

REMEDIAL ACTION COMPLETION REPORT

**UPRR Parcel D
Emeryville, California**

EPA Project No. BF-0942801

**FINAL DRAFT
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Prepared for:

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1. INTRODUCTION

Erler & Kalinowski, Inc. (“EKI”) has prepared this remedial action completion report (“RACR”) on behalf of the City of Emeryville Redevelopment Agency (“City”) to summarize soil remediation activities conducted between May and September 2008 at the Union Pacific Railroad (“UPRR”) Parcel D property (the “Site”), located north of the intersection of Sherwin Street (historically referred to as Sherwin Avenue) and Halleck Street in Emeryville, California (Figure 1). The triangular parcel is approximately 2 acres in size and is undeveloped except for access roads along the eastern and southern boundaries (Figure 2).

This non-time critical removal action was funded partially under a United States Environmental Protection Agency (“U.S. EPA”) Brownfields cleanup grant and the City. The City is acting as the Lead Agency under a Memorandum of Understanding with the California Department of Toxic Substances Control (“DTSC”) and the San Francisco Bay Regional Water Quality Control Board (“SFRWQCB”). Ms. Susan G. Colman is acting as Brownfields Site Manager (“Site Manager”) who provides regulatory and technical support to the City; and the City will administer the cleanup grant.

Remediation activities at the Site were conducted in accordance with EKI’s *Final Site Cleanup Plan, UPRR Parcel D, Emeryville, California* (“SCP”, EKI 2008), dated March 2008. The SCP was approved by the SFRWQCB with no comments in an e-mail dated 4 February 2008 and by the DTSC with comments in a letter dated 26 February 2008. Based on DTSC comments, the DTSC and SFRWQCB agreed on revised cleanup levels in e-mails dated 7 March and 10 March 2008, respectively. These comments and revisions were incorporated in the final Conditional Approval and SCP and submitted to the DTSC on 18 March 2008.

The SCP also met the corrective action and closure requirements for the Technichem facility’s Solid Waste Management Unit (“SWMU”) #6 (Health and Safety Code 25187 and California Code of Regulations (“CCR”), Title 22, Division 4.5, section 66264.110 et seq. or 66264.111). The cleanup alternatives and the basis for selection of the recommended cleanup alternative for the Technichem SWMU #6 were presented in the *Analysis of Brownfield Cleanup Alternatives*, dated 27 November 2007 (“ABCA”; EKI, 2007).

1.1 Site Background

The City is preparing the Site for redevelopment. As part of the process, EKI identified past uses of the Site and adjacent properties that may have resulted in releases of chemicals to soil and groundwater in the *Phase I Environmental Site Assessment Report*, dated 2 October 2006 (“Phase I Report”; EKI, 2006a). EKI conducted a soil and groundwater investigation in October 2006, and concentrations of chemicals detected in soil and groundwater were compared with

applicable screening criteria to identify chemicals of concern (“COCs”). Results and conclusions of the October 2006 soil and groundwater investigation were described in the *Soil and Groundwater Investigation Data Report*, dated 14 November 2006 (“Phase II Report”; EKI, 2006b).

Following the Phase II investigations, EKI prepared the ABCA, which described the nature and extent of contamination at the Site, summarized remedial action objectives (“RAOs”), proposed preliminary Site cleanup goals, described alternatives for Site cleanup, compared cleanup alternatives, and recommended a cleanup alternative. The recommended cleanup alternative proposed in the ABCA consisted of shallow soil excavation and placement of imported fill soil.

The ABCA also conformed to 40 CFR 300.415 of the National Oil and Hazardous Substances Pollution Contingency Plan and the regulatory processes cited above for the Technichem SWMU #6.

The SCP was prepared meet RAOs defined in the ABCA and included a description of procedures required to implement the selected cleanup alternative and plans to provide guidance for health and safety measures to be employed during cleanup activities. The SCP outlined the process by which the selected cleanup contractor will implement the cleanup alternative for the Site.

Prior to commencing remediation activities at the Site, EKI also performed additional delineation soil sampling in January 2008. This additional delineation sampling is described in Section 2.1 below.

Results of previous subsurface investigations, summarized in the SCP and in this RACR identified areas of soil that required remediation due to the presence of elevated concentrations of arsenic, cadmium, lead, and total petroleum hydrocarbons as diesel (“TPH-d”) and motor oil (“TPH-mo”) (i.e., the contaminants of concern (“COCs”)). COC-impacted soils were primarily located within the artificial fill layer (“Fill”) that typically extends from ground surface to an average depth of approximately 3 feet below ground surface (“bgs”) and overlies Bay Mud, as described in the Site conceptual model presented in the SCP.

Analytical data for samples collected during Phase II and additional delineation sampling at the Site was used to pre-characterize the soil for appropriate off-site disposal. As described below in Section 4, all excavated soil was disposed off-Site at the Kettleman Hills facility owned by Waste Management, Inc. (“WMI”) located in Kettleman City, California. Approximately 98 percent of excavated soil was disposed as non-Resource Conservation and Recovery Act (“non-RCRA”) hazardous waste and the remaining approximately 2 percent of the soil was disposed as RCRA hazardous waste.

1.2 Remedial Action Activities

Remediation activities were performed by Pacific States Environmental Contractors, Inc. (“Pacific States”), a licensed hazardous waste contractor, of Dublin, California, in accordance with its agreement with the City. Shannon Alford of Harris & Associates, Inc. performed construction management and oversight services on behalf of the City. During remediation activities at the Site, EKI personnel collected confirmation soil samples, perimeter air samples, and performed perimeter air monitoring activities in accordance with the SCP.

Based on results of confirmation soil sampling performed during implementation of remedial activities, additional soil excavation beyond the identified initial limits shown in the SCP at some locations was performed until either Site remedial goals were met or the Site boundary limit was reached. Excavated areas were backfilled with imported fill soil, which was tested in accordance with DTSC’s “Information Advisory - Clean Imported Fill Material,” dated October 2001 (“DTSC Import Fill Guidance”) and found to meet identified remedial goals and geotechnical requirements. Analytical data for import fill material is included in Section 7, below. The photographs included in Appendix A document site remediation activities (Appendix A).

2. PREPARATORY ACTIVITIES

2.1 Additional Delineation Soil Sampling

In January 2008, soil sampling was conducted to further delineate the lateral and vertical extents of the proposed excavation and to verify that the COC-impacted soil was primarily restricted to the Fill layer, as described in the Site conceptual model presented in the SCP. As shown on Figure 2, this additional delineation sampling included the collection of soil samples from eight (8) shallow test pits (locations UPD-21 through UPD-26, UPD-31 and UPD-32) and four (4) soil boreholes (locations UPD-27 through UPD-30) within the proposed excavation area. Additional delineation soil samples were collected and analyzed in accordance with the procedures in the Sampling and Analysis Plan (“SAP”) presented in Appendix G of the SCP.

Prior to performing the additional delineation soil sampling, EKI performed the following activities:

- Contacted Underground Services Alert and hired Subdynamic Locating Services, a private utility locating company, to investigate the presence of underground conflicts at the proposed trench locations.
- Contacted UPRR per Right of Entry Agreement to notify UPRR of the commencement of investigation activities.
- Obtained drilling permit from the Alameda County Public Works Agency (“ACPWA”) to drill soil borings.

After completion of field investigation activities, Kister, Savio, & Rei Inc., a State of California licensed land surveying company, surveyed the horizontal coordinates and vertical elevation of the sampling locations.

2.1.1 Collection of Additional Delineation Soil Samples

Additional delineation soil samples were collected from eight (8) shallow test pits and four (4) boreholes. Shallow test pits were constructed by Cornerstone Environmental Contractors, Inc. of Dublin, California. Soil borings were advanced by Precision Sampling, Inc. of Richmond, California, using direct-push technology. All field activities were conducted under the supervision of EKI personnel. Drilling activities were conducted in accordance with Alameda County Public Works Agency (“ACPWA”) Water Resources Well Permit number W2008-0027, included in Appendix B.

Additional delineation soil sampling locations are shown on Figure 2 (test pits UPD-21 through UPD-26, UPD-31 and UPD-32 and boreholes UPD-27 through UPD-30). Shallow test pits and boreholes were logged by an EKI geologist, under the supervision of a California Professional Geologist. Shallow test pit and borehole logs are included in Appendix C.

At each location, composite soil samples were collected from the Fill material and discrete soil samples were collected from the underlying Bay Mud. In accordance with the SCP, these samples were analyzed for arsenic, cadmium, lead, zinc, TPH-d, and TPH-mo by Calscience Environmental Laboratories Inc. located in Garden Grove, California, a California state certified analytical laboratory. Additional analyses (e.g., WET and TCLP) for waste characterization were also conducted as needed to properly characterize the soil for off-site disposal.

2.1.2 Analytical Results for Additional Delineation Soil Sampling

Analytical results for the additional delineation soil samples are included in Table 1 and laboratory analytical reports for these samples are included in Appendix D.

In general, analytical results from the additional delineation sampling activities support the conceptual model presented in the SCP that COC-impacted soils were primarily located within the Fill that overlies Bay Mud. Based upon these analytical results, minor modifications were made to the extent of excavation as described below.

2.2 **Extent of Excavation**

Based upon the analytical results of the additional delineation soil sampling, minor modifications were made to the extent of excavation as described below.

2.2.1 Lateral Extent of Excavation

The lateral excavation boundary around location UPD-16, located in Sherwin Street, was extended to the east, based upon samples collected at location UPD-30 that contained COCs over the Site cleanup goals.

2.2.2 Vertical Extent of Excavation

The elevation contours depicting the bottom of the Fill were revised and additional soil was excavated to uniform bottom elevations in the vicinity of locations UPD-4, UPD-5/UPD-33, UPD-16, UPD-24, UPD-27, and UPD-29. Updated bottom of Fill contours and areas excavated to a uniform bottom elevation are shown on Figure 2

2.3 **Pre-Approval of Waste Disposal Classifications**

Prior to excavation and with concurrence of the operators of Pacific States and the selected disposal facilities, soil sampling results for *in situ* soil were submitted to Waste Management, Inc. (“WMI”) to pre-characterize the soil for appropriate off-site disposal. Data included soil sampling results from Phase II and additional delineation soil sampling performed by EKI. Per WMI review, the majority of excavated soil was approved for direct loading and disposal at WMI’s Kettleman Hills Facility as a non-Resource Conservation and Recovery Act (“non-RCRA”) hazardous waste. Fill soil excavated from an area surrounding sampling location

UPD-29 (see Figure 2) was approved for direct loading and disposal at WMI's Kettleman Hills Facility as a RCRA waste.

A summary of off-Site waste disposal is presented in Section 4, below.

2.4 Site-Specific Plans

Prior to implementation of soil remediation activities at the Site, and in accordance with the SCP, Contract Documents, and state and federal regulations, Pacific States prepared a Site-specific Health and Safety Plan ("H&S Plan") for remediation activities at the Site. Pacific States was responsible for implementation of health and safety procedures for its on-Site personnel. The Pacific States H&S Plan was submitted to the Site Manager, DTSC, EPA, County, and SFRWQCB on 29 April 2008.

In accordance with the SCP, Pacific States also prepared addendums to the following site-specific plans:

- Storm Water Pollution Prevention Plan ("SWPPP"); and
- Traffic Control and Waste Transportation Plan.

These addendums were submitted to the Site Manager, DTSC, EPA, County, and SFRWQCB. The Site Manager and DTSC approved these plans in an email dated 14 May 2008. SFRWQCB approved the SWPPP in an email dated 9 May 2008.

The Dust Control and Decontamination Plans that were included in the SCP were implemented without addendums.

2.5 Permits

Prior to beginning cleanup activities, Pacific States submitted a Regulation 8, Rule 40 Notification Form to the Bay Area Air Quality Management District ("BAAQMD"). Pacific States also notified the State of California, Department of Industrial Relations, Division of Occupational Safety and Health ("Cal-OSHA") prior to beginning excavation activities, in accordance with 8 CCR 341.1(f).

Since this remediation work was being conducted on behalf of the City, permits for grading/excavation or encroachment were not required.

In accordance with the SWPPP, Pacific States filed a Notice of Intent ("NOI") to comply with the requirements of the National Pollution Discharge Elimination System ("NPDES") *General Permit for Storm Water Discharges Associated with Construction Activity*, Water Quality Order 99-08-DWQ ("General Permit") issued by the State Water Resources Control Board.

2.6 Utility Clearance

Prior to initiation of remediation activities, Pacific States notified Underground Service Alert (“USA”). The planned excavation area was also investigated for the presence of existing utilities by a private utility locating service. Existing utilities on the Site were located and marked.

As described below in Section **Error! Reference source not found.**, two existing utilities encountered at the Site were left in place: (1) an active electric line that extends between UPRR easements and (2) an inactive section of a fire line that is part of the Sherwin-Williams facility.

2.7 Well Abandonment

The three Sherwin-Williams groundwater monitoring wells (LF-21, SA-AW-02, and SA-AW-03) located within the proposed excavation areas at the Site were abandoned by Levine-Fricke-Recon, Inc. in accordance with ACPWA requirements on 27 March 2008.

2.8 Pre-Excavation Geotechnical Evaluation

A geotechnical evaluation was conducted by the City’s geotechnical consultant, Kleinfelder West, Inc. (“Kleinfelder”), to develop structural support and/or excavation proximity criteria for excavation activities performed in the vicinity of the Southern Pacific Railroad tracks to the west, the former Technichem facility to the southwest, and the Sherwin-Williams property to the east. Kleinfelder’s *Geotechnical Investigation for Temporary Slope Recommendations, UPRR Parcel D Remediation Project, Emeryville, California*, dated 17 March 2008 (“geotechnical evaluation”), is included as Appendix E. In general, the geotechnical evaluation outlined the following:

- A minimum 5-foot setback from the property line for near vertical slopes or design of temporary slopes at the property line assuming soft clay conditions with slopes not steeper than 1.5 horizontal feet for each 1 foot of vertical relief (1.5H:1V),
- Excavations greater than 4 feet with near vertical walls, such as near an existing building, be designed with an appropriate shoring system, and
- Fill and compaction requirements.

During the geotechnical investigation, Kleinfelder personnel noted hydrocarbon odor and sheen in borehole KB-1. One soil sample from this borehole, sample KB1-7B collected at approximately 9 feet bgs, was submitted for TPH analysis. TPH-d and TPH-mo were reported in this sample at concentrations of 380 mg/kg and 730 mg/kg, respectively. These concentrations, combined, are slightly above the combined TPH-d and TPH-mo cleanup goal of 1,000 mg/kg. As described in Section 5, soil in this area was excavated to a maximum depth of approximately 5 feet bgs.

2.9 Site Security

Prior to and during cleanup activities on the Site, Pacific States placed temporary chain link fencing at the southern perimeter of remediation activities, as needed. Along the UPRR tracks, Pacific States placed and maintained a temporary 'snow fence'. Post-remediation Site security and fencing is described in Section 7.3 below.

3. SOIL REMEDIATION ACTIVITIES

Soil remediation activities were conducted between May and August of 2008, in accordance with the protocols outlined in the SCP. The following sections describe the completed remediation activities.

Prior to performing excavation activities, Pacific States conducted Site preparation activities that included installing perimeter fencing, underground utility line location, constructing a decontamination pad, and other pre-excavation activities.

3.1 Excavation Activities

Soil excavation was performed in two phases. In Phase 1, Pacific States excavated soil from non-Sherwin Street areas between 27 May 2008 and 10 June 2008. In Phase 2, Pacific States excavated soil from the Sherwin Street area between 23 July 2008 and 11 August 2008.

Soil was excavated from total depths ranging from approximately 1 foot to approximately 7 feet bgs. Soil excavation was conducted using excavators and excavated soil was directly loaded into trucks for off-Site disposal.

In general, Fill soil was excavated until a clean surface of Bay Mud was exposed, which resulted in approximately 6-inches of Bay Mud also being excavated in many areas. EKI personnel were present during all excavation activities to document that the Fill material was removed and the clean Bay Mud surface was exposed to the lateral extent of excavation.

To protect adjacent above-grade structures and the use of street and rail corridors, the lateral extents of the excavations did not proceed beyond the property lines or excavation support structures or buffer zones, as deemed necessary by the railroad, the City, and recommendation in the geotechnical evaluation. In accordance with the geotechnical evaluation, a 1.5H:1V slope was left in place along the property boundary, except where noted below (see Section 5). Soil that remained in place in these sloped sidewalls at the property boundaries were sampled in accordance with the SCP and the results are summarized in Section 5.

In accordance with the SCP, existing Phase II and additional delineation sample analytical data was used in conjunction with post-excavation sampling to confirm the vertical extent of excavation.

3.2 Dust Control and Perimeter Air Monitoring

Dust control and perimeter air monitoring were performed during soil excavation and backfilling activities at the Site in accordance with the Dust Control and Perimeter Air Monitoring Plans included as Appendices D and E of the SCP (EKI, 2008).

3.2.1 Dust Control

Dust control during Site remediation activities was conducted by spraying water to maintain moist surface soil conditions with the intent of preventing visible dust from leaving the Site. A water truck with directional spray capacity and a fire hose were used on-Site throughout the project. Site-wide watering was performed as needed during the day. Also, water was sprayed at the working face of the excavation and at truck loading locations, as needed, to maintain a soil moisture that was sufficient to minimize the creation of dust.

Additional dust control measures were also implemented to reduce and control dust. These additional measures included:

- Covering the perimeter fence with fabric;
- Halting excavation activities when wind speeds exceed 20 miles per hour for more than 15 minutes;
- Keeping vehicle speeds low;
- Minimizing drop heights during truck loading;
- Covering loaded trucks before leaving the Site; and
- Sweeping active paved areas with a vacuum street sweeper.

Exposed soil that potentially contained COCs at concentrations above remedial goals was covered with dust control fabric to prevent dust generation. The dust control fabric was secured to the exposed excavation sidewalls with nails and remained in place until the excavation was backfilled.

3.2.2 Perimeter Air Monitoring

In accordance with the AMP, perimeter air monitoring was performed throughout the duration of the project at three locations (one upwind, one crosswind, and one downwind) by EKI personnel. Perimeter air monitoring results are summarized in detail in the Perimeter Air Monitoring Report presented in Appendix F. General results of perimeter air monitoring are described below.

Approximately one week prior to the start of remediation activities, a meteorological station was set up at the Site in order to determine the general wind direction for use in positioning the air monitoring stations. The meteorological station was also used to monitor wind speed and wind direction continuously at the Site during soil excavation and loading activities.

On 7 May 2008, three perimeter air monitoring stations were set up as illustrated on Figure E-1 (Appendix E of the SCP) to collect samples for analysis of each of the parameters listed below:

- Airborne Chemicals of Concern (“COCs”) (i.e., arsenic, cadmium, and lead);
- Total respirable dust (“PM10”) measured at the downwind station; and
- Total dust (real-time, data-logging, direct-read aerosol monitors [“DataRAMs”]).

Total dust measurements averaged between 8.6×10^{-4} and 9.2×10^{-3} mg/m³ during the 6-hour sampling period. Laboratory results indicated that no PM10 dust was detected above the analytical reporting limit and that, of the airborne COCs, only lead was detected above its analytical reporting limit. Based on the analytical results, background lead concentrations were found to range from 8.3×10^{-6} to 9.8×10^{-6} mg/m³.

During the first two days of remediation activities (27 and 28 May 2008), each air monitoring station was equipped to collect airborne COC samples and the downwind station was also equipped to collect a PM10 sample. Laboratory results for the samples collected during these two days indicated that airborne COC and PM10 dust concentrations were below the Site-specific action levels identified in the AMP. Therefore, as outlined in the AMP (Appendix E of the SCP), no additional sampling or laboratory analyses were performed for the airborne COCs or PM10 dust.

DataRAM measurements were collected at all three air monitoring stations throughout excavation and backfilling activities. The DataRAMs provided real-time information that was used to demonstrate that the action levels for total dust were met. To verify operation and compliance with action levels, the DataRAMs were checked approximately every hour during the work shift. At no time during soil excavation activities was the 8-hour time-weighted average (“TWA”) action limit of 0.11 mg/m³ exceeded. On a few occasions, the 0.11 mg/m³ 5-minute TWA action limit was exceeded, however these exceedances were typically the result of instantaneous spikes caused by the street sweeper (in the case of the crosswind perimeter air monitoring station) and gusting winds. In each of these instances Pacific States increased their dust suppression efforts. At no point during the soil excavation activities was the 5-minute Total Dust Action Limit of 0.79 mg/m³ exceeded.

3.3 Decontamination of Construction Equipment and Transportation Vehicles

Prior to the start of off-haul of soil, Pacific States set up a decontamination area on-Site for use by all construction equipment and transportation vehicles that might come into contact with contaminated soil. The Phase 1 and Phase 2 plastic-lined decontamination areas were located as shown in Figure 2. To reduce the track out of contaminated soils, vehicle wheels, buckets, and exteriors were dry-brushed in the decontamination area to remove accumulated dirt and other materials (as needed) prior to their departure from the Site. In addition, the paved Site exit area was routinely swept with the street sweeper to control track out from the Site.

The original decontamination pad was removed on 10 June 2008, following the completion of Phase 1 excavation activities. During Phase 2, trucks were loaded while parked on the remaining paved portions of Sherwin Street or on a temporary truck route constructed with approved backfill material.

3.4 Storm Water Pollution Control Measures

Throughout the course of the project, Pacific States implemented a variety of best management practices (“BMPs”) for storm water protection and erosion control in accordance with the SWPPP. The BMPs included sediment controls such as drain inlet protection, tracking controls such as street sweeping and vacuuming and a stabilized construction entrance and exit, and non-storm water controls, including proper vehicle and equipment cleaning, fueling, and maintenance. To prevent sediment and/or surface water transport from the Site, drain inlet protection was placed in curbside storm drains located adjacent to the Site; these storm water BMPs were maintained throughout the project duration.

No measurable precipitation occurred at the Site during soil excavation or backfill activities.

In accordance with the SWPPP, visual inspections by Harris & Associates of BMPs were the primary methods for determining compliance with the storm water permits. No reportable storm water violations were observed.

3.5 Surveying

BKF Engineers, Inc. of Redwood City, California, a surveyor licensed by the State of California, performed surveying of confirmation soil sampling and final excavation extents. Appendix G contains a tabulated listing of the horizontal and vertical coordinates for confirmation soil sampling locations and extent of the excavated area.

4. WASTE MANAGEMENT AND DISPOSAL

Approximately 16,000 tons of soil was removed from the Site during the remediation activities. Since the soil had been pre-characterized and accepted by WMI, excavated soil was loaded directly into trucks for transport. Transport of hazardous soil was performed by Denbeste Transportation of Windsor, California, in accordance with the approved Traffic Control and Waste Transportation Plan and Addendum.

Soil excavated from the Site was disposed of at permitted disposal facilities as follows:

- A total of 15,624 tons of soil were transported to and disposed at WMI's Kettleman Hills Facility located in Kettleman City, California, as Class I non-RCRA hazardous waste; and
- A total of 301 tons of soil were transported to and disposed at WMI's Kettleman Hills Facility located in Kettleman City, California, as Class I RCRA hazardous waste.

Tabulated summaries of waste disposal and copies of waste profile forms, certified weight tickets, and hazardous waste manifests are included in Appendix H.

Soil excavated for the reconstruction of Sherwin Street was disposed of as non-RCRA hazardous waste.

In addition to excavated soil, asphalt, concrete, treated wood, and steel were also removed from the Site as summarized below.

- Approximately 4,000 square yards of asphalt was transported to Gallagher & Burke in Oakland, California, for recycling.
- Approximately 200 cubic yards of concrete was transported to McGuire & Hester in Oakland, California, for recycling.
- A total of 568 linear feet of treated wood was disposed at Allied Waste's Keller Canyon Landfill in Pittsburg, California.
- Steel was transported to Schnitzer Steel in Oakland, California for recycling.

5. RESULTS OF CONFIRMATION SOIL SAMPLING

This section provides a discussion of observed Site conditions, confirmation soil sampling activities, and sample analytical results.

EKI personnel were on-Site during excavation activities. Fill material was observed to range in thickness from less than 1 foot to approximately 6 feet and generally consisted of gravel and sand with some fine-grained silt and clay. Some debris was observed in the fill, including wood, abandoned pipe, metal, glass, and porcelain. The underlying native Bay Mud is a greenish gray to black silty clay.

A limited amount of groundwater was encountered along the western property boundary during soil excavation activities. However, dewatering of the excavation during excavation activities was not necessary.

5.1 Collection of Confirmation Soil Samples

Confirmation soil samples were collected from the lateral and vertical extents of excavation at the Site in accordance with the procedures outlined in SAP.

The locations of confirmation sampling locations are shown on Figure 3. Confirmation sampling locations were surveyed by BKF Engineers, Inc., and a tabulated listing of the horizontal and vertical coordinates for confirmation sample locations is included in Appendix G.

5.1.1 Laboratory Analysis of Confirmation Soil Samples

Confirmation soil samples were analyzed for the following constituents:

- Total arsenic (U. S. Environmental Protection Agency [“EPA”] Method 6020);
- Total cadmium (EPA Method 6020);
- Total lead (EPA Method 6020); and
- TPH-d and TPH-mo (EPA Method 8015B(m) with silica gel cleanup).

Analytical testing results for confirmation soil samples are summarized in Table 1 and Table 2. Analytical laboratory reports are included in Appendix D. All soil sampling results are reported on a dry weight basis.

In accordance with the SCP, analytical data and survey information for samples collected at the excavation limits that contain concentrations of COCs that exceed Site cleanup goals will be added to the City’s OSIRIS Mapped Real Estate Parcel Database, as described in Section 8.

5.1.2 Bottom of Excavation Confirmation Soil Samples

As shown on Figure 3, bottom of excavation confirmation soil samples were collected, as necessary, to supplement the existing pre-confirmation soil data.

Analytical results for soil samples used to determine COC concentrations at the bottom of the excavation (i.e., bottom of excavation confirmation samples) are summarized in Table 1. The vertical extent of excavation and analytical results at selected sampling locations are presented on the cross sections shown on Figure 4 through Figure 7. Analytical results for bottom of excavation confirmation samples are also summarized on Figure 8.

5.1.3 Sidewall Confirmation Soil Samples

As shown on Figure 3, sidewall confirmation samples were collected from the lateral extent of excavation, which included interior limits of excavation within the property boundary and at the limits of excavation determined by the geotechnical evaluation (i.e., “excavation limit” samples). At these excavation limits, further excavation was not possible beyond the temporary slopes required to maintain integrity of above-ground structures, adjacent buildings, railroad tracks, sidewalks, etc., in accordance with the geotechnical evaluation. Sidewall confirmation samples, including excavation limit samples, were collected approximately every 25 linear feet and for approximately every three (3) feet of vertical sidewall.

Analytical results for sidewall confirmation samples are summarized in Table 2 and on Figure 9 and Figure 10.

5.2 **Results of Confirmation Sampling**

This section provides a discussion of observed Site conditions, confirmation soil sampling activities, and sample analytical results for selected areas of the Site.

5.2.1 Bottom of Excavation Confirmation Soil Samples

As shown on Figure 8, COCs were not detected above Site cleanup goals in bottom of excavation soil confirmation samples, with the following exceptions:

- TPH-d and TPH-mo detected at concentrations of 380 mg/kg and 730 mg/kg, respectively, in the sample collected from geotechnical boring KB-1 at approximately 9 feet bgs. The combined TPH-d and TPH-mo concentrations detected in this sample (1,110 mg/kg) are greater than the Site cleanup goal of 1,000 mg/kg.
- TPH-d detected at 420 mg/kg in sample BotA3-4.5 is above the Site cleanup goal of 400 mg/kg and the combined TPH-d and TPH-mo concentrations detected in this sample (1,010 mg/kg) is greater than the Site cleanup goal of 1,000 mg/kg.

5.2.2 Sidewall Confirmation Soil Samples

5.2.2.1 *Interior Limits of Excavation Sidewalls*

As shown on Figure 10, concentrations of COCs were not detected above cleanup goals in sidewall confirmation samples collected at interior excavation limits (i.e., samples UPD30E3-1.25, UPD30E4-1.5, UPD15E1-1, UPD15N3-1, UPD-15, UPD15N4-1.5, UPD15W2-1.5, UPD15W3-1.5, and UPD27E-6 and were used to determine the limits of excavation within the property boundary.

5.2.2.2 *Excavation Limit Sidewalls*

As shown on Figures 9 and 10, concentrations of COCs were detected above cleanup goals in excavation limit samples where further excavation was not possible beyond the temporary slopes required to maintain integrity of above-ground structures, adjacent buildings, railroad tracks, sidewalks, etc., in accordance with the geotechnical evaluation. Arsenic, cadmium, and lead were detected in these excavation limit sidewall confirmation samples at maximum concentrations of 241 mg/kg, 26.3 mg/kg, and 2,690 mg/kg, respectively. TPH-d and TPH-mo were detected in sidewall confirmation samples at maximum concentrations of 5,300 mg/kg and 17,000 mg/kg, respectively.

As shown on Figures 9 and 10, it appears that COC-impacted soils extend beyond the property boundary to the east, west, and south of the Site.

5.2.3 Areas Excavated to Uniform Elevation

In accordance with the remedial approach described above in Section 2.2, soil was excavated to the target uniform elevation at locations UPD-4, UPD-5/33, UPD-16, UPD-17, UPD-24, and UPD-29.

At location UPD-4, lateral excavation was limited because active underground utility that powers the UPRR signal station was left in place. As described below in Section 5.2.5, additional confirmation soil samples were collected around this utility.

One interior sidewall sample, sample UPD27E-6 was collected from the sidewall between the UPD-5/33 and UPD-27 areas. Concentrations of COCs detected in this sample were below the Site-specific cleanup goals.

In the UPD-16 and UPD-17 areas, concentrations of COCs detected in interior sidewall samples (samples UPD30E3-1.25, UPD30E4-1.5, and UPD15E1-1) were below the Site-specific cleanup goals.

At locations UPD-24 and UPD-29, the bottom of excavation in the vicinity of these locations was equal to the target depth and therefore, no vertical sidewalls were exposed and no sidewall confirmation samples were necessary.

5.2.4 Northern Portion of the Site

During excavation of the narrow, northern portion of the Site (approximately 10 feet wide), the City Engineer was on-Site to observe excavation activities and approved excavation to near-vertical sidewalls in an effort to remove as much COC-containing Fill from this area as possible. As excavation progressed from north to south for approximately 50 feet, Bay Mud that appeared to be impacted by petroleum hydrocarbons was encountered below the Fill. This area was excavated to a maximum depth of approximately 5 feet bgs. Per the City Engineer, excavation could not be extended deeper than 5 feet because of safety concerns.

As shown on Figure 2, confirmation samples were collected from the bottom and sidewalls of the excavation in this area where petroleum hydrocarbon impacted soils were encountered. As shown on Figure 8 and 9, TPH-d and TPH-mo were detected above Site-specific cleanup goals in excavation limit sidewall samples (at sample locations EEL01, EEL03, WEL01 and WEL01) and in bottom of excavation sample BotA3-4.5. TPH was also detected slightly above goals in the sample from geotechnical investigation boring KB-1 at approximately 9 feet bgs.

TPH was detected only slightly above goals in the bottom of excavation samples collected in this area. Therefore, it appears that a majority of impacted soil was removed. Since impacted soil in this area of the Site was generally confined to the fill material, TPH encountered below the fill material and within the Bay Mud at deeper depths does not appear to be the result of releases from the Site given that it was not detected in shallow soils.

As shown on Figure 2, pea gravel was encountered below the Fill at a depth of approximately 3 feet bgs approximately 60 feet south of the property boundary. The pea gravel extends approximately 75 feet and was covered with black filter fabric. Fill above the pea gravel was excavated and the pea gravel was exposed. Based upon the geotechnical investigation boring KB-1, the pea gravel is approximately 4 feet thick. No visual impacts were observed in the pea gravel and the pea gravel was left in place.

As shown on Figure 2, six (6) concrete footings (measuring approximately 4 feet wide, 4 feet thick, and 10 feet long) were encountered just below ground surface. These concrete footings were oriented side-by-side in an area extending approximately 40 feet. The concrete footings were set in the Bay Mud and no fill material was observed surrounding the footings. The concrete footings were removed and disposed off-Site.

5.2.5 UPRR Electric Line

An active underground utility that powers the UPRR signal station is located between the two UPRR easements along the western boundary of the Site. This active electrical line was left in place and Pacific States excavated Fill to within approximately 3 feet of the line. Confirmation samples were collected approximately every 25 feet along the soil that remained in place around the line (samples PEL01 through PEL 09) as shown on Figure 8. As shown on Figure 8, COCs were not detected above Site-specific cleanup goals in the confirmation samples collected around the line, except for a lead concentration of 185 mg/kg detected in sample PEL09-1.2.

5.2.6 Sherwin-Williams Fire Line

An inactive portion of a fire line that encircles the Sherwin-Williams property was encountered on the Site along the eastern property boundary. This section of fire line was not encountered during excavation, due to the temporary slopes maintained along the property boundary in accordance with the geotechnical recommendations. In consultation with Sherwin-Williams, the fire line was left in place.

5.2.7 Southwest Corner of Site

Initial excavation in the southwest corner of the Site was conducted to the target elevations for this area while maintaining the temporary slopes required by the geotechnical evaluation. In the temporary slope along the southern property boundary adjacent to the Former Technichem building, EKI personnel observed approximately 3.5 feet of Fill overlying Bay Mud. The Fill material in this area consisted of approximately two feet of sandy gravel, one foot of gravel with some debris (metal, brick, wood, glass), and 0.5 feet of clayey gravel. Using a calibrated PID to screen these soils, it appeared that the bottom layer of clayey gravel fill appeared to be impacted with TPH. An initial confirmation sample was collected from the clayey gravel material (sample UPD5S1-4) located just south of location UPD-5. TPH-d and TPH-mo were detected in this sample at concentrations of 4,700 mg/kg and 12,000 mg/kg, respectively. As approved by the City Engineer, Pacific States excavated additional soil along the wall of the Former Technichem building to almost vertical slopes using a ‘slotted’ excavating procedure.

This additional excavation was performed by excavating approximately 10-foot long sections to a near-vertical slope (‘slots’), then immediately backfilling the excavated section with approved import fill. Six (6) excavation limit sidewall confirmation samples were collected from three locations on the near-vertical slopes (locations SEL-13, SEL-14, and SEL-15) during the slotted excavation activities. As shown on Figure 10, lead, TPH-d, and TPH-mo were detected above Site-specific goals in these samples as summarized below:

- Lead was detected in one sample, SEL13-1.5, at a concentration of 242 mg/kg.
- TPH-d was detected in two samples, samples SEL14-4.0 and SEL15-3.75, at concentrations of 770 mg/kg and 940 mg/kg, respectively.
- TPH-mo was also detected in samples SEL14-4.0 and SEL15-3.75 at concentrations of 2,400 mg/kg and 2,800 mg/kg, respectively.

In accordance with the SCP, EKI field personnel performed air monitoring with a calibrated PID for VOCs in the breathing zone while excavation activities were performed in this area. During these excavation activities, organic vapor concentrations measured with the PID did not exceed the action levels described in EKI’s Health and Safety Plan.

6. PROJECT QUALITY ASSURANCE

In accordance with the Quality Assurance Project Plan (“QAPP”) included in the SCP, quality assurance (“QA”) and quality control (“QC”) procedures were utilized by EKI and the selected analytical laboratory to assure that chemical data reported by the analytical laboratory are of known and acceptable quality and are representative of environmental conditions during implementation of the SCP.

The Quality Assurance Project Report is included as Appendix I. As summarized in the Quality Assurance Project Report, all chemical data reported by the analytical laboratory for soil samples and QA/QC samples (i.e., equipment rinsate blanks and trip blanks) were determined to be of known and acceptable quality and are considered representative of environmental conditions during implementation of remedial activities at the Site and no corrective actions were required.

QA/QC field procedures for equipment decontamination, sampling containers, handling and transport, field documentation, and chain-of-custody were performed in accordance with the SAP.

QA/QC for perimeter air monitoring samples is described in the Perimeter Air Monitoring Report (“PAMR”), included as Appendix F. As described in the PAMR, all data reported by the analytical laboratory for air samples were determined to be of known and acceptable quality and are considered representative of environmental conditions during implementation of remedial activities at the Site and no corrective actions were required.

7. BACKFILLING AND SITE RESTORATION

This section presents a discussion of backfilling and compaction activities, and Site restoration.

Backfilling of the excavation was conducted from approximately 24 July 2008 to approximately 25 August 2008. The entire excavation was backfilled with an aggregate base material obtained from a local quarry as described below. Prior to backfilling the excavation, orange plastic safety fence was placed along the excavation perimeter sidewalls where further excavation was not possible beyond the temporary slopes required to maintain integrity of above-ground structures, adjacent buildings, railroad tracks, sidewalks, etc., in accordance with the SCP. The orange plastic fence will serve to demarcate the contact between potentially impacted material and clean import fill.

During backfilling of the Site, EKI personnel continued dust and perimeter air monitoring in accordance with the Dust Control and Perimeter Air Monitoring Plans included as Appendices D and E of the SCP (EKI, 2008). Daily perimeter air monitoring logs are included in the Perimeter Air Monitoring Report included as Appendix F.

The small amount of groundwater that was encountered in limited areas of the Site during backfilling was left in place.

7.1 Import Fill

The entire excavation was backfilled with soil imported by Pacific States from Dumbarton Quarry, located in Fremont, California. All fill imported to the Site was obtained from a stockpile of aggregate base made of crushed chert and greenstone from the quarry. EKI personnel visited the quarry to inspect the import fill soil and found it to be a homogeneous stockpile of material that had been crushed by the quarry. EKI personnel did not observe any serpentinite or other asbestos-containing rock in the stockpile.

Samples of the import fill soil were collected and analyzed in accordance with DTSC's "Information Advisory - Clean Imported Fill Material," dated October 2001 ("DTSC Import Fill Guidance"). In accordance with the DTSC Import Fill Guidance, four (4) discrete samples were collected from the import fill, since the source was an individual borrow area of two (2) acres or less and the import fill was obtained from a homogenous, quarry source.

Import fill samples were analyzed for Site COCs (arsenic, cadmium, lead, TPH-d, and TPH-mo) and the target compounds outlined in the DTSC Import Fill Guidance for "land near a rock quarry" (metals, asbestos, and pH). Concentrations of all the Site COCs and target compounds were below Site remediation goals. Concentrations of metals detected in the samples were also generally similar, which indicates that this import fill was from a uniform source and that the

results of the import fill samples were representative of the fill material. Laboratory analytical reports for samples of import fill are included in Appendix D. One of the four samples of import fill had a concentration of total chromium greater than 50 mg/kg (i.e., 52 mg/kg in sample AB2), which may be due to the source rock at the quarry containing greenstone. Based upon this chromium result, all four samples were subjected to the Waste Extraction Test (“WET”) using acid and the leachates were analyzed for chromium. Chromium was not detected in any of the four WET leachates. No asbestos was detected in the import fill samples.

Analytical data for the import fill material was submitted to the Site Manager prior to backfilling. The Site Manager approved the import material for use in an email dated 15 July 2008.

7.2 Compaction Testing

Testing Engineers, Inc. of San Leandro, California, performed compaction testing during backfilling. Testing confirmed that import fill placed in non-Sherwin Street areas was compacted at least 90%. Below Sherwin Street, testing confirmed that import fill placed in Sherwin Street areas was compacted at least 95%. Copies of the Testing Engineers, Inc. geotechnical reports are included in Appendix J.

7.3 Site Restoration

Following backfilling and grading, Sherwin Street was rebuilt to the City’s specifications. This included new curbs and gutters, storm drains, and asphalt paving. The perimeter of the Site was fenced and a gate constructed for truck access to the Site.

Non-Sherwin Street areas of the Site were winterized by spreading a mixture of straw and adhesive tackifier over the unpaved areas to limit erosion.

8. SITE MANAGEMENT AND POST-SITE CLEANUP OPERATIONS

Final survey data for limits of excavation, and survey and laboratory analytical data for excavation limit confirmation samples that contained COCs that exceed Site cleanup goals will be added to the City's OSIRIS Mapped Real Estate Parcel Database, the City's web application that provides on-line access to environmental status for parcels and is used by City personnel as a notification and warning system prior to issuing excavation permits.

For the soil cleanup, no ongoing operations or maintenance will be required, as no equipment will be installed as part of the soil cleanup activities.

It is anticipated that Sherwin Williams will re-install the three groundwater monitoring wells (LF-21, SA-AW-02, and SA-AW-03) that were destroyed to facilitate Site cleanup. These wells were located along the upgradient or eastern boundary of the Site. Subsequent monitoring of Sherwin Williams wells for arsenic in groundwater will be sufficient to provide an approximation of groundwater quality at the Site.

9. REFERENCES

- EKI, 2006a. *Phase I Environmental Site Assessment ("Phase I")*, UPRR Parcel D, Emeryville, California, Erler & Kalinowski, Inc., 2 October 2006.
- EKI, 2006b. *Soil and Groundwater Investigation Data Report ("Phase II")*, UPRR Parcel D, Emeryville, California, Erler & Kalinowski, Inc., 14 November 2006.
- EKI, 2007. *Analysis of Brownfields Cleanup Alternatives*, UPRR Parcel D, Emeryville, California, Erler & Kalinowski, Inc., 27 November 2007.
- EKI, 2008. *Site Cleanup Plan*, UPRR Parcel D, Emeryville, California, Erler & Kalinowski, Inc., 18 March 2008.
- Site Manager, 2008. *Final Conditional Approval of Site Cleanup Plan*, Union Pacific Railroad Parcel D, Sherwin Street, Emeryville, Susan G. Colman, Site Manager for City of Emeryville, 18 March 2008.

TABLE 1
SUMMARY OF SOIL ANALYTICAL RESULTS FOR ARSENIC, CADMIUM, LEAD, TPH-D, AND TPH-MO
BOTTOM OF EXCAVATION CONFIRMATION SAMPLES
UPRR Parcel D, Emeryville, California

FINAL DRAFT

Sample Location	Sample ID (c)	Sample Date	Ground Surface Elevation (ft msl)	Sample Depth (ft bgs)	Sample Elevation (ft msl)	Lithologic Unit	Bottom of Excavation Elevation (ft msl)	Excavation Status (d)	Analytical Results (mg/kg) (a)(b)									
									Arsenic (mg/kg in dry weight)	WET Arsenic (mg/L)	TCLP Arsenic (mg/L)	Cadmium (mg/kg in dry weight)	WET Cadmium (mg/L)	Lead (mg/kg in dry weight)	WET Lead (mg/L)	TCLP Lead (mg/L)	TPH-d (mg/kg in dry weight)	TPH-mo (mg/kg in dry weight)
UPD-1	UPD-1-0-2-25	10/16/2006	10.21	0 - 2.25	10.21 - 7.96	Fill	6.57	Excavated	51.9	--	--	1.13	--	120	--	0.136	55	170
	UPD-1-2-2.5	10/16/2006		2 - 2.5	8.21 - 7.71	Fill		Excavated	10.2	--	--	0.551	--	472	--	--	290	750
	UPD-1-3.5-4	5/30/2008		3.5 - 4	6.71 - 6.21	BM		Remaining	14.1	--	--	0.314	--	8.3	--	--	<6.5	<33
	UPD-1-4-4.5	10/16/2006		4 - 4.5	6.21 - 5.71	BM		Remaining	10.2	--	--	0.174	--	29.6	--	--	<6.3	<32
UPD-2	UPD-2-1-1.5	10/16/2006	8.66	1 - 1.5	7.66 - 7.16	BM	5.65	Excavated	17.2	--	--	0.444	--	9.9	--	--	<6	<30
	UPD-2-5-5.5	10/16/2006		5 - 5.5	3.66 - 3.16	BM		Remaining	NU (e)	--	--	0.37	--	13.7	--	--	<6.1	46
	UPD-2-5-5.5 R1	10/16/2006		5 - 5.5	3.66 - 3.16	BM		Remaining	16.6	--	--	--	--	--	--	--	--	
	UPD-2-5-5.5 R2	10/16/2006		5 - 5.5	3.66 - 3.16	BM		Remaining	16.1	--	--	--	--	--	--	--	--	
	UPD-2-5-5.5 R3	10/16/2006		5 - 5.5	3.66 - 3.16	BM		Remaining	17.1	--	--	--	--	--	--	--	--	
UPD-3	UPD-3-0-2	10/16/2006	8.17	0 - 2	8.17 - 6.17	Fill	5.69	Excavated	75.2	--	<0.1	1.16	--	104	--	<0.1	47	140
	UPD-3-3-3.5	10/16/2006		3 - 3.5	5.17 - 4.67	BM		Remaining	5.38	--	--	0.427	--	19.2	--	--	<6.2	<31
	UPD-3-7.5-8	10/16/2006		7.5 - 8	0.67 - 0.17	BM		Remaining	4.84	--	--	<0.128	--	6.38	--	--	16	<32
UPD-4	UPD-4-0-3	10/16/2006	8.69	0 - 3	8.69 - 5.69	Fill	5.10	Excavated	26.1	--	--	8.28	--	684	--	2.72	64	200
	UPD-4-3-3.5	10/16/2006		3 - 3.5	5.69 - 5.19	BM		Excavated	14.9	--	--	0.903	--	254	--	--	<6.7	<33
	UPD4-3.6-4.1	6/6/2008		3.6 - 4.1	5.09 - 4.59	BM		Remaining	3.77	--	--	0.258	--	7.51	--	--	<6.8	<34
	UPD-4-7.5-8	10/16/2006		7.5 - 8	1.19 - 0.69	BM		Remaining	2.6	--	--	1.31	--	11.5	--	--	<6.5	<33
UPD-5/ UPD-33	UPD-5A-0-2	10/18/2006	9.73	1 - 3	8.73 - 6.73	Fill	3.65	Excavated	11.1	--	--	3.18	--	328	--	--	3200	12000
	UPD33-1-3A	1/22/2008		1 - 3	8.73 - 6.73	Fill		Excavated	14.3	--	--	6.49	--	388	--	--	5300	20000
	UPD33-1-3B	1/22/2008		1 - 3	8.73 - 6.73	Fill		Excavated	--	--	--	--	--	--	--	2100	8100	
	UPD-5-1.5-2	10/16/2006		2.5 - 3	7.23 - 6.73	Fill		Excavated	17.8	--	--	2.78	--	474	--	--	5400	19000
	UPD33-3.5-4	1/22/2008		3.5 - 4	6.23 - 5.73	BM		Excavated	7.66	--	--	0.705	--	11.1	--	--	<7.7	<39
	UPD-5A-4-4.5	10/18/2006		5 - 5.5	4.73 - 4.23	BM		Excavated	6.09	--	--	0.539	--	50.1	--	--	340	1400
	UPD-5-5-5.5	10/16/2006		6 - 6.5	3.73 - 3.23	BM		Remaining	6.07	--	--	0.619	--	10	--	--	<7.2	<36
	UPD-5A-7.5-8	10/18/2006		8.5 - 9	1.23 - 0.73	BM		Remaining	2.37	--	--	0.216	--	7.54	--	--	22	250
UPD-6	UPD-6-0-3.5	10/18/2006	9.87	0 - 3.5	9.87 - 6.37	Fill	6.46	Excavated	70.1	--	--	3.49	--	344	--	--	570	2,000
	UPD-6-3-3.5	10/18/2006		3 - 3.5	6.87 - 6.37	Fill		Excavated	8.45	--	--	<0.114	--	10.6	--	--	13	35
	UPD-6-3.5-4	5/30/2008		3.5 - 4	6.37 - 5.87	BM		Remaining	13.2	--	--	0.261	--	7.59	--	--	<6.3	<32
UPRR Parcel D Site-specific Cleanup Goal (g)									24	NA	NA	5.6	NA	150	NA	NA	400	1,000

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UPRR Parcel D, Emeryville, California

FINAL DRAFT

Sample Location	Sample ID (c)	Sample Date	Ground Surface Elevation (ft msl)	Sample Depth (ft bgs)	Sample Elevation (ft msl)	Lithologic Unit	Bottom of Excavation Elevation (ft msl)	Excavation Status	Analytical Results (mg/kg) (a)(b)									
									Arsenic (mg/kg in dry weight)	WET Arsenic (mg/L)	TCLP Arsenic (mg/L)	Cadmium (mg/kg in dry weight)	WET Cadmium (mg/L)	Lead (mg/kg in dry weight)	WET Lead (mg/L)	TCLP Lead (mg/L)	TPH-d (mg/kg in dry weight)	TPH-mo (mg/kg in dry weight)
UPD-7	UPD-7-0-2	10/18/2006	9.67	0-2	9.67-7.67	Fill	6.19	Excavated	145	--	<0.1	6.91	--	469	--	0.695	120	410
	UPD-7-2-2.5	10/18/2006		2-2.5	7.67-7.17	Fill		Excavated	56.3	--	--	0.912	--	50.3	--	--	6.5	35
	UPD-7-2.5-3	10/18/2006		2.5-3	7.17-6.67	BM		Excavated	4.91	--	--	0.542	--	7.04	--	--	<6.7	<34
UPD-8	UPD-8-0-2	10/17/2006	9.50	0-2	9.50-7.50	Fill	6.05	Excavated	48.4	--	--	3.71	--	258	--	0.209	100	500
	UPD-8-2-2.5	10/17/2006		2-2.5	7.50-7.00	Fill		Excavated	15.5	--	--	0.233	--	25.4	--	--	<5.9	<30
	UPD-8-2.5-3	10/17/2006		2.5-3	7.00-6.50	BM		Excavated	3.97	--	--	0.401	--	8.72	--	--	<6.7	<34
UPD-9	UPD-9-0-2	10/17/2006	9.06	0-2	9.06-7.06	Fill	5.18	Excavated	11.7	--	--	6.57	--	579	--	--	56	260
	UPD-9-2-2.5	10/17/2006		2-2.5	7.06-6.56	Fill		Excavated	8.76	--	--	<0.12	--	11.7	--	--	<6	<30
	UPD-9-2.5-3	10/17/2006		2.5-3	6.56-6.06	BM		Excavated	3.84	--	--	0.495	--	10	--	--	<7	<35
UPD-10	UPD-10-0-2.5	10/17/2006	9.23	0-2.5	9.23-6.73	Fill	4.66	Excavated	57.8	--	<0.1	9.99	--	401	--	0.838	93	440
	UPD-10-2.5-3	10/17/2006		2.5-3	6.73-6.23	Fill		Excavated	23.5	--	--	3.95	--	93	--	--	<6.7	<34
	UPD10-4.1-4.6 (f)	6/6/2008		4.6 - 5.1	4.63 - 4.13	BM		Remaining	3.67	--	--	0.841	--	30.2	--	--	<8	<40
	UPD-10-6.5-7	10/17/2006		6.5 - 7	2.73 - 2.23	BM		Remaining	6.88	--	--	0.513	--	11	--	--	<6.8	<34
UPD-11	UPD-11-0-2.5	10/18/2006	9.79	0-2.5	9.79-7.29	Fill	5.23	Excavated	19.3	--	--	10	--	307	--	--	230	870
	UPD-11-2.5-3	10/18/2006		2.5-3	7.29-6.79	Fill		Excavated	66.9	--	--	4.6	--	365	--	--	30	140
	UPD-11-4-4.5	10/18/2006		4-4.5	5.79-5.29	BM		Excavated	7.35	--	--	0.711	--	17.9	--	--	<7.1	<36
UPD-12	UPD-12-0-2.5	10/17/2006	9.29	0-2.5	9.41-6.91	Fill	5.88	Excavated	98.9	--	<0.1	6.78	--	301	--	0.271	82	410
	UPD12-3.5-4.0	6/11/2008		3.5 - 4	5.79 - 5.29	BM		Remaining	2.71	--	--	0.638	--	21.4	--	--	<6.9	<34
	UPD-12-4.5-5	10/17/2006		4.5 - 5	4.91 - 4.41	BM		Remaining	7.05	--	--	0.447	--	14.1	--	--	62	<34
UPD-13	UPD-13-0-2	10/17/2006	8.88	0-2	8.13-6.13	Fill	5.37	Excavated	70.9	--	--	1.41	--	112	--	--	110	420
	UPD-13-3-3.5	10/17/2006		3 - 3.5	5.13 - 4.63	BM		Remaining	4.76	--	--	0.606	--	9.22	--	--	<7.1	<35
	UPD-13-6-6.5	10/17/2006		6 - 6.5	2.13 - 1.63	BM		Remaining	1.99	--	--	0.166	--	5.88	--	--	<6.2	33
UPD-14	UPD-14-0-2	10/17/2006	9.29	0.75-2.75	8.54-6.54	Fill	5.38	Excavated	29.9	--	--	2.73	--	175	--	1.43	18	120
	UPD-14-2-2.5	10/17/2006		2.75-3.25	6.54-6.04	BM		Excavated	6.68	--	--	0.722	--	15.4	--	--	<7.5	<37
UPD-16	UPD-16-0.5-1	10/18/2006	8.64	1.25-1.75	7.39-6.89	BM	6.57	Excavated	7.22	--	--	0.823	--	480	--	--	720	1,800
	UPD-16-1.5-2	10/18/2006		2.25 - 2.75	6.39 - 5.89	BM		Remaining	4.69	--	--	0.621	--	17.1	--	--	<6.9	<35
	UPD-16-4-4.5	10/18/2006		4.75 - 5.25	3.89 - 3.39	BM		Remaining	16.2	--	--	0.742	--	6.87	--	--	<6.4	<32
UPRR Parcel D Site-specific Cleanup Goal (g)									24	NA	NA	5.6	NA	150	NA	NA	400	1,000

TABLE 1
SUMMARY OF SOIL ANALYTICAL RESULTS FOR ARSENIC, CADMIUM, LEAD, TPH-D, AND TPH-MO
BOTTOM OF EXCAVATION CONFIRMATION SAMPLES
UPRR Parcel D, Emeryville, California

FINAL DRAFT

Sample Location	Sample ID (c)	Sample Date	Ground Surface Elevation (ft msl)	Sample Depth (ft bgs)	Sample Elevation (ft msl)	Lithologic Unit	Bottom of Excavation Elevation (ft msl)	Excavation Status	Analytical Results (mg/kg) (a)(b)									
									Arsenic (mg/kg in dry weight)	WET Arsenic (mg/L)	TCLP Arsenic (mg/L)	Cadmium (mg/kg in dry weight)	WET Cadmium (mg/L)	Lead (mg/kg in dry weight)	WET Lead (mg/L)	TCLP Lead (mg/L)	TPH-d (mg/kg in dry weight)	TPH-mo (mg/kg in dry weight)
UPD-17	UPD-17-0.5-1	10/18/2006	8.75	1.25 - 1.75	7.5 - 7	BM	6.28	Excavated	6.2	--	--	0.611	--	25.7	--	--	<7.4	<36
	UPD-17-2.5-3	10/18/2006		3.25 - 3.75	5.5 - 5	BM		Excavated	4.98	--	--	0.212	--	10.3	--	--	<6.7	<34
UPD-20	UPD-20-0-0.5	10/18/2006	6.43	0 - 0.5	6.43 - 5.93	Fill	5.35	Excavated	46.6	--	--	4.41	--	350	--	--	17	59
	UPD20-1-1.5	6/6/2008		1 - 1.5	5.43 - 4.93	BM		Remaining	3.13	--	--	0.511	--	6.6	--	--	<6.3	<32
	UPD-20-1.5-2	10/18/2006		1.5 - 2	4.93 - 4.43	BM		Remaining	7.79	--	--	0.379	--	12.1	--	--	<5.8	<29
UPD-21	UPD21-0-2.5	1/17/2008	10.88	0 - 2.5	10.88 - 8.38	Fill	5.29	Excavated	35.6	--	--	2.54	--	376	31.5	0.697	1,100	1,600
	UPD21-2.5-3.0	1/17/2008		2.5 - 3	8.38 - 7.88	BM		Excavated	14.3	--	--	0.706	--	123	5.27	0.106	21	54
UPD-22	UPD22-0-2.5	1/17/2008	10.13	0 - 2.5	10.13 - 7.63	Fill	6.47	Excavated	104	4.65	--	1.9	--	200	9.54	--	98	230
	UPD22-2.5-3.0	1/17/2008		2.5 - 3	7.63 - 7.13	BM		Excavated	4.46	--	--	0.476	--	46.4	--	--	21	58
UPD-23	UPD23-0.5-3	1/16/2008	9.98	0.5 - 3	9.48 - 6.98	Fill	5.40	Excavated	54.1	2.31	--	4.33	--	211	14.6	0.215	28	71
	UPD23-3-4R	1/21/2008		3 - 4	6.98 - 5.98	Fill		Excavated	18.9	--	--	0.463	--	13.2	--	--	--	--
	UPD23-4.0-4.5	1/16/2008		4 - 4.5	5.98 - 5.48	BM		Excavated	26.9	--	--	0.73	--	20.1	--	--	10	<36
	UPD23-4.5-5	7/28/2008		4.5 - 5	5.48 - 4.98	BM		Remaining	3.94	--	--	0.662	--	11.1	--	--	<6.9	<35
UPD-24	UPD24-0-3.0	1/16/2008	9.52	0 - 3	9.52 - 6.52	Fill	5.80	Excavated	65.8	2.37	--	1.27	--	104	5.75	--	69	150
	UPD24-2-3R	1/21/2008		2 - 3	7.52 - 6.52	Fill		Excavated	41.5	--	--	0.288	--	17.3	--	--	--	--
	UPD24-3.0-3.5	1/16/2008		3 - 3.5	6.52 - 6.02	BM		Excavated	5.24	--	--	0.421	--	371	4.36	<0.1	16	40
	UPD24-3.5-4.0	1/16/2008		3.5 - 4	6.02 - 5.52	BM		Remaining	5.16	--	--	0.416	--	104	--	--	--	--
UPD-25	UPD25-1-5	1/16/2008	10.09	1 - 5	9.09 - 5.09	Fill	5.23	Excavated	21.3	--	--	3.66	--	167	8.16	<0.1	82	220
	UPD25-5-5.5	1/16/2008		5 - 5.5	5.09 - 4.59	BM		Remaining	4.34	--	--	0.63	--	10.5	--	--	30	92
UPD-26	UPD26-1.5-3.0	1/16/2008	9.25	1.5 - 3	7.75 - 6.25	Fill	5.70	Excavated	9.2	--	--	0.132	--	12.5	--	--	13	37
	UPD26-3.0-3.5	1/16/2008		3 - 3.5	6.25 - 5.75	BM		Excavated	3.89	--	--	0.515	--	37	--	--	13	<33
UPD-27	UPD27-0-3	1/22/2008	9.76	0 - 3	9.76 - 6.76	Fill	2.25	Excavated	27.2	--	--	4.14	--	262	--	--	870	9,400
	UPD27-3.5-4	1/22/2008		3.5 - 4	6.26 - 5.76	Fill		Excavated	55.6	--	--	3.68	--	279	--	--	520	1,500
	UPD27-4-4.5	1/22/2008		4 - 4.5	5.76 - 5.26	Fill		Excavated	42.2	--	--	9.61	--	629	--	--	15	<33
	UPD27-5-5.5	1/22/2008		5 - 5.5	4.76 - 4.26	Fill		Excavated	24.9	--	--	3.54	--	230	--	--	38	97
	UPD27-6.25-6.75	6/11/2008		6.25 - 6.75	2.76 - 2.26	Fill		Excavated	15.7	--	--	3.92	--	286	--	--	87	300
	UPD27-7-7.5	1/22/2008		7 - 7.5	2.76 - 2.26	Sand		Excavated	14.5	--	--	0.163	--	9.64	--	--	8.4	<32
UPRR Parcel D Site-specific Cleanup Goal (g)									24	NA	NA	5.6	NA	150	NA	NA	400	1,000

TABLE 1
SUMMARY OF SOIL ANALYTICAL RESULTS FOR ARSENIC, CADMIUM, LEAD, TPH-D, AND TPH-MO
BOTTOM OF EXCAVATION CONFIRMATION SAMPLES
UPRR Parcel D, Emeryville, California

FINAL DRAFT

Sample Location	Sample ID (c)	Sample Date	Ground Surface Elevation (ft msl)	Sample Depth (ft bgs)	Sample Elevation (ft msl)	Lithologic Unit	Bottom of Excavation Elevation (ft msl)	Excavation Status	Analytical Results (mg/kg) (a)(b)									
									Arsenic (mg/kg in dry weight)	WET Arsenic (mg/L)	TCLP Arsenic (mg/L)	Cadmium (mg/kg in dry weight)	WET Cadmium (mg/L)	Lead (mg/kg in dry weight)	WET Lead (mg/L)	TCLP Lead (mg/L)	TPH-d (mg/kg in dry weight)	TPH-mo (mg/kg in dry weight)
UPD-28	UPD28-0-4	1/22/2008	9.27	0-4	9.27-5.27	Fill	6.93 (h)	Excavated	22.4	--	--	5.59	--	384	--	--	130	610
	UPD28-4-4.5	1/22/2008		4 - 4.5	5.27 - 4.77	BM		Remaining	7.64	--	--	0.567	--	45.7	--	--	<7.8	<39
UPD-29	UPD29-0.5-4	1/22/2008	9.23	0.5-4	8.73-5.23	Fill	4.87	Excavated	29.7	--	--	8.19	--	1,020	--	6.63 (i)	1,600	7,200
	UPD29-4-4.5	1/22/2008		4 - 4.5	5.23 - 4.73	BM		Remaining	12.3	--	--	1.66	--	12.5	--	--	<7.5	<37
UPD-30	UPD30-0.8-2	1/22/2008	8.70	0.8-2	7.90-6.70	Fill	6.65	Excavated	4.98	--	--	0.403	--	28.4	--	--	1,300	7,700
	UPD30-2-2.5	1/22/2008		2 - 2.5	6.70 - 6.20	BM		Remaining	5.86	--	--	0.613	--	14.2	--	--	<7.1	<35
UPD-31	UPD31-0-3	1/16/2008	9.79	0-3	9.79-6.79	Fill	5.68	Excavated	147	4.85	0.26	4.32	--	243	9.49	<0.4	130	260
	UPD31-3-3.5R	1/21/2008		3-3.5	6.79-6.29	Fill		Excavated	75.8	--	--	0.625	--	26.3	--	--	--	--
	UPD31-4.0-4.5	1/16/2008		4 - 4.5	5.79 - 5.29	BM		Remaining	8.76	--	--	0.462	--	13.7	--	--	17	36
UPD-32	UPD32-0-3.0	1/16/2008	9.33	0-3	9.33-6.33	Fill	5.50	Excavated	27.1	--	--	16.7	0.897	610	34.8	0.35	51	140
	UPD32-3.0-3.5	1/16/2008		3-3.5	6.33-5.83	BM		Excavated	4.96	--	--	0.519	--	17.8	--	--	17	44
KB-1	KB1-7B	3/7/2008	10.50	9	1.50	BM	6.50	Remaining	--	--	--	--	--	--	--	--	380	730
BotA1	BotA1-5	8/21/2008	10.30	5 - 5.5	5.30 - 4.80	BM	5.30	Remaining	5.07	--	--	0.4	--	7.86	--	--	<6.5	<32
BotA2	BotA2-5	8/21/2008	10.30	5 - 5.5	5.30 - 4.80	BM	5.30	Remaining	7.17	--	--	0.513	--	7.96	--	--	<6.6	<33
BotA3	BotA3-4.5	8/25/2008	10.00	4.5 - 5	5.50 - 5.00	BM	5.50	Remaining	7.21	--	--	0.424	--	9.34	--	--	420	590
PEL01	PEL01-1.0	6/9/2008	--	--	--	Fill	7.00	Remaining	13.7	--	--	0.579	--	29.4	--	--	<5.7	<29
PEL02	PEL02-2.0	6/9/2008	--	--	--	Fill	6.91	Remaining	15.5	--	--	0.187	--	15.3	--	--	<5.7	<28
PEL03	PEL03-1.0	6/9/2008	--	--	--	Fill	7.20	Remaining	2.9	--	--	<0.104	--	6.45	--	--	<5.2	<26
PEL04	PEL04-1.0	6/9/2008	--	--	--	Fill	7.01	Remaining	25.5	--	--	1.61	--	46.4	--	--	33	130
PEL05	PEL05-2.0	6/9/2008	--	--	--	Fill	6.54	Remaining	7.34	--	--	0.166	--	11.6	--	--	<5.9	<30
PEL06	PEL06-1.5	6/9/2008	--	--	--	Fill	6.71	Remaining	8.35	--	--	0.119	--	12.2	--	--	<5.7	<28
PEL07	PEL07-1.8	6/9/2008	--	--	--	Fill	7.00	Remaining	11.9	--	--	0.245	--	14.2	--	--	<5.8	<29
PEL08	PEL08-2.0	6/9/2008	--	--	--	Fill	6.57	Remaining	22.2	--	--	0.373	--	23.6	--	--	<5.7	<28
PEL09	PEL09-1.2	6/9/2008	--	--	--	Fill	7.58	Remaining	23.5	--	--	3.07	--	175	--	--	16	34
UPRR Parcel D Site-specific Cleanup Goal (g)									24	NA	NA	5.6	NA	150	NA	NA	400	1,000

TABLE 1
SUMMARY OF SOIL ANALYTICAL RESULTS FOR ARSENIC, CADMIUM, LEAD, TPH-D, AND TPH-MO
BOTTOM OF EXCAVATION CONFIRMATION SAMPLES
UPRR Parcel D, Emeryville, California

Abbreviations:

<0.50 = Compound not detected at or above indicated laboratory reporting limit
BM = Bay Mud
ft bgs = feet below ground surface
ft msl = feet above Mean Sea Level
mg/kg = Milligrams per kilogram
mg/L = Milligrams per liter
TPH = Total Petroleum Hydrocarbons
TPH-d = TPH as diesel
TPH-mo = TPH as motor oil
TCLP = Toxicity Characteristic Leaching Procedure
TTLC = Total Threshold Limit Concentration
WET = Waste Extraction Test

Notes:

- (a) Samples were analyzed for metals using EPA Method 6020/7471A and for TPH using EPA Method 8015B(m) with silica gel cleanup.
- (b) Concentrations in **bold** equal or exceed the site specific goal.
- (c) Samples in gray designated with a "~~strike-through~~" font have been excavated.
- (d) In general, Fill soil was excavated until a clean surface of Bay Mud was exposed, which resulted in approximately 6-inches of Bay Mud also being excavated in many areas.
- (e) NU = Data not usable. As described in the SCP, analytical results of three replicate samples of UPD-2-5-5.5 (UPD-2-5-5.5 R1, UPD-2-5-5.5 R2, and UPD-2-5-5.5 R3) indicate that the initial reported laboratory analytical result of 35.9 mg/kg of arsenic for UPD-2-5-5.5 were spurious and the results were rejected. The maximum reported concentrations of arsenic in the three replicate samples was 17.1 mg/kg.
- (f) Depth interval of sample UPD10-4.1-4.6 was misidentified. This sample was collected following excavation activities and therefore, collected at a depth of 4.6 to 5.1 feet bgs.
- (g) Site-specific cleanup goal for TPH-d and TPH-mo combined is 1,000 mg/kg.
- (h) Further excavation at this location was not possible beyond the temporary slopes required to maintain integrity of above-ground structures.
- (i) Based upon this lead concentration in the TCLP extract, soil excavated from the area surrounding location UPD-29 was disposed off-Site as RCRA hazardous waste.

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS FOR ARSENIC, CADMIUM, LEAD, TPH-D AND TPH-MO
SIDEWALL CONFIRMATION SAMPLES
 UPRR Parcel D, Emeryville, California

FINAL DRAFT

Sample Location	Sample ID	Sample Date	Sample Depth (ft bgs)	Excavation Status	Analytical Results (mg/kg) (a)(b)				
					Arsenic	Cadmium	Lead	TPH-d	TPH-mo
EEL01	EEL01-1.4	6/3/2008	1.4	Remaining	9.68	0.773	186	190	610
	EEL01-3.3	6/3/2008	3.3	Remaining	6.05	0.542	18	980	910
EEL03	EEL03-1.5	6/2/2008	1.5	Remaining	3.4	0.537	226	5,300	8,100
	EEL03-3.0	6/2/2008	3	Remaining	7.52	0.447	191	400	650
EEL04	EEL04-1.0	6/2/2008	1	Remaining	2.82	<0.101	5.07	10	52
	EEL04-3.0	6/2/2008	3	Remaining	2.4	<0.101	5.75	<5.1	<25
EEL05	EEL05-1.0	6/2/2008	1	Remaining	2.83	0.157	10.4	15	98
	EEL05-3.0	6/2/2008	3	Remaining	2.8	<0.102	4.53	<5.1	<25
EEL06	EEL06-1.0	6/2/2008	1	Remaining	3.04	0.106	8.89	15	85
	EEL06-3.0	6/2/2008	3	Remaining	2.21	<0.102	3.88	<5.1	<25
EEL07	EEL07-1.2	6/2/2008	1.2	Remaining	9.82	2.26	160	600	1,100
	EEL07-3.5	6/2/2008	3.5	Remaining	39.6	2.09	439	660	1,900
EEL08	EEL08-1.0	6/2/2008	1	Remaining	5.15	0.914	1,310	24	81
	EEL08-2.8	6/2/2008	2.8	Remaining	5.89	0.386	20.5	<5.7	<29
EEL09	EEL09-2.0	6/2/2008	2	Remaining	3.98	0.838	47.1	<5.1	<25
EEL10	EEL10-1.5	6/2/2008	1.5	Remaining	84.5	1.95	608	400	1,700
EEL11	EEL11-1.5	6/2/2008	1.5	Remaining	160	2.63	342	340	1,000
	EEL11-2.9	6/2/2008	2.9	Remaining	4.93	0.412	6.25	<6	<30
EEL12	EEL12-1.0	6/2/2008	1	Remaining	20.6	3.51	333	550	810
	EEL12-3.0	6/2/2008	3	Remaining	7.46	0.473	85.3	<6.1	<30
EEL13	EEL13-1.3	6/2/2008	1.3	Remaining	18.6	3.41	316	130	370
EEL14	EEL14-1.8	6/2/2008	1.8	Remaining	114	1.87	374	69	300
EEL15	EEL15-2.0	6/2/2008	2	Remaining	20.6	0.853	328	150	470
EEL16	EEL16-1.3	6/2/2008	1.3	Remaining	37.1	5.64	373	260	1,100
EEL17	EEL17-2.0	6/2/2008	2	Remaining	8.3	0.174	46.8	19	71
EEL18	EEL18-1.4	6/2/2008	1.4	Remaining	11.9	2.78	202	100	340
EEL19	EEL19-1.6	6/3/2008	1.6	Remaining	40.5	1.84	144	61	350
EEL20	EEL20-1.8	6/3/2008	1.8	Remaining	8.84	0.29	19.2	<5.8	<29
EEL21	EEL21-2.4	6/3/2008	2.4	Remaining	30.8	3.19	145	330	960
UPRR Parcel D Site-specific Cleanup Goal (c)					24	5.6	150	400	1,000

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS FOR ARSENIC, CADMIUM, LEAD, TPH-D AND TPH-MO
SIDEWALL CONFIRMATION SAMPLES
 UPRR Parcel D, Emeryville, California

FINAL DRAFT

Sample Location	Sample ID	Sample Date	Sample Depth (ft bgs)	Excavation Status	Analytical Results (mg/kg) (a)(b)				
					Arsenic	Cadmium	Lead	TPH-d	TPH-mo
EEL22	EEL22-1.5	6/3/2008	1.5	Remaining	6.39	<0.105	5.08	<5.2	<26
EEL23	EEL23-2.0	6/3/2008	2	Remaining	6.26	<0.112	5.5	<5.6	<28
EEL24	EEL24-1.5	6/3/2008	1.5	Remaining	37.1	1.22	31.9	<6	100
EEL25	EEL25-1.5	6/10/2008	1.5	Remaining	8.06	0.352	11.3	<5.7	<28
EEL26	EEL26-1.5	6/10/2008	1.5	Remaining	76.5	0.241	25.7	<5.7	<29
EEL27	EEL27-1.0	6/10/2008	1	Remaining	18.6	2.12	79.9	11	61
EEL28	EEL28-1.5	6/10/2008	1.5	Remaining	6.71	0.21	11.5	69	490
EEL29	EEL29-1.0	6/10/2008	1	Remaining	6.61	0.197	15.1	<5.6	<28
EEL30	EEL30-1.5	7/29/2008	1.5	Remaining	9.34	<0.114	4.99	<5.7	<29
EEL31	EEL31-1.5	7/29/2008	1.5	Remaining	9.21	<0.139	4.9	<6.9	<35
NEL01	NEL01-1.0	7/28/2008	1 - 1	Remaining	6.71	0.284	110	230	590
NEL02	NEL02-1.0	7/28/2008	1 - 1	Remaining	110	2.58	289	230	590
NEL03	NEL03-1.25	8/4/2008	1..25	Remaining	6.09	<0.114	5.27	<5.7	<28
SEL01	SEL01-1.0	7/28/2008	1	Remaining	4.27	0.267	21.9	270	3,900
SEL02	SEL02-1.0	7/28/2008	1	Remaining	6.61	0.49	15.5	<7	<35
SEL03	SEL03-1.0	7/28/2008	1	Remaining	8.29	0.294	31.3	<6.4	<32
SEL04	SEL4-1.0	7/29/2008	1	Remaining	76.5	8.02	724	62	170
	SEL4-3.5	7/29/2008	3.5	Remaining	9.47	0.132	14.7	<6.1	<30
SEL05	SEL5-0.5	7/29/2008	0.5	Remaining	3.25	0.149	17	15	69
	SEL5-4.0	7/29/2008	4	Remaining	43	3.5	509	200	750
SEL06	SEL06-0.5	7/29/2008	0.5	Remaining	18.8	0.897	87.6	30	120
	SEL06-4.5	7/29/2008	4.5	Remaining	10.5	4.01	235	290	1,600
SEL07	SEL07-1.5	7/29/2008	1.5	Remaining	7.35	<0.117	9.61	<5.9	<29
SEL08	SEL08-1.5	7/29/2008	1.5	Remaining	4.36	0.165	34.8	17	97
SEL09	SEL09-1.5	7/29/2008	1.5	Remaining	19.6	0.723	68.8	66	210
SEL10	SEL10-2	7/29/2008	2	Remaining	10.2	0.542	50	93	320
SEL11	SEL11-2	7/29/2008	2	Remaining	5.58	0.228	24.4	<5.9	<29
SEL12	SEL12-1.5	8/4/2008	1.5	Remaining	6.26	0.583	11.2	<6.9	<34
UPRR Parcel D Site-specific Cleanup Goal (c)					24	5.6	150	400	1,000

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS FOR ARSENIC, CADMIUM, LEAD, TPH-D AND TPH-MO
SIDEWALL CONFIRMATION SAMPLES
 UPRR Parcel D, Emeryville, California

FINAL DRAFT

Sample Location	Sample ID	Sample Date	Sample Depth (ft bgs)	Excavation Status	Analytical Results (mg/kg) (a)(b)				
					Arsenic	Cadmium	Lead	TPH-d	TPH-mo
SEL13	SEL13-1.5	8/11/2008	1.5	Remaining	7.33	1.93	242	130	560
	SEL13-4.0	8/11/2008	4	Remaining	6.07	0.554	47.1	<6.7	<34
SEL14	SEL14-1.0	8/11/2008	1	Remaining	6.11	1.22	98.4	90	490
	SEL14-4.0	8/11/2008	4	Remaining	17.3	1.84	55.1	770	2,400
SEL15	SEL15-1.0	8/11/2008	1	Remaining	1.75	0.221	16.9	20	96
	SEL15-3.75	8/11/2008	3.75	Remaining	8.64	0.979	48.3	940	2,800
UPD-15	UPD-15-0-2.5	10/17/2006	0 - 2.5	Remaining	20.3	0.337	31.3	12	120
	UPD-15-2.5-3	10/17/2006	2.5 - 3	Remaining	6.26	0.621	12	<7	<35
UPD15E1	UPD15E1-1.0	7/28/2008	1	Remaining	17.4	<0.117	12.9	<5.8	<29
UPD15N1	UPD15N1-0.5	5/30/2008	0.5	Excavated	34.4	4.34	238	410	1,100
	UPD15N1-2.0	5/30/2008	2	Excavated	425	0.898	48	<5.7	<29
UPD15N2	UPD15N2-1.5	5/30/2008	1.5	Excavated	642	35.4	2,220	170	590
UPD15N3	UPD15N3-1.5	7/28/2008	1.5	Remaining	6.15	<0.119	10.4	<5.9	<30
UPD15N4	UPD15N4-1.5	7/28/2008	1.5	Remaining	9.89	<0.123	12.4	<6.2	<31
UPD15W1	UPD15W1-1.5	5/30/2008	1.5	Excavated	7.6	<0.114	40.3	<5.7	<29
UPD15W2	UPD15W2-1.5	7/28/2008	1.5	Remaining	7.18	<0.115	10.1	<5.8	<29
UPD15W3	UPD15W3-1.5	7/28/2008	1.5	Remaining	6.69	<0.116	10.5	<5.8	110
UPD-27E	UPD27E1-6.0	6/10/2008	6	Remaining	6.43	0.649	12.2	<7.6	<38
UPD30E1	UPD30E1-1.0	7/28/2008	1	Excavated	28.1	1.44	251	170	1,100
UPD30E2	UPD30E2-1.0	7/28/2008	2	Excavated	4.97	0.222	30.3	870	6,500
UPD30E3	UPD30E3-1.25	8/4/2008	1.25	Remaining	3.74	0.583	50.5	<6.7	<34
UPD30E4	UPD30E4-1.5	8/4/2008	1.5	Remaining	3.7	0.699	19.8	<6.9	<35
WEL01	WEL01-1.4	6/3/2008	1.4	Remaining	44.8	0.647	136	170	660
	WEL01-3.7	6/3/2008	3.7	Remaining	6.93	0.289	8.2	270	600
WEL02	WEL02-1.4	6/3/2008	1.4	Remaining	33.1	1.3	210	410	960
	WEL02-3.1	6/3/2008	3.1	Remaining	15.3	0.447	7.95	150	510
WEL03	WEL03-1.3	6/2/2008	1.3	Remaining	2.62	<0.101	4.67	<5	31
WEL04	WEL04-1.4	6/2/2008	1.4	Remaining	2.23	<0.101	3.95	<5	<25
WEL05	WEL05-1.0	6/2/2008	1	Remaining	2.01	<0.101	3.56	<5	<25
WEL06	WEL06-1.1	6/2/2008	1.1	Remaining	2.74	<0.101	5.93	<5	43
UPRR Parcel D Site-specific Cleanup Goal (c)					24	5.6	150	400	1,000

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS FOR ARSENIC, CADMIUM, LEAD, TPH-D AND TPH-MO
SIDEWALL CONFIRMATION SAMPLES
UPRR Parcel D, Emeryville, California

FINAL DRAFT

Sample Location	Sample ID	Sample Date	Sample Depth (ft bgs)	Excavation Status	Analytical Results (mg/kg) (a)(b)				
					Arsenic	Cadmium	Lead	TPH-d	TPH-mo
WEL07	WEL07-1.0	6/2/2008	1	Remaining	179	2.24	395	130	530
	WEL07-3.0	6/2/2008	3	Remaining	241	0.589	25.5	19	61
WEL08	WEL08-1.5	6/2/2008	1.5	Remaining	19.4	0.477	190	37	160
WEL09	WEL09-1.5	6/2/2008	1.5	Remaining	10.6	0.563	495	230	810
WEL10	WEL10-1.6	6/2/2008	1.6	Remaining	6.1	0.509	11.4	<5.8	<29
WEL12	WEL12-1.3	6/2/2008	1.3	Remaining	23.7	0.762	52.7	49	140
WEL13	WEL13-1.0	6/2/2008	1	Remaining	230	0.153	445	<5.2	<26
WEL14	WEL14-0.8	6/2/2008	0.8	Remaining	6.2	0.23	17.9	11	54
WEL15	WEL15-0.9	6/2/2008	0.9	Remaining	29.9	0.504	14.1	<5.9	<29
WEL16	WEL16-1.0	6/2/2008	1	Remaining	102	0.725	13	<5.7	<28
WEL17	WEL17-1.0	6/2/2008	1	Remaining	33.8	0.356	19.5	<5.5	<28
WEL18	WEL18-0.8	6/3/2008	0.8	Remaining	5.96	0.241	35.2	610	3,300
WEL19	WEL19-0.9	6/3/2008	0.9	Remaining	18.7	0.912	80.8	380	2,000
WEL20	WEL20-1.0	6/3/2008	1	Remaining	34.7	3.78	212	360	1,800
WEL21	WEL21-1.5	6/3/2008	1.5	Remaining	10.4	1.34	40.5	<5.9	<29
WEL22	WEL22-1.3	6/3/2008	1.3	Remaining	32.6	2.62	88.3	46	350
WEL23	WEL23-1.5	6/3/2008	1.5	Remaining	7.83	0.418	21.6	<5.7	<28
WEL24	WEL24-0.7	6/3/2008	0.7	Remaining	60.6	1.4	330	280	750
WEL25	WEL25-1.2	6/3/2008	1.2	Remaining	35.8	9.05	451	450	1,100
WEL26	WEL26-1.5	6/9/2008	1.5	Remaining	47.4	2.06	162	58	200
WEL27	WEL27-0.5	6/9/2008	0.5	Remaining	42.8	16.4	674	1,200	3,100
	WEL27-2.5	6/9/2008	2.5	Remaining	6.45	0.295	12.3	<6	<30
WEL28	WEL28-1.5	6/9/2008	1.5	Remaining	6.9	0.129	14.9	<5.5	<27
WEL29	WEL29-1.2	6/9/2008	1.2	Remaining	5.75	4.08	1,090	<5.3	<26
WEL30	WEL30-1.5	6/9/2008	1.5	Remaining	21.9	1.85	84.1	23	94
WEL31	WEL31-2.0	6/9/2008	2	Remaining	7.03	0.628	53.9	30	92
WEL32	WEL32-0.7	6/9/2008	0.7	Remaining	34.3	11.8	617	72	340
WEL33	WEL33-0.5	6/10/2008	0.5	Remaining	27.2	26.3	2,690	240	1,000
	WEL33-3.5	6/10/2008	3.5	Remaining	11.2	1.03	140	<6.2	<31
UPRR Parcel D Site-specific Cleanup Goal (c)					24	5.6	150	400	1,000

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS FOR ARSENIC, CADMIUM, LEAD, TPH-D AND TPH-MO
SIDEWALL CONFIRMATION SAMPLES
 UPRR Parcel D, Emeryville, California

FINAL DRAFT

Sample Location	Sample ID	Sample Date	Sample Depth (ft bgs)	Excavation Status	Analytical Results (mg/kg) (a)(b)				
					Arsenic	Cadmium	Lead	TPH-d	TPH-mo
WEL34	WEL34-1.0	6/10/2008	1	Remaining	45.8	22.8	2,320	180	640
	WEL34-3.5	6/10/2008	3.5	Remaining	14.4	3.01	47.6	27	150
WEL35	WEL35-1.0	6/10/2008	1	Remaining	19.7	1.61	1,150	3,700	17,000
	WEL35-4.0	6/10/2008	4	Remaining	3.6	0.142	10.2	<6	<30
WEL36	WEL36-1.5	6/10/2008	1.5	Remaining	7.09	2.11	577	5,000	17,000
	WEL36-4.0	6/10/2008	4	Remaining	7.02	0.143	20.3	<5.7	<29
WEL37	WEL37-2.0	6/10/2008	2	Remaining	112	5.57	895	2,600	10,000
	WEL37-4.5	6/10/2008	4.5	Remaining	22.2	0.716	81	200	730
WEL38	WEL38-2.0	6/10/2008	2	Remaining	9.05	3.75	310	250	640
	WEL38-4.5	6/10/2008	4.5	Remaining	10	0.78	29.4	23	150
WEL39	WEL39-1.5	6/10/2008	1.5	Excavated	5.61	0.959	46.8	87	140
	WEL39-4.5	6/10/2008	4.5	Excavated	24.6	7.47	697	190	540
WEL40	WEL40-1.0	6/10/2008	1	Remaining	13.4	0.958	183	66	200
	WEL40-4.0	6/10/2008	4	Remaining	2.51	0.195	20.2	<7	<35
UPRR Parcel D Site-specific Cleanup Goal (c)					24	5.6	150	400	1,000

Abbreviations:

<0.50 = Compound not detected at or above indicated laboratory reporting limit

ft bgs = feet below ground surface

mg/kg = Milligrams per kilogram in dry weight

TPH = Total Petroleum Hydrocarbons

TPH-d = TPH as diesel

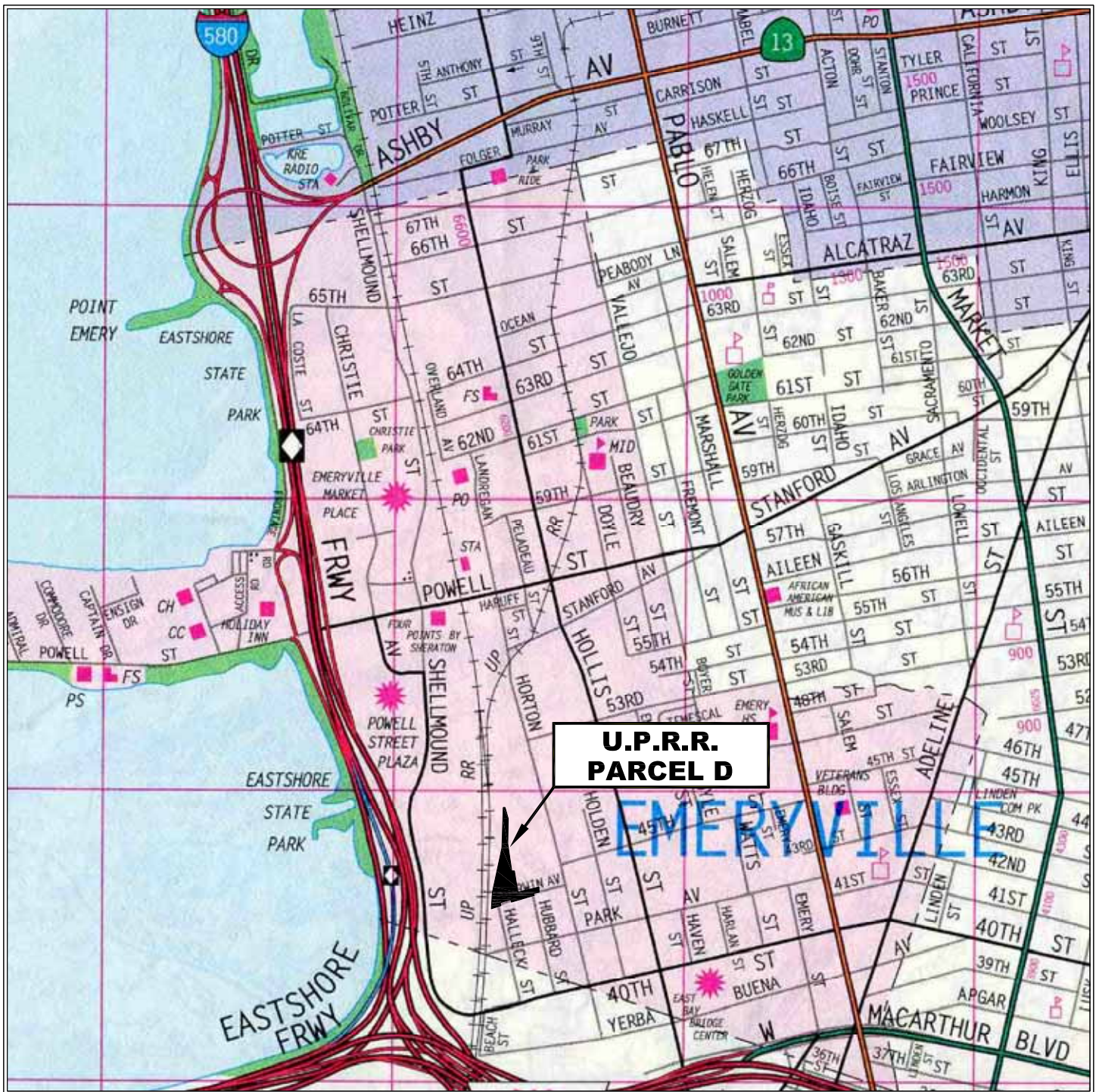
TPH-mo = TPH as motor oil

Notes:

(a) Samples were analyzed for metals using EPA Method 6020/7471A and for TPH using EPA Method 8015B(m) with silica gel cleanup.

(b) Concentrations in bold equal or exceed the site specific goal.

(c) Site-specific cleanup goal for TPH-d and TPH-mo combined is 1,000 mg/kg.



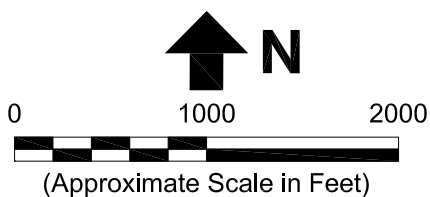
Reference: The Thomas Guide; San Francisco, Alameda and Contra Costa Counties.

Note:

1. All locations are approximate.

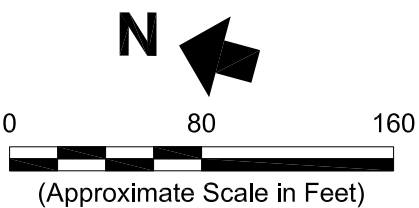
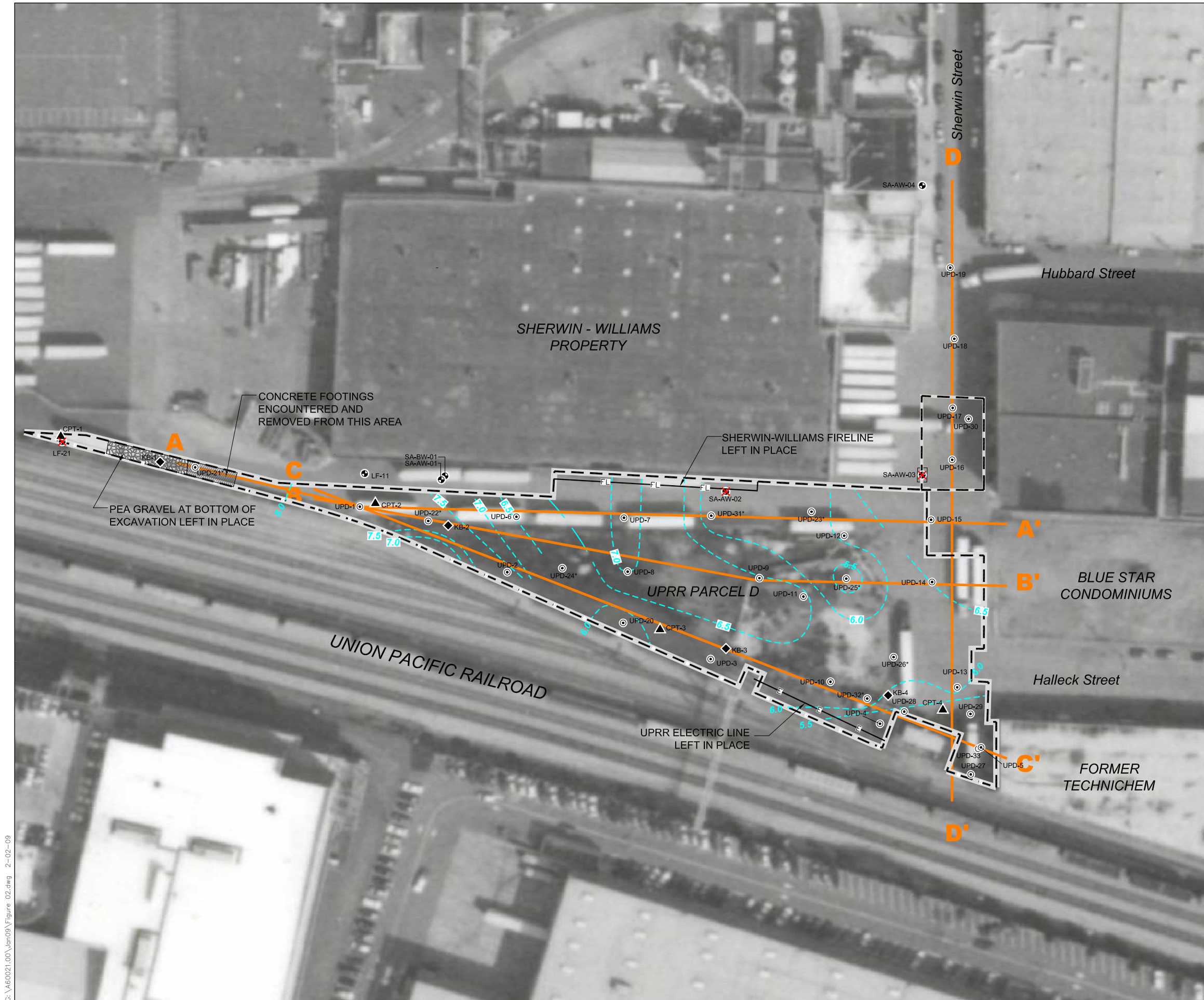
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Site Location Map



UPRR Parcel D
Emeryville, CA
January 2009
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Figure 1



Legend:

- Soil Sampling Location (Boring)
- * Soil Sampling Location (Trench)
- ▲ Cone Penetration Location (Kleinfelder, March 2008)
- ◆ Soil Boring Location (Kleinfelder, March 2008)
- ⊕ Existing Groundwater Monitoring Well Location
- ⊗ Abandoned Groundwater Monitoring Well Location
- Confirmation Soil Sampling Location
- Lateral Extent of Excavation
- A—A'** Cross-Section Location
- - - Revised Bottom of Fill Elevation (ft msl)

Notes:

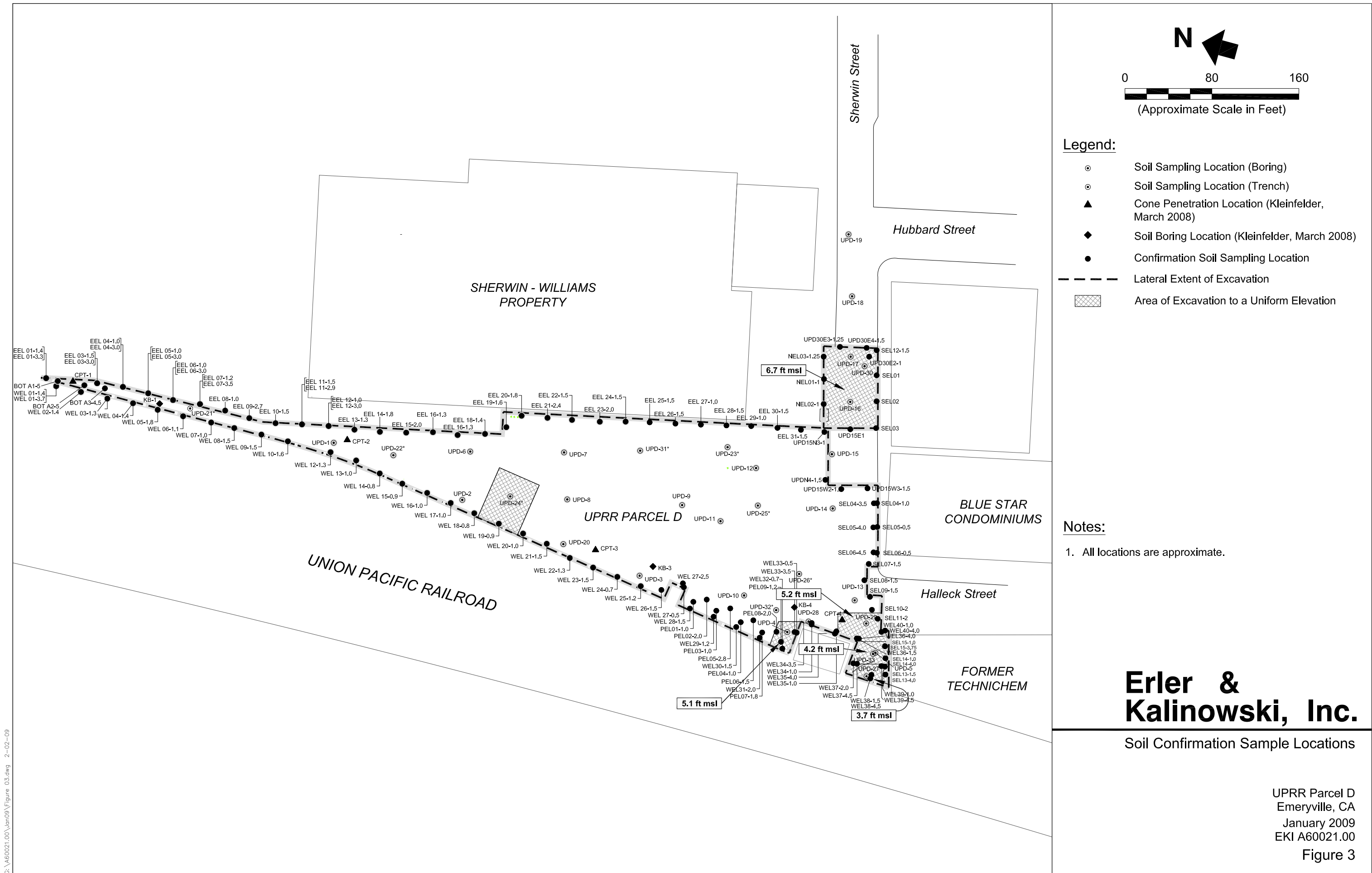
1. All locations are approximate.
2. Basemap source: Pacific Aerial Surveys, Oakland, CA, dated 9 March 2005.

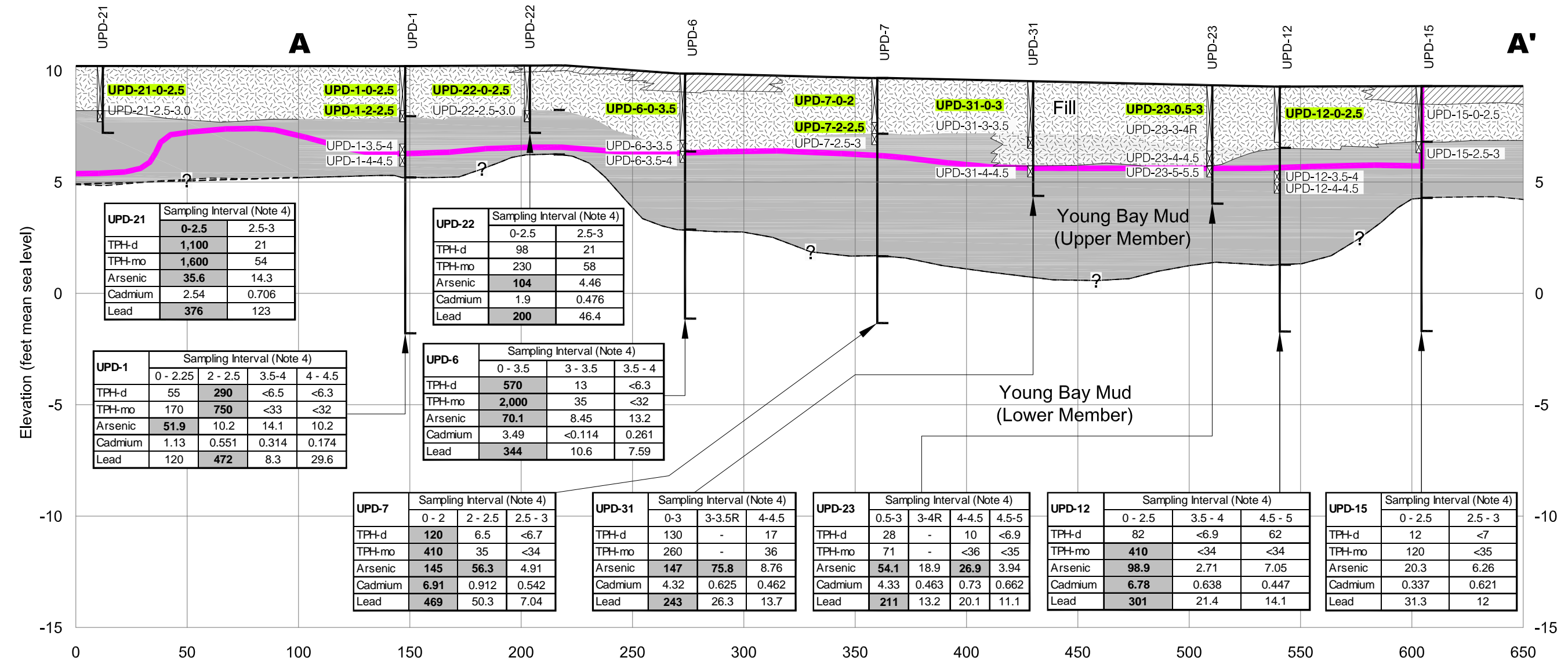
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Final Lateral and Vertical Extents of
Excavation and Cross Section Locations

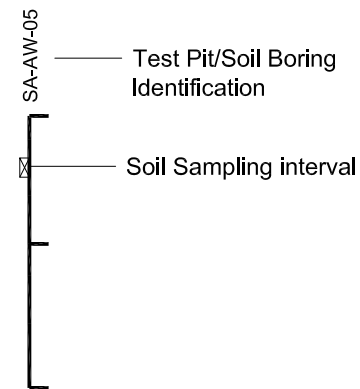
UPRR Parcel D
Emeryville, CA
January 2009
EKI A60021.00
Figure 2

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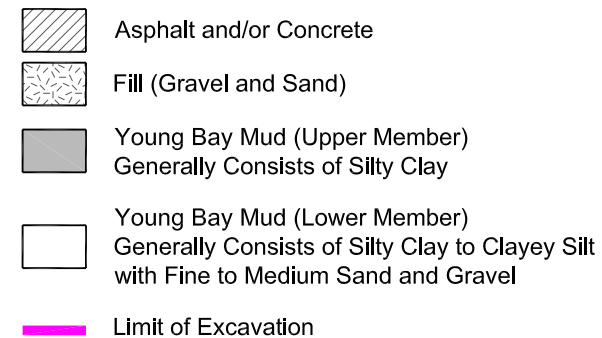




Legend:



Explanation:

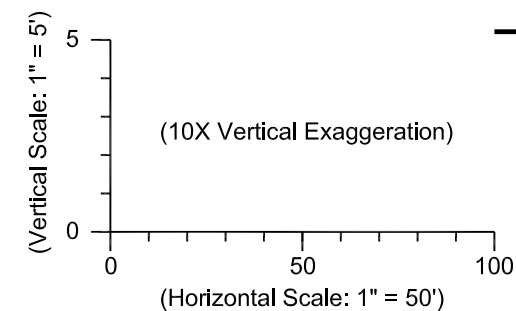


Abbreviations:

COCs = Chemicals of concern
 ft bgs = Feet below ground surface
 TPH = Total petroleum hydrocarbons
 TPH-d = Total petroleum hydrocarbons as diesel
 TPH-mo = Total petroleum hydrocarbons as motor oil

Notes:

1. All locations are approximate.
2. Sample names in **bold font** and shaded green indicate one or more COCs were above site cleanup goals.
3. Sample names in regular font and not shaded indicate no COCs were above site cleanup goals.
4. Sampling interval is in feet below ground surface for sampling locations where asphalt or concrete was not present at ground surface. Sampling interval is in feet below concrete/asphalt surface for sampling locations where asphalt or concrete was present at ground surface.
5. Concentrations in milligrams per kilogram. Concentrations that exceed the site cleanup goal are in **bold** and shaded in grey. (See Table 3-2).

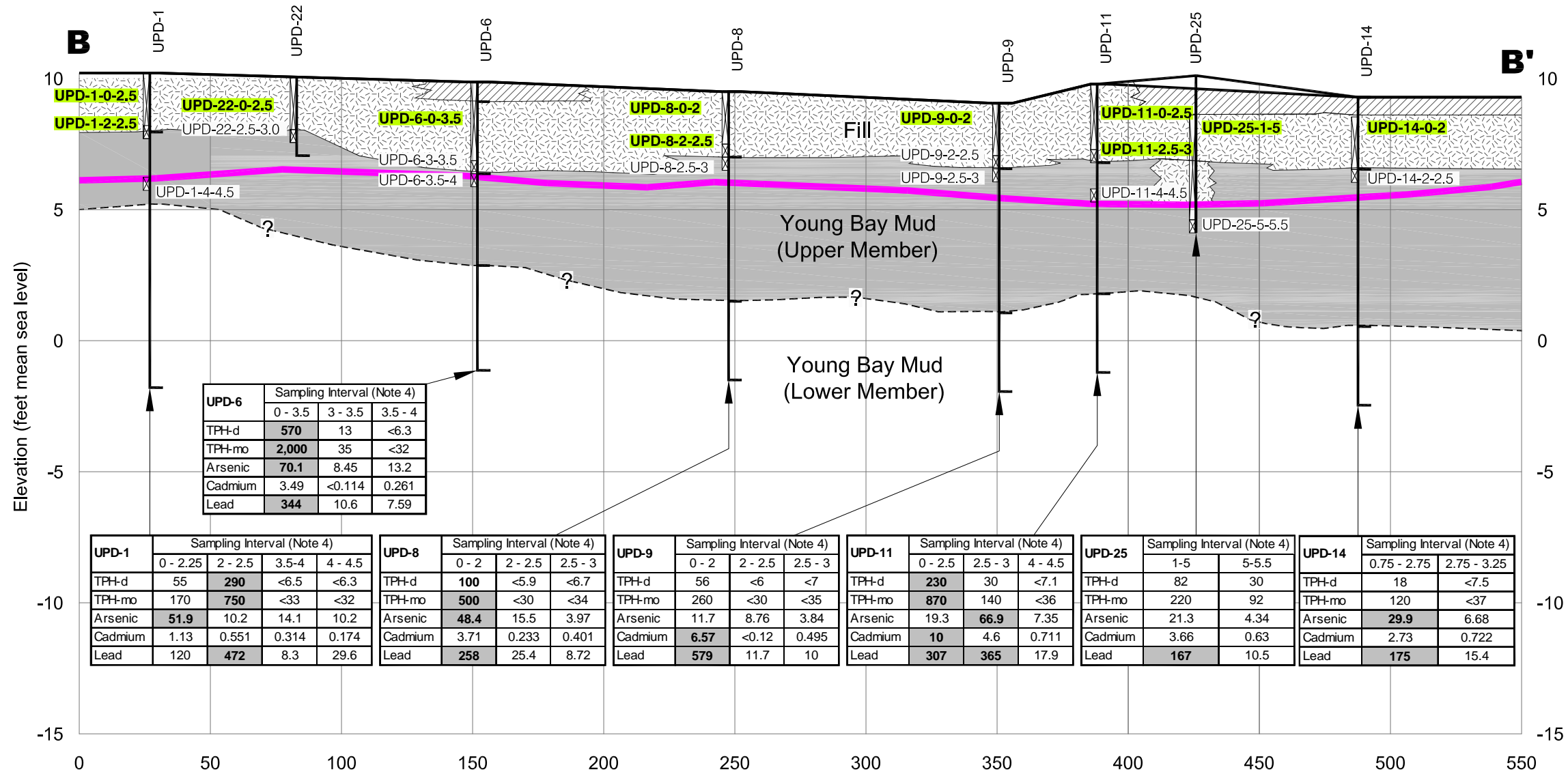


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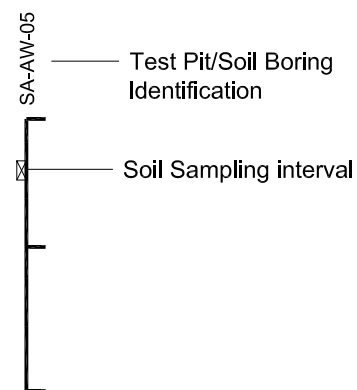
Geologic-Cross Section A - A'

UPRR Parcel D
 Emeryville, CA
 January 2009
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Figure 4



Legend:



Explanation:

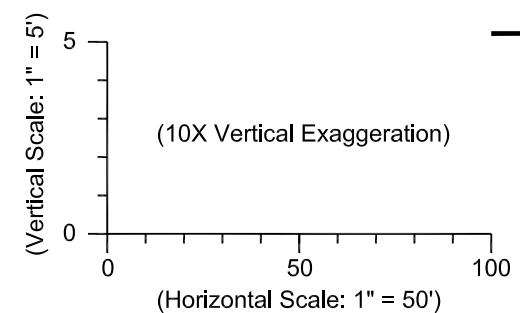
- Asphalt and/or Concrete
- Fill (Gravel and Sand)
- Young Bay Mud (Upper Member)
Generally Consists of Silty Clay
- Young Bay Mud (Lower Member)
Generally Consists of Silty Clay to Clayey Silt with Fine to Medium Sand and Gravel
- Limit of Excavation

Abbreviations:

- COCs = Chemicals of concern
 ft bgs = Feet below ground surface
 TPH = Total petroleum hydrocarbons
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Notes:

- All locations are approximate.
- Sample names in **bold font** and shaded green indicate one or more COCs were above site cleanup goals.
- Sample names in regular font and not shaded indicate no COCs were above site cleanup goals.
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- Concentrations in milligrams per kilogram. Concentrations that exceed the site cleanup goal are in **bold** and shaded in grey. (See Table 3-2).

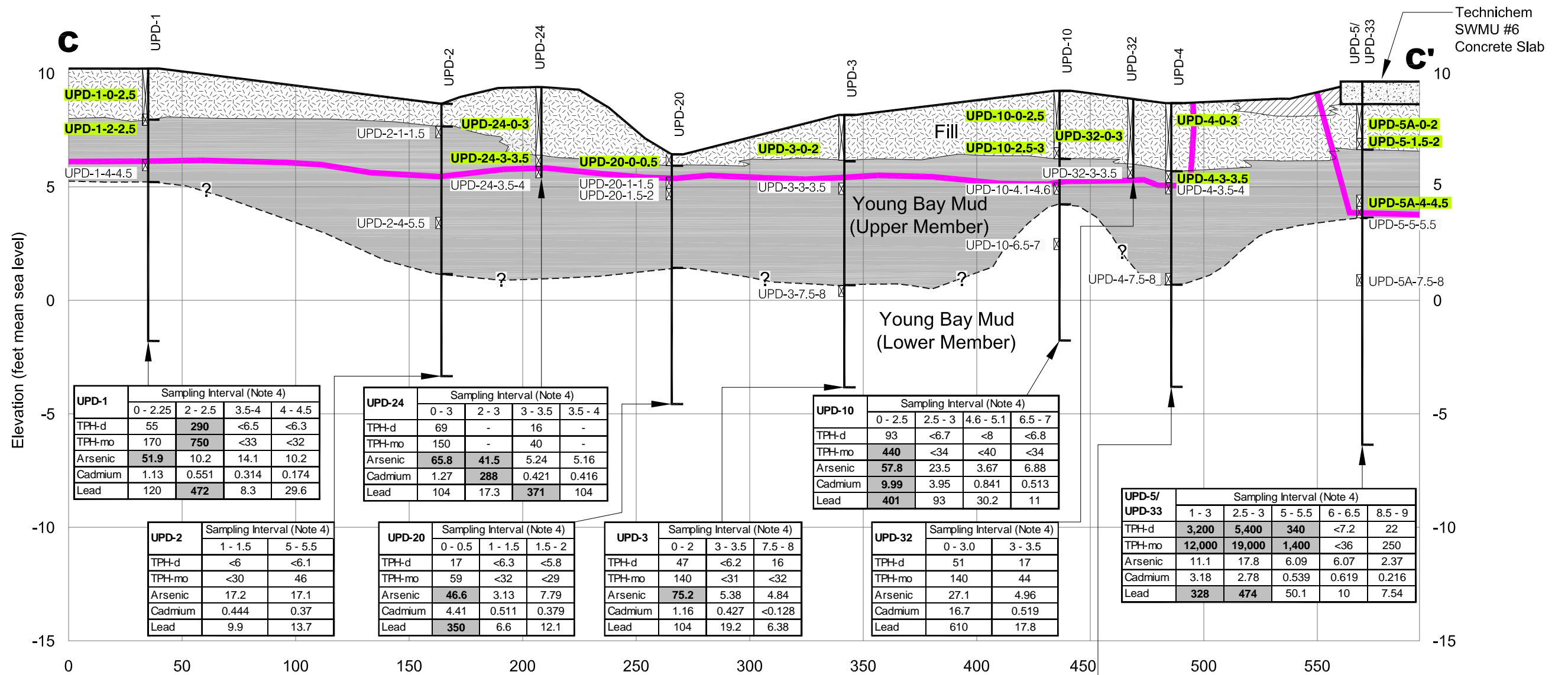


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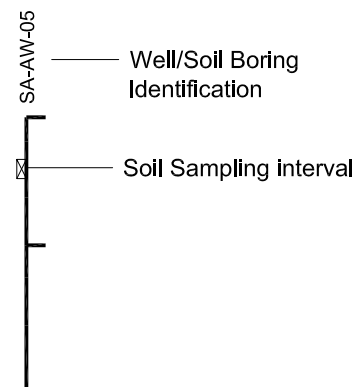
Geologic-Cross Section B - B'

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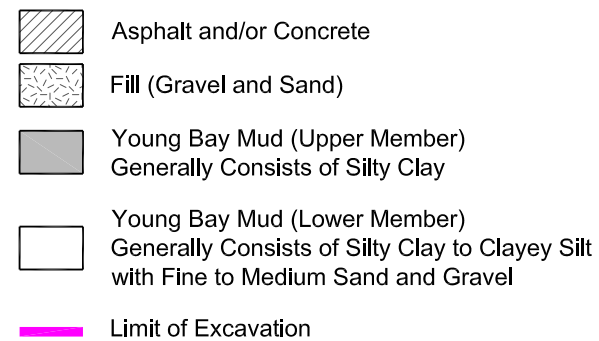
Figure 5



Legend:



Explanation:

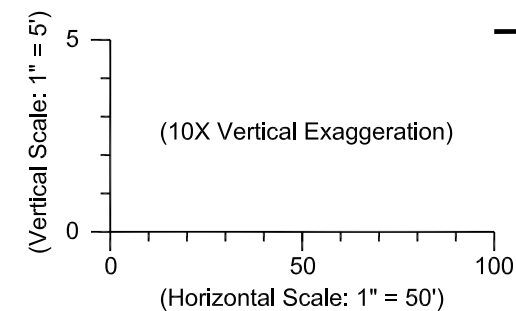


Abbreviations:

COCs = Chemicals of concern
ft bgs = Feet below ground surface
TPH = Total petroleum hydrocarbons
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Notes:

- All locations are approximate.
- Sample names in **bold font** and shaded green indicate one or more COCs were above site cleanup goals.
- Sample names in regular font and not shaded indicate no COCs were above site cleanup goals.
- Sampling interval is in feet below ground surface for sampling locations where asphalt or concrete was not present at ground surface. Sampling interval is in feet below concrete/asphalt surface for sampling locations where asphalt or concrete was present at ground surface.
- Concentrations in milligrams per kilogram. Concentrations that exceed the site cleanup goal are in **bold** and shaded in grey. (See Table 3-2).

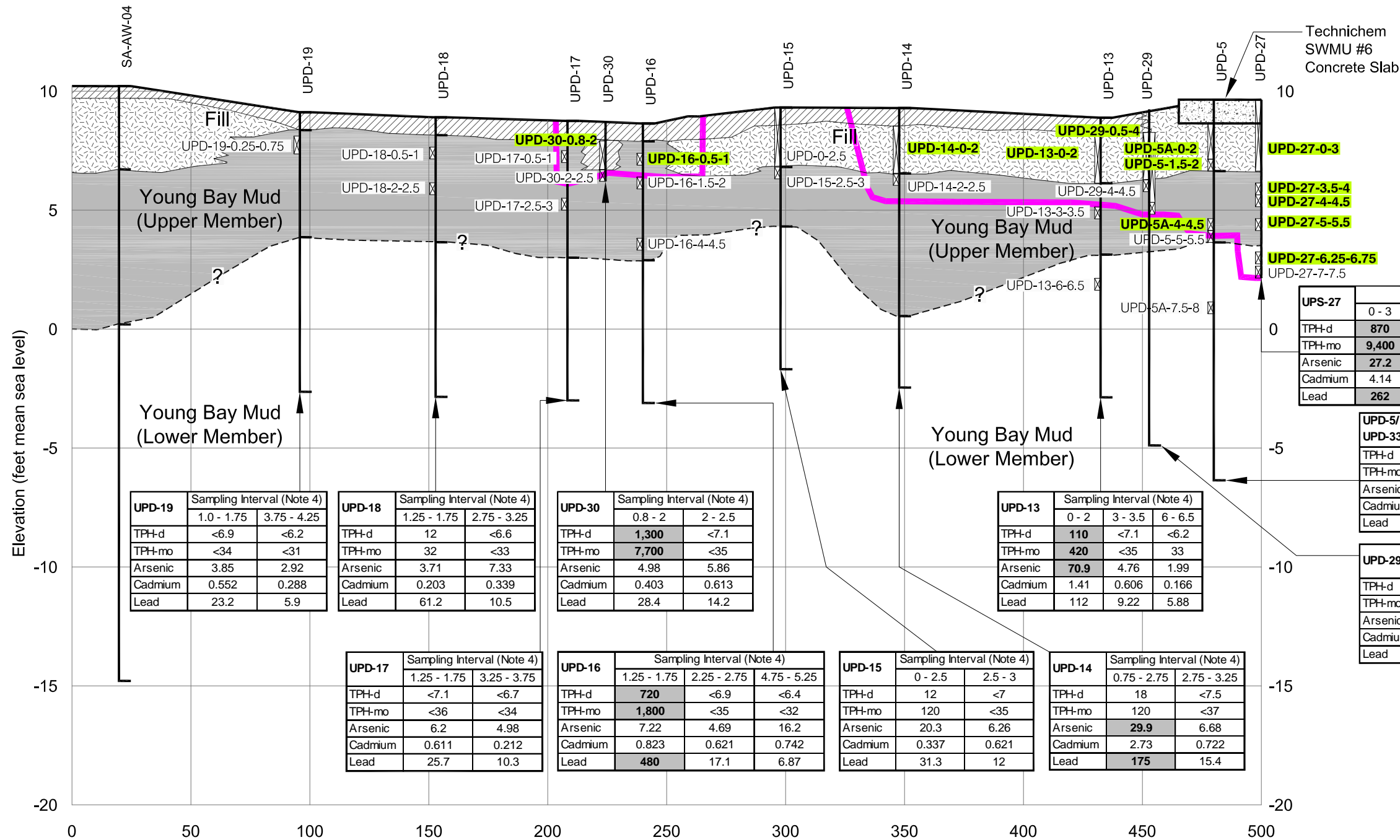


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Geologic-Cross Section C - C'

UPRR Parcel D
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January 2009
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Figure 6



UPS-27	Sampling Interval (Note 4)					
	0 - 3	3.5 - 4	4 - 4.5	5 - 5.5	6.25 - 6.75	7 - 7.5
TPH-d	870	520	15	38	87	8.4
TPH-mo	9,400	1,500	<33	97	300	<32
Arsenic	27.2	55.6	42.2	24.9	15.7	14.5
Cadmium	4.14	3.68	9.61	3.54	3.92	0.163
Lead	262	279	629	230	286	9.64

UPD-5/ UPD-33	Sampling Interval (Note 4)				
	1 - 3	2.5 - 3	5 - 5.5	6 - 6.5	8.5 - 9
TPH-d	3,200	5,400	340	<7.2	22
TPH-mo	12,000	19,000	1,400	<36	250
Arsenic	11.1	17.8	6.09	6.07	2.37
Cadmium	3.18	2.78	0.539	0.619	0.216
Lead	328	474	50.1	10	7.54

UPD-29	Sampling Interval (Note 4)	
	0.5 - 4	4 - 4.5
TPH-d	1,600	<7.5
TPH-mo	7,200	<37
Arsenic	29.7	12.3
Cadmium	8.19	1.66
Lead	1,020	12.5

UPD-19	Sampling Interval (Note 4)	
	1.0 - 1.75	3.75 - 4.25
TPH-d	<6.9	<6.2
TPH-mo	<34	<31
Arsenic	3.85	2.92
Cadmium	0.552	0.288
Lead	23.2	5.9

UPD-18	Sampling Interval (Note 4)	
	1.25 - 1.75	2.75 - 3.25
TPH-d	12	<6.6
TPH-mo	32	<33
Arsenic	3.71	7.33
Cadmium	0.203	0.339
Lead	61.2	10.5

UPD-30	Sampling Interval (Note 4)	
	0.8 - 2	2 - 2.5
TPH-d	1,300	<7.1
TPH-mo	7,700	<35
Arsenic	4.98	5.86
Cadmium	0.403	0.613
Lead	28.4	14.2

UPD-17	Sampling Interval (Note 4)	
	1.25 - 1.75	3.25 - 3.75
TPH-d	<7.1	<6.7
TPH-mo	<36	<34
Arsenic	6.2	4.98
Cadmium	0.611	0.212
Lead	25.7	10.3

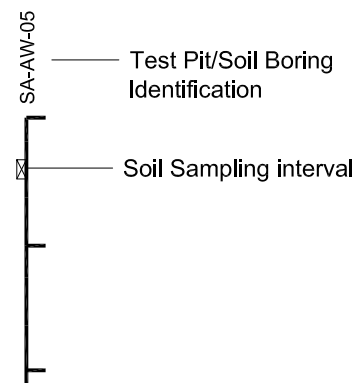
UPD-16	Sampling Interval (Note 4)		
	1.25 - 1.75	2.25 - 2.75	4.75 - 5.25
TPH-d	720	<6.9	<6.4
TPH-mo	1,800	<35	<32
Arsenic	7.22	4.69	16.2
Cadmium	0.823	0.621	0.742
Lead	480	17.1	6.87

UPD-15	Sampling Interval (Note 4)	
	0 - 2.5	2.5 - 3
TPH-d	12	<7
TPH-mo	120	<35
Arsenic	20.3	6.26
Cadmium	0.337	0.621
Lead	31.3	12

UPD-13	Sampling Interval (Note 4)		
	0 - 2	3 - 3.5	6 - 6.5
TPH-d	110	<7.1	<6.2
TPH-mo	420	<35	33
Arsenic	70.9	4.76	1.99
Cadmium	1.41	0.606	0.166
Lead	112	9.22	5.88

UPD-14	Sampling Interval (Note 4)	
	0.75 - 2.75	2.75 - 3.25
TPH-d	18	<7.5
TPH-mo	120	<37
Arsenic	29.9	6.68
Cadmium	2.73	0.722
Lead	175	15.4

Legend:



Explanation:

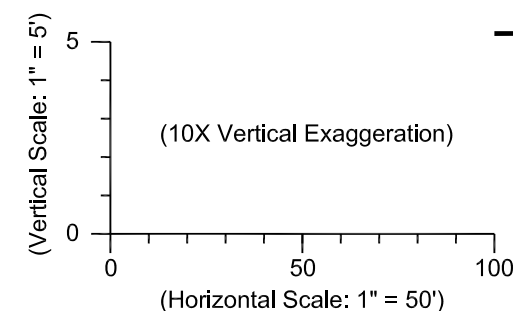
- Asphalt and/or Concrete
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Generally Consists of Silty Clay
- Young Bay Mud (Lower Member)
Generally Consists of Silty Clay to Clayey Silt with Fine to Medium Sand and Gravel
- Limit of Excavation

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Notes:

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- Sample names in **bold font** and shaded green indicate one or more COCs were above site cleanup goals.
- Sample names in regular font and not shaded indicate no COCs were above site cleanup goals.
- Sampling interval is in feet below ground surface for sampling locations where asphalt or concrete was not present at ground surface. Sampling interval is in feet below concrete/asphalt surface for sampling locations where asphalt or concrete was present at ground surface.
- Concentrations in milligrams per kilogram. Concentrations that exceed the site cleanup goal are in **bold** and shaded in grey. (See Table 3-2).



Erler & Kalinowski, Inc.

Geologic-Cross Section D - D'

UPRR Parcel D
Emeryville, CA
January 2009
EKI A60021.00

Figure 7

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