and placed in the shipping container prior to sealing the container for shipment. Samples packaged for shipment and dispatched to the independent laboratory will contain a separate Chain-of-Custody form accompanying each cooler. A copy of each Chain-of-Custody form will be retained by the sampling team for the project file, and the original will be sent with the samples. A sample of the Chain-of-Custody form that will be used during the cleanup action is included in Exhibit C.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

This section identifies the QA/QC protocols to be implemented in conjunction with air monitoring and sampling during the cleanup action for Site, including sample collection procedures, analytical methods, QA/QC procedures, and data quality reviews to ensure that the data quality objectives (DQOs) are met. Both the quantitative and qualitative measures of data quality to ensure that the DQOs are achieved are described.

5.1 DATA QUALITY OBJECTIVES

The DQOs for this project are to develop and implement procedures to ensure that data are of sufficient quality to accurately assess the impacts of COCs and total dust on ambient air quality at the Site. All observations and measurements will be made and recorded in such a manner as to yield results representative of the medium and conditions observed and/or measured. The quality of the laboratory data will be assessed by precision, accuracy, representativeness, completeness, and comparability (the PARCC Parameters). Definitions of these parameters and the applicable quality control procedures are described in Subsections 5.1.1 through 5.1.5. Quantitative DQOs for applicable parameters (e.g., precision, accuracy, completeness) are provided following each definition. Laboratory DQOs have been established by the analytical laboratory and are specified in the analytical laboratory's Quality Assurance Plan, which is kept on file in the Farallon office.

5.1.1 Precision

Precision measures the reproducibility of measurements under a given set of conditions. Specifically, precision is a quantitative measure of the variability of two or more measurements compared to their average values. Precision is calculated from results of duplicate sample analyses. Precision is quantitatively expressed as the relative percent difference (RPD), and is calculated as follows:

Where:

$$RPD = \frac{(C_1 - C_2)}{(C_1 + C_2)/2} \times 100$$

C_1 = the larger of the two duplicate results (i.e., the highest detected concentration); and

C_2 = the smaller of the two duplicate results (i.e., the lowest detected concentration).

Quantitative μ criteria for laboratory duplicate results have been developed by the U.S. Environmental Protection Agency (EPA) and/or NIOSH for inorganic chemical analysis. Laboratory-derived criteria will be used to assess the validity of duplicate results.

5.1.2 Accuracy

Accuracy is a measure of the closeness (bias) of the measured value to the true value. The accuracy of chemical analysis results is assessed by "spiking" samples in the laboratory with known standards (i.e., matrix spikes of known concentration) and determining the percent recovery. Accuracy is measured as the percent recovery (%R), and is calculated as follows:

$$\%R = \frac{(M_{sa} - M_{ua})}{C_{sa}} x\ 100$$

Where:

M_{sa} = measured concentration in spiked aliquot;

M_{ua} = measured concentration in unspiked aliquot; and

C_{sa} = actual concentration of spike added.

Where applicable, laboratory matrix spikes, blank spikes, and/or laboratory controls samples will be prepared at the analytical laboratory in accordance with NIOSH requirements for inorganic chemical analyses. Laboratory-derived control limits will be used to assess the validity matrix spike, blank spikes, and or laboratory controls samples results.

The accuracy of sample results can be affected also by sample contamination. Sample contamination can occur because of improperly cleaned sampling equipment, exposure of samples to chemical concentrations in the field or during transport to the laboratory, or chemical concentrations in the laboratory. To ascertain that the samples collected are not contaminated during handling, transport, or analysis, several types of blank samples will be analyzed.

5.1.3 Representativeness

Representativeness is a qualitative measure of how closely the measured results reflect the actual concentration or distribution of the constituent concentrations in the matrix sampled. The sampling plan design, sampling collection techniques, sample handling protocols, sample analysis methods, and data review procedures have been developed to ensure that the results obtained are representative of site conditions.

5.1.4 Completeness

Completeness is defined as the percentage of measurements judged to be valid. Results will be considered valid if they are not rejected during data validation. Completeness is calculated as follows:

$$Completeness = \frac{(Number\ of\ Valid\ Measurements)}{(Total\ Number\ of\ Measurements)} x\ 100$$

The target completeness goal for this work will be 90 percent for a given analysis.

5.1.5 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. The use of standard EPA and Ecology methods and procedures for both sample collection and laboratory analysis will make the data collected during the cleanup action internally consistent.

5.2 SAMPLING PROCEDURES

All sampling protocols will be performed in accordance with generally accepted environmental practices and will meet or exceed current regulatory standards and guidelines. Sampling procedures may be modified if necessary to satisfy amendments to current regulations, methods, or guidelines.

5.2.1.1 Duplicate Samples

Duplicate samples will be collected at a frequency of 10 percent, or one for every 10 perimeter air samples collected. To collect the duplicate sample, two air sampling instruments will be placed at the same location for a single sampling event.

5.2.1.2 Quality Control Samples

Trip blanks will consist of one unopened MCE and PVC cassette filter for every 10 samples collected. Field blanks will consist of two MCE and PVC cassette filters that have been exposed to the ambient air in the active soil handling areas, and/or at the perimeter of the Site. Field blanks will accompany each batch of cassette filters sent for chemical analysis.

To expose a cassette filter to the ambient air, remove the end-caps from in and out ports of the filter, expose the filter to the ambient air for 5 minutes, and return the end-caps to the in and out ports of the filter.

5.2.1.3 Laboratory Method Blanks

The laboratory will run method blanks at a minimum frequency of 5 percent, or one per batch to assess sample contamination in the laboratory.

5.3 ANALYTICAL PROCEDURES

Chemical and physical analyses to be conducted during the cleanup action are discussed in Section 4.0. The container types, holding times, analytical methods, practical quantitation limits, and method detection limits will be in accordance with current regulatory guidelines.

5.4 DATA REDUCTION AND ANALYSIS

The Project Manager and Project QA/QC Officer are responsible for data review and validation. The particular type of analyses and presentation method selected for any given data set will depend on the type, quantity, quality, and prospective use of the data. The analysis of the project data is likely to require data reduction for preparation of tables, charts, and maps. To ensure that data are accurately transferred during the reduction process, the Project QA/QC Officer or designee (someone other than the person who prepared the map, table, or chart) will check all reduced data. Any incorrect transfer of data will be highlighted and corrected.

5.5 QUALITY CONTROL PROCEDURES

This section identifies the quality control procedures to be implemented in association with the cleanup action. The quality control procedures ensure that field and analytical results provide a high degree of data usability to meet the cleanup objectives for the Site.

5.5.1 Air Sample Quality Control

Air sample quality control samples (e.g., field blank samples) to be collected during this project are described in Section 4.4.1.

5.5.2 Laboratory Quality Control

Analytical laboratory QA/QC procedures are provided in the laboratory's Quality Assurance Plan.

5.5.3 Data Quality Control

All data will undergo two levels of QA/QC evaluation: one by the laboratory for all analytical data, and one by Farallon for both analytical data and field data. The laboratory will perform initial data reduction, evaluation, and reporting, as specified in the laboratory's Quality Assurance Plan. The analytical data will then be validated at Farallon under supervision of the Project QA/QC Officer. The following types of quality control information will be reviewed, as appropriate:

- Method deviations;
- Sample digestion and holding times;
- Method reporting limits;
- Blank samples;
- Duplicate samples (precision);
- Matrix spike/matrix spike duplicate samples (accuracy);
- Blank spikes and laboratory control samples;
- Reference control samples; and
- Percent completeness.

Farallon will review field records and results of field observations and measurements to ensure that procedures were properly performed and documented. The review of field procedures will include:

- Completeness and legibility of field logs and sampling forms;
- Preparation and frequency of field quality control samples;
- Equipment calibration and maintenance; and
- Chain-of-Custody forms.

5.6 PERFORMANCE AND SYSTEM AUDITS

Performance audits will be completed for both sampling and analysis work. Field performance will be monitored through regular review of Chain-of-Custody forms, field notebooks, sampling forms, and field duplicate sampling and analysis. The Project Manager and/or the Project QA/QC Officer also may perform periodic on-Site review of work in progress.

Accreditation from Ecology for each analysis performed by the laboratory demonstrates the laboratory's ability to perform the requested methods properly. Therefore, a system audit of the analytical laboratory during the course of this project will not be conducted.

The Project Manager and/or Project QA/QC Officer will oversee communication with the analytical laboratory on a frequent basis while samples are being processed and analyzed at the laboratory. This will allow Farallon to assess progress toward obtaining the DQOs and to take corrective measures if a problem arises.

The analytical laboratory will be responsible for identifying and correcting, as appropriate, any deviations from performance standards, as discussed in the laboratory's Quality Assurance Plan. The laboratory will communicate to the Project Manager or the Project QA/QC Officer any deviation from a performance standard during sample analysis, and the appropriate corrective measure(s).

5.7 DATA ASSESSMENT PROCEDURES

The Project Manager and Project QA/QC Officer are responsible for data review and validation. Upon receipt of each data package from the laboratory, calculations using the equations presented for precision, accuracy, and completeness will be performed. Results will be compared to the qualitative DQOs.

5.8 CORRECTIVE ACTION

Corrective action will be the joint responsibility of the Project Manager and the Project QA/QC Officer. Corrective procedures may include:

- Identifying the source of the violation;
- Re-analyzing samples, if holding time criteria permit;

- Re-sampling and analyzing;
- Evaluating and amending sampling and analytical procedures; and/or
- Qualifying data to indicate the level of uncertainty.

During field sampling activities, the Project Manager and field team members will be responsible for identifying and correcting protocols that may compromise the quality of the data. The Project Manager and/or Project QA/QC Officer will be verbally notified to obtain approval to proceed prior to implementing a corrective action. All corrective action taken will be documented in the Field Report form (Exhibit A).

6.0 REFERENCES

National Institute for Occupational Safety and Health (NIOSH). 2006. *NIOSH Pocket Guide to Chemical Hazards.* August.

TABLE

AIR MONITORING PLAN
EMJ Slag Site
Kent, Washington

Farallon PN: 831-022

Table 1
OSHA Permissible Exposure Limits
EMJ Slag Site
Kent Washington
Farallon PN: 831-022

Ambient Air Constituents	PEL mg/m3
Hydrated Lime Dust	5 [1]
Nuisance Dust (respirable fraction)	5 [2]

NOTES:

[1] NIOSH Pocket Guide to Chemical Hazards, DHHS (NIOSH) Publication No. 2005-149, August 2006.

[2] 29 CFR Part 1910.1000

OSHA = Occupational Safety and Health Administration

PEL = Permissible Exposure Limit for 8-hour work period

EXHIBIT A
AIR MONITORING FIELD FORMS

AIR MONITORING PLAN
EMJ Slag Site
Kent, Washington

Farallon PN: 831-022

AIR SAMPLE DATA SHEET

PROJECT NAME:	PROJECT NO:		SHEET OF
DATE:	SITE ADDRESS:		
SAMPLE PUMP MODEL:		CALIBRATION DATE/STANDARD:	
SAMPLE METHOD: ☐ MCE FILTER	☐ PVC FILTER	☐ SORBENT TUBE	☐ OTHER
SAMPLE TYPE ☐ PERSONAL	☐ PERIMETER	☐ TRAILER	☐ OTHER

AIR SAMPLE LOCATION	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE METHOD	DATE & TIME	WORK AREA	START PUMP FLOW RATE	END PUMP FLOW RATE	WEATHER CONDITIONS	REMARKS

PREPARED BY:

VISIBLE DUST MONITORING LOG

Date	Time	Perimeter Observations of Visible Dust		General Site Conditions and Activities	Weather		Observed by	Corrective Actions
		Upwind Yes/No	Downwind Yes/No		Conditions	Wind Direction		

EXHIBIT B
INSTRUMENT CALIBRATION PROCEDURES

AIR MONITORING PLAN
EMJ Slag Site
Kent, Washington

Farallon PN: 831-022

AIR SAMPLE PUMP CALIBRATION PROCEDURES

Personal ambient air sampling pumps must be properly calibrated to assure accurate volumes and sample concentrations. The sampling pumps will be calibrated using one of the following procedures:

- Sample pump calibration with primary standard. Primary standard will be the Bios DryCal DC Lite Calibrator, Model 12K. This is a primary standard traceable to Nation Institute of Standards and Technology with a range of 5 to 5000 milliliters; and/or
- Sample pump calibration with a secondary standard. A rotameter is first calibrated to the primary standard (above) and is then used to check sample flow rates in the field. A calibration curve is established for the rotameter at flow rates that will be encountered in the field.

CALIBRATION PROCEDURES

Bios DryCal – Primary Standard

- Read and follow manufacturer's instructions;
- Turn on sample pump and run for 5 minutes prior to calibration;
- Attach sample MCE and PVC filter cassette to sample hose and attach sample hose to pump. Be sure to note proper airflow direction on the filter cassette;
- Set pump to desired flow and check flow rate on pump rotameter with the flow rate of the primary standard;
- Run the DryCal calibration and write down flow rate of primary standard; and
- Turn off pump and discard the filter cassette.

CALIBRATION OF SECONDARY STANDARD

- Set up BIOS DryCal in accordance with manufacturer's instructions;
- Establish a rotameter with flow range of 1 to 5 liters per minute (lpm) air;
- Attach inlet of rotameter to outlet of DryCal, attach outlet of rotameter to inlet of a filter cassette, and attach outlet of sample media to inlet of sample pump with sample hoses;
- Turn on sample pump and allow the pump to warm up for at least 5 minutes;
- Adjust sample flow rate indicated on the rotameter with the sample pump to desired flow rate; and
- Write down indicated flow rate from the rotameter and then activate DryCal and note actual flow rate from the DryCal.

The procedure outlined above should be performed at least three times for each desired flow rate to establish a calibration curve of indicated flow rate versus actual flow rate for the rotameter. The flow rate should range from 1 to 4 lpm in 0.5 lpm. The secondary standard is now calibrated to the primary standard. The calibration curve for the rotameter can now be used to establish flow rates without taking the DryCal out of the office environment.

FLOW CALIBRATION WITH SECONDARY STANDARD.

- Turn on pump and allow to run for 5 minutes prior to calibration;
- Attach filter cassette to pump with sample hose. Be sure to note proper airflow direction on the filter cassette; and
- Attach inlet of sample media to outlet of rotameter with sample hose and adjust indicated flow rate on rotameter to desired flow.

EXHIBIT C
CHAIN-OF-CUSTODY FORM

AIR MONITORING PLAN
EMJ Slag Site
Kent, Washington

Farallon PN: 831-022

Anchorage
2000 W. International Airport Road
Suite A10
Anchorage, AK 99502
phone 907.563.9200 fax 907.563.9210

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Project Manager:	Site Contact:	Date:	COC No:
Your Company Name here	Tel/Fax:	Lab Contact:	Carrier:	_____ of _____ COCs
Address	**Analysis Turnaround Time**			Job No.
City/State/Zip	Calendar (C) or Work Days (W) _____			
(xxx) xxx-xxxx Phone	TAT if different from Below _____			SDG No.
(xxx) xxx-xxxx FAX	☐ 2 weeks			
Project Name:	☐ 1 week			
Site:	☐ 2 days			
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample																Sample Specific Notes:

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

RECORDING REQUESTED BY

AND WHEN RECORDED MAIL TO:

O'Melveny & Myers
400 South Hope Street
Los Angeles, California 90071-2899
Reference: 433,941-116
Att: Sandra S. Ikuta

9508250708

SPACE ABOVE THIS LINE FOR RECORDER'S USE

DECLARATION OF RESTRICTIVE COVENANT

The property that is the subject of this Restrictive Covenant is the subject of remedial action under Chapter 70.105D RCW. The work done to clean up the property (hereafter the "Cleanup Action") is described in Washington State Department of Ecology Consent Decree No. 95-2-15301-1 (the "Decree"), and in attachments to the Decree. This Restrictive Covenant is required by the Department of Ecology ("Ecology") pursuant to WAC 173-340-440 and has been made by the undersigned solely for the benefit of Ecology and any successor agency.

Owner, as defined below, is the fee owner of real property in King County, state of Washington (legal description attached as Exhibit A), hereafter referred to as the "Site." As used herein, the term "Owner" shall mean the undersigned and all successors-in-interest and assigns to all or any portion of the Site. As a result of the Cleanup Action, secondary/recycled steel slag materials at the Site will be covered by a cap consisting of up to three feet of top soil, tree seedlings and vegetation. The Site will also include storm water, surface water, and groundwater drainage systems.

Owner makes the following declaration as to limitations, restrictions, and uses to which the Site may be put, and specifies that such declarations shall constitute covenants to run with the land, as provided by law, and shall be binding on all parties and all persons claiming under them, including all current and future owners of any portion of or interest in the Site.

<u>Section 1.</u> Owner agrees not to perform any Cleanup Action outside the scope of the Decree unless Ecology or any successor agency agrees to an amendment to the Cleanup Action as provided in the Decree. All Cleanup Actions shall be performed in accordance with the Decree. Any activity on the Site that is creating or has the potential to create a danger to the health or welfare of the people on the Site or in the surrounding area or to the environment, may be prohibited by Ecology or any successor

agency pursuant to the Decree. It is understood that, subject to review and approval by Ecology or any successor agency, the Cleanup Action may be revised to accommodate the use of a portion of the Site by a governmental authority to expand a roadway (and the legal description of the Site for purposes of this Restrictive Covenant and the Decree may be revised to exclude the portion of the Site acquired by such governmental authority).

Section 2. Owner must give written notice to Ecology and any successor agency of Owner's intent to convey any interest in the Site. No conveyance of title, easement, lease or other interest in the Site shall be consummated by Owner without adequate and complete provision for the continued operation and maintenance of any containment system, treatment system, and monitoring system installed or implemented pursuant to this Decree and for continued compliance with this Restrictive Covenant.

Section 3. Owner shall maintain the cap, drainage systems, and monitoring system in accordance with the Decree. Owner shall notify Ecology or any successor agency prior to modifying the cap, drainage systems, or monitoring system in connection with any future development of the Site and shall obtain approval from Ecology for any substantial modification thereof. For purposes of this Restrictive Covenant, a modification shall not be deemed substantial if: (i) the proposed modification will not materially affect the pH of surface or groundwater; and (ii) Owner will restore the integrity of the cap, drainage systems, and monitoring system at the Site to their original condition in a timely manner. If Ecology or any successor agency approves a proposed substantial modification, and such modification is inconsistent with the terms of the Restrictive Covenant, this Restrictive Covenant shall be amended to reflect such modification.

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Section 4. Owner shall allow authorized representatives of Ecology or any successor agency the right to enter the Site at reasonable times for the purpose of evaluating compliance with the Cleanup Action and the Decree, including the right to take samples, to inspect any remedial actions taken at the Site, and to inspect records that are related to the Cleanup Action, pursuant to the provisions of the Decree.

Section 5. Owner reserves the right under WAC 173-340-440 or other applicable law to record an instrument which provides that this Restrictive Covenant shall no longer limit the use of the Site or be of any further force or effect. Under WAC 173-340-440, such an instrument may be recorded only with the consent of Ecology or any successor agency and Ecology or any successor agency may consent to the recording of such an instrument only after public notice and comment.

Section 6. If there is a breach of any material provision of this Restrictive Covenant by Owner, Ecology or any successor agency may enforce its rights hereunder by an action for specific performance or other injunctive relief permitted under the laws of the State of Washington, which injunctive relief shall be the exclusive remedy of Ecology and any successor agency hereunder. This Restrictive Covenant is not intended to, and does not, benefit or create any rights in any entity or person other than Owner and Ecology and any successor agency, and no such entity or person shall have any right to enforce this Restrictive Covenant.

Owner agrees to record this Restrictive Covenant on the Site with the register of deeds for King County and provide Ecology with a recorded copy.

Date: 8/22/95

THE EARLE M. JORGENSEN COMPANY

By: Charles L. Gillespie

Its: VP + CFO

9508250708

STATE OF CALIFORNIA)
COUNTY OF ORANGE) S.S.
)

On AUGUST 22, 1995, before me, SHARON K HOUGH, a Notary Public in and for said State, personally appeared CHARLES J. GALLOFO, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that he/~~she~~/~~they~~ executed the same in his/~~her~~/~~their~~ authorized capacity(~~ies~~), and that by his/~~her~~/~~their~~ signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Signature _____ (Seal)

SHARON K. HOUGH
COMM. # 993881
Notary Public – California
ORANGE COUNTY
My Comm. Expires JUL 9, 1997

EXHIBIT A

Legal Description of the Land

TRACTS 26 AND 31, SHINNS CLOVERDALE ADDITION TO KENT, ACCORDING TO THE PLAT THEREOF, RECORDED IN VOLUME 6 OF PLATS, PAGE(S) 52, IN KING COUNTY, WASHINGTON, LYING EAST OF PRIMARY STATE HIGHWAY NO. 5, AS CONVEYED TO THE STATE OF WASHINGTON BY DEED RECORDED UNDER RECORDING NUMBER 5320168 AND SOUTH OF SOUTH 218TH STREET AS CONVEYED TO THE CITY OF KENT BY DEED RECORDED UNDER RECORDING NUMBER 8101130005;
EXCEPT THAT PORTION OF TRACT 31 KNOWN AS VALLEY VIEW SHORT SUBDIVISION SPC-8-78 RECORDED UNDER RECORDING NUMBER 7906261130.

METHOD 9045D

SOIL AND WASTE pH

1.0 SCOPE AND APPLICATION

1.1 This method is an electrometric procedure for measuring pH in soils and waste samples. Wastes may be solids, sludges, or non-aqueous liquids. If water is present, it must constitute less than 20% of the total volume of the sample.

2.0 SUMMARY OF METHOD

2.1 The sample is mixed with reagent water, and the pH of the resulting aqueous solution is measured.

3.0 INTERFERENCES

3.1 Samples with very low or very high pH may give incorrect readings on the meter. For samples with a true pH of >10, the measured pH may be incorrectly low. This error can be minimized by using a low-sodium-error electrode. Strong acid solutions, with a true pH of <1, may give incorrectly high pH measurements.

3.2 Temperature fluctuations will cause measurement errors.

3.3 Errors will occur when the electrodes become coated. If an electrode becomes coated with an oily material that will not rinse free, the electrode can (1) be cleaned with an ultrasonic bath, or (2) be washed with detergent, rinsed several times with water, placed in 1:10 HCl so that the lower third of the electrode is submerged, and then thoroughly rinsed with water, or (3) be cleaned per the manufacturer's instructions.

4.0 APPARATUS AND MATERIALS

4.1 pH meter with means for temperature compensation.

4.2 Glass electrode.

4.3 Reference electrode -- A silver-silver chloride or other reference electrode of constant potential may be used.

NOTE: Combination electrodes incorporating both measuring and referenced functions are convenient to use and are available with solid, gel-type filling materials that require minimal maintenance.

4.4 Beaker -- 50-mL.

4.5 Thermometer and/or temperature sensor for automatic compensation.

4.6 Analytical balance -- capable of weighing 0.1 g.

5.0 REAGENTS

5.1 Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available. Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.

5.2 Reagent water. All references to water in this method refer to reagent water, as defined in Chapter One.

5.3 Primary standard buffer salts are available from the National Institute of Standards and Technology (NIST) and should be used in situations where extreme accuracy is necessary. Preparation of reference solutions from these salts requires some special precautions and handling, such as low-conductivity dilution water, drying ovens, and carbon-dioxide-free purge gas. These solutions should be replaced at least once each month.

5.4 Secondary standard buffers may be prepared from NIST salts or purchased as solutions from commercial vendors. These commercially available solutions, which have been validated by comparison with NIST standards, are recommended for routine use.

6.0 SAMPLE PRESERVATION AND HANDLING

Samples should be analyzed as soon as possible.

7.0 PROCEDURE

7.1 Calibration

7.1.1 Because of the wide variety of pH meters and accessories, detailed operating procedures cannot be incorporated into this method. Each analyst must be acquainted with the operation of each system and familiar with all instrument functions. Special attention to care of the electrodes is recommended.

7.1.2 Each instrument/electrode system must be calibrated at a minimum of two points that bracket the expected pH of the samples and are approximately three pH units or more apart. Repeat adjustments on successive portions of the two buffer solutions until readings are within 0.05 pH units of the buffer solution value. If an accurate pH reading based on the conventional pH scale [0 to 14 at 25 EC] is required, the analyst should control sample temperature at 25 ± 1 EC when sample pH approaches the alkaline end of the scale (e.g., a pH of 11 or above).

7.2 Sample preparation and pH measurement of soils:

7.2.1 To 20 g of soil in a 50-mL beaker, add 20 mL of reagent water, cover, and continuously stir the suspension for 5 min. Additional dilutions are allowed if working with hygroscopic soils and salts or other problematic matrices.

7.2.2 Let the soil suspension stand for about 1 hr to allow most of the suspended clay to settle out from the suspension or filter or centrifuge off the aqueous phase for pH measurement.

7.2.3 Adjust the electrodes in the clamps of the electrode holder so that, upon lowering the electrodes into the beaker, the glass electrode will be immersed just deep enough into the clear supernatant solution to establish a good electrical contact through the ground-glass joint or the fiber-capillary hole. Insert the electrodes into the sample solution in this manner. For combination electrodes, immerse just below the suspension.

7.2.4 If the sample temperature differs by more than 2 EC from the buffer solution, the measured pH values must be corrected.

7.2.5 Report the results as "soil pH measured in water at __EC" where "_EC" is the temperature at which the test was conducted.

7.3 Sample preparation and pH measurement of waste materials

7.3.1 To 20 g of waste sample in a 50-mL beaker, add 20 mL of reagent water, cover, and continuously stir the suspension for 5 min. Additional dilutions are allowed if working with hygroscopic wastes and salts or other problematic matrices.

7.3.2 Let the waste suspension stand for about 15 min to allow most of the suspended waste to settle out from the suspension or filter or centrifuge off aqueous phase for pH measurement.

NOTE: If the waste is hygroscopic and absorbs all the reagent water, begin the experiment again using 20 g of waste and 40 mL of reagent water.

NOTE: If the supernatant is multiphasic, decant the oily phase and measure the pH of the aqueous phase. The electrode may need to be cleaned (Step 3.3) if it becomes coated with an oily material.

7.3.3 Adjust the electrodes in the clamps of the electrode holder so that, upon lowering the electrodes into the beaker, the glass electrode will be immersed just deep enough into the clear supernatant to establish good electrical contact through the ground-glass joint or the fiber-capillary hole. Insert the electrode into the sample solution in this manner. For combination electrodes, immerse just below the suspension.

7.3.4 If the sample temperature differs by more than 2 EC from the buffer solution, the measured pH values must be corrected.

7.3.5 Report the results as "waste pH measured in water at __EC" where "_EC" is the temperature at which the test was conducted.

8.0 QUALITY CONTROL

8.1 Refer to Chapter One for the appropriate QC protocols.

8.2 Electrodes must be thoroughly rinsed between samples.

9.0 METHOD PERFORMANCE

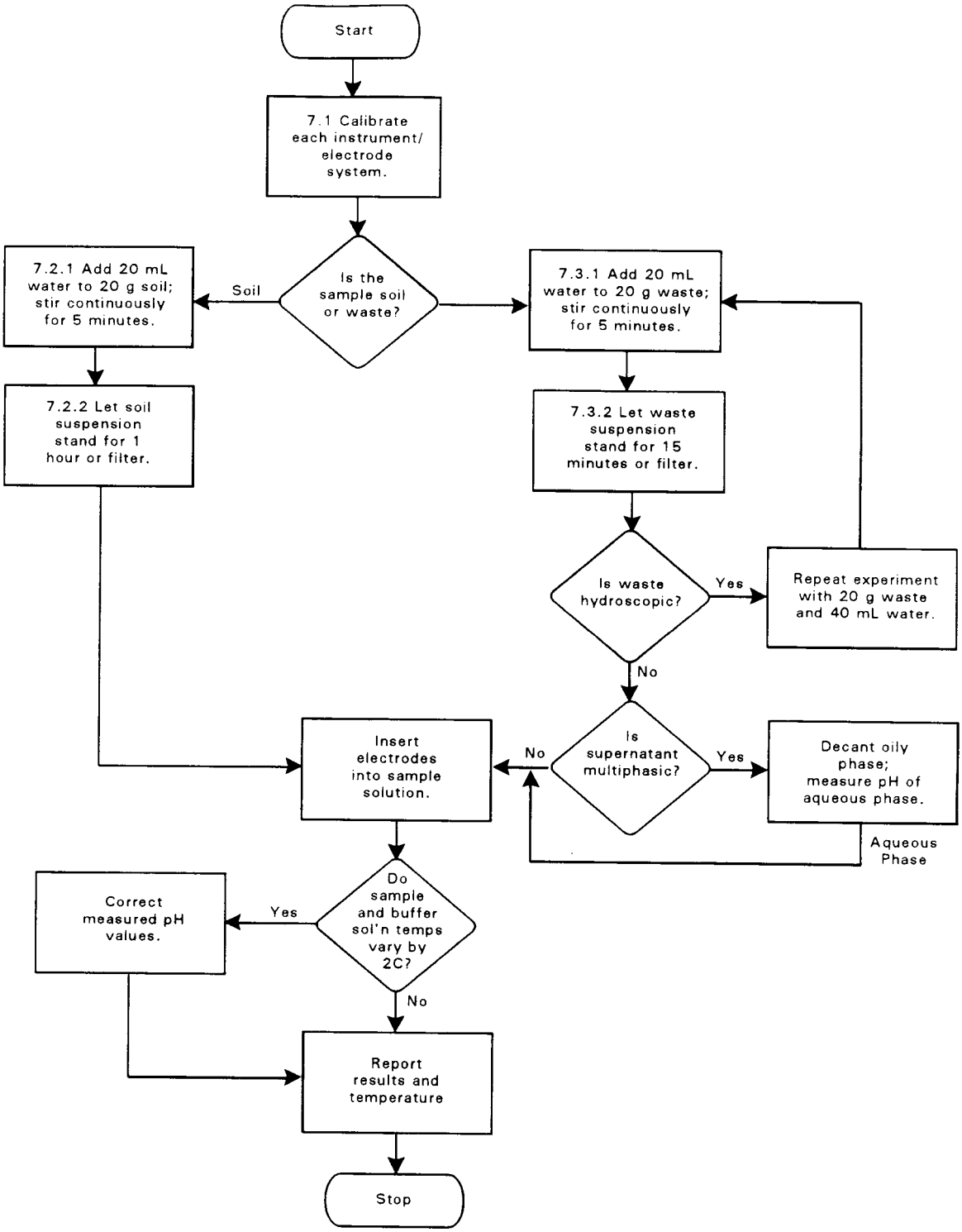
9.1 No data provided.

10.0 REFERENCES

1. Black, Charles Allen; Methods of Soil Analysis; American Society of Agronomy: Madison, WI, 1973.

2. National Bureau of Standards, Standard Reference Material Catalog, 1986-87, Special Publication 260.

SOIL AND WASTE pH



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FIELD REPORT

Page ___ of ___

Date: _____ **Project #:** _____ **Task #:** _____

Project: _____ **Site Address:** _____

Client: _____ **Contractor:** _____

Weather: _____ **Temp:** _____

Equipment Used: _____

Hours: _____ _____ **Mileage:** _____ **Project Manager:** _____

Contractor *Staff*

Prepared By: _____ **Reviewed By:** _____

Comments:

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FIELD REPORT (continued)

Page ___ of ___

Project: _____ **Date:** _____ **Project #:** _____ **Task #:** _____

975 5th Avenue Northwest
Issaquah, WA 98027

Log of Boring:

Client:
Project:
Location:
Farallon PN:
Logged By:

Date/Time Started:
Date/Time Completed:
Equipment:
Drilling Company:
Drilling Foreman:
Drilling Method:

Sampler Type:
Drive Hammer (lbs.):
Depth of Water ATD (ft bgs):
Total Boring Depth (ft bgs):
Total Well Depth (ft bgs):

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USGS Graphic	% Recovery	Blow Counts 8/8/8	PID (units)	Sample ID	Sample Analyzed	Boring/Well Construction Details
0										
5										
10										
15										
20										

Well Construction Information

Monument Type:
Casing Diameter (inches):
Screen Slot Size (inches):
Screened Interval (ft bgs):

Filter Pack:
Surface Seal:
Annular Seal:

Ground Surface Elevation (ft):
Top of Casing Elevation (ft):
Boring Abandonment:
Surveyed Location: X: Y:

LOW FLOW WELL PURGING AND SAMPLING DATA

		WELL NO:
DATE:	PROJECT NAME:	PROJECT NO:
WEATHER CONDITIONS:		
WELL DIAMETER (IN.) ☐ 1 ☐ 2 ☐ 4 ☐ 6 ☐ OTHER		
SAMPLE TYPE: ☐ GROUNDWATER ☐ WASTEWATER ☐ SURFACE WATER ☐ OTHER		
WELL DEPTH (TOC) FT.	DEPTH TO WATER BEFORE PURGING (TOC) FT.	
LENGTH OF WATER FT.	CALCULATED ONE WELL VOLUME[1]: GAL.	
DEPTH OF SAMPLE POINT FT.	ESTIMATED VOLUME PURGED GAL.	
EQUIP. DECON. ☐ ALCONOX WASH ☐ LIQUINOX WASH ☐ DIST/DEION 1 RINSE ☐ DIST/DEION 2 RINSE ☐ OTHER		
CONTAINER PRESERVATION: ☐ LAB PRESERVED ☐ FIELD PRESERVED		
WATER ANALYZER:	PUMP TYPE:	TUBING:

ACTUAL TIME (min)	FLOW RATE (ml/min)	DEPTH TO WATER (feet)	TEMP ☐ °F ☐ °C	SPECIFIC CONDUCT.	pH	DISS. OXYGEN (mg/l)	TURBIDITY (NTU)	ORP (mV)	REMARKS
			(+/- 0.1°)	(+/- 3%)	(+/- 0.1)	(+/- 10%)	(NA)	(+/- 10 mV)	(EVIDENT ODOR, COLOR, PID)
	INITIAL		--	--	--	--	--	--	

DEPTH TO WATER AFTER PURGING (TOC) FT.	SAMPLE FILTERED ☐ YES ☐ NO SIZE ____
NOTES:	SAMPLE TIME: ID#
	DUPLICATE ☐ TIME: ID#:
	EQUIP. BLANK: ☐ TIME: ID#:
	PREPARED BY:

[1] A 1 FOOT LENGTH OF WATER = 0.05 GAL IN 1" DIA. PIPE 0.17 GAL IN 2" DIA PIPE 0.65 GAL IN 4" DIA PIPE 1.5 GAL IN 6" DIA PIPE

SOIL AND SURFACE WATER SAMPLE DATA

PROJECT NAME:	PROJECT NO:	SHEET OF
PROJECT LOCATION:		
PH MODEL & SERIAL NO:	CALIBRATION DATE/STANDARD:	

HEADSPACE CONTAINER: ☐ 16 OZ GLASS ☐ 8 OZ GLASS ☐ 4 OZ GLASS ☐ ZIP-LOC

SAMPLE METHOD: ☐ SONIC ☐ HAND AUGER ☐ HOLLOW STEM ☐ SPLIT SPOON ☐ GEOPROBE ☐ BACKHOE BUCKET

EQUIP DECON: ☐ TAP WATER WASH ☐ DIST/DEION 1 RINSE ☐ ISOPROPANOL ☐ ANALYTE FREE FINAL RINSE

☐ ALCONOX WASH ☐ LIQUINOX WASH ☐ DIST/DEION 2 RINSE ☐ OTHER SOLVENT ☐ DIST/DEION FINAL RINSE ☐ AIR DRY

LOCATION	DATE	SAMPLE NAME/ NUMBER OF CONTAINERS	DEPTH	TIME	STAINING	ODOR	pH	SAMPLE TEMP (°C)	SHEEN	DESCRIPTION/ REMARKS

PREPARED BY:

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 425-420-9200 FAX 420-9210
11922 E. First Ave, Spokane, WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave,Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT:

INVOICE TO:

REPORT TO:
ADDRESS:

PHONE: FAX:

P.O. NUMBER:

PROJECT NAME:

PROJECT NUMBER:

SAMPLED BY:

PRESERVATIVE

REQUESTED ANALYSES

TURNAROUND REQUEST

in Business Days *

Organic & Inorganic Analyses

10 (STD.) | 7 | 5 | 4 | 3 | 2 | 1 | <1

Petroleum Hydrocarbon Analyses

5 (STD.) | 4 | 3 | 2 | 1 | <1

OTHER Specify:

** Turnaround Requests less than standard may incur Rush Charges.*

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

RELEASED BY:		DATE:	RECEIVED BY:		DATE:
PRINT NAME:	FIRM:	TIME:	PRINT NAME:	FIRM:	TIME:
RELEASED BY:		DATE:	RECEIVED BY:		DATE:
PRINT NAME:	FIRM:	TIME:	PRINT NAME:	FIRM:	TIME:

ADDITIONAL REMARKS:

TEMP:

PAGE OF

TAL-1000(0108)

WASTE INVENTORY TRACKING SHEET

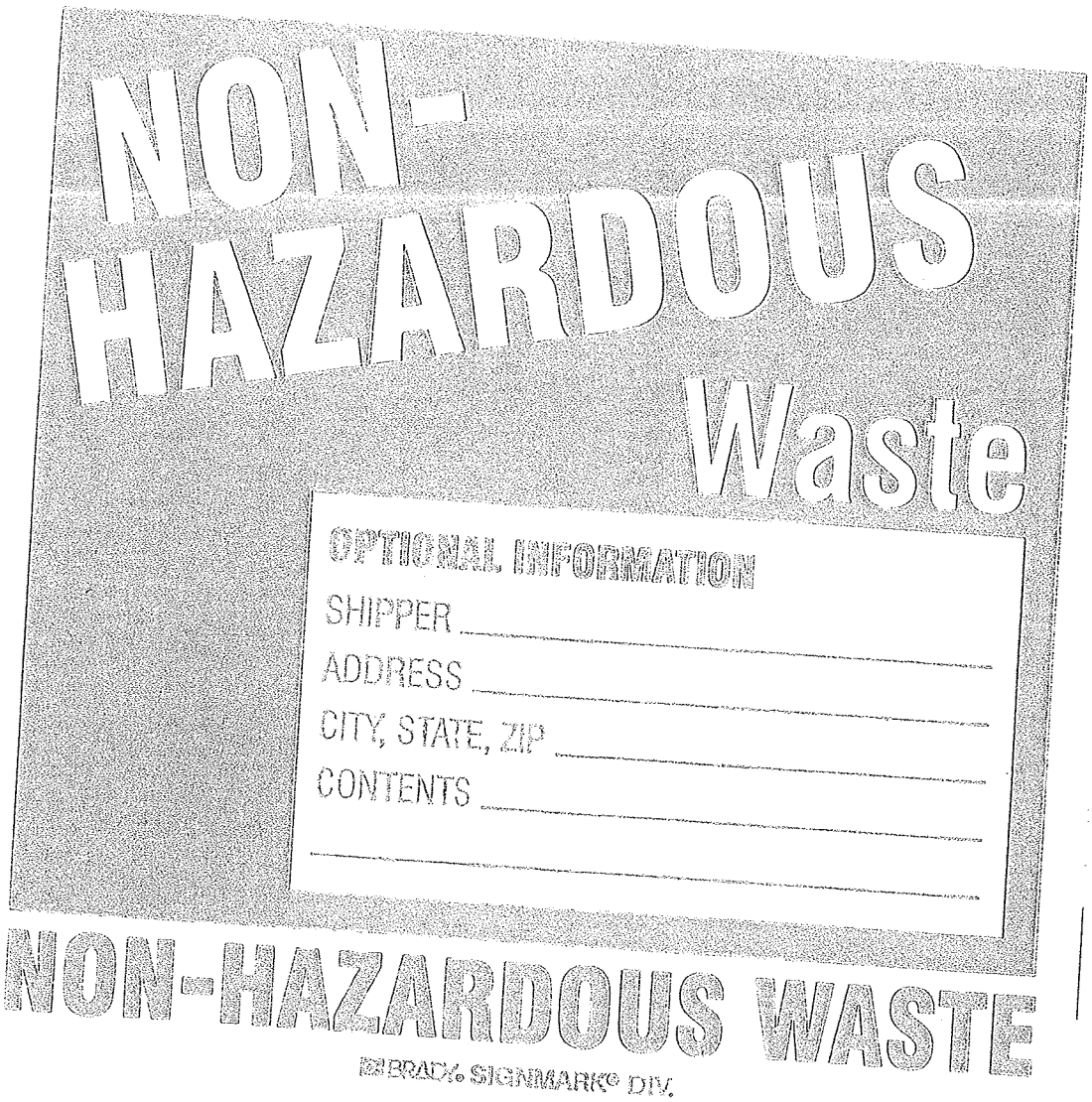
Project Number: _____
Project Name: _____
Project Address: _____
Field Work: _____
Project Manager: _____

Page _____ of _____
Date: _____
Prepared By: _____

Container ID	Fullness	Contents/Origin	Date(s) Accumulated	Labled (Y/N)	Sampled (Y/N)	Comments

NOTES: Contents should be specified and include identification of well/boring, media, souce, depth of soil (if applicable), and any other applicable information.

FARALLON consulting


NON-
HAZARDOUS
Waste
OPTIONAL INFORMATION
SHIPPER
ADDRESS
CITY, STATE, ZIP
CONTENTS
NON-HAZARDOUS WASTE
BRADY SIGNMARK® DIV.

I-CHEM

CLIENT/SOURCE	☐ GRAB ☐ COMPOSITE
SITE NAME	DATE/TIME
SAMPLE #	PRESERVATIVE
ANALYSIS	COLL. BY

I-CHEM

CLIENT/SOURCE	☐ GRAB ☐ COMPOSITE
SITE NAME	DATE/TIME
SAMPLE #	PRESERVATIVE
ANALYSIS	COLL. BY

I-CHEM

CLIENT/SOURCE	☐ GRAB ☐ COMPOSITE
SITE NAME	DATE/TIME
SAMPLE #	PRESERVATIVE
ANALYSIS	COLL. BY

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SITE NAME	DATE/TIME
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ANALYSIS	COLL. BY

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CLIENT/SOURCE	☐ GRAB ☐ COMPOSITE
SITE NAME	DATE/TIME
SAMPLE #	PRESERVATIVE
ANALYSIS	COLL. BY

I-CHEM

CLIENT/SOURCE	☐ GRAB ☐ COMPOSITE
SITE NAME	DATE/TIME
SAMPLE #	PRESERVATIVE
ANALYSIS	COLL. BY

I-CHEM

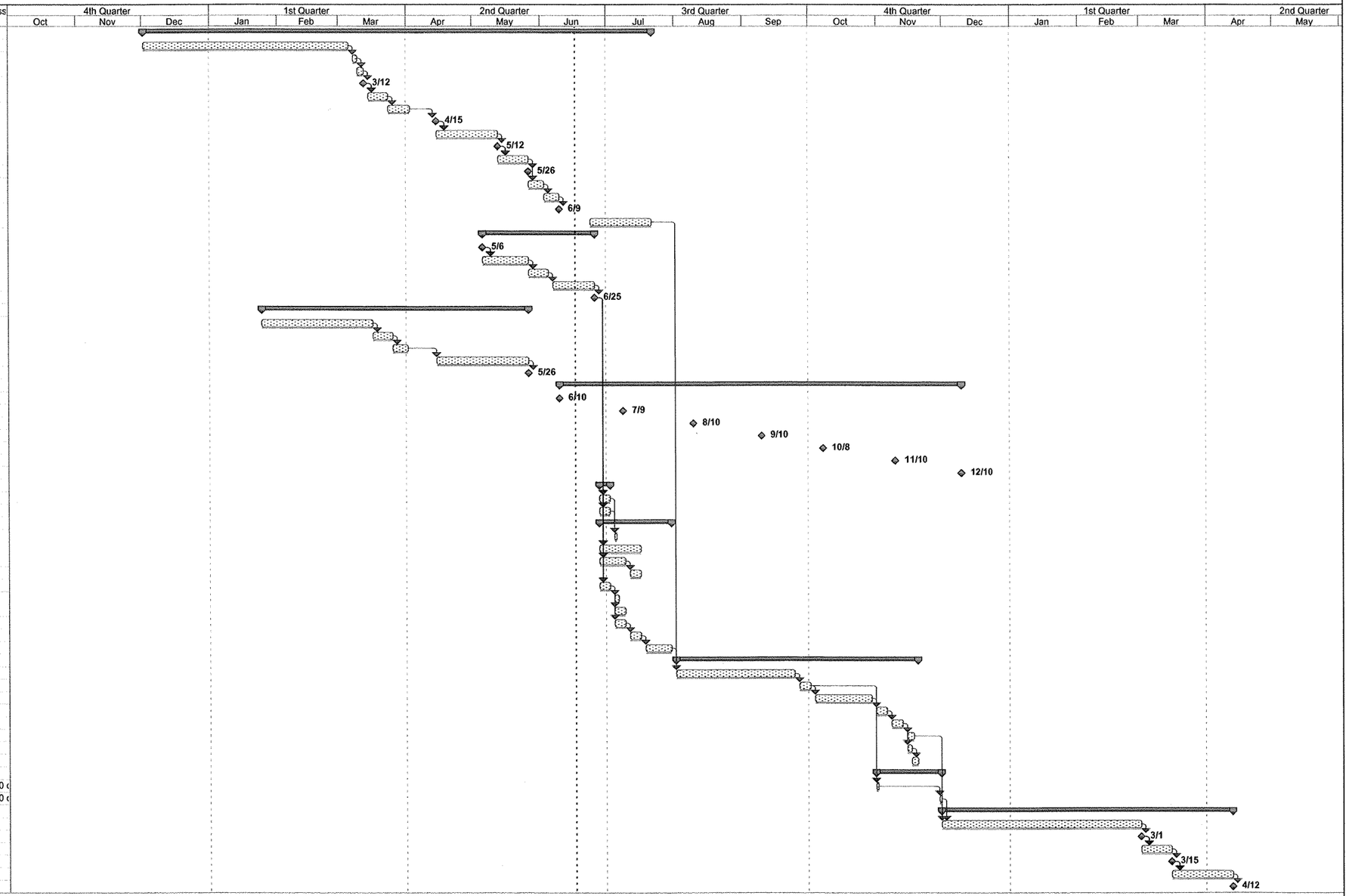
CLIENT/SOURCE	☐ GRAB ☐ COMPOSITE
SITE NAME	DATE/TIME
SAMPLE #	PRESERVATIVE
ANALYSIS	COLL. BY

I-CHEM

CLIENT/SOURCE	☐ GRAB ☐ COMPOSITE
SITE NAME	DATE/TIME
SAMPLE #	PRESERVATIVE
ANALYSIS	COLL. BY

Projected Schedule
Slag Disposal Beckwith Property Site
Kent, Washington
Farallon PN: 831-022

ID	Task Name	Duration	Start	Finish	Predecess
1	**Work Plan**	**166 days**	**Wed 12/2/09**	**Wed 7/21/10**	
2	Document Development	68 days	Wed 12/2/09	Fri 3/5/10	
3	Tech Edit	2 days	Mon 3/8/10	Tue 3/9/10	2
4	Senior Review	3 days	Wed 3/10/10	Fri 3/12/10	3
5	Submit Draft Work Plan to EMJ	0 days	Fri 3/12/10	Fri 3/12/10	4
6	EMJ Review	7 days	Mon 3/15/10	Tue 3/23/10	5
7	Incorporate EMJ revisions	8 days	Wed 3/24/10	Fri 4/2/10	6
8	Submit Draft Work Plan to Ecology	0 days	Thu 4/15/10	Thu 4/15/10	7
9	Ecology Review	20 days	Thu 4/15/10	Wed 5/12/10	8
10	Receipt of Ecology Comments	0 days	Wed 5/12/10	Wed 5/12/10	9
11	Work Plan Revisions	10 days	Thu 5/13/10	Wed 5/26/10	10
12	Submit to EMJ	0 days	Wed 5/26/10	Wed 5/26/10	11
13	EMJ Review Period	5 days	Thu 5/27/10	Wed 6/2/10	11
14	Incorporate EMJ revisions	5 days	Thu 6/3/10	Wed 6/9/10	13
15	Submit Final Work Plan to Ecology	0 days	Wed 6/9/10	Wed 6/9/10	14
16	30-Day Public Comment Period	1 mon	Thu 6/24/10	Wed 7/21/10	
17	**Construction Contract Bidding**	**37 days**	**Thu 5/6/10**	**Fri 6/25/10**	
18	Issue Bid Package	0 days	Thu 5/6/10	Thu 5/6/10	
19	Bidding Period	15 days	Thu 5/6/10	Wed 5/26/10	18
20	Bid Evaluation Period	7 days	Thu 5/27/10	Fri 6/4/10	19
21	Issue Contract	15 days	Mon 6/7/10	Fri 6/25/10	20
22	Notice to Proceed	0 days	Fri 6/25/10	Fri 6/25/10	21
23	**SEPA**	**88 days**	**Mon 1/25/10**	**Wed 5/26/10**	
24	SEPA Development	37 days	Mon 1/25/10	Tue 3/16/10	
25	Submit to EMJ for Review	7 days	Wed 3/17/10	Thu 3/25/10	24
26	SEPA Revisions	5 days	Fri 3/26/10	Thu 4/1/10	25
27	Submit SEPA for Ecology Review	30 days	Thu 4/15/10	Wed 5/26/10	26
28	Ecology Issues DNS Letter	0 days	Wed 5/26/10	Wed 5/26/10	27
29	**Ecology Progress Reports**	**131 days**	**Thu 6/10/10**	**Fri 12/10/10**	
30	Submit June Progress Report	0 days	Thu 6/10/10	Thu 6/10/10	
31	Submit July Progress Report	0 days	Fri 7/9/10	Fri 7/9/10	
32	Submit August Progress Report	0 days	Tue 8/10/10	Tue 8/10/10	
33	Submit September Progress Report	0 days	Fri 9/10/10	Fri 9/10/10	
34	Submit October Progress Report	0 days	Fri 10/8/10	Fri 10/8/10	
35	Submit November Progress Report	0 days	Wed 11/10/10	Wed 11/10/10	
36	Submit December Progress Report	0 days	Fri 12/10/10	Fri 12/10/10	
37	**Pre-Mobilization Site Activities**	**5 days**	**Mon 6/28/10**	**Fri 7/2/10**	
38	Pre-Performance Monitoring and Sampling	5 days	Mon 6/28/10	Fri 7/2/10	22
39	Stake Excavation Areas	5 days	Mon 6/28/10	Fri 7/2/10	22
40	**Excavation Preparation**	**25 days**	**Mon 6/28/10**	**Fri 7/30/10**	
41	Pre-Construction Meeting	1 day	Mon 7/5/10	Mon 7/5/10	38,39
42	Submit Bonds and Certificates of Insurance	15 days	Mon 6/28/10	Fri 7/16/10	22
43	Prepare Submittals	10 days	Mon 6/28/10	Fri 7/9/10	22
44	Submittal Review and Approval	5 days	Mon 7/12/10	Fri 7/16/10	43
45	Construction Survey	5 days	Mon 6/28/10	Fri 7/2/10	22
46	Erosion Control Features	2 days	Mon 7/5/10	Tue 7/6/10	45
47	Staging Area and Site Control Construction	5 days	Mon 7/5/10	Fri 7/9/10	45
48	Mobilize Equipment and Site Setup	5 days	Mon 7/5/10	Fri 7/9/10	45
49	Mobilize Existing Treatment Equipment	5 days	Mon 7/12/10	Fri 7/16/10	48
50	Clearing and Grubbing	10 days	Mon 7/19/10	Fri 7/30/10	49
51	**Excavation Activities**	**80 days**	**Mon 8/2/10**	**Fri 11/19/10**	
52	Soil Excavation	40 days	Mon 8/2/10	Fri 9/24/10	50,16
53	Confirmation Sample Analysis	5 days	Mon 9/27/10	Fri 10/1/10	52
54	Place and Compact Structural Fill	20 days	Mon 10/4/10	Fri 10/29/10	53
55	Place Quarry Spalls	5 days	Mon 11/1/10	Fri 11/5/10	54
56	Place Crushed Rock	5 days	Mon 11/8/10	Fri 11/12/10	55
57	Perform As-Built Survey	3 days	Mon 11/15/10	Wed 11/17/10	56
58	Remove Erosion Control Features	2 days	Mon 11/15/10	Tue 11/16/10	56
59	Demobilize Staging Area	3 days	Wed 11/17/10	Fri 11/19/10	58
60	**Compliance Monitoring**	**22 days**	**Mon 11/1/10**	**Tue 11/30/10**	
61	First Surface Water Monitoring Event	1 day	Mon 11/1/10	Mon 11/1/10	53FS+20 d
62	Second Surface Water Monitoring Event	1 day	Tue 11/30/10	Tue 11/30/10	61FS+20 d
63	**Prepare Closure Report**	**95 days**	**Wed 12/1/10**	**Tue 4/12/11**	
64	Closure Report Preparation	65 days	Wed 12/1/10	Tue 3/1/11	57,62
65	Submit Closure Report to EMJ	0 days	Tue 3/1/11	Tue 3/1/11	64
66	EMJ Review - Closure Report	10 days	Wed 3/2/11	Tue 3/15/11	65
67	Submit Closure Report to Ecology	0 days	Tue 3/15/11	Tue 3/15/11	66
68	Ecology Review - Closure Report	20 days	Wed 3/16/11	Tue 4/12/11	67
69	Ecology Approval - Closure Report	0 days	Tue 4/12/11	Tue 4/12/11	68



Project: Schedule 112509
Date: Thu 6/17/10

Task | Split | Progress | Milestone | Summary | Project Summary | External Tasks | External MileTask | Split