

REVISED REMEDIAL INVESTIGATION, FEASIBILITY STUDY, AND DISPROPORTIONATE COST ANALYSIS

Former Kelly-Moore Manufacturing Facility
5400–5580 Airport Way South
Seattle, Washington

Prepared for:

Kelly-Moore Paint Company, Inc.
San Carlos, California 94070

Prepared by:

Amec Foster Wheeler
Environment & Infrastructure, Inc.
600 University Street, Suite 600
Seattle, Washington 98101
(206) 342-1760

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Project No. 014697

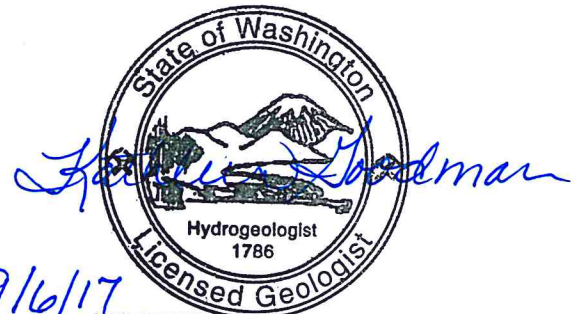


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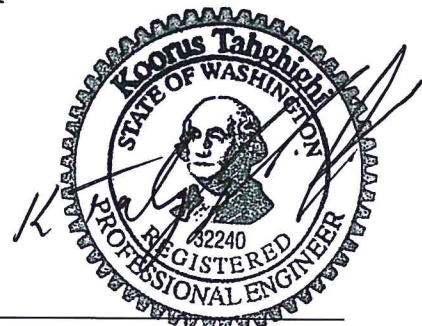
This report was prepared by the staff of Amec Foster Wheeler Environment & Infrastructure, Inc., under the supervision of the Engineer and Geologist whose seals and signatures appear hereon.

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Kathleen Goodman, LHG
Principal Hydrogeologist

Kathleen Goodman



Koorus Tahghighi, PE
Associate Engineer

EXPIRES 1/10/18

EXECUTIVE SUMMARY

The approximately 2.7-acre site located at 5400–5580 Airport Way South in Seattle, Washington, has been used for a variety of industrial purposes since the early 1900s. Kelly-Moore Paint Company, Inc. (Kelly-Moore), acquired the site in 1994. They used portions of the site as a paint manufacturing plant for blending paints and pigments between approximately 1994 and 2008, and vacated the property by 2010. Kelly-Moore sold the southern portion of the site to JST Georgetown, LLC, in 2011, and sold the northern portion of the site to NCD GeorgeTown, LLC, in 2014. The new owners of the northern parcel demolished all of the former buildings and warehouses in 2015, during which time Kelly-Moore directed Amec Foster Wheeler to perform additional interim remedial actions and address known areas of contamination that were not accessible prior to the demolition. The construction of the new building on the northern parcel was completed in 2016.

A series of environmental investigations and underground storage tank (UST) removals took place at the site beginning in the 1980s and 1990s. More recently, Kelly-Moore's investigation and cleanup activities have been ongoing since 2009. The primary constituents of potential concern (COPCs) identified for the site in connection with recent remedial work by Kelly-Moore have included total petroleum hydrocarbons (TPH) in soils and groundwater, with much less frequent occurrences of metals, carcinogenic polycyclic aromatic hydrocarbons, volatile organic compounds, and semivolatile organic compounds.

In 2009, Kelly-Moore conducted a remedial investigation at the site. The scope of the work was expanded upon the discovery of contamination associated with the nine USTs on site, which were removed in October 2009. In 2010, Kelly-Moore entered the Washington State Department of Ecology (Ecology) Voluntary Cleanup Program (VCP) and began moving through the Model Toxics Control Act (MTCA) process toward no further action (NFA) status. A remedial investigation/feasibility study (RI/FS) report was submitted to Ecology in 2011 (AMEC Geomatrix, 2011). The proposed remedial action included soil excavation in selected areas, dual phase vapor extraction with biosparging, and additional groundwater monitoring. Ecology provided feedback on the RI/FS in 2012, stating that the proposed cleanup alternative was appropriate as an interim action for the site that might lead to a final Cleanup Action, but that more supporting data would need to be provided to verify that objective (Ecology, 2012).

In 2011 and 2013, groundwater sampling was performed at the permanent wells to assess the improvement in groundwater concentrations for TPH following removal of the nine USTs in 2009. Large reductions in TPH concentrations in several wells occurred between 2011 and 2013, indicating the alternatives reviewed in the RI/FS should be re-evaluated, because concentrations of COPCs had decreased substantially since preparation of the RI/FS in 2011. Kelly-Moore submitted a plan to



Ecology (AMEC, 2013c) proposing groundwater sampling to further evaluate natural attenuation of COPCs. Ecology commented on that plan in 2014 and specified additional data that should be evaluated to characterize and cleanup the site (Ecology, 2014).

During 2012 and 2013, Kelly-Moore conducted monitoring activities and targeted cleanup actions while negotiating the potential sale, the future use of the site, and the cleanup alternatives under a variety of land use scenarios.

Since 2014, Kelly-Moore has performed several remedial interim actions, both during building demolition and after the new owner demolished the old buildings on the northern portion of the site, consisting of:

- Additional polychlorinated biphenyl investigation and cleanup actions,
- Removal of UST piping and additional treatment by chemical oxidation,
- “Hot spot” excavations identified in the 2011 RI/FS with additional treatment by chemical oxidation,
- Immediate removal of two previously unknown USTs discovered during the 2015 remedial activities,
- Installation of a soil vapor extraction (SVE) system and air sparge piping,
- Installation of a vapor barrier under the new building, and
- Removal of additional contaminated soils identified in conjunction with new utility installation.

Kelly-Moore also performed soil and groundwater sampling in 2015 and 2016 to support decisions regarding the long-term cleanup process at the site.

Data collected at the site in 2015 confirmed that no light nonaqueous phase liquid was found in soils or groundwater on site, and that the highest concentrations of COPCs in soil had been successfully removed prior to construction of the new building. The highest remaining concentrations of TPH in soil are in the smear zone on the northern half of the site, around the areas of the former UST excavations. The highest remaining concentrations of TPH in groundwater were detected at well KMW-04 on the western side of the central portion of the property. The southern building and the new northern building have vapor barriers to protect indoor air. SVE and air sparge piping have been installed on the northern half of the site.

Cleanup activities performed in 2015 and 2016 were performed with the intent of conducting source removal that would minimize the impact on the new owner's development schedule. The understanding with the developer was that, to accommodate their construction schedule, not all contamination could be removed prior to construction of the new building on the north parcel, and additional treatment and monitoring would be required to achieve an NFA determination for the site based on MTCA regulations. Consistent with the VCP program, remedial efforts implemented by Kelly-Moore in 2015 were planned and documented in order to later report those activities to Ecology—a part of the ongoing process of documenting compliance with the MTCA cleanup process. The revised RI that was submitted in January 2016 provided an update to the site conceptual model, documented the interim actions completed since 2011, and updated the evaluation of the nature and extent of contamination. Ecology provided comments on that RI in May of 2016.

This revised RI, in combination with an FS and disproportionate cost analysis, addresses Ecology's comments on the previous draft RI submitted in January 2016, updates the evaluation of the nature and extent of contamination, and documents additional investigations performed since the previous RI was submitted. The additional investigation and interim actions were implemented to address the potential contamination in off-site soil and groundwater along the western site boundary.

In the FS, a range of remediation technologies was evaluated on the basis of their effectiveness, implementability, and cost. Six remedial technologies were retained for further evaluation: institutional and engineering controls, monitored natural attenuation of groundwater, SVE, in situ chemical oxidation, biosparging, air sparging, and additional excavation and disposal. Four alternatives were evaluated for the remediation of the site. Institutional controls and groundwater monitoring were included in all four alternatives.

Based on the disproportionate cost analysis, Alternative 2 (consisting of air sparging, SVE, biosparging, maintenance of the site pavement, and a deed restriction in conjunction with monitored natural attenuation until achieving cleanup action objectives) received the highest overall benefit ranking. In addition, the costs for Alternative 2 are the lowest of the three alternatives that use active remediation approaches. Thus, the proposed preferred alternative is Alternative 2.



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ACRONYMS AND ABBREVIATIONS

µg/L	micrograms per liter
Amec Foster Wheeler	Amec Foster Wheeler Environment & Infrastructure, Inc.
bgs	below ground surface
BNSF	BNSF Railway Company
BTEX	benzene, toluene, ethylbenzene, and xylenes
CLARC	Cleanup Levels and Risk Calculation
CAO	cleanup action objectives
COPC	constituent of potential concern
cPAH	carcinogenic polycyclic aromatic hydrocarbon
CSM	conceptual site model
DO	dissolved oxygen
Ecology	Washington State Department of Ecology
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
FS	feasibility study
ISCO	in situ chemical oxidation
Kelly-Moore	Kelly-Moore Paint Company, Inc.
mg/kg	milligrams per kilogram
MNA	monitored natural attenuation
MTCA	Model Toxics Control Act
mV	millivolts
NFA	no further action
ORP	oxidation-reduction potential
PAH	polycyclic aromatic hydrocarbon
PCBs	polychlorinated biphenyls
POC	point of compliance
PQLs	practical quantitation limits
PVC	polyvinyl chloride
RAO	remedial action objective
RI	remedial investigation
SVE	soil vapor extraction
SVOC	semivolatile organic compound
TCE	trichloroethene
TPH	total petroleum hydrocarbons
TPH-D	diesel-range petroleum hydrocarbons
TPH-G	gasoline-range petroleum hydrocarbons
TPH-O	lube oil-range petroleum hydrocarbons
TSCA	Toxic Substances Control Act
USTs	underground storage tanks
VCP	Voluntary Cleanup Program
VOC	volatile organic compound
WAC	Washington Administrative Code

REVISED REMEDIAL INVESTIGATION, FEASIBILITY STUDY, AND DISPROPORTIONATE COST ANALYSIS

Former Kelly-Moore Manufacturing Facility
Seattle, Washington

1.0 INTRODUCTION

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler), has prepared this report on behalf of Kelly-Moore Paint Company, Inc. (Kelly-Moore), for the former Kelly-Moore manufacturing facility at 5400–5580 Airport Way South, in Seattle, Washington (the site). Kelly-Moore's objective is to clean up the site in compliance with requirements established by the Washington State Department of Ecology (Ecology) under the state Model Toxics Control Act (MTCA) via the Washington State Voluntary Cleanup Program (VCP) and attain No Further Action (NFA) status for the site.

Project information:

- **Site name:** Kelly-Moore Paint Company, Seattle, Washington
- **VCP Number:** NW2305
- **Project Consultant:**
Kathleen Goodman, LG, LHg
Amec Foster Wheeler Environment & Infrastructure, Inc.
600 University Street, Suite 600
Seattle, Washington 98101
(206) 342-1780
- **Current Owner/Operator:**
NCD Georgetown, LLC (owner of northern portion)
JST Georgetown, LLC (owner of southern portion)
- **Previous Owner/Operator:** Kelly-Moore Paint Company, Inc.
- **Ecology Site Manager:** Tamara Cardona, PhD.

The site has been used for a variety of industrial and related purposes since the early 1900s. Kelly-Moore acquired the site in 1994 and operated a paint manufacturing plant that blended paints and pigments from approximately 1994 to 2008. By 2010, Kelly-Moore had ceased manufacturing



operations, vacated the site, and leased much of the northern portion of the site to a third party while a sale was negotiated for the southern half of the site.

In 2010, Kelly-Moore entered the VCP program and began moving through the MTCA process toward NFA status. A remedial investigation/feasibility study (RI/FS) report was submitted to Ecology in 2011 (AMEC Geomatrix, 2011). The proposed remedial action included soil excavation in selected areas, dual phase vapor extraction with biosparging, and additional groundwater monitoring. Ecology provided feedback on the RI/FS in 2012, stating that the proposed cleanup alternative was appropriate as an interim action for the site that might lead to a final cleanup action, but that more supporting data would need to be provided to verify that objective (Ecology, 2012).

The potential sale of the northern portion of the site or its future use were uncertain during 2012 and 2013. During this period, Kelly-Moore spoke with potential buyers and evaluated options for moving forward with the cleanup under a variety of scenarios, including retaining all or a portion of the site until after cleanup was complete. Final decisions on the remedial approach for the site, however, remained contingent on whether the site would be sold and its future anticipated use. In 2014 the northern portion of the site was sold. Kelly-Moore collaborated with the new owner to conduct additional interim measures that were feasible during the new owner's demolition and construction activities. A revised RI that updated the conceptual site model presented in the 2011 RI/FS, included additional data collected since 2011, documented interim actions completed through 2015, and updated the evaluation of the nature and extent of contamination was submitted to Ecology in January 2016. Ecology responded with comments on May 4, 2016.

1.1 PURPOSE

This RI/FS responds to Ecology's comments on the 2016 RI and provides Ecology with changes to the nature and extent of contamination following completion of various interim cleanup actions that have been performed by Kelly-Moore as a result of sale and redevelopment of the site. Formal responses to Ecology's comments are provided in Appendix A. This RI further characterizes the nature and extent of contamination on the site per Washington Administrative Code (WAC) 173-340-350(7)(a).

1.2 REPORT ORGANIZATION

This report is organized as follows:

- Section 1 describes the purpose of the RI.
- Section 2 describes the site in the context of its location.

- Section 3 describes the natural conditions in the vicinity of the site, including geology, surface water, groundwater, and potential receptors.
- Section 4 summarizes previous investigations and remedial actions conducted at the site, including potential sources of contamination.
- Section 5 describes the nature and extent of contamination at the site.
- Section 6 summarizes the site conceptual model, combining the hydrogeologic conceptual model with contaminant pathways and analysis of potential receptors.
- Section 7 describes the applicable cleanup standard for the site.
- Section 8 summarizes the areas of the site requiring cleanup based on the applicable cleanup standards and the extent of contamination.
- Section 9 provides recommendations to address data gaps.
- Section 10 provides an overview of the purpose of the FS.
- Section 11 identifies and describes potential remedial technologies.
- Section 12 describes the cleanup alternatives.
- Section 13 discusses the evaluation of the alternatives and identifies the preferred alternative.
- Section 14 lists the references used in preparing this report.



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2.0 SITE INFORMATION AND HISTORY

The site is located on the east side of Airport Way South at the intersection of South Lucile Street and Airport Way South in the Georgetown neighborhood of Seattle, Washington (Figure 2-1), and covers approximately 2.7 acres. A complete legal description of the site is provided in Appendix B. The former layout of the site is provided for reference, since the majority of remedial activities occurred prior to 2015 (Figure 2-2). The site is bordered on the north by BNSF Railway Company (BNSF) tracks and the Olympic Foundry, on the west by Airport Way South and the Airport Way South overpass, on the east by BNSF tracks and a steep hillside, and on the south by an Interstate 5 connector ramp overpass (Figure 2-3).

2.1 SITE DEVELOPMENT AND USE HISTORY

The site has been used for industrial purposes since the early 1900s. The southern portion of the site was used as an auto garage, wrecking yard, and/or service station from the 1920s through the 1940s and as a machinist union hall until the 1990s. The northern portion of the site was used by Pacific Coast Coal Company in the 1940s, and by the Preservative Paints Factory and Asphaltum Products Roofs and Mineral Paints dating back to 1929. Sanborn Fire Insurance maps for the period between the 1920s and 1950 were reviewed during the previous Phase I Environmental Site Assessments (ESAs) (SECOR, 1994 and 1997a) and also indicate industrial use of the site and the presence of underground storage tanks (USTs). Over the years, a series of USTs were installed and periodically replaced at the site, as described in Section 4.0. The site USTs documented were located in the central area of the site (between the southern warehouse and the northern building conglomeration). Two additional previously unknown USTs were found and removed in 2015, as described in Section 4.0. These USTs also were in the central area of the site, underneath the southern end of the former northern parcel building complex.

The site currently consists of a large warehouse building and a mostly paved parking lot surrounded by landscaping in the southern portion of the site and a newly constructed building occupying most of the northern portion of the site. The northern and southern portions of the site are separate parcels, as shown on Figure 2-3, and both parcels have been sold by Kelly-Moore. The former building complex in the northern portion was a large conglomeration of buildings of various ages that had been present on the site in some form since the 1920s (SECOR, 1994, 1997a and b). Figure 2-2 shows the configuration of the former northern and central building complexes.



Usage of the former buildings in the northern and central portion of the site prior to the cessation of manufacturing in 2008 consisted of:

- Building 1 – Used for warehousing but reportedly was formerly used as a tooling area.
- Building 2 – Used for warehousing.
- Building 3 – Used for warehousing, but a maintenance shop was reportedly located here in the past.
- Building 4 – Used for warehousing.
- Building 5 – Used for warehousing. A door opens to the east side of the site and an outdoor dumpster. A map provided in earlier Phase I ESAs (SECOR, 1994 and 1997a) indicates that this area was formerly used for outdoor storage and was not enclosed as part of the building conglomeration until after 1985.
- Building 5A – Used for product storage tanks; a long strip floor drain in the building was routed into a 6-foot-deep sump.
- Building 6 – Two-story building used for paint manufacturing.
- Building 7 – Used for paint manufacturing. A former maintenance shop was reportedly located here in the past. A small electrical room (confined space) located upstairs in this building was accessible only by ladder.
- Building 8 – Used for paint manufacturing. A smaller former retail area located on the west side of the building also included a second story that was used for manufacturing.
- Building 9 – Used for warehousing and included office space and restrooms on the west side of the building.
- Building 10 – Used for warehousing. This building did not have an exterior wall on the east side and was open to the outdoor loading dock area on this side.
- Building 12 – Used for office space.
- The large warehouse building south of Building 10 (Figure 2-2) was constructed in 1997. An open, paved parking lot is located south of this southern building.

2.2 CURRENT SITE USE AND FACILITIES

Figure 2-3 shows a recent aerial photograph of the site, after demolition of the northern structures, and also shows the outline of the newly constructed building.

Most of the site is paved or covered by buildings. The properties immediately west and south of the site are also paved. These neighboring properties to the north and east (upgradient) are active rail line areas and have been in industrial use for a similar length of time as the subject site. Interstate 5 also

parallels the site's eastern border; the elevated freeway runs north-south along the west slope of Beacon Hill, approximately 350 feet from the site.

The site is generally accessed via Airport Way South by multiple entrances on the west side of the buildings. All existing entrances and parking areas are shown on Figure 2-3. Aboveground and underground utilities exist in the area. Additionally, underground utilities exist in the right-of-way on Airport Way South and have prevented investigative borings in areas west of the site boundary.

Zoning for the site is Industrial General 1 and Industrial General 2 for general industrial use, as shown in documentation provided in Appendix B.

The southern parcel is leased by Elysian Brewing (a beer manufacturer), which moved into the warehouse in 2011 to add bottling capacity to its operations. The northern parcel was sold by Kelly-Moore in 2015 to NCD GeorgeTown, LLC, and Elysian Brewing is the primary tenant of the new building constructed on this parcel, using it for brewing beer.

2.3 RECENT VCP PROGRESS/DECISIONS IN CONJUNCTION WITH SITE DIVESTITURES AND DEVELOPMENTS

The current environmental investigation and cleanup work was initiated by Kelly-Moore following the cessation of manufacturing activities in 2008 and as a result of the anticipated divestiture of the site. Section 4.0 provides a brief review of the investigations described in this section, along with supporting tables and figures. As described in Section 2.1, the site has had a long history of industrial activities, primarily associated with paint manufacturing and sales. By 2009, Kelly-Moore was no longer using the site and was leasing the buildings to various tenants. Due to the former usage of the site and the age of the buildings, it was anticipated that any redevelopment of the site would require major renovations and/or demolition.

In addition, based on previous UST removal records, Kelly-Moore was aware of the potential for environmental contamination of soil and groundwater at the site. Six USTs used by a prior operator to store paint manufacturing components at the site were removed in 1985, and an additional 14 paint product USTs were removed in 1997–1998 (SECOR, 1998). When the USTs were removed in 1997–1998, darker colored soil, indicating a potential release, was observed near the perimeter of the excavation. More than 1,000 tons of contaminated soil was excavated and disposed of off-site as part of the 1997–1998 UST removal. In general, excavations did not extend below the water table. Sampling of soil at the base and perimeter of the excavation identified several volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH) (as mineral spirits/Stoddard solvent) at concentrations greater than MTCA Method A cleanup levels. A 2009 Phase II ESA identified



contaminant concentrations in soil and groundwater on the site that were greater than MTCA Method A cleanup levels, primarily TPH and VOCs (AMEC Geomatrix, 2009a). Based on these findings, Kelly-Moore proceeded to enter into the VCP in June 2010 and begin characterization of the site in preparation for cleanup, with a goal of attaining NFA status for the site.

As part of sampling at the site in 2009, polychlorinated biphenyls (PCBs) were identified in the interior of certain buildings in some areas on the floors. Upon the identification of PCBs, Kelly-Moore, working with the U.S. Environmental Protection Agency (EPA), performed a self-implemented PCB cleanup under the Toxic Substances Control Act (TSCA). PCBs were primarily confined to flooring material and have never been detected in groundwater. PCB contamination was successfully cleaned up in coordination with EPA and documented in accordance with TSCA between 2009 and 2015 in all areas of the site.

An RI/FS report was submitted to Ecology in 2011 (AMEC Geomatrix, 2011). The proposed remedial action included soil excavation in selected areas, dual phase vapor extraction with biosparging, if feasible, and additional groundwater monitoring. Five permanent monitoring wells were installed and groundwater monitoring was initiated to supplement the data collected during the earlier Phase 2 and RI stages. Ecology provided feedback on the RI/FS in 2012, stating that the proposed cleanup alternative was appropriate as an interim action for the site that might lead to a final cleanup action, but that more supporting data would need to be provided to make that determination.

During 2012–2013, Kelly-Moore development and/or property divestiture plans were uncertain. As a result, monitoring activities took precedence over more aggressive remedial actions. Kelly-Moore negotiated with potential buyers and evaluated options for moving forward with the cleanup under a variety of scenarios, including potentially retaining all or a portion of the site until after cleanup was complete. For example, it was understood that if the buildings on the north end of the site could be removed, it would then be possible to more easily perform several aspects of the cleanup planned in the 2011 RI/FS (targeted soil excavation work under the building) and more aggressive treatment options would be feasible than with the buildings standing.

With the development plan and interim actions in flux, RI data collection proceeded during the 2012-2013 period. Groundwater sampling was performed at the permanent wells to assess groundwater trends following the 2009 soil excavation work during removal of nine USTs (AMEC Geomatrix, 2010a). The sampling showed an 86 percent reduction in contaminant concentrations in KMW-03 and a 36 percent reduction in KMW-04 between 2011 and 2013. This reduction in concentrations resulted in a re-evaluation of the RI/FS. A wider groundwater monitoring network was informally discussed with Ecology in 2013 and a plan was prepared outlining data collection needs to

evaluate natural attenuation at the site. Ecology commented on that plan in 2014 and specified additional data that should be evaluated in order to characterize and clean up the site.

A sale of the northern parcel was negotiated in 2014 and Kelly-Moore sold the property. The new owner planned to demolish all of the aboveground structures and build a new building immediately following the sale. At the time the property transfer was negotiated, Kelly-Moore worked with the new owner to coordinate further clean up at the site during the anticipated demolition. Kelly-Moore also discussed how to administratively manage the redevelopment with the new owner, because the development changed the site constraints assumed in the 2011 RI/FS. The new owner began demolition of the building on the northern portion of the site in 2015.

During demolition of the buildings, a much larger area of the site was temporarily accessible for cleanup activities. With that in mind, an interim action plan was presented to Ecology in April 2015 (Amec Foster Wheeler, 2015a) that summarized the more aggressive cleanup measures and additional investigation beyond the cleanup originally planned in the 2011 RI/FS. The interim action plan included soil and groundwater treatment with chemical oxidation, the additional excavation of certain contaminated soil located under the footprint of the now demolished buildings, collection of soil samples from excavations, and direct push groundwater sampling to further characterize groundwater. Additional data collection was conducted to evaluate the long term cleanup progress. The interim action plan and data collection were initiated concurrent with redevelopment of the property. A plan to perform the final phase of the self-implementing cleanup for the remaining PCBs required under TSCA was submitted to and approved by EPA, and was implemented as part of demolition.

The interim action activities that were completed in 2015 significantly changed the conceptual site model since the 2011 RI/FS was prepared. The intent of the cleanup actions performed during 2015 was to take advantage of on-site demolition by performing further source removal prior to new building construction and to construct treatment infrastructure that would aid in expediting the overall cleanup timeline. The work assumed additional treatment and monitoring would likely be required to achieve NFA status for the site. Consistent with the VCP program, during this period Kelly-Moore planned and documented interim actions for reporting to Ecology consistent with the MTCA cleanup process. A Revised RI (Amec Foster Wheeler, 2016) was submitted to Ecology on January 28, 2016, describing the interim actions performed in 2015 concurrent to the construction of the building.



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3.0 PHYSICAL NATURAL CONDITIONS

This section describes the physical setting of the site.

3.1 PHYSIOGRAPHIC SETTING/TOPOGRAPHY

The site is located immediately west of Beacon Hill, a topographically high area in the vicinity of the site, and along the eastern boundary of the Duwamish valley floor. The Duwamish valley is the floodplain of the formerly meandering Duwamish River, which has been historically filled to prevent/control flooding and to channelize the Duwamish Waterway, which is located approximately 5,000 feet west of the site.

3.2 GEOLOGY

This section describes the geology of the site, including regional and site geologic conditions.

3.2.1 Regional Geologic Setting

The site lies at the western base of Beacon Hill, in an area consisting of fluvial deposits made up of interbedded layers of sands, silts, and silty sands. Overlying the fluvial deposits is fill material that was placed throughout the local region early in the twentieth century and as part of the channelization of the Duwamish River into what is now the Duwamish Waterway, when industrial development began in the area. Fill material typically used in the region may include dredged sediments (SECOR, 1994), but also may include other types of fill such as construction and wood debris.

Boring logs for nearby borings directly west of the site show these sand and silt layers present to depths of at least 50 to 60 feet, and one log shows relatively shallow bedrock encountered at 55 to 60 feet (PSC, 2003). These boring logs are included in Appendix C.

3.2.2 Site Geologic Conditions

Local geology was investigated and reported during a Phase II ESA and supplemental Phase II investigation (AMEC Geomatrix, 2009b and c, 2010b), as well as during this RI. Figures 3-1 and 3-2 show the locations of soil borings and samples collected on the north and south parcels, respectively. Figure 3-3 shows the locations where groundwater samples were collected from the borings, as well as the locations of former and current monitoring wells. Boring logs for the site are included in Appendix C.

The shallow stratigraphy beneath the site consists of sand, silt, and occasional gravel fill. Other apparent historical fill material was encountered at some borings: brick at borings KM-1, KM-5, KM-16, and KM-28; wood fragments at KM-10, KM-15, and KM-22; blackened, potentially burned



material at KM-5, KM-7, KM-8, KM-11, KM-15, KM-16, KM-23, KM-24, KM-25, KM-26, KM-27, and KM-29; and crushed concrete at KM-14.

3.3 SURFACE WATER

Other than stormwater runoff, no surface water is present on or near the site. Surface water prior to 2015 infiltrated into the soil in unpaved areas of the site (Figure 2-2). Some stormwater may have discharged to the City of Seattle storm sewer system via a connection on Airport Way South (based on historic City of Seattle sewer card maps). The current site (Figure 2-3) is completely paved, aside from planter boxes and some designed landscaping, and includes a new stormwater system connected to the City of Seattle storm sewer system by the new owners (NCD GeorgeTown, LLC).

The closest surface water body is the Duwamish Waterway, located 5,000 feet west of the site.

3.4 GROUNDWATER

Based on review of environmental investigations conducted near the site and water levels measured at the site, groundwater flows to the west (PSC, 2003). Construction details for the eight existing groundwater monitoring wells at the site are provided in Table 3-1, and survey data for these wells are provided in Table 3-2.

Groundwater was generally encountered between 5.5 and 11.5 feet below ground surface (bgs) in borings conducted at the site. Depth to groundwater was greater in the borings below the southern warehouse because of the elevation of the warehouse floor, which was constructed approximately 3 to 4 feet higher than the surrounding grade, using imported fill. This building was constructed above the normal ground surface to accommodate a loading dock on the south side.

Water level measurements conducted at the monitoring wells since March 2011 are presented in Table 3-3. Potentiometric surface maps for the groundwater sampling events conducted in June and November of 2016 are presented in Figures 3-4 and 3-5, confirming the western flow direction with an elevation change of less than half a foot across the site.

3.5 NATURAL RESOURCES AND ECOLOGICAL RECEPTORS

Ecological receptors are not anticipated to be present at the site or to be influenced by potential releases from the site. The site is an industrial property covered with two buildings, concrete, and asphalt. The Georgetown Playfield, a 5.13-acre city park, is located approximately 300 feet southwest of the property boundary. The park facilities include lighted ballfields, a basketball court, tennis and handball courts and swings. The park is surrounded by urban residential properties. Given the human

activities within the park and the surrounding urban environment, it is unlikely to provide ecologically significant habitat for wildlife.

Amec Foster Wheeler completed a simplified Terrestrial Ecological Evaluation (TEE) in accordance with WAC 173-340-7492(2)(a)(ii) to assess the site's potential for posing a significant threat to terrestrial ecological receptors. The completed Table 749-1 is included as Appendix D. The assessment of habitat for the TEE was completed by an experienced Amec Foster Wheeler biologist, whose resume is also included in Appendix D. As shown in the completed Table 749-1, the evaluation indicates that the simplified Terrestrial Ecological Evaluation can be ended under WAC 173-340-7492 (2)(a)(ii).

Aquatic ecological receptors in surface water are not expected to be exposed to hazardous substances due to potential releases from the site, since the nearest surface water body, the Duwamish Waterway, is approximately 5,000 feet west of the site. As discussed in Section 3.3, no surface water is present on or near the site.



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4.0 ENVIRONMENTAL INVESTIGATION/INTERIM ACTION SUMMARY

Multiple environmental investigations and prior remedial actions have been performed at the site (Table 4-1). Work performed during these investigations is briefly summarized in this section, including a description of constituents of potential concern (COPCs) evaluated during these investigations and a description of work performed for each environmental medium. The previous investigations identified the COPCs that were above the action levels established for each investigation. Typically, MTCA Method A values for industrial properties were used in these historical investigations until preliminary screening levels were established in the 2011 RI. This RI uses the term COPC to identify chemicals that have concentrations above the MTCA screening levels. More detailed descriptions of activities conducted during the prior investigations and actions are available in the referenced reports below. Boring logs are provided in Appendix C. Construction details for existing groundwater monitoring wells at the site are provided in Table 3-1, and survey data for these wells are provided in Table 3-2. The excavation areas described below and investigations performed by Amec Foster Wheeler are shown on Figure 4-1.

The main stages of investigation and interim remedial actions at the site are detailed below.

1994 and 1997 Phase I ESAs: SECOR conducted an initial Phase I ESA in 1994 that was updated in 1997 (SECOR 1994, 1997a and b). The Phase I report (SECOR, 1997b) discussed UST decommissioning and removal that occurred in the mid-1980s, but the report did not have location or sample result information regarding these UST decommissioning and removal activities:

- In 1985, six USTs used to store paint manufacturing components were decommissioned and removed from the site. SECOR did not have any information about these USTs but they were reportedly in the same area as UST removal activities conducted later by SECOR and Amec Foster Wheeler.
- A diesel UST was removed from the southern portion of the site around 1987, and a Bunker C heating oil UST was removed around 1989. The location information for these USTs was not provided in the Phase I report.

1997 UST Removal: In 1997, SECOR conducted a UST tank removal and installation. SECOR described the results of the project, as well as associated soil sampling conducted during the project (SECOR, 1998). In 1997, a small (300-gallon) UST was found under the northern building complex during a demolition project and was removed (SECOR, 1994 and 1997a). In addition, SECOR removed a total of 14 USTs used to store paint products, including several tanks that had been replaced during the 1985 UST removal. When the tanks were removed, soil around the perimeter of the excavation was darker than the soil surrounding the USTs and emitted a hydrocarbon-like odor, indicating a potential release. However, because of the lighter soil surrounding the tanks and the good



condition of the tanks, SECOR concluded that the soil staining was likely a result of leaks from the USTs previously removed from these areas in the mid-1980s (SECOR, 1998). SECOR conducted soil sampling at the base and perimeter of the excavations. Several COPCs (VOCs and TPH as mineral spirits/Stoddard solvent) were detected at elevated concentrations. SECOR installed seven new USTs in the open paved area between the northern building complex and the southern building, leaving a total of nine USTs on the site. The purpose of these new tanks was to store paint products. The soil results from this investigation and a figure showing the sample locations are provided in Appendix E.

1997 Vapor Barrier Installation: A vapor barrier was installed as part of the construction of the southern warehouse building. Photographs of the installation are provided in Appendix F. Further details of the installation are unavailable.

2009–2010 Phase II ESAs: Amec Foster Wheeler (then AMEC Geomatrix) conducted a limited Phase II ESA in 2009 to provide a preliminary evaluation of soil and groundwater conditions at the site and identify the type and magnitude of potential environmental releases (AMEC Geomatrix, 2009b and c). A second stage of this work was completed in late 2009 to further investigate the extent of selected COPCs detected in groundwater on the north portion of the site in Building 3 via the installation of additional borings (AMEC Geomatrix, 2010c). A third stage of this work was conducted in 2010 to evaluate conditions underneath the southern warehouse building, as well as COPC concentrations in indoor and outdoor air, prior to the sale of the southern parcel (AMEC Geomatrix, 2010b):

- During the Phase II conducted in August 2009, soil results indicated that soil in the vicinity of several known USTs was contaminated with TPH as gasoline, diesel and lube oil (TPH-G, TPH-D, and TPH-O); benzene, toluene, ethylbenzene, and xylenes (BTEX); polycyclic aromatic hydrocarbons (PAHs); and some VOCs. It was concluded that during the planned UST removal that surrounding contaminated soil should be over-excavated as much as possible, or alternatively, the extent of impacts should be delineated in order to plan for future removal or treatment.
- The northern area of the northern parcel was investigated in December 2010 to evaluate the soil and groundwater for a possible source of the vinyl chloride detected in groundwater sample KM-16.
- A supplemental Phase II was conducted in August 2010 to further evaluate the soil and groundwater below the warehouse on the southern parcel. Soil samples were analyzed for TPH (as gasoline, diesel and motor oil), VOCs, SVOCs, and total metals. The contamination identified on the southern parcel was from samples collected from the northern edge of the southern parcel (KM-22 and KM-25) and included TPH-G and PAHs.

October 2009 UST Removal: Amec Foster Wheeler (then AMEC Geomatrix) oversaw the decommissioning and removal of the nine USTs (consisting of seven 8,000-gallon product USTs and two 7,000-gallon containment USTs) and appurtenant piping left on site after the 1997 SECOR work, and the removal of other historical piping associated with former USTs at the site (AMEC Geomatrix, 2010a). During the UST decommissioning, additional investigations and excavation were conducted where feasible to address issues identified during the field work. In addition, over-excavation of contaminated soil was performed in several areas, and soil and groundwater samples were collected and analyzed from the sidewall and/or bottom of the excavation at the final extent of the excavation. Seven of the product storage tanks (USTs 3 through 9) were found to contain a variety of products inside the tanks to liquid depths of approximately 8 to 12 inches. The remnant products in the tanks were removed. These products varied from a thin, colorless liquid to a dark, honey-like, non-flowing resin. The two containment tanks (USTs 1 and 2) were reportedly used to contain fire suppression water and spill overflow from the manufacturing facility; however, facility employees indicated that no releases into these tanks had occurred, and water observed in the tanks and tested during the decommissioning was considered likely to be stormwater (AMEC Geomatrix, 2010a). All tanks were observed to be undamaged, with no pitting, staining, or holes. However, several sets of older piping were encountered in the UST excavations; these pipes were not associated with the USTs removed during the 2009 UST decommissioning and were presumably related to USTs removed during prior actions. Wherever possible, older piping was removed, including a 65-foot section that was located beneath Building 7. Soil was excavated to a depth of 9.5 to 10.5 feet bgs in most portions of the excavation and was disposed of off site.

In November 2009, after the UST removal, three test pits were excavated west of the product tank in an attempt to locate the source of contaminated soils found on the western sidewall of the excavation. Samples were not collected from these locations; however, field indicators suggest that a sidewall free of contaminants would not have been attained with additional westward excavation (TP-1 through TP-3 on Figure 4-1). A fourth test pit was excavated on November 13, 2009, south of the containment tank excavation (TP-4 on Figure 4-1). Based on analytical results from a sample collected at 8 feet bgs, a clean southern sidewall could not be obtained in the containment tank excavation without encroaching on the warehouse building to the south. The UST report concluded that it is unlikely that the USTs removed in 2009 were the source of the affected soil, based on the field observations, the concentrations of analytes, and the locations of the remaining affected soil. The locations of the former USTs are shown on Figure 4-1 and the full data set for soil and groundwater results associated with the UST removal conducted in October 2009 are presented in Appendix G.

2008–2015 PCB Investigation and Cleanup: Starting in 2008 and continuing through 2015, Kelly-Moore performed a PCB cleanup within the interior of certain on-site buildings, consistent with the



Self-Implementing Cleanup Standards described in TSCA, which include submitting work plans and all cleanup reports to the EPA (AMEC Geomatrix, 2010d). Several areas of concrete flooring in Building 6 and Building 7 were scarified to remove the PCBs. Analytical results of samples from the scarified concrete surfaces in Buildings 6 and 7 showed PCB concentrations less than 1 milligram per kilogram (mg/kg) in the remaining concrete flooring material. The sample locations and results for Buildings 6 and 7 are provided in Appendix E. Areas of flooring and scale pits in Building 8 showed PCB concentrations greater than 1 mg/kg, which is the bulk PCB remediation waste cleanup standard for high-occupancy areas (Title 40 CFR Part 761.61). As a result of these findings, institutional controls were established as an interim action for Building 8. Building 8 was sealed off, and signage was installed to indicate that building materials remained present with PCBs above regulatory limits (Amec Foster Wheeler, 2015b). In 2014, after Kelly-Moore sold the northern portion of the site, and the new owner made plans to demolish Building 8 and to manage removal of the remaining PCBs from the footprint of Building 8 as part of demolition planning and waste management. A PCB Closure and Characterization Plan Addendum (AMEC, 2014), was submitted to EPA in support of this effort and was approved in February 2015 (EPA, 2015). The goals of the cleanup were to address remaining areas where concentrations of PCBs were greater than 1 part per million and to perform confirmation sampling to evaluate the success of mitigation measures. The cleanup involved demolition of the aboveground structures, segregating previously-identified PCB-containing building materials from Building 8, removal of the southern portion of concrete slab from former Building 8, soil sampling beneath the slab, and follow-up excavation as needed based on the soil sample results. Several floor scale pits were also removed, along with surrounding soil. Following demolition and soil removal, all confirmation samples collected at the site were below the high occupancy PCB cleanup level of 1 part per million (Amec Foster Wheeler, 2015b). The sample locations and results for Building 8 are included in Appendix E.

2011 Data Gaps Investigation: In 2011, Amec Foster Wheeler conducted additional soil and groundwater sampling and installed five monitoring wells (KMW-01 to KMW-05) at the site to complete the RI and provide data to further support cleanup planning.

2011 Remedial Investigation and Feasibility Study: In 2011, Kelly-Moore submitted a RI/FS report to Ecology for review, consistent with the VCP (AMEC Geomatrix, 2011). The proposed remedial action included soil excavation in selected areas, dual phase vapor extraction and biosparging if feasible, and additional groundwater monitoring. For the evaluation of cleanup technologies described in this report, it was assumed the ongoing presence of the buildings on the north and south end of the site, as no formal plans for sale or demolition were known at that time.

2013 Groundwater Sampling and Monitored Natural Attenuation Work Plan: Groundwater sampling was performed in 2013 at five wells previously sampled to assess how groundwater concentrations may have changed after the soil excavation work performed in connection with the October 2009 UST removals. Reductions in contaminant concentrations were observed in several wells and concentrations of COPCs had decreased substantially since 2011, indicating the alternatives reviewed in the RI/FS should be re-evaluated. Implementation of a wider groundwater monitoring network was informally discussed with Ecology, and a plan was prepared to further evaluate natural attenuation of COPCs at the site.

2015 Groundwater Sampling: Groundwater samples were collected from nine direct push borings in March 2015 to evaluate current conditions and aid in evaluating treatment options in the area of highest known groundwater concentrations of COPCs. Results are discussed in Section 5.1.2.

2015 Well Abandonment: KMW-01 and KMW-02 were abandoned in February 2015 after demolition of the older buildings on the north end of the site in 2015. The well abandonment records are located in Appendix C. Attempts were made to abandon KMW-03 and KMW-05, but efforts to locate them were unsuccessful. It is assumed they were accidentally removed during the construction of the new building foundation. KMW-04 remains intact on site.

2015 Hot Spot Soil Excavation and Treatment: After demolition of the older buildings on the north end of the site in 2015, hot spot soil excavations were conducted in selected areas that were previously identified as having contaminated soil above proposed preliminary screening levels. Areas were selected for excavation and off-site disposal based on contaminant concentrations, depth, and estimated areal extent. In total, six areas were selected for hot spot soil excavation and treatment. Five of the excavation areas were identified by historical boring numbers (KM-19, KM-30, KM-32, KM-39, and KM-41). The sixth area is known as the “piping trench excavation” and was in the area of underground piping discovered and partially excavated during the October 2009 UST removals. Due to the overlying buildings, only very limited excavation and piping could be done during the original excavation in 2009. Confirmation samples were collected from the, north, south, east, and west sidewalls and the bottom of the five excavation areas (KM-19, KM-30, KM-32, KM-39, and KM-41), as well as from the piping trench (B7-Piping). Several constituents, including BTEX, gasoline, and benzo(a)pyrene, still remain above preliminary screening levels in each of the five excavation areas. Results are as follows.

- **Soil Removal at Boring KM-19:** December 2009 historical soil samples from boring KM-19 showed concentrations of TPH-G above the preliminary screening level in both the 3.5–4.0 foot and 6.0–6.5 foot depth intervals, at concentrations of 430 mg/kg and 8,200 mg/kg, respectively (Appendix G). On February 26, 2015, soil was excavated

from a 10-foot by 10-foot area centered on boring KM-19, to a depth of approximately 7 feet bgs. Groundwater was observed at approximately 6 feet bgs. Approximately 26 cubic yards of soil was removed from this excavation and the bottom of the excavation was mixed with oxidant to a depth of 1 yard below the bottom of the excavation prior to backfill.

The record soil sample results indicate the majority of TPH contamination was successfully removed, as only one sample exceeded the proposed TPH-G preliminary screening level. That sample was bottom sample KM-19-bot-7.0, which had a TPH-G concentration of 420 mg/kg (Appendix G). All four sidewall samples were below preliminary screening levels.

- **Soil Removal at Boring KM-30:** March 2011 historical samples from boring KM-30 showed concentrations of TPH-G above the preliminary screening level in the 2.0-2.5 foot and 4.75–5.25 foot depth intervals, at concentrations of 400 mg/kg and 6,000 mg/kg, respectively (Appendix G). Benzo[a]pyrene was also detected above preliminary screening levels in the same depth intervals, at concentrations of 0.37 mg/kg, and 1.4 mg/kg, respectively (Appendix G). On February 26, 2015, soil was removed from a 10-foot by 10-foot area centered on boring KM-30, extending to a depth of 5.5 feet. Approximately 20.4 cubic yards of soil was removed from this excavation and the bottom of the excavation was mixed with oxidant to a depth of 1 yard below the bottom of the excavation prior to backfill. Soils from this excavation contained abundant fill debris, including what appeared to be metal, slag, coal, bricks, rocks, and other debris.

Record samples were analyzed for TPH-G, BTEX, and carcinogenic PAHs (cPAHs). Sample results indicate significant reductions in TPH-G were achieved; however, all samples except for the north sidewall (KM-30-NW-4.0) still exceeded proposed TPH-G preliminary screening levels. The highest TPH-G concentration was detected in the east sidewall sample, KM-30-EW-4.0, at a concentration of 3,500 mg/kg. Benzene and several SVOCs, including benzo[a]pyrene, were also detected above preliminary screening levels in the same samples as TPH-G exceedances, but were not detected above their respective laboratory reporting limits in sample KM-30-NW-4.0, suggesting that remaining contamination in this area does not extend further north.

- **Soil Removal at Boring KM-32:** March 2011 historical soil samples from boring KM-32 showed concentrations of benzo[a]pyrene that exceeded the preliminary screening level. The highest concentration of benzo[a]pyrene measured at the site was detected at a concentration of 24 mg/kg from the 2.5–3.0 foot depth interval at KM-32. VOCs were not detected above the laboratory reporting limits. On February 26, 2015, soil was excavated from a 10-foot by 10-foot area centered on boring KM-32. The excavation extended to a depth of approximately 2.5 feet bgs. Approximately 9.3 cubic yards of soil was removed from this excavation.

Record samples were analyzed for cPAHs. Results indicate that concentrations were greatly reduced; however, all samples still exceed the preliminary screening level of 0.10 mg/kg. Concentrations ranged from 1.7 mg/kg in sample KM-32-NW-1.5 to 5.6 mg/kg in sample KM-32-WW-1.5.

- Soil Removal at Borings KM-39 and KM-41:** Both the KM-39 and KM-41 excavation areas occurred within the former Building 8 footprint, which was excavated as part of the separate PCB cleanup action described above as the 2008–2015 PCB Investigation and Cleanup. The results documenting the PCB cleanup action are presented in Appendix E. Both excavations were centered on the former in-ground floor scale pits in former Building 8. Although each excavation was conducted to remove the former scale pits and potentially accompanying PCBs, record soil samples were also collected for other COPCs that exceeded preliminary screening levels in the area of former Building 8.

March 2011 historical samples from boring KM-39 showed concentrations of TPH-G, BTEX, and several semivolatile organic compounds (SVOCs), including benzo[a]pyrene and naphthalene, above the preliminary screening levels. On March 5, 2015, the scale pit structure was removed, along with adjacent soils in an area 10 feet by 10 feet, extending to a depth of 4.5 feet bgs. Approximately 16.7 cubic yards of soil was removed, including the concrete scale pit structure, and the bottom of the excavation was mixed with oxidant to a depth of 1 yard below the bottom of the excavation prior to backfill. Record soil samples showed concentrations of TPH-G exceeded the preliminary screening level in all locations except the north sidewall. The highest TPH-G concentration was detected in the west sidewall sample KM-39-WW-3.5, at a concentration of 3,100 mg/kg. Benzene was also detected in all locations except the north sidewall, at concentrations above the preliminary screening level. Xylenes only exceeded preliminary screening levels in one sample, KM-39-EW-3.5. Benzo[a]pyrene was detected in east sidewall sample KM-39-EW-3.5 above the preliminary screening level at a concentration of 4.5 mg/kg. Sample KM-39-EW-3.5 also had a cPAH concentration of 5.9 mg/kg, which is above the preliminary screening level.

March 2011 historical samples collected from boring KM-41 showed concentrations of TPH-G, xylenes, PCBs, benzo[a]anthracene, and naphthalene above the preliminary screening levels. On March 5, 2015, the floor scale pit was removed, along with adjacent soil. The total excavation extent measured approximately 15 feet wide (east-west) by 18 feet long (north-south), and extending to a depth of approximately 6 feet bgs from the elevation of the underlying concrete slab. The bottom of the excavation was mixed with oxidant to a depth of 1 yard below the bottom of the excavation prior to backfill. Record samples showed TPH-G exceeded the preliminary screening level in bottom sample KM-41-B1-6.0 and sidewall sample KM-41-SW-4.0, at concentrations of 380 mg/kg and 3,600 mg/kg, respectively. SVOCs, including benzo[a]anthracene and benzo[a]pyrene, were detected in the record samples at KM-41 above the preliminary screening levels. West wall sample KM-41-WW-4.0 had a benzo[a]pyrene concentration of 0.27 mg/kg and a cPAH concentration of 0.35 mg/kg, which are both above their preliminary screening levels. Benzene also exceeded the preliminary screening level in sample KM-41-SW-4.0 at a concentration of 0.021 mg/kg. All other COPCs were below their respective preliminary screening levels.

- Piping Trench Excavation and UST Removal:** The piping trench excavation was located between former Buildings 7 and 8, in an area where underground piping was left in place following the decommissioning and removal of nine USTs and associated

pipng in 2009. Although some piping was removed at that time, some had to be left in place because it was adjacent to, and extended beneath, building foundations. When the new owner elected to demolish the buildings on site, it presented an opportunity to remove the product piping left in place in 2009, as well as perform additional soil excavation to remove TPH-contaminated soil documented during the 2009 excavation that remained a potential source for groundwater contamination at the site.

The piping trench excavation was conducted in three phases. The first phase was the excavation of two intersecting trenches to remove all remaining product piping that was not removed during the 2009 excavation, along with underlying soil potentially affected by COPCs. In total, nine steel product pipes were removed from this trench on February 26, 2015. The trenches were approximately 6 feet wide by approximately 120 feet in total length (Figure 4-1). The depth varied between 4.5 feet at the south end and 5 feet at the north end. Groundwater was observed in the excavation at approximately 5 feet bgs. Approximately 135 cubic yards of soil was removed during the first phase.

The north end of the excavation was expanded to the east in a second phase on March 5, 2015, when a previously unknown UST was discovered. The UST was an approximately 500-gallon tank in poor condition with pinholes and limited fluid inside that appeared to be rusty water. The UST was properly decommissioned and removed (Amec Foster Wheeler, 2015c), and over-excavation of the area resumed again on March 13, 2015. The second phase of excavation extended the northern 60 feet of the previous trench to the east by 8 feet, at a depth of ranging from 5.0 to 5.5 feet, which was just below the observed water table. Approximately 100 cubic yards of material was removed during this phase of excavation. One of the previously collected sidewall sample locations, B7-piping-S1-4.0, was over-excavated with the expanded excavation, and a new sidewall sample was collected 8-feet to the east and identified as B7-piping-S1B-4.0. Soil samples collected from the excavated area around the former UST showed TPH-G, TPH-D, benzene, naphthalene, and benzo[a]pyrene above the respective preliminary screening levels. It is unknown whether the source of the contamination was from the UST, from the former underground piping in the area, or some other unknown source.

The third phase of piping trench excavation expanded the southern 25 feet of the piping trench to the east by 8 feet, and extended the depth to the water table (at approximately 5 feet bgs). The additional excavation removed 50 cubic yards of material on March 25, 2015. The entire piping trench excavation was treated with oxidant, mixed to a depth of 1 yard below the bottom of the excavation prior to backfill.

- ***Additional of Subsurface Piping and Second Unknown UST Removal:*** Because both hot spot soil excavation and historical results showed that contaminated soil remained beneath the area where the former buildings were demolished in 2015 and because the new owner was preparing the site for construction of a new building that would occupy much of the north end of the site, Kelly-Moore received permission from the new owner to complete one additional subsurface task prior to building construction. The task was to place subsurface horizontal wells in soils above the groundwater table that could be used to conduct soil vapor extraction (SVE) or possibly

chemical oxidation, and thereby allow for potential treatment of the remaining VOCs (including TPH-G) in the subsurface after the new building is completed at the site. Piping was also placed in the western trench (Figure 4-1) to allow connection points for air sparging if further reduction of groundwater contaminant concentrations is deemed necessary—i.e., in the event that oxidant treatment used in the 2015 hot spot soil excavations does not sufficiently treat COPCs to allow for groundwater concentrations to attenuate to concentrations below preliminary screening levels.

Two trenches were dug for installation of the remediation piping: (i) an eastern trench under the footprint of the new building, and (ii) a western trench under the footprint of the new parking lot (Figures 2-3 and 4-1). The installation was designed to treat an approximately 50-foot-radius area around each SVE well. This layout was designed to allow additional remediation, as necessary, of all areas of residual TPH-G concentrations above preliminary screening levels.

The eastern trench included eight individual 4-inch schedule 40 polyvinyl chloride (PVC) pipes ending with 10 feet of 0.020-inch slotted screen. Screens were placed at 7 to 7.5 feet bgs (corresponding to roughly 14 to 15 feet in elevation) and the piping was sloped back to the screens. Alignment of the eastern trench was situated to avoid building structural components as specified by the new owner's building geotechnical requirements. Piping was day-lighted against the north side of the existing building at the south side of the site and was temporarily capped. Backfill was performed in 12-inch lifts of soil, with compaction by an excavator-mounted vibrating compaction unit. Geotech Consultants, Inc. of Bellevue, Washington was on site for geotechnical review during the installation of the eastern trench and requested a minimum compaction of 90 percent in order to meet geotechnical requirements. Backfill was tested with a nuke density gauge on June 17, 2015, and results indicated that compaction was 94 percent, exceeding the minimum requirements. Work was completed for the eastern trench prior to the installation of a vapor barrier and pouring of the foundations from June 15 to June 25, 2015.

A second, previously unknown, UST was discovered during the placement of the eastern piping. The UST was discovered on June 17, 2015, and was a riveted single-walled 500-gallon steel tank. Because the UST was riveted and riveted tanks were banned in 1943, the tank is assumed to have been placed prior to 1943. The tank was approximately half full of fluid, which was visible through a hole in the top of the tank. The fluid in the tank appeared to be groundwater, and rusted pin holes were observed in the lower portion of the tank walls. Surrounding soils did not show signs of obvious contamination resulting from the UST or any difference from soils observed away from the UST, so over-excavation was not performed. However, SVE wells were installed to allow for treatment of soils in the vicinity of the UST, as recent and historical soil samples had already confirmed residual TPH contamination throughout the area. The UST was properly decommissioned and removed (Amec Foster Wheeler, 2015c).

The western trench included four individual 4-inch schedule 40 PVC pipes with 10 feet of 0.020-inch slotted screen at the end (for SVE) and four individual 1-inch schedule 80 PVC pipes (for connection to air sparge wells). Screens were placed at 4.0 to 4.5 feet bgs (corresponding to roughly 14 to 15 feet in elevation), with the overall

conveyance piping placed at 6.0 to 6.5 feet bgs in order to stay under a planned sewer pipe installation. Piping was capped and buried, and sloped to drain to the south. Bedding and backfill was performed using the same methods as for the eastern trench. Tracing wire was placed 1 foot above the piping and metal markers were placed at the end of the air sparge lines, which were brought up to 2 feet bgs and placed approximately 10 feet back from the well screens. Work was completed on the western trench prior to installation of the site utilities from October 15 to October 21, 2015. Record sampling was conducted along the western trench and showed TPH-G and benzene above the respective preliminary screening levels in several locations (samples KM-R01 through KM-R13 on Table 5-3). The lay-out of this trench was subsequently revised when Amec Foster Wheeler realized that the installed utilities interfered with the piping that had already been installed. The final piping was installed in December 2016.

An additional approximately 241 tons or approximately 180 cubic yards of contaminated soil was excavated during trenching work completed during the installation of the remediation piping and the underground utilities for the new building, and was disposed of off site.

- **Installation of Vapor Barriers:** The large warehouse building at the south end of the site was constructed in 1997. According to Kelly-Moore, a visqueen vapor barrier was installed beneath the full footprint of the building. Construction as-built records were not then available, although Amec Foster Wheeler did review photographs showing placement of the vapor barrier during construction of the warehouse.

In July 2015, a vapor barrier was also installed by the new owner, prior to the pouring of the foundation and the concrete slab, under the new building at the north end of the site. The vapor barrier was 15-millimeter Yellow Guard Vapor Barrier. All seams were taped. The barrier was installed on top of the clean sandy imported fill and ran to the inside edge of the foundation trenches. Amec Foster Wheeler took pictures on July 10, 2015, to document the installation (Appendix F). Rebar for reinforcement of the concrete slab was placed on top of the vapor barrier prior to the pouring of the concrete. The extent of the vapor barriers is shown on Figure 4-1.

Replacement Monitoring Wells: Monitoring wells KMW-02R, KMW-03R, and KMW-06 through KMW-08 were installed in June 2016 after construction of the building on the northern parcel was completed, to replace monitoring wells KMW-01 and KMW-02, which were abandoned on February 4, 2016, and KMW-03 and KMW-05, which were destroyed during building construction. The current monitoring well lay-out is shown on Figure 2-3 and the monitoring well construction details are provided in Table 3-1. Groundwater samples were collected from the monitoring wells in June and November 2016.

2016 Soil Borings and Groundwater Screening Samples: In August 2016 additional soil and groundwater samples (KM-53 through KM-55) were collected to the north of the new western trench,

to determine the TPH and BTEX concentrations in soil and groundwater. This area was previously uninvestigated due to the locations of buildings and utilities.

2016 Off-Site Well Installation: KMW-10 and KMW-11 were installed off-site and hydraulically downgradient in November 2016. These wells were installed to assess potential downgradient migration of COPCs. Soil samples were collected from the smear zone and total depth of the borings. Groundwater samples were collected from the full monitoring well network in November 2016.



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5.0 NATURE AND EXTENT OF SITE CONTAMINATION

Section 5 describes the nature and extent of COPCs resulting from releases of hazardous substances on the Kelly-Moore site. COPCs were selected for analysis during various investigations based on historical use of the site.

Most soil samples were analyzed for metals; TPH-G, TPH-D, and TPH-O; VOCs; and SVOCs. Selected soil samples were collected for the analysis of more limited suites of constituents—normally this occurred during focused investigations for the presence of a particular COPC or set of COPCs in a given area of the site. About half the groundwater samples were analyzed for metals, TPH-G, TPH-D, VOCs, SVOCs, and PCBs. In areas where COPCs had previously been evaluated, more focused investigations were conducted and samples were analyzed for a more limited suite of metals, TPH-G, VOCs, and SVOCs. In these focused investigations, the previous investigations had not identified TPH-D and/or PCBs.

5.1 NATURE OF CONSTITUENTS OF POTENTIAL CONCERN

5.1.1 Soil

As discussed in detail in Section 4.0, site soils were investigated during a number of historical investigations (SECOR, 1997a and b; King County Department of Health, 1998). Most historical samples were collected in areas from which the soil was later excavated and removed during the UST decommissioning and removal in 2009 (AMEC Geomatrix, 2010a). In addition, soil samples were collected during several investigations between 2009 (AMEC Geomatrix, 2011) and 2015. Soil samples were analyzed for COPCs detailed in Table 4-1.

The locations of soil sampling conducted at the site during previous investigations are shown in Figures 3-1 and 3-2; only samples from locations not excavated and removed are shown. The precise locations of samples were not surveyed during historical investigations conducted prior to Amec Foster Wheeler's retention by Kelly-Moore; therefore, these samples are provided on Figure D-1 in Appendix E, which shows the approximate location of these samples, based on historical records and maps. Because the precise locations of these samples are unknown, it is possible that some soil from the areas of pre-Amec Foster Wheeler investigations may have been removed during subsequent investigations/cleanups.

The soil samples include confirmation samples collected during UST decommissioning and removal activities (SECOR, 1994, 1997a, and 1998; AMEC Geomatrix, 2010a) and soil excavations, soil samples collected from borings advanced on site (AMEC Geomatrix, 2009a, 2010c and e), and soil samples collected prior to construction of the new building on the north parcel. In all cases, soil



samples were collected only above the observed water table at the time of collection. In most borings, the water table was encountered at depths of approximately 5 to 6 feet, except in borings in the southern warehouse, where depth to water was as much as 11.5 feet bgs, apparently due to the placement of artificial fill.

Soil samples collected during site investigations have been found to contain concentrations of some COPCs above MTCA Method A cleanup levels (used for preliminary screening of site data). Summary soil analytical results for samples collected at the site from 2009 to 2015 are provided in Tables 5-1 to 5-5 for analytes detected in the samples. The full tabulated site data set is provided in Appendix G and analytical data reports are provided in Appendix H. The site data have been uploaded to Ecology's Environmental Information Management database, as required under the VCP. A detailed discussion of these analytical results and comparisons to the preliminary screening levels for the site are provided in Section 5.4.1, where these results are used to delineate the nature and extent of soil contamination at the site.

5.1.2 Groundwater

Groundwater sample locations from historical environmental investigations are provided on Figure 3-3. Groundwater samples were analyzed for the COPCs listed in Table 4-1. Previous groundwater investigations are detailed in Section 4.0.

Groundwater samples collected during previous investigations, as well as during sampling as part of this RI, have been found to contain concentrations of some COPCs above MTCA Method A cleanup levels (used for preliminary screening of site data). Summary groundwater analytical results for samples collected at the site are provided in Tables 5-6 and 5-7. The full tabulated site data set is provided in Appendix G and analytical data is provided in Appendix H. The site data has been uploaded to Ecology's Environmental Information Management database, as required under the VCP. A detailed discussion of these analytical results and comparisons to the preliminary screening levels for the site are provided in Section 5.4.2, where these results are used to delineate the nature and extent of groundwater contamination at the site.

5.1.3 Air/Soil Vapor

Air sampling was conducted inside the southern warehouse in September 2010 (AMEC Geomatrix, 2010f). The purpose of the air sampling was to determine whether there was any indication of airborne COPCs inside the building after the installation of the vapor barrier. Potential emissions could include incidental historical spills of coating products and solvents on indoor concrete floors during warehousing operations and emissions from groundwater to the building interior due to contamination originating on- or off-site.

Air samples were collected for eight hours during daytime hours on September 8, 2010, using Summa canisters, while the facility heating, ventilation, and air conditioning system was operating at normal settings. Two samples were collected from approximately 4 feet elevation in two representative areas within the building for analysis of Stoddard solvent (also referred to as mineral spirits) and VOCs. One sample was collected from outside the southern portion of the building for analysis of VOCs. Very sensitive EPA sampling and analytical methods were used to ensure a detection limit that would identify a potential human health hazard if one existed.

The results on the day of sampling do not support a hypothesis that there is a potential indoor ambient air quality problem, as the measured concentrations were mostly undetectable despite the sensitive methods, and were far less than occupational exposure limits. The levels of VOCs indoors were comparable to the levels outside in the urban ambient air in this industrial area.

5.2 POTENTIAL SOURCES OF COPCS

The sources of COPCs at the site are presumed to be a combination of several of the following:

- Leaks or spills related to former USTs and related piping located in the central area of the site, but also including piping that ran underground into the buildings north of the former UST area.
- Leaks or spills during historical operations before the storage areas were paved or via sumps or catch basins. It is unknown when the site was fully paved, and the full historical use of all the areas is unknown.
- Releases that could have migrated from the neighboring rail line property, situated slightly uphill and hydraulically upgradient of the site, or other upgradient sources.
- Imported fill material is apparent in multiple locations across the site. Various fill materials have been noted during site activities. Historical records also indicate that the site may have been historically filled with material from unknown sources. Wood, coal, asphalt pieces, and other unidentified fill materials have been observed at the site in the subsurface borings and excavations. The dates of fill placement at the site are unknown.
- Air depositional contributions from the heavy industrial location of the site (between an interstate freeway, a major city arterial, and an active rail yard).
- Activities by former owners and operators at the site, prior to paint manufacturing.

5.3 FILL MATERIAL

Historic fill material has been observed in some excavations and investigative borings at the site, indicating that an assortment of fill materials may have been placed at the site over its developed

history. No obvious pattern to the placement or depth interval has been noted, with different material observed at different depths in different areas. No information on the date that fill material may have been placed, either at the site or regionally, has been identified. Specifically, the following materials and locations were documented during investigations conducted by Amec Foster Wheeler:

- Wood boards of various size in Test Pit 3 (TP-3) at approximately 4-8 feet bgs beneath Building 10.
- Pink-colored soil in the excavation beneath Building 10 at approximately 3 feet bgs, and a 4-square-foot area of soil stained pink and white in the northwest corner of the containment tank excavation (sample location NWPipe), immediately below the concrete. The fill was sampled and no other CPOCs were found in the pink soil that warranted further investigation (AMEC Geomatrix, 2010a).
- Bricks, coal, and/or slag material in borings KM-1, KM-4, KM-7, KM-8, KM-16, KM-20, KM-23, KM-24, KM-26, (AMEC Geomatrix, 2010g).
- Blackened, charred-looking fill (possibly from fire or staining by coal) in borings KM-4, KM-7, KM-8, KM-11, KM-15, KM-16, KM-24, KM-25, KM-26, KM-29, KM-30, KM-32, KM-39, KM-41, KMW-01, KMW-05.

In 2015, two new sources of fill were used on site to support construction of the new building on the northern portion of the site:

- Concrete from demolished building footings, walls, and floors was crushed and re-used on site. Only concrete that was acceptable for re-use on site as characterized by Amec Foster Wheeler (Amec Foster Wheeler, 2015b) was used for fill.
- Sandy soil was imported by NCD GeorgeTown LLC. Prior to import, three composite samples were analyzed for Resource Conservation and Recovery Act 8 metals and NWTPH-Dx (Appendix H). These samples were collected from a stockpile at the source site at 4441 42nd Ave SW Seattle, WA. Each composite sample was composed of four distinct sample locations. Fill was found to be below MTCA Method A cleanup levels for Unrestricted Use.

5.4 EXTENT OF COPC OCCURRENCE

This section presents the results of investigations into the nature and extent of contamination on the site. Comparison to preliminary screening levels that may trigger additional cleanup action is discussed in Section 8.

5.4.1 Soil

This section discusses the analytical results for contaminant occurrence in site soils by constituent class.

5.4.1.1 Metals

Analytical data for metals in soils are presented in Table 5-1. Metals were analyzed for samples collected from most soil borings, confirmation samples collected from the UST and piping excavations performed in 2009 and 2015, the western trench, the monitoring well installation, and historical samples.

Metals were detected in all soil samples in which they were analyzed, including the following: arsenic, barium, cadmium, chromium, copper, lead, nickel, and zinc. Metals are found naturally in the environment at varying concentrations and may also be introduced to the environment via anthropogenic releases. The metals noted above are commonly detected in urban environments, and arsenic is a notable issue throughout the Puget Sound region.

5.4.1.2 TPH

Analytical data for TPH in soils are presented in Table 5-2. TPH-G, TPH-D, and TPH-O were analyzed for samples collected from most soil borings and confirmation samples collected from multiple excavations. Several historical samples were also analyzed for TPH as mineral spirits/Stoddard solvent.

TPH-G is the most frequently detected constituent at the site. The magnitude of the current known extent of residual TPH-G in soil is shown in Figures 5-1 through 5-6. TPH-G concentrations historically ranged from below detection to a maximum of 33,000 mg/kg, though the maximum residual concentration is 8,400 mg/kg. Soils with historical TPH-G concentrations above this concentration have been removed. In general, the highest concentrations were detected in samples collected from deeper soils just above the water table, with lower concentrations detected in samples collected from the vadose zone. Concentrations of TPH-G above 1,000 mg/kg have been observed in the northern part of the northern parcel as well as in the central part of the northern parcel, near the former UST areas.

The laboratory reports from the 2009 Phase II ESA (AMEC Geomatrix, 2009a) and the 2009 UST removal (AMEC Geomatrix, 2010a) indicated that many of the of the TPH-G detections had chromatograms that were similar to mineral spirits/Stoddard solvent. Mineral spirits/Stoddard solvent is commonly used as a paint thinner and solvent. Based on the previous manufacturing processes that occurred at the site, it is not unexpected that some of the TPH-G contamination characterized by the analytical laboratory could have originated from mineral spirits/Stoddard solvent. The analytical laboratory typically reports mineral spirits/Stoddard solvent as part of TPH-G unless requested to compare the chromatographs against product standards.



Concentrations of TPH in samples collected throughout the site show smaller source areas that do not always appear linked to one another, and indicate that even after multiple excavations of the most highly-contaminated material, residual contamination at lower concentrations, particularly within the fluctuating top of the water table, is likely to exist over a large portion of the northern end of the site.

TPH-G concentrations on the southern half of the site decline rapidly, with only one location showing an elevated concentration (350 mg/kg at KM-22, near the north end of the southern warehouse building).

5.4.1.3 VOCs

Analytical data for VOCs in soils are presented in Table 5-3. Soil samples collected from most soil borings were analyzed for the full suite of VOCs; however, some samples that were part of targeted investigations were only analyzed for BTEX compounds.

VOCs detected in at least one sample on site are 1,1-dichloroethane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 2-butanone, acetone, benzene, carbon disulfide, ethylbenzene, isopropylbenzene, m,p-xylene, methyl isobutyl ketone, methylene chloride, naphthalene (discussed in this report as an SVOC), n-butylbenzene, n-propylbenzene, o-xylene, p-isopropyltoluene, sec-butylbenzene, tert-butylbenzene, tetrachloroethene, toluene, trichloroethene (TCE), and trichlorofluoromethane.

Elevated concentrations of VOCs in soils are mainly located in the central area of the site, in the vicinity of former USTs and piping (mostly associated with USTs removed long ago). The BTEX detected in soils at the site are likely related to the past releases of mineral spirits/Stoddard solvent and gasoline. Mineral spirits/Stoddard solvent are a petroleum derivative, commonly used as paint thinner, with a high toluene content. Benzene is also expected to be present in mineral spirits but at much lower concentrations than toluene, ethylbenzene, and xylenes. However, gasoline was also used at the site, and both mineral spirits/Stoddard solvent and gasoline are probably sources of most of the VOCs detected in soils.

5.4.1.4 SVOCs

Analytical data for SVOCs in soils are presented in Table 5-4. Most soil samples collected between 2009 and 2010 included laboratory analysis for the suite of 78 SVOCs. Soil samples collected between 2011 and 2015 were collected for a smaller suite of SVOCs, primarily PAHs. Naphthalene was analyzed as both a SVOC and a VOC from 2009 to 2015. Total cPAH values expressed as the benzo(a)pyrene toxicity equivalency factor were also calculated according to methodology established in WAC 173-340-708(8).

PAHs were detected sporadically around the site, indicating that their presence may be related to non-native fill used at the site and area background conditions in this industrial neighborhood. Figures 5-7 through 5-10 present the magnitude of the current known extent of cPAHs in residual soil. The highest concentrations were observed in shallow soils at the KM-32 hot spot excavation, KM-55, and the KM-39 hot spot excavation.

5.4.1.5 PCBs

Soil samples that remain with detections of PCBs are presented in Table 5-5. As shown in Appendices E and G, many more samples were analyzed for PCBs and were below detection. Individual PCB congeners were analyzed for most borings, for samples collected from the B7 Trench (samples B7-Trench-1, -2, and -3), and for soil samples collected from the bottom of scale pits inside Building 8.

PCBs were detected only in the central area of the site, within the interior of site buildings and interior scale pits. Prior to the interim action excavations, the highest concentrations of PCBs were observed in samples from the former Building 8 scale pits at concentrations of 44 mg/kg and 100 mg/kg for KM09-8-78 and KM09-8-79, respectively. Subsequent soil samples collected beneath and near the sumps showed much lower concentrations. PCBs were not detected at elevated concentrations in soil samples collected outside of the former Building 8 footprint. Cleanup of PCBs was completed in two phases in 2010 and 2015 (Amec Foster Wheeler, 2015b). Sample locations and PCB results for all affected areas are included in Appendix E.

5.4.1.6 Summary of Soil Results

The analytical results for soils indicated that the main areas of concern for soil impacts due to COPCs are the former UST area specifically and the northern portion of the site in general. These areas are described in this section by the apparent source area.

The most extensive soil impacts appeared to be located in and near the former UST area and related piping in the central area of the site. The main constituents in this source area appeared to be related to mineral spirits/Stoddard solvent and gasoline, including detections of TPH-G identified by the laboratory as being within the range of mineral spirits/Stoddard solvent, BTEX, and naphthalene. The extent of this impact extends beneath the former footprint of Buildings 7, 10, 8, and the westernmost portion of the southern warehouse.

Concentrations of constituents in soils underlying the westernmost portion of the southern warehouse appear to represent the southernmost edge of impacts related to the former UST source area. Metals, TPH-G and cPAHs have been identified in this area.

Elevated concentrations of TPH-G and cPAHs were identified in soils adjacent to the northern site boundary. The source of TPH-G and cPAHs in this area is unknown, but the chromatograms for TPH-G most closely match a gasoline standard (versus mineral spirits/Stoddard solvent). COPC concentrations in the vicinity of the former northern buildings are more sporadic, indicating that the source may be numerous isolated small spills that could have historically occurred in different areas.

5.4.2 Groundwater

This section discusses the analytical results for COPC occurrence in site groundwater by constituent class. Groundwater samples were collected from UST excavations (grab samples), from push-probes (unfiltered samples taken with a peristaltic pump), and from monitoring wells using low-flow sampling techniques. Groundwater samples were collected from monitoring wells during sampling events in March and August 2011 and June and November 2016. Additional samples were collected from a subset of monitoring wells in April and June 2013, in order to monitor concentrations of TPH-G. Groundwater samples will be collected from monitoring wells semiannually, during the wet and dry seasons, until site closure. Grab groundwater samples collected from excavations are not considered in the analysis below, and were used in this RI primarily as indicators of contamination, rather than quantitatively. The push-probe samples were collected with low-flow sampling techniques; however, due to turbidity in open boreholes and the lack of filtering, it is possible that the metals and SVOC results for groundwater could be affected by COPCs in soil particles present in the turbid water. Groundwater monitoring wells meet the quantitative requirements for all COPCs. Generally, the highest concentrations of COPCs observed at the site were detected in grab groundwater samples from the 2009 UST excavations and 2015 interim action. Compounds detected in groundwater samples collected from push-probes or excavations are presented in Table 5-6. Compounds detected in groundwater samples collected from monitoring wells during sampling events from 2011 through 2016 are presented in Table 5-7. Appendix G presents all of the groundwater sampling results. The extent of TPH-G present in groundwater during the June and November 2016 groundwater sampling events is shown on Figures 5-11.

5.4.2.1 Metals

Various metals were analyzed in groundwater samples collected during the previous investigations and UST excavations and the analytical data are presented in Table 5-6 and 5-7. Most of the metals samples collected to date have been unfiltered and were analyzed for total metals with dissolved metals analyzed in conjunction with total metals in three of the five monitoring well sampling events that took place between March 2011 and November 2016.

Arsenic, copper, and lead were the most frequently detected metals in groundwater samples collected from push probes. The highest concentrations were observed in the central area of the site. As shown on Table 5-6, KM-1, located at the southern tip of the site, also showed an elevated lead concentration in groundwater (22 micrograms per liter [µg/L]). Other southern locations (KM-2, KM-29, and KM-27) did not show similarly high concentrations; therefore, lead concentration for KM-1 seems to be an isolated detection. Elevated metals could be attributed to the fact that the samples were unfiltered and mostly from direct-push borings completed without a traditional sand pack.

Monitoring well data (Table 5-7), collected from wells with a traditional sand pack, support this theory, with arsenic being the most frequently detected metal in the groundwater from monitoring wells. Arsenic has been detected in the groundwater from KMW-04, KMW-06, and KMW-10 at concentrations ranging from 3.4 to 20 µg/L. Figure 5-11 shows the total and dissolved arsenic exceedances in the groundwater samples collected during the 2016 sampling events. Total lead was detected at 3.7 µg/L in the groundwater from KMW-06 during the June 2016 sampling event and at 1.1 µg/L during the November 2016 sampling event, but has not been detected above the reporting limit in the groundwater from any other monitoring well.

5.4.2.2 TPH

Analytical results for TPH in groundwater are presented in Table 5-6 and 5-7. TPH-G was the most frequently detected hydrocarbon. The highest concentrations have been observed in the central area of the site, near the northwest corner of the southern warehouse. Elevated concentrations of TPH-G also were detected at the north end of the site, although more sporadically. Unlike samples from the central area of the site, samples from the borings in the northern tip of the site (KM-16 and KM-22) were found to have a chromatogram indicative of gasoline rather than mineral spirits/Stoddard solvent, which is more prevalent in the central area. Additional groundwater samples were collected from nine direct push borings completed in March 2015 to evaluate current conditions and aid in evaluating treatment options in the area of highest known groundwater concentrations (KM-44 through KM-52) after a decrease in TPH-G concentrations in groundwater collected from monitoring wells KMW-03 and KMW-04 was observed in 2013. Results showed that while TPH-G concentrations at monitoring wells are decreasing, an area of elevated concentrations remains within the area west of the former USTs.

Groundwater samples collected from all monitoring wells were analyzed for TPH-G in 2011, 2013, and 2016. Monitoring wells KMW-03 and KMW-04 were additionally sampled in 2015 to assess the decline in TPH-G concentrations observed in groundwater samples collected from these wells. Results of the 2013 sampling event showed that concentrations of TPH-G had decreased in concentration by 50 to 85 percent since the wells were sampled in 2011, with a further decrease



observed at KMW-04 by 2015. As shown in the groundwater sample collected from KMW-04 during the November 2016 sampling event, the TPH-G concentration has increased to previously observed concentrations.

TPH-D and TPH-O had not been consistently detected in groundwater collected from monitoring wells until the sampling events conducted in 2016. TPH-D and TPH-O were detected in the groundwater samples collected from KMW-04 and KMW-06 during the June and November sampling events, and in the groundwater from KMW-08 during the June sampling event, and in the groundwater from KMW-09 during the November sampling event. TPH-D and TPH-O concentrations in groundwater collected from KMW-03, KMW-04, KMW-06, KMW-08, and KMW-09 ranged from 510 to 5,400 µg/L.

5.4.2.3 VOCs

Analytical data for VOCs in groundwater are presented in Table 5-6 and 5-7.

BTEX compounds were the most frequently detected VOCs, predominantly in the central area of the site. 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene were also detected in the central portion of the site at KM-22 at elevated concentrations. In the northern portion of the site, vinyl chloride was detected at a concentration of 3.8 µg/L at KM-16, and TCE was detected at a concentration of 9 µg/L at KM-17 and 0.83 µg/L in the groundwater from KM-31. Additional sampling performed in this area all showed lower detections of these constituents; therefore, the extent appears to be very limited or indicative of an off-site source and chlorinated VOCs have not been detected above the screening levels in groundwater samples collected from monitoring wells during 2016 (Figure 5-11).

BTEX concentrations in groundwater collected from monitoring wells indicates that BTEX compounds are predominately co-located with the elevated concentrations of TPH in the groundwater from KMW-04. The only VOCs detected at concentrations above the preliminary screening levels in groundwater collected from monitoring wells were 1,2,4-trimethylbenzene and naphthalene, detected in the groundwater from KMW-04 and KMW-03, respectively.

5.4.2.4 SVOCs

The full suite of SVOCs was analyzed during the early phases of the Phase II investigation but analysis focused on PAHs in subsequent phases. Analytical data for SVOCs in groundwater are presented in Tables 5-6 and 5-7. PAHs have only been sporadically detected in several groundwater samples, with the highest concentrations of PAHs detected in borings KM-22, KM-36, KM-37, and KM-41 in the central area, and KM-32 in the northern area. PAHs are highly adsorptive to soil particles, and PAH concentrations from groundwater samples collected with push-probes may not be

representative of actual concentrations, since the push-probe locations don't have permanent sand packs and have not been developed to minimize the turbidity of the water.

Total cPAHs were detected in the groundwater samples collected from monitoring well MW-04 during the June 2016 sampling event and from KMW-06 during both the June and November sampling events (Figure 5-11).

5.4.2.5 PCBs

PCBs were not detected in any of the eight groundwater samples analyzed during the initial Phase II investigation and are not considered a COPC for groundwater. These push-probe samples were collected from locations throughout the site and from areas below the former buildings where PCBs were detected. The groundwater results were screened against the MTCA Method A screening level of 0.1 µg/L. Groundwater samples collected from monitoring wells prior to 2016 were not analyzed for PCBs because the initial Phase II investigation results did not indicate that groundwater was affected by PCBs. The MTCA Method B screening level for PCBs developed through the RI/FS process is 0.05 µg/L, below the prior screening level and also lower than the reporting limits achieved by the laboratory during the Phase II investigations. Concentrations of PCBs in groundwater samples collected from monitoring wells during June 2016 were below detection. The PCB sampling results, all indicating that PCBs are not present above laboratory detection limits, are listed in Appendices E and G.

5.4.2.6 Summary of Groundwater Results

The analytical results for groundwater indicate three main areas of concern for groundwater impact: (i) the former UST area, (ii) the southern warehouse, and, to a lesser extent, (iii) the very north end of the site. These areas are described here by the apparent source area. To aid in evaluating the presence of COPCs in groundwater as they may relate to residual soil contamination, concentrations of TPH-G, the most widespread COPC, are presented for soil on Figures 5-1 to 5-6, and for groundwater on Figures 5-12 and 5-13.

The highest concentrations of COPCs in groundwater were located in and near the former UST area in the central area of the site, under the footprint of the new building. Groundwater samples collected from within the UST excavations in 2009 had elevated concentrations of constituents that appear to be related to mineral spirits/Stoddard solvent, although gasoline also is present (based on chromatograms provided by the laboratory). However, concentrations have decreased significantly since the USTs were removed in 2009. The highest groundwater concentrations remaining are for TPH-G (identified by the laboratory as being within the range of mineral spirits/Stoddard solvent and



some gasoline) and BTEX to the west-southwest of the former USTs beneath former Buildings 8 and 10 and the northwest corner of the southern warehouse (near KMW-04).

At the north end of the site, adjacent to the site boundary, VOCs (TCE and vinyl chloride), TPH-G, and naphthalene were present in groundwater. The source of these constituents in groundwater in this area is unknown and the impacts appear to be limited. TCE and vinyl chloride were detected in push probe samples in the low parts per billion in 2009, but were not detected at monitoring well KMW-02 during sampling events performed in 2011, 2013, or 2016.

5.4.3 Air

Air sampling inside the southern warehouse in September 2010 found a barely measurable level of mineral spirits/Stoddard-solvent-range hydrocarbons in the warehouse office, but none in the warehouse. Levels of the VOCs acetone, ethanol, methyl ethyl ketone, and toluene were similar in the office and warehouse, and similar to the levels in outdoor ambient air measured at the same time. The VOC 1,4-dioxane was barely detected in the warehouse office and was not detected in the warehouse. The results on the day of sampling do not support a hypothesis that there is a potential problem related to indoor ambient air quality because the measured concentrations were mostly undetectable despite the sensitive methods, and far below occupational exposure limits (Amec Geomatrix, 2010f) The levels of indoor VOCs were also comparable to the levels outside in the urban ambient air in this industrial area.

6.0 CONCEPTUAL SITE MODEL

The conceptual site model (CSM) combines the hydrogeologic conceptual model with contaminant pathways and analysis of potential receptors. The CSM identifies human and environmental receptors based on land use and activities at and near the site and characterizes the nature of their contact with affected media at and near the site. If a receptor has the potential to contact affected media, a potentially complete exposure pathway is considered to exist.

The CSM is presented in Figure 6-1, which illustrates the current understanding of the potential sources and releases of constituents, generalized hydrogeologic information, and constituent distribution and transport at the site.

The CSM is based on assumed current and future industrial land use at the site and its location within an industrial area. The majority of the site is paved with asphalt or concrete; the only unpaved areas are small areas with landscaping or planter boxes.

Ecological receptors are not expected to be present at the site or to be influenced by historic releases at the site because the majority of the site is paved or covered by buildings. Similarly, the surrounding neighborhood downgradient of the site is predominantly paved and characterized by industrial use.

Aquatic ecological receptors in surface water are also not expected to be exposed to COPCs from the site, because there is no surface water at the site and the site is located a significant distance (over 5,000 feet) from any surface water receiving bodies.

Human receptors are present at the site, although potential exposure is limited because the majority of the site is paved and groundwater is not used at or near the site. Workers inside buildings could be exposed to vapors that migrate from affected shallow soil and groundwater. An evaluation of the southern warehouse indicates that this is not a pathway of concern. An evaluation of the indoor air in the northern building has not been conducted; however, with the removal of the majority of the source area, installation of an interim action SVE system under the northern building, and installation of a vapor barrier, the risk of exposure is limited to current construction workers and future tenants. An evaluation of indoor air inside the northern building is planned for 2017 (approximately one year after construction and build-out are expected to be completed), as vapors from new paint and ongoing construction would likely mask any possible affects from sub slab contamination.

6.1 CONTAMINANT RELEASES

The site has been used for industrial purposes since the early 1900s and has a long history of industrial use, most recently as a paint manufacturing plant that discontinued manufacturing activities in 2008. Although the specific sources of COPCs in soil and groundwater at the site are unknown, Section 5.2 summarizes the potential sources and/or historic releases of COPCs.

6.2 FATE AND TRANSPORT

This section describes the site-specific fate and transport likely to occur given the site and COPC characteristics. Site data indicate that affected soil and groundwater remains at the site. Groundwater at the site flows at a slight gradient to the west-southwest away from Beacon Hill toward the Duwamish Waterway, located 5,000 feet to the west/southwest. The highest COPC concentrations are present in soil in the central area of the site, in the area encompassing the former USTs, former Buildings 7, 8, and 10, and the area to the west/southwest of these former structures. The highest contaminant concentrations in groundwater are present on the western edge of this area, in the direction of groundwater flow. Recent excavation of COPC-affected soil is expected to decrease groundwater concentrations at the site. Available evidence also indicates that some COPCs are naturally degrading at the site. Depending on the acceptable timeline for cleanup, further remediation of groundwater may be necessary.

6.2.1 Site COPC Characteristics

TPH-G and related VOCs (BTEX) are the primary COPCs found at the site in both soil and groundwater. SVOCs and metals are secondary COPCs, detected less frequently and at similar locations as the other driving COPCs. PCBs were also a COPC in the isolated areas where they had been detected within the former buildings at the site but have since been successfully remediated (Amec Foster Wheeler, 2015b).

6.2.1.1 Primary COPCs: TPH-G and BTEX

Petroleum hydrocarbons are a complex mixture of hundreds of chemicals, each with individual fate and transport characteristics (Potter and Simmons, 1998). TPH-G is typically fairly mobile within the environment, while TPH-D is typically less mobile. The solubility and volatility of all compounds generally decrease with increased molecular weight, and the more volatile and water-soluble compounds are lost most rapidly from source areas.

Degradation and biodegradation of petroleum hydrocarbons have been documented for numerous sites under a wide variety of geochemical conditions, indicating that these processes are likely to occur at most sites (Wiedemeier et al., 1999). When a mixture of petroleum hydrocarbons is released

into the environment, the composition changes with time due to natural attenuation processes often referred to as *weathering*. The type and degree of weathering depend on the initial composition of the petroleum mixture and on site-specific environmental conditions, because different types of hydrocarbons weather differently under different conditions. Petroleum compounds are also degraded readily in the subsurface by naturally occurring microbes under a wide variety of conditions. While petroleum compounds are typically degraded more quickly under aerobic conditions, anaerobic degradation can be equally effective at attenuating the concentrations of petroleum compounds. Because petroleum contains a complex and variable mixture of hydrocarbon compounds, all of which eventually break down to carbon dioxide and water or to methane (depending on the degradation environment), the breakdown processes produce no telltale daughter products that can be used as evidence that petroleum biodegradation is occurring. Since much of the source material has been removed, concentrations have already shown significant decreases and natural attenuation processes will likely reduce petroleum hydrocarbon concentrations in groundwater even further over time.

These primary COPCs are generally representative of areas on site with COPCs above preliminary screening levels and function as effective indicator compounds for areas in need of further remedial actions.

6.2.1.2 Secondary COPCs: SVOCs

SVOCs occur in the environment both naturally and as a result of anthropogenic releases, including releases of petroleum products, and as byproducts of partial combustion (NIH, 2011). SVOCs include a number of PAHs (such as acenaphthene, acenaphthylene, anthracene, benzo[g,h,i]perylene, fluoranthene, fluorene, phenanthrene, and pyrene) and cPAHs (such as benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, indeno[1,2,3-cd]pyrene, and naphthalene) that were detected at the site.

With the exception of naphthalene, PAHs are typically fairly immobile in the environment because of their low water solubility, low volatilization potential, and strong tendency to adsorb to soil. Biodegradation is the primary natural mechanism of reduction of PAH concentrations in soil, with half-lives on the order of 0.5 to 1 year typically reported (NIH, 2011). Naphthalene is similar to benzene in mobility and also readily biodegradable.

Biodegradation is likely to reduce PAH concentrations over time and strong adsorption is likely to prevent leaching to groundwater in the future.

6.2.1.3 Secondary COPCs: Metals

Metals are found naturally in the environment at varying concentrations and may also be introduced to the environment via anthropogenic releases. A number of physical, chemical, and biological processes influence the concentrations of metals in an aqueous system. These processes include chemical speciation, hydrolysis, volatilization, sorption, bioaccumulation, and biodegradation. The mobility of each metal in soil and groundwater depends on a number of factors, including soil organic matter and geochemical conditions, such as pH and oxidation-reduction conditions. Each metal behaves differently in a particular environment due to its unique chemical nature. Evaluation of the mobility of metals is especially difficult because of their ability to form ions and interact with water, minerals, biota, and organic materials.

6.2.2 Site Geochemistry

Subsurface geochemistry strongly influences the fate and transport of organic and inorganic COPCs. Evaluation of geochemical parameters along with contaminant concentrations can help to explain the nature and extent of contamination at the site. Water quality parameters, including temperature, dissolved oxygen (DO), turbidity, oxidation-reduction potential (ORP), and specific conductivity were recorded during groundwater sampling during each sampling event (Table 6-1). In general, monitoring data collected from monitoring wells rather than borings, using consistent sampling techniques, are considered to provide the most reliable indication of these parameters.

pH is a measure of the hydrogen ion concentration in solution and is an indication of the balance between acids and bases in water. The pH of the groundwater at the site in the sampling events that were conducted between March 2011 and November 2016 ranged between 5.5 and 7.3, indicating relatively neutral groundwater.

Specific conductivity is often used as an approximation of the dissolved solids content and can help to verify that samples were obtained from the same groundwater system. In natural waters, dissolved solids vary from 55 to 75 percent of the specific conductivity (Hem, 1985). Specific conductivity ranged from 0.191 to 0.0578 millisiemens per centimeter during the sampling events that were conducted between March 2011 and November 2016.

ORP is a measure of electron activity and indicates the relative tendency of a solution to accept or transfer electrons. As the reserve of electron acceptors is depleted by microbial activity, ORP decreases, indicating a reducing environment. Conversely, a high concentration of electron acceptors results in a high ORP, indicative of an oxidizing environment. Because oxygen has one of the highest energy potentials among electron acceptors, it is consumed first; therefore, ORP can also be indicative of an aerobic or anaerobic environment. ORP in natural groundwater environments

typically ranges between -400 and 800 millivolts (mV). ORP greater than approximately 750 mV corresponds to oxidizing or aerobic environments, while below approximately -150 mV, the anaerobic processes of sulfate reduction and methanogenesis occur (Wiedemeier et al., 1999). Field instrumentation is not always sufficiently sensitive to accurately measure ORP in groundwater; therefore, field measurements of ORP should be supported by data for the concentrations of oxidized and reduced constituents. The ORP measured in monitoring wells during the sampling events that were conducted between March 2011 and November 2016 ranged from -519 mV to 166mV, but the ORP measured during the majority of monitoring events was below 0 mV, suggesting moderately reducing conditions in which nitrate, manganese, and iron reduction can occur. This finding is consistent with the low DO concentrations at the site.

DO in groundwater can be an important factor controlling the mobility of many inorganic constituents and the biodegradation of xenobiotic organic constituents. Oxygen in groundwater typically reacts with any oxidizable material in its flow path; therefore, unless the groundwater is located near the point of recharge, DO concentrations are typically very low (Hem, 1985). Obtaining accurate DO field measurements is often highly problematic due to sensitive field equipment (Wiedemeier et al., 1999). DO concentrations were generally 1 milligrams per liter (mg/L), but ranged from less than 1 to 4 mg/L during the sampling events that were conducted between March 2011 and November 2016.

The groundwater samples collected from monitoring wells have been analyzed periodically for additional geochemical parameters to evaluate natural attenuation in groundwater, because the TPH-G concentrations in samples collected from monitoring well KMW-03 in March and April 2013 had decreased significantly. Groundwater samples collected from push-probe locations KM-44 and KM-52 were also analyzed for geochemical parameters because these samples were located near what was believed to be the edges of the TPH plume. This data is shown in Table 6-2. As shown in Table 6-2, groundwater chemistry data suggest that natural degradation may have occurred. Laboratory results combined with the field measurements showing low levels of DO and a slightly negative ORP (indicating a reducing environment that would support natural degradation of the fuel compounds detected in the groundwater) show that nitrate and sulfate concentrations were depressed.



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7.0 PRELIMINARY SCREENING LEVELS

This section outlines the approach used to develop the preliminary screening levels for the site. MTCA regulations require that remedial action alternatives achieve cleanup standards. MTCA regulations establish three primary components for cleanup standards:

- Cleanup levels for COPCs,
- The point of compliance (POC) where these cleanup levels must be met, and
- Other regulatory requirements that apply.

MTCA regulations define three basic methods for determining cleanup levels for soil and groundwater:

- **Method A** – applies to “routine” sites or where few hazardous substances are involved. Method A cleanup levels have been established for unrestricted and industrial land uses.
- **Method B** – the “universal” method that can be applied to all media at all sites (unrestricted and industrial use). Two types of Method B cleanup levels can be used: standard (or default) cleanup levels based on standard assumptions, or modified cleanup levels that incorporate chemical-specific or site-specific information.
- **Method C** – a conditional cleanup level that can be used where more rigorous cleanup levels cannot be achieved. Similar to Method B, Method C comprises two types of cleanup levels: standard and modified. Use of Method C cleanup levels requires institutional controls to ensure future protection of human health and the environment and is generally applicable only to industrial sites.

For carcinogenic COPCs, MTCA Method B and Method C cleanup levels are generally defined by the upper bound of the estimated lifetime cancer risk, which cannot exceed 1×10^{-6} and 1×10^{-5} , respectively, for each method, for individual carcinogens. Hazard indices for both Methods B and C cannot exceed 1.0.

Methods A, B, and C cleanup standards are required by the Revised Code of Washington 70.105D.030 (2)(d) to be “*at least as stringent as all applicable state and federal laws.*” These requirements are similar to the applicable or relevant, and appropriate requirements approach of the federal superfund law, and are described in entirety in WAC 173-340-710.



Preliminary site-specific cleanup levels must be protective of the pathways established in the CSM, including the following media exposure pathways:

- Soil:
 - Industrial direct human exposure pathways (ingestion, inhalation, and dermal absorption),
 - Indoor vapor inhalation pathway, and
 - Groundwater pathway.
- Groundwater:
 - Direct human exposure pathways (ingestion and dermal absorption),
 - Groundwater-to-surface water pathway; and
 - Indoor vapor inhalation pathway.

Preliminary screening levels were developed for all compounds that were analyzed in the RI data set. To develop and evaluate a reasonable range of cleanup alternatives in an FS, a POC must be defined for contaminated sites. As defined in the MTCA regulations, the POC is the point or points at which cleanup levels must be attained. As stated previously, the POC, cleanup levels, and other applicable standards taken together define the cleanup standard. Cleanup has been completed for any site that attains the cleanup standard, as approved by Ecology. To develop and evaluate a reasonable range of cleanup alternatives in this RI, it was necessary to establish POCs for both soil and groundwater. A standard POC (as defined in MTCA) was assumed for the site in this RI.

7.1 SOIL PRELIMINARY SCREENING LEVELS

The site is located in an area zoned for industrial use and the anticipated future use of the site is industrial; however, though the site meets the characteristics of an industrial property listed in WAC 173-340-745, it is premature at this time to determine whether the cleanup actions selected for the site provide for appropriate institutional controls to limit potential exposure to residential hazardous substances. Therefore, MTCA Method B soil cleanup levels are appropriate for use at the site until such a determination can be made.

Preliminary screening levels for soil were selected by choosing the minimum of the following MTCA cleanup levels:

- MTCA Method B (carcinogenic and noncarcinogenic) Cleanup Levels based on direct contact/ingestion obtained from the Cleanup Levels and Risk Calculation (CLARC) Web site (<https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx>),
- For those COPCs with no available Method B cleanup levels, MTCA Method A Soil Cleanup Levels for Unrestricted Land Use (MTCA Table 745-1), and
- Soil cleanup levels protective of groundwater cleanup levels (WAC 173-340-747[4]).

After selecting the minimum value from the levels described above, the preliminary screening levels were established for use in the RI by following the criteria listed below. For some COPCs, the preliminary screening levels were revised upward when compared to natural background levels and practical quantitation limits (PQLs) in accordance with the MTCA regulations (WAC 173-340-709 and WAC 173-340-705[6]). The modified Method B preliminary screening levels were established as follows:

- The risk-based soil cleanup level selected for each COPC was compared to the natural background concentration. If the risk-based cleanup level was less than the natural background concentration, the natural background concentration was selected for comparison to the PQL.
- If natural background concentrations were lower than the risk-based soil cleanup level, the risk-based soil cleanup level was selected for comparison to the PQL.
- If the selected natural background concentration or risk-based soil cleanup level was less than the PQL, the PQL was selected as the preliminary screening level.

Natural background levels for metals were defined by Ecology (1994) for the Puget Sound area. The Puget Sound natural background values were calculated as the 90th percentile value using Ecology's MTCA STAT program on a sample set of 45 samples. Screening levels that were below the defined Puget Sound natural background levels were adjusted up to the applicable natural background level in accordance with the limitations set forth in WAC 173-340-706(6).

The preliminary screening levels for soil are listed in Table 7-1.

7.2 GROUNDWATER PRELIMINARY SCREENING LEVELS

Even though the site is industrial, the preliminary screening level for groundwater for each COPC is a MTCA Method B cleanup level, because current groundwater data show some COPCs in groundwater at the downgradient site boundary. Because groundwater travels off site, a Method B

cleanup level was selected as the most appropriate for use in the RI. The preliminary screening levels were selected by choosing the following:

- MTCA Method A levels for COPCs that do not have a Method B level available, and
- Surface Water Applicable or Relevant and Appropriate Requirements:
 - Water Quality Standards for Surface Waters of the State of Washington (WAC 173-201A) – Acute and Chronic effects, Aquatic Life, Freshwater;
 - National Recommended Water Quality Criteria (Clean Water Act §304) – Freshwater, Acute and Chronic Effects, Aquatic Life and for the Protection of Human Health, Consumption of Water and Organisms and Consumption of Organisms Only ; and
 - National Toxics Rule (40 CFR 131) – Freshwater, Acute and Chronic Effects, Aquatic Life, and Human Health, Consumption of Water and Organisms.
- MTCA Surface Water Table Values (from CLARC):
 - MTCA Method B Surface Water levels calculated using Ecology's CLARC tables if a federal or local surface water value is not found in the above references (Ecology, 2011).
- Values Protective of Indoor Air:
 - MTCA Method B groundwater to vapor cleanup levels, obtained from Table B-1 in Ecology's Draft Guidance for Evaluating Soil Vapor Intrusion in Washington State, which was updated in April 2015 (Ecology, 2015).

For some COPCs, the preliminary Method B cleanup levels were revised upward in accordance with the MTCA regulations (WAC 173-340-705[6]) so that the cleanup levels were not lower than the PQLs obtained by the project laboratory. The preliminary screening levels established by this process are modified MTCA Method B cleanup levels. In accordance with WAC 173-340-707, if the PQL for a COPC was higher than the preliminary groundwater cleanup level, the cleanup level was raised to the PQL level. The PQLs were obtained from the current project laboratory, OnSite of Redmond, Washington, which is certified by the state of Washington. The preliminary groundwater screening levels are summarized in Table 7-2. Preliminary screening levels were developed to be protective of surface water, human health and the environment via direct contact, and inhalation risks. The preliminary screening levels are not protective of drinking water because the groundwater at the site is not suitable or practicable as a potential source of drinking water. There are no water supply wells within 1 mile downgradient of the site (WAC 173-340-720[2]); therefore, cleanup levels for potable ingested use will not be considered.

8.0 CONSTITUENTS OF POTENTIAL CONCERN

This section identifies the proposed COPCs for soil and groundwater. Analytical results for detected analytes for all samples were compared to the preliminary screening levels presented in Section 7.0. Constituents that were detected in at least one sample at a concentration that exceeded the preliminary screening level were chosen as COPCs for the site. Table 8-1 identifies the COPCs for soil, and Table 8-2 identifies the COPCs for groundwater.

Final cleanup levels will be determined for the site during the Cleanup Action Plan phase of the project, in accordance with WAC 173-340-706(4) (multiple hazardous substances or pathways), after Ecology approves the RI/FS. The list of COPCs may be modified based on these final cleanup levels for the site.

This section provides a summary of COPCs remaining on site, the concentrations of those COPCs, and the areas affected.

8.1 TPH AND BTEX

Most soil samples containing concentrations of TPH-G above the preliminary screening levels were collected from the central portion of the site (Figures 5-1 through 5-6) in the vicinity of the former USTs and associated piping, and in samples collected beneath former Buildings 7, 8, and 10. In addition, two samples at the northern portion of the site (KM-19 and KM-30) contained TPH-G in soil at concentrations above the preliminary screening level. As shown in Table 5-2, the highest concentrations of TPH-G (above 1,000 mg/kg) in soil were found in samples in the range of 4 to 6 feet bgs. It is likely that these samples were collected in soils that are below the water table during at least part of the year, and may be more indicative of groundwater impact than a source in soil. The water table was observed to be nearly 10 feet bgs during the 2009 excavation. Subsequent water level measurements at the monitoring wells and during the most recent direct-push sampling showed a much higher water table, closer to 5 feet bgs.

TPH-G concentrations in groundwater from monitoring wells (Table 5-7) similarly were highest in the central portion of the site (KMW-04 and KMW-06), with the highest concentrations (greater than 10,000 µg/L) detected downgradient (west) of the highest soil concentrations (Figures 5-12 and 5-13).

Similar to TPH, BTEX is found at concentrations exceeding the preliminary screening levels in soil samples collected from the central portion of the site in the vicinity of the former USTs and associated piping, and in samples collected beneath former Buildings 7, 8, and 10. BTEX was also detected in confirmation samples taken during the excavation of the KM-30 hotspot in the northern portion of the



site (Table 5-2). BTEX concentrations in groundwater exceeded the preliminary screening level in the groundwater from KMW-04 and KMW-06, where the highest concentrations of TPH-G are detected.

8.2 VOCs

Vinyl chloride was detected in groundwater at concentrations exceeding the preliminary screening level in the northern portion of the site, at location KM-16 (3.8 µg/L). Trichloroethene was detected in groundwater in the northern portion of the site at concentrations exceeding the preliminary screening levels at KM-16 (0.6 µg/L), KM-17 (9 µg/L), KM-20 (1.1 µg/L), and KM-31 (0.83 µg/L) (Table 5-6).

VOCs were not detected at concentrations above the preliminary screening levels in the other borings in the vicinity or in nearby monitoring wells KMW-1 and KMW-2, indicating that the VOC impact (excluding BTEX) is limited to the northernmost part of the site and could be associated with off-site sources. Vinyl chloride and trichloroethene have not been detected in the groundwater collected from monitoring wells at concentrations above the preliminary screening levels during any of the sampling events (Table 5-7).

8.3 PCBs

PCBs were detected at concentrations above the preliminary screening levels only in soil from the scale pit areas located inside former Building 8. Subsequent cleanup action successfully removed PCBs, and confirmation sampling has confirmed that any remaining PCBs are present at concentrations below the 1 mg/kg high occupancy cleanup level for unrestricted use under TSCA, as well as the preliminary screening levels for mixtures of PCBs (Table 5-5 and Appendices E and G).

8.4 SVOCs

Several SVOCs were found to exceed the preliminary screening levels in soil, such as total cPAHs, total naphthalenes, chrysene, indeno[1,2,3-cd]pyrene, and the individual cPAHs benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, and benzo[k]fluoranthene (Table 5-5). SVOCs that were found to exceed the preliminary screening levels in groundwater included bis(2-ethylhexyl)phthalate, fluoranthene, N-nitrosodiphenylamine, total cPAHs, total naphthalenes, chrysene, indeno[1,2,3-cd]pyrene, and the individual PAHs benzo[a]anthracene, benzo(a)pyrene, benzo[b]fluoranthene, and benzo[k]fluoranthene.

As shown in Figures 5-7 through 5-10, cPAH concentrations exceeded the preliminary screening levels in samples from many site locations for soil. These detections were likely a result of historic area-wide fill.

8.5 METALS

The locations of samples in which the concentrations of metals exceeded the preliminary screening levels are sporadic, likely resulting from historic area-wide fill issues or associated with naturally-occurring background levels of metals present in the Puget Sound region.

In the northern portion of the site, arsenic exceeded the preliminary screening levels in two soil samples (Table 5-2). In the central portion of the site, arsenic was not detected in soil above preliminary screening levels. In the central portion of the site, cadmium concentrations at several locations exceeded the soil preliminary screening levels based on soil concentrations protective of groundwater. However, cadmium was not detected in groundwater anywhere on the site, so using the groundwater protection screening level is not warranted. No action is warranted based on cadmium concentrations.

In the central portion of the site, copper was detected at concentrations above the preliminary screening level (36 mg/kg) at only three soil locations: test pit TP-4 (110 mg/kg at 1 foot bgs and less than the preliminary screening level at 8 feet bgs), Containment-N-Wall (39 mg/kg at 9.5 feet bgs) and KM-22 (86 mg/kg at 6.5 feet bgs and less than the preliminary screening level at 12.5 feet bgs). Copper was detected above the preliminary screening level in one soil sample location in the southern portion of the site. Copper was not detected in groundwater at concentrations above the preliminary screening level at any groundwater sample location.

Lead was detected at concentrations above the soil preliminary screening level of 220 mg/kg in two locations: KM-10 (700 mg/kg) and KM-15 (410 mg/kg). Lead was detected above the groundwater preliminary screening level of 1.1 µg/L only in the groundwater from monitoring well KMW-06 (Table 5-7).



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9.0 REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAOs) are site-specific goals established to protect human health and the environment by eliminating or substantially reducing one or more exposure pathways. The RAOs provide a framework for developing and evaluating remedial action technologies and alternatives that will reduce the toxicity and volume of affected soil on the site and the extent and mobility of affected groundwater. The following RAOs have been identified for the site:

- Mitigation of COPCs in soil as necessary to adequately protect human receptors;
- Mitigation of COPCs in soil to minimize or eliminate volatilization to indoor and outdoor air as necessary to adequately protect human receptors;
- Mitigation of COPCs in soil as necessary to minimize or eliminate leaching of COPCs in soil to groundwater;
- Mitigation of COPCs in groundwater as necessary to adequately protect human receptors and migration to surface water; and
- Implementation of a technically feasible remedy for soil and groundwater that allows for continued industrial use of the site at a reasonable cost.

The implementation of these RAOs will adequately address human health risks associated with exposure to site soil and groundwater, and significantly reduce the potential for affected groundwater and surface water to migrate beyond the site boundaries. Based on the results of the terrestrial ecological evaluation completed for the site, protection of ecological receptors need not be included as an RAO.



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10.0 OVERVIEW OF FEASIBILITY STUDY

The purpose of the FS is to develop and evaluate cleanup action alternatives for addressing contamination identified at the site, and to present criteria that Kelly-Moore will use in selecting a preferred alternative for cleanup. The FS uses information about the history and environmental conditions of the site gathered during prior investigations. The results of these investigations are summarized in the previous sections of this report.

Cleanup action objectives (CAOs) consist of chemical- and medium-specific goals for protecting human health and the environment. The CAOs specify the media and contaminants of interest, potential exposure routes and receptors, and proposed cleanup goals. The CAOs are intended to eliminate, reduce, or control unacceptable risks to human health and the environment posed by hazardous substances in soil and groundwater to the extent feasible and practicable, in accordance with the MTCA Cleanup Regulation (WAC 173-340) and other applicable regulatory requirements. Specifically, the objective of the cleanup is to mitigate risks associated with the following potential exposure routes and receptors:

- Contact (dermal, incidental ingestion, or inhalation) with hazardous substances in soil and groundwater by visitors, workers (including excavation workers), and potential future site users (industrial exposure scenario); and
- Reduce or eliminate risk to the beneficial use of the groundwater and potential downgradient receptors.

The cleanup goal for the site is to mitigate these risks by meeting the soil and groundwater cleanup standards identified in Section 7.0.



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11.0 IDENTIFICATION AND SCREENING OF REMEDIAL TECHNOLOGIES

This section presents a screening evaluation of potentially applicable response actions and remediation technologies for the cleanup action. The screening evaluation was carried out for each of the environmental media (soil and groundwater) requiring cleanup action evaluation. Based on the screening evaluation, selected response actions and technologies were carried forward for use in the development of cleanup action alternatives (Section 12.0).

The primary COPCs for this site are TPH-G, BTEX, and cPAHs in site soil and groundwater; therefore, the selected technologies are focused on meeting the CAOs for these COPCs. Historically, PCBs had been considered COPCs in soil; however, all known PCB-affected soils have been excavated and disposed of, and there are no known areas where soils currently exceed the PCB screening level.

A range of potential response actions and remediation technologies was evaluated so that an appropriate range of cleanup action alternatives could be considered. The response actions considered in the screening evaluation are identified and evaluated in Table 11-1. These potential response actions and remediation technologies were screened on the basis of their effectiveness, implementability, and cost. On the basis of the screening, it was determined whether the response actions and technologies warranted further evaluation. Some response actions and technologies were screened out from further evaluation due to low effectiveness or poor implementability, or because another technology would be similarly effective and implementable but would have a significantly lower cost. The option of removing contaminated groundwater was not retained due to the widespread existence of contaminated groundwater at various levels both on and off site; thus, only localized remediation technologies that will result in site-wide improvement over time have been included for groundwater remediation. Six remedial technologies were retained for further evaluation:

- Monitored natural attenuation (MNA),
- SVE,
- In situ chemical oxidation (ISCO),
- Air sparging,
- Biosparging, and
- Excavation and off-site disposal.

11.1 MONITORED NATURAL ATTENUATION

MNA is a process in which naturally occurring bacteria degrade contaminants in the groundwater without added nutrients or other amendments. Groundwater is monitored periodically to verify that the COPCs are degrading and that the groundwater meets the cleanup levels at a conditional POC, typically at the site boundary. Because of the longer timeline associated with this technology, institutional controls (including a deed restriction and well-maintained surface pavement) would be required in conjunction with MNA. This approach would only address the COPCs that are degradable; therefore, it would not address PAHs within a reasonable restoration time frame.

11.2 SOIL VAPOR EXTRACTION

SVE addresses contamination in the vadose zone. A system of piping and a vacuum pump are installed to extract vapors from the vadose zone. This technology removes the volatile portions of the COPCs in soil and, to some extent, in the groundwater. SVE is generally used for the removal of VOCs and fuels. SVE can be implemented under buildings and in other developed areas, and may extend the reach of individual extraction wells by minimizing short-circuiting from air flow through the ground surface. In addition, SVE can be used in conjunction with air sparging to capture VOCs after they are stripped from the groundwater.

11.3 IN SITU CHEMICAL OXIDATION

ISCO has been used successfully to destroy contaminant masses in soils and groundwater at numerous sites. This technology adds chemicals to the subsurface that will release oxygen, thereby increasing the rate of biodegradation. RegenOx® is the oxidant selected for potential use at this site; it is a solid alkaline oxidant patented by Regenesis. RegenOx® uses sodium percarbonate and a catalyst to generate free radicals that permanently destroy a range of contaminants, including petroleum hydrocarbons and many VOCs. RegenOx® is also designed to be compatible with subsequent bioremediation. One byproduct of RegenOx® is oxygen, which is an important electron acceptor for biological degradation and can enhance residual contaminant destruction. Unlike other ISCO products, the oxidant and activator in RegenOx® are mixed together in a tank at the surface, rather than by multiple injections. This provides certainty that the oxidant delivered to the subsurface is appropriately activated. RegenOx® would be delivered through direct-push injections, but injection locations may be limited by tenant activities on developed areas of the site.

11.4 BIOSPARGING

Biosparging is a remediation technology in which air is injected into the saturated zone at low flow rates to increase oxygen concentrations and enhance the biological activity of the indigenous microorganisms. Biosparging can be used to reduce concentrations of petroleum constituents and

VOCs that are dissolved in groundwater, adsorbed to soil below the water table, and within the capillary fringe. Biosparging can also provide limited treatment for constituents adsorbed to soils in the unsaturated zone.

11.5 AIR SPARGING

Air sparging is a remediation technology in which air is injected into the water table at relatively high rates of flow to cause bubbling of air to volatilize organic compounds, and also increases oxygen concentrations and enhances the biological activity the indigenous microorganisms. Air sparging can be used to reduce concentrations of petroleum constituents and VOCs that are dissolved in groundwater, adsorbed to soil below the water table, and within the capillary fringe. Air sparging can provide limited treatment for constituents adsorbed to soils in the unsaturated zone. Air sparging must be used in conjunction with SVE so that volatile compounds in vapor-phase do not migrate off site or to the surface.

11.6 EXCAVATION AND OFF-SITE DISPOSAL

Soil removal by excavation is considered to be an effective technology to permanently eliminate the risk of exposure to contaminants at the site. Excavated soil would be disposed at a permitted solid waste (Resource Conservation and Recovery Act, Subtitle D) landfill. This approach would remove the COPCs. While some contaminated groundwater may be removed incidentally, it is assumed the contaminated groundwater will not be actively removed.



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12.0 DESCRIPTION OF CLEANUP ALTERNATIVES

The technologies carried forward from the screening are institutional and engineering controls, monitored natural attenuation, SVE, ISCO, biosparging, air sparging, and excavation and disposal. A total of four alternatives have been developed for the remediation of the site, which are described in this section. Due to the fact that some COPCs will remain on site with any of the available technologies, institutional controls and groundwater monitoring has been included in all four alternatives. All four alternatives exclude the interim action measures that were conducted between 2009 and 2015 and are detailed in Section 4.0 and on Figure 4-1. The estimated capital cost and long term costs are presented in Appendix I; a summary of the costs are shown on Table 12-1.

12.1 ALTERNATIVE 1: MONITORED NATURAL ATTENUATION

This technology will include institutional controls and MNA. No active remediation is proposed under this alternative, beyond the interim actions previously conducted. This alternative is the basis against which other alternatives are evaluated. We have assumed the institutional controls will include a deed restriction and maintaining the cap currently in place by the concrete slab and asphalt pavement. We have assumed that groundwater will be monitored semi-annually for a period at least 15 years. Eight on-site and two off-site monitoring wells will be sampled and the samples analyzed for the COPCs. The estimated cost for this alternative is \$33,000 initially, then \$505,000 for the long term, for a total cost of \$538,000 for this alternative (Table 12-1).

12.2 ALTERNATIVE 2: SOIL VAPOR EXTRACTION AND AIR SPARGING OR BIOSPARGING

Alternative 2 consists of the following:

- Hot-spot air sparging to reduce concentrations of TPH-G and BTEX in groundwater;
- Targeted SVE to reduce concentrations of TPH-G and BTEX in vadose zone soils of the northern area;
- Biosparging to accelerate biodegradation following the SVE and air sparging treatment, if necessary and cost-effective; and
- Maintenance of the site pavement and a deed restriction in conjunction with MNA until achieving CAOs for select site COPCs.

Air sparging would be used to treat the hot spot soil and groundwater areas in the north parcel, as shown on Figure 12-1. In addition, SVE would be used to capture air sparge vapors and also to reduce concentrations of TPH-G and VOCs in soil in the vadose zone within its radius of influence.



Vapor removed from the subsurface would be burned using catalytic oxidation or collected using granular activated carbon prior to discharge to the atmosphere.

The SVE vacuum pump system and the air sparging pump system would be operated by automated controls so that in the case of SVE system failure, the air sparging system would also stop running. This is to prevent air sparging from occurring at times when no SVE removal mechanism is operating. However, during periods of SVE maintenance or following SVE operations, biosparging would be used with the existing air sparging infrastructure in order to accelerate degradation of site COPCs if necessary to meet CAOs. At some point, the air sparge/SVE system will no longer effectively remove the COPCs. At that point, MNA would be used following active SVE treatment if necessary to monitor when the CAOs are achieved.

This alternative includes the installation of two SVE piping trenches on the eastern and western portions of the site. This piping would connect to an equipment center near KMW-04 that would contain the catalytic oxidizer unit or the granular activated carbon media. The air sparge piping would be installed near the western edge of the property as shown in Figure 12-1. The estimated duration of SVE and air sparging activities is two years. This alternative includes the installation of two piping trenches, 13 SVE wells, and five air sparging wells. SVE emissions and performance monitoring samples would be collected monthly to comply with discharge permitting requirements, and groundwater samples would be collected semi-annually from eight monitoring wells during the operation of the SVE and air sparging systems.

The cost for Alternative 2 is estimated to be \$514,000 for installation, and \$672,000 for long term operation and maintenance, for a total cost of \$1,186,000 for the alternative (Table 12-1).

12.3 ALTERNATIVE 3: IN SITU CHEMICAL OXIDATION

Alternative 3 consists of the following:

- Implementation of site-wide ISCO using RegenOx® to reduce concentrations of TPH-G and BTEX throughout the central and north areas; and
- Maintenance of site pavement, a deed restriction, and MNA until CAOs are achieved.

RegenOx® would be used to chemically oxidize TPH-G and BTEX in soil and groundwater below the water table at a depth of 5 to 15 feet bgs. Based on the TPH-G and BTEX sample results, a total estimated oxidant dose of approximately 100,000 pounds of RegenOx® would be applied at the site. This quantity may increase based on the results of the first round of injections. The RegenOx® would be applied using a direct-push drilling rig. It is assumed that the ISCO injection points would be at

30 feet on center. The injection locations would shift approximately 5 to 10 feet with each round of injections to increase the coverage area of the oxidant. The injection layout is shown in Figure 12-2. Decreasing the injection spacing or increasing the RegenOx® concentration would reduce the overall number of injection events required. This would shorten the schedule for completing the ISCO treatment but would generally cost the same. Injection events would be completed in two- to four-week intervals. Two groundwater sampling events are planned during the ISCO treatment to evaluate the effectiveness of the oxidant. It is assumed that monitoring would be conducted in eight wells site-wide. Groundwater monitoring would be conducted quarterly for one year following treatment. Injections inside the developed portion of the property may be possible, but would be limited by on-site activities of the current owner and tenant.

The effect of ISCO on the soil within the vadose zone would likely be limited, and the quantity of RegenOx®, number of injection events, and the duration of the remediation cannot be accurately estimated until data is obtained about its effects after the first round of injections.

The cost for Alternative 3 is estimated to be \$1,478,000 for installation and \$1,183, 000 for long term operation and maintenance, for a total cost of \$2,660,000 for this alternative (Table 12-1).

12.4 ALTERNATIVE 4: EXCAVATION

Alternative 4 consists of the following:

- Excavation and disposal of all accessible contaminated site soils;
- Application of oxidants to improve the groundwater; and
- Maintenance of site pavement, a deed restriction, and MNA until site CAOs are achieved.

Under this alternative, the tenant would have to be relocated and the entire building, built in 2015-2016, would have to be demolished. The demolition debris would be recycled off site. The contaminated soil would then excavated and disposed of off site at a solid waste landfill. Confirmation samples would be collected from the excavation bottom on a grid to confirm the residual concentrations of COPCs are below the cleanup levels. After confirmation samples indicate the cleanup levels have been reached, an oxidation agent such as RegenOx® will be applied to the excavation at the groundwater level to gradually release oxygen into the groundwater in order to promote biodegradation of the residual concentrations of the COPCs in the groundwater. The excavation would then be backfilled to final grades, in compacted layers. Subsequently, a new building would be constructed and occupied to restore the property to its current status.



The areas of contamination shown on Figures 5-1 to 5-11 indicate that the total volume of excavation may be close 10,000 cubic yards, or 16,500 tons. The area of the known contamination at the groundwater table is estimated at approximately 15,000 square feet. Assuming application of 1 pound of oxidation agent per square foot, a total of 15,000 pounds or 7.5 tons of RegenOx® would be used.

The cost of this alternative is estimated at \$10,922,000 for installation, and \$105,000 for post-construction, for a total cost of \$11,026,000 for this alternative (Table 12-1).

13.0 EVALUATION OF ALTERNATIVES

This section describes the threshold requirements for cleanup actions under MTCA, the criteria used for a disproportionate cost analysis, and the evaluation of the alternatives based on the criteria identified.

13.1 THRESHOLD REQUIREMENTS

Cleanup actions performed under MTCA must comply with several basic requirements. Cleanup action alternatives that do not comply with these criteria are not considered suitable cleanup actions under MTCA. As provided in WAC 173-340-360(2)(a), the four threshold requirements for cleanup actions are:

- Protect human health and the environment,
- Comply with cleanup standards,
- Comply with applicable state and federal laws, and
- Provide for compliance monitoring.

13.1.1 Protection of Human Health and the Environment

The results of cleanup actions performed under MTCA must ensure that both human health and the environment are protected.

13.1.2 Compliance with Cleanup Standards

Compliance with cleanup standards requires, in part, that the cleanup levels are met at the applicable POCs. If a remedial action does not comply with the cleanup standards, the remedial action is an interim action, not a cleanup action. Where a cleanup action involves containment of soils with concentrations of hazardous substances exceeding the cleanup levels at the POC, the cleanup action may be determined to comply with the cleanup standards, provided the requirements specified in WAC 173-340-740(6)(f) are met.

13.1.3 Compliance with Applicable State and Federal Laws

Cleanup actions conducted under MTCA must comply with applicable state and federal laws. The term “applicable state and federal laws” includes legally applicable or relevant and appropriate requirements (ARAR), as described in WAC 173-340-710. Typical ARARs include location-specific, action-specific, and contaminant-specific ARARs. Location- and action-specific ARARs influence the character and nature of the cleanup standard and/action. Contaminant-specific ARARs are those that



affect cleanup standards. Final cleanup standards will be developed after approval of the RI/FS. This section describes ARARs with which the remedial actions must comply.

In addition to compliance with MTCA, any remedial action taken at the site must comply with other applicable laws and regulations (42 United States Code Ch. 6901 et seq.). The applicable requirements under the Dangerous Waste Regulations pertain primarily to management of remediation wastes. Corrective action requirements under the dangerous waste rules are addressed in the MTCA regulations.

Location-specific ARARs include those based on the location of the site, such as:

- Permits from location municipalities as required for activities at the site;
- Shoreline, wetlands, and critical areas criteria; and
- Tribal and cultural protections (archaeological resources).

Action-specific ARARs include those based on acceptable management practices and will depend on the technology selected. They may include:

- Minimum Standards for Construction and Maintenance of Wells;
- Underground Injection Control Program;
- General Occupational Health Standards and Safety Standards for Construction Work;
- State Environmental Policy Act; and
- Clean Air Act.

Depending on the nature of the action selected as the remedial alternative, different ARARs may apply and will be defined as part of the design for implementation. Standard industry practices often address many ARARs, such as construction of wells being performed by a Washington State licensed driller and construction work being conducted under site-specific health and safety plans compliant with federal and local safety regulations.

13.1.4 Provide for Compliance Monitoring

The cleanup action must allow for compliance monitoring in accordance with WAC 173-340-410. Compliance monitoring consists of protection monitoring, performance monitoring, and confirmation monitoring. Protection monitoring is conducted to confirm that human health and the environment are adequately protected during both the construction and the operation and maintenance periods of a

cleanup action. Performance monitoring is conducted to confirm that the cleanup action has attained the cleanup standards and, if appropriate, the remediation levels or other performance standards. Confirmation monitoring is conducted to confirm the long-term effectiveness of the cleanup action once the cleanup standards and, if appropriate, the remediation levels or other performance standards have been attained.

13.2 OTHER MTCA REQUIREMENTS

Under MTCA, when selecting from the alternatives that meet the minimum requirements described above, the alternatives must be further evaluated against the following additional criteria:

- **Use of permanent solutions to the maximum extent practicable (WAC 173-340-360[2][b][i]).** When selecting from cleanup action alternatives that fulfill the threshold requirements, MTCA requires that the selected action use permanent solutions to the maximum extent practicable (WAC 173-340-360[2][b][i]). MTCA specifies that the permanence of these qualifying alternatives must be evaluated by balancing the costs and benefits of each of the alternatives using a disproportionate cost analysis in accordance with WAC 173-340-460(3)(e). The criteria for conducting this analysis are described in Section 13.3.
- **Provision of a reasonable restoration time frame (WAC 173-340-360[2][b][ii]).** In accordance with WAC 173-340-360(2)(b)(ii), MTCA places a preference on those cleanup action alternatives that, while equivalent in other respects, can be implemented in a shorter period of time. MTCA includes a summary of factors to be considered in evaluating whether a cleanup action provides for a reasonable restoration time frame (WAC 173-340-360[4][b]).
- **Consideration of public concerns (WAC 173-340-460[2][b][iii]).** Ecology will consider public comments submitted during the RI/FS process in making its preliminary selection of an appropriate cleanup action alternative. This preliminary selection is subject to further public review and comment when the proposed remedy is published in the draft cleanup action plan.

13.3 COMPARATIVE ANALYSIS OF ALTERNATIVES

The alternatives reviewed in this report focus only on the future remediation efforts and not on the lengthy list of interim remedial activities conducted historically. The list of future alternatives that has been developed includes MNA as Alternative 1, under which no additional active remedial effort would be made. This alternative serves as the basis for comparison of the other alternatives. The comparative analysis of alternatives is shown on Table 13-1.

13.3.1 Protectiveness

The overall protectiveness of a cleanup action alternative is evaluated on the basis of several factors. The evaluation of protectiveness considers the extent to which human health and the environment are

protected and the degree to which overall risk at a site is reduced. It considers both the on-site and off-site reduction in risk resulting from implementing the alternative. Protectiveness gauges the degree to which the cleanup action may perform at higher level than the specific standards presented in MTCA. It is also a measure of the improvement of the overall environmental quality at the site.

Alternatives 2, 3, and 4 provide a higher degree of protectiveness compared to Alternative 1. Alternatives 2 and 3 provide approximately the same degree of protectiveness, but Alternative 4 provides the highest degree, since the approach removes the soil contamination from the site and will gradually remediate the contaminated groundwater.

13.3.2 Permanence

When selecting a cleanup action alternative, MTCA specifies preference for actions that are “permanent solutions to the maximum extent practicable.” The evaluation criteria for permanence include the degree to which the alternative permanently reduces the toxicity, mobility, or mass of hazardous substances, including the effectiveness of the alternative in destroying the hazardous substances, the reduction or elimination of hazardous substance releases and sources of releases, the degree of irreversibility of waste treatment processes, and the characteristics and quantity of treatment residuals generated.

Alternatives 2 through 4 offer higher degree of permanence compared to alternative, with Alternative 4 being the highest degree due to the fact all the COPCs would be removed.

13.3.3 Cost

Under MTCA, the analysis of cleanup action alternative costs includes all costs associated with implementing an alternative, including design, construction, long-term monitoring, and institutional controls. Costs are intended to be comparable among different alternatives to assist in the overall analysis of relative costs and benefits of the alternatives. The cost estimates developed are approximate and accurate to within +50 percent to -30 percent. Net present value calculation was deemed inappropriate at this time because the cost of inflation approximately equals the discount rate in the current market.

Alternatives 2 through 4 offer increasing cost, respectively, with Alternative 4 being the most expensive. The summary of the cost estimates for the alternatives are presented on Table 12-1. The cost estimates do not include the nearly \$500,000 that has already been spent to-date on remedial efforts on site.

13.3.4 Long-Term Effectiveness

Long-term effectiveness is a parameter that expresses the degree of certainty that the alternative will be successful in maintaining compliance with cleanup standards over the long-term performance of the cleanup action. The MTCA regulations contain a specific preference ranking for different types of technologies that is to be considered as part of the comparative analysis. The ranking places the highest preference on technologies such as reuse/recycling, treatment, immobilization/solidification, and disposal in an engineered, lined, and monitored facility.

Lower preference rankings are applied for technologies such as on-site isolation/containment with attendant engineered controls, and institutional controls and monitoring. The regulations recognize that, in most cases, the cleanup alternatives will combine multiple technologies to accomplish the CAOs. The MTCA preference ranking must be considered along with other site-specific factors in the evaluation of long-term effectiveness.

Alternative 4 has the highest degree of long term effectiveness due to the complete removal of the COPCs.

13.3.5 Management of Short-Term Risks

The evaluation of this criterion considers the relative magnitude and complexity of actions required to maintain protection of human health and the environment during implementation of the cleanup action. Cleanup actions carry short-term risks, such as potential mobilization of contaminants during construction, or safety risks typical of large construction projects. Some short-term risks can be managed through the use of best practices during project design and construction, while other risks are inherent in project alternatives and can offset the long-term benefits of an alternative.

Alternatives 2 and 3 have a slightly higher degree of short term risk associated with them compared to Alternative 1, but Alternative 4 has the highest degree of short term risk, by disturbing the contaminated soil within the groundwater which may cause some release of bound contaminants, and subsequently by shipping it, where spills can occur.

13.3.6 Implementability

Implementability is an overall metric expressing the relative difficulty and uncertainty of implementing the cleanup action. The evaluation of implementability includes a consideration of technical factors such as the availability of mature technologies and experienced contractors to accomplish the cleanup work. It also includes administrative factors associated with permitting and completing the cleanup.

All alternatives are implementable. Alternative 1 would be the easiest to implement, followed by Alternative 3. Alternative 2 would be more difficult to implement than Alternative 3, since it would require access throughout the site, including inside the occupied building. Alternative 4 has the most challenges, requiring displacement of the current tenant as well as demolition and reconstruction of the existing buildings.

13.3.7 Consideration of Public Concerns

Under MTCA, the public involvement process is used to identify potential public concerns regarding cleanup action alternatives. The extent to which an alternative addresses those concerns is considered as part of the evaluation process. This includes concerns raised by individuals, community groups, local governments, tribes, federal and state agencies, and other organizations that may have an interest in or knowledge of the site.

Alternative 4 will likely best address the public's concerns quickly, however, Alternatives 2 and 3 also will address those concerns but over a longer period of time due to the time it takes for gradual degradation of the organic COPCs. Although all the alternatives would remove the organic COPCs, only Alternative 4 would remove the small quantity of non-organic COPCs.

13.4 PREFERRED ALTERNATIVE

The MTCA disproportionate cost analysis is used to evaluate which of the alternatives meets the threshold requirements at the lowest cost, resulting in the highest benefit for the cost. This analysis involves comparing the costs and benefits of alternatives and selecting the alternative for which the incremental costs are not disproportionate to the incremental benefits. The evaluation criteria for the disproportionate cost analysis are specified in WAC 173-340-360(2) and (3), and include protectiveness, permanence, cost, long-term effectiveness, management of short-term risks, implementability, and consideration of public concerns.

For each of these criteria, an approximate weight is assigned, and for each alternative, a score is given for the criterion from 1 to 10. The cost benefit analysis is shown on Table 13-1 and Figure 13-1. The scoring assigned to the alternatives is based on experience and reflects a relative position with respect to the other alternatives. For example, the criterion of long-term effectiveness was given a weight of 25 percent, and the score for Alternatives 1 through 4 were 5, 7, 7, and 9, respectively. The scores were selected based on the fact that while Alternative 1 is effective, it will be a long time to accomplish, and will not address residual quantities of certain COPCs, whereas under Alternative 4 the contamination would be completely removed.

Based on the cost benefit analysis, Alternative 2 received the highest overall alternative benefit ranking and the costs are the lowest of the three alternatives using active remediation approaches. For this reason, the preferred alternative is Alternative 2.



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TABLES

TABLE 3-1
CONSTRUCTION DETAILS FOR GROUNDWATER MONITORING WELLS
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

Well Identification	Drilling Method	Installation Date	Total Borehole Depth (feet bgs)	Total Well Depth (feet bgs)	Diameter (inches)	Material	Screen Slot Size	Screen Interval (feet bgs)	Filter Pack Sand Type	Filter Pack Interval (feet bgs)	Seal Interval (feet bgs)	Well Monument Type	Date Abandoned
KMW-01 ¹	HSA	3/23/2011	14	14	0.75	Sch. 40 PVC	0.01	4 - 14	2/12 Silica	3 - 14	2 - 3	Flush Mount	2/4/2015
KMW-02 ¹	HSA	3/18/2011	14.5	14.5	2	Sch. 40 PVC	0.01	4.25 - 14.25	2/12 Silica	3 - 14.5	2 - 3	Flush Mount	2/4/2015
KMW-02R	DP	6/28/2016	15	15	2	Sch. 40 PVC	0.01	5 - 15	2/12 Silica	4 - 15	2 - 4	Flush Mount	In use
KMW-03 ²	HSA	3/18/2011	13.5	13.5	2	Sch. 40 PVC	0.01	3.25 - 13.25	2/12 Silica	2.5 - 13.5	1.5 - 2.5	Flush Mount	6/3/2015
KMW-03R	DP	6/27/2016	14.8	15	2	Sch. 40 PVC	0.01	5 - 15	2/12 Silica	4 - 15	2 - 4	Flush Mount	In use
KMW-04	HSA	3/17/2011	13.5	13.5	2	Sch. 40 PVC	0.01	3 - 13	2/12 Silica	2.5 - 13.5	1.5 - 2.5	Flush Mount	In use
KMW-05 ²	HSA	3/17/2011	13.5	13.5	2	Sch. 40 PVC	0.01	3.25 - 13.25	2/12 Silica	2.5 - 13.5	1.5 - 2.5	Flush Mount	6/3/2015
KMW-06 ³	DP	6/28/2016	20 ³	14.9	2	Sch. 40 PVC	0.01	4.7 - 14.9	2/12 Silica	3.7 - 15	2 - 4	Flush Mount	In use
KMW-07	DP	6/27/2016	14.8	15	2	Sch. 40 PVC	0.01	5 - 15	2/12 Silica	4 - 15	2 - 4	Flush Mount	In use
KMW-08	DP	6/27/2016	15	15	2	Sch. 40 PVC	0.01	5 - 15	2/12 Silica	4 - 15	2 - 4	Flush Mount	In use
KMW-09	DP	11/4/2016	15.5	15	2	Sch. 40 PVC	0.01	5 - 15	2/12 Silica	4 - 15	2 - 4	Flush Mount	In use
KMW-10	DP	11/4/2016	15.5	15	2	Sch. 40 PVC	0.01	5 - 15	2/12 Silica	4 - 15	2 - 4	Flush Mount	In use

Notes

1. KMW-1 and KMW-2 were decommissioned on February 4, 2015, by backfilling with bentonite chips and concrete surface seal.
2. KMW-3 and KMW-5 appear to have been destroyed during demolition and new building construction in 2015.
3. KMW-06 was over-drilled to 20 feet bgs and backfilled to 15 feet bgs with native material.

Abbreviations

bgs = below ground surface
DP = direct-push
HSA = hollow-stem auger
PVC = polyvinyl chloride
Sch. = schedule

TABLE 3-2

MONITORING WELL SURVEY DATA
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

Well Name	WCS North Zone NAD 83(91) ³		Ground Surface Elevation	Top of Casing Elevation
	Northing	Easting		
KMW-02R ¹	205743.9	1273010.4	22.01	21.63
KMW-03R ¹	205538.1	1273156.6	21.99	21.54
KMW-04 ¹	205423.6	1273115.0	18.90	18.56
KMW-06 ¹	205525.2	1273039.2	20.16	19.80
KMW-07 ¹	205713.7	1273034.0	22.00	21.63
KMW-08 ¹	205648.5	1273101.3	22.03	21.65
KMW-09 ²	205508.9	1273025.5	18.60	18.14
KMW-10 ²	205336.2	1272955.0	20.84	20.39

Notes

1. Survey completed on June 30, 2016 by Duane Hartman and Associates.
2. Survey completed on December 13, 2016 by Duane Hartman and Associates.
3. Coordinate System and Zone: Washington State Plane, North Zone Coordinates.
Horizontal Datum: NAD 83(91), North Zone, US FEET.
Vertical Datum: NAVD88, US FEET.

Abbreviations

NAD = North American Datum
NAVD88 = North American Vertical Datum of 1988
WCS = Washington Coordinate System



TABLE 3-3
GROUNDWATER ELEVATIONS
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

Well ID	TOC Elevation (feet) ¹	Date	Depth to Water (feet below TOC)	Groundwater Elevation (feet) ¹
KMW-01	19.37 ²	3/28/2011	5.03	14.34
		6/7/2013	6.56	12.81
KMW-02 ³ -02R	19.79 ²	3/28/2011	5.33	14.46
		6/7/2013	7.00	12.79
	21.63 ⁴	6/30/2016	9.03	12.60
		11/10/2016	8.68	12.95
KMW-03 ⁵ -03R	18.64 ²	3/28/2011	4.21	14.43
		4/4/2013	5.2	13.44
		6/7/2013	5.75	12.89
		3/10/2015	5.55	13.09
	21.54 ⁴	7/1/2016	9.03	12.51
		11/10/2016	8.83	12.71
KMW-04	18.64 ²	3/28/2011	4.52	14.12
		6/7/2013	5.90	12.74
		3/10/2015	5.57	13.07
	18.56 ⁴	6/30/2016	6.14	12.42
		11/10/2016	6.13	12.43
KMW-05 ⁵	18.88 ²	3/28/2011	4.42	14.46
		6/7/2013	5.93	12.95
KMW 06	19.80 ⁴	6/30/2016	7.38	12.42
		11/10/2016	7.35	12.45
KMW 07	21.63 ⁴	7/1/2016	9.05	12.58
		11/10/2016	8.68	12.95
KMW 08	21.65 ³	7/1/2016	9.08	12.57
		11/10/2016	8.73	12.92
KMW-09	18.14 ⁶	11/10/2016	5.73	12.41
KMW-10	20.39 ⁶	11/10/2016	8.27	12.12

Notes

1. Elevations in feet above mean sea level.
2. Survey completed on May 12, 2011 by Duane Hartman and Associates. Coordinate System and Zone: Washington State Plane, North Zone Coordinates. Vertical Datum: NAVD88, US FEET.
3. KMW-02 was abandoned using bentonite chips on February 4, 2015. KMW-02R was installed to replaced KMW-02 on June 28, 2016.
4. Surveys conducted on June 30, 2016. Vertical Datum: NAVD 88. Bench Mark: City of Seattle 2" Brass disk 3805-3801 located at the SW corner of Airport Way South and Corson Ave South, Elevation 18.532 feet
5. KMW-03 and KMW-05 were abandoned on June 3, 2015. KMW-03R was installed to replace KMW-03 on June 27, 2016.
6. Surveys conducted on December 13, 2016. Same datum as June 30, 2016.

Abbreviations

NAVD88 = North American Vertical Datum of 1988

TOC = top of casing

TABLE 4-1
SUMMARY OF PREVIOUS INVESTIGATIONS
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

Year	Report Title	Reference ¹	Summary	Summary of Investigation	Constituents of Potential Concern	Rationale for Analyses Conducted
1994	Phase I Environmental Site Assessment	SECOR (1994)	Phase I ESA conducted in 1994.	Phase I - no soil or groundwater sampling conducted.	NA	NA
1997	Phase I Environmental Site Assessment Update	SECOR (1997a)	Phase I ESA conducted in 1997.	Phase I - no soil or groundwater sampling conducted.	NA	NA
1997	Phase I Environmental Site Assessment, Former Preservative Paints Office Building Parcel	SECOR (1997b)	Phase I ESA conducted in 1997 for 5502 Airport Way South.	Phase I - no soil or groundwater sampling conducted.	NA	NA
1997	Underground Storage Tank Closure Site Assessment	SECOR (1998)	Results of UST tank removal and installation described in the report, as well as associated soil sampling conducted during the project.	This report documented the removal of 14 paint product USTs. Some soil samples exceeded the MTCA Method A industrial cleanup levels for TPH-G, but the report concluded that the contaminated soil was from older USTs that had previously been removed, because the soil around the USTs removed in 1997 was not stained.	TPH-G, PCBs, VOCs, Metals	Samples were collected from stockpiles and the bottoms and sides of the various UST excavations. Most of the sample results were below the MTCA Method A industrial cleanup levels for soil. The soil results summarized in this report were collected at depths that were later removed during excavations conducted by Amec Foster Wheeler (see Appendix D for sample locations and results).
2008–2009	Polychlorinated Biphenyl (PCB) Investigation and Cleanup Report	AMEC Geomatrix (2010d)	Evaluation and remediation of PCBs at the site, including an investigation of PCB concentrations in buildings, concrete flooring, and soil; scarification of concrete flooring in Buildings 6 and 7; and temporary institutional controls to seal off Building 8 and prevent human exposure to PCBs.	Buildings 6, 7, and 8 were characterized. Some areas were cleaned in accordance with TSCA and additional areas were planned to be cleaned up based on the sampling conducted during this initial phase of the PCB cleanup.	PCBs	PCBs were detected in the buildings as part of building closure (see Appendix D for sample locations and results).
2009	Limited Phase II Environmental Site Assessment Report	AMEC Geomatrix (2009a)	Limited Phase II conducted in 2009 to provide a preliminary evaluation of soil and groundwater conditions at the site and identify the type and magnitude of potential environmental releases, in light of historical property uses and limited prior soil sampling.	The Phase II concluded that soil contaminated with TPH-G, TPH-D, TPH-O, VOCs, PAHs, and metals were due to the presence of the known USTs and that, if the possible, the soil would be overexcavated. Otherwise, the extent of contamination would be delineated as much as possible in order to plan for future removal or treatment.	Soil: TPH-G, TPH-D, TPH-O, VOCs, SVOCs, metals, PCBs Groundwater: TPH-G, TPH-O, TVOCs, SVOCs, total metals	All analyses conducted in an effort to characterize the site.
2009	Underground Storage Tank Decommissioning Report	AMEC Geomatrix (2010a)	October 2009 decommissioning and removal of nine USTs and appurtenant piping, and removal of other historical piping associated with former USTs at the site. The report describes the results of the project, as well as associated soil and groundwater sampling conducted during the project.	Samples collected from the sidewalls and bottoms of the excavations were below MTCA Method A Industrial screening values. Though the western sidewall was above MTCA screening values for TPH-G, additional test pits indicated that a clean sidewall could not have been achieved without structural damage to the warehouse. The report concluded that all contaminated soil was not removed during the excavations and that it was unlikely that the USTs and associated piping were the source of the contamination encountered.	Soil: TPH-G, TPH-D, TPH-O, SVOCs, PCBs, VOCs, metals Groundwater: TPH in the gasoline and lube oil ranges, VOCs, SVOCs, total metals	All analyses conducted in an effort to characterize the site.

TABLE 4-1

SUMMARY OF PREVIOUS INVESTIGATIONS
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

Year	Report Title	Reference ¹	Summary	Summary of Investigation	Constituents of Potential Concern	Rationale for Analyses Conducted
2009	2009 Phase II Investigation Results Summary	AMEC Geomatrix (2009c)	December 2009 additional direct-push sampling to further investigate the extent of selected constituents detected in groundwater at the north end of the property in Building 3.	Five borings were completed for groundwater and limited soil analyses. A source area for the constituents observed in groundwater at the north end of the site were not identified. Results confirmed localized levels of chlorinated solvents (TCE and VC) above screening levels in groundwater and concentrations of TPH-G above screening levels in soil and groundwater.	Soil: TPH-G, VOCs, SVOCs Groundwater: PAHs, TPH-G, VOCs	Analyses limited to TPH-G, VOCs, and SVOCs (PAHs in groundwater) because these samples were collected to determine the source of the vinyl chloride detected in the groundwater from KM-16.
2010	Supplemental Phase II Investigation Results	AMEC Geomatrix (2010a)	A supplemental Phase II investigation at the site in August 2010, consisting of soil and groundwater sampling to evaluate conditions underneath the southern warehouse building.	The concentrations of constituents detected in the KM-22 groundwater samples were similar to those observed in groundwater collected during the UST removal that occurred just north of the warehouse where KM-22 is located. The soil concentrations only exceeded the MTCA screening level for TPH-G, indicating that the source for groundwater exceedances is either upgradient or occurred long enough ago that it is no longer present in high concentrations in soil. This investigation helped determine the bounds of the contamination left in place after the UST removal. PAHs, possibly related to fill material used, also were detected in soil at KM-25.	Soil: TPH-G, TPH-D, TPH-O, SVOCs, PCBs, VOCs, metals Groundwater: TPH-G, TPH-D, TPH-O, VOCs, SVOCs, total metals	All analyses conducted in an effort to characterize the site.
2010	Addendum to Polychlorinated Biphenyl (PCB) Investigation and Cleanup Report	AMEC Geomatrix (2010e)	Evaluation and remediation of the additional cleanup and floor sampling in Building 6 conducted in March 2010.	This report describes additional cleanup performed in Building 6 to address areas noted in the PCB Investigation and Cleanup Report that were over the screening criterion. All of the samples were below the screening level after the cleanup.	PCBs	Only buildings significantly impacted by PCBs (see Appendix D for sample locations and results).
2010	Air Sampling - South Warehouse Report	AMEC Geomatrix (2010f)	September 2010 air sampling was conducted in the south warehouse to identify whether there was any indication of airborne chemicals.	No VOCs above screening levels were detected in ambient air.	VOCs	No other contamination suspected in the ambient air.
2011	Draft Remedial Investigation and Feasibility Study	AMEC Geomatrix (2011)	March 2011 additional direct-push sampling to further delineate the extent of selected constituents detected in soil and groundwater on the property. In addition, five groundwater monitoring wells were installed to serve long-term groundwater monitoring needs.	Additional soil and groundwater samples were collected to delineate contamination on the northern parcel.	Soil: VOCs, TPH-G, BTEX, PAHs, metals, PCBs Groundwater: BTEX, total metals, PAHs, VOCs, TPH-G	Targeted analyses conducted in soil samples to delineate contamination on the northern parcel and full suite of analyses conducted in groundwater.
2013	DPVE Pilot Study Summary	AMEC (2013a)	April 2013 collection of groundwater samples from well KMW-03 in prior to designing a remediation pilot test.	After reviewing the study results and seeing a dramatic decrease in the concentration of TPH-G and VOCs in the April 2013 groundwater sample compared to the March 2011 groundwater sample, it was decided that a complete round of samples should be collected from the existing wells.	TPH-G, VOCs, and the following geochemical parameters: TOC, TDS, TSS, hardness, chloride, nitrate, nitrite, sulfate, sulfide, total phosphorus, dissolved calcium, total and ferrous iron, dissolved magnesium, dissolved manganese, dissolved potassium, and dissolved sodium	A sample was collected from KMW-03 in order to obtain additional data for a dual phase vapor extraction pilot study.

TABLE 4-1
SUMMARY OF PREVIOUS INVESTIGATIONS
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

Year	Report Title	Reference ¹	Summary	Summary of Investigation	Constituents of Potential Concern	Rationale for Analyses Conducted
2013	Groundwater Monitoring Results Memo	AMEC (2013b)	June 2013 collection of a complete round of groundwater samples from the five existing groundwater monitoring wells in order to determine how concentrations of COCs and geochemical parameters have changed since 2011.	This data confirmed the drop in TPH-G and VOCs since 2011.	TPH-G, VOCs, and the following geochemical parameters: TOC, TDS, TSS, total and dissolved manganese, total iron, dissolved ferrous iron, hardness, alkalinity, nitrate, nitrite, sulfate, sulfide, phosphorous, ortho-phosphate, and dissolved gases (methane, ethane, and ethene)	Only TPH-G and geochemical parameters were collected to confirm the decrease in concentrations observed in April 2013 in KMW-03 and to evaluate the groundwater for natural attenuation parameters.
2015	Underground Storage Tank Decommissioning Report	Amec Foster Wheeler (2015c)	March 2015 oversight of the decommissioning and removal of a UST. The report described the results of the project, as well as associated soil sampling conducted during the project.	Soil samples were collected from the bottoms and sidewalls of the excavation. Groundwater samples were not collected. TPH-D, TPH-G, benzene, and benzo(a)pyrene were detected in the samples at concentrations above the cleanup levels. It was unknown whether the contamination was from the UST. In situ chemical oxidation and oxygen releasing compounds were mixed with soil in the piping trench concurrent with the UST removal.	TPH-G, TPH-D, VOCs, BTEX, cPAHs, metals	Soil samples analyzed for full suite of COCs.
2015	PCB Closure Report	None	February and March 2015 oversight of the removal of PCB-containing materials from the site. Following the demolition and soil removal, all confirmation samples collected at the property were below the high occupancy PCB cleanup level of 1 ppm. The report describes the results of the project, as well as associated soil sampling conducted.	All of the PCB investigations were conducted with EPA approval.	Metals, PCBs	Building 8 investigations conducted in previously 2009 did not indicate any other COCs.
2015	Revised Remedial Investigation	None	March 2015 groundwater sampling from nine direct push borings to evaluate current conditions. Groundwater samples were also collected from monitoring wells KMW-03 and KMW-04.	This data confirmed that concentrations of TPH-G continued to drop in monitoring wells KMW-03 and KMW-04.	TPH-G and the following geochemical parameters on select samples: TOC, total and dissolved iron and manganese, nitrate, sulfate, and chemical oxygen demand	Only TPH-G and geochemical parameters were collected to confirm the decrease in concentrations observed in 2013 and to investigate the extent of TPH-G in temporary groundwater wells after the UST removal conducted in 2009.
2015	Underground Storage Tank Decommissioning Report	None	June 2015 oversight of the decommissioning and removal of a UST. The report described the results of the project, as well as associated soil and tank fluid sampling conducted during the project.	The UST was encountered while trenching to install lines for a soil vapor extraction system. Soil samples were collected from the bottom of the excavation at a depth of 9.5 feet bgs and from the sidewalls at depths of 5 feet bgs. The soil samples contained TPH-G, TPH-D, benzene, m,p-xylene, and naphthalene at concentrations above the screening levels. Further excavation was not performed because it was concluded that the contamination was unlikely to be from the tank, which was thought to have been in place since before 1943.	Soil: TPH-G, TPH-D, TPH-O, and VOCs	Soil samples analyzed for full suite of COCs.
2015	Draft Remedial Investigation	None	June and October 2015 oversight of two phases of remediation pipe installation.	Samples were collected from the western trench (KM-R01 through KM-R13) to characterize soils on the southern parcel that were previously not characterized due to building and utility locations.	Soil: TPH-G, TPH-D, TPH-O, SVOCs, VOCs, PCBs, metals	Soil samples analyzed for full suite of COCs.

TABLE 4-1

SUMMARY OF PREVIOUS INVESTIGATIONS
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

Year	Report Title	Reference ¹	Summary	Summary of Investigation	Constituents of Potential Concern	Rationale for Analyses Conducted
2015	Draft Remedial Investigation	None	November 2015 oversight of the disposal of soils generated during utility trenching operations.	Amec Foster Wheeler helped to characterize stockpiled soils for disposal during utility installation. Samples were not collected for site characterization.	NA	NA
2016	Draft Remedial Investigation	None	June 2016 installation of monitoring wells KMW-02R, KMW-03R, and KMW-06 through KMW-08 on the northern parcel to replace monitoring wells decommissioned or destroyed during building construction.	Soil samples were collected from the borings and groundwater samples were collected from the full monitoring well network.	Soil: TPH-G, TPH-D, TPH-O, PAHs, SVOCs, PCBs, VOCs, total metals Groundwater: TPH-G, TPH-O, VOCs, PAHs, PCBs, total and dissolved Metals	
2016	Draft Remedial Investigation	None	August 2016 additional soil and groundwater sampling north of the western remedial trench to assess TPH and BTEX concentrations.	Soil and groundwater samples were collected to determine TPH-G and BTEX concentrations, as these are the compounds targeted by the remedial action.	Soil: TPH-G, TPH-D, TPH-O, PAHs, PCBs, BTEX, total metals Groundwater: TPH-G, TPH-O, BTEX	
2016	Draft Remedial Investigation	None	November 2016 installation of monitoring wells KMW-09 and KMW-10 were downgradient and off-site to determine off-site concentrations of CPOCs.	Soil samples were collected from the borings and groundwater samples were collected from the full monitoring well network.	Soil: TPH-G, BTEX Groundwater: TPH-G, TPH-O, VOCs, PAHs, PCBs, total and dissolved metals	

Notes:

1. Full references can be found in Section 14 of the report.

Abbreviations

bgs = below ground surface

BTEX = benzene, toluene, ethylbenzene, and xylenes

COC = constituent of concern

COPC = constituent of potential concern

cPAH = carcinogenic polycyclic aromatic hydrocarbons

DPVE = dual-phase vacuum extraction

EPA = Environmental Protection Agency

ESA = environmental site assessment

MTCA = Model Toxics Control Act

NA = not available

PAH = polycyclic aromatic hydrocarbons

PCBs = polychlorinated biphenyls

ppm = parts per million

SVOCs = semivolatile organic compounds

TCE = trichloroethylene

TDS = total dissolved solids

TOC = total organic carbon

TPH = total petroleum hydrocarbons

TPH-D = total petroleum hydrocarbons as diesel

TPH-G = total petroleum hydrocarbons as gasoline

TPH-O = total petroleum hydrocarbons as lube oil

TSCA = Toxic Substances Control Act

TSS = total suspended solids

UST = underground storage tank

VC = vinyl chloride

VOCs = volatile organic compounds

TABLE 5-1

METAL DETECTIONS IN SOIL ^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	Phase II Investigation Samples																	
		KM-1	KM-1	KM-2	KM-5	KM-5	KM-6	KM-6	KM-7	KM-7	KM-8	KM-8	KM-9	KM-11	KM-12	KM-13	KM-14	KM-15	KM-16
		8/5/2009	8/5/2009	8/5/2009	8/7/2009	8/7/2009	8/7/2009	8/7/2009	8/7/2009	8/7/2009	8/7/2009	8/7/2009	8/5/2009	8/6/2009	8/7/2009	8/6/2009	8/6/2009	8/6/2009	8/6/2009
Depth (feet bgs)		1.5 to 2	5.5 to 6	1.5 to 2	2 to 2.5	6 to 6.5	1.5 to 2	4 to 4.2	1.8 to 2	6.8 to 7	1.8 to 2	6.8 to 7	1.5 to 2	1.8 to 2	1.8 to 2	1.2 to 1.5	1.8 to 2	3.8 to 4	3.8 to 4
Arsenic	10	13 U	--	11 U	13 U	11 U	11 U	11 U	15 U	11 U	13 U	11 U	11 U	13 U	11 U	11 U	11 U	15	14
Barium	824	--	--	--	24	20	37	26	75	41	61	28	--	380	16	35	92	390	400
Cadmium	1	1.8	--	0.73	0.64 U	0.53 U	0.54 U	0.53 U	0.74 U	0.57 U	0.65 U	0.54 U	0.54 U	0.63 U	0.53 U	0.53 U	0.56 U	0.6 U	0.54 U
Chromium	1,000	17	--	10	6.1	6.3	10	8.4	32	8	20	7.4	6.2	9.4	7	23	21	26	44
Copper	36	59	--	21	--	--	--	--	--	--	--	--	8.5	--	--	--	--	--	--
Lead	220	370	5.3 U	26	6.4 U	5.3 U	5.4 U	5.3 U	24	5.7 U	12	5.4 U	5.4 U	44	5.3 U	5.3 U	66	410	14
Mercury	0.52	0.31 U	--	0.26 U	0.32 U	0.26 U	0.27 U	0.27 U	0.37 U	0.29 U	0.32 U	0.27 U	0.27 U	0.32 U	0.26 U	0.26 U	0.28 U	0.83	0.27 U
Nickel	63	14	--	9.1	--	--	--	--	--	--	--	--	5.9	--	--	--	--	--	--
Zinc	85	150	--	40	--	--	--	--	--	--	--	--	16	--	--	--	--	--	--

TABLE 5-1

METAL DETECTIONS IN SOIL ^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	UST Removal Investigation													
		Product-S Wall	Product-E1 Wall	Product-E2 Wall	Product-N Wall	Product-W1b Wall	Product-W2b Wall	Tank 1-B	Tank 2-B	Tank 3-B	Tank 5-B	Tank 6-B	Tank 7-B	Tank 8-B	Tank 9-B
		10/20/2009	10/22/2009	10/22/2009	10/22/2009	11/13/2009	11/13/2009	10/27/2009	10/27/2009	10/20/2009	10/21/2009	10/21/2009	10/22/2009	10/22/2009	10/22/2009
Depth (feet bgs)		9 to 9	9 to 9	9 to 9	9 to 9	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5
Arsenic	10	12 U	11 U	12 U	13 U	11 U	11 U	13 U	12 U	12 U	12 U	11 U	11 U	12 U	12 U
Barium	824	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	1	0.61 U	0.56 U	0.58 U	0.64 U	0.56 U	0.54 U	0.65 U	0.62 U	0.58 U	0.6 U	0.56 U	0.57 U	0.59 U	0.61 U
Chromium	1,000	5.6	13	18	7.2	9	9.4	9.5	8.9	16	11	7.8	13	15	17
Copper	36	5.3	28	26	9.3	7.2	8.8	8.9	9.5	26	25	9.3	33	30	13
Lead	220	6.1 U	5.6 U	5.8 U	6.4 U	5.6 U	5.4 U	6.5 U	6.2 U	5.8 U	6.0 U	5.6 U	5.7 U	5.9 U	7.2
Mercury	0.52	0.30 U	0.28 U	0.29 U	0.32 U	0.28 U	0.27 U	0.32 U	0.31 U	0.29 U	0.30 U	0.28 U	0.29 U	0.29 U	0.31 U
Nickel	63	5.2	13	14	6.6	6.9	9.3	11	11	15	12	8.8	13	15	22
Zinc	85	14	24	25	140	16	17	21	23	27	23	25	29	27	95



TABLE 5-1

METAL DETECTIONS IN SOIL ^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	UST Removal Investigation (Cont.)						Supplemental Phase II Results							
		Containment-E Wall	Containment-S Wall	Containment-W Wall	Pipe-C1	TP4-1	TP4-8	KM-22	KM-22	KM-23	KM-23	KM-24	KM-24	KM-25	KM-26
		10/27/2009	10/27/2009	10/28/2009	11/17/2009	11/13/2009	11/13/2009	8/23/2010	8/23/2010	8/23/2010	8/23/2010	8/23/2010	8/23/2010	8/23/2010	8/23/2010
Depth (feet bgs)		9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	5.5 to 5.5	1 to 1	8 to 8	12.5 to 13	6.5 to 7	10.5 to 11	7.5 to 8	10.5 to 11	7.5 to 8	10.5 to 11	11 to 11.5
Arsenic	10	12 U	12 U	12 U	11 U	14 U	11 U	12 U	13 U	12 U	11 U	12 U	11 U	11 U	12 U
Barium	824	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	1	0.59 U	0.61 U	0.58 U	0.56 U	0.68 U	0.55 U	0.59 U	0.64 U	0.58 U	0.53 U	0.61 U	0.55 U	0.56 U	0.58 U
Chromium	1,000	21	24	12	18	13	6.8	8.1	21	6.5	8.6	8.2	8.3	31	5.8
Copper	36	13	11	20	15	110	8.1	8.8	86	9.6	23	8.1	10	24	8.9
Lead	220	5.9 U	6.1 U	34	9.8	52	5.5 U	5.9 U	190	5.8 U	20	6.1 U	9.6	32	5.8 U
Mercury	0.52	0.30 U	0.30 U	0.29 U	0.28 U	0.34 U	0.28 U	0.29 U	0.32 U	0.29 U	0.26 U	0.30 U	0.27 U	0.28 U	0.29 U
Nickel	63	25	27	12	22	25	6.8	6.9	31	7.0	9.2	6.7	8.9	14	5.8
Zinc	85	31	26	55	68	67	18	18	110	17	36	18	29	34	14

TABLE 5-1

METAL DETECTIONS IN SOIL ^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	Supplemental Phase II Results (cont)							February/March 2015 UST Removal Confirmation Samples					Samples Collected North of Western Remedial Trench					
		KM-26	KM-27	KM-27	KM-28	KM-28	KM-29	KM-29	B7-PIPING-B1	B7-PIPING-B2	B7-PIPING-S1B	B7-PIPING-B5	B7-PIPING-S2	KM-53	KM-53	KM-54	KM-54	KM-55	KM-55
		8/23/2010	8/24/2010	8/24/2010	8/24/2010	8/24/2010	8/24/2010	8/24/2010	2/27/2015	2/27/2015	3/13/2015	3/13/2015	2/27/2015	8/2/2016	8/2/2016	8/2/2016	8/2/2016	8/2/2016	8/2/2016
Depth (feet bgs)		8 to 8.5	10.5 to 11	8 to 8.5	10.5 to 11	8.5 to 9	10.5 to 11	7.5 to 8	5 to 5	5 to 5	4 to 4	5 to 5	4 to 4	2.5 to 2.5	6 to 6	3 to 3	6 to 6	3 to 3	6 to 6
Arsenic	10	10 U	12 U	11 U	11 U	11 U	11 U	11 U	14 U	12 U	11 U	13 U	12 U	5.6 U	5.2 U	42	5.3 U	8.4	5.4 U
Barium	824	--	--	--	--	--	--	--	24	21	33	49	100						
Cadmium	1	1.9	0.59 U	0.53 U	0.55 U	0.55 U	0.54 U	0.53 U	0.70 U	0.59 U	0.54 U	0.65 U	0.60 U	0.56 U	0.52 U	0.54 U	0.53 U	0.57 U	0.54 U
Chromium	1,000	7.3	6.5	7.2	6	6.8	7.3	7	7.8	9.3	9.5	8.4	24	39	11	32	10	37	7.7
Copper	36	8.1	9.3	8.8	8.4	8.8	8.1	8.9	--	--	--	--	--	--	--	--	--	--	--
Lead	220	5.2 U	5.9 U	5.3 U	5.5 U	5.5 U	5.4 U	5.3 U	7.0 U	5.9 U	5.4 U	6.5 U	30	10	5.2 U	53	5.3 U	210	5.4 U
Mercury	0.52	0.26 U	0.30 U	0.26 U	0.27 U	0.27 U	0.27 U	0.27 U	0.35 U	0.29 U	0.27 U	0.32 U	0.30 U	0.28 U	0.26 U	0.27 U	0.26 U	0.28 U	0.27 U
Nickel	63	8.1	6.4	7.0	6.2	7.6	7.6	8.0	--	--	--	--	--	--	--	--	--	--	--
Zinc	85	23	15	14	17	40	14	15	--	--	--	--	--	--	--	--	--	--	--

TABLE 5-1

METAL DETECTIONS IN SOIL ^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	Monitoring Well Installation										
		KMW-02R	KMW-02R	KMW-03R	KMW-03R	KMW-06	KMW-06	KMW-06	KMW-07	KMW-07	KMW-08	KMW-08
		6/28/2016	6/28/2016	6/27/2016	6/27/2016	6/28/2016	6/28/2016	6/28/2016	6/27/2016	6/27/2016	6/27/2016	6/27/2016
Depth (feet bgs)		10 to 11	14 to 15	10.5 to 11.5	14 to 15	8.5 to 9.5	14.5 to 15.5	16.5 to 17.5	8.5 to 9.5	14.5 to 15.5	11.5 to 12.5	14.5 to 15.5
Arsenic	10	6.0 U	6.1 U	5.9 U	12	5.7 U	6.2 U	5.8 U	5.9 U	5.9 U	6.1 U	5.8 U
Barium	824	64	20	28	30	27	14	9.6	33	17	41	27
Cadmium	1	0.60 U	0.61 U	0.59 U	0.60 U	0.57 U	0.62 U	0.58 U	0.59 U	0.59 U	0.61 U	0.58 U
Chromium	1,000	10	7.00	8.2 J	12 J	4.5	8.5	7.5	13 J	10 J	9.9 J	8.1 J
Copper	36	--	--	--	--	--	--	--	--	--	--	--
Lead	220	6.0 U	6.1 U	5.9 U	6.0 U	5.7 U	6.2 U	5.8 U	5.9 U	5.9 U	6.1 U	5.8 U
Mercury	0.52	0.30 U	0.31 U	0.30 U	0.30 U	0.28 U	0.31 U	0.29 U	0.30 U	0.30 U	0.31 U	0.29 U
Nickel	63	--	--	--	--	--	--	--	--	--	--	--
Zinc	85	--	--	--	--	--	--	--	--	--	--	--

Notes:

- Data qualifiers are as follows:
U = The analyte was not detected at the reporting limit indicated.
J = The value is an estimate.
- Yellow highlighting signifies results that exceeded the preliminary screening level

Abbreviations:

-- = not analyzed
bgs = below ground surface
mg/kg = milligrams per kilogram
UST = underground storage tank



TABLE 5-2

BTEX AND TPH DETECTIONS IN SOIL ^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	Phase II Investigation Samples														UST Removal Investigation		
		KM-1	KM-5	KM-5	KM-6	KM-6	KM-7	KM-7	KM-8	KM-8	KM-11	KM-14	KM-15	KM-16	KM-16	Product-S Wall	Product-N Wall	Product-W1b Wall
		8/5/2009	8/7/2009	8/7/2009	8/7/2009	8/7/2009	8/7/2009	8/7/2009	8/7/2009	8/7/2009	8/6/2009	8/6/2009	8/6/2009	8/6/2009	8/6/2009	10/20/2009	10/22/2009	11/13/2009
Depth (feet bgs)		1.5 to 2	2 to 2.5	6 to 6.5	1.5 to 2	4 to 4.2	1.8 to 2	6.8 to 7	1.8 to 2	6.8 to 7	1.8 to 2	1.8 to 2	3.8 to 4	3.8 to 4	7.8 to 8	9 to 9	9 to 9	9.5 to 9.5
BTEX																		
Benzene	0.004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	4.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
m,p-Xylene	17.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	4.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	4.65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TPH																		
Gasoline Range Organics	30	8.1 U	35	4,400	110	1,200	1,200	2,300	80	8,400	300	8.0	7.2 U	5.9 U	5.2 UJ	9.8	100	120
Diesel Range Organics	2,000	35	32 U	840 U	27 U	36 U	94 U	920 U	34	2,200 U	1,100	35	38	27 U	--	30 U	32 U	28 U
Lube Oil	2,000	330	64 U	53 U	54 U	53 U	97	57 U	140	54 U	440	130	210	160	--	61 U	64 U	56 U

TABLE 5-2

BTEX AND TPH DETECTIONS IN SOIL ^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	UST Removal Investigation (Continued)									
		Product-W2b Wall	Tank 2-B	Tank 6-B	Tank 9-B	Containment-E Wall	Containment-S Wall	Containment-W Wall	Pipe-1	Pipe-C1	TP4-8
		11/13/2009	10/27/2009	10/21/2009	10/22/2009	10/27/2009	10/27/2009	10/28/2009	10/28/2009	11/17/2009	11/13/2009
Depth (feet bgs)		9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	5.5 to 5.5	5.5 to 5.5	8 to 8
BTEX											
Benzene	0.004	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	4.6	--	--	--	--	--	--	--	--	--	--
m,p-Xylene	17.2	--	--	--	--	--	--	--	--	--	--
o-Xylene	4.00	--	--	--	--	--	--	--	--	--	--
Toluene	4.65	--	--	--	--	--	--	--	--	--	--
TPH											
Gasoline Range Organics	30	760	54	180	28	58	88	150	18	15	970
Diesel Range Organics	2,000	97 U	31 U	30	88 U	30 U	41 U	29 U	44 U	28 U	54 U
Lube Oil	2,000	54 U	62 U	56 U	61 U	220	61 U	240	200	56 U	55 U

TABLE 5-2

BTEX AND TPH DETECTIONS IN SOIL ^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	Supplemental Phase II Results					Data Gaps Investigation and Monitoring Well Installation							
		KM-22	KM-22	KM-23	KM-23	KM-25	KM-31	KM-33	KM-36	KM-37	KM-37	KM-40	KM-40	KMW-04
		8/23/2010	8/23/2010	8/23/2010	8/23/2010	8/23/2010	3/22/2011	3/22/2011	3/21/2011	3/21/2011	3/21/2011	3/21/2011	3/21/2011	3/17/2011
Depth (feet bgs)		12.5 to 13	6.5 to 7	10.5 to 11	7.5 to 8	10.5 to 11	2.5 to 3	4 to 4.5	6 to 6.5	2 to 2.5	5 to 5.5	1.5 to 2	4 to 4.5	2 to 2.5
BTEX														
Benzene	0.004	--	--	--	--	--	--	0.076 U	0.065	0.098	0.077	0.58	0.3	0.02 U
Ethylbenzene	4.6	--	--	--	--	--	--	0.38 U	0.061 U	0.083 U	0.13 U	7.1	2.7	1.2
m,p-Xylene	17.2	--	--	--	--	--	--	1.9 U	0.2	0.35	0.23	25	9.1	0.65
o-Xylene	4.00	--	--	--	--	--	--	1.9 U	0.31 U	0.083 U	0.13 U	0.22	0.33	0.085
Toluene	4.65	--	--	--	--	--	--	0.38 U	0.061 U	0.083 U	0.13 U	0.56	1.8	0.079
TPH														
Gasoline Range Organics	30	30	350	44	14	6.1 U	5.3 U	3,300	94	28	81	250	280	27
Diesel Range Organics	2,000	29 U	150 U	29 U	26 U	39	--	--	--	--	--	--	--	--
Lube Oil	2,000	59 U	290	58 U	53 U	100	--	--	--	--	--	--	--	--

TABLE 5-2

BTEX AND TPH DETECTIONS IN SOIL ^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	February/March 2015 UST Removal Confirmation Samples					2015 Hot Spot Soil Excavation and Treatment									
		B7-PIPING-B1	B7-PIPING-B2	B7-PIPING-S1B	B7-PIPING-B5	B7-PIPING-S2	KM-19-NW	KM-19-EW	KM-19-Bot	KM-19-SW	KM-30-EW	KM-30-SW	KM-30-Bot	KM-30-WW	KM-30-NW	KM-39-EW
		2/27/2015	2/27/2015	3/13/2015	3/13/2015	2/27/2015	2/26/2015	2/26/2015	2/26/2015	2/26/2015	2/26/2015	2/26/2015	2/26/2015	2/26/2015	2/26/2015	3/5/2015
Depth (feet bgs)		5 to 5	5 to 5	4 to 4	5 to 5	4 to 4	4.5 to 4.5	5 to 5	6 to 6.5	4.5	4 to 4	5 to 5	5.5 to 5.5	4	4	3.5 to 3.5
BTEX																
Benzene	0.004	0.097	0.41	0.27	0.13	0.069	0.02 U	0.02 U	0.02 U	0.02 U	0.17	0.13	0.16	0.18	0.02 U	0.48
Ethylbenzene	4.6	0.62	1.2	0.69	0.27	7.4	0.039 U	0.045 U	0.10 U	0.04 U	1.3	0.93	0.91	1.0	0.051 U	13
m,p-Xylene	17.2	3.8	8.9	3.6	1.4	9.5	0.10	0.08	0.44	0.059	9.8	8.4	7.4	8.5	0.19	24
o-Xylene	4.00	1.4 U	4.8	1.2 U	0.12 U	1.0	0.039 U	0.045 U	0.10 U	0.04 U	2.0 U	1.1 U	1.2 U	1.2 U	0.051 U	3.9
Toluene	4.65	0.14 U	0.098 U	0.23 U	0.12 U	0.095 U	0.039 U	0.045 U	0.10 U	0.04 U	0.10 U	0.11 U	0.12 U	0.12 U	0.051 U	0.19
TPH																
Gasoline Range Organics	30	2,600	3,000	3,900	1,100	1,300	56	36	420	4.0 U	3,500	2,500	2,400	2,600	100	1,200
Diesel Range Organics	2,000	3,300	4,100	11,000	7,800	7,400	--	--	--	--	--	--	--	--	--	--
Lube Oil	2,000	370	710	1,300 U	970 U	5,600	--	--	--	--	--	--	--	--	--	--



TABLE 5-2

BTEX AND TPH DETECTIONS IN SOIL ^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	2015 Hot Spot Soil Excavation and Treatment (Cont.)					June 2015 UST Removal				Samples Collected from Western Trench						
		KM-39-B1	KM-39-WW	KM-39-SW	KM-41-B1	KM-41-SW	TANK2-SOIL-S1-5	TANK2-SOIL-S2-5	TANK2-SOIL-S3-5	TANK2-SOIL-B1-9.5	KM-R01	KM-R01	KM-R03	KM-R03	KM-R05	KM-R05	KM-R07
		3/5/2015	3/5/2015	3/5/2015	3/6/2015	3/6/2015	6/22/2015	6/22/2015	6/22/2015	6/18/2015	10/15/2015	10/15/2015	10/16/2015	10/16/2015	10/19/2015	10/19/2015	10/20/2015
Depth (feet bgs)		4.5 to 4.5	3.5	3.5	6 to 6	4	5 to 5	5 to 5	5 to 5	9.5 to 9.5	2 to 2	5 to 5	2 to 2	6 to 6	2 to 2	6.5 to 6.5	2 to 2
BTEX																	
Benzene	0.004	0.048	0.24	0.020 U	0.02 U	0.021	--	--	--	--	0.076	0.02 U	0.02 U	0.23	0.031	0.099	0.02 U
Ethylbenzene	4.6	0.3	0.64	0.088 U	0.097 U	0.52	--	--	--	--	0.18	0.20	0.076 U	5.3	0.087 U	2.0	0.047 U
m,p-Xylene	17.2	2.5	5.9	0.33	0.24	5.6	--	--	--	--	0.25	0.33	0.22	5.9	0.41	6.8	0.11
o-Xylene	4.00	0.6 U	1.2 U	0.088 U	0.097 U	1.0 U	--	--	--	--	0.063 U	0.053 U	0.076 U	0.32 U	0.087 U	0.61	0.047 U
Toluene	4.65	0.12 U	0.23 U	0.088 U	0.097 U	0.10 U	--	--	--	--	0.063 U	0.053 U	0.076 U	0.063 U	0.087 U	0.072 U	0.047 U
TPH																	
Gasoline Range Organics	30	1,600	3,100	170	380	3600	520	5.3 U	2,000	2,700	69	21	7.6 U	700	230	140	4.7 U
Diesel Range Organics	2,000	--	--	--	--	--	560	94	2,600	2,100	--	--	--	--	--	--	--
Lube Oil	2,000	--	--	--	--	--	280	72	850	280	--	--	--	--	--	--	--

TABLE 5-2

BTEX AND TPH DETECTIONS IN SOIL ^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	Samples Collected from Western Trench (Cont.)					Samples Collected North of Western Remedial Trench						Monitoring Well Installation					
		KM-R07	KM-R09	KM-R11	KM-R11	KM-R13	KM-53	KM-53	KM-53	KM-53	KM-54	KM-55	KMW-02R	KMW-03R	KMW-03R	KMW-06	KMW-07	KMW-08
		10/20/2015	10/20/2015	10/21/2015	10/21/2015	11/3/2015	8/2/2016	8/2/2016	8/2/2016	8/2/2016	8/2/2016	8/2/2016	6/28/2016	6/27/2016	6/27/2016	6/28/2016	6/27/2016	6/27/2016
Depth (feet bgs)		5 to 5	5 to 5	2 to 2	5 to 5	3 to 3	2.5 to 2.5	6 to 6	9 to 9	13.5 to 13.5	3 to 3	3 to 3	10 to 11	10.5 to 11.5	14 to 15	8.5 to 9.5	8.5 to 9.5	11.5 to 12.5
BTEX																		
Benzene	0.004	0.18	0.02 U	0.02 U	0.075	0.02 U	0.02 U	0.025	0.047 U	--	0.02 U	0.02 U	--	--	--	--	--	--
Ethylbenzene	4.6	8.6	0.27	0.078	0.89	0.057 U	0.036 U	0.05 U	0.24 U	--	0.053 U	0.045 U	--	--	--	--	--	--
m,p-Xylene	17.2	6.9	2.7	0.33	7.5	0.13	0.038	0.05 U	0.51	--	0.053 U	0.045 U	--	--	--	--	--	--
o-Xylene	4.00	0.095 U	0.10 U	0.068 U	1.5 U	0.057 U	0.036 U	0.05 U	0.24 U	--	0.053 U	0.045 U	--	--	--	--	--	--
Toluene	4.65	0.095 U	0.10 U	0.068 U	0.29 U	0.057 U	0.036 U	0.05 U	0.24 U	--	0.053 U	0.045 U	--	--	--	--	--	--
TPH																		
Gasoline Range Organics	30	99	1,400	9.3	5,000	100	3.6 U	5.0 U	910	--	6.9	4.5 U	7.5	6,200	20	1,500	85	2,400
Diesel Range Organics	2,000	--	--	--	--	--	28 U	26 U	640	30 U	61	42	30 U	2,000 U	30 U	1,100 U	30 U	2,500 J
Lube Oil	2,000	--	--	--	--	--	57	52 U	170	60 U	400	210	60 U	59 U	60 U	57 U	59 U	420 J

Notes:

- Data qualifiers are as follows:
U = The analyte was not detected at the reporting limit indicated.
J = The value is an estimate.
UJ = The analyte was not detected at the estimated reporting limit indicated.
- Yellow highlighting signifies results that exceeded the preliminary screening level.

Abbreviations:

-- = not analyzed
bgs = below ground surface
BTEX = benzene, toluene, ethylbenzene, and xylenes
mg/kg = milligrams per kilogram
TPH = total petroleum hydrocarbons
UST = underground storage tank

TABLE 5-3

VOLATILE ORGANIC COMPOUND DETECTIONS IN SOIL ^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	Phase II Investigation Samples													
		KM-1	KM-2	KM-5	KM-5	KM-6	KM-7	KM-7	KM-8	KM-8	KM-9	KM-11	KM-14	KM-15	KM-16
		8/5/2009	8/5/2009	8/7/2009	8/7/2009	8/7/2009	8/7/2009	8/7/2009	8/7/2009	8/7/2009	8/5/2009	8/6/2009	8/6/2009	8/6/2009	8/6/2009
Depth (feet bgs)		1.5 to 2	1.5 to 2	2 to 2.5	6 to 6.5	4 to 4.2	1.8 to 2	6.8 to 7	1.8 to 2	6.8 to 7	1.5 to 2	1.8 to 2	1.8 to 2	3.8 to 4	3.8 to 4
1,1-Dichloroethane	0.042	0.0014 U	0.001 U	0.0016 U	0.3 U	0.062 U	2.0 U	0.072 U	0.081 U	2.4 U	0.0013 U	0.02	0.001 U	0.0012 U	0.0013 U
1,2,4-Trimethylbenzene	NE	0.0014 UJ	0.001 U	0.0016 U	0.3 U	1.3	3.6	0.072 U	0.16	27	0.0013 U	0.0088 J	0.001 U	0.0012 UJ	0.0013 UJ
1,3,5-Trimethylbenzene	800	0.0014 UJ	0.001 U	0.0016 U	0.3 U	0.35	2.0 U	0.072 U	0.081 U	10	0.0013 U	0.0018 UJ	0.001 U	0.0012 UJ	0.0013 UJ
Acetone	28.9	0.16	0.0052 U	0.076	1.5 U	0.31 U	9.9 U	0.36	0.41 U	12 U	0.0067 U	0.35	0.0051 U	0.0059 U	0.0064 U
Benzene	0.004	0.0014 U	0.001 U	0.0016 U	0.3 U	0.062 U	2.0 U	0.072 U	0.13	2.4 U	0.0013 U	0.0064	0.001 U	0.0012 U	0.0013 U
Carbon Disulfide	2.83	0.0014 U	0.001 U	0.0016 U	0.3 U	0.062 U	2.0 U	0.072 U	0.081 U	2.4 U	0.0013 U	0.0018 U	0.001 U	0.0012 U	0.0013 U
Ethylbenzene	4.6	0.0014 U	0.001 U	0.0061	23	8.3	57	0.072 U	0.45	330	0.0013 U	0.0032 J	0.001 U	0.0012 U	0.0013 U
Isopropylbenzene	8,000	0.0014 U	0.001 U	0.015	1.6	0.77	2.0 U	0.25	0.085	6.4	0.0013 U	0.0018 UJ	0.001 U	0.0012 U	0.0013 U
m,p-Xylene	17.2	0.0028 U	0.0021 U	0.0031 U	0.59 U	11	210	0.14 U	7.4	590	0.0027 U	0.021 J	0.002 U	0.0024 U	0.0026 U
Methyl ethyl ketone	NE	0.022	0.0052 U	0.011	1.5 U	0.31 U	9.9 U	0.36 U	0.41 U	12 U	0.0067 U	0.0091 U	0.0051 U	0.0059 U	0.0064 U
Methyl Isobutyl Ketone	6,400	0.0069 U	0.0052 U	0.0078 U	1.5 U	0.31 U	47	0.36 U	0.41 U	12 U	0.0067 U	0.0091 U	0.0051 U	0.0059 U	0.0064 U
Methylene Chloride	0.02	0.0069 U	0.0052 U	0.0078 U	1.5 U	0.31 U	9.9 U	0.36 U	0.41 U	12 U	0.0067 U	0.0091 U	0.0051 U	0.0059 U	0.0064 U
Naphthalene	0.25	0.0014 UJ	0.001 U	0.0038	0.3 U	0.21	2.0 U	0.072 U	0.14	2.4 U	0.0013 U	0.0018 UJ	0.001 U	0.0012 UJ	0.0013 UJ
n-Butylbenzene	526	0.0014 UJ	0.001 U	0.0016 U	0.55	0.062 U	2.0 U	0.19	0.081 U	2.4 U	0.0013 U	0.0018 UJ	0.001 U	0.0012 UJ	0.0013 UJ
n-Propylbenzene	3.3	0.0014 UJ	0.001 U	0.016	1.7	0.9	2.0 U	0.40	0.081 U	7.5	0.0013 U	0.0018 UJ	0.001 U	0.0012 UJ	0.0013 UJ
o-Xylene	4	0.0014 U	0.001 U	0.0016 U	0.3 U	1.8	59	0.072 U	0.081 U	2.4 U	0.0013 U	0.0056 J	0.001 U	0.0012 U	0.0013 U
p-Isopropyltoluene	NE	0.0014 UJ	0.001 U	0.0016 U	0.3 U	0.088	2.0 U	0.072 U	0.081 U	2.4 U	0.0013 U	0.006 J	0.001 U	0.0012 UJ	0.0013 UJ
sec-Butylbenzene	8,000	0.0014 UJ	0.001 U	0.003	0.36	0.14	2.0 U	0.12	0.081 U	2.4 U	0.0013 U	0.0079 J	0.001 U	0.0012 UJ	0.0013 UJ
tert-Butylbenzene	8,000	0.0014 UJ	0.001 U	0.0016 U	0.3 U	0.062 U	2.0 U	0.072 U	0.081 U	2.4 U	0.0013 U	0.0072 J	0.001 U	0.0012 UJ	0.0013 UJ
Tetrachloroethene	0.007	0.0014 U	0.001 U	0.0016 U	0.3 U	0.062 U	2.0 U	0.072 U	0.081 U	2.4 U	0.0013 U	0.0018 UJ	0.001 U	0.0043	0.0013 U
Toluene	4.65	0.0069 U	0.0052 U	0.0078 U	1.5 U	0.33	1,200	0.36 U	0.41 U	12 U	0.0067 U	0.0091 U	0.0051 U	0.0059 U	0.0064 U
Trichloroethene	0.004	0.0014 U	0.001 U	0.0016 U	0.3 U	0.062 U	2.0 U	0.072 U	0.081 U	2.4 U	0.0013 U	0.0018 U	0.001 U	0.0012 U	0.011
Trichlorofluoromethane	24,000	0.0014 U	0.0036	0.0016 U	0.3 U	0.062 U	2.0 U	0.072 U	0.081 U	2.4 U	0.0026	0.0042	0.0021	0.0024	0.002

TABLE 5-3

VOLATILE ORGANIC COMPOUND DETECTIONS IN SOIL ^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	UST Removal Investigation								
		Product-S Wall	Product-E1 Wall	Product-E2 Wall	Product-N Wall	Product-W1b Wall	Product-W2b Wall	Tank 1-B	Tank 2-B	Tank 3-B
		10/20/2009	10/22/2009	10/22/2009	10/22/2009	11/13/2009	11/13/2009	10/27/2009	10/27/2009	10/20/2009
Depth (feet bgs)		9 to 9	9 to 9	9 to 9	9 to 9	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5
1,1-Dichloroethane	0.042	0.0014 U	0.001 U	0.0011 U	0.074 U	0.0011 U	0.059 U	0.0012 U	0.0013 U	0.00096 U
1,2,4-Trimethylbenzene	NE	0.0014 U	0.001 U	0.0011 U	0.074 U	0.042	0.12	0.0012 U	0.11	0.00096 U
1,3,5-Trimethylbenzene	800	0.0014 U	0.001 U	0.0011 U	0.074 U	0.018	0.071	0.0012 U	0.13	0.00096 U
Acetone	28.9	0.032	0.0092	0.0089	0.37 U	0.21	0.3 U	0.028	0.055	0.014
Benzene	0.004	0.0014 U	0.001 U	0.0011 U	0.074 U	0.0011 U	0.059 U	0.0012 U	0.0013 U	0.00096 U
Carbon Disulfide	2.83	0.0014 U	0.001 U	0.0011 U	0.074 U	0.0011 U	0.059 U	0.0097	0.006	0.00096 U
Ethylbenzene	4.6	0.0014 U	0.001 U	0.0011 U	0.099	0.67	1.2	0.009	1.3	0.019
Isopropylbenzene	8,000	0.0014 U	0.0076	0.0011 U	0.42	0.19	0.44	0.0072	0.12	0.00096 U
m,p-Xylene	17.2	0.0027 U	0.0021 U	0.0022 U	0.15 U	0.018	2.1	0.011	2.6	0.089
Methyl ethyl ketone	NE	0.0069 U	0.0052 U	0.0055 U	0.37 U	0.033	0.3 U	0.0062 U	0.0066 U	0.0048 U
Methyl Isobutyl Ketone	6,400	0.0069 U	0.0052 U	0.0055 U	0.37 U	0.0057 U	0.3 U	0.0062 U	0.0066 U	0.0048 U
Methylene Chloride	0.02	0.0069 U	0.0052 U	0.0055 U	0.37 U	0.0057 U	0.3 U	0.0062 U	0.0066 U	0.0048 U
Naphthalene	0.25	0.0014 U	0.001 U	0.0011 U	0.074 U	0.003	0.059 U	0.0012 U	0.18	0.00096 U
n-Butylbenzene	526	0.0014 U	0.001 U	0.0011 U	0.19	0.038	0.087	0.0012 U	0.0013 U	0.00096 U
n-Propylbenzene	3.3	0.0014 U	0.0038	0.0011 U	0.47	0.33	0.52	0.0083	0.18	0.00096 U
o-Xylene	4	0.0014 U	0.001 U	0.0011 U	0.074 U	0.0011 U	0.28	0.0012 U	0.58	0.032
p-Isopropyltoluene	NE	0.0014 U	0.001 U	0.0011 U	0.074 U	0.0072	0.059 U	0.0012 U	0.014	0.00096 U
sec-Butylbenzene	8,000	0.0014 U	0.0012	0.0011 U	0.15	0.063	0.093	0.0013	0.044	0.00096 U
tert-Butylbenzene	8,000	0.0014 U	0.001 U	0.0011 U	0.074 U	0.0043	0.059 U	0.0012 U	0.0026	0.00096 U
Tetrachloroethene	0.007	0.0014 U	0.001 U	0.0011 U	0.074 U	0.0011 U	0.059 U	0.0012 U	0.0013 U	0.00096 U
Toluene	4.65	0.0069 U	0.014	0.0055 U	0.37 U	0.0057 U	0.47	0.0062 U	0.095	0.0048 U
Trichloroethene	0.004	0.0014 U	0.001 U	0.0011 U	0.074 U	0.0011 U	0.059 U	0.0012 U	0.0013 U	0.00096 U
Trichlorofluoromethane	24,000	0.0014 U	0.001 U	0.0011 U	0.074 U	0.0011 U	0.059 U	0.0012 U	0.0013 U	0.00096 U

TABLE 5-3

VOLATILE ORGANIC COMPOUND DETECTIONS IN SOIL ^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	UST Removal Investigation (Cont.)								
		Tank 5-B	Tank 6-B	Tank 7-B	Tank 8-B	Tank 9-B	Containment-E Wall	Containment-N Wall	Containment-S Wall	Containment-W Wall
		10/21/2009	10/21/2009	10/22/2009	10/22/2009	10/22/2009	10/27/2009	10/27/2009	10/27/2009	10/28/2009
Depth (feet bgs)		9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5
1,1-Dichloroethane	0.042	0.0011 U	0.055 U	0.00093 U	0.001 U	0.0012 U	0.065 U	0.001 U	1.3 U	0.0013 U
1,2,4-Trimethylbenzene	NE	0.0011 U	0.055 U	0.00093 U	0.001 U	0.0012 U	0.14	0.057	2.5	0.057 J
1,3,5-Trimethylbenzene	800	0.0011 U	0.055 U	0.00093 U	0.001 U	0.0012 U	0.065 U	0.023	1.4	0.029 J
Acetone	28.9	0.016	0.28 U	3.5	10	0.04	0.33 U	0.034	6.7 U	0.15 J
Benzene	0.004	0.0011 U	0.055 U	0.00093 U	0.001 U	0.0012 U	0.065 U	0.0016	1.3 U	0.002 J
Carbon Disulfide	2.83	0.0011 U	0.055 U	0.00093 U	0.001 U	0.0012 U	0.065 U	0.001 U	1.3 U	0.0013 U
Ethylbenzene	4.6	0.0012	0.083	0.00093 U	0.0056	0.0012 U	0.5	0.71	41	0.072 J
Isopropylbenzene	8,000	0.0011 U	0.073	0.00093 U	0.001 U	0.0012 U	1.5	0.035	1.3 U	0.044 J
m,p-Xylene	17.2	0.005	0.28	0.0019 U	0.024	0.0024 U	1.0	0.99	150	0.25 J
Methyl ethyl ketone	NE	0.0054 U	0.28 U	0.0046 U	0.0052 U	0.006	0.33 U	0.005 U	6.7 U	0.0065 U
Methyl Isobutyl Ketone	6,400	0.0054 U	0.28 U	0.0046 U	0.0052 U	0.0059 U	0.33 U	0.005 U	6.7 U	0.0065 U
Methylene Chloride	0.02	0.0054 U	0.28 U	0.0046 U	0.0052 U	0.0059 U	0.33 U	0.005 U	6.7 U	0.0065 U
Naphthalene	0.25	0.0011 U	0.055 U	0.00093 U	0.001 U	0.0012 U	0.075	0.007	1.3 U	0.013 J
n-Butylbenzene	526	0.0011 U	0.055 U	0.00093 U	0.001 U	0.0012 U	0.52	0.0054	1.3 U	0.0013 U
n-Propylbenzene	3.3	0.0011 U	0.13	0.00093 U	0.001 U	0.0012 U	2.2	0.061	1.3 U	0.047 J
o-Xylene	4	0.0017	0.055 U	0.00093 U	0.0086	0.0012 U	0.065 U	0.21	28	0.11 J
p-Isopropyltoluene	NE	0.0011 U	0.055 U	0.00093 U	0.001 U	0.0012 U	0.065 U	0.0018	1.3 U	0.004 J
sec-Butylbenzene	8,000	0.0011 U	0.055 U	0.00093 U	0.001 U	0.0012 U	0.38	0.0058	1.3 U	0.017 J
tert-Butylbenzene	8,000	0.0011 U	0.055 U	0.00093 U	0.001 U	0.0012 U	0.065 U	0.001 U	1.3 U	0.0022 J
Tetrachloroethene	0.007	0.0011 U	0.055 U	0.00093 U	0.001 U	0.0012 U	0.065 U	0.001 U	1.3 U	0.0013 U
Toluene	4.65	0.03	0.3	0.0046 U	0.0052 U	0.0059 U	0.33 U	0.059	6.7 U	0.0065 U
Trichloroethene	0.004	0.0011 U	0.055 U	0.00093 U	0.001 U	0.0012 U	0.065 U	0.001 U	1.3 U	0.0013 U
Trichlorofluoromethane	24,000	0.0011 U	0.055 U	0.00093 U	0.001 U	0.0012 U	0.065 U	0.001 U	1.3 U	0.0013 U

TABLE 5-3

VOLATILE ORGANIC COMPOUND DETECTIONS IN SOIL ^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	UST Removal Investigation (Cont.)				Supplemental Phase II Results							
		Pipe-1	Pipe-C1	TP4-1	TP4-8	KM-22	KM-22	KM-23	KM-23	KM-25	KM-27	KM-27	KM-28
		10/28/2009	11/17/2009	11/13/2009	11/13/2009	8/23/2010	8/23/2010	8/23/2010	8/23/2010	8/23/2010	8/24/2010	8/24/2010	8/24/2010
Depth (feet bgs)		5.5 to 5.5	5.5 to 5.5	1 to 1	8 to 8	12.5 to 13	6.5 to 7	10.5 to 11	7.5 to 8	10.5 to 11	10.5 to 11	8 to 8.5	8.5 to 9
1,1-Dichloroethane	0.042	0.0019 U	0.0011 U	0.0027 U	0.056 U	0.067 U	0.0012 U	0.0011 U	0.0012 U	0.001 U	0.0013 U	0.0012 U	0.0012 U
1,2,4-Trimethylbenzene	NE	0.0019 U	0.0011 U	0.0027 UJ	1.0	0.12	0.10	0.0011 U	0.0012 U	0.001 U	0.0013 U	0.0012 U	0.0012 U
1,3,5-Trimethylbenzene	800	0.0019 U	0.0011 U	0.0027 UJ	0.45	0.067 U	0.045	0.0011 U	0.0012 U	0.001 U	0.0013 U	0.0012 U	0.0012 U
Acetone	28.9	0.0097 U	0.036	0.013 U	0.28 U	0.34 U	0.16	0.041	0.067	0.058	0.028	0.12	0.041
Benzene	0.004	0.0036	0.0011 U	0.0027 U	0.056 U	0.067 U	0.0015	0.0011 U	0.0012 U	0.001 U	0.0013 U	0.0012 U	0.0012 U
Carbon Disulfide	2.83	0.0019 U	0.0015	0.0027 U	0.056 U	0.067 U	0.0071	0.0011 U	0.0012 U	0.001 U	0.0013 U	0.0012 U	0.0012 U
Ethylbenzene	4.6	0.34	0.0011 U	0.0074	4.2	1.9	0.18	0.0011 U	0.0012 U	0.001 U	0.0013 U	0.0012 U	0.0012 U
Isopropylbenzene	8,000	0.018	0.0011 U	0.0027 U	0.68	0.067 U	0.22	0.15	0.031	0.001 U	0.0013 U	0.0012 U	0.0012 U
m,p-Xylene	17.2	1.2	0.0022 U	0.014	5.1	6.4	2.3	0.0023 U	0.0024 U	0.0053	0.0026 U	0.0024 U	0.0025 U
Methyl ethyl ketone	NE	0.0097 U	0.006	0.013 U	0.28 U	0.34 U	0.023	0.0057 U	0.012	0.0088	0.0066 U	0.019	0.0092
Methyl Isobutyl Ketone	6,400	0.0097 U	0.0054 U	0.013 U	0.28 U	0.34 U	0.0059 U	0.0057 U	0.0061 U	0.0051 U	0.0066 U	0.0059 U	0.0062 U
Methylene Chloride	0.02	0.0097 U	0.0054 U	0.013 U	0.28 U	0.34 U	0.0059 U	0.0057 U	0.0061 U	0.0051 U	0.0066 U	0.0059 U	0.013
Naphthalene	0.25	0.0019 U	0.0011 U	0.0027 UJ	0.18	0.067 U	0.0012 U	0.0011 U	0.0012 U	0.0021	0.0013 U	0.0012 U	0.0012 U
n-Butylbenzene	526	0.0019 U	0.0011 U	0.0027 UJ	0.056 U	0.067 U	0.0051	0.016	0.0028	0.001 U	0.0013 U	0.0012 U	0.0012 U
n-Propylbenzene	3.3	0.0019 U	0.0011 U	0.0027 UJ	1.1	0.067 U	1.4	0.19	0.043	0.001 U	0.0013 U	0.0012 U	0.0012 U
o-Xylene	4	0.31	0.0011 U	0.0027 U	0.32	2.5	0.0088	0.0011 U	0.0012 U	0.0022	0.0013 U	0.0012 U	0.0012 U
p-Isopropyltoluene	NE	0.0019 U	0.0011 U	0.0027 UJ	0.097	0.067 U	0.0068	0.0011 U	0.0012 U	0.001 U	0.0013 U	0.0012 U	0.0012 U
sec-Butylbenzene	8,000	0.0019 U	0.0011 U	0.0027 UJ	0.10	0.067 U	0.023	0.025	0.0065	0.001 U	0.0013 U	0.0012 U	0.0012 U
tert-Butylbenzene	8,000	0.0019 U	0.0011 U	0.0027 UJ	0.056 U	0.067 U	0.0026	0.0027	0.0012 U	0.001 U	0.0013 U	0.0012 U	0.0012 U
Tetrachloroethene	0.007	0.0038	0.0011 U	0.0027 U	0.056 U	0.067 U	0.0012 U	0.0011 U	0.0012 U	0.001 U	0.0013 U	0.0012 U	0.0012 U
Toluene	4.65	0.02	0.0054 U	0.013 U	0.28 U	0.34 U	0.0059 U	0.0057 U	0.0061 U	0.0051 U	0.0066 U	0.0059 U	0.0062 U
Trichloroethene	0.004	0.0019 U	0.0011 U	0.0027 U	0.056 U	0.067 U	0.0012 U	0.0011 U	0.0012 U	0.001 U	0.0013 U	0.0012 U	0.0012 U
Trichlorofluoromethane	24,000	0.0019 U	0.0011 U	0.0027 U	0.056 U	0.067 U	0.0012 U	0.0011 U	0.0012 U	0.001 U	0.0013 U	0.0012 U	0.0012 U

TABLE 5-3

VOLATILE ORGANIC COMPOUND DETECTIONS IN SOIL ^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	2015 UST Removal			
		TANK2-SOIL-S1-5	TANK2-SOIL-S2-5	TANK2-SOIL-S3-5	TANK2-SOIL-B1-9.5
		6/22/2015	6/22/2015	6/22/2015	6/18/2015
Depth (feet bgs)		5 to 5	5 to 5	5 to 5	9.5 to 9.5
1,1-Dichloroethane	0.042	0.048 U	0.0012 U	0.052 U	0.34 U
1,2,4-Trimethylbenzene	NE	1.0	0.048 U	14	0.34 U
1,3,5-Trimethylbenzene	800	0.49	0.048 U	3.0	0.34 U
Acetone	28.9	0.48 U	0.017	0.52	3.4 U
Benzene	0.004	0.22	0.0012 U	0.052 U	0.34 U
Carbon Disulfide	2.83	0.048 U	0.0012 U	0.052 U	0.34 U
Ethylbenzene	4.6	1.2	0.053	4.3	0.34 U
Isopropylbenzene	8,000	0.048 U	0.0012 U	0.052 U	2.1
m,p-Xylene	17.2	6.6	0.26	140	0.68 U
Methyl ethyl ketone	NE	0.24 U	0.0058 U	0.26 U	1.7 U
Methyl Isobutyl Ketone	6,400	0.24 U	0.0058 U	0.26 U	1.7 U
Methylene Chloride	0.02	0.24 U	0.0058 U	0.26 U	1.7 U
Naphthalene	0.25	0.85	0.048 U	9.1	0.34 U
n-Butylbenzene	526	0.048 U	0.048 U	1.4	1.8
n-Propylbenzene	3.3	0.06	0.048 U	0.24	3.0
o-Xylene	4	0.44	0.0012 U	30	0.34 U
p-Isopropyltoluene	NE	0.15	0.048 U	1.7	0.34 U
sec-Butylbenzene	8,000	0.048 U	0.048 U	0.53	0.95
tert-Butylbenzene	8,000	0.048 U	0.048 U	0.052 U	0.34 U
Tetrachloroethene	0.007	0.048 U	0.0012 U	0.08	0.34 U
Toluene	4.65	0.49	0.0058 U	0.26 U	1.7 U
Trichloroethene	0.004	0.048 U	0.0012 U	0.052 U	0.34 U
Trichlorofluoromethane	24,000	0.048 U	0.0012 U	0.052 U	0.34 U

TABLE 5-3

VOLATILE ORGANIC COMPOUND DETECTIONS IN SOIL ^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	Monitoring Well Installation										
		KMW-02R	KMW-02R	KMW-03R	KMW-03R	KMW-06	KMW-06	KMW-06	KMW-07	KMW-07	KMW-08	KMW-08
		6/28/2016	6/28/2016	6/27/2016	6/27/2016	6/28/2016	6/28/2016	6/28/2016	6/27/2016	6/27/2016	6/27/2016	6/27/2016
Depth (feet bgs)		10 to 11	14 to 15	10.5 to 11.5	14 to 15	8.5 to 9.5	14.5 to 15.5	16.5 to 17.5	8.5 to 9.5	14.5 to 15.5	11.5 to 12.5	14.5 to 15.5
1,1-Dichloroethane	0.042	0.0011 U	0.0011 U	0.065 U	0.0013 U	0.063 U	0.0014 U	0.0012 U	0.0014 U	0.0011 U	0.068 U	0.0011 U
1,2,4-Trimethylbenzene	NE	0.0011 U	0.0011 U	0.57	0.0013 U	0.063 U	0.0014 U	0.0012 U	0.0014 U	0.0011 U	0.068 U	0.0011 U
1,3,5-Trimethylbenzene	800	0.0011 U	0.0011 U	0.14	0.0013 U	0.063 U	0.0014 U	0.0012 U	0.0014 U	0.0011 U	0.068 U	0.0011 U
Acetone	28.9	0.012 J	0.0053 U	0.32 U	0.007 J	0.32 U	0.061 J	0.0066 J	0.036 J	0.0072 J	0.34 U	0.0068 J
Benzene	0.004	0.0016	0.0011 U	0.083	0.0013 U	0.063 U	0.0014 U	0.0012 U	0.0014 U	0.0011 U	0.068 U	0.0011 U
Carbon Disulfide	2.83	0.0011 U	0.0011 U	0.065 U	0.011	0.063 U	0.018	0.0025	0.0014 U	0.0011 U	0.068 U	0.0096
Ethylbenzene	4.6	0.0011 U	0.0011 U	10	0.0013 U	0.063 U	0.0014 U	0.0012 U	0.0014 U	0.0011 U	0.068 U	0.0011 U
Isopropylbenzene	8,000	0.004	0.0011 U	1.2	0.0029	0.32	0.0014 U	0.0012 U	0.0014 U	0.0011 U	0.94	0.0011 U
m,p-Xylene	17.2	0.0022 U	0.0021 U	19	0.0026 U	0.13 U	0.0028 U	0.0025 U	0.0027 U	0.0022 U	0.14 U	0.0022 U
Methyl ethyl ketone	NE	0.0054 U	0.0053 U	0.32 U	0.0064 U	0.32 U	0.02 J	0.0062 U	0.0073 J	0.0056 U	0.34 U	0.0056 U
Methyl Isobutyl Ketone	6,400	0.0054 U	0.0053 U	0.32 U	0.0064 U	0.32 U	0.0069 U	0.0062 U	0.0068 U	0.0056 U	0.34 U	0.0056 U
Methylene Chloride	0.02	0.0054 U	0.0053 U	0.32 U	0.0064 U	0.63 U	0.0069 U	0.0062 U	0.0068 U	0.0056 U	0.34 U	0.0056 U
Naphthalene	0.25	0.0011 U	0.0011 U	0.18	0.0013 U	0.063 U	0.0014 U	0.0012 U	0.0014 U	0.0011 U	0.068 U	0.0011 U
n-Butylbenzene	526	0.0011 U	0.0011 U	1.0	0.0013 U	0.063 U	0.0014 U	0.0012 U	0.0014 U	0.0011 U	2.4	0.0011 U
n-Propylbenzene	3.3	0.0011 U	0.0011 U	1.8	0.0027	0.56	0.0014 U	0.0012 U	0.0014 U	0.0011 U	1.5	0.0011 U
o-Xylene	4	0.0011 U	0.0011 U	0.64	0.0013 U	0.063 U	0.0014 U	0.0012 U	0.0014 U	0.0011 U	0.068 U	0.0011 U
p-Isopropyltoluene	NE	0.0053	0.0011 U	0.073	0.0013 U	0.063 U	0.0014 U	0.0012 U	0.0014 U	0.0011 U	0.068 U	0.0011 U
sec-Butylbenzene	8,000	0.0011 U	0.0011 U	0.45	0.0013 U	0.18	0.0014 U	0.0012 U	0.004	0.0011 U	4.2	0.0011 U
tert-Butylbenzene	8,000	0.0011 U	0.0011 U	0.065 U	0.0013 U	0.063 U	0.0014 U	0.0012 U	0.0014 U	0.0011 U	0.2	0.0011 U
Tetrachloroethene	0.007	0.0013	0.000062	0.0032 U	0.000064 U	0.0032 U	0.000069 U	0.000062 U	0.000068 U	0.000056 U	0.0034 U	0.000056 U
Toluene	4.65	0.013	0.012	0.54	0.007	0.32 U	0.013	0.014	0.012	0.02	0.34 U	0.0098
Trichloroethene	0.004	0.00009	0.000053 U	0.0032 U	0.000064 U	0.0032 U	0.000069 U	0.000062 U	0.000068 U	0.000056 U	0.0034 U	0.000056 U
Trichlorofluoromethane	24,000	0.0011 U	0.0011 U	0.065 U	0.0013 U	0.063 U	0.0014 U	0.0012 U	0.0014 U	0.0011 U	0.068 U	0.0011 U

Notes:

- Data qualifiers are as follows:
U = The analyte was not detected at the reporting limit indicated.
J = The value is an estimate.
UJ = The analyte was not detected at the estimated reporting limit indicated.
- Yellow highlighting signifies results that exceeded the preliminary screening level.

Abbreviations:

-- = not analyzed
bgs = below ground surface
mg/kg = milligrams per kilogram
NE = not established
UST = underground storage tank

TABLE 5-4

SEMIVOLATILE COMPOUND DETECTIONS IN SOIL ^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	Phase II Investigation Samples														
		KM-1	KM-2	KM-5	KM-5	KM-6	KM-6	KM-7	KM-7	KM-8	KM-8	KM-11	KM-14	KM-15	KM-16	KM-16
		8/5/2009	8/5/2009	8/7/2009	8/7/2009	8/7/2009	8/7/2009	8/7/2009	8/7/2009	8/7/2009	8/7/2009	8/6/2009	8/6/2009	8/6/2009	8/6/2009	8/6/2009
Depth (feet bgs)		1.5 to 2	1.5 to 2	2 to 2.5	6 to 6.5	1.5 to 2	4 to 4.2	1.8 to 2	6.8 to 7	1.8 to 2	6.8 to 7	1.8 to 2	1.8 to 2	3.8 to 4	3.8 to 4	7.8 to 8
(3+4)-Methylphenol (m,p-Cresol)	8,000	0.21 U	0.035 U	0.21 U	0.18 U	0.18 U	0.18 U	4.1	0.19 U	0.43 U	0.36 U	0.21 U	0.037 U	0.04 U	0.18 U	0.035 UJ
1,2-Diphenylhydrazine	NE	0.21 U	0.035 U	0.21 U	0.18 U	0.18 U	0.18 U	0.49 U	0.19 U	0.43 U	0.36 U	0.21 U	0.037 U	0.04 U	0.18 U	0.035 UJ
1-Methylnaphthalene	34.5	0.064	0.007 U	0.0085 U	0.037	0.0072 U	0.011	0.013	0.02	0.019	0.12	4.1	0.04	0.086	0.023	0.014 UJ
2,4-Dimethylphenol	1.31	0.21 U	0.035 U	0.21 U	0.18 U	0.18 U	0.18 U	0.49 U	0.19 U	0.43 U	0.36 U	0.21 U	0.037 U	0.04 U	0.18 U	0.035 UJ
2-Methylnaphthalene	320	0.077	0.007 U	0.0089	0.062	0.0072 U	0.015	0.023	0.032	0.03	0.21	3.3	0.042	0.11	0.036	0.014 UJ
2-Methylphenol (o-Cresol)	2.33	0.21 U	0.035 U	0.21 U	0.18 U	0.18 U	0.18 U	3.5	0.19 U	0.43 U	0.36 U	0.21 U	0.037 U	0.04 U	0.18 U	0.035 UJ
Acenaphthene	66.1	0.042 U	0.007 U	0.0085 U	0.007 U	0.0072 U	0.0071 U	0.0098 U	0.0077 U	0.013	0.011	1.5	0.048	0.0099	0.19	0.014 UJ
Acenaphthylene	NE	0.042 U	0.007 U	0.0085 U	0.007 U	0.0072 U	0.0071 U	0.0098 U	0.0077 U	0.032	0.0072 U	0.28	0.017	0.062	0.0072 U	0.014 UJ
Anthracene	2,275	0.042 U	0.007 U	0.0085 U	0.007 U	0.0072 U	0.0071 U	0.0098 U	0.0077 U	0.13	0.0072 U	0.68	0.043	0.084	0.2	0.014 UJ
Benzo(ghi)perylene	NE	0.094	0.026	0.0085 U	0.007 U	0.0072 U	0.0071 U	0.0098 U	0.0077 U	0.72	0.011	0.41	0.14	0.30	5.2	0.014 UJ
bis(2-Ethylhexyl)phthalate	2.64	0.21 U	0.035 U	0.21 U	0.18 U	0.18 U	0.18 U	0.49 U	0.19 U	0.43 U	0.36 U	0.21 U	0.042	0.052	0.18 U	0.035 UJ
bis-2-Ethylhexyladipate	833	0.21 U	0.035 U	0.21 U	0.18 U	0.18 U	0.18 U	0.49 U	0.19 U	0.43 U	0.36 U	0.21 U	0.037 U	0.04 U	0.18 U	0.095 J
Carbazole	NE	0.21 U	0.035 U	0.21 U	0.18 U	0.18 U	0.18 U	0.49 U	0.19 U	0.43 U	0.36 U	0.21 U	0.037 U	0.04 U	0.18 U	0.035 UJ
Dibenzofuran	0.086	0.21 U	0.035 U	0.21 U	0.18 U	0.18 U	0.18 U	0.49 U	0.19 U	0.43 U	0.36 U	0.38	0.037 U	0.044	0.18 U	0.035 UJ
Fluoranthene	85.2	0.15	0.03	0.0085 U	0.01	0.011	0.012	0.025	0.0077 U	1.1	0.04	1.4	0.21	0.30	2.0	0.014 UJ
Fluorene	101	0.042 U	0.007 U	0.0085 U	0.007 U	0.0072 U	0.0071 U	0.0098 U	0.0077 U	0.034	0.01	1.0	0.023	0.013	0.073	0.014 UJ
Naphthalene	0.25	0.042 U	0.007 U	0.015	0.052	0.0072 U	0.023	0.14	0.0077 U	0.13	0.69	1.0	0.025	0.086	0.07	0.014 UJ
Phenanthrene	NE	0.14	0.01	0.0085 U	0.015	0.014	0.014	0.017	0.0077 U	0.45	0.034	3.5	0.16	0.2	0.89	0.014 UJ
Pyrene	655	0.16	0.029	0.0085 U	0.012	0.012	0.013	0.024	0.0077 U	1.2	0.054	1.8	0.24	0.29	1.9	0.014 UJ
Total cPAHs	0.1	0.143	0.044	0.006 U	0.005 U	0.005 U	0.005 U	0.007 U	0.006 U	1.02	0.019	0.698	0.204	0.348	5.66	0.011 U

TABLE 5-4

SEMIVOLATILE COMPOUND DETECTIONS IN SOIL ^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	UST Removal Investigation										
		Product-S Wall	Product-N Wall	Product-W1b Wall	Product-W2b Wall	Tank 1-B	Tank 3-B	Tank 6-B	Tank 7-B	Tank 8-B	Tank 9-B	Containment-E Wall
		10/20/2009	10/22/2009	11/13/2009	11/13/2009	10/27/2009	10/20/2009	10/21/2009	10/22/2009	10/22/2009	10/22/2009	10/27/2009
Depth (feet bgs)		9 to 9	9 to 9	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5	9.5 to 9.5
(3+4)-Methylphenol (m,p-Cresol)	8,000	0.041 U	0.042 U	0.037 U	0.036 U	0.043 U	0.039 U	0.037 U	0.038 U	0.039 U	0.037 U	0.04 U
1,2-Diphenylhydrazine	NE	0.041 U	0.042 U	0.037 U	0.036 U	0.043 U	0.039 U	0.037 U	0.038 U	0.039 U	0.037 U	0.04 U
1-Methylnaphthalene	34.5	0.0081 U	0.012	0.0075 U	0.0085	0.18	0.0078 U	0.0085	0.0076 U	0.0078 U	0.0074 U	0.081
2,4-Dimethylphenol	1.31	0.041 U	0.042 U	0.037 U	0.036 U	0.043 U	0.039 U	0.037 U	0.038 U	0.039 U	0.037 U	0.04 U
2-Methylnaphthalene	320	0.0081 U	0.019	0.0075 U	0.011	0.30	0.0078 U	0.013	0.0076 U	0.0078 U	0.0099	0.15
2-Methylphenol (o-Cresol)	2.33	0.041 U	0.042 U	0.037 U	0.036 U	0.043 U	0.039 U	0.037 U	0.038 U	0.039 U	0.037 U	0.04 U
Acenaphthene	66.1	0.0081 U	0.025	0.0075 U	0.0072 U	0.69	0.0078 U	0.0075 U	0.0076 U	0.0078 U	0.052	0.58
Acenaphthylene	NE	0.0081 U	0.0084 U	0.0075 U	0.0072 U	0.043 U	0.0078 U	0.0075 U	0.0076 U	0.0078 U	0.0074 U	0.04 U
Anthracene	2,275	0.0081 U	0.064	0.0075 U	0.014	0.043 U	0.01	0.022	0.0076 U	0.0078 U	0.041	0.49
Benzo(ghi)perylene	NE	0.0081 U	0.079	0.0075 U	0.049	0.085	0.08	0.061	0.011	0.024	0.069	0.23
bis(2-Ethylhexyl)phthalate	2.64	0.041 U	0.042 U	0.037 U	0.036 U	0.043 U	0.039 U	0.037 U	0.038 U	0.039 U	0.049	0.17
bis-2-Ethylhexyladipate	833	0.041 U	0.042 U	0.037 U	0.036 U	0.043 U	0.039 U	0.037 U	0.038 U	0.039 U	0.037 U	0.04 U
Carbazole	NE	0.041 U	0.042 U	0.037 U	0.036 U	0.33	0.039 U	0.037 U	0.038 U	0.039 U	0.041	0.22
Dibenzofuran	0.086	0.041 U	0.042 U	0.037 U	0.036 U	0.17	0.039 U	0.037 U	0.038 U	0.039 U	0.037 U	0.29
Fluoranthene	85.2	0.017	0.52	0.0098	0.11	0.095	0.1	0.25	0.0098	0.018	0.28	1.2
Fluorene	101	0.0081 U	0.05	0.0075 U	0.0076	0.27	0.0078 U	0.01	0.0076 U	0.0078 U	0.058	0.46
Naphthalene	0.25	0.0081 U	0.028	0.0075 U	0.014	0.06	0.0078 U	0.026	0.0076 U	0.0078 U	0.024	0.079
Phenanthrene	NE	0.0081 U	0.75	0.012	0.049	0.22	0.01	0.11	0.0076 U	0.0078 U	0.14	2.0
Pyrene	655	0.016	0.44	0.011	0.14	0.094	0.093	0.25	0.0096	0.017	0.25	0.95
Total cPAHs	0.1	0.007	0.181	0.006 U	0.076	0.121	0.112	0.124	0.018	0.038	0.115	0.416

TABLE 5-4

SEMIVOLATILE COMPOUND DETECTIONS IN SOIL ^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	UST Removal Investigation (Cont.)							Data Gaps Investigation and Monitoring Well Installation					
		Containment-S Wall	Containment-W Wall	Pipe-1	Pipe-C1	Tank 4-B2	TP4-1	TP4-8	KM-22	KM-22	KM-23	KM-24	KM-25	KM-26
		10/27/2009	10/28/2009	10/28/2009	11/17/2009	11/13/2009	11/13/2009	11/13/2009	8/23/2010	8/23/2010	8/23/2010	8/23/2010	8/23/2010	8/23/2010
Depth (feet bgs)		9.5 to 9.5	9.5 to 9.5	5.5 to 5.5	5.5 to 5.5	9.5 to 9.5	1 to 1	8 to 8	12.5 to 13	6.5 to 7	7.5 to 8	10.5 to 11	10.5 to 11	8 to 8.5
(3+4)-Methylphenol (m,p-Cresol)	8,000	0.041 U	0.039 U	0.057 U	0.037 U	0.04 U	0.046 U	0.037 U	0.039 U	0.051	0.035 U	0.04 U	0.037 U	0.035 U
1,2-Diphenylhydrazine	NE	0.041 U	0.039 U	0.057 U	0.037 U	0.04 U	0.046 U	0.037 U	0.039 U	0.043 U	0.035 U	0.04 U	0.037 U	0.035 U
1-Methylnaphthalene	34.5	0.0098	0.15	0.013	0.0075 U	0.0079 U	0.0091 U	0.018	0.027	0.0097	0.007 U	0.0081 U	0.018	0.007 U
2,4-Dimethylphenol	1.31	0.13	0.039 U	0.057 U	0.037 U	0.04 U	0.046 U	0.037 U	0.98 U	1.1 U	0.88 U	1 U	0.93 U	0.87 U
2-Methylnaphthalene	320	0.016	0.28	0.011	0.0075 U	0.0079 U	0.0091 U	0.04	0.061	0.0085	0.007 U	0.0081 U	0.012	0.007 U
2-Methylphenol (o-Cresol)	2.33	0.041 U	0.039 U	0.057 U	0.037 U	0.04 U	0.046 U	0.037 U	0.039 U	0.049	0.035 U	0.04 U	0.037 U	0.035 U
Acenaphthene	66.1	0.051	0.83	0.011 U	0.01	0.0079 U	0.0091 U	0.0073 U	0.0078 U	0.0085 U	0.007 U	0.0081 U	0.033	0.007 U
Acenaphthylene	NE	0.0081 U	0.039 U	0.011 U	0.0075 U	0.0079 U	0.0091 U	0.0073 U	0.0078 U	0.0095	0.007 U	0.0081 U	0.58	0.007 U
Anthracene	2,275	0.064	0.95	0.011 U	0.021	0.0079 U	0.0091 U	0.0084	0.0096	0.018	0.007 U	0.0081 U	0.64	0.007 U
Benzo(ghi)perylene	NE	0.034	0.51	0.031	0.041	0.055	0.05	0.012	0.014	0.064	0.05	0.0081 U	1.0	0.007 U
bis(2-Ethylhexyl)phthalate	2.64	0.041 U	0.099	0.057 U	0.2	0.04 U	0.046 U	0.037 U	0.039 U	0.043 U	0.035 U	0.04 U	0.037 U	0.035 U
bis-2-Ethylhexyladipate	833	0.041 U	0.039 U	0.057 U	0.037 U	0.04 U	0.046 U	0.037 U	0.039 U	0.043 U	0.035 U	0.04 U	0.037 U	0.035 U
Carbazole	NE	0.041 U	0.32	0.057 U	0.037 U	0.04 U	0.046 U	0.037 U	0.039 U	0.043 U	0.035 U	0.04 U	0.11	0.035 U
Dibenzofuran	0.086	0.041 U	0.41	0.057 U	0.037 U	0.04 U	0.046 U	0.037 U	0.039 U	0.043 U	0.035 U	0.04 U	0.05	0.035 U
Fluoranthene	85.2	0.16	2.2	0.045	0.082	0.049	0.055	0.046	0.051	0.12	0.056	0.023	4.5	0.0078
Fluorene	101	0.045	0.62	0.011 U	0.0093	0.0079 U	0.0091 U	0.0093	0.0088	0.0085 U	0.007 U	0.0081 U	0.22	0.007 U
Naphthalene	0.25	0.033	0.12	0.012	0.0075 U	0.0079 U	0.0091 U	0.091	0.2	0.024	0.007 U	0.0081 U	0.012	0.007 U
Phenanthrene	NE	0.20	2.9	0.037	0.041	0.011	0.024	0.054	0.061	0.076	0.01	0.0081 U	2.0	0.007 U
Pyrene	655	0.13	1.8	0.049	0.074	0.056	0.058	0.052	0.063	0.14	0.052	0.016	3.6	0.007 U
Total cPAHs	0.1	0.059	0.925	0.035	0.053	0.078	0.073	0.019	0.021	0.12	0.006 U	0.007	2.1	0.005 U

TABLE 5-4

SEMIVOLATILE COMPOUND DETECTIONS IN SOIL ^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	Data Gaps Investigation and Monitoring Well Installation (Cont.)							
		KM-31	KM-33	KM-35	KM-35	KM-36	KM-37	KM-37	KMW-02
		3/22/2011	3/22/2011	3/22/2011	3/22/2011	3/21/2011	3/21/2011	3/21/2011	3/18/2011
Depth (feet bgs)		2.5 to 3	4 to 4.5	2 to 2.5	6.5 to 7	6 to 6.5	2 to 2.5	5 to 5.5	5 to 5.5
(3+4)-Methylphenol (m,p-Cresol)	8,000	--	--	--	--	--	--	--	--
1,2-Diphenylhydrazine	NE	--	--	--	--	--	--	--	--
1-Methylnaphthalene	34.5	0.0073 U	1.1	0.0071 U	0.07	0.016	0.035	0.009	0.0085 U
2,4-Dimethylphenol	1.31	--	--	--	--	--	--	--	--
2-Methylnaphthalene	320	0.0073 U	0.62	0.0071 U	0.10	0.02	0.036	0.013	0.0085 U
2-Methylphenol (o-Cresol)	2.33	--	--	--	--	--	--	--	--
Acenaphthene	66.1	0.0073 U	0.36	0.0071 U	0.036 U	0.0075 U	0.0089 U	0.0074 U	0.026
Acenaphthylene	NE	0.01	0.053	0.0071 U	0.036 U	0.0075 U	0.012	0.0074 U	0.0085 U
Anthracene	2,275	0.022	0.37	0.0071 U	0.048	0.0075 U	0.012	0.0074 U	0.03
Benzo(ghi)perylene	NE	0.32	0.025	0.012	2.5	0.0075 U	0.066	0.067	0.38
bis(2-Ethylhexyl)phthalate	2.64	--	--	--	--	--	--	--	--
bis-2-Ethylhexyladipate	833	--	--	--	--	--	--	--	--
Carbazole	NE	--	--	--	--	--	--	--	--
Dibenzofuran	0.086	--	--	--	--	--	--	--	--
Fluoranthene	85.2	0.14	0.50	0.027	1.5	0.0075 U	0.082	0.058	0.35
Fluorene	101	0.0073 U	0.66	0.0071 U	0.036 U	0.0075 U	0.0089 U	0.0074 U	0.012
Naphthalene	0.25	0.0073 U	0.36	0.0071 U	0.063	0.0075 U	0.025	0.0074 U	0.015
Phenanthrene	NE	0.12	0.59	0.0071 U	0.33	0.0075 U	0.072	0.027	0.15
Pyrene	655	0.19	0.41	0.031	1.6	0.0075 U	0.082	0.084	0.31
Total cPAHs	0.1	0.326	0.054	0.023	4.9	0.006 U	0.069	0.070	0.489

TABLE 5-4

SEMIVOLATILE COMPOUND DETECTIONS IN SOIL^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	February/March 2015 UST Removal Confirmation Samples					Hot Spot Soil Excavation and Treatment							
		B7-PIPING-B1	B7-PIPING-B2	B7-PIPING-S1B	B7-PIPING-B5	B7-PIPING-S2	KM-30-EW	KM-30-SW	KM-30-Bot	KM-30-WW	KM-32-EW	KM-32-Bot	KM-32-NW	KM-32-SW
		2/27/2015	2/27/2015	3/13/2015	3/13/2015	2/27/2015	2/26/2015	2/26/2015	2/26/2015	2/26/2015	2/26/2015	2/26/2015	2/26/2015	2/26/2015
Depth (feet bgs)		5 to 5	5 to 5	4 to 4	5 to 5	4 to 4	4 to 4	5 to 5	5.5 to 5.5	5.5 to 5.5	1.5 to 1.5	2.5 to 2.5	1.5	1.5
(3+4)-Methylphenol (m,p-Cresol)	8,000	--	--	--	--	--	--	--	--		--	--		
1,2-Diphenylhydrazine	NE	--	--	--	--	--	--	--	--		--	--		
1-Methylnaphthalene	34.5	--	--	--	--	--	--	--	--		--	--		
2,4-Dimethylphenol	1.31	--	--	--	--	--	--	--	--		--	--		
2-Methylnaphthalene	320	--	--	--	--	--	--	--	--		--	--		
2-Methylphenol (o-Cresol)	2.33	--	--	--	--	--	--	--	--		--	--		
Acenaphthene	66.1	--	--	--	--	--	--	--	--		--	--		
Acenaphthylene	NE	--	--	--	--	--	--	--	--		--	--		
Anthracene	2,275	--	--	--	--	--	--	--	--		--	--		
Benzo(ghi)perylene	NE	--	--	--	--	--	--	--	--		--	--		
bis(2-Ethylhexyl)phthalate	2.64	--	--	--	--	--	--	--	--		--	--		
bis-2-Ethylhexyladipate	833	--	--	--	--	--	--	--	--		--	--		
Carbazole	NE	--	--	--	--	--	--	--	--		--	--		
Dibenzofuran	0.086	--	--	--	--	--	--	--	--		--	--		
Fluoranthene	85.2	--	--	--	--	--	--	--	--		--	--		
Fluorene	101	--	--	--	--	--	--	--	--		--	--		
Naphthalene	0.25	--	--	--	--	--	--	--	--		--	--		
Phenanthrene	NE	--	--	--	--	--	--	--	--		--	--		
Pyrene	655	--	--	--	--	--	--	--	--		--	--		
Total cPAHs	0.1	0.542	6.01	0.383	4.89	70.2	0.399	0.73	0.34	0.917	5.32	2.66	1.69	2.83

TABLE 5-4

SEMIVOLATILE COMPOUND DETECTIONS IN SOIL^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	Hot Spot Soil Excavation and Treatment (Cont.)										
		KM-32-WW	KM-39-EW	KM-39-B1	KM-39-NW	KM-39-WW	KM-39-SW	KM-41-EW	KM-41-B1	KM-41-NW	KM-41-SW	KM-41-WW
		2/26/2015	3/5/2015	3/5/2015	3/5/2015	3/5/2015	3/5/2015	3/6/2015	3/6/2015	3/6/2015	3/6/2015	3/6/2015
Depth (feet bgs)		1.5	3.5 to 3.5	4.5 to 4.5	3.5	3.5	3.5	4 to 4	6 to 6	4	4	4
(3+4)-Methylphenol (m,p-Cresol)	8,000		--	--				--	--			
1,2-Diphenylhydrazine	NE		--	--				--	--			
1-Methylnaphthalene	34.5		--	--				--	--			
2,4-Dimethylphenol	1.31		--	--				--	--			
2-Methylnaphthalene	320		--	--				--	--			
2-Methylphenol (o-Cresol)	2.33		--	--				--	--			
Acenaphthene	66.1		--	--				--	--			
Acenaphthylene	NE		--	--				--	--			
Anthracene	2,275		--	--				--	--			
Benzo(ghi)perylene	NE		--	--				--	--			
bis(2-Ethylhexyl)phthalate	2.64		--	--				--	--			
bis-2-Ethylhexyladipate	833		--	--				--	--			
Carbazole	NE		--	--				--	--			
Dibenzofuran	0.086		--	--				--	--			
Fluoranthene	85.2		--	--				--	--			
Fluorene	101		--	--				--	--			
Naphthalene	0.25		--	--				--	--			
Phenanthrene	NE		--	--				--	--			
Pyrene	655		--	--				--	--			
Total cPAHs	0.1	5.60	5.92	0.165	0.118	0.21	0.094	0.085	0.149	0.110	0.154	0.348

TABLE 5-4

SEMIVOLATILE COMPOUND DETECTIONS IN SOIL^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	Samples Collected North of Western Remedial Trench					Monitoring Well Installation						
		KM-53	KM-53	KM-53	KM-54	KM-55	KMW-02R	KMW-03R	KMW-03R	KMW-06	KMW-06	KMW-08	KMW-08
		8/2/2016	8/2/2016	8/2/2016	8/2/2016	8/2/2016	6/28/2016	6/27/2016	6/27/2016	6/28/2016	6/28/2016	6/27/2016	6/27/2016
Depth (feet bgs)		2.5 to 2.5	6 to 6	9 to 9	3 to 3	3 to 3	10 to 11	10.5 to 11.5	14 to 15	8.5 to 9.5	14.5 to 15.5	11.5 to 12.5	14.5 to 15.5
(3+4)-Methylphenol (m,p-Cresol)	8,000	--	--	--	--	--	--	0.39 U	0.04 U	--	--	0.41 U	0.039 U
1,2-Diphenylhydrazine	NE	--	--	--	--	--	--	0.041	0.04 U	--	--	0.041 U	0.039 U
1-Methylnaphthalene	34.5	0.0088	0.007 U	0.0081	0.062	0.059	0.008 U	0.032	0.011	0.42	0.062	0.16	0.0078 U
2,4-Dimethylphenol	1.31	--	--	--	--	--	--	0.39 U	0.04 U	--	--	0.66	0.039 U
2-Methylnaphthalene	320	0.012	0.007 U	0.0099	0.057	0.066	0.008 U	0.019	0.011	0.40	0.0083 U	0.098	0.0078 U
2-Methylphenol (o-Cresol)	2.33	--	--	--	--	--	--	0.39 U	0.04 U	--	--	0.41 U	0.039 U
Acenaphthene	66.1	0.0075 U	0.009	0.016	0.061	0.062	0.008 U	0.016	0.021	0.18	0.54	0.48	0.0078 U
Acenaphthylene	NE	0.0075 U	0.007 U	0.029	0.015	0.012	0.008 U	0.016 U	0.0081 U	0.0097	0.05	0.076	0.0078 U
Anthracene	2,275	0.0075 U	0.007 U	0.016	0.044	0.094	0.008 U	0.016 U	0.0081 U	0.05	0.0097	0.31	0.0078 U
Benzo(ghi)perylene	NE	0.0082	0.007 U	0.25	0.12	1.8	0.073	0.016 U	0.0081 U	0.014	0.0083 U	0.44	0.0078 U
bis(2-Ethylhexyl)phthalate	2.64	--	--	--	--	--	--	0.039 U	0.04 U	--	--	0.041 U	0.039 U
bis-2-Ethylhexyladipate	833	--	--	--	--	--	--	0.039 U	0.04 U	--	--	0.041 U	0.039 U
Carbazole	NE	--	--	--	--	--	--	0.039 U	0.04 U	--	--	0.041 U	0.039 U
Dibenzofuran	0.086	--	--	--	--	--	--	0.039 U	0.04 U	--	--	0.18	0.039 U
Fluoranthene	85.2	0.011	0.007 U	0.38	0.30	1.7	0.035	0.064	0.0081 U	0.068	0.012	1.2	0.0078 U
Fluorene	101	0.0075 U	0.007 U	0.013	0.065	0.043	0.008 U	0.016 U	0.017	0.11	0.061	0.56	0.0078 U
Naphthalene	0.25	0.018	0.012	0.012	0.093	0.1	0.008 U	0.13	0.033	0.078	0.057	0.69	0.019
Phenanthrene	NE	0.0082	0.007 U	0.015	0.30	0.52	0.018	0.09	0.012	0.21	0.0092	0.85	0.0078 U
Pyrene	655	0.013	0.007 U	0.69	0.30	1.6	0.037	0.084	0.0081 U	0.069	0.015	1.2	0.0078 U
Total cPAHs	0.1	0.019	0.005 U	0.401	0.185	2.43	0.089	0.030	0.006 U	0.027	0.006 U	0.858	0.006 U

Notes:

- Data qualifiers are as follows:
U = The analyte was not detected at the reporting limit indicated.
J = The value is an estimate.
UJ = The analyte was not detected at the estimated reporting limit indicated.
- Yellow highlighting signifies results that exceeded the preliminary screening level.

Abbreviations:

-- = not analyzed
bgs = below ground surface
mg/kg = milligrams per kilogram
UST = underground storage tank

TABLE 5-5

POLYCHLORINATED BIPHEYNL DETECTIONS IN SOIL ^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	KM-14	KM-38	KM-42	KM-43
		8/6/2009	3/23/2011	3/24/2011	3/23/2011
		1.8 to 2	4.5 to 5	4.5 to 5	1.5 to 2
Aroclor 1016	5.6	0.056 U	0.054 U	0.058 U	0.052 U
Aroclor 1221	NE	0.056 U	0.054 U	0.058 U	0.052 U
Aroclor 1232	NE	0.056 U	0.054 U	0.058 U	0.052 U
Aroclor 1242	NE	0.056 U	0.054 U	0.058 U	0.052 U
Aroclor 1248	NE	0.056 U	0.054 U	0.058 U	0.052 U
Aroclor 1254	0.5	0.056 U	0.054 U	0.058 U	0.052 U
Aroclor 1260	0.5	0.057	0.24	0.53	0.17
Total PCBs	1.0	0.057	0.24	0.53	0.17

Notes:

1. Data qualifiers are as follows:
U = The analyte was not detected at the reporting limit indicated.
2. Following WAC 173-340-7-[8] the mixture of PCBs is considered a single hazardous substance; therefore, only total PCBs are compared to a screening level.

Abbreviations:

PCBs = polychlorinated biphenyls

TABLE 5-6

GROUNDWATER DETECTIONS IN GRAB SAMPLES^{1,2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	Product-GW ¹	Contain-GW	Containment-W Wall	Air concentrations in micrograms per liter (µg/L):															
		10/22/2009	10/27/2009	10/28/2009	8/5/2009	8/5/2009	8/7/2009	8/7/2009	8/7/2009	8/5/2009	8/6/2009	8/6/2009	8/6/2009	12/23/2009	12/23/2009	12/23/2009	12/23/2009	12/23/2009	8/23/2010	8/23/2010
Total Metals																				
Arsenic	3.3	12	58	--	3.3 U ⁶	3.3 U	3.3 U	3.3 U	--	3.3 U	3.3 U	3.3 U	3.3 U	--	--	--	--	--	17	13
Chromium	50	30	110	--	11 U	11 U	11 U	11 U	--	11 U	11 U	11 U	11 U	--	--	--	--	--	11 U	28
Copper	10	110	310	--	11 U	11 U	--	--	--	11 U	--	--	--	--	--	--	--	--	25	34
Lead	1.1	14	500	200 U	22	1.1 U	1.1 U	1.1 U	--	1.1 U	1.4	1.1 U	1.1 U	--	--	--	--	--	4.5	19
Mercury	0.5	0.5 U	0.88	--	0.5 U	0.5 U	0.5 U	0.5 U	--	0.5 U	0.5 U	0.5 U	0.5 U	--	--	--	--	--	0.5 U	0.5 U
Nickel	49	26	120	--	22 U	22 U	--	--	--	22 U	--	--	--	--	--	--	--	--	22 U	20
Zinc	50	120	2000	--	36	28 U	--	--	--	28 U	--	--	--	--	--	--	--	--	28 U	55
Semivolatile Organic Compounds																				
(3+4)-Methylphenol (m,p-Cresol)	NE	10 U	20 U	--	1.3 U	1.0 U	0.99 U	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U	--	--	--	--	--	9.7	0.99 U
1,4-Dinitrobenzene	1.6	10 U	20 U	--	1.3 U	1.0 U	0.99 U	1.0 U	--	1.6	1.0 U	1.0 U	1.0 U	--	--	--	--	--	0.95 U	0.99 U
1-Methylnaphthalene	1.5	0.51 U	44	--	0.13 U	0.1 U	0.099 U	0.1 U	--	0.45	0.1 U	0.1 U	0.1 U	--	--	--	--	--	0.76	0.099 U
2,4-Dimethylphenol	160	12	20 U	--	1.3 U	1.0 U	0.99 U	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U	--	--	--	--	--	20	0.99 U
2-Methylnaphthalene	32	1.8	95	--	0.13 U	0.1 U	0.099 U	0.1 U	--	0.27	0.1 U	0.1 U	0.12	--	--	--	--	--	1.3	0.099 U
2-Methylphenol (o-Cresol)	400	14	20 U	--	1.3 U	1.0 U	0.99 U	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U	--	--	--	--	--	3.6	0.99 U
Acenaphthene	648	0.51 U	180	--	0.13 U	0.1 U	0.099 U	0.1 U	--	0.33	0.13	0.1 U	0.1 U	--	--	--	--	--	0.095 U	0.099 U
Acenaphthylene	NE	0.51 U	20 U	--	0.13 U	0.1 U	0.099 U	0.1 U	--	0.1 U	0.12	0.1 U	0.1 U	--	--	--	--	--	0.095 U	0.099 U
Anthracene	4800	0.51 U	310	--	0.13 U	0.1 U	0.099 U	0.1 U	--	0.1 U	0.1 U	0.1 U	0.1 U	--	--	--	--	--	0.095 U	0.099 U
Benzo(a)anthracene	0.01	0.3	150	--	0.013 U	0.01 U	0.0099 U	0.01 U	--	0.021	0.01 U	0.01 U	0.01 U	0.0097 U	--	0.0098	0.0097 U	--	0.022	0.064
Benzo(a)pyrene	0.01	0.37	120	--	0.013 U	0.01 U	0.0099 U	0.01 U	--	0.014	0.01 U	0.01 U	0.01 U	0.0097 U	--	0.0097 U	0.0097 U	--	0.022	0.061
Benzo(b)fluoranthene	0.01	0.65	160	--	0.013 U	0.01 U	0.0099 U	0.01 U	--	0.02	0.01 U	0.01 U	0.01 U	0.0097 U	--	0.0097 U	0.0097 U	--	0.017	0.054
Benzo(ghi)perylene	NE	0.29	72	--	0.013 U	0.01 U	0.0099 U	0.01 U	--	0.01	0.01 U	0.01 U	0.01 U	--	--	--	--	--	0.015	0.039
Benzo(k)fluoranthene	0.01	0.2	46	--	0.013 U	0.01 U	0.0099 U	0.01 U	--	0.01 U	0.01 U	0.01 U	0.01 U	0.0097 U	--	0.0097 U	0.0097 U	--	0.017	0.051
bis(2-Ethylhexyl)phthalate	1.2	10 U	20 U	--	1.3 U	1.0 U	0.99 U	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U	--	--	--	--	--	0.95 U	1.9
Carbazole	NE	10 U	91	--	1.3 U	1.0 U	0.99 U	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U	--	--	--	--	--	0.95 U	0.99 U
Chrysene	0.01	0.37	180	--	0.013 U	0.01 U	0.0099 U	0.01 U	--	0.02	0.01 U	0.01 U	0.01 U	0.0097 U	--	0.0097 U	0.0097 U	--	0.025	0.076
Dibenz(a,h)anthracene	0.01	0.12	21	--	0.013 U	0.01 U	0.0099 U	0.01 U	--	0.01 U	0.01 U	0.01 U	0.01 U	0.0097 U	--	0.0097 U	0.0097 U	--	0.0095 U	0.012
Dibenzofuran	16	10 U	110	--	1.3 U	1.0 U	0.99 U	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U	--	--	--	--	--	0.95 U	0.99 U
Dimethylphthalate	270,000	32	20 U	--	1.3 U	1.0 U	0.99 U	1.0 U	--	1.0 U	1.0 U	1.0 U	1.0 U	--	--	--	--	--	0.95 U	0.99 U
Di-n-octylphthalate	160	10 U	20 U	--	1.3 U	1.0 U	0.99 U	1.0 U	--	1.0 U	1.4	1.0 U	1.0 U	--	--	--	--	--	0.95 U	0.99 U
Fluoranthene	86	0.51 U	530	--	0.13 U	0.1 U	0.099 U	0.1 U	--	0.1 U	0.1 U	0.1 U	0.1 U	--	--	--	--	--	0.095 U	0.17
Fluorene	640	0.51 U	180	--	0.13 U	0.1 U	0.099 U	0.1 U	--	0.14	0.1 U	0.1 U	0.1 U	--	--	--	--	--	0.095 U	0.099 U
Indeno(1,2,3-cd)pyrene	0.01	0.25	72	--	0.013 U	0.01 U	0.0099 U	0.01 U	--	0.01 U	0.01 U	0.01 U	0.01 U	0.0097 U	--	0.0097 U	0.0097 U	--	0.011	0.035
Naphthalene	8.9	0.93	670	--	0.13 U	0.1 U	0.099 U	0.1 U	--	0.77	0.37	0.13	1.4	--	--	--	--	--	22	0.099 U
Phenanthrene	NE	0.51 U	830	--	0.13 U	0.1 U	0.099 U	0.1 U	--	0.12	0.1 U	0.1 U	0.1 U	--	--	--	--	--	0.15	0.12
Pyrene	480	0.51 U	430	--	0.13 U	0.1 U	0.099 U	0.1 U	--	0.1 U	0.1 U	0.1 U	0.1 U	--	--	--	--	--	0.095 U	0.14

TABLE 5-6

GROUNDWATER DETECTIONS IN GRAB SAMPLES^{1, 2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	Product-GW ¹	Contain-GW	Containment-W Wall	Air concentrations in micrograms per liter (µg/L)																						
		10/22/2009	10/27/2009	10/28/2009	8/5/2009	8/5/2009	8/7/2009	8/7/2009	8/7/2009	8/5/2009	8/6/2009	8/6/2009	8/6/2009	12/23/2009	12/23/2009	12/23/2009	12/23/2009	12/23/2009	12/23/2009	8/23/2010	8/23/2010						
Total Petroleum Hydrocarbons																											
Gasoline Range Organics	800	200,000	510,000	--	100 U	100 U	290	100 U	--	100 U	100 U	100 U	1,300	100 U	--	710	400 U	100 U	91,000	100 U							
Diesel Range	500	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--							
Lube Oil	500	450	1,500	--	430 U	450 U	450 U	440 U	--	440 U	440 U	440 U	450 U	--	--	--	--	--	430 U	430 U							
Benzene, Toluene, Ethylbenzene, and Xylenes																											
Benzene	0.8	--	--	--	--	--	4.4	1.0 U	--	--	1.0 U	1.0 U	1.0 U	--	--	--	--	--	--	--							
Ethylbenzene	530	--	--	--	--	--	16	1.4	--	--	2.2	1.0 U	96	--	--	--	--	--	--	--							
m,p-Xylene	1,600	--	--	--	--	--	69	1.4	--	--	9.1	1.0 U	56	--	--	--	--	--	--	--							
o-Xylene	440	--	--	--	--	--	8	1.0 U	--	--	2.5	1.0 U	7.2	--	--	--	--	--	--	--							
Toluene	640	--	--	--	--	--	1.0 U	5.8	--	--	1.0 U	1.0 U	14	--	--	--	--	--	--	--							
Volatile Organic Compounds																											
1,1,1-Trichloroethane	5,238	100 U	100 U	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.4 U	0.33	0.2 U	0.2 U	0.2 U	0.2 U	200 U	0.2 U							
1,1-Dichloroethane	7.7	100 U	100 U	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.59	0.77	0.2 U	0.2 U	0.2 U	0.2 U	200 U	0.2 U							
1,2,4-Trimethylbenzene	28	100 U	430	--	0.2 U	0.2 U	0.28	0.2 U	0.77 J	0.2 U	0.25	0.2 U	33	0.2 U	0.96	0.2 U	0.2 U	0.2 U	520	0.2 U							
1,2-Dichloroethane	0.38	100 U	100 U	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.4 U	0.28	0.2 U	0.2 U	0.2 U	0.2 U	200 U	0.2 U							
1,3,5-Trimethylbenzene	80	100 U	120	--	0.2 U	0.2 U	0.2 U	0.2 U	0.28 J	0.2 U	0.2 U	0.2 U	7.8	0.2 U	0.61	0.2 U	0.2 U	0.2 U	250	0.2 U							
Acetone	7,200	13000	2,500 U	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	10 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5,000 U	5.0 U							
Benzene	0.8	100 U	100 U	--	0.2 U	0.2 U	4.2	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	200 U	0.2 U							
Chloroform	1.2	100 U	100 U	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.4 U	0.37	0.2 U	0.2 U	0.2 U	0.2 U	200 U	0.2 U							
Cis-1,2-Dichloroethene	16	100 U	100 U	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U	8.9	11	0.2 U	0.2 U	0.2 U	0.2 U	200 U	0.2 U							
Ethylbenzene	530	8100	13,000	--	0.2 U	0.2 U	15	0.48	18 J	0.2 U	1.2	0.2 U	93	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	8,900	0.2 U							
Isopropylbenzene	800	100 U	100	--	0.2 U	0.2 U	0.65	0.2 U	0.22 J	0.88	0.2 U	0.2 U	21	0.2 U	0.2 U	18	12	0.2 U	200 U	0.2 U							
m,p-Xylene	1,600	37,000	45,000	--	0.4 U	0.4 U	57	1.0	25 J	0.4 U	5.9	0.52	47	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	27,000	0.4 U							
Naphthalene	8.9	500 U	590	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	2.3	1.1	1.0 U	3.7	1.0 U	160	1.0 U	1.0 U	1.0 U	1,000	1.0 U							
n-Butylbenzene	400	100 U	100 U	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	5.5	0.91	0.2 U	200 U	0.2 U							
n-Propylbenzene	800	100 U	100 U	--	0.2 U	0.2 U	0.29	0.26	0.26 J	0.75	0.2 U	0.2 U	28	0.2 U	0.2 U	34	16	0.2 U	200 U	0.2 U							
o-Xylene	440	13,000	12,000	--	0.2 U	0.2 U	6.7	0.2 U	0.2 UJ	0.2 U	1.7	0.2 U	5.6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	9,000	0.2 U							
p-Isopropyltoluene	NE	100 U	100 U	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U	3.0	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	200 U	0.2 U							
sec-Butylbenzene	800	100 U	100 U	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U	11	0.2 U	0.2 U	13	6.4	0.2 U	200 U	0.2 U							
tert-Butylbenzene	800	100 U	100 U	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U	1.3	0.2 U	0.2 U	0.79	0.69	0.2 U	200 U	0.2 U							
Toluene	640	17,000	1,200	--	1.0 U	1.0 U	1.0 U	13	1.0 UJ	1.0 U	1.0 U	1.0 U	12	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4,700	1.0 U							
Trans-1,2-Dichloroethene	160	100 U	100 U	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.4 U	0.23	0.2 U	0.2 U	0.2 U	0.2 U	200 U	0.2 U							
Trichloroethene	0.54	100 U	100 U	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.6	9.0	0.2 U	0.2 U	1.1	0.2 U	200 U	0.2 U							
Trichlorofluoromethane	120	100 U	100 U	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.4 U	0.27	0.2 U	0.2 U	0.2 U	0.2 U	200 U	0.2 U							
Vinyl Chloride	0.2	100 U	100 U	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U	3.8	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	200 U	0.2 U							

TABLE 5-6

GROUNDWATER DETECTIONS IN GRAB SAMPLES^{1, 2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

	Cleanup Level	Air concentrations in micrograms per liter (µg/L)																									
		KM-27	KM-29	KM-30	KM-31	KM-32	KM-33	KM-34	KM-35	KM-36	KM-37	KM-39	KM-41	KM-44	KM-45	KM-46	KM-47	KM-48	KM-49	KM-50	KM-51	KM-52	KM-53	KM-54	KM-55		
		8/24/2010	8/24/2010	3/23/2011	3/22/2011	3/22/2011	3/22/2011	3/21/2011	3/22/2011	3/21/2011	3/21/2011	3/24/2011	3/24/2011	3/4/2015	3/4/2015	3/4/2015	3/4/2015	3/4/2015	3/4/2015	3/4/2015	3/4/2015	3/4/2015	3/4/2015	8/2/2016	8/2/2016	8/2/2016	
Total Metals																											
Arsenic	3.3	3.3 U	8.6	--	--	--	8.2	3.3 U	3.3 U	20	15	17	11	--	--	--	--	--	--	--	--	--	--	--	--	--	
Chromium	50	11 U	11 U	--	--	--	25	11 U	11 U	11 U	11 U	11 U	11 U	--	--	--	--	--	--	--	--	--	--	--	--	--	
Copper	10	11 U	11 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Lead	1.1	1.1 U	1.6	--	--	--	6.5	1.1 U	1.1 U	1.1 U	13	2.9	60	--	--	--	--	--	--	--	--	--	--	--	--	--	
Mercury	0.5	0.5 U	0.5 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Nickel	49	22 U	22 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Zinc	50	28 U	28 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Semivolatile Organic Compounds																											
(3+4)-Methylphenol (m,p-Cresol)	NE	0.97 U	0.95 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
1,4-Dinitrobenzene	1.6	0.97 U	0.95 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
1-Methylnaphthalene	1.5	0.097 U	0.095 U	0.96 U	0.097 U	0.1 U	0.39	0.099 U	0.097 U	0.91	0.5 J ^b	9.2	18	--	--	--	--	--	--	--	--	--	--	--	--	--	
2,4-Dimethylphenol	160	0.97 U	0.95 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
2-Methylnaphthalene	32	0.097 U	0.095 U	0.96 U	0.097 U	0.1 U	0.096 U	0.099 U	0.097 U	1.1	0.73 J	4.8 U	22	--	--	--	--	--	--	--	--	--	--	--	--	--	
2-Methylphenol (o-Cresol)	400	0.97 U	0.95 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Acenaphthene	648	0.097 U	0.095 U	0.96	0.097 U	0.1 U	1.9	0.099 U	0.097 U	0.43	0.12 J	4.8 U	9.6 U	--	--	--	--	--	--	--	--	--	--	--	--	--	
Acenaphthylene	NE	0.097 U	0.095 U	0.96 U	0.097 U	0.1 U	0.096 U	0.099 U	0.097 U	0.1 U	0.098 UJ	4.8 U	9.6 U	--	--	--	--	--	--	--	--	--	--	--	--	--	
Anthracene	4800	0.097 U	0.095 U	0.96 U	0.097 U	0.1 U	0.18	0.099 U	0.097 U	0.1 U	0.098 UJ	4.8 U	9.6 U	--	--	--	--	--	--	--	--	--	--	--	--	--	
Benzo(a)anthracene	0.01	0.0097 U	0.012	0.096 U	0.0097 U	0.16	0.02	0.0099 U	0.0097 U	0.035	0.043 J	0.48 U	0.96 U	--	--	--	--	--	--	--	--	--	--	--	--	--	
Benzo(a)pyrene	0.01	0.0097 U	0.017	0.096 U	0.0097 U	0.18	0.0096 U	0.0099 U	0.0097 U	0.032	0.035 J	0.48 U	0.96 U	--	--	--	--	--	--	--	--	--	--	--	--	--	
Benzo(b)fluoranthene	0.01	0.0097 U	0.01	0.096 U	0.0097 U	0.21	0.0096 U	0.0099 U	0.0097 U	0.027	0.032 J	0.48 U	0.96 U	--	--	--	--	--	--	--	--	--	--	--	--	--	
Benzo(ghi)perylene	NE	0.0097 U	0.0095 U	0.096 U	0.0097 U	0.14	0.0096 U	0.0099 U	0.0097 U	0.05	0.037 J	0.48 U	0.96 U	--	--	--	--	--	--	--	--	--	--	--	--	--	
Benzo(k)fluoranthene	0.01	0.0097 U	0.0095 U	0.096 U	0.0097 U	0.16	0.0096 U	0.0099 U	0.0097 U	0.021	0.026 J	0.48 U	0.96 U	--	--	--	--	--	--	--	--	--	--	--	--	--	
bis(2-Ethylhexyl)phthalate	1.2	0.97 U	7.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Carbazole	NE	0.97 U	0.95 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Chrysene	0.01	0.0097 U	0.0095 U	0.096 U	0.0097 U	0.23	0.022	0.0099 U	0.0097 U	0.042	0.053 J	0.48 U	0.96 U	--	--	--	--	--	--	--	--	--	--	--	--	--	
Dibenz(a,h)anthracene	0.01	0.0097 U	0.0095 U	0.096 U	0.0097 U	0.048	0.0096 U	0.0099 U	0.0097 U	0.01 U	0.0098 UJ	0.48 U	0.96 U	--	--	--	--	--	--	--	--	--	--	--	--	--	
Dibenzofuran	16	0.97 U	0.95 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Dimethylphthalate	270,000	0.97 U	0.95 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Di-n-octylphthalate	160	0.97 U	0.95 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Fluoranthene	86	0.097 U	0.095 U	0.96 U	0.097 U	0.18	0.14	0.099 U	0.097 U	0.1 U	0.1 J	4.8 U	9.6 U	--	--	--	--	--	--	--	--	--	--	--	--	--	
Fluorene	640	0.097 U	0.095 U	0.96 U	0.097 U	0.1 U	0.93	0.099 U	0.097 U	0.1 U	0.098 UJ	4.8 U	9.6 U	--	--	--	--	--	--	--	--	--	--	--	--	--	
Indeno(1,2,3-cd)pyrene	0.01	0.0097 U	0.0095 U	0.096 U	0.0097 U	0.12	0.0096 U	0.0099 U	0.0097 U	0.032	0.027 J	0.48 U	0.96 U	--	--	--	--	--	--	--	--	--	--	--	--	--	
Naphthalene	8.9	0.097 U	0.095 U	0.96 U	0.097 U	0.1 U	0.16	0.099 U	0.097 U	3.6	4.6 J	4.8 U	27 J	--	--	--	--	--	--	--	--	--	--	--	--	--	
Phenanthrene	NE	0.097 U	0.095 U	0.96 U	0.097 U	0.1 U	0.096 U	0.099 U	0.097 U	0.2	0.17 J	4.8 U	9.6 U	--	--	--	--	--	--	--	--	--	--	--	--	--	
Pyrene	480	0.097 U	0.095 U	0.96 U	0.097 U	0.17	0.1	0.099 U	0.097 U	0.1 U	0.1 J	4.8 U	9.6 U	--	--	--	--	--	--	--	--	--	--	--	--	--	

TABLE 5-6

GROUNDWATER DETECTIONS IN GRAB SAMPLES^{1, 2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

	Cleanup Level	KM-27	KM-29	KM-30	KM-31	KM-32	KM-33	KM-34	KM-35	KM-36	KM-37	KM-39	KM-41	KM-44	KM-45	KM-46	KM-47	KM-48	KM-49	KM-50	KM-51	KM-52	KM-53	KM-54	KM-55
		8/24/2010	8/24/2010	3/23/2011	3/22/2011	3/22/2011	3/22/2011	3/21/2011	3/22/2011	3/21/2011	3/21/2011	3/24/2011	3/24/2011	3/4/2015	3/4/2015	3/4/2015	3/4/2015	3/4/2015	3/4/2015	3/4/2015	3/4/2015	3/4/2015	8/2/2016	8/2/2016	8/2/2016
Total Petroleum Hydrocarbons																									
Gasoline Range Organics	800/1000	100 U	100 U	840	100 U	100 U	160	190	100 U	31,000	38,000	6,600	4,400	3,500	3,500	14,000	2,100	4,600	26,000	3,100	4,700	1,300	580	170	270
Diesel Range	500	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2000	290	1,800
Lube Oil	500	420 U	420 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	560	420 U	510
Benzene, Toluene, Ethylbenzene, and Xylenes																									
Benzene	0.8	--	--	--	--	--	1.0 U	1.0 U	1.0 U	93	35	11	--	--	--	--	--	--	--	--	--	--	0.29	0.20 U	8.0
Ethylbenzene	530	--	--	--	--	--	1.0 U	13	1.0 U	4,700	5,100	10 U	--	--	--	--	--	--	--	--	--	--	1.0 U	3.9	2.1
m,p-Xylene	1600	--	--	--	--	--	1.0 U	56	1.0 U	1,400	10,000	27	--	--	--	--	--	--	--	--	--	--	2.0	25	2.8
o-Xylene	440	--	--	--	--	--	1.0 U	18	1.0 U	50 U	1,600	10 U	--	--	--	--	--	--	--	--	--	--	1.0 U	1.0 U	1.1
Toluene	640	--	--	--	--	--	1.0 U	1.4	1.0 U	10 U	10 U	37	--	--	--	--	--	--	--	--	--	--	1.0 U	12	2.3
Volatile Organic Compounds																									
1,1,1-Trichloroethane	5,238	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	--	--	--	--	--	--	0.4 U	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	7.7	0.2 U	0.2 U	0.2 U	0.26	0.2 U	--	--	--	--	--	--	0.4 U	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	28	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	--	--	--	--	--	--	6.0 J	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	0.38	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	--	--	--	--	--	--	0.4 U	--	--	--	--	--	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	80	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	--	--	--	--	--	--	1.3 J	--	--	--	--	--	--	--	--	--	--	--	--
Acetone	7,200	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	--	--	--	--	--	--	10 U	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	0.8	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	--	--	--	--	--	--	23 J	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	1.2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	--	--	--	--	--	--	0.4 U	--	--	--	--	--	--	--	--	--	--	--	--
Cis-1,2-Dichloroethene	16	0.2 U	0.2 U	0.2 U	2.1	0.2 U	--	--	--	--	--	--	0.4 U	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	530	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	--	--	--	--	--	--	9.6 J	--	--	--	--	--	--	--	--	--	--	--	--
Isopropylbenzene	800	0.2 U	0.2 U	8.0	0.2 U	0.2 U	--	--	--	--	--	--	24 J	--	--	--	--	--	--	--	--	--	--	--	--
m,p-Xylene	1,600	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	--	--	--	--	--	--	26 J	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	8.9	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--	--	--	--	--	--	92 J	--	--	--	--	--	--	--	--	--	--	--	--
n-Butylbenzene	400	0.2 U	0.2 U	4.3	0.2 U	0.2 U	--	--	--	--	--	--	4.8 J	--	--	--	--	--	--	--	--	--	--	--	--
n-Propylbenzene	800	0.2 U	0.2 U	10	0.2 U	0.2 U	--	--	--	--	--	--	30 J	--	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	440	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	--	--	--	--	--	--	9.1 J	--	--	--	--	--	--	--	--	--	--	--	--
p-Isopropyltoluene	NE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	--	--	--	--	--	--	0.52 J	--	--	--	--	--	--	--	--	--	--	--	--
sec-Butylbenzene	800	0.2 U	0.2 U	12	0.2 U	0.2 U	--	--	--	--	--	--	4.4 J	--	--	--	--	--	--	--	--	--	--	--	--
tert-Butylbenzene	800	0.2 U	0.2 U	1.0	0.2 U	0.2 U	--	--	--	--	--	--	0.57 J	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	640	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--	--	--	--	--	--	2.4 J	--	--	--	--	--	--	--	--	--	--	--	--
Trans-1,2-Dichloroethene	160	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	--	--	--	--	--	--	0.4 U	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene	0.54	0.2 U	0.2 U	0.2 U	0.83	0.2 U	--	--	--	--	--	--	0.4 U	--	--	--	--	--	--	--	--	--	--	--	--
Trichlorofluoromethane	120	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	--	--	--	--	--	--	0.4 U	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl Chloride	0.2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	--	--	--	--	--	--	0.4 U	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

- Data qualifiers are as follows:
U = The analyte was not detected at the reporting limit indicated.
J = The value is an estimate.
UJ = The analyte was not detected at the estimated reporting limit indicated.
- Yellow highlighted values were above clean up levels, including non-detect results where the laboratory detection limit is above clean up levels.

Abbreviations:

-- = not analyzed
µg/L = micrograms per liter
GW = groundwater
NE = none established

TABLE 5-7

GROUNDWATER DETECTIONS IN MONITORING WELL SAMPLES^{1, 2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	KMW-01			KMW-02/02R ³				
		3/28/2011	8/4/2011	6/7/2013	3/28/2011	8/4/2011	6/7/2013	6/30/2016	11/10/2016
Total Metals									
Arsenic	3.3	3.3 U	3.3 U	--	3.3 U	3.3 U	--	3.3 U	3.3 U
Lead	1.1	1.1 U	1.1 U	--	1.1 U	1.1 U	--	1.1 U	1.1 U
Dissolved Metals									
Arsenic	3.3	3.0 U	--	--	3.0 U	--	--	3.0 U	3.0 U
Polycyclic Aromatic Hydrocarbons									
1-Methylnaphthalene	1.5	0.098 U	0.095 U	--	0.098 U	0.096 U	--	0.095 U	0.094 U
2-Methylnaphthalene	32	0.098 U	0.095 U	--	0.098 U	0.096 U	--	0.095 U	0.094 U
Acenaphthene	648	0.098 U	0.095 U	--	0.098 U	0.096 U	--	0.095 U	0.094 U
Acenaphthylene	NE	0.098 U	0.095 U	--	0.098 U	0.096 U	--	0.095 U	0.094 U
Anthracene	4,800	0.098 U	0.095 U	--	0.098 U	0.096 U	--	0.095 U	0.094 U
Benzo(a)anthracene	0.01	0.0098 U	0.0095 U	--	0.0098 U	0.0096 U	--	0.0095 U	0.0094 U
Benzo(a)pyrene	0.01	0.0098 U	0.0095 U	--	0.0098 U	0.0096 U	--	0.0095 U	0.0094 U
Benzo(b)fluoranthene	0.01	0.0098 U	0.0095 U	--	0.0098 U	0.0096 U	--	0.0095 U	0.0094 U
Benzo(ghi)perylene	NE	0.0098 U	0.0095 U	--	0.0098 U	0.0096 U	--	0.0095 U	0.0094 U
Benzo(j,k)fluoranthene	0.01	0.0098 U	0.0095 U	--	0.0098 U	0.0096 U	--	0.0095 U	0.0094 U
Chrysene	0.01	0.0098 U	0.0095 U	--	0.0098 U	0.0096 U	--	0.0095 U	0.0094 U
Dibenz(a,h)anthracene	0.01	0.0098 U	0.0095 U	--	0.0098 U	0.0096 U	--	0.0095 U	0.0094 U
Fluoranthene	86	0.098 U	0.095 U	--	0.098 U	0.096 U	--	0.095 U	0.094 U
Fluorene	640	0.098 U	0.095 U	--	0.098 U	0.096 U	--	0.095 U	0.094 U
Indeno(1,2,3-cd)pyrene	0.01	0.0098 U	0.0095 U	--	0.0098 U	0.0096 U	--	0.0095 U	0.0094 U
Naphthalene	8.9	0.098 U	0.095 U	--	0.098 U	0.096 U	--	0.095 U	0.094 U
Phenanthrene	NE	0.098 U	0.095 U	--	0.098 U	0.096 U	--	0.095 U	0.094 U
Pyrene	480	0.098 U	0.095 U	--	0.098 U	0.096 U	--	0.095 U	0.094 U
Total cPAHs	0.01	0.007 U	0.007 U	--	0.007 U	0.007 U	--	0.007 U	0.007 U
Total Petroleum Hydrocarbons									
Gasoline Range Organics	800	100 U	100 U	100 U	100 U	100 U	100 U	500 U	100 U
Diesel Range Organics	500	--	--	--	--	--	--	260	260 U
Lube Oil	500	--	--	--	--	--	--	410 U	410 U

TABLE 5-7

GROUNDWATER DETECTIONS IN MONITORING WELL SAMPLES^{1, 2}

Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Preliminary Screening Level	KMW-01			KMW-02/02R ³				
		3/28/2011	8/4/2011	6/7/2013	3/28/2011	8/4/2011	6/7/2013	6/30/2016	11/10/2016
Volatile Organic Compounds									
1,2,4-Trimethylbenzene	28	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3,5-Trimethylbenzene	80	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Acetone	7200	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	12 U	5.0 U
Benzene	0.8	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trichlorofluoromethane	120	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Cis-1,2-Dichloroethene	16	0.2 U	0.2 U	0.2 U	0.26	0.26	0.2 U	0.2 U	0.2 U
Ethylbenzene	530	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Isopropylbenzene	800	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
m,p-Xylene	1,600	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Naphthalene	8.9	1.0 U	1.0 U	1.4 U	1.0 U	1.0 U	1.4 U	1.0 U	1.3 U
n-Butylbenzene	400	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
n-Propylbenzene	800	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
o-Xylene	440	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
sec-Butylbenzene	800	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
tert-Butylbenzene	800	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Toluene	640	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

TABLE 5-7

GROUNDWATER DETECTIONS IN MONITORING WELL SAMPLES^{1, 2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	KMW-03/03R ⁴									KMW-04							
	3/28/2011	3/28/2011 (D)	8/4/2011	4/4/2013	6/7/2013	3/10/2015	7/1/2016	11/10/2016	11/10/2016 (D)	3/28/2011	8/4/2011	8/4/2011 (D)	6/7/2013	3/10/2015	6/30/2016	6/30/2016 (D)	11/11/2016
Total Metals																	
Arsenic	3.3 U	3.3 U	3.3 U	--	--	--	3.3 U	3.3 U	3.3 U	12	12	10	--	--	12	12	20
Lead	1.1 U	1.1 U	1.1 U	--	--	--	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	--	--	1.1 U	1.1 U	1.1 U
Dissolved Metals																	
Arsenic	3.0 U	3.0 U	--	--	--	--	3.0 U	3.0 U	3.0 U	12	--	--	--	--	4.5	4.0	20
Polycyclic Aromatic Hydrocarbons																	
1-Methylnaphthalene	0.25	0.25	0.55	--	--	--	0.095 U	0.095 U	0.095 U	0.56	0.44	0.39	--	--	0.9	0.94	0.52
2-Methylnaphthalene	0.37	0.37	0.74	--	--	--	0.095 U	0.095 U	0.095 U	0.93	0.72	0.68	--	--	1.4	1.5	0.54
Acenaphthene	0.096 U	0.095 U	0.28	--	--	--	0.32	0.23	0.18	0.12 U	0.095 U	0.095 U	--	--	0.47 U	0.47 U	0.94 U
Acenaphthylene	0.096 U	0.095 U	0.095 U	--	--	--	0.095 U	0.095 U	0.095 U	0.12 U	0.095 U	0.095 U	--	--	0.47 U	0.47 U	0.94 U
Anthracene	0.096 U	0.095 U	0.56	--	--	--	0.11	0.11	0.12	0.12 U	0.095 U	0.095 U	--	--	0.095 U	0.095 U	0.94 U
Benzo(a)anthracene	0.0096 U	0.0095 U	0.0095 U	--	--	--	0.018	0.0095 U	0.0095 U	0.012 U	0.0095 U	0.0095 U	--	--	0.011	0.014	0.0094 U
Benzo(a)pyrene	0.0096 U	0.0095 U	0.0095 U	--	--	--	0.011	0.0095 U	0.0095 U	0.012 U	0.0095 U	0.0095 U	--	--	0.0095 UJ	0.015 J	0.0094 U
Benzo(b)fluoranthene	0.0096 U	0.0095 U	0.0095 U	--	--	--	0.011	0.0095 U	0.0095 U	0.012 U	0.0095 U	0.0095 U	--	--	0.0095 UJ	0.022 J	0.0094 U
Benzo(ghi)perylene	0.0096 U	0.0095 U	0.0095 U	--	--	--	0.014	0.0095 U	0.0095 U	0.012 U	0.0095 U	0.0095 U	--	--	0.0095 UJ	0.023 J	0.0094 U
Benzo(j,k)fluoranthene	0.0096 U	0.0095 U	0.0095 U	--	--	--	0.0095 U	0.0095 U	0.0095 U	0.012 U	0.0095 U	0.0095 U	--	--	0.0095 U	0.0095 U	0.0094 U
Chrysene	0.0096 U	0.0095 U	0.0095 U	--	--	--	0.012	0.0095 U	0.0095 U	0.012 U	0.0095 U	0.0095 U	--	--	0.0095 U	0.0095 U	0.0094 U
Dibenz(a,h)anthracene	0.0096 U	0.0095 U	0.0095 U	--	--	--	0.0095 U	0.0095 U	0.0095 U	0.012 U	0.0095 U	0.0095 U	--	--	0.0095 U	0.0095 U	0.0094 U
Fluoranthene	0.096 U	0.095 U	0.095 U	--	--	--	0.095 U	0.095 U	0.095 U	0.12 U	0.095 U	0.095 U	--	--	0.095 U	0.095 U	0.094 U
Fluorene	0.096 U	0.095 U	0.095 U	--	--	--	0.15	0.13	0.15	0.12 U	0.095 U	0.095 U	--	--	0.095 U	0.095 U	0.94 U
Indeno(1,2,3-cd)pyrene	0.0096 U	0.0095 U	0.0095 U	--	--	--	0.011	0.0095 U	0.0095 U	0.012 U	0.0095 U	0.0095 U	--	--	0.0095 UJ	0.016 J	0.0094 U
Naphthalene	4.8	5.7	8.1	--	--	--	0.18	0.095 U	0.095 U	7.2	4.3	4.4	--	--	5.7	6.5	3.8
Phenanthrene	0.096 U	0.095 U	0.12	--	--	--	0.095 U	0.095 U	0.095 U	0.12 U	0.095 U	0.095 U	--	--	0.13	0.1	0.94 U
Pyrene	0.096 U	0.095 U	0.095 U	--	--	--	0.095 U	0.095 U	0.095 U	0.12 U	0.095 U	0.095 U	--	--	0.095 U	0.095 U	0.094 U
Total cPAHs	0.007 U	0.007 U	0.007 U	--	--	--	0.016	0.007 U	0.007	0.009 U	0.007 U	0.007 U	--	--	0.008	0.02	0.007 U
Total Petroleum Hydrocarbons																	
Gasoline Range Organics	7,700	7,000	6,100	1,800	1,100	1,100	300	130	170	75,000	55,000	50,000	48,000	27,000	27,000	27,000	63,000
Diesel Range Organics	--	--	--	--	--	--	660 J	310 U	280 U	--	--	--	--	--	3,000 J	2,700 J	6,400 U
Lube Oil	--	--	--	--	--	--	410 U	410 U	410 U	--	--	--	--	--	510	870	410 U

TABLE 5-7

GROUNDWATER DETECTIONS IN MONITORING WELL SAMPLES^{1, 2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	KMW-03/03R ⁴									KMW-04							
	3/28/2011	3/28/2011 (D)	8/4/2011	4/4/2013	6/7/2013	3/10/2015	7/1/2016	11/10/2016	11/10/2016 (D)	3/28/2011	8/4/2011	8/4/2011 (D)	6/7/2013	3/10/2015	6/30/2016	6/30/2016 (D)	11/11/2016
Volatile Organic Compounds																	
1,2,4-Trimethylbenzene	--	--	--	1.0 U	0.2 U	--	0.2 U	0.2 U	0.2 U	--	--	--	77	--	44 J	65 J	160
1,3,5-Trimethylbenzene	--	--	--	1.0 U	0.2 U	--	0.2 U	0.2 U	0.2 U	--	--	--	20 U	--	20 U	20	52
Acetone	--	--	--	25 U	5 U	--	12 U	7.9	6.5	--	--	--	500 U	--	1,200 U	1,000 U	1,200 U
Benzene	8.1	8.4	4.0 U	1.0 U	0.41	--	0.2 U	0.2 U	0.2 U	10	13	13	20 U	--	20 U	20 U	20 U
Trichlorofluoromethane	--	--	--	1.0 U	0.2 U	--	0.2 U	0.2 U	0.2 U	--	--	--	20 U	--	20 U	20 U	20 U
Cis-1,2-Dichloroethene	--	--	--	1.0 U	0.2 U	--	0.2 U	0.2 U	0.2 U	--	--	--	20 U	--	20 U	20 U	20 U
Ethylbenzene	3,100	2,700	2,400	170	27	--	1.4	0.33	0.34	5,700	3,700	3,400	3,400	--	3,700	4,300	5,200
Isopropylbenzene	--	--	--	44	41	--	21	4.9	4.7	--	--	--	41	--	47	63	80
m,p-Xylene	18	18	7.1	2.0 U	0.4 U	--	2.1	1.0	0.97	12,000	8,500	7,700	6,800	--	7,100	7,900	12,000
Naphthalene	--	--	--	19	9.8	--	1.0 U	1.3 U	1.3 U	--	--	--	140 U	--	100 U	100 U	100 U
n-Butylbenzene	--	--	--	2.5	2.4	--	1.1	0.42	0.42	--	--	--	20 U	--	20 U	20 U	20 U
n-Propylbenzene	--	--	--	51	47	--	27	9.2	8.1	--	--	--	32	--	47 J	70	78
o-Xylene	4.0 U	4.0 U	4.0 U	1.0 U	0.2 U	--	0.35	0.35	0.37	3,400	2,100	1,900	2,200	--	1,700	1,700	3,600
sec-Butylbenzene	--	--	--	2.9	2.9	--	2.7	1.5	1.3	--	--	--	20 U	--	20 U	20 U	20 U
tert-Butylbenzene	--	--	--	1.0 U	0.28	--	0.34	0.21	0.2	--	--	--	20 U	--	20 U	20 U	20 U
Toluene	4.0 U	4.0 U	4.0 U	5.0 U	1.0 U	--	1.1	1.0 U	1.0 U	7,400	5,800	5,500	3,800	--	1,400	1,300	5,300

TABLE 5-7

GROUNDWATER DETECTIONS IN MONITORING WELL SAMPLES^{1, 2}
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	KMW-05			KMW-06		KMW-07		KMW-08		KMW-09	KMW-10
	3/28/2011	8/4/2011	6/7/2013	6/30/2016	11/11/2016	7/1/2016	11/10/2016	7/1/2016	11/10/2016	11/11/2016	11/11/2016
Total Metals											
Arsenic	3.3 U	3.3 U	--	3.5	3.4	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	9.1
Lead	1.1 U	1.1 U	--	3.7	1.1	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Dissolved Metals											
Arsenic	3.0 U	--	--	3.0 U	3.1	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	7.3
Polycyclic Aromatic Hydrocarbons											
1-Methylnaphthalene	0.095 U	0.095 U	--	5.3	12	0.095 U	0.095 U	1.5	1.5	0.67	0.098 U
2-Methylnaphthalene	0.095 U	0.095 U	--	1.9	11	0.095 U	0.095 U	0.94	0.83	0.49	0.098 U
Acenaphthene	0.095 U	0.095 U	--	2.6	2.5	0.14	0.095 U	1.1	1.1	1.9	0.98 U
Acenaphthylene	0.095 U	0.095 U	--	0.22	0.14	0.095 U	0.095 U	0.094 U	0.095 U	0.11	0.098 U
Anthracene	0.095 U	0.095 U	--	0.93	1.8	0.095 U	0.095 U	0.40	0.48	0.54	0.13
Benzo(a)anthracene	0.0095 U	0.0095 U	--	0.047	0.013	0.0095 U	0.0095 U	0.086	0.015	0.0098 U	0.0098 U
Benzo(a)pyrene	0.0095 U	0.0095 U	--	0.038	0.022	0.0095 U	0.0095 U	0.11	0.013	0.0098 U	0.0098 U
Benzo(b)fluoranthene	0.0095 U	0.0095 U	--	0.047	0.021	0.0095 U	0.0095 U	0.12	0.020	0.0098 U	0.0098 U
Benzo(ghi)perylene	0.0095 U	0.0095 U	--	0.041	0.024	0.0095 U	0.0095 U	0.10	0.0095 U	0.0098 U	0.0098 U
Benzo(j,k)fluoranthene	0.0095 U	0.0095 U	--	0.018	0.031	0.0095 U	0.0095 U	0.046	0.0095 U	0.0098 U	0.0098 U
Chrysene	0.0095 U	0.0095 U	--	0.035	0.028	0.0095 U	0.0095 U	0.090	0.042	0.0098 U	0.0098 U
Dibenz(a,h)anthracene	0.0095 U	0.0095 U	--	0.0095 U	0.0095 U	0.0095 U	0.0095 U	0.024	0.0095 U	0.0098 U	0.0098 U
Fluoranthene	0.095 U	0.095 U	--	0.14	0.16	0.095 U	0.095 U	0.47	0.36	0.098 U	0.098 U
Fluorene	0.095 U	0.095 U	--	0.72	1.7	0.10	0.095 U	0.95	0.97	0.52	0.098 U
Indeno(1,2,3-cd)pyrene	0.0095 U	0.0095 U	--	0.028	0.023	0.0095 U	0.0095 U	0.063	0.0095 U	0.0098 U	0.0098 U
Naphthalene	0.095 U	0.095 U	--	0.43	0.47	0.095 U	0.095 U	1.2	0.78	0.15	0.20
Phenanthrene	0.095 U	0.095 U	--	0.14	0.86	0.095 U	0.095 U	0.24	0.60	0.098 U	0.15
Pyrene	0.095 U	0.095 U	--	0.19	0.15	0.095 U	0.095 U	0.43	0.34	0.098 U	0.098 U
Total cPAHs	0.007 U	0.007 U	--	0.05	0.03	0.007 U	0.007 U	0.14	0.018	0.007 U	0.007 U
Total Petroleum Hydrocarbons											
Gasoline Range Organics	100 U	100 U	100 U	2,700	850	500 U	100 U	1,000	400	370	110
Diesel Range Organics	--	--	--	5,400 J	3,500	260 U	260 U	770 J	370 U	1,700	1,300 U
Lube Oil	--	--	--	1,500 J	1,200	410 U	420 U	410 U	410 U	660	420 U

TABLE 5-7

GROUNDWATER DETECTIONS IN MONITORING WELL SAMPLES^{1, 2}

Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	KMW-05			KMW-06		KMW-07		KMW-08		KMW-09	KMW-10
	3/28/2011	8/4/2011	6/7/2013	6/30/2016	11/11/2016	7/1/2016	11/10/2016	7/1/2016	11/10/2016	11/11/2016	11/11/2016
Volatile Organic Compounds											
1,2,4-Trimethylbenzene	--	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	3.7
1,3,5-Trimethylbenzene	--	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.38
Acetone	--	--	5.0 U	12 U	5.0 U	12 U	6.5	12 U	10	5.0 U	5.0 U
Benzene	1.0 U	1.0 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2	0.2 U	0.7
Trichlorofluoromethane	--	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.35	0.4	0.2 U	0.2 U
Cis-1,2-Dichloroethene	--	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Ethylbenzene	1.0 U	1.0 U	0.2 U	0.38	0.25	0.2 U	0.2 U	0.2 U	0.31	3.1	1.6
Isopropylbenzene	--	--	0.2 U	21	17	1.1	0.29	5.4	5.9	8.1	15
m,p-Xylene	1.0 U	1.0 U	0.4 U	1.4	0.92	0.4 U	0.44	0.4 U	0.76	0.51	11
Naphthalene	--	--	1.4 U	1.0 U	1.3 U	1.0 U	1.3 U	1.5	1.3 U	1.3 U	1.3 U
n-Butylbenzene	--	--	0.2 U	2.5	1.6	0.73	0.2 U	2.2	2.2	0.46	0.25
n-Propylbenzene	--	--	0.2 U	28	22	0.91	0.21	6.2	7.0	8.3	15
o-Xylene	1.0 U	1.0 U	0.2 U	0.64	0.49	0.2 U	0.2 U	0.2 U	0.34	0.2 U	0.29
sec-Butylbenzene	--	--	0.2 U	3.1	2.4	3.4	0.72	7.0	8.1	0.72	0.42
tert-Butylbenzene	--	--	0.2 U	0.3	0.25	0.3	0.2 U	0.64	0.65	0.2 U	0.2 U
Toluene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

Notes:

1. Data qualifiers are as follows:

U = The analyte was not detected at the reporting limit indicated.

J = The value is an estimate.

UJ = The analyte was not detected at the estimated reporting limit indicated.

2. Yellow highlighted values were above clean up levels, including non-detect results where the laboratory detection limit is above clean up levels.

3. On February 4, 2015, KMW-02 was abandoned by backfilling with bentonite and was replaced on June 28, 2016.

4. On June 3, 2015 KMW-03 was destroyed during building demolition and was replaced on June 27, 2016.

Abbreviations:

-- = not analyzed

µg/L = micrograms per liter

CFC = chlorofluorocarbon

cPAHs = carcinogenic polycyclic aromatic hydrocarbons.

(D) = duplicate sample collected

mg/L - milligram per liter

NE = not established

R = replaced

TABLE 6-1
GROUNDWATER PARAMETERS
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

Monitoring Well	Date	pH	SC	ORP	DO
			(ms/cm)	(mv)	(mg/L)
KMW-01 ¹	3/8/2011	6.23	0.295	-93	2.11
	6/7/2013	5.94	0.248	-224	3.3
KMW-02 ²	3/8/2011	5.59	0.218	-49	1.69
	6/7/2013	5.54	0.197	166	3.9
KMW-02R	6/30/2016	6.38	0.220	-485.5	0.47
	11/10/2016	5.86	0.220	71.5	1.00
KMW-03 ²	3/8/2011	7.34	0.25	-159	1.28
	4/4/2013	5.91	0.375	-88	0.60
	6/7/2013	6.70	0.457	-173	3.7
	3/10/2015	6.65	0.312	-117.9	0.79
KMW-03R	7/1/2016	7.14	0.578	-397.1	0.34
	11/10/2016	7.09	0.550	-75.5	0.64
KMW-04	3/8/2011	6.93	0.46	-147	1.76
	6/7/2013	6.32	0.41	-93	3.3
	3/10/2015	6.18	0.222	-67.3	0.76
	6/30/2016	6.43	0.376	-144.8	0.45
	11/11/2016	6.17	0.359	-30.2	0.77
KMW-05 ³	3/8/2011	6.16	0.299	-67	1.33
	6/7/2013	5.75	0.191	120	3.4
KMW-06	6/30/2016	6.42	0.522	-175.0	0.38
	11/11/2016	6.41	0.485	-55.4	1.27
KMW-07	7/1/2016	6.54	0.270	-519.5	0.39
	11/10/2016	6.26	0.331	14.7	0.86
KMW-08	7/1/2016	6.95	0.227	-480.1	0.36
	11/10/2016	6.13	0.266	46.1	1.05
KMW-09	11/11/2016	6.42	0.457	-50.6	1.80
KMW-10	11/11/2016	6.19	0.468	-49.4	1.26

Notes

1. KMW-01 was abandoned on 2/4/2015.
2. KMW-02 and KMW-03 were replaced on 6/27/2016 and 6/28/2016.
3. KMW-05 was destroyed during demolition and new building construction in 2015.

Abbreviations

DO = dissolved oxygen
mg/L = milligrams per liter
ms/cm = millisiemens per centimeter
mv = millivolts
ORP = oxidation reduction potential
SC = specific conductivity

TABLE 6-2

GEOCHEMICAL COMPOUNDS IN GROUNDWATER ¹
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

Analyte	KM-44	KM-52	KMW-01		KMW-02 ²		KMW-03 ³			KMW-04		KMW-05	
	3/4/2015	3/4/2015	8/4/2011	6/7/2013	8/4/2011	6/7/2013	8/4/2011	4/4/2013	6/7/2013	8/4/2011	6/7/2013	8/4/2011	6/7/2013
Conventionals (mg/L)													
Alkalinity, Total	--	--	71.5	62	46.6	55	255	220	220	221	120	54	56
Chemical Oxygen Demand	--	--	5.0 U	--	5.0 U	--	28.4	--	--	93.8	--	5.0 U	--
Chloride	--	--	4.7	--	6.7	--	7.2	3.4	--	2.6	--	13.2	--
Hardness, Total	--	--	83	90	67	63	200	120	180	150	91	57	62
Iron, Ferrous, Fe+2	--	--	0.75 J	2.44	0.668	0.673	8.96	--	6.8	21.2 J	40	2.22	0.595
Nitrate	0.05 U	0.16	1.2	0.05 U	0.2	1.8	0.1 U	0.05 U	0.2	0.1 U	0.05 U	0.1 U	0.7
Nitrite	--	--	--	0.02 U	--	0.02 U	--	--	0.02 U	--	0.02 U	--	0.02 U
Ortho-Phosphorous	--	--	0.1 U	--	0.1 U	--	0.1 U	--	--	0.1 U	--	0.1 U	--
Phosphate	--	--	--	0.038	--	0.032	--	--	0.52	--	0.56	--	0.018
Phosphorus	--	--	0.026 J	0.049	0.032 J	0.042	0.562 J	--	0.59	0.388 J	0.69	0.084 J	0.014
Sulfate	10 U	110	41.6	39	40.8	32	0.1 U	5.0 U	5.0 U	0.1 U	5.0 U	43.8	35
Sulfide	--	--	--	0.05 U	--	0.05 U	--	--	0.05 U	--	0.05 U	--	0.05 U
Total Dissolved Solids	--	--	--	140	--	120	--	150	250	--	220	--	130
Total Organic Carbon	4.4	19	1.56	1.0 U	1.5 U	1.2	6.28	4.5	4.7	15.1	11	1.72	1.0 U
Total Suspended Solids	--	--	--	4.0 U	--	6.0	--	7.0	6.0	--	6.0	--	4.0 U
Gases (µg/L)													
Ethane	--	--	--	100 U	--	2.0 U	--	--	250 U	--	1,000 U	--	0.5 U
Ethylene	--	--	--	100 U	--	2.0 U	--	--	250 U	--	1,000 U	--	0.5 U
Methane	--	--	--	1,400	--	24	--	--	1,600	--	9,100	--	1.0 U
Total Metals (µg/L)													
Calcium	--	--	24,100	--	19,100	--	62,000	--	--	39,300	--	15,200	--
Iron	24,000	44,000	740	2,400	620	1,600	8,600	5,600	6,600	50,700	39,000	2,860	760
Magnesium	--	--	5,630	--	4,820	--	10,200	--	--	11,600	--	4,700	--
Manganese	380	1,800	95	150	139	130	1,240	--	440	1,220	930	158	150
Potassium	--	--	4,100	--	2,500	--	4,700	--	--	5,300	--	4,300	--
Sodium	--	--	13,000	--	11,100	--	24,300	--	--	16,400	--	20,200	--
Dissolved Metals (µg/L)													
Calcium	--	--	--	--	--	--	--	37,000	--	--	--	--	--
Iron	24,000	42,000	--	--	--	--	--	5,700	--	--	--	--	--
Magnesium	--	--	--	--	--	--	--	5,200	--	--	--	--	--
Manganese	380	1,700	--	150	--	140	--	380	450	--	950	--	150
Potassium	--	--	--	--	--	--	--	3,000	--	--	--	--	--
Sodium	--	--	--	--	--	--	--	35,000	--	--	--	--	--

Notes:

- Data qualifiers are as follows:
U = The analyte was not detected at the reporting limit indicated.
J = The value is an estimate.
- On February 4, 2015 KMW-02 was abandoned by backfilling with bentonite and replaced on June 28, 2016.
- On June 3, 2015 KMW-03 was destroyed during building demolition and was replaced on June 27, 2016.

Abbreviations:

-- = not analyzed
µg/L = micrograms per liter
mg/L = milligram per liter

TABLE 7-1

SELECTION OF PRELIMINARY SOIL SCREENING LEVELS

Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Compound	Cas Number	MTCA Cleanup Levels Protective of Human Health				Puget Sound Regional Background Level	Final Applicable Practical Quantitation Limit	Preliminary Soil Screening Level	Basis
		Method A - Unrestricted Land Use	Method B		Protection of Groundwater				
			Noncarcinogen	Carcinogen					
Metals									
Antimony	7440-36-0	--	32	--	5.06	--	5.0	5.06	Protection of groundwater
Arsenic	7440-38-2	20	24	0.667	1.93	7.0	10	10	Practical quantitation limit
Barium	7440-39-3	--	16,000	--	824	--	2.5	824	Protection of groundwater
Beryllium	7440-41-7	--	160	--	506	--	0.50	160	Protection of direct contact
Cadmium	7440-43-9	2.0	80	--	0.607	1.0	0.50	1.0	Natural background
Chromium	7440-47-3	2,000	120,000	--	1000	48	0.50	1,000	Protection of groundwater
Copper	7440-50-8	--	3,200	--	4.44	36	1.0	36	Natural background
Lead	7439-92-1	250	--	--	220	24	5.0	220	Protection of groundwater
Mercury	7439-97-6	2.0	--	--	0.522	0.07	0.25	0.52	Protection of groundwater
Nickel	7440-02-0	--	1,600	--	63.4	48	2.5	63	Protection of groundwater
Selenium	7782-49-2	--	400	--	0.582	--	10	10	Practical quantitation limit
Silver	7440-22-4	--	400	--	1.87	--	0.50	1.87	Protection of groundwater
Thallium	7440-28-0		0.8	--	7.12	--	10	10	Practical quantitation limit
Vanadium	7440-62-2		400	--	1600	--	0.50	400	Protection of direct contact
Zinc	7440-66-6	--	24,000	--	62.2	85	2.5	85	Natural background
Polychlorinated Biphenyls									
Total PCBs ¹	1336-36-3	1.0	--	0.5	--	--	0.05	1.0	--
Total Petroleum Hydrocarbons ²									
Diesel Range Organics	--	2,000	--	--	--	--	25	2,000	Protection of groundwater
Lube Oil	--	2,000	--	-	--	--	50	2,000	Protection of groundwater
Gasoline Range Organics ³	--	30/100	--	--	--	--	5.0	30/100	Protection of groundwater
Volatile Organic Compounds									
cis- 1,2-Dichloroethene	156-59-2	--	160	--	0.080	--	0.001	0.0802	Protection of groundwater
cis- 1,3-Dichloropropene	10061-01-5	--	--	--	--	--	0.001	--	No risk-based cleanup level available
trans- 1,2-Dichloroethene	156-60-5	--	1600	--	0.870	--	0.001	0.8698	Protection of groundwater
trans- 1,3-Dichloropropene	10061-02-6	--	--	--	--	--	0.001	--	No risk-based cleanup level available

TABLE 7-1

SELECTION OF PRELIMINARY SOIL SCREENING LEVELS
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Compound	Cas Number	MTCA Cleanup Levels Protective of Human Health				Puget Sound Regional Background Level	Final Applicable Practical Quantitation Limit	Preliminary Soil Screening Level	Basis
		Method A - Unrestricted Land Use	Method B		Protection of Groundwater				
			Noncarcinogen	Carcinogen					
Volatile Organic Compounds (Cont.)									
1,1,1,2-Tetrachloroethane	630-20-6	--	2400	38.5	--	--	0.001	38.5	Protection of direct contact
1,1,1-Trichloroethane	71-55-6	2.00	160000	--	41.5	--	0.001	2.0	Protection of direct contact
1,1,2,2-Tetrachloroethane	79-34-5	--	--	--	0.001	--	0.001	0.001	Protection of groundwater
1,1,2-Trichloroethane	79-00-5	--	320	17.5	0.003	--	0.001	0.003	Protection of groundwater
1,1-Dichloroethane	75-34-3	--	16000	175	0.042	--	0.001	0.042	Protection of groundwater
1,1-Dichloroethene	75-35-4	--	4000	--	0.001	--	0.001	0.001	Protection of groundwater
1,1-Dichloropropene	563-58-6	--	--	--	--	--	0.001	--	No risk-based cleanup level available
1,2,3-Trichlorobenzene	87-61-6	--	--	--	--	--	0.001	--	No risk-based cleanup level available
1,2,3-Trichloropropane	96-18-4	--	320	0.033	--	--	0.001	0.033	Protection of direct contact
1,2,4-Trichlorobenzene	120-82-1	--	800	34.5	0.056	--	0.001	0.056	Protection of groundwater
1,2,4-Trimethylbenzene	95-63-6	--	--	--	--	--	0.001	--	No risk-based cleanup level available
1,2-Dibromo-3-chloropropane	96-12-8	--	16	1.25	--	--	0.005	1.25	Protection of direct contact
1,2-Dibromoethane	106-93-4	0.01	720	0.500	--	--	0.001	0.005	Protection of direct contact
1,2-Dichlorobenzene	95-50-1	--	7200	--	4.92	--	0.001	4.92	Protection of groundwater
1,2-Dichloroethane	107-06-2	--	480	11.0	0.002	--	0.001	0.002	Protection of groundwater
1,2-Dichloropropane	78-87-5	--	7200	27.8	0.003	--	0.001	0.003	Protection of groundwater
1,3,5-Trimethylbenzene	108-67-8	--	800	--	--	--	0.001	800	Protection of direct contact
1,3-Dichlorobenzene	541-73-1	--	--	--	--	--	0.001	--	No risk-based cleanup level available
1,3-Dichloropropane	142-28-9	--	--	--	--	--	0.001	--	No risk-based cleanup level available
1,4-Dichlorobenzene	106-46-7	--	5600	185	0.080	--	0.001	0.08	Protection of groundwater
2,2-Dichloropropane	594-20-7	--	--	--	--	--	0.001	--	No risk-based cleanup level available
2-Butanone	78-93-3	--	48000	--	--	--	0.005	48,000	Protection of direct contact
2-Chloroethyl vinyl ether	110-75-8	--	--	--	--	--	0.005	--	No risk-based cleanup level available
2-Chlorotoluene	95-49-8	--	1600	--	--	--	0.001	1,600	Protection of direct contact
2-Hexanone	591-78-6	--	--	--	--	--	0.005	--	No risk-based cleanup level available
4-Chlorotoluene	106-43-4	--	--	--	--	--	0.001	--	No risk-based cleanup level available
Acetone	67-64-1	--	72000	--	28.9	--	0.005	28.9	Protection of groundwater
Benzene	71-43-2	0.03	320	18.2	0.004	--	0.001	0.004	Protection of groundwater
Bromobenzene	108-86-1	--	--	--	--	--	0.001	--	No risk-based cleanup level available
Bromochloromethane	74-97-5	--	--	--	--	--	0.001	--	No risk-based cleanup level available
Bromodichloromethane	75-27-4	--	1600	16.1	0.001	--	0.001	0.001	Protection of groundwater
Bromoform	75-25-2	--	1600	127	0.028	--	0.001	0.028	Protection of groundwater
Bromomethane	74-83-9	--	112	--	0.052	--	0.001	0.052	Protection of groundwater

TABLE 7-1

SELECTION OF PRELIMINARY SOIL SCREENING LEVELS
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Compound	Cas Number	MTCA Cleanup Levels Protective of Human Health				Puget Sound Regional Background Level	Final Applicable Practical Quantitation Limit	Preliminary Soil Screening Level	Basis
		Method A - Unrestricted Land Use	Method B		Protection of Groundwater				
			Noncarcinogen	Carcinogen					
Volatile Organic Compounds (Cont.)									
Carbon disulfide	75-15-0	--	8000	--	2.83	--	0.001	2.83	Protection of groundwater
Carbon tetrachloride	56-23-5	--	320	14.3	0.002	--	0.001	0.002	Protection of groundwater
Chlorobenzene	108-90-7	--	1600	--	1.14	--	0.001	1.14	Protection of groundwater
Chloroethane	75-00-3	--	--	--	--	--	0.001	--	No risk-based cleanup level available
Chloroform	67-66-3	--	800	32.3	0.006	--	0.001	0.006	Protection of groundwater
Chloromethane	74-87-3	--	--	--	1.47	--	0.005	1.47	Protection of groundwater
Dibromochloromethane	124-48-1	--	1600	11.9	0.002	--	0.001	0.002	Protection of groundwater
Dibromomethane	74-95-3	--	800	--	--	--	0.001	800	Protection of direct contact
Dichlorodifluoromethane	75-71-8	--	16000	--	--	--	0.001	16,000	Protection of direct contact
Ethylbenzene	100-41-4	6.00	8000	--	4.58	--	0.001	4.6	Protection of groundwater
Hexachlorobutadiene	87-68-3	--	80	12.8	0.475	--	0.005	0.47	Protection of groundwater
Iodomethane	74-88-4	--	--	--	--	--	0.005	--	No risk-based cleanup level available
Isopropylbenzene	98-82-8	--	8000	--	--	--	0.001	8,000	Protection of direct contact
Methyl isobutyl ketone	108-10-1	--	6400	--	--	--	0.005	6,400	Protection of direct contact
Methyl t-butyl ether	1634-04-4	0.10	--	556	0.103	--	0.001	0.10	Protection of direct contact
Methylene chloride	75-09-2	0.02	480	500	0.020	--	0.005	0.02	Protection of direct contact
Naphthalene	91-20-3	5.00	1600	--	0.249	--	0.001	0.25	Protection of groundwater
n-Butylbenzene	104-51-8	--	16000	526	--	--	0.001	526	Protection of direct contact
n-Propylbenzene	103-65-1	--	8000	--	3.27	--	0.001	3.3	Protection of groundwater
m,p-Xylene	179601-23-1	--	--	--	17.2	--	0.002	17.2	Protection of groundwater
o-Xylene	95-47-6	--	16000	--	4.04	--	0.001	4.0	Protection of groundwater
Total xylenes	1330-20-7	9.00	16000	--	--	--	0.002	9.0	Protection of direct contact
p-Isopropyltoluene	99-87-6	--	--	--	--	--	0.001	--	No risk-based cleanup level available
sec-Butylbenzene	135-98-8	--	8000	--	--	--	0.001	8,000	Protection of direct contact
Styrene	100-42-5	--	16000	--	35.9	--	0.001	35.9	Protection of groundwater
tert-Butylbenzene	98-06-6	--	8000	--	--	--	0.001	8,000	Protection of direct contact
Tetrachloroethene	127-18-4	0.05	480	476	0.007	--	0.001	0.007	Protection of groundwater
Toluene	108-88-3	7.00	6400	--	4.65	--	0.005	4.65	Protection of groundwater
Trichloroethene	79-01-6	0.03	40	12.0	0.004	--	0.001	0.004	Protection of groundwater
Trichlorofluoromethane	75-69-4	--	24000	--	--	--	0.001	24,000	Protection of direct contact
Vinyl acetate	108-05-4	--	80000	--	32.3	--	0.005	32.3	Protection of groundwater
Vinyl chloride	75-01-4	--	240	0.670	0.001	--	0.001	0.001	Protection of groundwater

TABLE 7-1

SELECTION OF PRELIMINARY SOIL SCREENING LEVELS
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Compound	Cas Number	MTCA Cleanup Levels Protective of Human Health				Puget Sound Regional Background Level	Final Applicable Practical Quantitation Limit	Preliminary Soil Screening Level	Basis
		Method A - Unrestricted Land Use	Method B		Protection of Groundwater				
			Noncarcinogen	Carcinogen					
Semivolatile Organic Compounds									
(3+4)-Methylphenol (m,p-Cresol)	106-44-5	--	8000	--	--	--	0.033	8,000	Protection of direct contact
1,2-Dichlorobenzene	95-50-1	--	7200	--	4.92	--	0.033	4.92	Protection of groundwater
1,2-Dinitrobenzene	528-29-0	--	8.0	--	--	--	0.033	8.0000	Protection of direct contact
1,2-Diphenylhydrazine	126-66-7	--	--	--	--	--	0.033	--	No risk-based cleanup level available
1,3-Dinitrobenzene	99-65-0	--	8.0	--	--	--	0.033	8.0	Protection of direct contact
1,4-Dinitrobenzene	100-25-4	--	8.0	--	--	--	0.033	8.0	Protection of direct contact
2,3,4,6-Tetrachlorophenol	58-90-2	--	2400	--	--	--	0.033	2,400	Protection of direct contact
2,3,5,6-Tetrachlorophenol	935-95-5	--	--	--	--	--	0.033	--	No risk-based cleanup level available
2,3-Dichloroaniline	608-27-5	--	--	--	--	--	0.033	--	No risk-based cleanup level available
2,4,5-Trichlorophenol	95-95-4	--	8000	--	28.8	--	0.033	28.75	Protection of groundwater
2,4,6-Trichlorophenol	88-06-2	--	80	90.9	0.016	--	0.033	0.033	Practical quantitation limit
2,4-Dichlorophenol	120-83-2	--	240	--	0.167	--	0.033	0.167	Protection of groundwater
2,4-Dimethylphenol	105-67-9	--	1600	--	1.31	--	0.033	1.31	Protection of groundwater
2,4-Dinitrophenol	51-28-5	--	160	--	0.128	--	0.33	0.33	Practical quantitation limit
2,4-Dinitrotoluene	121-14-2	--	160	3.23	0.006	--	0.033	0.033	Practical quantitation limit
2,6-Dinitrotoluene	606-20-2	--	24	0.667	0.005	--	0.033	0.033	Practical quantitation limit
2-Chloronaphthalene	91-58-7	--	6400	--	--	--	0.033	6,400	Protection of direct contact
2-Chlorophenol	95-57-8	--	400	--	0.472	--	0.033	0.472	Protection of groundwater
2-Methylphenol (o-Cresol)	95-48-7	--	4000	--	2.33	--	0.033	2.33	Protection of groundwater
2-Nitroaniline	88-74-4	--	800	--	--	--	0.033	800	Protection of direct contact
2-Nitrophenol	88-75-5	--	--	--	--	--	0.033	--	No risk-based cleanup level available
3,3'-Dichlorobenzidine	91-94-1	--	--	2.22	0.018	--	0.17	0.17	Practical quantitation limit
3-Nitroaniline	99-09-2	--	--	--	--	--	0.033	--	No risk-based cleanup level available
4,6-Dinitro-2-methylphenol	534-52-1	--	--	--	--	--	0.17	0.1700	Practical quantitation limit
4-Bromophenyl phenyl ether	101-55-3	--	--	--	--	--	--	--	No risk-based cleanup level available
4-Chloro-3-methylphenol	59-50-7	--	--	--	--	--	0.033	--	No risk-based cleanup level available
4-Chloroaniline	106-47-8	--	320	5.00	--	--	0.17	5.0	Protection of direct contact
4-Chlorophenyl phenyl ether	7005-72-3	--	--	--	--	--	--	--	No risk-based cleanup level available
4-Nitroaniline	100-01-6	--	--	--	--	--	0.033	--	No risk-based cleanup level available
4-Nitrophenol	100-02-7	--	--	--	--	--	0.033	--	No risk-based cleanup level available
Acenaphthene	83-32-9	--	4800	--	66.1	--	0.0067	66.1	Protection of groundwater
Acenaphthylene	208-96-8	--	--	--	--	--	0.0067	--	No risk-based cleanup level available
Aniline	62-53-3	--	560	175	--	--	0.17	175	Protection of direct contact

TABLE 7-1

SELECTION OF PRELIMINARY SOIL SCREENING LEVELS
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Compound	Cas Number	MTCA Cleanup Levels Protective of Human Health				Puget Sound Regional Background Level	Final Applicable Practical Quantitation Limit	Preliminary Soil Screening Level	Basis
		Method A - Unrestricted Land Use	Method B		Protection of Groundwater				
			Noncarcinogen	Carcinogen					
Semivolatile Organic Compounds (Cont.)									
Anthracene	120-12-7	--	24000	--	2275	--	0.0067	2,275	Protection of groundwater
Benzidine	92-87-5	--	240	0.004	--	--	0.33	0.33	Practical quantitation limit
Benzo[a]anthracene	56-55-3	--	--	1.37	0.072	--	0.0067	0.072	Protection of groundwater
Benzo[a]pyrene	50-32-8	0.10	-	0.137	0.194	--	0.0067	0.100	Protection of direct contact
Benzo[b]fluoranthene	205-99-2		--	1.37	0.240	--	0.0067	0.24	Protection of groundwater
Benzo[g,h,i]perylene	191-24-2	--	--	--	--	--	0.0067	--	No risk-based cleanup level available
Benzo[k]fluoranthene	207-08-9	--	--	13.7	0.252	--	0.033	0.252	Protection of groundwater
Benzyl alcohol	100-51-6	--	8000	--	--	--	0.17	8,000	Protection of direct contact
bis(2-Chloroethoxy)methane	111-91-1	--	--	--	--	--	0.033	--	No risk-based cleanup level available
bis(2-Chloroethyl) ether	111-44-4	--	--	0.909	0.006	--	0.033	0.033	Practical quantitation limit
bis(2-Chloroisopropyl) ether	39638-32-9	--	--	--	--	--	0.033	--	No risk-based cleanup level available
bis(2-Ethylhexyl) phthalate	117-81-7	--	1600	71.4	2.64	--	0.033	2.64	Protection of groundwater
bis-2-Ethylhexyl adipate	103-23-1	--	48000	833	--	--	0.033	833	Protection of direct contact
Butyl benzyl phthalate	85-68-7	--	16000	526	2.32	--	0.033	2.32	Protection of groundwater
Carbazole	86-74-8	--	--	--	--	--	0.033	--	No risk-based cleanup level available
Chrysene	218-01-9	--	--	137	0.080	--	0.0067	0.08	Protection of groundwater
Dibenz[a,h]anthracene	53-70-3	--	--	0.137	0.360	--	0.0067	0.137	Protection of direct contact
Dibenzofuran	132-64-9	--	80.0	--	0.086	--	0.033	0.086	Protection of groundwater
Diethyl phthalate	84-66-2	--	64000	--	72.2	--	0.17	72.2	Protection of groundwater
Dimethyl phthalate	131-11-3	--	--	--	1088	--	0.033	1,088	Protection of groundwater
Di-n-butyl phthalate	84-74-2	--	8000	--	57.6	--	0.033	57.6	Protection of groundwater
Di-n-octyl phthalate	117-84-0	--	800	--	--	--	0.033	800	Protection of direct contact
Fluoranthene	206-44-0	--	3200	--	85.2	--	0.0067	85.2	Protection of groundwater
Fluorene	86-73-7	--	3200	--	101	--	0.0067	101	Protection of groundwater
Hexachlorobenzene	118-74-1	--	64.0	0.625	1.60	--	0.033	0.625	Protection of direct contact
Hexachlorobutadiene	87-68-3	--	80.0	12.8	1.08	--	0.033	1.08	Protection of groundwater
Hexachlorocyclopentadiene	77-47-4	--	480	--	160	--	0.033	160	Protection of groundwater
Hexachloroethane	67-72-1	--	56.0	25.0	0.044	--	0.033	0.044	Protection of groundwater
Indeno[1,2,3-cd]pyrene	193-39-5	--	--	1.37	0.700	--	0.0067	0.700	Protection of groundwater
Isophorone	78-59-1	--	56.0	25.0	0.041	--	0.033	0.041	Protection of groundwater
1-Methylnaphthalene	90-12-0	--	5600	34.5	--	--	0.0067	34.5	Protection of direct contact
2-Methylnaphthalene	91-57-6	--	320	--	--	--	0.0067	320	Protection of direct contact
Nitrobenzene	98-95-3	--	160	--	0.102	--	0.033	0.102	Protection of groundwater

TABLE 7-1

SELECTION OF PRELIMINARY SOIL SCREENING LEVELS
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Compound	Cas Number	MTCA Cleanup Levels Protective of Human Health				Puget Sound Regional Background Level	Final Applicable Practical Quantitation Limit	Preliminary Soil Screening Level	Basis
		Method A - Unrestricted Land Use	Method B		Protection of Groundwater				
			Noncarcinogen	Carcinogen					
Semivolatile Organic Compounds (Cont.)									
N-Nitrosodimethylamine	62-75-9	--	0.64	0.020	--	--	0.033	0.033	Practical quantitation limit
N-Nitroso-di-n-propylamine	621-64-7	--		0.143	0.004	--	0.033	0.033	Practical quantitation limit
N-Nitrosodiphenylamine	86-30-6	--	--	204	0.099	--	0.033	0.099	Protection of groundwater
Pentachlorophenol	87-86-5	--	400	2.50	0.079	--	0.17	0.17	Practical quantitation limit
Phenanthrene	85-01-8	--	--	--	--	--	0.0067	--	No risk-based cleanup level available
Phenol	108-95-2	--	24000	--	11.0	--	0.033	11.0	Protection of groundwater
Pyrene	129-00-0	--	2400	--	655	--	0.0067	655	Protection of groundwater
Pyridine	110-86-1	--	80	--	--	--	0.3300	80	Protection of direct contact
Total cPAHs	--	0.10	-	0.14	0.19	--	0.01	0.10	Protection of direct contact

Notes

1. PCB cleanup level selected to allow unrestricted use under MTCA and the Toxic Substances Control Act. PCBs are evaluated as a single hazardous substance.
2. MTCA Method A values used for TPH, since Method B and C not available.
3. Gasoline cleanup level is 30 mg/kg if benzene is present, otherwise it is 100 mg/kg.

Abbreviations

-- = not applicable
mg/kg = milligrams per kilogram
MTCA = Model Toxics Control Act
TPH = total petroleum hydrocarbons

TABLE 7-2

SELECTION OF PRELIMINARY GROUNDWATER SCREENING LEVELS

Former Kelly-Moore Manufacturing Facility

Seattle, Washington

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

Constituents	Groundwater Method A	Groundwater Method B Non cancer	Groundwater Method B Cancer	Surface Water Method B Non cancer	Surface Water Method B Cancer	Surface Water Aquatic Life Fresh/Acute 173-201A WAC	Surface Water Aquatic Life Fresh/Acute CWA §304	Surface Water Aquatic Life Fresh/Acute NTR 40 CFR 131	Surface Water Aquatic Life Fresh/Chronic 173-201A WAC	Surface Water Aquatic Life Fresh/Chronic CWA §304	Surface Water Aquatic Life Fresh/Chronic NTR 40 CFR 131	Surface Water Human Health Fresh Water CWA §304	Surface Water Human Health Fresh Water NTR 40 CFR 131	2015 Vapor Intrusion Groundwater Screening Level Method B Noncancer	2015 Vapor Intrusion Groundwater Screening Level Method B Cancer	Minimum Screening Level	PQLs	Minimum From Regulations	Preliminary Screening Level
Metals																			
Antimony	--	6.40	--	1037.04	--	--	--	--	--	--	--	5.60	14.00	--	--	5.60	5.0	5.60	5.6
Arsenic	5.00	4.80	0.06	17.68	0.10	360.00	340.00	360.00	190.00	150.00	190.00	0.02	0.02	--	--	0.02	3.3	0.02	3.3
Barium	--	3200.00	--	--	--	--	--	--	--	--	--	1000.00	--	--	--	1,000.00	28	1,000.00	1,000
Beryllium	--	32.00	--	272.90	--	--	--	--	--	--	--	1000.00	--	--	--	32.00	10	32.00	32
Cadmium	5.00	8.00	40.50	--	0.82	2.00	3.90	0.37	0.25	1.00	--	--	--	--	--	0.25	4.4	0.25	4.4
Chromium	50.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	50.00	11	0.00	50
Copper	--	640.00	2880.00	--	4.61	13.00	17.00	3.47	9.00	11.00	--	--	--	--	--	3.47	10	3.47	10
Lead	15.00	--	--	--	13.88	65.00	65.00	0.54	2.50	2.50	--	--	--	--	--	0.54	1.1	0.54	1.1
Mercury	2.00	--	--	--	2.10	1.40	2.10	0.01	0.77	0.01	--	0.14	--	0.89	--	0.01	0.5	0.01	0.5
Nickel	--	320.00	1103.23	--	438.00	470.00	1400.00	48.65	52.00	160.00	610.00	610.00	--	--	--	48.65	22	48.65	49
Selenium	--	80.00	2700.62	--	20.00	--	20.00	5.00	5.00	5.00	170.00	--	--	--	--	5.00	5.6	5.00	5.6
Silver	--	80.00	25925.93	--	0.32	3.20	3.40	--	--	--	--	--	--	--	--	0.32	11	0.32	11
Thallium	--	0.16	--	0.22	--	--	--	--	--	--	--	0.24	1.70	--	--	0.16	5.0	0.16	5
Vanadium	--	80.00	--	--	--	--	--	--	--	--	--	--	--	--	--	80.00	10	80.00	80
Zinc	--	4800.00	16548.46	--	35.36	120.00	110.00	32.29	120.00	100.00	7400.00	--	--	--	--	32.29	50	32.29	50
Total Petroleum Hydrocarbons¹																			
Diesel Range Organics	500	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	250	500	500
Lube Oil	500	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	400	500	500
Gasoline Range Organics	800/1000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	100	800/1000	800/1000
Volatile Organic Compounds																			
<i>cis</i> -1,2-Dichloroethene	--	16	--	--	--	--	--	--	--	--	--	--	--	--	--	16.00	0.20	16.00	16
<i>cis</i> -1,3-Dichloropropene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.20	0.00	--
<i>trans</i> -1,2-Dichloroethene	--	160	--	32,407	--	--	--	--	--	--	--	140,000	--	--	--	160.00	0.20	160.00	160
<i>trans</i> -1,3-Dichloropropene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.20	0.00	--
1,1,1,2-Tetrachloroethane	--	240.00	1.68	--	--	--	--	--	--	--	--	--	--	--	7.40	1.68	0.20	1.68	1.7
1,1,1-Trichloroethane	200	16,000	--	925,926	--	--	--	--	--	--	--	--	--	5,238	--	5,238.10	0.20	5,238.10	5,238
1,1,2,2-Tetrachloroethane	--	160.00	0.22	10,370.37	6.48	--	--	--	--	--	--	0.17	0.17	--	6.20	0.17	0.20	0.17	0.20
1,1,2-Trichloroethane	--	32.00	0.77	2,304.53	25.27	--	--	--	--	--	--	0.59	0.60	4.51	--	0.59	0.20	0.59	0.59
1,1-Dichloroethane	--	1,600.0	7.7	--	--	--	--	--	--	--	--	--	--	--	11.2	7.68	0.20	7.68	7.7
1,1-Dichloroethene	--	400.00	--	23,148.15	--	--	--	--	--	--	--	330.00	0.06	130.00	--	0.06	0.20	0.06	0.20
1,1-Dichloropropene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.20	0.00	--
1,2,3-Trichlorobenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.20	0.00	--
1,2,3-Trichloropropane	--	32,000	0.001	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.20	0.00	--
1,2,4-Trichlorobenzene	--	80	2	236	2	--	--	--	--	--	--	35	--	39	--	1.51	0.20	1.51	1.5
1,2,4-Trimethylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	28	--	28.44	0.20	28.44	28
1,2-Dibromo-3-chloropropane	--	1.60	0.05	--	--	--	--	--	--	--	--	--	--	--	--	0.05	1.0	0.05	1.0
1,2-Dibromoethane	0.01	72.00	0.02	--	--	--	--	--	--	--	--	--	--	--	--	0.02	0.20	0.02	0.20
1,2-Dichlorobenzene	--	720	--	4,167	--	--	--	--	--	--	--	420	2,700	2,571	--	420.00	0.20	420.00	420
1,2-Dichloroethane	5	48.00	0.48	12,962.96	59.35	--	--	--	--	--	--	0.38	0.38	139.78	4.20	0.38	0.20	0.38	0.38
1,2-Dichloropropane	--	720.00	1.22	56,910.57	43.91	--	--	--	--	--	--	0.50	--	28.44	3.89	0.50	0.20	0.50	0.50
1,3,5-Trimethylbenzene	--	80	--	--	--	--	--	--	--	--	--	--	--	--	--	80.00	0.20	80.00	80
1,3-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--	--	320.00	400.00	--	--	320.00	0.20	320.00	320
1,3-Dichloropropane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.20	0.00	--
1,4-Dichlorobenzene	--	560.00	8.10	3,240.74	21.43	--	--	--	--	--	--	63.00	400.00	7,808.49	4.85	4.85	0.20	4.85	4.85
2,2-Dichloropropane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.20	0.00	--
2-Butanone	--	4,800	--	--	--	--	--	--	--	--	--	--	--	1,739,130	--	4,800.00	5.0	4,800.00	4,800
2-Chloroethyl vinyl ether	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	1.0	0.00	--
2-Chlorotoluene	--	160	--	--	--	--	--	--	--	--	--	--	--	--	--	160.00	0.20	160.00	160
2-Hexanone	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	2.0	0.00	--
4-Chlorotoluene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.20	0.00	--
Acetone	--	7,200	--	--	--	--	--	--	--	--	--	--	--	--	--	7,200.00	5.0	7,200.00	7,200
Benzene	5	32.0	0.8	1,994.3	22.7	--	--	--	--	--	--	2.2	1.2	102.7	2.4	0.80	0.20	0.80	0.80
Bromobenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.20	0.00	--
Bromochloromethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.20	0.00	--

TABLE 7-2

SELECTION OF PRELIMINARY GROUNDWATER SCREENING LEVELS

Former Kelly-Moore Manufacturing Facility

Seattle, Washington

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

Constituents	Groundwater Method A	Groundwater Method B Non cancer	Groundwater Method B Cancer	Surface Water Method B Non cancer	Surface Water Method B Cancer	Surface Water Aquatic Life Fresh/Acute 173-201A WAC	Surface Water Aquatic Life Fresh/Acute CWA §304	Surface Water Aquatic Life Fresh/Acute NTR 40 CFR 131	Surface Water Aquatic Life Fresh/Chronic 173-201A WAC	Surface Water Aquatic Life Fresh/Chronic CWA §304	Surface Water Aquatic Life Fresh/Chronic NTR 40 CFR 131	Surface Water Human Health Fresh Water CWA §304	Surface Water Human Health Fresh Water NTR 40 CFR 131	2015 Vapor Intrusion Groundwater Screening Level Method B Noncancer	2015 Vapor Intrusion Groundwater Screening Level Method B Cancer	Minimum Screening Level	PQLs	Minimum From Regulations	Preliminary Screening Level
Volatile Organic Compounds (Continued)																			
Bromodichloromethane	--	160.00	0.71	13,645.22	27.51	--	--	--	--	--	--	0.55	0.27	--	1.84	0.27	0.20	0.27	0.27
Bromoform	--	160.00	5.54	13,645.22	215.91	--	--	--	--	--	--	4.30	4.30	--	200.00	4.30	1.0	4.30	4.30
Bromomethane	--	11.2	--	955.2	--	--	--	--	--	--	--	47.0	48.0	13.0	--	11.20	0.20	11.20	11.2
Carbon disulfide	--	800	--	--	--	--	--	--	--	--	--	--	--	400	--	400.00	0.20	400.00	400
Carbon tetrachloride	--	32.00	0.63	545.81	4.87	--	--	--	--	--	--	0.23	0.25	59.16	0.54	0.23	0.20	0.23	0.23
Chlorobenzene	--	160	--	5,185	--	--	--	--	--	--	--	130	680	286	--	130.00	0.20	130.00	130
Chloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	18,286	--	18,285.71	1.0	18,285.71	18,286
Chloroform	--	80.00	1.41	6,822.61	55.02	--	--	--	--	--	--	5.70	5.70	494.59	1.20	1.20	0.20	1.20	1.2
Chloromethane	--	--	--	--	--	--	--	--	--	--	--	--	--	152.82	--	152.82	1.0	152.82	153
Dibromochloromethane	--	160.00	0.52	13,645.22	20.31	--	--	--	--	--	--	0.40	0.41	--	4.53	0.40	0.20	0.40	0.40
Dibromomethane	--	80	--	--	--	--	--	--	--	--	--	--	--	277	0	0.28	0.20	0.28	0.28
Dichlorodifluoromethane	--	1,600	--	--	--	--	--	--	--	--	--	--	--	6	--	5.66	0.20	5.66	5.7
Ethylbenzene	700	800	--	6,823	--	--	--	--	--	--	--	530	3,100	2,783	--	530.00	0.20	530.00	530
Hexachlorobutadiene	--	8.00	0.56	925.93	29.68	--	--	--	--	--	--	0.44	0.44	--	0.81	0.44	0.20	0.44	0.44
Iodomethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	1.0	0.00	--
Isopropylbenzene	--	800	--	--	--	--	--	--	--	--	--	--	--	--	--	800.00	0.2	800.00	800
Methyl isobutyl ketone	--	640	--	--	--	--	--	--	--	--	--	--	--	471,429	--	640.00	2.0	640.00	640
Methyl t-butyl ether	20	--	24.3	--	--	--	--	--	--	--	--	--	--	87,003.4	610.0	24.31	0.20	24.31	24.3
Methylene chloride	5	48.00	21.88	17,283.95	3,600.82	--	--	--	--	--	--	4.60	4.70	4,864.69	4,433.96	4.60	1.0	4.60	4.6
Naphthalene	160	160	--	4,714	--	--	--	--	--	--	--	--	--	167	9	8.93	1.0	8.93	8.9
n-Butylbenzene	--	400	--	--	--	--	--	--	--	--	--	--	--	--	--	400.00	0.20	400.00	400
n-Propylbenzene	--	800	--	--	--	--	--	--	--	--	--	--	--	--	--	800.00	0.20	800.00	800
m,p-Xylene	--	1,600	--	--	--	--	--	--	--	--	--	--	--	--	--	1,600.00	0.40	1,600.00	1,600
o-Xylene	--	1,600	--	--	--	--	--	--	--	--	--	--	--	440	--	440.00	0.20	440.00	440
p-Isopropyltoluene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.20	0.00	--
sec-Butylbenzene	--	800	--	--	--	--	--	--	--	--	--	--	--	--	--	800.00	0.20	800.00	800
Styrene	--	1,600	--	--	--	--	--	--	--	--	--	--	--	8,104	--	1,600.00	0.20	1,600.00	1,600
tert-Butylbenzene	--	800	--	--	--	--	--	--	--	--	--	--	--	--	--	800.00	0.20	800.00	800
Tetrachloroethene	5	48	21	502	100	--	--	--	--	--	--	1	1	44	23	0.69	0.20	0.69	0.69
Toluene	1000	640	--	18,855	--	--	--	--	--	--	--	1,300	6,800	15,584	--	640.00	1.0	640.00	640
Trichloroethene	5	4.0	0.5	117.8	12.8	--	--	--	--	--	--	2.5	2.7	--	--	0.54	0.20	0.54	0.54
Trichlorofluoromethane	--	2,400	--	--	--	--	--	--	--	--	--	--	--	120	--	120.00	0.20	120.00	120
Vinyl acetate	--	8,000	--	--	--	--	--	--	--	--	--	--	--	7,800	--	7,800.00	2.0	7,800.00	7,800
Vinyl chloride	0.2	24.00	0.03	6,481.48	3.70	--	--	--	--	--	--	0.03	2.00	56.69	--	0.03	0.20	0.03	0.20
Semivolatile Organic Compounds																			
(3+4)-Methylphenol (m,p-Cresol)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	1.0	0.00	--
1,2,4-Trichlorobenzene	--	80	2	236	2	--	--	--	--	--	--	35	--	--	--	1.51	1.0	1.51	1.5
1,2-Dichlorobenzene	--	720	--	4,167	--	--	--	--	--	--	--	420	2,700	--	--	420.00	1.0	420.00	420
1,2-Dinitrobenzene	--	1.60	--	--	--	--	--	--	--	--	--	--	--	--	--	1.60	1.0	1.60	1.6
1,2-Diphenylhydrazine	--	--	0.11	--	0.32	--	--	--	--	--	--	0.04	0.04	--	--	0.04	1.0	0.04	1.0
1,3-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--	--	320.00	400.00	--	--	320.00	1.0	320.00	320
1,3-Dinitrobenzene	--	1.6	--	--	--	--	--	--	--	--	--	--	--	--	--	1.60	1.0	1.60	1.6
1,4-Dichlorobenzene	--	8.10	--	3,240.74	21.43	--	--	--	--	--	--	63.00	400.00	--	--	8.10	1.0	8.10	8.1
1,4-Dinitrobenzene	--	1.60	--	--	--	--	--	--	--	--	--	--	--	--	--	1.60	1.0	1.60	1.6
2,3,4,6-Tetrachlorophenol	--	480	--	--	--	--	--	--	--	--	--	--	--	--	--	480.00	1.0	480.00	480
2,3,5,6-Tetrachlorophenol	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	1.0	0.00	--
2,3-Dichloroaniline	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	1.0	0.00	--
2,4,5-Trichlorophenol	--	800	--	--	--	--	--	--	--	--	--	1,800	--	--	--	800.00	1.0	800.00	800
2,4,6-Trichlorophenol	--	8.00	3.98	17.28	3.93	--	--	--	--	--	--	1.40	2.10	--	--	1.40	1.0	1.40	1.4
2,4-Dichlorophenol	--	24	--	190	--	--	--	--	--	--	--	77	93	--	--	24.00	1.0	24.00	24
2,4-Dimethylphenol	--	160	--	--	--	--	--	--	--	--	--	--	--	--	--	160.00	1.0	160.00	160
2,4-Dinitrophenol	--	32	--	--	--	--	--	--	--	--	--	--	--	--	--	32.00	10	32.00	32
2,4-Dinitrotoluene	--	32.00	0.28	1,364.52	5.50	--	--	--	--	--	--	0.11	0.11	--	--	0.11	1.0	0.11	1.0
2,6-Dinitrotoluene	--	4.80	0.06	--	--	--	--	--	--	--	--	--	--	--	--	0.06	1.0	0.06	1.0

TABLE 7-2

SELECTION OF PRELIMINARY GROUNDWATER SCREENING LEVELS

Former Kelly-Moore Manufacturing Facility

Seattle, Washington

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

Constituents	Groundwater Method A	Groundwater Method B Non cancer	Groundwater Method B Cancer	Surface Water Method B Non cancer	Surface Water Method B Cancer	Surface Water Aquatic Life Fresh/Acute 173-201A WAC	Surface Water Aquatic Life Fresh/Acute CWA §304	Surface Water Aquatic Life Fresh/Acute NTR 40 CFR 131	Surface Water Aquatic Life Fresh/Chronic 173-201A WAC	Surface Water Aquatic Life Fresh/Chronic CWA §304	Surface Water Aquatic Life Fresh/Chronic NTR 40 CFR 131	Surface Water Human Health Fresh Water CWA §304	Surface Water Human Health Fresh Water NTR 40 CFR 131	2015 Vapor Intrusion Groundwater Screening Level Method B Noncancer	2015 Vapor Intrusion Groundwater Screening Level Method B Cancer	Minimum Screening Level	PQLs	Minimum From Regulations	Preliminary Screening Level
Semivolatile Organic Compounds (Continued)																			
2-Chloronaphthalene	--	640	--	1,037	--	--	--	--	--	--	--	1,000	--	--	--	640.00	1.0	640.00	640
2-Chlorophenol	--	40	--	100	--	--	--	--	--	--	--	--	--	--	--	40.00	1.0	40.00	40
2-Methylphenol (o-Cresol)	--	400	--	--	--	--	--	--	--	--	--	--	--	--	--	400.00	1.0	400.00	400
2-Nitroaniline	--	160	--	--	--	--	--	--	--	--	--	--	--	--	--	160.00	1.0	160.00	160
2-Nitrophenol	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	1.0	0.00	--
3,3'-Dichlorobenzidine	--	--	0.19	--	0.05	--	--	--	--	--	--	0.02	0.04	--	--	0.02	1.0	0.02	1.0
3-Nitroaniline	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	1.0	0.00	--
4,6-Dinitro-2-methylphenol	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	5.0	0.00	--
4-Bromophenyl phenyl ether	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	1.0	0.00	--
4-Chloro-3-methylphenol	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	1.0	0.00	--
4-Chloroaniline	--	32.00	0.22	--	--	--	--	--	--	--	--	--	--	--	--	0.22	1.0	0.22	1.0
4-Chlorophenyl phenyl ether	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	1.0	0.00	--
4-Nitroaniline	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	1.0	0.00	--
4-Nitrophenol	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	1.0	0.00	--
Acenaphthene	--	960	--	648	--	--	--	--	--	--	--	670	--	--	--	648.15	0.1	648.15	648
Acenaphthylene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.1	0.00	--
Aniline	--	56.00	7.68	--	--	--	--	--	--	--	--	--	--	--	--	7.68	1.0	7.68	7.7
Anthracene	--	4,800	--	25,926	--	--	--	--	--	--	--	8,300	9,600	--	--	4,800.00	0.1	4,800.00	4,800
Benidine	--	48,000	0.0004	88,3838	0.0003	--	--	--	--	--	--	0.0001	0.0001	--	--	0.00	10	0.00	10
Benzo[a]anthracene	--	--	0.12	--	0.30	--	--	--	--	--	--	0.00	0.00	--	--	0.003	0.01	0.00	0.01
Benzo[a]pyrene	0.1	--	0.012	--	0.030	--	--	--	--	--	--	0.004	0.003	--	--	0.003	0.01	0.00	0.01
Benzo[b]fluoranthene	--	--	0.12	--	0.30	--	--	--	--	--	--	0.00	0.00	--	--	0.003	0.01	0.00	0.01
Benzo[g,h,i]perylene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00000	0.01	0.00	--
Benzo[k]fluoranthene	--	--	1.20	--	2.96	--	--	--	--	--	--	0.00	0.00	--	--	0.0028	0.01	0.00	0.01
Benzyl alcohol	--	800	--	--	--	--	--	--	--	--	--	--	--	--	--	800.00	1.00	800.00	800
bis(2-Chloroethoxy)methane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	1.0	0.00	--
bis(2-Chloroethyl) ether	--	--	0.04	--	0.85	--	--	--	--	--	--	0.03	0.03	--	26.00	0.03	1.0	0.03	1.0
bis(2-Chloroisopropyl) ether	--	--	--	--	--	--	--	--	--	--	--	1,400.00	1,400.00	--	--	1,400.00	1.0	1,400.00	1,400
bis(2-Ethylhexyl) phthalate	--	320.00	6.25	398.86	3.56	--	--	--	--	--	--	1.20	1.80	--	--	1.20	1.0	1.20	1.2
bis(2-Ethylhexyl) adipate	--	9,600.00	72.92	--	--	--	--	--	--	--	--	--	--	--	--	72.92	1.0	72.92	73
Butyl benzyl phthalate	--	3,200	46	1,265	8	--	--	--	--	--	--	1,500	--	--	--	8.32	1.0	8.32	8.3
Carbazole	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.000	1.0	0.00	--
Chrysene	--	--	11.99	--	29.60	--	--	--	--	--	--	0.00	0.00	--	--	0.003	0.01	0.00	0.01
Dibenz[a,h]anthracene	--	--	0.01	--	0.03	--	--	--	--	--	--	0.00	0.00	--	--	0.003	0.01	0.00	0.01
Dibenzofuran	--	16	--	--	--	--	--	--	--	--	--	--	--	--	--	16.00	1.0	16.00	16
Diethyl phthalate	--	12,800	--	28,412	--	--	--	--	--	--	--	17,000	23,000	--	--	12,800.00	1.0	12,800.00	12,800
Dimethyl phthalate	--	--	--	--	--	--	--	--	--	--	--	270,000	313,000	--	--	270,000.00	1.0	270,000.00	270,000
Di-n-butyl phthalate	--	1,600	--	--	--	--	--	--	--	--	--	--	--	--	--	1,600.00	1.0	1,600.00	1,600
Di-n-octyl phthalate	--	160	--	--	--	--	--	--	--	--	--	--	--	--	--	160.00	1.0	160.00	160
Fluoranthene	--	640	--	86	--	--	--	--	--	--	--	130	300	--	--	86.42	0.1	86.42	86
Fluorene	--	640	--	3,457	--	--	--	--	--	--	--	1,100	1,300	--	--	640.00	0.1	640.00	640
Hexachlorobenzene	--	12.80	0.05	0.24	0.00	--	--	--	--	--	--	0.00	0.00	--	--	0.00028	1.0	0.00	1.0
Hexachlorobutadiene	--	8.00	0.56	925.93	29.68	--	--	--	--	--	--	0.44	0.44	--	--	0.44	1.0	0.44	1.0
Hexachlorocyclopentadiene	--	48	--	3,618	--	--	--	--	--	--	--	40	240	--	--	40.00	1.0	40.00	40
Hexachloroethane	--	5.60	1.09	20.86	1.86	--	--	--	--	--	--	1.40	1.90	--	--	1.09	1.0	1.09	1.09
Indeno[1,2,3-cd]pyrene	--	--	0.12	--	0.30	--	--	--	--	--	--	0.00	0.00	--	--	0.0028	0.01	0.00	0.01
Isophorone	--	1,600.00	46.05	117,845.12	1,550.59	--	--	--	--	--	--	35.00	8.40	--	--	8.40	1.0	8.40	8.4
1-Methylnaphthalene	--	560.00	1.51	--	--	--	--	--	--	--	--	--	--	--	--	1.51	1.0	1.51	1.5
2-Methylnaphthalene	--	32	--	--	--	--	--	--	--	--	--	--	--	--	--	32.00	1.0	32.00	32
Naphthalene	160	160	--	4,714	--	--	--	--	--	--	--	--	--	167	9	8.93	1.0	8.93	8.9
Nitrobenzene	--	16	--	1,788	--	--	--	--	--	--	--	17	17	10,514	160	16.00	1.0	16.00	16.0
N-Nitrosodimethylamine	--	0.0640	0.0009	797.7208	4.8880	--	--	--	--	--	--	0.0007	0.0007	--	--	0.0007	1.0	0.00	1.0
N-Nitroso-di-n-propylamine	--	--	0.01	--	0.84	--	--	--	--	--	--	0.01	--	--	--	0.01	1.0	0.01	1.0
N-Nitrosodiphenylamine	--	--	17.86	--	9.45	--	--	--	--	--	--	3.30	5.00	--	--	3.30	1.0	3.30	3.3
Pentachlorophenol	--	80.00	0.22	1,178.45	1.47	20.27	19.00	20.00	12.79	15.00	13.00	0.27	0.28	--	--	0.22	5.0	0.22	5.0
Phenanthrene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00	0.1	0.00	--
Phenol	--	2,400	--	555,556	--	--	--	--	--	--	--	21,000	21,000	--	--	2,400.00	1.0	2,400.00	2,400
Pyrene	--	480	--	2,593	--	--	--	--	--	--	--	830	960	--	--	480.00	0.1	480.00	480
Pyridine	--	8.00	--	--	--	--	--	--	--	--	--	--	--	--	--	8.00	1.0	8.00	8.0

TABLE 7-2

SELECTION OF PRELIMINARY GROUNDWATER SCREENING LEVELS

Former Kelly-Moore Manufacturing Facility

Seattle, Washington

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

Constituents	Groundwater Method A	Groundwater Method B Non cancer	Groundwater Method B Cancer	Surface Water Method B Non cancer	Surface Water Method B Cancer	Surface Water Aquatic Life Fresh/Acute 173-201A WAC	Surface Water Aquatic Life Fresh/Acute CWA §304	Surface Water Aquatic Life Fresh/Acute NTR 40 CFR 131	Surface Water Aquatic Life Fresh/Chronic 173-201A WAC	Surface Water Aquatic Life Fresh/Chronic CWA §304	Surface Water Aquatic Life Fresh/Chronic NTR 40 CFR 131	Surface Water Human Health Fresh Water CWA §304	Surface Water Human Health Fresh Water NTR 40 CFR 131	2015	2015	Minimum Screening Level	PQLs	Minimum From Regulations	Preliminary Screening Level	
														Vapor Intrusion Groundwater Screening Level Method B Noncancer	Vapor Intrusion Groundwater Screening Level Method B Cancer					
Polychlorinated Biphenyls																				
Aroclor 1016	--	1.12	1.25	0.01	0.00	--	--	--	--	--	0.01	--	--	--	--	--	0.0030	0.050	0.00	0.050
Aroclor 1221	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.00000	0.050	0.00	--
Aroclor 1232	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.000000	0.050	0.00	--
Aroclor 1242	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.000000	0.050	0.00	--
Aroclor 1248	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.000000	0.050	0.00	--
Aroclor 1254	--	0.32	0.04	0.00	0.00	--	--	--	--	--	0.01	--	--	--	--	--	0.000105	0.050	0.00	0.050
Aroclor 1260	--	--	0.04	--	--	--	--	--	--	--	0.01	--	--	--	--	--	0.014000	0.050	0.01	0.050
Total PCBs	0.1	--	0.04	--	0.0001	2.00	--	--	--	0.01	0.01	0.14	0.00006	0.00017	--	--	0.000064	0.050	0.00006	0.050

Notes

1. MTCA Method A values used since Method B not available.

Abbreviations

-- = not applicable
µg/L = micrograms per liter
CFR = Code of Federal Regulations
CWA = Clean Water Act
MTCA = Model Toxics Control Act

NTR = National Toxics Rule
PCBs = polychlorinated biphenyls
PQL = laboratory practical quantitation limit
WAC = Washington Administrative Code

TABLE 8-1

SELECTION OF SOIL COPCs
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Screening Level	Number of Samples Analyzed	Frequency of Detection	Maximum Non-detect Value	Minimum Non-detect Value	Maximum Detection	Minimum Detection	Frequency of Exceedances	Frequency of Exceedance (percent)	Sample ID of Maximum Detection	COPC?
Metals											
Arsenic	10	76	5	17	5.2	42	8.4	4	5	KM-54-3	yes
Barium	824	30	30	--	--	400	9.6	0	0	KM-16-0809-4	no
Cadmium	1	76	3	0.87	0.52	1.9	0.73	2	3	KM-26-8.5-0810	yes ¹
Chromium	1000	76	76	--	--	44	4.5	0	0	KM-16-0809-4	no
Copper	36	40	40	--	--	110	5.3	4	10	TP4-1-1109	yes ¹
Lead	220	77	21	7	5.2	410	7.2	2	3	KM-15-0809-4	yes
Mercury	0.52	76	1	0.44	0.26	0.83	0.83	1	1	KM-15-0809-4	yes ¹
Nickel	63	40	40	--	--	31	4.1	0	0	KM-22-7.0-0810	no
Selenium	10	30	0	15	5.7	--	--	0	63	--	no
Silver	1.87	30	0	1.4	0.53	--	--	--	--	--	no
Zinc	85	40	40	--	--	150	14	5	13	KM-1-0809-2	yes ¹
Polycyclic Aromatic Hydrocarbons											
1-Methylnaphthalene	34.5	18	9	0.0081	0.007	0.42	0.0081	0	0	KMW-06-9	no
2-Methylnaphthalene	320	18	8	0.0083	0.007	0.4	0.0099	0	0	KMW-06-9	no
Acenaphthene	66.1	17	8	0.0081	0.007	0.54	0.009	0	0	KMW-06-15	no
Acenaphthylene	NE	18	6	0.016	0.007	0.076	0.0097	0	0	KMW-08-12	no
Anthracene	2275	17	5	0.016	0.007	0.094	0.0097	0	0	KM-55-3	no
Benzo(a)anthracene	0.072	42	30	0.0083	0.007	50	0.012	23	55	B7-PIPING-S2-4.0	yes ²
Benzo(a)pyrene	0.1	42	31	0.0083	0.007	51	0.013	23	55	B7-PIPING-S2-4.0	yes ²
Benzo(b)fluoranthene	0.24	42	31	0.0083	0.007	53	0.0091	15	36	B7-PIPING-S2-4.0	yes ²
Benzo(ghi)perylene	NE	17	6	0.016	0.007	1.8	0.0082	0	0	KM-55-3	no
Benzo(j,k)fluoranthene	0.252	42	28	0.016	0.007	44	0.0087	13	31	B7-PIPING-S2-4.0	yes ²
Chrysene	0.08	42	30	0.0083	0.007	52	0.01	23	55	B7-PIPING-S2-4.0	yes ²
Dibenz(a,h)anthracene	0.137	42	24	0.19	0.007	12	0.0085	12	29	B7-PIPING-S2-4.0	yes ²
Fluoranthene	85.2	16	7	0.0081	0.007	1.7	0.011	0	0	KM-55-3	no
Fluorene	101	17	6	0.016	0.007	0.11	0.013	0	0	KMW-06-9	no
Indeno(1,2,3-cd)pyrene	0.7	42	29	0.19	0.007	28	0.008	10	24	B7-PIPING-S2-4.0	yes ²
Naphthalene	0.25	18	11	0.0081	0.007	0.69	0.012	1	6	KMW-08-12	yes
Phenanthrene	NE	16	8	0.0081	0.007	0.52	0.0082	0	0	KM-55-3	no
Pyrene	655	16	7	0.0081	0.007	1.6	0.013	0	0	KM-55-3	no
Polychlorinated Biphenyls											
Aroclor 1016	5.6	56	0	0.074	0.05	--	--	--	0	--	--
Aroclor 1221	NE	56	0	0.074	0.05	--	--	--	0	--	--
Aroclor 1232	NE	56	0	0.074	0.05	--	--	--	0	--	--

TABLE 8-1

SELECTION OF SOIL COPCs
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Screening Level	Number of Samples Analyzed	Frequency of Detection	Maximum Non-detect Value	Minimum Non-detect Value	Maximum Detection	Minimum Detection	Frequency of Exceedances	Frequency of Exceedance (percent)	Sample ID of Maximum Detection	COPC?
Polychlorinated Biphenyls (Cont.)											
Aroclor 1242	NE	56	0	0.074	0.05	--	--	--	0	--	--
Aroclor 1248	NE	56	0	0.074	0.05	--	--	--	0	--	--
Aroclor 1254	0.5	56	0	0.074	0.05	--	--	--	0	--	--
Aroclor 1260	0.5	56	4	0.074	0.05	0.53	0.057	1	2	KM-42-0311-5	no ³
Semivolatile Organic Compounds											
(3+4)-Methylphenol (m,p-Cresol)	8000	62	2	0.43	0.035	4.1	0.051	0	0	KM-7-0809-2	no
1,2,4-Trichlorobenzene	0.056	62	0	0.49	0.035	--	--	--	--	--	--
1,2-Dichlorobenzene	4.92	124	0	0.49	0.035	--	--	--	--	--	--
1,2-Dinitrobenzene	8	62	0	0.49	0.035	--	--	--	--	--	--
1,2-Diphenylhydrazine	NE	62	1	0.49	0.035	0.041	0.041	0	0	KMW-08-12	no
1,3-Dichlorobenzene	NE	62	0	0.49	0.035	--	--	--	--	--	--
1,3-Dinitrobenzene	8	62	0	0.49	0.035	--	--	--	--	--	--
1,4-Dichlorobenzene	0.08	62	0	0.49	0.035	--	--	--	--	--	--
1,4-Dinitrobenzene	8	62	0	0.49	0.035	--	--	--	--	--	--
1-Methylnaphthalene	34.5	69	29	0.014	0.0069	4.1	0.0085	0	0	KM-11-0809-2.5	no
2,3,4,6-Tetrachlorophenol	2400	62	0	0.49	0.035	--	--	--	--	--	--
2,3,5,6-Tetrachlorophenol	NE	62	0	0.49	0.035	--	--	--	--	--	--
2,3-Dichloroaniline	NE	62	0	0.49	0.035	--	--	--	--	--	--
2,4,5-Trichlorophenol	28.75	62	0	0.49	0.035	--	--	--	--	--	--
2,4,6-Trichlorophenol	0.033	62	0	0.49	0.035	--	--	--	--	--	--
2,4-Dichlorophenol	0.167	62	0	0.49	0.035	--	--	--	--	--	--
2,4-Dimethylphenol	1.31	62	2	1.1	0.035	0.66	0.13	0	0	KMW-08-12	no
2,4-Dinitrophenol	0.33	62	0	2.5	0.17	--	--	--	--	--	--
2,4-Dinitrotoluene	0.033	62	0	0.49	0.035	--	--	--	--	--	--
2,6-Dinitrotoluene	0.033	62	0	0.49	0.035	--	--	--	--	--	--
2-Chloronaphthalene	6400	62	0	0.49	0.035	--	--	--	--	--	--
2-Chlorophenol	0.472	62	0	0.49	0.035	--	--	--	--	--	--
2-Methylnaphthalene	320	69	31	0.014	0.0069	3.3	0.0085	0	0	KM-11-0809-2.5	no
2-Methylphenol (o-Cresol)	2.33	62	2	0.43	0.035	3.5	0.049	1	2	KM-7-0809-2	yes
2-Nitroaniline	800	62	0	0.49	0.035	--	--	--	--	--	--
2-Nitrophenol	NE	62	0	0.49	0.035	--	--	--	--	--	--
3,3'-Dichlorobenzidine	0.17	62	0	4.9	0.19	--	--	--	--	--	--
3-Nitroaniline	NE	62	0	0.49	0.035	--	--	--	--	--	--
4,6-Dinitro-2-methylphenol	0.17	62	0	2.5	0.17	--	--	--	--	--	--

TABLE 8-1

SELECTION OF SOIL COPCs
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Screening Level	Number of Samples Analyzed	Frequency of Detection	Maximum Non-detect Value	Minimum Non-detect Value	Maximum Detection	Minimum Detection	Frequency of Exceedances	Frequency of Exceedance (percent)	Sample ID of Maximum Detection	COPC?
Semivolatile Organic Compounds (Cont.)											
4-Bromophenyl-phenylether	NE	62	0	0.49	0.035	--	--	--	--	--	--
4-Chloro-3-methylphenol	NE	62	0	0.49	0.035	--	--	--	--	--	--
4-Chloroaniline	5	62	0	2	0.035	--	--	--	--	--	--
4-Chlorophenyl-phenylether	NE	62	0	0.49	0.035	--	--	--	--	--	--
4-Nitroaniline	NE	62	0	0.49	0.035	--	--	--	--	--	--
4-Nitrophenol	NE	62	0	0.49	0.035	--	--	--	--	--	--
Acenaphthene	66.1	70	18	0.042	0.0069	1.5	0.0099	0	0	KM-11-0809-2.5	no
Acenaphthylene	NE	69	10	0.043	0.0069	0.58	0.0095	0	0	KM-25-11.0-0810	no
Aniline	175	62	0	2	0.035	--	--	--	--	--	--
Anthracene	2275	70	25	0.043	0.0069	0.95	0.0084	0	0	Containment-W Wall-1009	no
Benzidine	0.33	62	0	4.9	0.35	--	--	--	--	--	--
Benzo(a)anthracene	0.072	70	37	0.014	0.0069	3.7	0.011	18	26	KM-35-0311-6.5	yes ²
Benzo(a)pyrene	0.1	70	37	0.014	0.0069	3.5	0.013	15	21	KM-16-0809-4	yes ²
Benzo(b)fluoranthene	0.24	70	39	0.014	0.0069	8.3	0.0088	10	14	KM-16-0809-4	yes ²
Benzo(ghi)perylene	NE	70	37	0.014	0.0069	5.2	0.011	0	0	KM-16-0809-4	no
Benzo(j,k)fluoranthene	0.252	1	1	--	--	0.27	0.27	1	100	KMW-08-12	yes ²
Benzo(k)fluoranthene	0.252	69	33	0.043	0.0069	4	0.013	7	10	KM-35-0311-6.5	yes ²
Benzyl alcohol	8000	62	0	2	0.035	--	--	--	--	--	--
bis(2-Chloroethoxy)methane	NE	62	0	0.49	0.035	--	--	--	--	--	--
bis(2-Chloroethyl)ether	0.033	62	0	0.49	0.035	--	--	--	--	--	--
bis(2-Chloroisopropyl)ether	NE	62	0	0.49	0.035	--	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	2.64	62	6	0.49	0.035	0.2	0.042	0	0	Pipe-C1-1109	no
bis-2-Ethylhexyladipate	833	62	1	0.49	0.035	0.095	0.095	0	0	KM-16-0809-8	no
Butylbenzylphthalate	2.32	62	0	0.49	0.035	--	--	--	--	--	--
Carbazole	NE	62	5	0.49	0.035	0.33	0.041	0	0	Tank 1-B-1009	no
Chrysene	0.08	70	38	0.014	0.0069	5.7	0.013	22	31	KM-35-0311-6.5	yes ²
Dibenz(a,h)anthracene	0.137	70	27	0.21	0.0069	2.1	0.0083	5	7	KM-16-0809-4	yes ²
Dibenzofuran	0.086	62	7	0.49	0.035	0.41	0.044	5	8	Containment-W Wall-1009	yes
Diethylphthalate	72.2	62	0	0.49	0.035	--	--	--	--	--	--
Dimethylphthalate	1088	62	0	0.49	0.035	--	--	--	--	--	--
Di-n-butylphthalate	57.6	62	0	0.49	0.035	--	--	--	--	--	--
Di-n-octylphthalate	800	62	0	0.49	0.035	--	--	--	--	--	--
Fluoranthene	85.2	71	46	0.014	0.0069	4.5	0.0078	0	0	KM-25-11.0-0810	no
Fluorene	101	70	22	0.042	0.0069	1	0.0076	0	0	KM-11-0809-2.5	no

TABLE 8-1

SELECTION OF SOIL COPCs
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Screening Level	Number of Samples Analyzed	Frequency of Detection	Maximum Non-detect Value	Minimum Non-detect Value	Maximum Detection	Minimum Detection	Frequency of Exceedances	Frequency of Exceedance (percent)	Sample ID of Maximum Detection	COPC?
Semivolatile Organic Compounds (Cont.)											
Hexachlorobenzene	0.625	62	0	0.49	0.035	--	--	--	--	--	--
Hexachlorobutadiene	0.47	62	0	0.49	0.035	--	--	--	--	--	--
Hexachlorobutadiene	1.08	62	0	0.49	0.035	--	--	--	--	--	--
Hexachlorocyclopentadiene	160	62	0	0.49	0.035	--	--	--	--	--	--
Hexachloroethane	0.044	62	0	0.49	0.035	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	0.7	70	37	0.014	0.0069	4.6	0.0082	3	4	KM-16-0809-4	yes ²
Isophorone	0.041	62	0	0.49	0.035	--	--	--	--	--	--
Naphthalene	0.25	69	28	0.042	0.0069	1	0.012	3	4	KM-11-0809-2.5	yes
Nitrobenzene	0.102	62	0	0.49	0.035	--	--	--	--	--	--
N-Nitrosodimethylamine	0.033	62	0	0.49	0.035	--	--	--	--	--	--
N-Nitroso-di-n-propylamine	0.033	62	0	0.49	0.035	--	--	--	--	--	--
N-Nitrosodiphenylamine	0.099	62	0	0.49	0.035	--	--	--	--	--	--
Pentachlorophenol	0.17	62	0	2.5	0.17	--	--	--	--	--	--
Phenanthrene	NE	71	40	0.014	0.0069	3.5	0.01	0	0	KM-11-0809-2.5	no
Phenol	11	62	0	0.49	0.035	--	--	--	--	--	--
Pyrene	655	71	45	0.014	0.0069	3.6	0.0096	0	0	KM-25-11.0-0810	no
Pyridine	80	62	0	4.1	0.035	--	--	--	--	--	--
Total Petroleum Hydrocarbons											
Gasoline Range Organics	30	136	77	8.3	3.6	8400	6.9	62	46	KM-8-0809-7	yes
Diesel Range Organics	2000	84	20	2200	26	11000	30	9	11	B7-piping-S1B-4.0	yes
Lube Oil	2000	84	24	1300	52	5600	57	1	1	B7-PIPING-S2-4.0	yes
Benzene, Toluene, Ethylbenzene, and Xylenes											
Benzene	0.004	65	26	0.076	0.02	0.58	0.021	26	40	KM-40-0311-2	yes
Ethylbenzene	4.6	65	25	0.38	0.036	13	0.078	5	8	KM-39-EW-3.5	yes
m, p-Xylene	17.2	65	42	1.9	0.04	24	0.038	2	3	KMW-09-6-7.5	yes
o-Xylene	4	65	7	2	0.036	4.8	0.085	1	2	B7-PIPING-B2-5.0	yes
Toluene	4.65	65	4	0.38	0.036	1.8	0.079	0	0	KM-40-0311-4.5	no
Volatile Organic Compounds											
1,1,1,2-Tetrachloroethane	38.5	75	0	2.4	0.00093	--	--	--	--	--	--
1,1,1-Trichloroethane	2	75	0	2.4	0.000053	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	0.001	75	0	2.4	0.00093	--	--	--	--	--	--
1,1,2-Trichloroethane	0.003	75	0	2.4	0.00093	--	--	--	--	--	--
1,1-Dichloroethane	0.042	75	1	2.4	0.00093	0.02	0.02	0	0	KM-11-0809-2.5	no
1,1-Dichloroethene	0.001	75	0	2.4	0.000053	--	--	--	--	--	--

TABLE 8-1

SELECTION OF SOIL COPCs
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Screening Level	Number of Samples Analyzed	Frequency of Detection	Maximum Non-detect Value	Minimum Non-detect Value	Maximum Detection	Minimum Detection	Frequency of Exceedances	Frequency of Exceedance (percent)	Sample ID of Maximum Detection	COPC?
Volatile Organic Compounds (Cont.)											
1,2,3-Trichlorobenzene	NE	75	0	2.4	0.00093	--	--	--	--	--	--
1,2,3-Trichloropropane	0.033	75	0	2.4	0.00093	--	--	--	--	--	--
1,2,4-Trichlorobenzene	0.056	75	0	2.4	0.00093	--	--	--	--	--	--
1,2,4-Trimethylbenzene	NE	75	18	0.34	0.00093	27	0.0088	0	0	KM-8-0809-7	no
1,2-Dibromo-3-chloropropane	1.25	75	0	12	0.0046	--	--	--	--	--	--
1,2-Dibromoethane	0.005	75	0	2.4	0.00093	--	--	--	--	--	--
1,2-Dichlorobenzene	4.92	150	0	2.4	0.00093	--	--	--	--	--	--
1,2-Dichloroethane	0.002	75	0	2.4	0.00093	--	--	--	--	--	--
1,2-Dichloropropane	0.003	75	0	2.4	0.00093	--	--	--	--	--	--
1,3,5-Trimethylbenzene	800	75	13	2	0.00093	10	0.018	0	0	KM-8-0809-7	no
1,3-Dichlorobenzene	NE	75	0	2.4	0.00093	--	--	--	--	--	--
1,3-Dichloropropane	NE	75	0	2.4	0.00093	--	--	--	--	--	--
1,4-Dichlorobenzene	0.08	75	0	2.4	0.00093	--	--	--	--	--	--
2,2-Dichloropropane	NE	75	0	2.4	0.00093	--	--	--	--	--	--
2-Chloroethylvinylether	NE	75	0	12	0.0046	--	--	--	--	--	--
2-Chlorotoluene	1600	75	0	2.4	0.00093	--	--	--	--	--	--
2-Hexanone	NE	75	0	12	0.0046	--	--	--	--	--	--
4-Chlorotoluene	NE	75	0	2.4	0.00093	--	--	--	--	--	--
Acetone	28.9	75	33	12	0.0049	10	0.0066	0	0	Tank 8-B-1009	no
Benzene	0.004	75	9	2.4	0.00093	0.22	0.0015	4	5	TANK 2- SOIL -S1-5	yes
Bromobenzene	NE	75	0	2.4	0.00093	--	--	--	--	--	--
Bromochloromethane	NE	75	0	2.4	0.00093	--	--	--	--	--	--
Bromoform	0.028	75	0	2.4	0.00093	--	--	--	--	--	--
Bromomethane	0.052	75	0	2.4	0.00093	--	--	--	--	--	--
Carbon Disulfide	2.83	75	8	2.4	0.00093	0.018	0.0015	0	0	KMW-06-15	no
Carbon Tetrachloride	0.002	75	0	2.4	0.00093	--	--	--	--	--	--
Chlorobenzene	1.14	75	0	2.4	0.00093	--	--	--	--	--	--
Chloroethane	NE	75	0	12	0.0046	--	--	--	--	--	--
Chloroform	0.006	75	0	2.4	0.00093	--	--	--	--	--	--
Chloromethane	1.47	75	0	12	0.0046	--	--	--	--	--	--
Cis-1,2-Dichloroethene	0.0802	75	0	2.4	0.000053	--	--	--	--	--	--
Cis-1,3-Dichloropropene	NE	75	0	2.4	0.00093	--	--	--	--	--	--
Dibromochloromethane	0.002	75	0	2.4	0.00093	--	--	--	--	--	--

TABLE 8-1

SELECTION OF SOIL COPCs
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Analyte	Screening Level	Number of Samples Analyzed	Frequency of Detection	Maximum Non-detect Value	Minimum Non-detect Value	Maximum Detection	Minimum Detection	Frequency of Exceedances	Frequency of Exceedance (percent)	Sample ID of Maximum Detection	COPC?
Volatile Organic Compounds (Cont.)											
Dichlorobromomethane	0.001	75	0	2.4	0.00093	--	--	--	--	--	--
Dichlorodifluoromethane	16000	75	0	2.4	0.00093	--	--	--	--	--	--
Ethylbenzene	4.6	75	29	0.34	0.00093	330	0.0012	6	8	KM-8-0809-7	yes
Hexachlorobutadiene	0.47	75	0	12	0.0046	--	--	--	--	--	--
Hexachlorobutadiene	1.08	75	0	12	0.0046	--	--	--	--	--	--
Iodomethane	NE	75	0	12	0.0046	--	--	--	--	--	--
Isopropylbenzene	8000	75	28	2	0.00093	6.4	0.0029	0	0	KM-8-0809-7	no
m,p-Xylene	17.2	75	27	0.68	0.0019	590	0.005	5	7	KM-8-0809-7	yes
Methyl ethyl ketone	48000	75	12	12	0.0046	0.033	0.006	0	0	Product-W1b Wall-1109	no
Methyl Isobutyl Ketone	6400	75	1	12	0.0046	47	47	0	0	KM-7-0809-2	no
Methyl t-Butyl Ether	0.1	75	0	2.4	0.00093	--	--	--	--	--	--
Methylene Chloride	0.02	75	1	12	0.0046	0.013	0.013	0	0	TP4-1-1109	no
Naphthalene	0.25	75	13	2.4	0.00093	9.1	0.0021	2	3	TANK 2- SOIL -S3-5	yes
n-Butylbenzene	526	75	14	2.4	0.00093	2.4	0.0028	0	0	KMW-08-12	no
n-Propylbenzene	3.3	75	26	2	0.00093	7.5	0.0027	1	1	KM-8-0809-7	yes
o-Xylene	4	75	19	2.4	0.00093	59	0.0017	3	4	KM-7-0809-2	yes
p-Isopropyltoluene	NE	75	12	2.4	0.00093	1.7	0.0018	0	0	TANK 2- SOIL -S3-5	no
sec-Butylbenzene	8000	75	24	2.4	0.00093	4.2	0.0012	0	0	KMW-08-12	no
Styrene	35.9	75	0	2.4	0.00093	--	--	--	--	--	--
tert-Butylbenzene	8000	75	8	2.4	0.00093	0.2	0.0022	0	0	KMW-08-12	no
Tetrachloroethene	0.007	75	4	2.4	0.000056	0.0043	0.000062	0	0	KM-15-0809-4	no
Toluene	4.65	75	19	12	0.0046	1200	0.007	1	1	KM-7-0809-2	yes
Trans-1,2-Dichloroethene	0.8698	75	0	2.4	0.000053	--	--	--	--	--	--
Trans-1,3-Dichloropropene	NE	75	0	2.4	0.00093	--	--	--	--	--	--
Trichloroethene	0.004	75	2	2.4	0.000053	0.011	0.00009	1	1	KM-16-0809-4	yes
Trichlorofluoromethane	24000	75	6	2.4	0.00093	0.0042	0.002	0	0	KM-11-0809-2.5	no
Vinyl Acetate	32.3	75	0	12	0.0046	--	--	--	--	--	--
Vinyl Chloride	0.001	75	0	2.4	0.000053	--	--	--	--	--	--

Abbreviations:

-- = not applicable
COPC = constituent of potential concern
mg/kg = milligrams per liter
NE = not established

Notes:

1. These compounds not detected in groundwater. Final cleanup level evaluation may consider removing protection of groundwater evaluation.
2. Carcinogenic cPAHs will be evaluated as one substance according to WAC 173-340-708(e).
3. Individual Aroclors are not considered in the CPOC evaluation as PCBs are treated as a single hazardous substance (WAC 173-340-7-8[8]).

TABLE 8-2

SELECTION OF GROUNDWATER COPCs¹
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

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

Constituent Class	Constituent Detected	Maximum Detection	Location of Maximum Detection	Preliminary Screening Level	COPC?
Total Petroleum Hydrocarbons	Diesel Range Organics	5,400	KMW-06	500	yes
	Lube Oil	1,500	KMW-06	500	yes
	Gasoline Range Organics	75,000	KMW-04	800	yes
Metals	Arsenic	20	KMW-04	3.3	yes
	Lead	3.7	KMW-06	1.1	yes
Volatile Organic Compounds	1,2,4-Trimethylbenzene	160	KMW-04	28	yes
	Benzene	8.4	KMW-03	0.80	yes
	Ethylbenzene	5,200	KMW-04	530	yes
	m,p-Xylene	12,000	KMW-04	1,600	yes
	o-Xylene	3,600	KMW-04	440	yes
	Toluene	5,300	KMW-04	640	yes
Semivolatile Organic Compounds	Benzo[a]anthracene	0.086	KMW-08	0.01	yes
	Benzo[a]pyrene	0.11	KMW-08	0.01	yes
	Benzo[b]fluoranthene	0.12	KMW-08	0.01	yes
	Benzo[j,k]fluoranthene	0.046	KMW-08	0.01	yes
	Chrysene	0.090	KMW-08	0.01	yes
	Indeno[1,2,3-cd]pyrene	0.063	KMW-08	0.01	yes
	1-Methylnaphthalene	12	KMW-06	1.5	yes
	Total cPAHs	0.01	KMW-08	0.14	yes

Notes:

1. Groundwater COPCs were determined using data from monitoring wells - groundwater results from grab samples were not used in the COPC determination.

Abbreviations

µg/L = micrograms per liter

COPC = constituent of potential concern

TABLE 11-1

SUMMARY OF TECHNOLOGIES EVALUATED
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

Technology	Description	Media Affected	Contaminants Affected	Carried Forward	Reason Technology Rejected
No Action	No further action taken at the site.	Soil, Groundwater	None	No	Would not achieve the CAOs.
Institutional Controls	Restrictive covenants (e.g., deed restrictions, posted notifications) and access restrictions (e.g., fencing). Long-term groundwater monitoring also was considered as a potential response action.	Soil, Groundwater	Immobile constituents	No	Does not work with future site plans.
Engineering Controls (e.g. Containment)	Physical barriers to human and ecological contact with contaminated media, including a surface cover (e.g., asphalt or concrete pavement or a shallow reinforced geotextile barrier layer) or a multi-layer, low permeability cap.	Soil, Groundwater	All	No	Does not work with future site plans.
Monitored Natural Attenuation	Ongoing monitoring to ensure that naturally occurring bacteria are degrading contaminants without enhancement.	Groundwater	VOCs, TPH-G	Yes	Would not achieve the CAOs alone, but could be part of a more complex remedy.
Soil Excavation & Disposal	Soil removal and storage in a permitted, off-site landfill.	Soil	All	Yes	Technology retained.
Soil Stabilization	Physical stabilization/solidification using Portland cement or other pozzolanic materials to immobilize constituents.	Soil	Metals	No	Not feasible due to the large footprint of existing buildings.
Soil Vapor Extraction	Removal and treatment of soil gas in the vadose zone to remove volatile contaminants from soil.	Soil	VOCs, TPH-G	Yes	Technology retained.
Bioventing	Inducing air flow in the unsaturated zone to enhance microbial degradation of constituents.	Soil	VOCs, TPH-G	No	Not effective for soils with shallow groundwater.

TABLE 11-1
SUMMARY OF TECHNOLOGIES EVALUATED
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

Technology	Description	Media Affected	Contaminants Affected	Carried Forward	Reason Technology Rejected
Thermal Desorption	Steam/hot air injection or electrical resistance/electromagnetic/fiber optic/radio frequency heating is used to increase the volatilization rate of semi-volatiles and facilitate extraction.	Soil, Groundwater	VOCs, TPH-G, cPAHs	No	Used in conjunction with SVE; may drive contaminants into buildings or off-site; typically cost prohibitive
In Situ Chemical Oxidation	Injection of a chemical oxidant to destroy contaminants in soil and groundwater.	Soil, Groundwater	VOCs, TPH-G, cPAHs	Yes	Technology retained.
Biosparging	Low flow rate air injection to enhance microbial degradation.	Groundwater	PAHs, VOCs, TPH-G	Yes	Technology retained.
Air Sparging	High flow rate air injection into groundwater to strip volatile contaminants.	Groundwater	VOCs, TPH-G	Yes	Technology retained.

Abbreviations

CAOs = cleanup action objectives

cPAHs = carcinogenic polycyclic aromatic hydrocarbons

PAHs = polycyclic aromatic hydrocarbons

SVE = soil vapor extraction

TPH-G = total petroleum hydrocarbons in the gasoline range

VOCs = volatile organic compounds

TABLE 12-1

REMEDIAL ALTERNATIVES COST SUMMARY
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Total Capital Cost	\$32,770	\$513,983	\$1,477,680	\$10,921,575
O&M Cost	\$505,700	\$672,186	\$1,182,690	\$104,650
TOTAL COST	\$538,000	\$1,186,000	\$2,660,000	\$11,026,000

Abbreviations

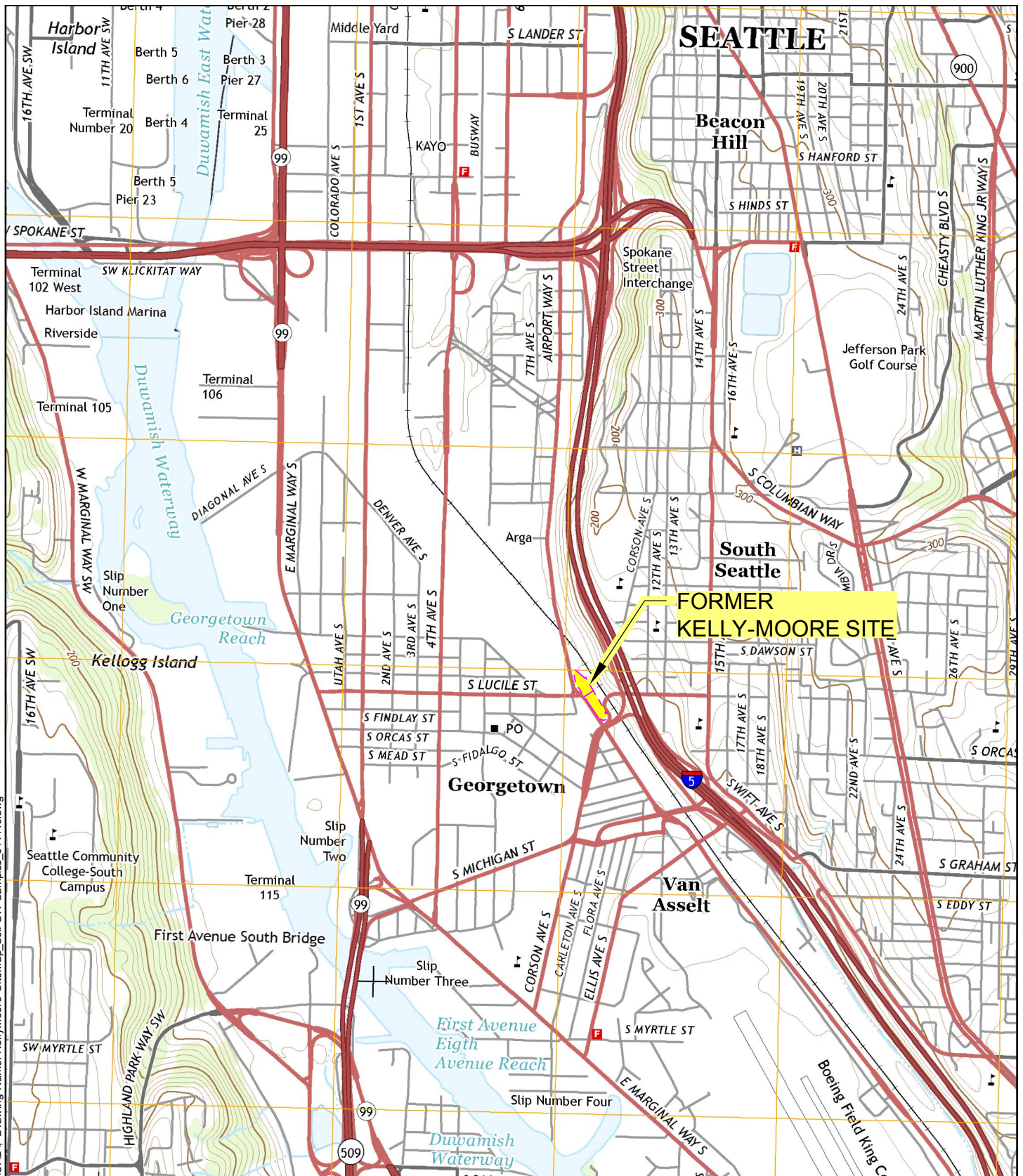
O&M = operations and maintenance

TABLE 13-1
COST BENEFIT RATIOS AND DISPROPORTIONATE COST ANALYSIS
Former Kelly-Moore Manufacturing Facility
Seattle, Washington

Components				Alternatives							
				1- Monitored Natural Attenuation		2- Soil Vapor Extraction and Air Sparging or Biosparging		3- In Situ Chemical Oxidation		4- Excavation	
Brief Description of Alternative				A base line against other alternatives, institutional/engineering controls only implemented							
Cost	Capital + Periodic (for 30 years); \$ Unit is \$1,000			\$538		\$1,186		\$2,660		\$11,026	
A. Evaluation of Components/Applicable or Relevant and Appropriate Requirements											
Features	Institutional/engineering controls			YES		YES		YES		YES	
	Contaminated soil removed			NO		NO		NO		YES	
	Contaminated groundwater treated			YES		YES		YES		YES	
	Meet the applicable or relevant and appropriate requirements			NO		YES		YES		YES	
B. Disproportionate Cost Analysis											
Criteria				Weighted		Weighted		Weighted		Weighted	
Weight (%)				Raw Score		Raw Score		Raw Score		Raw Score	
DCA and Relative Benefits Ranking Calculation	Protectiveness		25%	2	0.5	5	1.25	5	1.3	9	2.25
	Permanence		20%	5	1	7	1.4	7	1.4	9	1.8
	Cost		10%	10	1	8	0.8	6	0.6	1	0.1
	Long-term effectiveness		15%	5	0.75	7	1.05	7	1.1	9	1.35
	Short-term risks		10%	10	1	8	0.8	8	0.8	3	0.3
	Technical and administrative Implementability		10%	10	1	8	0.8	5	0.5	5	0.5
	Public concerns		10%	1	0.1	5	0.5	5	0.5	9	0.9
	Composite Totals		100%	5.35		6.6		6.1		7.2	
	Overall Alternative Benefit Ranking			4		1		2		4	
	Ratio of Cost/Benefit			101		180		436		1531	

Rating	Numerical Scale
Low	3
Low to moderate	4
Moderate	5
Moderate to high	6
Medium high	7
High	8
Very high	9
Highest	10

FIGURES

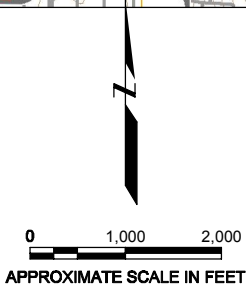


**FORMER
KELLY-MOORE SITE**

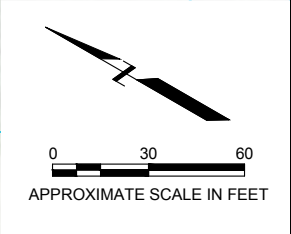
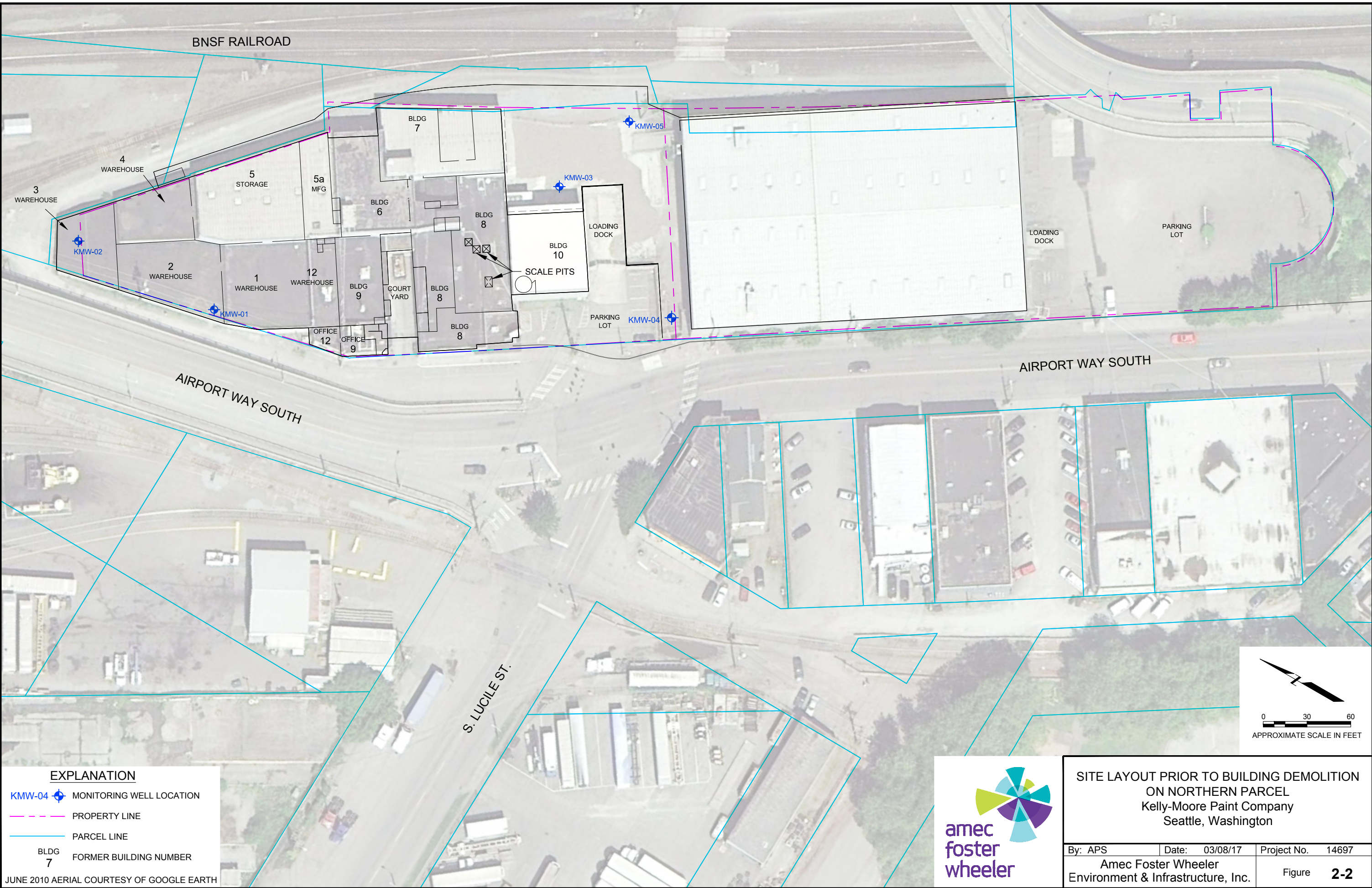


PROJECT LOCATION
Kelly-Moore Paint Company
Seattle, Washington


By: APS	Date: 01/21/16	Project No. 14697
Amec Foster Wheeler Environment & Infrastructure, Inc.		Figure 2-1





Plot Date: 03/08/17 - 11:27am, Plotted by: adam.stenberg
Drawing Path: C:\Users\adam.stenberg\appdata\local\temp\AcPublish_4596\ Drawing Name: KellyMoore-SiteMap_Soil-GW-Samples_021517.dwg




EXPLANATION

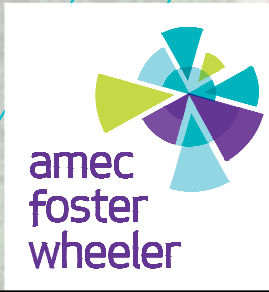
KMW-04  MONITORING WELL LOCATION

 PROPERTY LINE

 PARCEL LINE

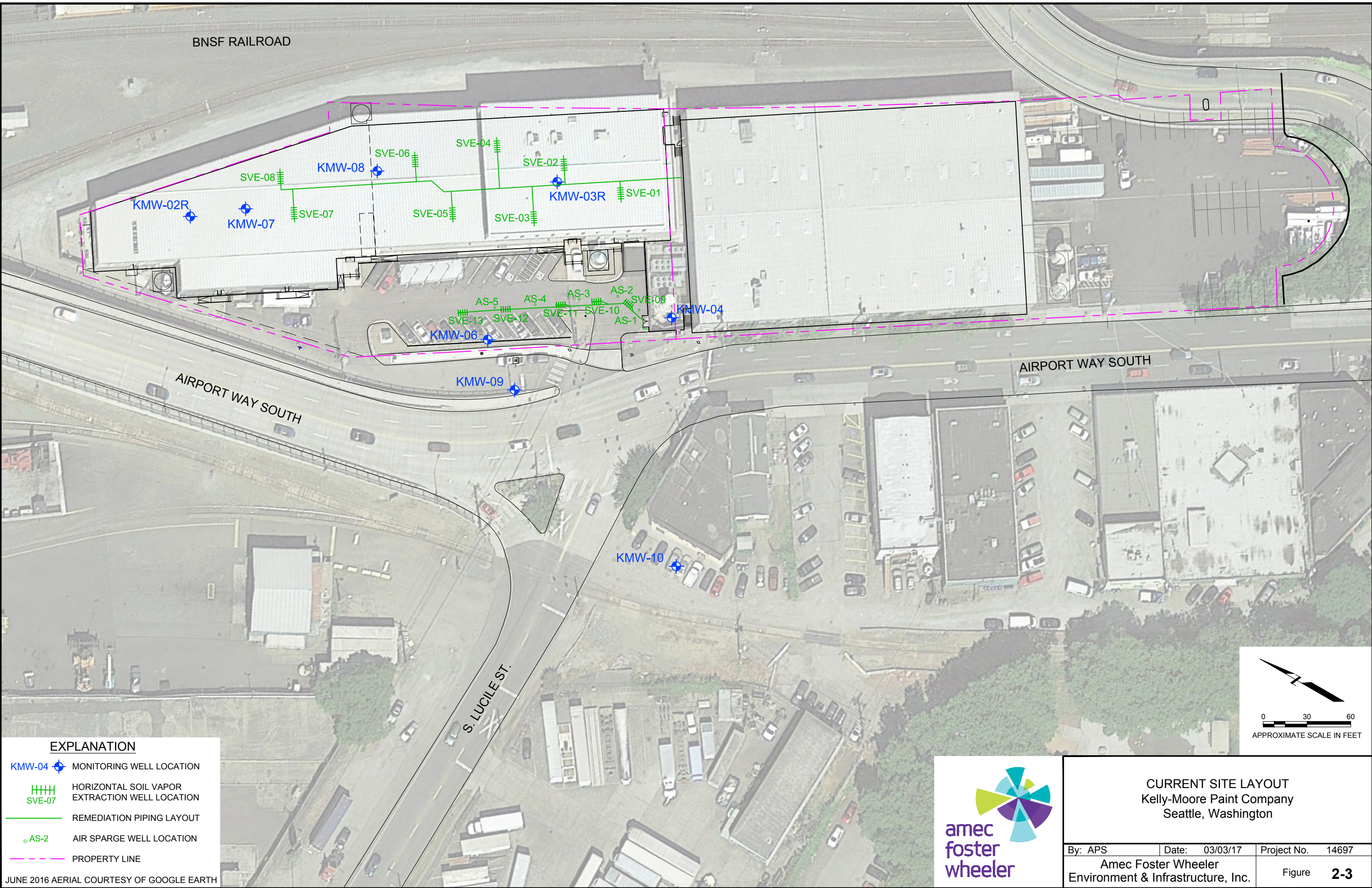
BLDG 7  FORMER BUILDING NUMBER

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SITE LAYOUT PRIOR TO BUILDING DEMOLITION ON NORTHERN PARCEL Kelly-Moore Paint Company Seattle, Washington		
By: APS	Date: 03/08/17	Project No. 14697
Amec Foster Wheeler Environment & Infrastructure, Inc.		Figure 2-2

Plot Date: 03/03/17 - 11:07am, Plotted by: adam.stenberg
Drawing Path: C:\Users\adam.stenberg\appdata\local\temp\AcPublish_1488\ Drawing Name: KellyMoore-SiteMap_Soil-GW-Samples_021517.dwg



EXPLANATION

- KMW-04  MONITORING WELL LOCATION
-  HORIZONTAL SOIL VAPOR EXTRACTION WELL LOCATION
-  REMEDIATION PIPING LAYOUT
-  AS-2 AIR SPARGE WELL LOCATION
-  PROPERTY LINE

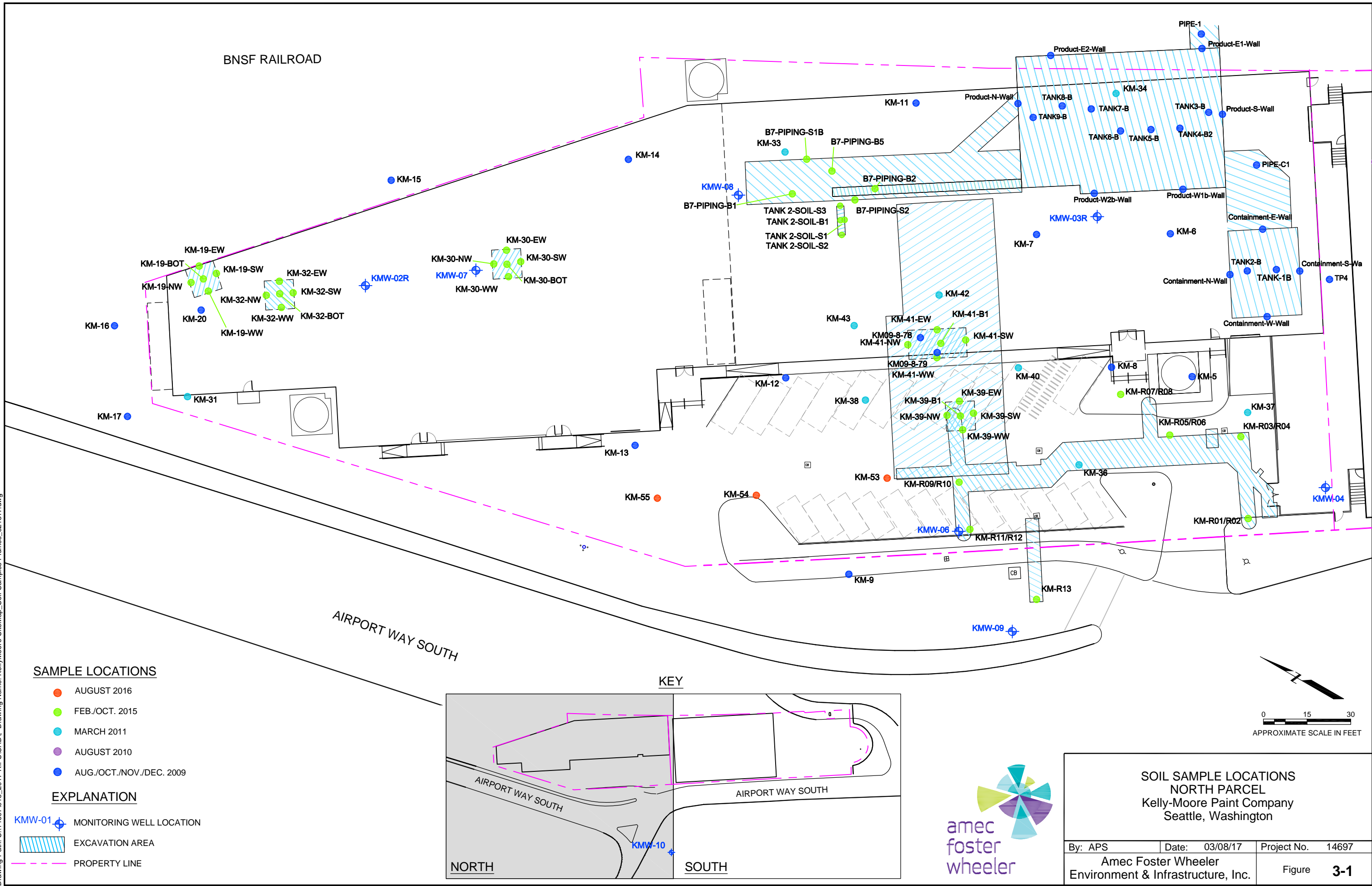
JUNE 2016 AERIAL COURTESY OF GOOGLE EARTH

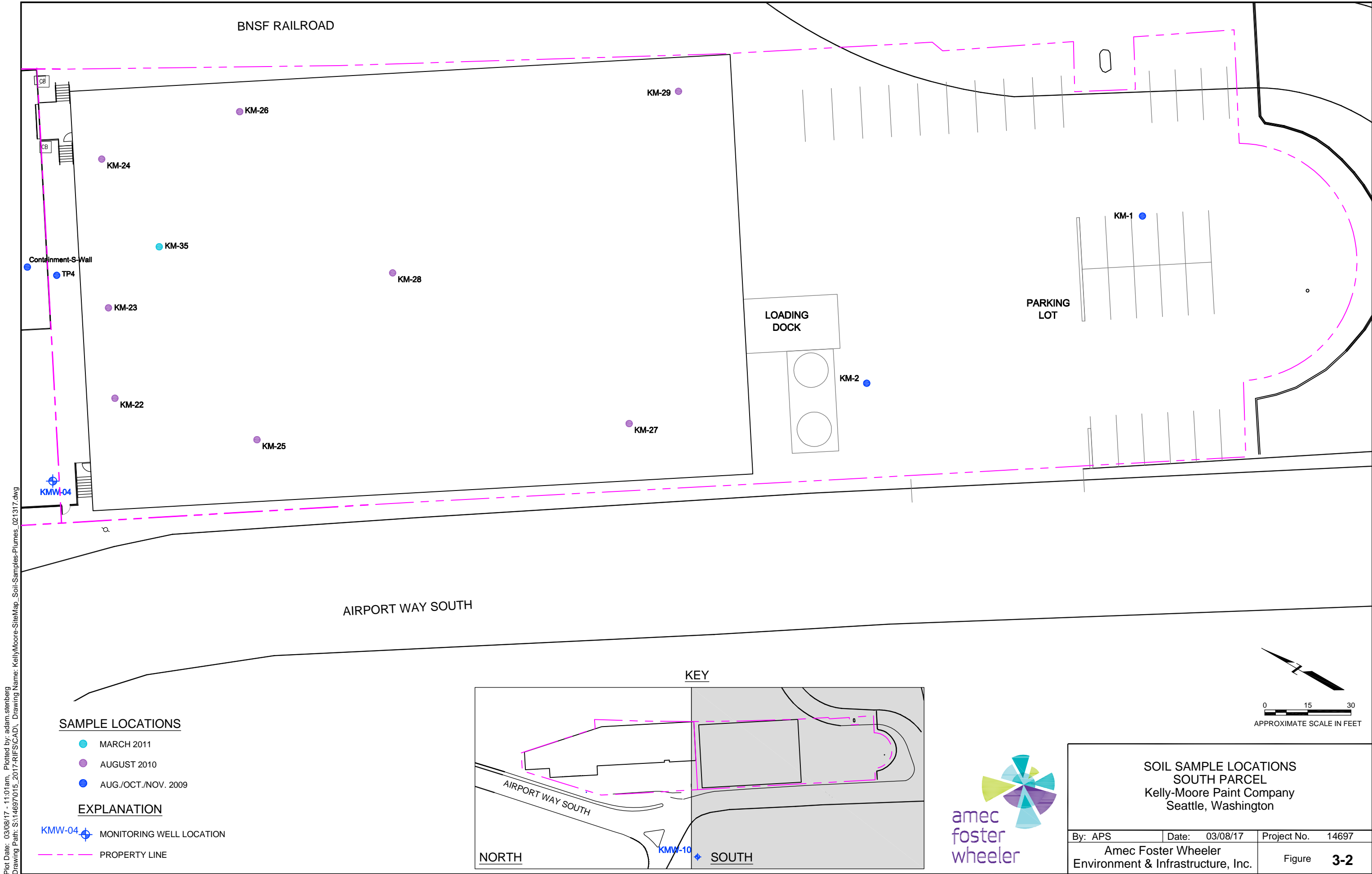


CURRENT SITE LAYOUT Kelly-Moore Paint Company Seattle, Washington

By: APS	Date: 03/03/17	Project No. 14697
Amec Foster Wheeler Environment & Infrastructure, Inc.		Figure 2-3

Plot Date: 03/08/17 - 11:00am, Plotted by: adam.stenberg
Drawing Path: S:\14697\015_2017-RIFSCAD\ Drawing Name: KellyMoore-SiteMap_Soil-Samples-Plumes_021317.dwg





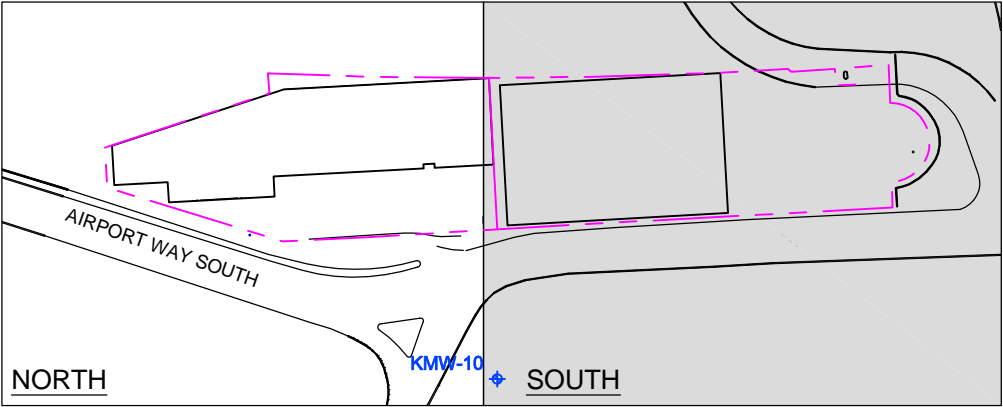
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Drawing Path: S:\14697\015_2017-RIFS\CAD\ Drawing Name: KellyMoore-SiteMap_Soil-Samples-Plumes_021317.dwg

SAMPLE LOCATIONS

- MARCH 2011
- AUGUST 2010
- AUG./OCT./NOV. 2009

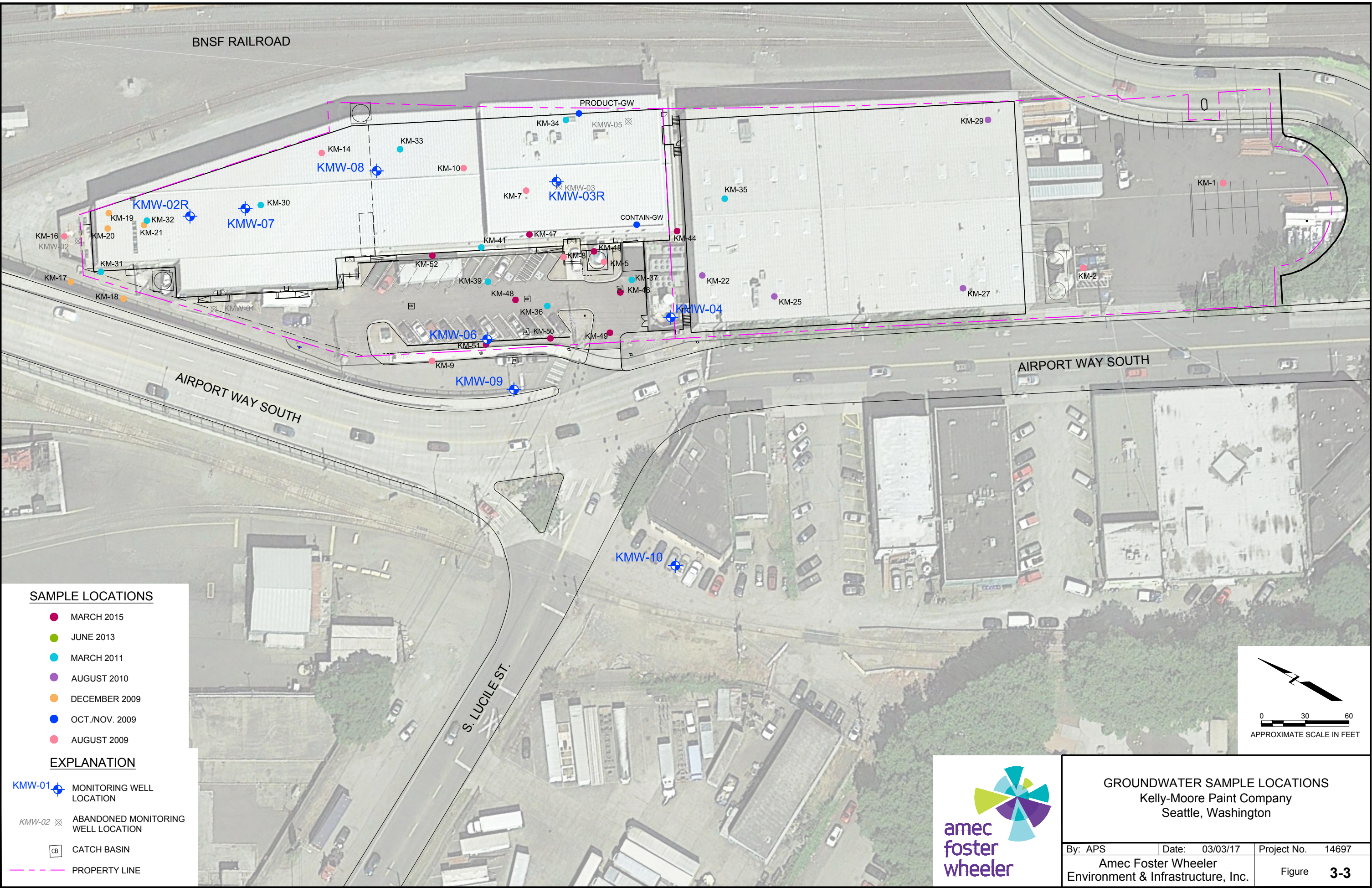
EXPLANATION

- KMW-04 ● MONITORING WELL LOCATION
- - - - - PROPERTY LINE



SOIL SAMPLE LOCATIONS SOUTH PARCEL Kelly-Moore Paint Company Seattle, Washington		
By: APS	Date: 03/08/17	Project No. 14697
Amec Foster Wheeler Environment & Infrastructure, Inc.		Figure 3-2

Plot Date: 03/03/17 - 11:18am, Plotted by: adam.stenberg
Drawing Path: C:\Users\adam.stenberg\appdata\local\temp\AcPublish_1488\ Drawing Name: KellyMoore-SiteMap_Soil-GW-Samples_021517.dwg



SAMPLE LOCATIONS

- MARCH 2015
- JUNE 2013
- MARCH 2011
- AUGUST 2010
- DECEMBER 2009
- OCT./NOV. 2009
- AUGUST 2009

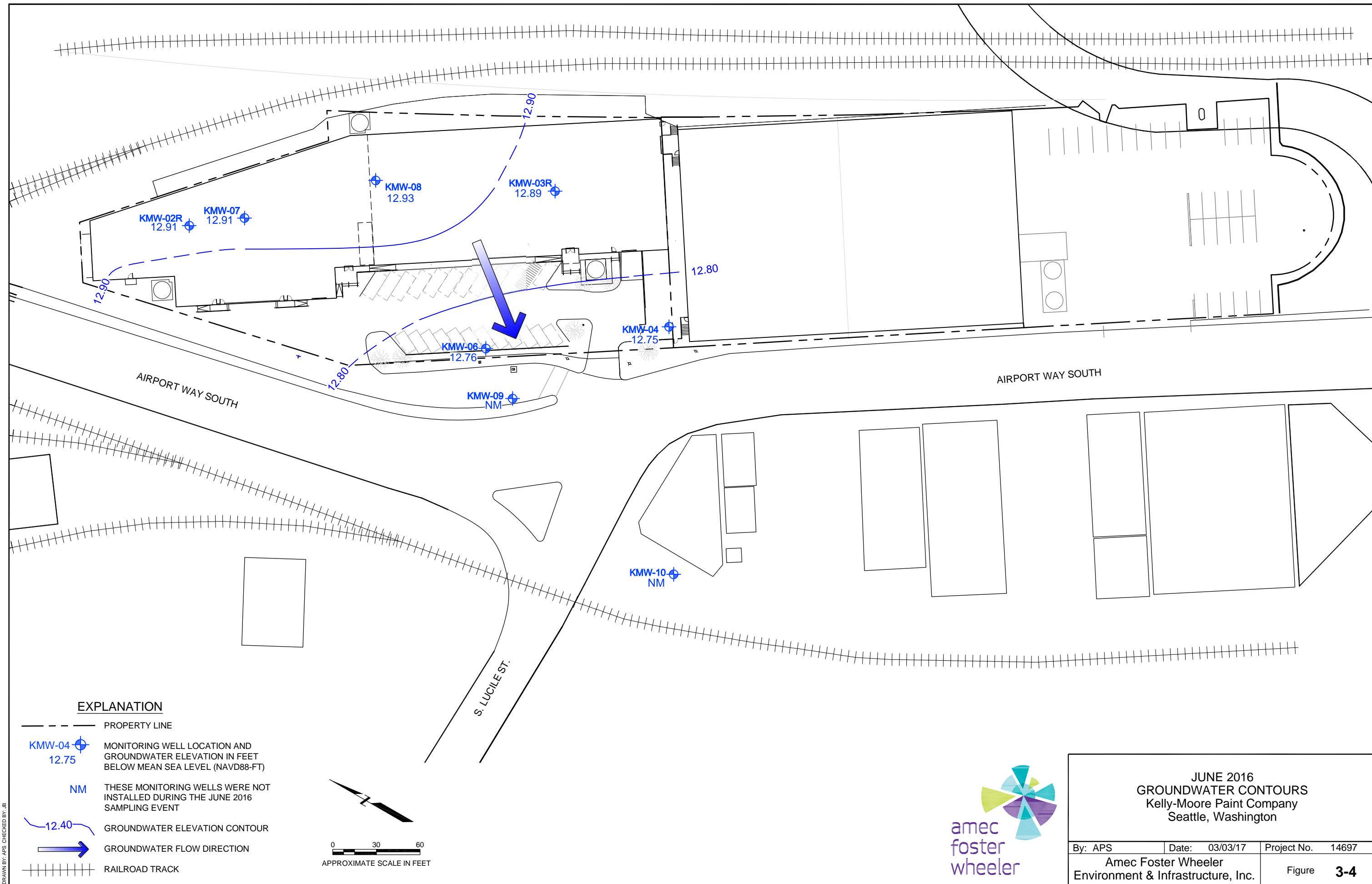
EXPLANATION

- KMW-01** ● MONITORING WELL LOCATION
- KMW-02** ☒ ABANDONED MONITORING WELL LOCATION
- CB** □ CATCH BASIN
- PROPERTY LINE



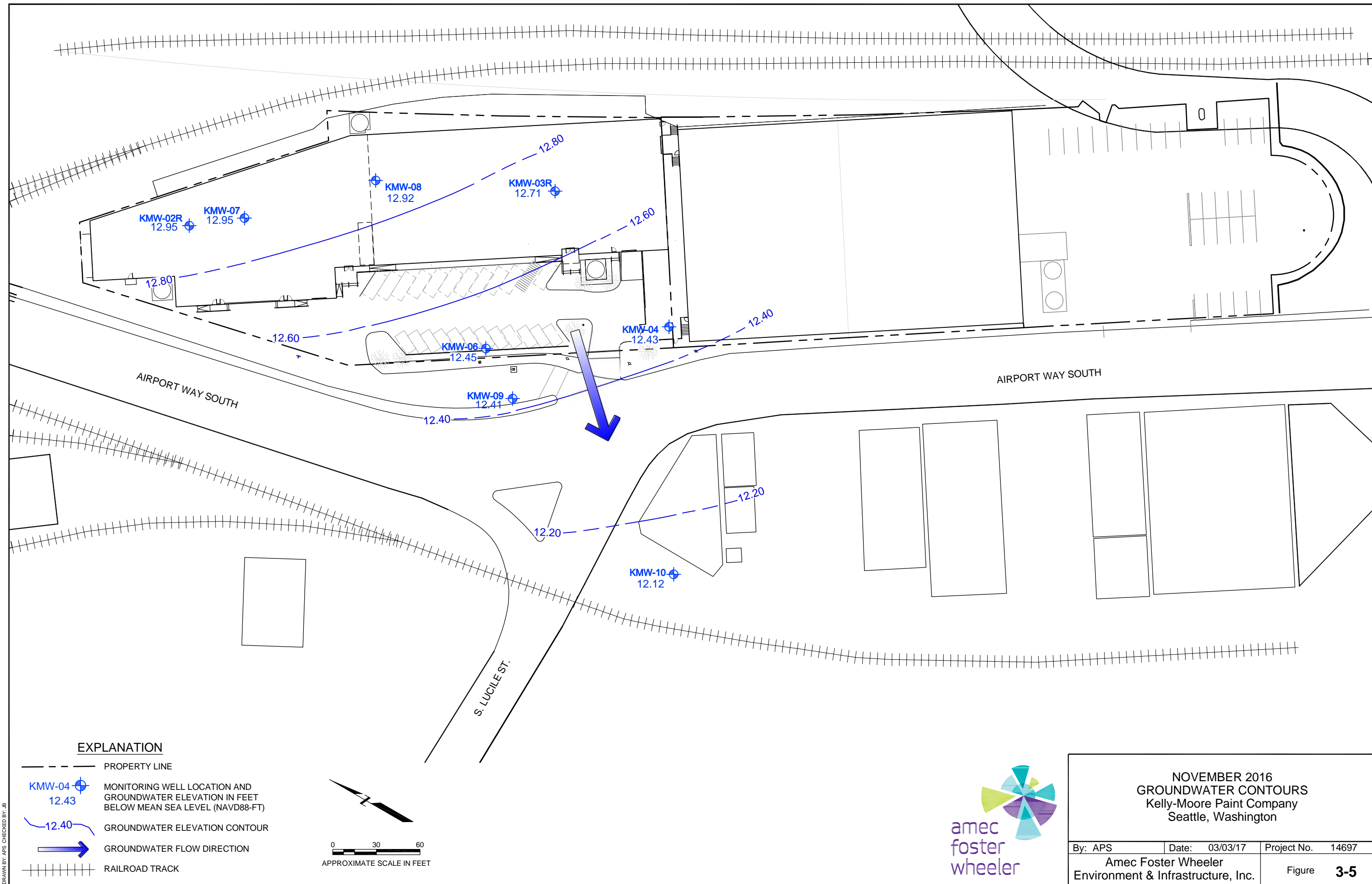
GROUNDWATER SAMPLE LOCATIONS
Kelly-Moore Paint Company
Seattle, Washington

By: APS	Date: 03/03/17	Project No. 14697
Amec Foster Wheeler Environment & Infrastructure, Inc.		Figure 3-3



DRAWN BY: APS CHECKED BY: JB

S:\14697\016_2017-RIFS\CAD\KellyMoore-GW-MON-NETWORK_021517.dwg - June 2016-GW - Mar. 03, 2017 12:33pm - adam.stenberg



DRAWN BY: APS CHECKED BY: JB

S:\14697\016_2017-RIFS\CAD\KellyMoore-GW-MON-NETWORK_021517.dwg - November 2016-GW - Mar. 03, 2017 12:35pm - adam.stenberg

Plot Date: 03/08/17 - 11:30am, Plotted by: adam.stenberg
Drawing Path: C:\Users\adam.stenberg\appdata\local\temp\AcPublish_4596\ Drawing Name: KellyMoore-SiteMap_Soil-GW-Samples_021517.dwg



EXPLANATION

- 2015 EXCAVATION AREA
- 2009 EXCAVATION AREA
- REMOVED UST LOCATION
- VAPOR BARRIER
- HORIZONTAL SOIL VAPOR EXTRACTION WELL LOCATION
SVE-13
- REMEDIATION PIPING LAYOUT
- PROPERTY LINE
- FENCE LINE
- TEST PIT
- FORMER BUILDING NUMBER

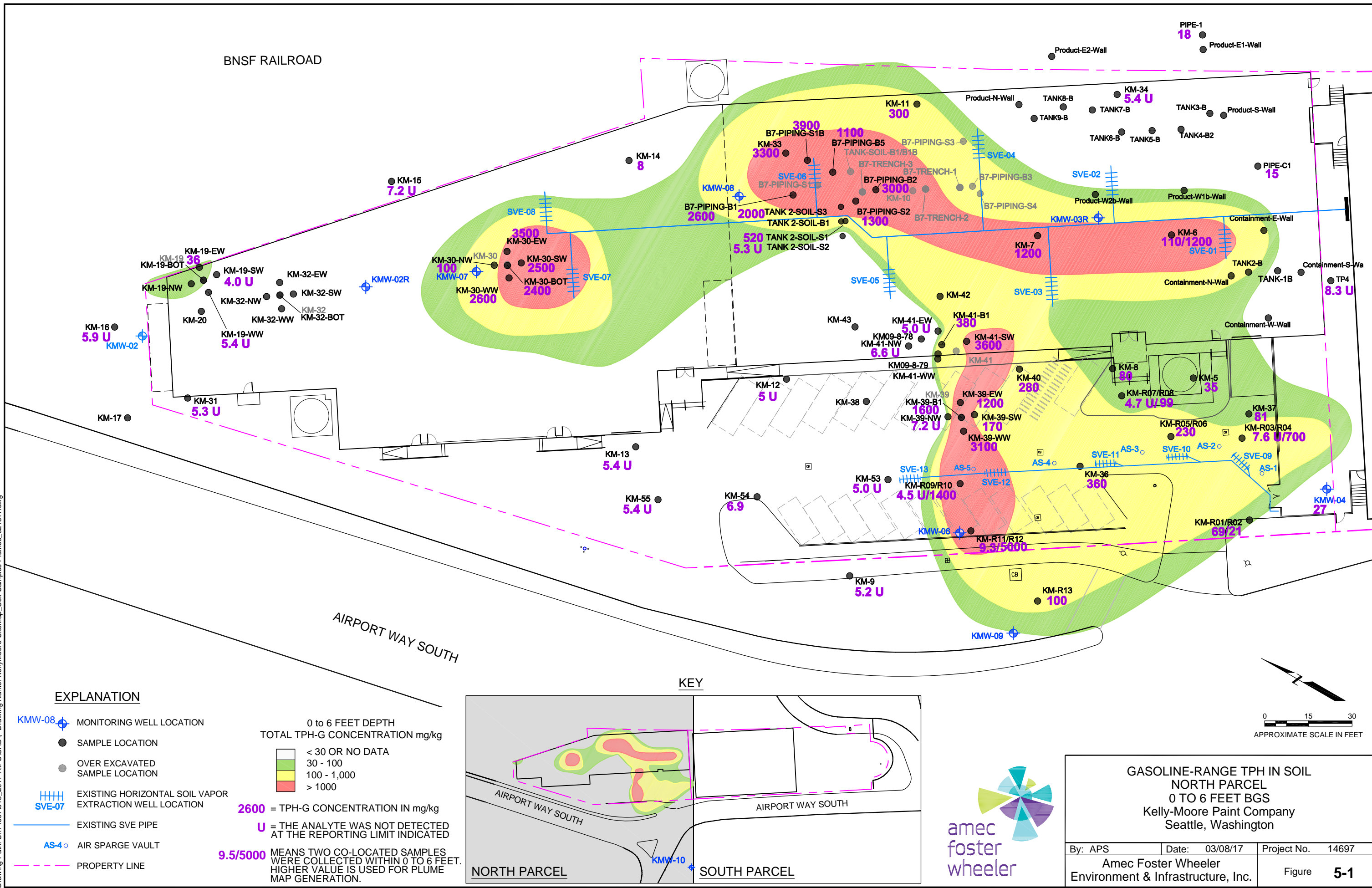
JUNE 2016 AERIAL COURTESY OF GOOGLE EARTH

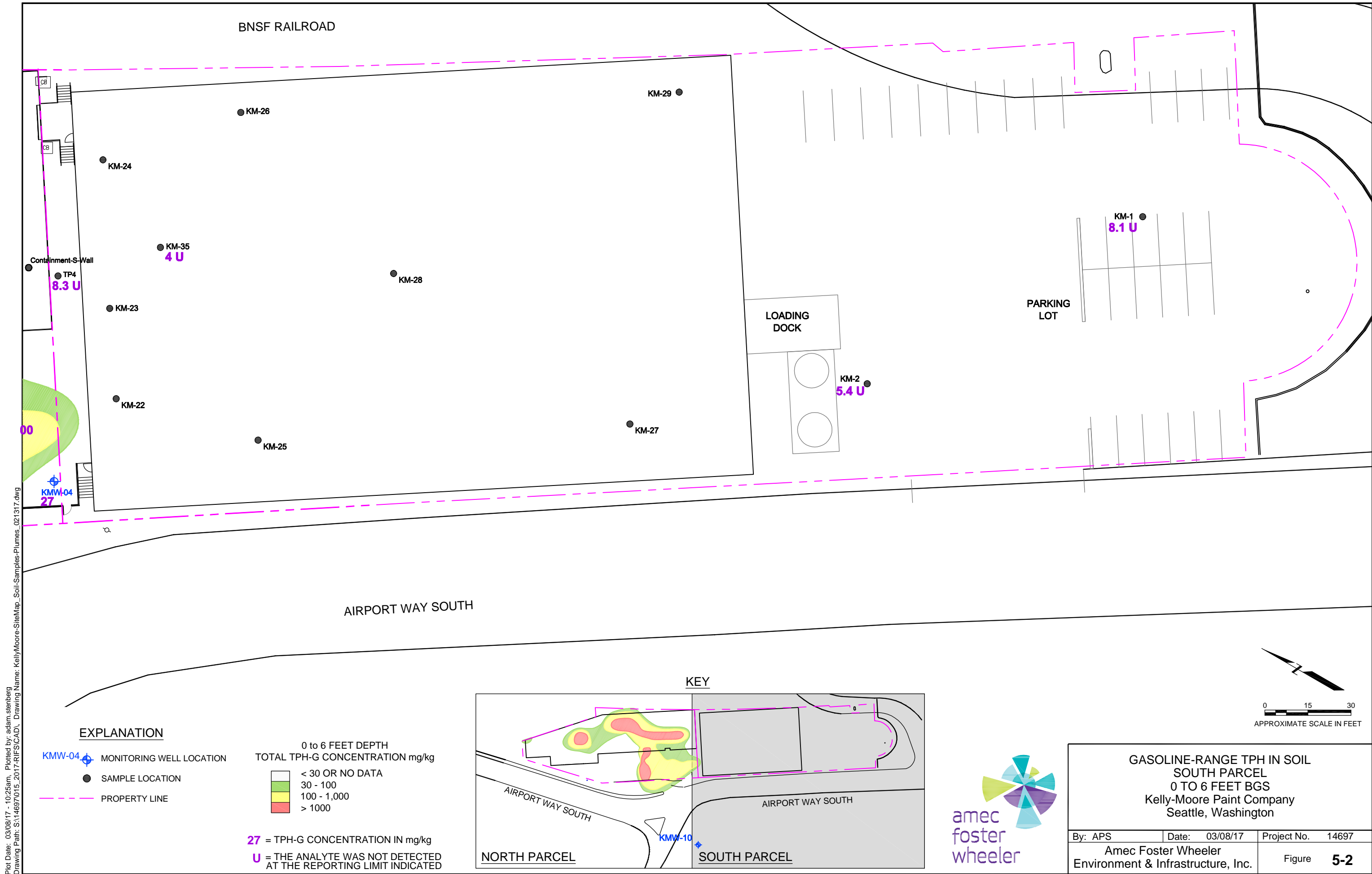


PRIOR REMEDIATION ACTIVITIES
Kelly-Moore Paint Company
Seattle, Washington

By: APS	Date: 03/08/17	Project No. 14697
Amec Foster Wheeler Environment & Infrastructure, Inc.		Figure 4-1

Plot Date: 03/08/17 - 10:22am, Plotted by: adam.stenberg
Drawing Path: S:\14697\015_2017-RIFS\CAD\, Drawing Name: KellyMoore-SiteMap_Soil-Samples-Plumes_021317.dwg





Plot Date: 03/08/17 - 10:25am, Plotted by: adam.stenberg
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EXPLANATION

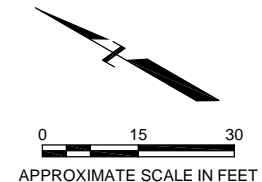
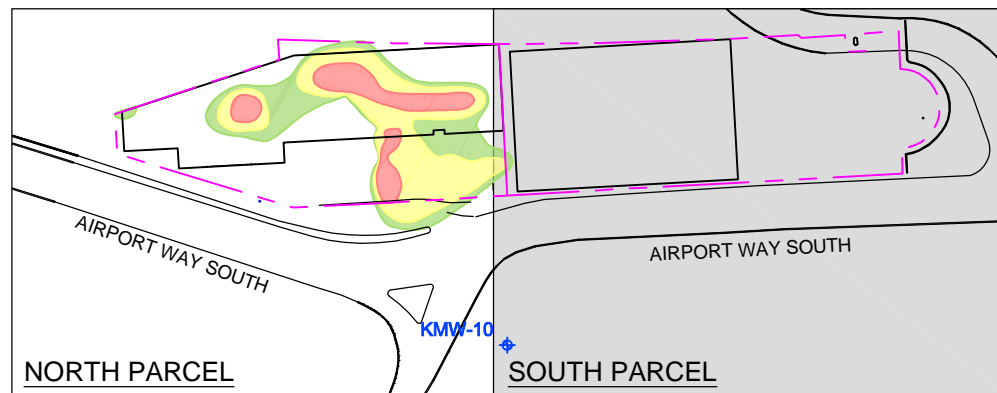
- KMW-04 MONITORING WELL LOCATION
- SAMPLE LOCATION
- PROPERTY LINE

0 to 6 FEET DEPTH
TOTAL TPH-G CONCENTRATION mg/kg

	< 30 OR NO DATA
	30 - 100
	100 - 1,000
	> 1000

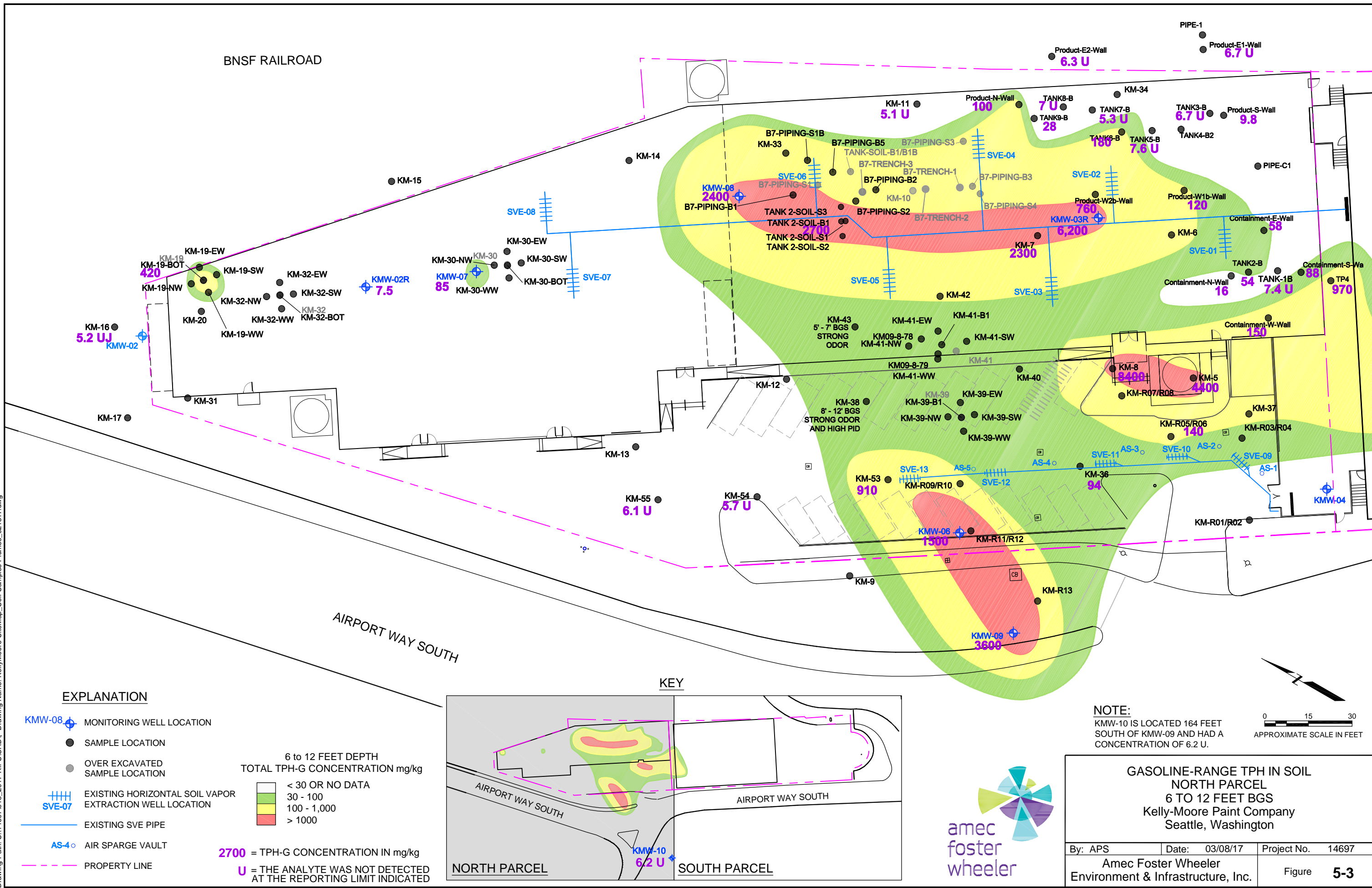
27 = TPH-G CONCENTRATION IN mg/kg
U = THE ANALYTE WAS NOT DETECTED
AT THE REPORTING LIMIT INDICATED

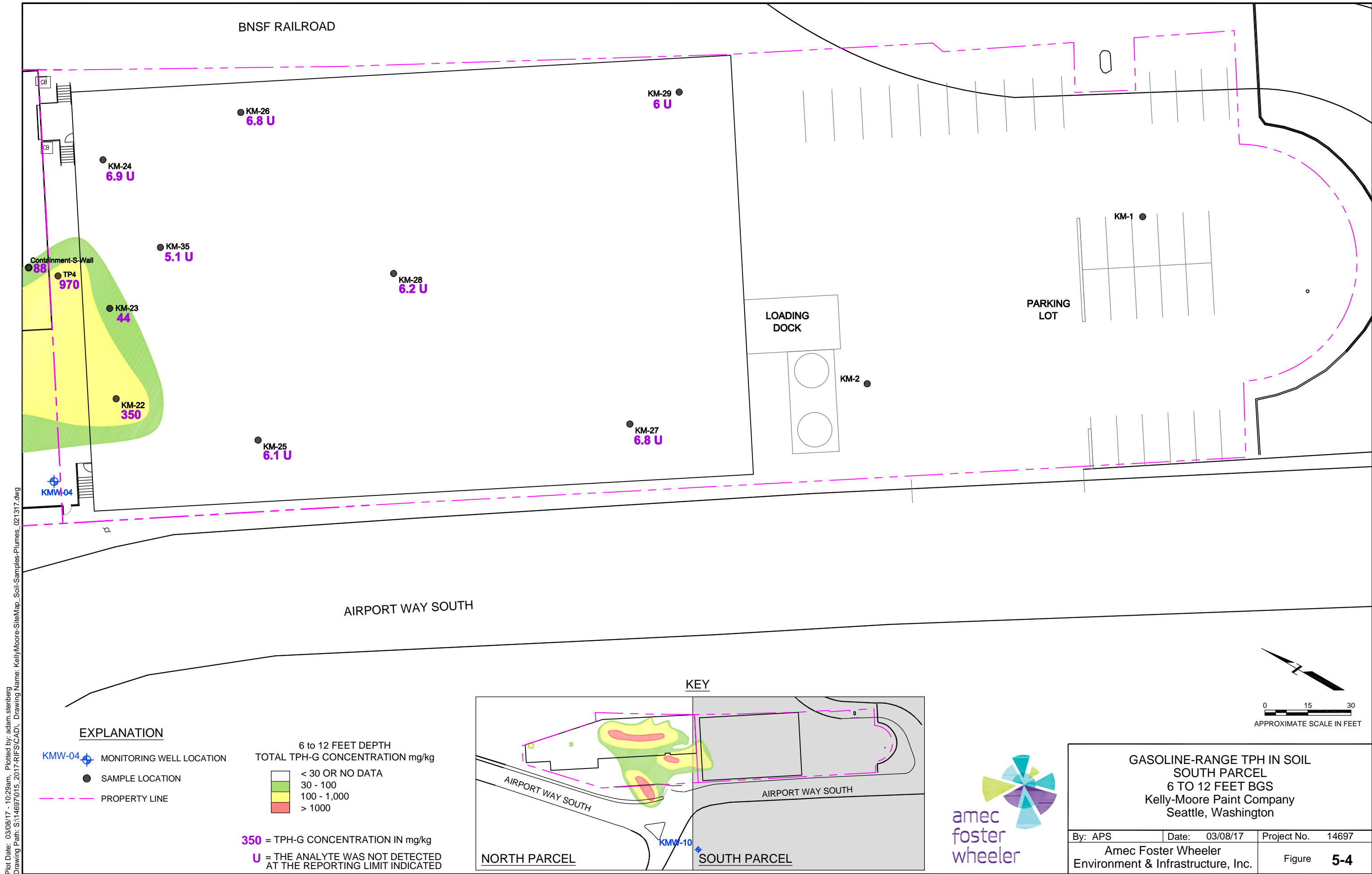
KEY



GASOLINE-RANGE TPH IN SOIL SOUTH PARCEL 0 TO 6 FEET BGS Kelly-Moore Paint Company Seattle, Washington		
By: APS	Date: 03/08/17	Project No. 14697
Amec Foster Wheeler Environment & Infrastructure, Inc.		Figure 5-2

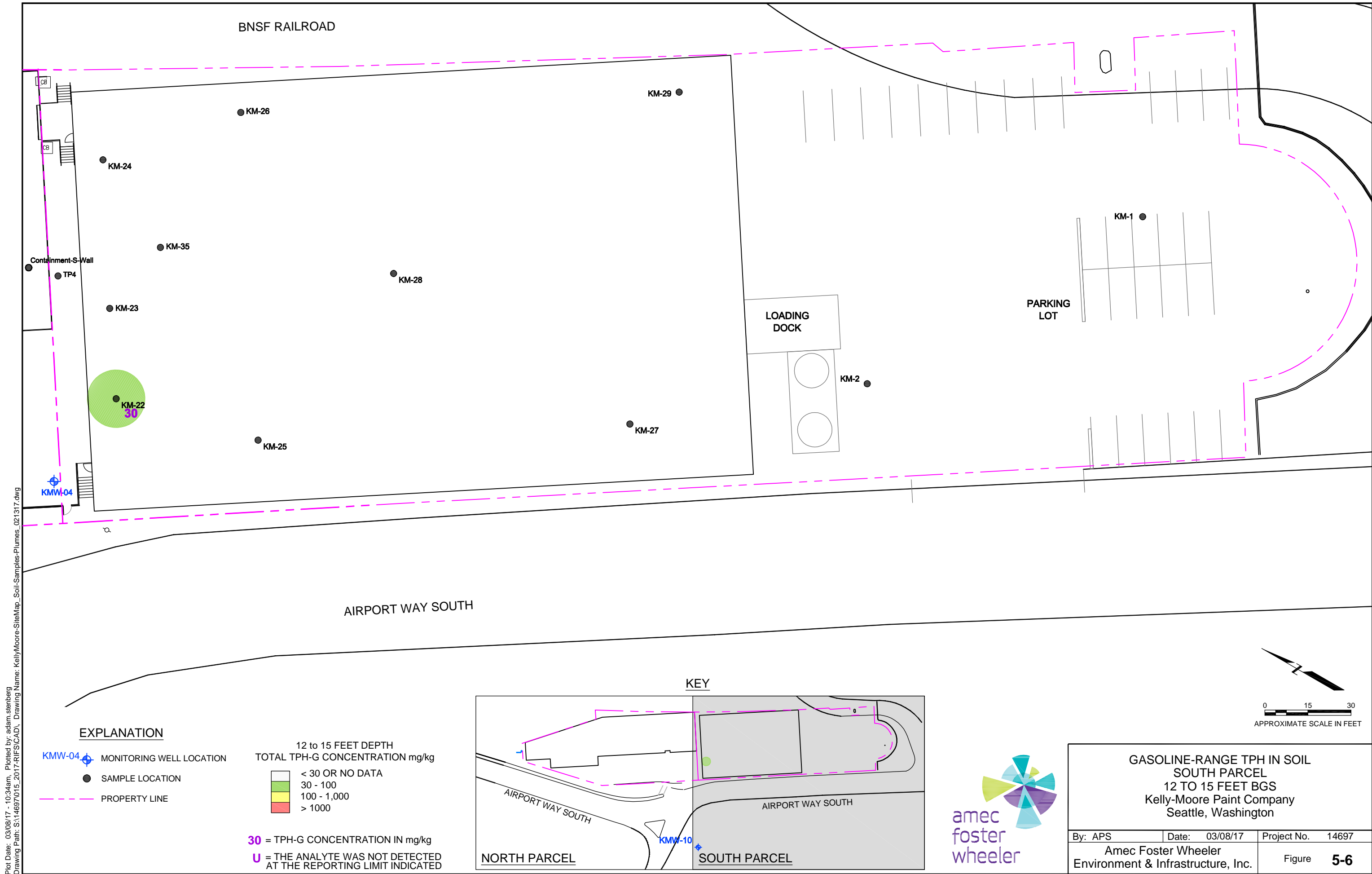
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Drawing Path: S:\14697\015_2017-RIFS\CAD\ Drawing Name: KellyMoore-SiteMap_Soil-Samples-Plumes_021317.dwg





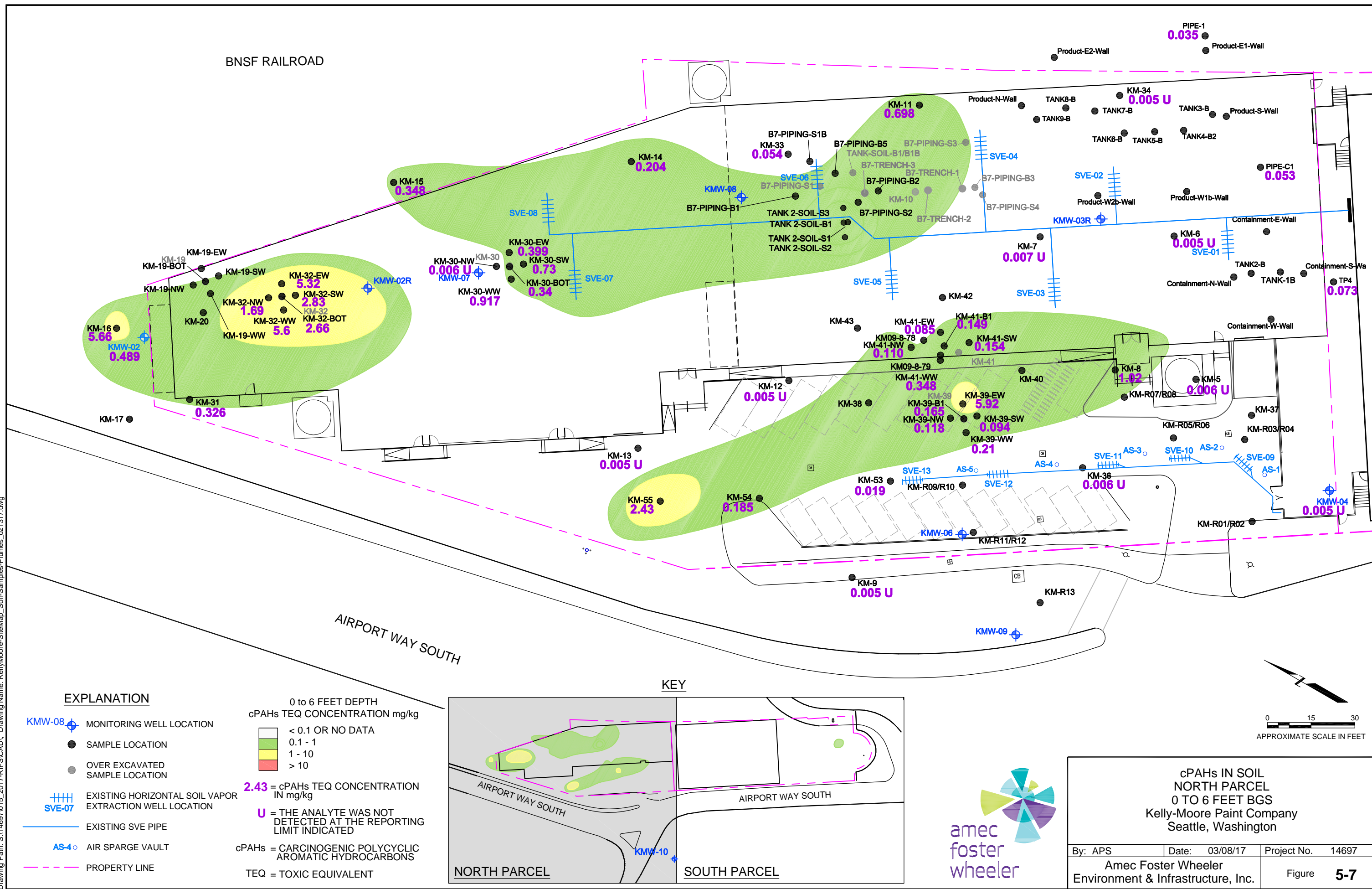
Plot Date: 03/08/17 - 10:29am, Plotted by: adam.stenberg
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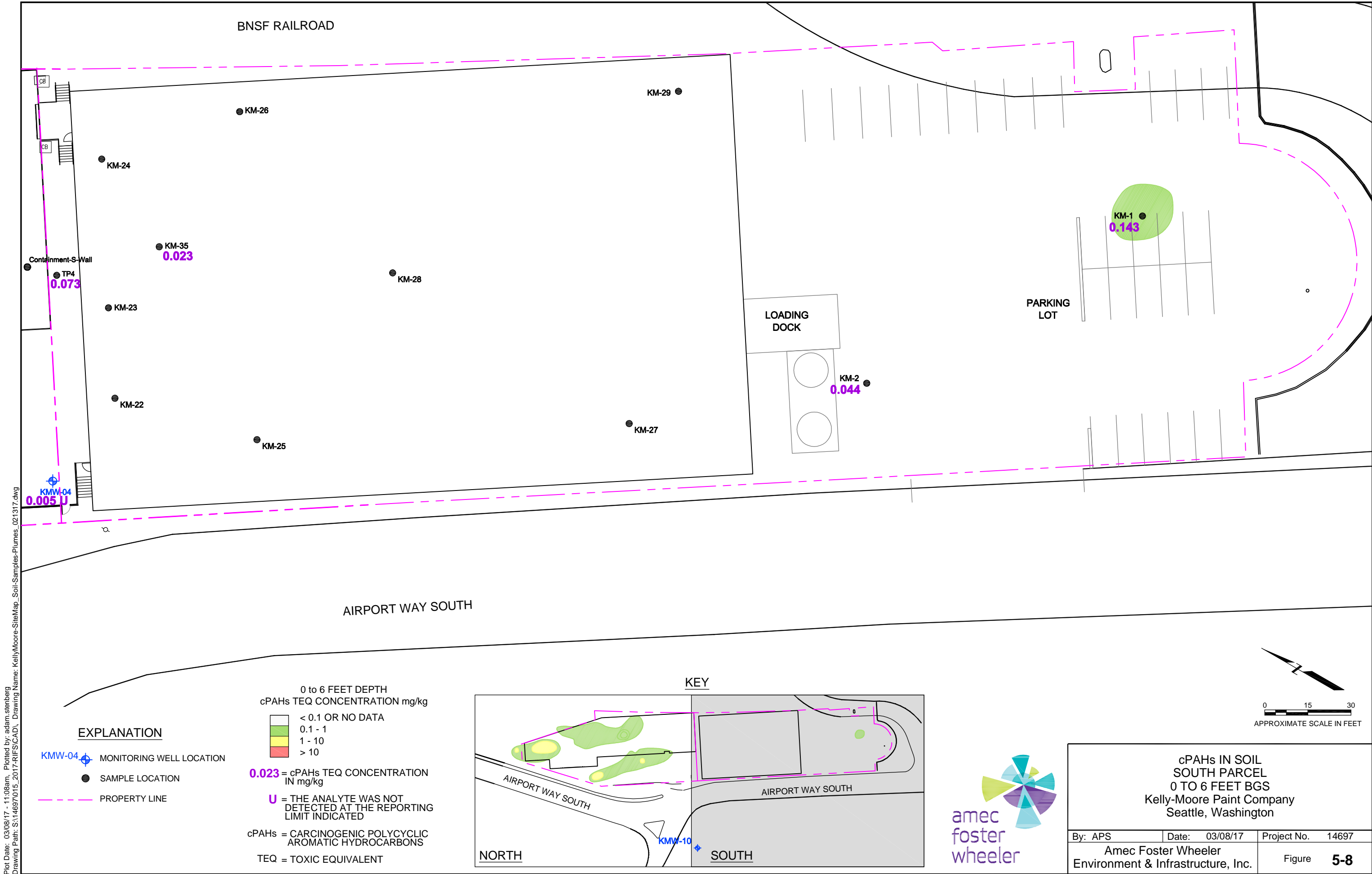




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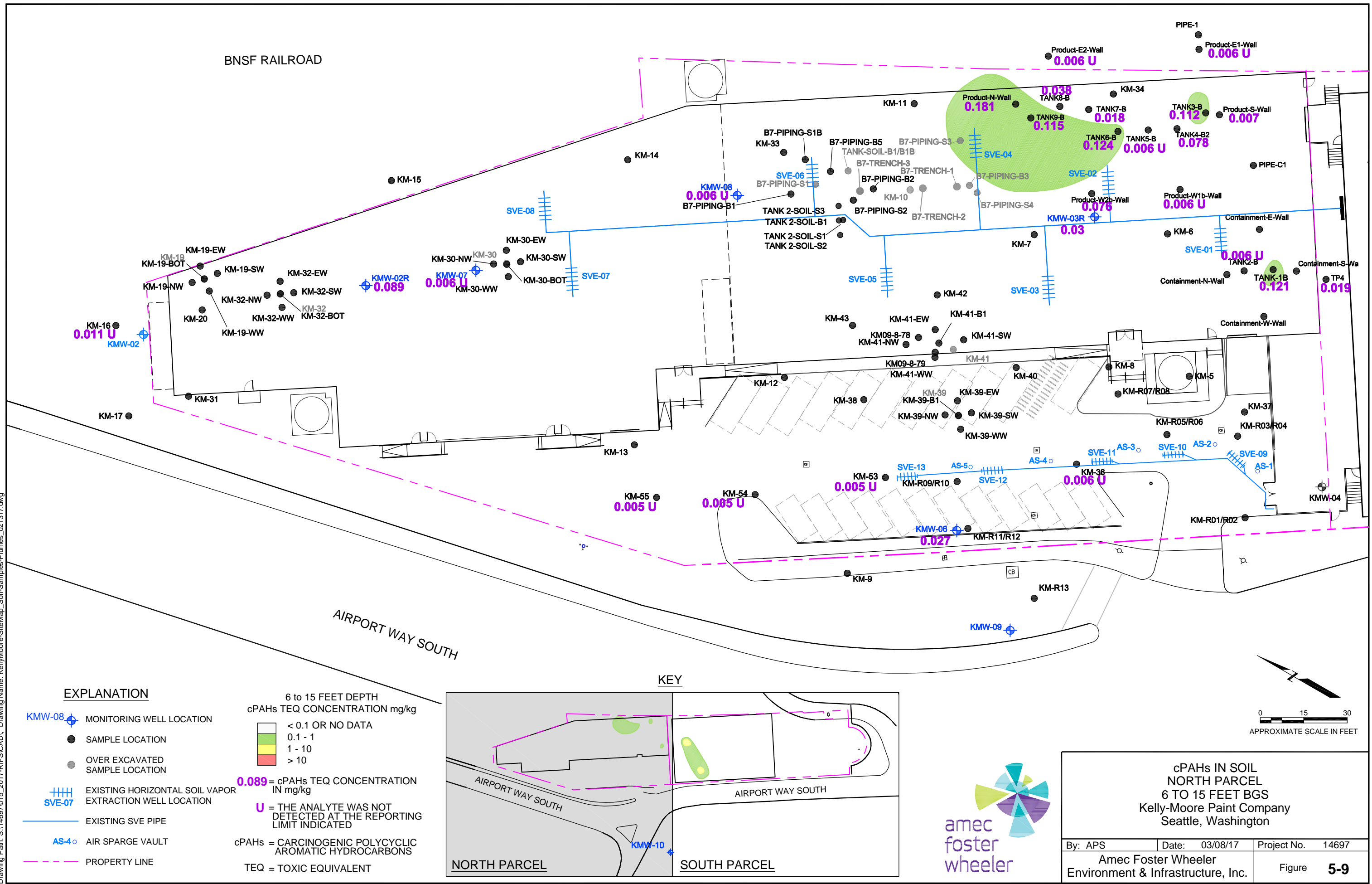
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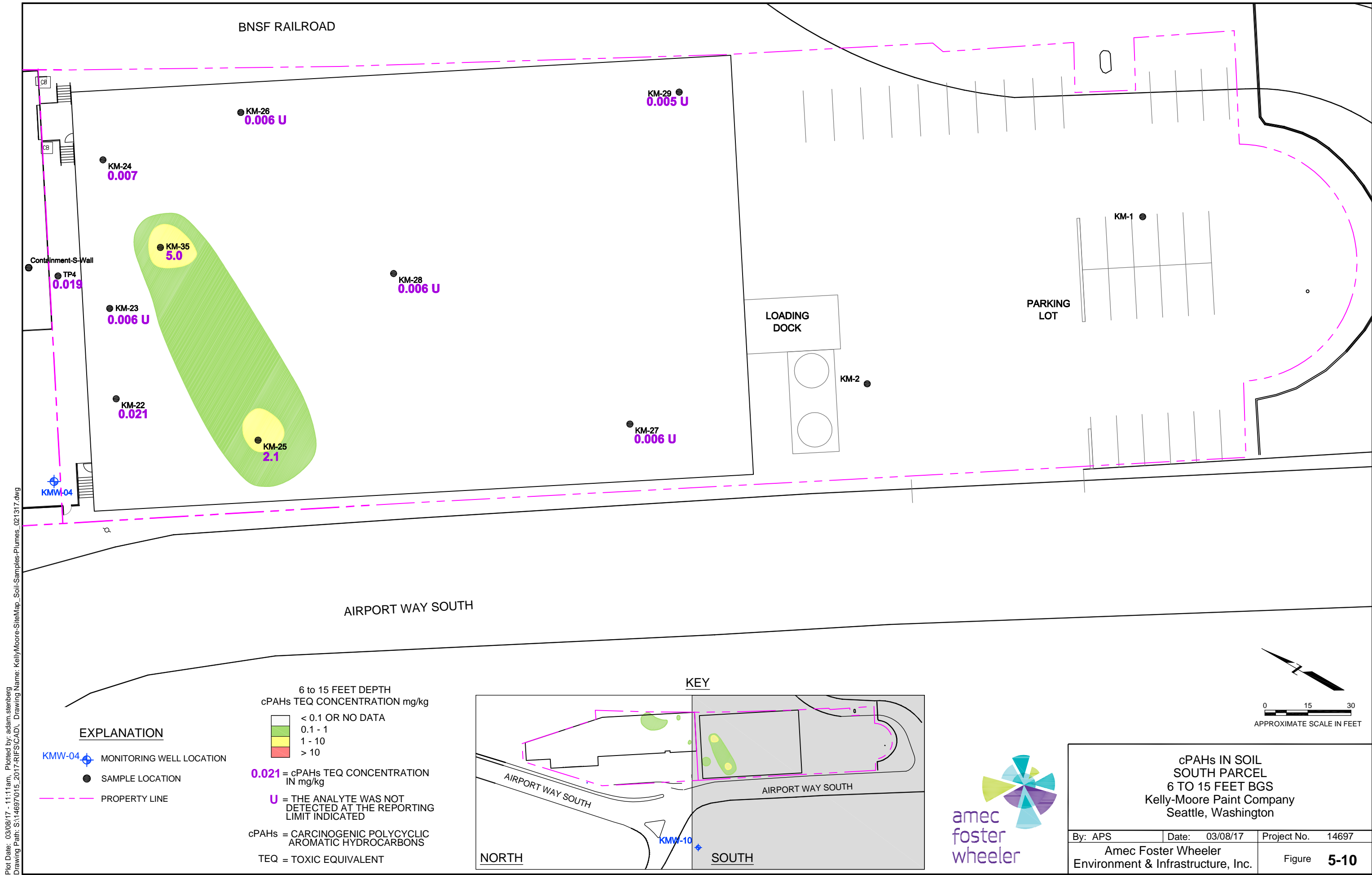




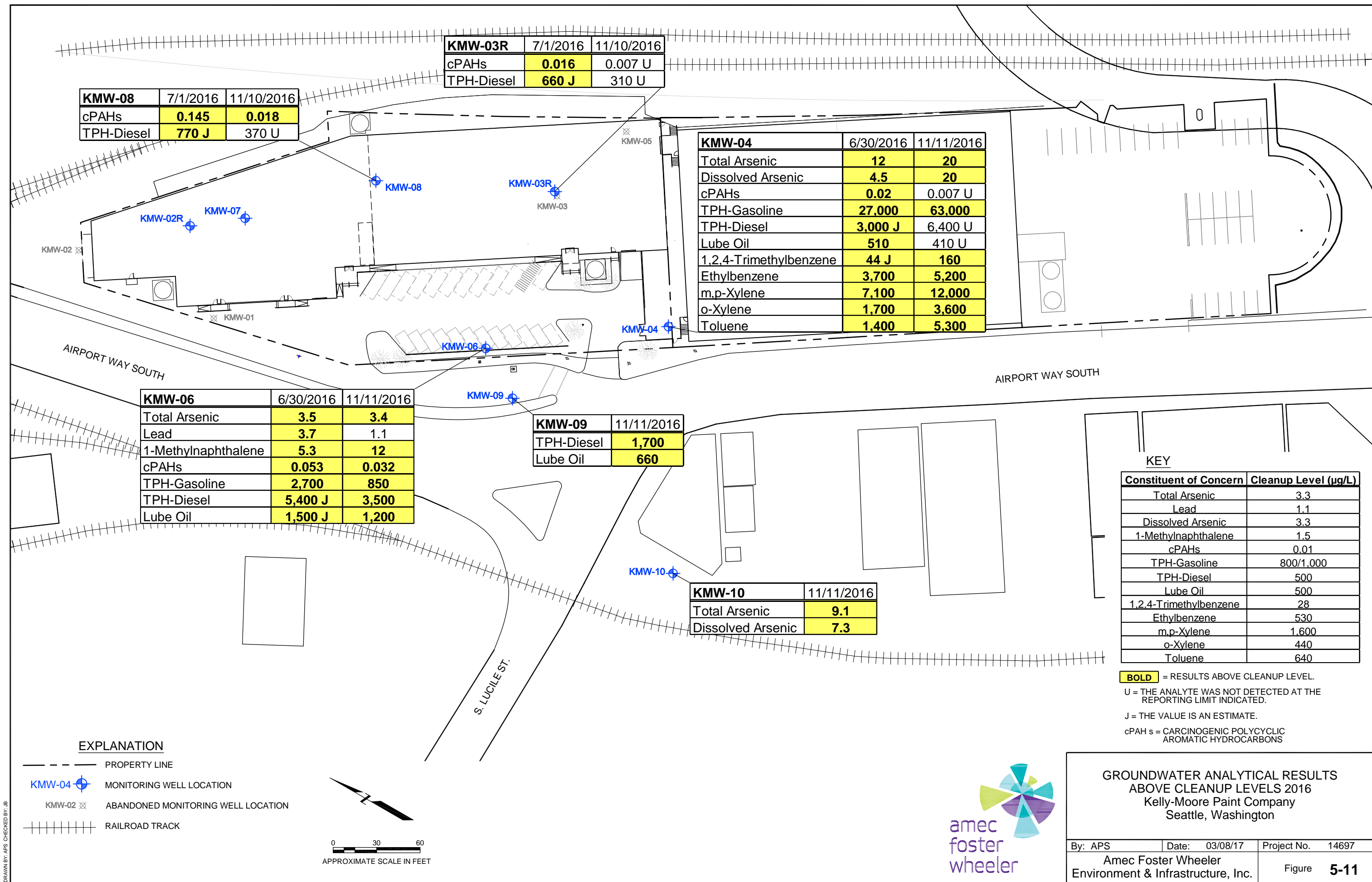
Plot Date: 03/08/17 - 11:08am, Plotted by: adam.stenberg
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Plot Date: 03/08/17 - 11:09am, Plotted by: adam.stenberg
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Plot Date: 03/08/17 - 11:11am, Plotted by: adam.stenberg
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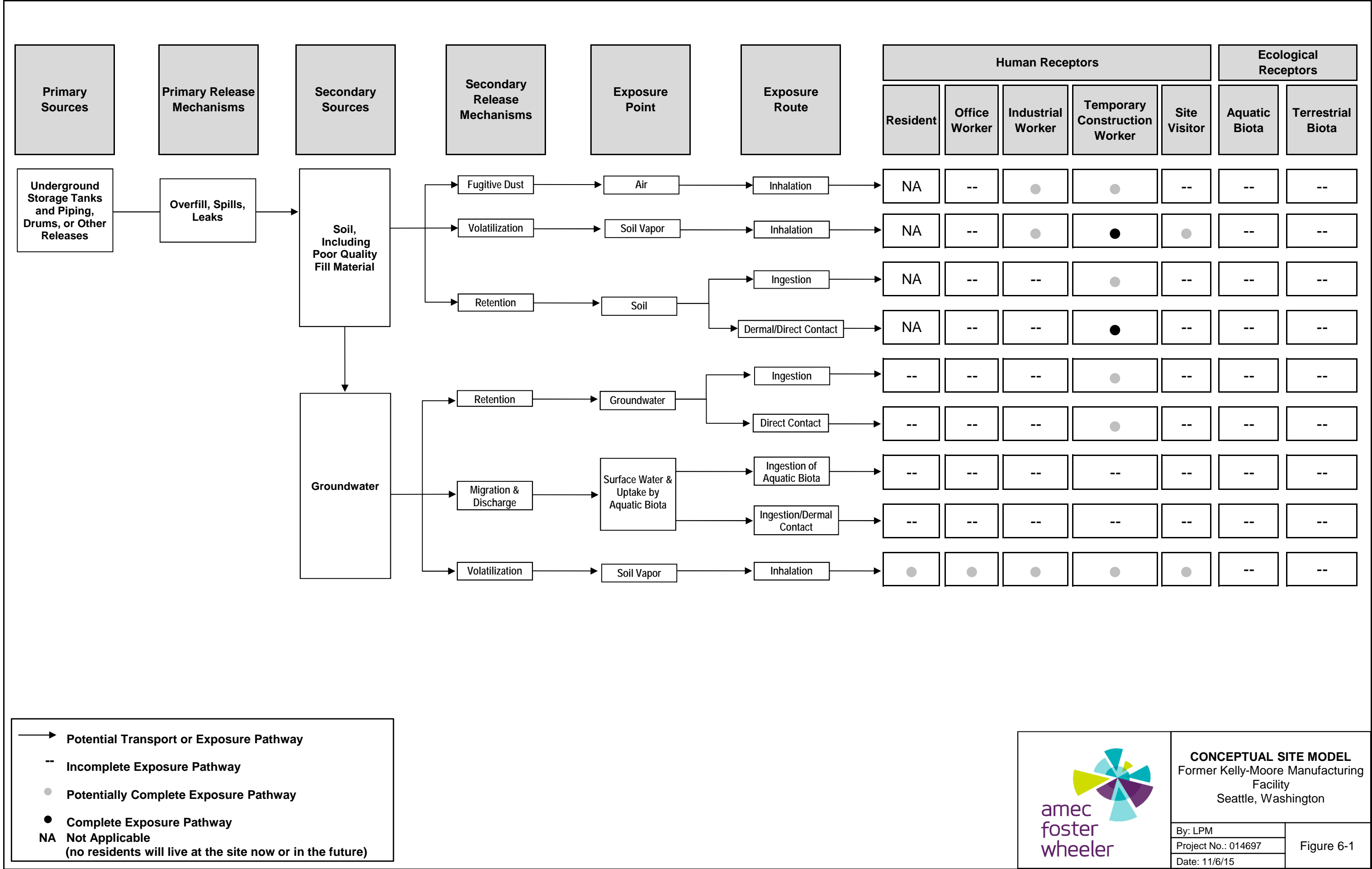


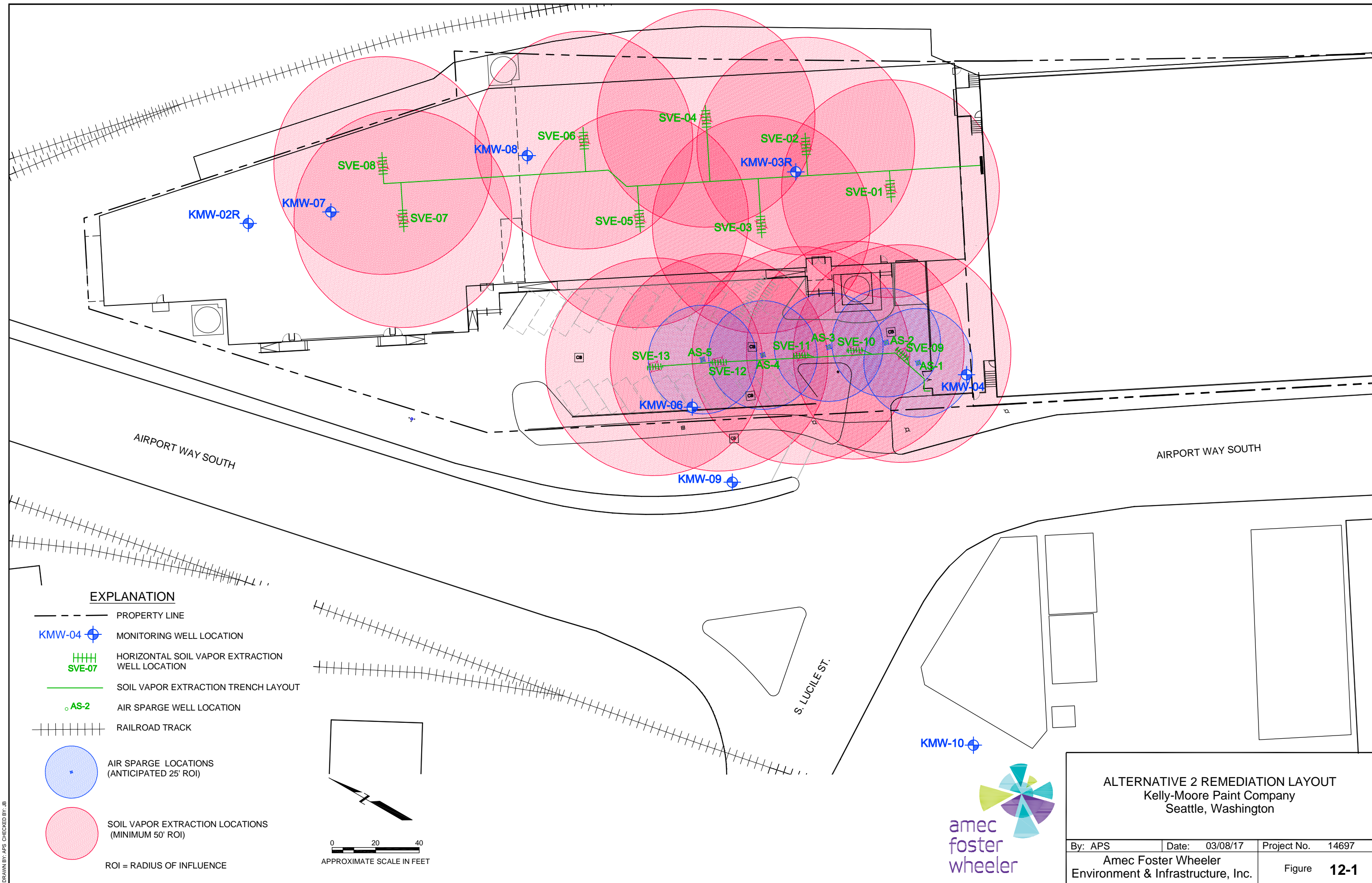


DRAWN BY: APS CHECKED BY: JB

S:\14697\016_2017-RIFS\CAD\KellyMoore-GW-MON-NETWORK_021517.dwg - Fig5-12_PLUME TPH-G DRY - Mar. 06, 2017 1:51pm - adam.stenberg

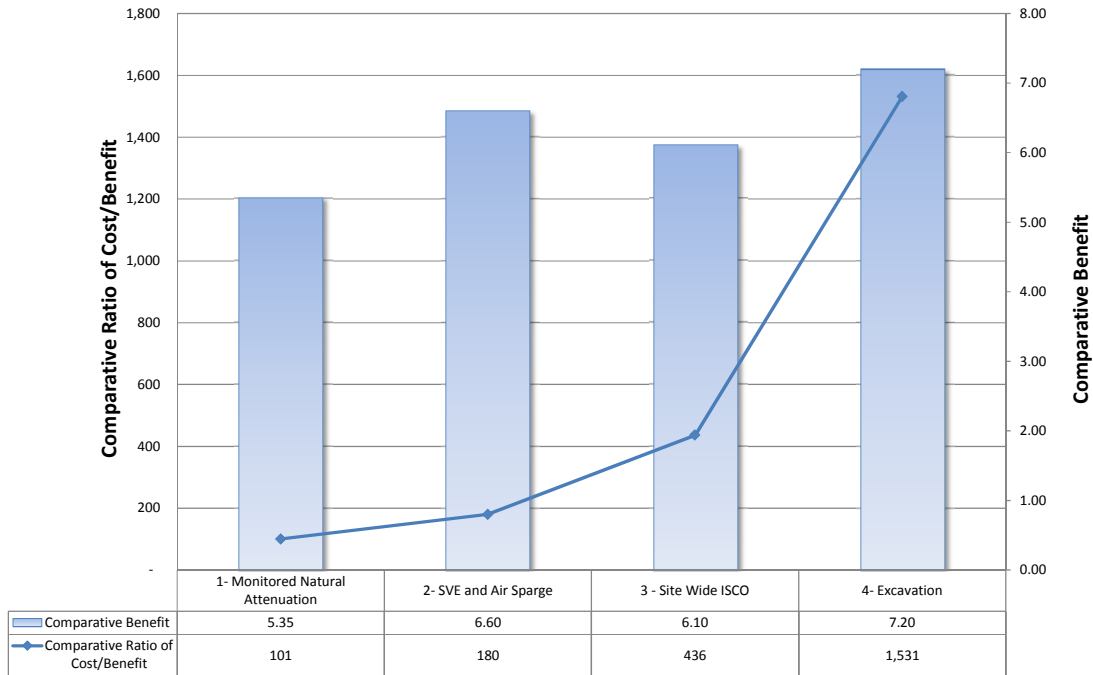






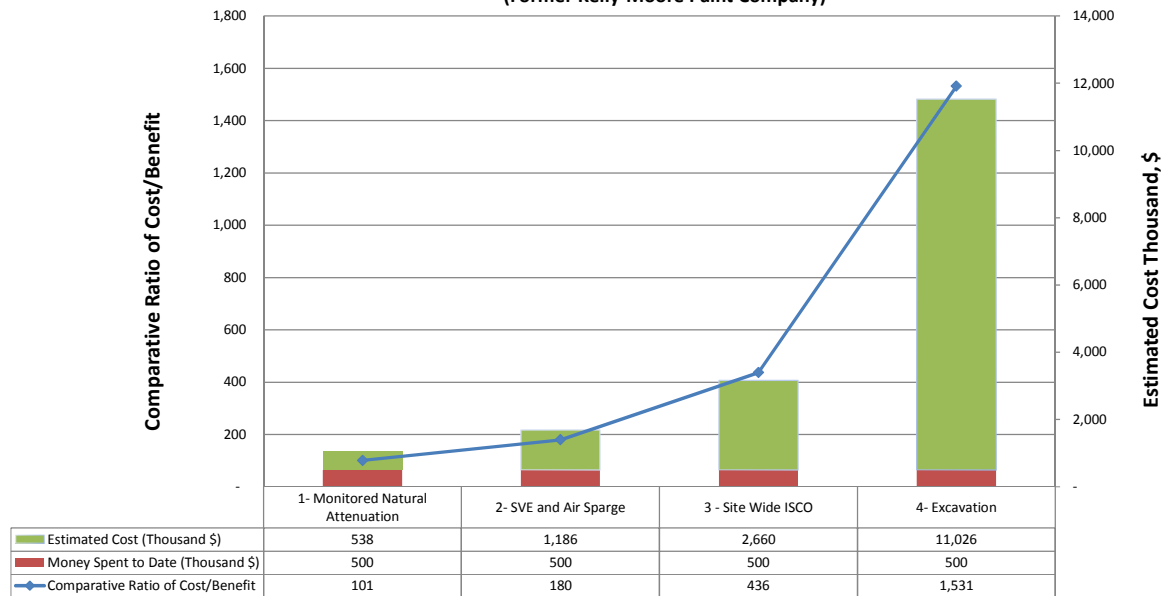


**A. Benefit & Cost-Benefit Ratio
(Former Kelly-Moore Paint Company)**



Alternatives

**B. Cost & Cost-Benefit Ratio
(Former Kelly-Moore Paint Company)**



Alternatives



DISPROPORTIONATE COST ANALYSIS SUMMARY
Kelly-Moore Paint Company
Seattle, Washington

Project No.
14697
Figure
13-1