Section 4. Nature and Extent of Solid Waste, Landfill Gas, and Chemicals in Soil

The information derived from the field investigations presented in Section 3 was used to define the nature and extent of solid waste, landfill gas, and chemicals in soil at Parcel E-2. The nature and extent evaluation presented in this section will document that an adequate amount of data, of sufficient quality, exist to support the human and ecological risk assessments, to provide a basis for the RAOs, and to evaluate a focused set of remedial alternatives for Parcel E-2.

The following subsections discuss the data evaluation procedures (Subsection 4.1) and nature and extent findings for the Landfill Area (Subsection 4.2), the Panhandle Area (Subsection 4.3), and the East Adjacent Area (Subsection 4.4). Subsection 4.5 presents a summary of the nature and extent evaluation at Parcel E-2 for each component discussed in Subsections 4.2 through 4.4. The nature and extent of sediment contamination within the intertidal Shoreline Area is presented, along with a SLERA for shoreline aquatic receptors, in the Shoreline Characterization Technical Memorandum (SulTech, 2005) (Appendix G to this report). The nature and extent of groundwater contamination is presented in Section 5.

4.1. EVALUATION METHODOLOGY

This subsection presents the methodology used to evaluate the nature and extent of solid waste, landfill gas, and chemicals in soil in Parcel E-2. The results are divided into three main areas of Parcel E-2 and are presented after this section. The goal is to provide a characterization of the nature and extent of contamination that will support the evaluation of remedial alternatives in the feasibility study. The nature and extent evaluations for solid waste and landfill gas are based on the NDGI findings, as summarized in the Landfill Gas Characterization and Landfill Lateral Extent Evaluation reports (TtEMI, 2003e; TtEMI, 2004f) (Appendices B and C to this report). The nature and extent of chemicals in soil were evaluated based on data collected during the RI, NDGI, and SDGI.

4.1.1. Solid Waste Extent Evaluation

In general, fill material at HPS can be grouped into four solid media types:

- Native soil
- Soil and rock fill
- Dredged sediment

- Construction and demolition debris
- Industrial and municipal-type waste

The first three types are considered inert fill material based on waste definitions in 27 CCR, Section (§) 20230. Inert waste does not contain hazardous waste or soluble pollutants at concentrations exceeding applicable water quality objectives, nor does it contain significant quantities of decomposable waste (as defined in 27 CCR, § 20230). Inert fill material is not expected to generate leachate that would create potential risks to human health or the environment. For purposes of delineating the extent of the solid waste at HPS, the native soil, soil and rock fill, and construction debris fill are considered to be the primary land mass in which the Parcel E-2 Landfill was constructed (TtEMI, 2004f).

Industrial and municipal-type waste may pose risk to human or ecological receptors in two ways. First, putrescible waste (waste that contains significant quantities of biodegradable material) may decompose and generate potentially explosive levels of methane gas. The evaluation methodology discussed in this subsection focused on identifying solid waste areas with significant quantities of putrescible waste. Second, waste materials may contain toxic levels of substances that would pose a threat to exposed receptors. To evaluate this risk, chemical data from soil samples collected throughout Parcel E-2 were evaluated, as described in Subsection 4.1.3.

The identification of industrial and municipal-type waste within Parcel E-2 was performed in two steps: 1) defining the extent of contiguous putrescible waste within the Landfill Area; and 2) identifying isolated locations in the Panhandle Area and East Adjacent Area that contain industrial wastes, municipal-type wastes, or construction debris. The presence of construction debris, although typically considered an inert waste, was evaluated in the adjacent areas (the Panhandle and East Adjacent Areas) because certain types of construction debris (mostly notably wood) readily biodegrade and may be considered putrescible. The following subsections discuss the methodology followed in each step in the evaluation.

4.1.1.1. Contiguous Solid Waste within Landfill Area

The field logs from the test pits and soil borings installed during the RI and NDGI were evaluated to estimate the lateral and vertical extent of industrial and municipal-type waste within the Parcel E-2 Landfill, and to assess the general composition of the waste. The evaluation was supplemented with a review of historic aerial photographs and landfill design maps.

As discussed in Section 3, the NDGI included an investigation designed to better evaluate the lateral extent of industrial and municipal-type waste (TtEMI, 2004f) (Appendix B to this report). Test pits were excavated at the boundary of the Parcel E-2 Landfill (adjacent to the interim cap) and in suspected areas of buried solid waste. Step-out test pits were excavated as necessary to assess the lateral extent of the solid waste. A total of 37 test pits were excavated as part of the lateral extent evaluation. The lateral extent was established at the test pit location where the solid waste (including construction debris) was 6 inches thick or less (TtEMI, 2004f). Figure 3-1 presents the locations of the test pits in conjunction with the extent of solid waste. Soil borings were drilled at the final step-out test pit locations to confirm that

solid waste was not present below the bottom of the test pits. In some locations near the landfill edge, soil borings were drilled to obtain additional information on the depth and thickness of solid waste.

4.1.1.2. Isolated Solid Waste Locations in Panhandle and East Adjacent Areas

The Navy reviewed aerial photographs and logs from more than 280 test pits, soil borings, monitoring wells, and GMPs, from various investigations at Parcel E-2, to identify locations outside the landfill that contain industrial wastes, municipal-type wastes, or construction debris. The presence of putrescible waste, such as wood debris, was noted during the review process. Appendix J contains the logs from soil borings, wells, and test pits that were used for this evaluation. Figures 3-1 and 3-2 show the locations of the test pits, soil borings, monitoring wells, and GMPs in Parcel E-2. The vertical extent of solid waste is depicted in several cross sections presented in Section 2 and described in more detail in Subsection 4.2.2.

Several locations within the East Adjacent Area and Panhandle Area contained non-putrescible industrial waste, such as sandblast waste, and other locations contained putrescible construction debris. Waste identified in all other locations consisted of non-putrescible construction debris (such as brick, concrete, and metal). Figure 4-1 and the table below present the locations and number of borings and test pits within each area and the results of the evaluation, including locations that contained waste, and the subset of these locations that contained sandblast waste and putrescible construction debris. The results of the evaluation are discussed in more detail in Subsections 4.3.1 and 4.4.1.

Waste Type	Number of Waste Locations in Panhandle Area [a]	Number of Waste Locations in East Adjacent Area [b]
Non-putrescible construction debris	28	10
Putrescible construction debris	17	21
Sandblast waste	0	9
Sandblast waste and putrescible construction debris	0	3
Total:	45 (83 total borings and test pits)	43 (116 total borings and test pits)

a Includes borings in the shoreline area in close proximity to the Panhandle Area.

b Includes borings in the shoreline area in close proximity to the East Adjacent Area.

4.1.2. Landfill Gas Evaluation

The nature and extent of landfill gas was evaluated based on data collected during past investigations, including the landfill gas characterization (TtEMI, 2003e) (Appendix A to this report) conducted under the NDGI and during the landfill gas TCRA (TtEMI, 2004a). As discussed in Subsection 3.2, the landfill gas characterization performed during the NDGI consisted of outdoor air and building atmosphere surveys, a soil-gas survey using temporary sampling points, and installation and monitoring of GMPs. Gas monitoring was initially performed using field instruments; laboratory samples were collected if field

results exceeded action levels for methane and total NMOCs (TtEMI, 2002a). The following subsections discuss the evaluation methodology used to assess the nature and extent of landfill gas at Parcel E-2.

4.1.2.1. Methane

Monitoring and control of landfill gas is regulated by 27 CCR. Performance standards for controlling methane gas at closed landfills are provided in 27 CCR § 20921. Concentrations of methane gas must not exceed 1.25 percent by volume in air (25 percent of the LEL) within on-site structures, and concentrations of methane gas migrating from the landfill must not exceed 5 percent by volume in air (the LEL) at the facility property boundary or an alternative boundary approved in accordance with 27 CCR §20925. The evaluation methodology for methane data involved comparing field and laboratory data against the 27 CCR standards. The methane data collection process is described in the following subsections. The methane evaluation results are discussed in Section 4.2.3.

Outdoor Air Monitoring

In 2002, outdoor air monitoring was performed throughout the Parcel E-2 Landfill and at buildings and subterranean structures (consisting of mainly well vaults) within 300 feet of the landfill. Additional buildings outside the 300-foot perimeter were surveyed based on the finding of methane above the LEL in GMPs along the northern perimeter of the landfill. No methane detections exceeded 25 percent of the LEL within any building. The Navy also collected confirmatory gas samples within the crawlspace of Building 830 because high methane levels were detected in the subsurface adjacent to the building during the soil gas survey conducted in 2002 (TtEMI, 2003e).

Air monitoring continued to be performed at various surface and subsurface locations north and south of the Parcel E-2 Landfill, including the Building 830 crawlspace, under the Interim Landfill Gas Monitoring and Control Plan (TtEMI and ITSI, 2004c). Some subsurface structures (extraction well vaults) have been removed as part of the Navy's PCB Hot Spot removal action. The table below presents the action levels for the air monitoring being conducted at Parcel E-2. The methane action level at these locations is set at 1 percent by volume in air to minimize the likelihood of exceeding the 27 CCR limit of 1.25 percent within on-site structures.

Air Monitoring Location	Methane Project Action Level (percent methane)	27 CCR Methane Regulatory Level (percent methane)	NMOC Project Action Level (parts per million)
Building 830 Crawl Space	1.0	1.25	> 5 ppm above background
Structures and On-site Utilities	1.0	1.25	> 5 ppm above background
UCSF Surface Locations	1.0	1.25	> 5 ppm above background

> Greater than
27 CCR Title 27, California Code of Regulations
NMOC Non-methane organic compound

Soil-Gas Survey

In 2002, the soil-gas survey was performed around the perimeter of the landfill and at step-out locations to characterize the nature and horizontal extent of gas at the landfill. An initial soil boring was advanced at each location to the depth of groundwater to select the depths for soil-gas sampling. Concentrations of methane and total NMOCs in the soil-gas were measured at a new boring immediately adjacent to (approximately 1 foot from) the initial boring. Step-out borings were advanced if concentrations of methane were detected above 25 percent of the LEL. During the initial soil-gas survey, high levels of methane (above the LEL) were detected at various locations, and additional step-out locations were advanced to delineate the lateral extent of methane above the lower quantitation limit of the instrument (0.5 percent of the LEL) (TtEMI, 2003e).

Gas Monitoring Probes

After the initial soil-gas survey was completed in April 2002, 12 GMPs (GMP01 through GMP12) were installed at the boundary of the Parcel E-2 Landfill next to the fence line that separates the landfill from the UCSF compound. These GMPs were installed at locations where methane exceeded 25 percent of the LEL. These GMPs serve as the compliance GMPs under the landfill perimeter monitoring network to demonstrate that the migration of landfill gas is being controlled (through the gas control system installed during the landfill gas TCRA) below the LEL at the fence line between the landfill and the UCSF compound (TtEMI and ITSI, 2004c).

In May 2002, the Navy installed seven GMPs along Crisp Avenue (GMP13 through GMP19) to provide more data on the extent of landfill gas migration. In June 2002, the Navy installed GMP20 and GMP21 along the western boundary of the landfill, southwest of existing probe GMP10, to provide additional data about possible landfill gas migration west of the landfill, an area adjacent to non-Navy property. These GMPs were installed in areas where methane was not detected above the lower quantitation limit of the instrument (0.5 percent of the LEL) during the initial soil-gas survey. These GMPs are also part of the landfill perimeter monitoring network to ensure that landfill gas does not migrate toward structures to the west above action levels (TtEMI and ITSI, 2004c).

As part of the landfill gas TCRA (TtEMI, 2004a), five GMPs (GMP22 through GMP26) were installed within the UCSF compound to monitor the performance of the TCRA. Although these GMPs are not located on Navy property, they are included in the monitoring network to ensure that landfill gas does not migrate beneath the pavement on the UCSF compound above action levels (TtEMI and ITSI, 2004c).

In February 2004, six additional GMPs (GMP27 through GMP32) were added in the area along Crisp Avenue to supplement seven wells installed in May 2002. These wells were installed at the request of the regulatory agencies to ensure that landfill gas is not migrating between the bottom of the utility trench and the lowest groundwater level (TtEMI and ITSI, 2004c). Although no landfill gas migration was detected along Crisp Avenue, the 13 Crisp Avenue GMPs are included in the monitoring network to ensure that landfill gas is not migrating north toward non-Navy property (former Parcel A) (TtEMI and ITSI, 2004c).

The landfill gas monitoring network was designed in accordance with 27 CCR, and ensures that any landfill gas is not allowed to accumulate above action levels. The perimeter GMPs are monitored on a monthly basis to ensure that methane gas does not exceed 5 percent by volume at the boundary, as specified in the Interim Landfill Gas Monitoring and Control Plan (TtEMI and ITSI, 2004c). GMPs on the UCSF compound and along Crisp Avenue act as secondary and tertiary lines of monitoring at increasing distances from the Parcel E-2 Landfill (TtEMI and ITSI, 2004c). The methane action level at all GMPs is set at 2.5 percent by volume in air to minimize the likelihood of exceeding the 27 CCR limit of 5 percent. All of the GMP locations are presented in Figure 3-7.

4.1.2.2. Non-Methane Organic Compounds

With regard to NMOCs at closed landfills, 27 CCR §20921 states that trace gases shall be controlled to prevent adverse acute and chronic exposure to toxic and carcinogenic compounds. The evaluation methodology for NMOCs involved comparing outdoor air data against the EPA Region IX PRGs for outdoor air (EPA, 2004) and performing risk assessments on soil-gas data collected from permanent GMPs. NMOC data collected from temporary soil-gas probes installed during the landfill gas characterization were not evaluated, as site conditions had changed following implementation of the landfill gas TCRA.

To evaluate compliance with 27 CCR, the Navy has conducted several risk assessments to evaluate whether trace gases from the Parcel E-2 Landfill pose a potential risk to human health. The risk assessments were performed using the Johnson and Ettinger vapor intrusion model (EPA, 2003). Field data, analytical data, and risk assessment results for GMPs along Crisp Avenue (GMP13 through GMP16, GMP18, and GMP19) are presented in the Landfill Gas Characterization Report (TtEMI, 2003e) (Appendix A to this report). Field data, analytical data, and risk assessment results for GMPs (GMP22 through GMP26) on the UCSF compound are presented in Appendices E, F, and G, respectively, of the Landfill Gas TCRA Closeout Report (TtEMI, 2004a) (Appendix F to this report). ELCR calculations for GMPs along Crisp Avenue, using the laboratory results, ranged from 6.4×10^{-7} to 2.0×10^{-8} for a residential exposure scenario. ELCR calculations for the GMPs on the UCSF compound ranged from 4.0×10^{-7} to 8.8×10^{-9} for an industrial exposure scenario. These risk ranges are below the risk management threshold of 1×10^{-6} (TtEMI and ITSI, 2004c).

Field measurements for NMOCs, collected during the same time frame as the laboratory analytical data, range from 0 parts per million by volume (ppmv) to 51 ppmv. Assuming that the NMOCs remain at the same proportions in the landfill gas, the ELCR is directly proportionate to the total NMOC concentration. Thus, recognizing that a 10-fold increase in the ELCR would require a 10-fold increase in the NMOC measurements, 500 ppmv was selected as the action level for NMOCs detected at GMPs included in the monitoring network. If the concentration of total NMOCs increases from the 50-ppmv range to above 500 ppmv, additional sampling and analysis for NMOCs and further evaluation of risk to human health would be warranted per the interim Landfill Gas Monitoring and Control Plan (TtEMI and ITSI, 2004c).

4.1.3. Soil Evaluation

Due to the quantity of soil data evaluated in this RI, the soil nature and extent evaluation was focused to discuss compounds that were detected at concentrations above the laboratory reporting limits (LRLs), exceeding outdoor levels, or greater than human health risk-based criteria developed for the RI. The development of the criteria is discussed in Subsection 4.1.3.2. All soil data, with the exception of soil physically removed during interim actions, is summarized in Appendix J and is included in the human and ecological risk assessments presented in this report.

Because the removal actions were performed concurrent with this RI/FS, certain assumptions needed to be made in order to "lock" the data set for the nature and extent evaluation and risk assessments presented in this Draft RI/FS. The data within the initial excavation boundaries for the metal slag and PCB Hot Spot removal actions, up to a depth of 3 feet bgs, were excluded from the RI/FS data set as a conservative representation of the soil that would be physically removed prior to publication of this Draft RI/FS. This assumption was conservative because the excavations were extended, in some locations, laterally beyond the assumed lateral and horizontal boundaries. For example, the depth of excavation was extended below 10 feet bgs in some locations at the PCB Hot Spot. However, the shoreline portion of the PCB Hot Spot, which was initially proposed for excavation, was not excavated due to its proximity to the Bay. As a result, soil data from the four borings within this area (as shown on Figure 3-2; location IR01SH025A consists of a kiln brick sample) were excluded from the Draft RI/FS data set but remain in place. Appendix J includes a separate section presenting soil data from these four borings. This issue does not affect the conclusions of the Draft RI/FS because the shoreline portion of the PCB Hot Spot is already known, as documented in the shoreline SLERA (Appendix G), to contain sediment with PCB concentrations that pose an unacceptable risk to the environment, and therefore will require remediation either under the TCRA or the remedy to be selected in the Parcel E-2 ROD. The data set will be rectified in the Draft Final RI/FS to reflect current site conditions, including the incorporation of confirmation sampling results from the Metal Slag Area and PCB Hot Spot.

As discussed in Section 3, the Parcel E-2 soil data set consists of 736 samples analyzed for a wide variety of organic and inorganic compounds. To facilitate review of the large data set, the evaluation was performed separately for each of the three study areas at Parcel E-2: the Landfill Area, the Panhandle Area, and the East Adjacent Area. The data set was further subdivided into three separate depth ranges (0 to 2 feet bgs, 2 to 10 feet bgs, and greater than 10 feet bgs) for consistency with the depth ranges evaluated in the HHRA.

Comprehensive data summary tables are presented in Appendix J by chemical category (i.e., metals, pesticides, PCBs, SVOCs, VOCs and petroleum hydrocarbons) for each study area and depth interval. Each table presents a series of summary statistics of the data for each compound, such as the number of samples collected; number of results that exceed the detection limit; minimum and maximum concentrations detected; and median, mean, and standard deviation of the detected results for each

compound. In addition, each table lists all potential screening criteria and quantifies the number of results that exceed each criterion.

4.1.3.1. Identification of Detected Compounds and Comparison of Organic Compound Concentrations with Ambient Levels

All validated soil data collected during past investigations (i.e., the RI, the NDGI, and the SDGI, excluding data within the TCRA initial excavation boundaries) were first evaluated to determine which compounds have been detected above laboratory method detection limits (MDLs). Statistical summary tables were prepared for each study area and depth interval. These tables summarize the detection frequency, range of MDLs, and range of detected concentrations. Metals data were compared to Hunters Point ambient levels (HPALs) (PRC, 1995a). The establishment of HPALs is discussed further in Subsection 4.1.3.3. The list of COPCs within each study area and depth interval was refined by eliminating compounds that were either not detected above the MDL or did not exceed their established HPAL.

4.1.3.2. Soil Remedial Investigation Evaluation Criteria

Due to the large size of the soil data set and the wide range of detected compounds, the evaluation of soil data focuses on compounds with concentrations that contribute the greatest amount of potential risk to future site occupants. Summary tables were prepared for each study area and depth interval to identify those compounds that are the primary contributors to the risk.

The risk-based thresholds used to identify compounds discussed in detail in this RI are referred to as the Remedial Investigation Evaluation Criteria (RIEC). They were selected as a conservative point of comparison that is generally consistent with the anticipated reuse of Parcel E-2 (open space) and the exposure pathways to be evaluated in the HHRA (direct exposure and inhalation). The HHRA, presented in Section 7, will evaluate the potential risk to human receptors for two future land use scenarios: open space (soil exposure from 0 to 2 feet bgs) and construction worker (soil exposure from 0 to 10 feet bgs). The SLERA, also presented in Section 7, will evaluate the potential ecological risk to terrestrial receptors (soil exposure from 0 to 3 feet bgs). The SLERA will also present a focused nature and extent evaluation using PSCs developed for terrestrial receptors. Both of these risk assessment documents provide a separate analysis of COPCs and, in general, are consistent with those selected for discussion in this RI.

The RIEC for all compounds are summarized in Table 4-1. The various criteria that form the basis of the RIEC are also summarized in Table 4-1. The RIEC were selected using the following followed these steps:

- Evaluation of current human-health criteria for direct exposure to soil: The RIEC was based on the EPA Region IX PRGs for industrial soil action levels (EPA, 2004). For compounds with more stringent toxicity criteria, as established by the California Environmental Protection Agency (Cal/EPA), the RIEC was adjusted based on information provided in the Environmental Screening Level (ESL) document prepared by the RWQCB (RWQCB, 2005). The values

specified in Table K-2 of the ESL document (direct exposure screening levels for commercial/industrial worker exposure scenario) were used because they were most comparable to the methodology used in calculating the PRGs. In most cases, the RIEC are established at concentrations corresponding to either a cancer risk of 1 x 10^{-6} or a non-cancer hazard quotient of 1.0 (if both a cancer and non-cancer criteria were available, the lower value was selected). In some cases, the RIEC are set at the saturation limit (as indicated in EPA Region IX PRGs) if that concentration for a given compound is lower than its corresponding cancer or non-cancer concentration. The saturation limit is the contaminant concentration at which soil pore air and pore water are saturated with the chemical and the adsorptive limits of the soil particles have been reached.

- Evaluation of current human-health criteria for inhalation exposure: For volatile and semi-volatile compounds, the values specified in Table E-1b of the ESL document (soil screening levels for evaluation of potential vapor intrusion concerns) were used to provide an initial evaluation of the inhalation exposure pathway. The vapor intrusion screening values were calculated using the *User's Guide For Subsurface Vapor Intrusion Into Buildings* (EPA, 2003). RIEC established based on the inhalation pathway correspond to either a cancer risk of 1 x 10^{-6} or a non-cancer hazard quotient of 1.0. On Table 4-1, this value is represented as ESL Industrial 2005 (inhalation).
- Identification of criteria for compounds without current human-health criteria: Several compounds did not have any current criteria specified by either EPA Region IX or the RWQCB. For such compounds, the SDGI industrial criteria were selected, if available, as the RIEC. The SDGI industrial criteria were established based on the 2000 EPA Region IX PRGs (TtEMI, 2002d). Although the SDGI industrial criteria are no longer current, they represent conservative screening criteria for those compounds without current human-health criteria.
- Evaluation of laboratory MDLs against human-health criteria: The human-health criteria for two PAHs, benzo(a)pyrene and dibenzo(a,h)anthracene were lower than the laboratory MDL as specified in the SDGI. The RIEC for these compounds were set at the MDL of 0.33 mg/kg, consistent with the SDGI industrial criteria (TtEMI, 2002d).
- Comparison of HPALs against human-health criteria: For metals with established ambient levels, the lowest risk-based value was then compared to the HPAL, and the greater value was selected as the RIEC. In the case of chromium, cobalt, and nickel, which have sample-specific HPALs (discussed further in Subsection 4.1.3.3), the RIEC selection was performed for each sample.
- Evaluation of petroleum hydrocarbon detections: Petroleum hydrocarbons are not classified as a CERCLA hazardous substance (Title 42 United States Code § 9601[14]), and are therefore excluded from consideration under the CERCLA process unless it is commingled with hazardous substances regulated under the CERCLA program. A screening evaluation was conducted to identify areas where petroleum hydrocarbons are commingled with other organic and inorganic compounds that are regulated under CERCLA. The primary RIEC used in this evaluation is the HPS source criterion established under the HPS petroleum program (TtEMI, 2002f). This criterion sums all TPH categories (gasoline-range, diesel-range, and motor-oil range) and compares it against a total TPH criterion of 3,500 mg/kg. To provide a basis for evaluating detections of individual TPH categories, the values specified in Table K-2 of the ESL document (RWQCB, 2005) were used as supplemental RIEC.

4.1.3.3. Hunters Point Ambient Levels

HPALs were calculated using probability plots and histograms generated for 14 metals (antimony, arsenic, barium, beryllium, cadmium, copper, lead, mercury, molybdenum, selenium, silver, thallium, vanadium, and zinc) and lithologic category using both original and logarithmically transformed data (PRC, 1995a). These plots were assessed to identify a cut-off value (threshold limit), separating the background population from the contaminated population. In some instances, these plots were also used to identify and exclude outliers from a data set of concern.

Magnesium-based regression plots were generated for the three metals (chromium, cobalt, and nickel). To approximate a normal distribution, the original data sets were logarithmically transformed. The transformed data were then used to generate regression plots of magnesium versus chromium, cobalt, and nickel. Outliers were visually identified and excluded from each data set. A regression line was obtained for each data set using the least squares method. The regression line and the 90 percent confidence interval for the regression line are included on each plot. The 90 percent confidence interval represents the 95 percent one-sided (upper or lower) confidence limit for the regression line. A sample is considered affected by site-related activities (that is, above the ambient level) when chromium, cobalt, or nickel concentrations exceed the calculated naturally occurring concentrations at a statistically significant level (95 percent upper confidence limit [UCL]).

Nickel was re-evaluated based on a nickel-cobalt regression, and the results were used in the RIEC selection on a sample-by-sample basis. The nickel-cobalt regression equation was presented in the *Draft Final Technical Memorandum, Nickel Screening and Implementation Plan, Hunters Point Shipyard, San Francisco, California* (TtEMI, 1999).

4.1.3.4. Graphical Presentation of Focused Evaluation Results

To evaluate the spatial distribution of chemicals exceeding the RIEC, parcel-wide figures were prepared that show all chemical results relative to the corresponding RIEC. The figures present soil data in three separate depth ranges (0 to 2 feet bgs, 2 to 10 feet bgs, and greater than 10 feet bgs) to be consistent with the depth ranges evaluated in the HHRA. The figures are referenced in the nature and extent evaluations for each of the three study areas at Parcel E-2: the Landfill Area, the Panhandle Area, and the East Adjacent Area. It is important to note that these figures are intended to focus the nature and extent evaluation, and should be used in conjunction with the text and tables presented later in this section, as well as with the complete analytical results provided in Appendix J. As an additional evaluation step, analytical results with LRLs above the corresponding RIEC are identified on each figure to evaluate the potential effect of elevated LRLs on the nature and extent evaluation.

4.2. LANDFILL AREA

The nature and extent of contamination at the Parcel E-2 Landfill was evaluated based on information from the previous investigations and TCRAs described in Section 3. Based on data from the 26 soil

borings, 12 monitoring wells, and 25 test pits extended within the Landfill Area, the solid waste is comprised primarily of domestic refuse and construction debris. However, the following information indicates that industrial wastes were also disposed of in or around the Parcel E-2 Landfill:

- The IAS indicated that sandblast waste, asbestos-containing debris, paint sludge, solvents, and waste oils were deposited in the Parcel E-2 Landfill (NEESA, 1984).
- The HRA indicated that the Parcel E-2 Landfill, along with other areas within Parcel E-2, was a disposal area for radioluminescent devices (primarily containing radium-226). The HRA also indicated that the landfill was a potential disposal area for: 1) wastes from decontamination of ships used in atomic testing; 2) building debris from demolition of radiologically impacted buildings used by the NRDL; and 3) materials used in radiological experiments by NRDL (NAVSEA, 2004).
- An oily waste area was identified on the NAVFAC drawings along the western perimeter of the Landfill Area (NAVFAC Western Division, 1974). During preliminary closure activities, ponded liquid was removed and the top 6 inches of soil at the oily waste area was scarified before the soil cover was placed. Based on borings and exploratory trenches, this area also was partially filled with solid waste during closure; therefore, this area is included within the boundaries of solid waste at the Parcel E-2 Landfill (TtEMI, 2004f).
- Triple A allegedly disposed of industrial debris, sandblast waste, oily industrial sand, and asphalt over an area of approximately 5 acres along the shoreline of Parcel E-2. In addition, Triple A allegedly stored unlabeled, deteriorating, uncovered drums with their contents exposed to the elements in the southeast corner of Parcel E-2 (Figure 1-11) (San Francisco District Attorney, 1986).
- Waste fuel and waste oil containing PCBs were used at the Parcel E-2 Landfill as dust suppressants (TtEMI, LFR, and Uribe, 1997).

The following subsections discuss the nature and extent of solid waste (Subsections 4.2.1 and 4.2.2), landfill gas (Subsection 4.2.3), and chemicals within the soil fill (Subsection 4.2.4).

4.2.1. Fill and Solid Waste Characteristics

Determination of the nature and extent of solid waste at the Parcel E-2 Landfill is based on the physical presence of contiguous industrial or municipal-type wastes. Based on soil borings drilled in the central portion of the landfill from 1988 to 1992, landfill waste consists of wood, paper, plastic, metal, glass, nails, foam, copper wire, cloth, rubber, plywood, ceramics, asphalt, concrete, and bricks, that is mixed with sand, clay, and gravel fill. The waste is usually brown to black. In many areas within the landfill, the waste is mixed with construction debris. Construction debris is typically inert. As discussed in Subsection 4.1.1, inert waste does not contain hazardous waste or soluble pollutants at concentrations exceeding applicable water quality objectives, nor does it contain significant quantities of decomposable waste (as defined in 27 CCR, § 20230). Inert fill material is not expected to generate leachate that would create potential risks to human health or the environment.

In some areas in and near the Parcel E-2 Landfill, solid waste and soil fill or construction debris materials appear to have a sheen that may be from petroleum products (TtEMI, 2004f). Some of the wood debris was noted in boring logs as exhibiting a creosote odor, and the fibrous material was noted as possible asbestos-containing material (TtEMI, LFR, and Uribe, 1997). Because the soil within the Landfill Area is mixed with solid waste, the chemical characteristics of the soil fill (Subsection 4.2.4) combined with the nature of the solid waste, determine the nature of the material contained within the Landfill Area. These characterization data are used to determine whether the containment presumption, as outlined in EPA guidance (EPA, 1993a; EPA, 1993b; EPA, 1996) is appropriate for Parcel E-2.

Information on the waste types encountered within the Landfill Area has been obtained during the remediation within the PCB Hot Spot, which extended into a small portion the Landfill Area (Figure 1-3). Small quantities of low-level radioactive wastes from the disposal of radioluminescent devices and sandblast grit were encountered during implementation of the PCB Hot Spot removal (BRAC PMO West, 2005b through 2005f). The sandblast grit was handled and screened as potential low-level radioactive waste, because HPS used sandblast grit to decontaminate ships that were involved in atomic weapons testing and may have disposed of some of the grit at the PCB Hot Spot area (NAVSEA, 2004). As of September 2006, approximately 324 cubic yards of soil and sediment, including portions of the sandblast grit encountered, were segregated as radiologically impacted (out of a total excavated volume of 44,500 cubic yards). In addition, 41 radiological devices and 108 cubic yards of fire brick were identified within the removal area (BRAC PMO West, 2006c). Additional information on the findings from the removal activities within the East Adjacent Area is provided in Subsection 4.4.1.

In September 1997, during installation of the sheet pile wall in the Landfill Area, an obstruction was encountered at a depth of about 20 feet bgs, accompanied by a release of pressurized gas that escaped to the surface. The atmosphere in this area was monitored for health and safety purposes, specifically for explosive conditions (using an LEL meter) and various compounds including natural gas, chlorine, and hydrogen sulfide (using colorimetric indicator tubes). Sporadic detections of atmospheric conditions above 10 percent of the LEL and chlorine gas above 5 parts per million (ppm) were encountered during the health and safety monitoring. Approximately 80 feet of the sheet pile wall (as originally designed) was re-aligned in order to avoid the subsurface obstructions. The alternate alignment consisted of an approximate 50-foot-long section that was off-set approximately 20 feet from the design alignment, with the remaining portion gradually angling back to the design alignment. The remainder of the sheet pile wall was completed with no additional releases of subsurface gas (IT, 1999).

Solid waste in the landfill is in contact with groundwater and constitutes the majority of the A-aquifer within the Landfill Area. Additional information on the fill and solid waste characteristics are provided in the Landfill Lateral Extent Evaluation report (TtEMI, 2004f) (Appendix B to this report).

4.2.2. Landfill Solid Waste Extent

The Landfill Lateral Extent Evaluation report presents the results of the evaluation of data collected from test pits and soil borings installed during the NDGI, along with historic soil and well boring log information, to assess the lateral and vertical extent of the solid waste at the Parcel E-2 Landfill. All information regarding the extent of solid waste at the landfill in this section was derived from the Landfill Lateral Extent Evaluation report (TtEMI, 2004f) (Appendix B to this report).

4.2.2.1. Lateral Extent of Solid Waste

Figure 3-1 shows the estimated lateral extent of solid waste at the Parcel E-2 Landfill, along with the locations of the test pits and soil borings used in the lateral extent evaluation. The lateral boundaries of the solid waste are based on the soil borings and test pits shown on Figure 3-1 as discussed below.

Along the northern perimeter of the Parcel E-2 Landfill, the landfill lateral extent was encountered along the fence line at boring TPBWE01 and test pits WE01, WE02B, WE03B, WE04B, WE05B, and WE06A. The northern extent continues just north of TPBWE09D, and then just south of TPBWE10C, where no solid waste was encountered. From this location, the extent of solid waste continues south through boring TPBWE11, which contained only minor amounts of wood debris.

The eastern edge of the solid waste is located beneath the interim landfill cap. Based on a review of historic information that included boring logs, aerial photographs, and maps, the lateral extent of solid waste ends approximately 10 feet before the eastern edge of the cap.

At the southern end of the Parcel E-2 Landfill, solid waste was not observed in test pits WE15, WE16, or WE22. Although solid waste was not encountered in WE22, this location is considered to define the southern extent of the solid waste, because debris placed by Triple A is present along the shoreline in this area. Because of the lack of solid waste in WE15 and WE16, the solid waste is considered to extend just north of these test pits. Test pits WE21B and WE20B did not contain solid waste, and therefore are considered as defining the western extent of solid waste at the landfill. The nearest test pits to these locations (WE21A and WE20A, respectively) contained solid waste. Farther south along the western perimeter, the solid waste extent is considered to be located between test pits WE19C and WE19B, WE18D and WE18C, and WE17F and WE17E, because solid waste was present in test pits WE19B, WE18C, and WE17E, but not in test pits WE19C, WE18D, or WE17F, respectively.

These assessments provide a good estimate of the contiguous solid waste associated with the Parcel E-2 landfill but, as discussed in Sections 4.3.1 and 4.4.1, isolated solid waste is present at numerous locations in the Panhandle and East Adjacent Areas. To address this heterogeneous waste distribution, the feasibility study will develop a focused set of remedial alternatives and evaluate their uniform implementation across Parcel E-2 as the most expeditious and cost-effective means of protecting human health and the environment.

4.2.2.2. Vertical Extent of Solid Waste

Figures 2-3 through 2-8 show the vertical extent of solid waste at the Parcel E-2 Landfill, along with the locations of the test pits and soil borings used in the extent evaluation. The vertical boundaries of the solid waste are discussed below.

Soil boring data confirm that the bottom of the solid waste is usually deeper than the test pit excavation depths. As a result, soil borings were drilled at most test pit locations to determine the depth of solid waste. Data from the test pits and historic soil borings were used to construct geologic cross-sections that show the depth and extent of waste at the landfill (Figures 2-3 through 2-8).

The waste is generally located between 21 feet above and 14 feet below msl. The thickness of the waste generally varies from 10 to 25 feet. The solid waste lies atop Bay Mud clays in the southern and eastern portions of the landfill, and atop B-aquifer sands in the northwestern area of the landfill. In other areas, the solid waste is bounded by fill (construction debris, sand, and gravel). In most borings, the solid waste is located both above and below the water table. The only area where the solid waste is located above the water table is in the northwest corner of the landfill.

4.2.3. Landfill Gas

This subsection discusses the nature and extent of landfill gas at Parcel E-2. The evaluation methodologies were discussed in Subsection 4.1.2. The results of relevant landfill gas investigations are summarized below, including those related to the landfill gas characterization study (Appendix A) and the landfill gas TCRA (Appendix F). This subsection also presents a description of the ongoing landfill gas activities, based on the Interim Landfill Gas Monitoring and Control Plan (TtEMI and ITSI, 2004c).

4.2.3.1. Landfill Gas Characterization

As discussed in Subsections 3.2 and 4.1.2, the landfill gas characterization investigation was conducted in 2002 as part of the NDGI to define the nature and extent of landfill gas within Parcel E-2 and adjacent areas. Subsection 3.2 discusses field activities and the report associated with this investigation. Data evaluation and results for the main components of the investigation are described below, including 1) outdoor air monitoring and building atmosphere surveys; 2) a subsurface soil-gas survey; and 3) GMP installation and monitoring. Unless otherwise indicated, all information in this subsection was derived from the Landfill Gas Characterization report (TtEMI, 2003e) (Appendix A). Figure 3-1 shows the locations of the, soil-gas survey locations and GMPs at Parcel E-2. Outdoor air and building surveys locations are shown on Figure 3-4.

Outdoor Air Monitoring and Building Atmosphere Surveys

Data from outdoor air monitoring and building atmosphere surveys were evaluated to assess whether methane (the main component of landfill gas) was present in outdoor air, buildings, or subterranean structures within 300 feet of the Parcel E-2 Landfill at concentrations exceeding the 27 CCR regulatory

limit of 1.25 percent by volume in air (25 percent of the LEL). Figure 4-2 shows the air monitoring points located within 300 feet of the landfill. Air monitoring data were also evaluated to assess whether NMOCs were present at concentrations exceeding EPA Region IX PRGs for ambient air (EPA, 2004).

Results of the outdoor air survey indicated that landfill gas is not present in the breathing zone within the Landfill Area, in building atmospheres within 300 feet of the Landfill Area, or within surveyed, accessible buildings outside the 300-foot perimeter. Methane was not detected at locations to the east, south, or west of the landfill during the outdoor air survey. Methane was detected at several locations north of the landfill as summarized below:

- Methane exceeded the LEL at the ground surface around the light pole near the southwestern corner of the UCSF compound (Location F, subsequent referred to as simply "light pole").
- Methane detections were between 5 and 18 percent of the LEL at two locations along a suspected utility corridor along the fence between the landfill and the UCSF compound (Locations A and C).
- Methane exceeded 25 percent of the LEL at a location on the basketball court on the UCSF compound, just west of the Building 830 crawlspace (Location B).

During additional outdoor air monitoring, performed using field instruments within a month of the initial outdoor air survey during the spring of 2002, methane was not detected at Locations A, B, C, or F. Air samples were collected and analyzed at three locations around the light pole and four locations within the Building 830 crawlspace. Methane was detected at a maximum concentration of 0.6 percent of the LEL in one light pole sample; all gas samples from within the Building 830 crawlspace were less than 1 percent of the LEL. Based on these results, the concentrations of methane in outdoor air around the landfill were considered negligible. Outdoor air at the light pole and Locations A and B were monitored on a monthly basis for two years following the removal action to verify that methane concentrations remain below 1 percent (TtEMI and ITSI, 2004c).

Outdoor air monitoring performed on the landfill surface (consisting of breathing zone measurements at cap penetrations and a surface transect over and around the cap surface) did not detect methane at concentrations exceeding 25 percent of the LEL. Methane was detected at concentrations exceeding 25 percent or more of the LEL at several wells (shown on Figure 4-2); however, these measurements were taken at the top of the well casing with the wells open to the atmosphere, and were not representative of outdoor air within the Landfill Area. Based on these results, the amount of landfill gas in outdoor air within the landfill limits was considered to be negligible. Methane results from the outdoor air survey are shown on Figure 4-2, and the outdoor air field data are presented in Table 3 in Appendix A.

Laboratory results (presented in Table 4 in Appendix A) indicated that certain NMOCs were present in outdoor air at concentrations exceeding their respective PRGs at two locations, as summarized below:

- At the light pole near the southwestern corner of the UCSF compound (Figure 4-2), 1,1,2,2-tetrachloroethane, 1,3,5-trimethylbenzene, benzene, and PCE exceeded the 2004 PRGs for ambient air. Chloromethane and ethylbenzene concentrations exceeded the 2002 PRGs for

ambient air; however, changes reflected in the 2004 PRGs resulted in these compounds no longer exceeding the established risk-based criteria.

- In the Building 830 crawlspace, benzene and PCE exceeded the 2004 PRGs for ambient air. Chloromethane concentrations exceeded the 2002 PRGs for ambient air; however, changes reflected in the 2004 PRGs resulted in chloromethane no longer exceeding the established risk-based criteria.

No NMOCs were detected at concentrations above PRGs in samples collected at these locations in November 2002. The November 2002 monitoring was performed after the gas control system was installed and active gas extraction was initiated from the extraction wells within the UCSF compound, as part of the landfill gas TCRA.

Subsurface Soil-Gas Survey

Data from the subsurface soil-gas survey were evaluated to assess the nature and extent of methane and other landfill gas components (NMOCs) in the vadose zone at the Parcel E-2 Landfill. Data were evaluated to identify subsurface locations where methane exceeded 25 percent of the LEL (1.25 percent by volume) and where NMOCs exceeded a screening criterion of 5 ppmv above background concentrations, as measured at a location upwind from the sampling locations. Field screening data and laboratory results corresponded well to one another. The main findings of the data evaluation are summarized below.

- Methane was detected at concentrations exceeding 25 percent of the LEL along the northern side of the landfill, where solid waste extends up to the boundary of the UCSF compound. NMOCs were also detected in this area at concentrations exceeding 5 ppmv above background.
- Methane was detected on the UCSF compound at concentrations exceeding the LEL, indicating that methane had migrated north of the landfill beneath the UCSF compound.
- No methane was detected north of the UCSF compound on Crisp Avenue. Thus, methane had not migrated beyond the UCSF compound beneath non-Navy property north of Crisp Avenue (former Parcel A).
- Methane concentrations were not detected at levels exceeding 25 percent of the LEL along the east, south, and west sides of the landfill. Thus, methane dissipated quickly with distance from the landfill in these directions.
- During field screening, NMOCs were detected at 11 soil-gas locations at concentrations exceeding 5 ppmv above background.
- At one location (SG12) located east of the delineated extent of waste, near IR04MW13A, laboratory analysis detected levels of PCE, TCE, and their degradation products at concentrations above the shallow soil gas screening levels for evaluation of potential vapor intrusions.

Figure 4-3 shows the extent of landfill gas based on the results of the subsurface soil-gas survey. Tables 5 and 7 in Appendix A present field screening and laboratory analytical results of the soil-gas survey, respectively. As discussed in Subsection 3.9, the Navy performed an interim removal action to

remove landfill gas that had migrated beneath the UCSF compound and to control future migration north of the solid waste boundary.

The soil-gas survey identified the nature and approximate lateral extent of landfill gas prior to the landfill gas removal action. The nature and extent delineation was further refined during several rounds of sampling conducted at GMPs installed in 2002, as discussed in the following subsection. The landfill gas barrier wall installed to control landfill gas migration is shown on Figure 4-3, and represents the current northern extent of landfill gas above 25 percent of the LEL.

Gas Monitoring Probe Installation and Monitoring

Data from GMPs installed in 2002 were evaluated to monitor the presence of landfill gas at Parcel E-2, the UCSF compound, and along Crisp Avenue. Monitoring was conducted on a weekly basis using field instruments. Four rounds of sampling were conducted between April and November 2002. Methane concentrations were compared with 27 CCR limits. NMOC concentrations were not compared to any specific criteria; rather, their concentrations were monitored over time during four rounds of sampling conducted in 2002. Table 4-2 lists the detection frequencies and range of results of NMOCs collected from GMPs during this time period. Findings of the data evaluation are summarized below.

During the first three rounds of monitoring from April to July 2002, methane concentrations exceeded the LEL (5 percent by volume) in GMP01A through GMP12; these GMPs are all located along the fence line on the northern edge of the Parcel E-2 Landfill. Methane was not detected in any of the GMPs located along Crisp Avenue (GMP13 through GMP19). Methane was also not detected in GMPs 20 and 21 located on the western edge of the landfill.

The fourth round of monitoring was conducted in November 2002, after the initiation of active gas extraction within the UCSF compound. Methane concentrations decreased to below the LEL in all GMPs along the northern edge of the Parcel E-2 Landfill except at GMP08A, which is located on the northeastern side of the landfill. Results measured during this round also indicated that methane concentrations in the UCSF compound GMPs were all below the LEL for methane. As in previous sampling rounds, methane was not detected in the GMPs on Crisp Avenue (GMP13 through GMP19). This finding further supported the conclusion that methane had not migrated beyond the UCSF compound beneath non-Navy property north of Crisp Avenue (former Parcel A).

Several NMOCs were detected during GMP monitoring, with the highest concentrations detected in GMPs around the perimeter of the Parcel E-2 Landfill and within the UCSF compound. NMOC concentrations were detected in the GMPs located along Crisp Avenue, but at lower concentrations than concentrations detected at the GMPs along the fence line and within the UCSF compound. NMOC concentrations at all GMPs decreased after the landfill gas extraction system became operational in October 2002.

A risk assessment was conducted prior to operation of the gas extraction system, to evaluate potential human health risks resulting from the low levels of NMOCs detected in GMPs along Crisp Avenue. An additional risk assessment was performed on NMOC data from GMPs within the UCSF compound. As discussed in Subsection 4.1.2.2, the assessments concluded that NMOC concentrations do not pose an unacceptable risk to human health.

4.2.3.2. Landfill Gas Removal Action

Based on the results of the landfill gas characterization investigation, the Navy initiated a TCRA to: 1) remove landfill gas and reduce subsurface methane concentrations at the UCSF compound to below the LEL (5 percent by volume in air); and 2) control future landfill gas migration to off-site areas. The TCRA consisted of active landfill gas extraction, post-extraction monitoring, and a response action to address potential methane migration pathways through the landfill gas control system. The results of each of these TCRA components are described in the following paragraphs. Unless otherwise indicated, all information in this subsection was derived from the Landfill Gas TCRA Closeout Report (TtEMI, 2004a) (Appendix F).

Active Landfill Gas Extraction

The goals of the active extraction phase of the TCRA were to: 1) reduce methane to concentrations equal to or less than 0.5 percent by volume in air in all extraction wells (EX-1 through EX-10); and 2) to reduce methane to concentrations equal to or less than 1 percent by volume in air in all GMPs within the UCSF compound (GMP22 through GMP26). Two cycles of active extraction were planned but not needed at all wells to achieve these goals. The active extraction phase of the TCRA was conducted from October 4, 2002 to January 20, 2003, when the TCRA goals for reducing the concentrations of methane were achieved. From January 2003 to present, active landfill gas extraction is conducted as necessary to ensure landfill gas concentrations do not exceed action levels.

Post-Extraction Monitoring

The landfill gas control system consists of an HDPE barrier wall, a gas collection trench sealed (on top) with bentonite, a horizontal perforated gas collection pipe, five gas vents, and a mobile active extraction unit to assist venting when necessary. Construction of the landfill gas control system was completed on October 3, 2002. After active gas extraction was halted on January 20, 2003, methane concentrations were monitored in extraction wells and GMPs, weekly for four weeks, and then monthly for four months. At the end of each monitoring period (weekly and monthly), gas samples were collected in Summa™ canisters from GMP22 through GMP26 (located within the UCSF compound) and analyzed at an off-site stationary laboratory to confirm the field monitoring results. GMP analytical results are shown in Appendix J.

During the first 2 weeks of monitoring, the landfill gas control system was operated passively. However, methane levels at GMP01A began to rise within 1 week after extraction was halted, with corresponding

increases in adjacent GMPs to the east (GMP02A) and west (GMP12). To address these methane increases, the landfill gas control system was switched from passive to active mode on February 5, 2003, by extracting gas through passive vent 1 (PV-01) at a low-flow rate. Laboratory analysis of GMPs (Appendix J) demonstrates that gas migration is effectively controlled through operation of the landfill gas control system. The activities of the TCRA have successfully controlled the migration of landfill gas beneath non-Navy property.

Methane Migration Response Action

During active gas extraction and subsequent monitoring, increases in methane concentrations were observed that were consistent with a physical problem with the landfill gas control system that allowed methane to migrate beyond the barrier wall. A detailed evaluation was conducted to determine the cause of the methane increases and to identify appropriate mitigative measures; the evaluation is documented in Appendix K to the Landfill Gas Removal Action Closeout Report (TtEMI, 2004a) (Appendix F) and briefly summarized below.

Data collected from temporary gas probes installed along the gas collection trench indicated that methane was migrating in two locations either through a tear in the barrier or over the barrier through the bentonite seal.

Response actions taken to address methane migration were:

- A grout curtain was installed in the gas collection trench on the north (UCSF) side of the HDPE barrier wall to control the migration of methane gas through the barrier wall. The grout curtain was installed in June 2003 using pressure grouting to fill voids in the gravel and soil along the northern side of the barrier wall and to seal any tears or separated seams. Figure 1-3 shows the grout curtain location.
- The bentonite cover was rehydrated to control the migration of methane gas above the barrier wall. Trenches were excavated to the top of the barrier wall in areas where temporary gas probe monitoring results indicated methane migration was occurring. Inspection of these trenches indicated several areas of inadequate hydration of the bentonite cover, with bentonite pellets clearly visible. The entire length of the bentonite cover was rehydrated by injecting water into the cover using a water jet constructed of perforated PVC pipe.
- A fifth passive vent (PV-05) was added to increase the venting capability of the trench. The vent was created by converting one of the risers connected to the main pipe of the barrier trench to a vent and connecting it to a treatment unit. The new passive vent was connected between PV-01 and PV-02, in the area of the observed methane increases. Figure 3-7 shows all the passive vent locations.

Based on subsequent monitoring, these response actions have reduced gas migration beneath the UCSF compound. Ongoing landfill gas monitoring and control system operation, in accordance with the Interim Landfill Gas Monitoring and Control Plan (TtEMI and ITSI, 2004a), is performed to control gas migration beneath the UCSF compound.

4.2.3.3. Ongoing Landfill Gas Activities

The ongoing landfill gas monitoring and control system operation is based on the Interim Landfill Gas Monitoring and Control Plan (TtEMI and ITSI, 2004a). Monthly monitoring is conducted to verify that hazardous levels of landfill gas are not migrating beyond the fence line of the landfill and onto the UCSF compound. The monitoring locations include 32 GMPs and 5 passive vents, 4 groundwater wells on the landfill cap, and outdoor air and subterranean structure locations both on Parcel E-2 and within the UCSF compound (Figure 3-7). As discussed in Subsection 3.9, monthly monitoring is being conducted at GMPs and along the gas control system, which is operated passively and actively on an intermittent basis (40 hours per week). In addition, the gas control system is inspected and maintained on a monthly basis. The monthly gas monitoring reports present results of the landfill gas monitoring, the status of the gas extraction system (active operation and/or passive operation), maintenance observations on the gas control system, and meteorological data. (ITSI, 2004a through 2004e and 2005a through 2005j)

4.2.4. Analytes Detected in Soils

Soil data within the Landfill Area is presented in a similar manner as for the Panhandle Area and East Adjacent Area for consistency purposes. However, the purpose of the soil data evaluation in the Landfill Area is quite different than the soil data evaluation in the adjacent areas. Because the soil within the Landfill Area is mixed with solid waste, the nature of the solid waste (Subsection 4.2.1) combined with the chemical characteristics of the soil fill determine the nature of the material contained within the Landfill Area. These characterization data are used to determine whether the containment presumption, as outlined in EPA guidance (EPA, 1993a; EPA, 1993b; EPA, 1996) is appropriate for the Parcel E-2 Landfill. Specifically, the characterization data will be used to assess the approximate lateral and vertical extent (relative to the landfill waste volume) of hazardous substances above the RIEC. This assessment will provide a basis for determining whether lesser quantities of hazardous wastes are present in the landfill as compared with municipal wastes.

In addition, the characterization data will be used to identify potential hot spots within the Landfill Area. Hot spots consist of highly toxic and/or highly mobile material and may present a principal threat to human health or the environment (EPA, 1991). For the purpose of this report, soil hot spots are defined as locations containing chemical concentrations 100 times greater than the corresponding RIEC. EPA recommends that hot spots in municipal landfills be identified and evaluated in order to decide if more extensive characterization and development of remedial alternatives is appropriate (EPA, 1991). Hot spots are identified in the subsections below. The evaluation decision whether or not these hot spots require more extensive characterization and development of remedial alternatives is summarized in Section 8.

As discussed in Subsection 4.1.3, comprehensive data summary tables for the Landfill Area are presented in Appendix J by chemical category (i.e., metals, pesticides, PCBs, SVOCs, VOCs, and petroleum hydrocarbons), and depth interval (0 to 2 feet, 2 to 10 feet, and greater than 10 feet). In addition, each

table presents a series of summary statistics of the data for each compound, such as the number of samples collected; the number of results that exceed the detection limit; minimum and maximum concentrations detected; and median, mean, and standard deviation of the detected results for each compound. Each table also lists all potential screening criteria and quantifies the number of results that exceed each criterion.

The following subsections describe the chemical characteristics of the soil fill within the Landfill Area.

4.2.4.1. Landfill Area Surface Soils (0 to 2 feet)

Table 4-3 presents a statistical summary for all of the analyses performed within the depth range of 0 to 2 feet below the surface of the landfill cap. Table 4-4 lists the analytes that were detected within this depth range at concentrations exceeding the RIEC.

Metals

A total of 24 samples were analyzed for one or more metals. As shown in Table 4-3, all analytes, except for chromium VI and cadmium, were detected at least once at concentrations above the LRL. Six analytes (barium, beryllium, copper, lead, manganese, and zinc) were detected at concentrations above HPALs. As shown in Table 4-4, none of the analytes were detected at concentrations above the selected RIEC. None of the LRLs for the analytes were above the selected RIEC.

Pesticides and PCBs

A total of 21 samples were analyzed for one or more pesticides and PCBs. As shown in Table 4-3, six analytes (4,4'-dichlorodiphenyldichloroethane [DDD], 4,4'-DDT, alpha-chlordane, gamma-chlordane, Aroclor-1242, and Aroclor-1260) were detected at least once above the LRL. No analytes were detected above the regulatory criteria, and therefore were not above the selected RIEC.

Semi-Volatile Organic Compounds

A total of 21 samples were analyzed for SVOCs. As shown in Table 4-3, 21 analytes were detected at least once at concentrations above the LRL. Nine analytes [1,4-dichlorobenzene, 3,3'-dichlorobenzidine, benzo(a)pyrene, benzo(k)fluoranthene, bis(2-chloroethyl)ether, hexachlorobenzene, n-nitrosodimethylamine, n-nitroso-di-n-propylamine, and pentachlorophenol] had samples that have LRLs above the screening criteria due to dilutions of samples and the limitations of analytical methods at the time. However, five analytes [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene, and naphthalene] were detected at concentrations above the selected RIEC (Table 4-4).

Benzo(a)anthracene was detected in 11 of 21 samples analyzed. This analyte was detected in two samples (IR01MW16A, 1.25 feet bgs, 1.5 mg/kg; IR01B275, 1.25 feet bgs, 2.3 mg/kg) at concentrations above the selected RIEC (1.3 mg/kg). As shown in Figure 4-4, IR01MW16A and IR01B275 are within the area of the landfill and are surrounded by nearby samples with concentrations that are below the RIEC. None of the LRLs for benzo(a)anthracene exceeded the selected RIEC. Based on the available

characterization data, the extent of benzo(a)anthracene in soil within this depth range is limited when compared to the overall Landfill Area and is not indicative of a hot spot.

Benzo(a)pyrene was detected in 11 of 21 samples analyzed. This analyte was detected in nine samples at concentrations above the selected RIEC (0.33 mg/kg). As shown in Figure 4-5, benzo(a)pyrene are within the area of the landfill and are surrounded be concentrations that are below the RIEC. In addition, LRLs for benzo(a)pyrene exceeded the selected RIEC in eight samples. Based on the available characterization data, benzo(a)pyrene within this depth range is present, or may be present (at locations with elevated LRLs), at concentrations above the RIEC throughout a large portion of the Landfill Area; however, the maximum detected concentration (3.1 mg/kg) is not indicative of a hot spot.

Benzo(b)fluoranthene was detected in 12 of 21 samples analyzed. This analyte was detected in two samples (IR01MW16A, 1.25 feet bgs, 1.5 mg/kg; IR01B275, 1.25 feet bgs, 2.3 mg/kg) at concentrations above the selected RIEC (1.3 mg/kg). As shown in Figure 4-6, IR01MW16A and IR01B275 are within the area of the landfill and are surrounded by nearby samples with concentrations that are below the RIEC. None of the LRLs for benzo(b)fluoranthene exceeded the selected RIEC. Based on the available characterization data, the extent of benzo(b)fluoranthene in soil within this depth range is limited when compared to the overall Landfill Area and is not indicative of a hot spot.

Indeno(1,2,3-cd)pyrene was detected in 10 of 21 samples analyzed. This analyte was detected in two samples (IR01MW16A, 1.25 feet bgs, 2.9 mg/kg; IR01B275, 1.25 feet bgs, 3.1 mg/kg) at concentrations above the selected RIEC (1.3 mg/kg). As shown in Figure 4-7, IR01MW16A and IR01B275 are within the area of the landfill and are surrounded by nearby samples with concentrations that are below the RIEC. None of the LRLs for indeno(1,2,3-cd)pyrene exceeded the selected RIEC. Based on the available characterization data, the extent of indeno(1,2,3-cd)pyrene in soil within this depth range is limited when compared to the overall Landfill Area and is not indicative of a hot spot.

Naphthalene was detected in 8 of 21 samples analyzed. This analyte was detected in one sample (IR01B011, 1.25 feet bgs, 2.1 mg/kg) at a concentration above the selected RIEC (1.5 mg/kg). As shown in Figure 4-8, the sample result exceeding the RIEC is within the area of the landfill and is surrounded by nearby samples with concentrations that are below the RIEC. None of the LRLs for naphthalene exceeded the selected RIEC. Based on the available characterization data, the extent of naphthalene in soil within this depth range is limited when compared to the overall Landfill Area and is not indicative of a hot spot.

Volatile Organic Compounds

A total 20 samples were analyzed for VOCs. As shown in Table 4-3, four analytes (1,1,1-trichloroethane, carbon disulfide, toluene, and vinyl acetate) were detected at least once at concentrations above the LRL. As shown in Table 4-4, none of these analytes was detected at concentrations above the selected RIEC. None of the LRLs for the analytes were above the selected RIEC.

Petroleum Hydrocarbons

Total TPH is the sum of the concentrations of TPH as gasoline (TPH-g), TPH as diesel (TPH-d), TPH as motor oil (TPH-mo), TPH as unknown purgeables, and TPH as unknown extractables (TtEMI, 2002f). None of the 21 samples contained total TPH above the source screening criteria (3,500 mg/kg). As shown on Table 4-4, one sample (IR01B011 at 5,000 mg/kg) had concentrations of total oil and grease (TOG) above the source screening criteria.

4.2.4.2. Landfill Area Subsurface Soils (2 to 10 feet)

Table 4-5 presents a statistical summary for all of the analyses performed within this depth range. Table 4-6 lists the analytes that were detected within this depth range at concentrations exceeding the RIEC.

Metals

A total of 91 samples were analyzed for one or more metals. As shown in Table 4-5, all analytes were detected at least once at concentrations above the LRL. Sixteen analytes (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, mercury, molybdenum, nickel, silver, vanadium, and zinc) were detected at concentrations above HPALs. Eight analytes (antimony, arsenic, cadmium, chromium, copper, iron, lead, and vanadium) were detected at concentrations above the selected RIEC (Table 4-6).

Antimony was detected in 44 out of 64 samples analyzed. This analyte was detected in 16 samples at concentrations above the HPAL (9.1 mg/kg) and three samples (IR01B021, 8.75 feet bgs, 675 mg/kg; IR01B021A, 5.75 feet bgs, 487 mg/kg; IR01B018G, 8.75 feet bgs, 1,930 mg/kg) at concentrations above the RIEC screening criteria (380 mg/kg). As shown in Figure 4-9, all samples that exceeded the RIEC are within the area of the landfill and are surrounded by nearby samples with concentrations that are below the RIEC. None of the LRLs for antimony exceeded the selected RIEC. Based on the available characterization data, the extent of antimony in soil within this depth range is limited when compared to the overall Landfill Area and is not indicative of a hot spot.

Arsenic was detected in 73 out of 77 samples analyzed. This analyte was detected in five samples at concentrations above the HPAL (11.1 mg/kg) which is the selected RIEC. As shown in Figure 4-10, all five samples that exceeded the RIEC are within the area of the landfill and are surrounded by nearby samples with concentrations that are below the RIEC. None of the LRLs for arsenic exceeded the selected RIEC. Based on the available characterization data, the extent of arsenic in soil within this depth range is limited when compared to the overall Landfill Area and is not indicative of a hot spot.

Cadmium was detected in 43 out of 77 samples analyzed. This analyte was detected in nine samples at concentrations above the HPAL (3.14 mg/kg) and seven samples contained concentrations above the selected RIEC (7.4 mg/kg). As shown in Figure 4-11, all samples that exceeded the RIEC are within the area of the landfill and are surrounded by nearby samples with concentrations that are below the RIEC. None of the LRLs for cadmium exceeded the selected RIEC. Based on the available characterization

data, the extent of cadmium in soil within this depth range is limited when compared to the overall Landfill Area and is not indicative of a hot spot.

Chromium was detected in all of the 77 samples analyzed. This analyte was detected in 14 samples at concentrations above the location-specific HPALs and 8 samples contained concentrations of chromium above the selected RIEC which is based on the HPAL and the 2004 industrial PRG (450 mg/kg), whichever is the higher value. As shown in Figure 4-12, all samples that exceeded the RIEC are within the area of the landfill and are surrounded by nearby samples with concentrations that are below the RIEC. None of the LRLs for chromium exceeded the selected RIEC. Based on the available characterization data, the extent of chromium in soil within this depth range is limited when compared to the overall Landfill Area and is not indicative of a hot spot.

Copper was detected in all 77 samples. This analyte was detected in 29 of the samples at concentrations above the HPAL (124.3 mg/kg). Three samples (IR01B018G, 8.75 feet bgs, 167,000 mg/kg; IR01B021, 8.75 feet bgs, 42,200 mg/kg; IR01B021A, 5.75 feet bgs, 175,000 mg/kg) contained concentrations above the selected RIEC (38,000 mg/kg). As shown in Figure 4-13, all three samples are within the area of the landfill and are surrounded by nearby samples with concentrations that are below the RIEC. None o f the LRLs for copper exceeded the selected RIEC. Based on the available characterization data, the extent of copper in soil within this depth range is limited when compared to the overall Landfill Area and is not indicative of a hot spot.

Iron was detected in all 77 samples. This analyte was detected in four samples at concentrations above the selected RIEC (100,000 mg/kg). As shown in Figure 4-14, all four samples are within the area of the landfill and are surrounded by nearby samples with concentrations that are below the RIEC. None of the LRLs for iron exceeded the selected RIEC. Based on the available characterization data, the extent of iron in soil within this depth range is limited when compared to the overall Landfill Area and is not indicative of a hot spot.

Lead was detected in all 77 samples analyzed. This analyte was detected in 73 of the samples at concentrations above the HPAL (8.99 mg/kg). Six of the samples (five locations) contained concentrations above the selected RIEC (800 mg/kg). As shown in Figure 4-15, all samples that exceeded the RIEC are within the area of the landfill and are surrounded by nearby samples with concentrations that are below the RIEC. None of the LRLs for lead exceeded the selected RIEC. Based on the available characterization data, the extent of lead in soil within this depth range is limited when compared to the overall Landfill Area and is not indicative of a hot spot.

Vanadium was detected in all 77 samples analyzed. This analyte was detected in one sample (IR01B021A, 5.75 feet bgs, 24,900 mg/kg) at a concentration above the HPAL (117.2 mg/kg) and the selected RIEC (1000 mg/kg). As shown in Figure 4-16, the sample is within the area of the landfill and is surrounded by nearby samples with concentrations that are below the RIEC. None of the LRLs for vanadium exceeded the selected RIEC. Based on the available characterization data, the extent of

vanadium in soil within this depth range is limited when compared to the overall Landfill Area and is not indicative of a hot spot.

Pesticides and PCBs

A total of 75 samples were analyzed for pesticides and PCBs. As shown in Table 4-5, ten analytes were detected at least once at concentrations above the LRL. As shown in Table 4-6, five analytes (Aroclor-1016, Aroclor-1242, Aroclor-1254, and Aroclor-1260, and total PCBs) were detected at concentrations above the selected RIEC. Because the value for the RIEC is for total PCBs only, the total value will be described in detail. One analyte (Aroclor-1260) had LRLs that were above the selected RIEC due to the limitations of analytical methods at the time. Most of the pesticide and PCB analytes have LRLs above the screening criteria for one or more samples due to dilutions of samples and the limitations of analytical methods at the time.

Total PCBs were detected in 38 of 75 samples analyzed. Eighteen samples (14 locations) contained total PCBs at concentrations above the selected RIEC (0.74 mg/kg). As shown in Figure 4-17, the samples are within the area of the landfill. None of the LRLs for individual PCB compounds exceeded the selected RIEC. Based on the available characterization data, total PCBs within this depth range are present, or may be present (at locations with elevated LRLs), at concentrations above the RIEC throughout a large portion of the Landfill Area; however, the maximum detected concentration (740 mg/kg) is indicative of a hot spot. However, concentrations detected in two samples (IR01B001, 9.41 feet bgs, 284 mg/kg and IR01MW16A, 8.75 feet bgs, 740 mg/kg) can be considered as hot spot contamination within the landfill when compared to the concentrations that have been detected in the surrounding depths and area.

Semi-Volatile Organic Compounds

A total of 78 samples were analyzed for SVOCs. As shown in Table 4-5, 28 analytes were detected at least once at concentrations above the LRL. Nine analytes [1,4-dichlorobenzene, 3,3'-dichlorobenzidine, benzo(a)pyrene, benzo(k)fluoranthene, bis(2-chloroethyl)ether, hexachlorobenzene, n-nitrosodimethylamine, n-nitroso-di-n-propylamine, and pentachlorophenol) with LRLs above the screening criteria for some samples due to dilutions of samples and the limitations of analytical methods at the time. However, 11 analytes [1,4-dichlorobenzene, 2-methylnaphthalene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and naphthalene] were detected at concentrations above the selected RIEC (Table 4-6).

1,4-Dichlorobenzene was detected in 9 of 58 samples analyzed. This analyte was detected in all nine samples (seven locations) at concentrations above the selected RIEC (0.13 mg/kg). As shown in Figure 4-18, the samples are within the area of the landfill and are surrounded by nearby samples with concentrations that are below the RIEC. In addition, all of the LRLs for 1,4-dichlorobenzene exceeded the selected RIEC. Based on the available characterization data, 1,4-dichlorobenzene within this depth range is present, or may be present (at locations with elevated LRLs), at concentrations above the RIEC

throughout a large portion of the Landfill Area; however, the maximum detected concentration (59 mg/kg) is not indicative of a hot spot.

2-Methylnaphthalene was detected in 25 of 57 samples analyzed. This analyte was detected in one sample (IR01B021A, 5.75 feet bgs, 650 mg/kg) at a concentration above the selected RIEC (550 mg/kg). As shown in Figure 4-19, the sample result is surrounded by nearby samples with concentrations that are below the RIEC. None of the LRLs for 2-methylnaphthalene exceeded the selected RIEC. Based on the available characterization data, the extent of 2-methylnaphthalene in soil within this depth range is limited when compared to the overall Landfill Area and is not indicative of a hot spot.

Anthracene was detected in 14 of 77 samples analyzed. This analyte was detected in one sample (IR01B021A, 5.75 feet bgs, 210 mg/kg) at a concentration above the selected RIEC (31 mg/kg). As shown in Figure 4-20, the sample results exceeding the RIEC are surrounded by nearby samples within 375 feet with concentrations that are below the RIEC. One of the LRLs for anthracene exceeded the selected RIEC. Based on the available characterization data, anthracene within this depth range is present, or may be present (at the location with the elevated LRL), at concentrations above the RIEC throughout a large portion of the Landfill Area; however, the maximum detected concentration (210 mg/kg) is not indicative of a hot spot.

Benzo(a)anthracene was detected in 20 of 77 samples analyzed. This analyte was detected in four samples at concentrations above the selected RIEC (1.3 mg/kg). As shown in Figure 4-21, the sample results exceeding the RIEC are surrounded by nearby samples within 325 feet with concentrations that are below the RIEC. In addition, 30 samples had LRLs for benzo(a)anthracene exceeding the selected RIEC. Based on the available characterization data, benzo(a)anthracene within this depth range is present, or may be present (at locations with elevated LRLs), at concentrations above the RIEC throughout a large portion of the Landfill Area; however, the maximum detected concentration (80 mg/kg) is not indicative of a hot spot.

Benzo(a)pyrene was detected in 20 of 77 samples analyzed. This analyte was detected in six samples at concentrations above the selected RIEC (0.33 mg/kg). As shown in Figure 4-22, the sample results exceeding the RIEC are surrounded by nearby samples within 325 feet with concentrations that are below the RIEC. In addition, all the LRLs for benzo(a)pyrene exceeded the selected RIEC. Based on the available characterization data, benzo(a)pyrene within this depth range is present, or may be present (at locations with elevated LRLs), at concentrations above the RIEC throughout a large portion of the Landfill Area; however, the maximum detected concentration (16 mg/kg) is not indicative of a hot spot.

Benzo(b)fluoranthene was detected in 25 of 77 samples analyzed. This analyte was detected in four samples at concentrations above the selected RIEC (1.3 mg/kg). As shown in Figure 4-23, the sample result exceeding the RIEC is surrounded by nearby samples within 325 feet with concentrations that are below the RIEC. In addition, 30 of the LRLs for benzo(b)fluoranthene exceeded the selected RIEC. Based on the available characterization data, benzo(a)fluoranthene within this depth range is present, or

may be present (at locations with elevated LRLs), at concentrations above the RIEC throughout a large portion of the Landfill Area; however, the maximum detected concentration (43 mg/kg) is not indicative of a hot spot.

Benzo(k)fluoranthene was detected in 17 of 77 samples analyzed. This analyte was detected in four samples at concentrations above the selected RIEC (1.3 mg/kg). As shown in Figure 4-24, the sample result exceeding the RIEC is surrounded by nearby samples within 325 feet with concentrations that are below the RIEC. In addition, 30 of the LRLs for benzo(k)fluoranthene exceeded the selected RIEC. Based on the available characterization data, benzo(k)fluoranthene within this depth range is present, or may be present (at locations with elevated LRLs), at concentrations above the RIEC throughout a large portion of the Landfill Area; however, the maximum detected concentration (13 mg/kg) is not indicative of a hot spot.

Chrysene was detected in 29 of 77 samples analyzed. This analyte was detected in two samples (IR01B021A, 5.75 feet bgs, 77 mg/kg; IR01B275, 2.75 feet bgs, 14 mg/kg) at concentrations above the selected RIEC (13 mg/kg). As shown in Figure 4-25, the sample result exceeding the RIEC is surrounded by nearby samples within 290 feet with concentrations that are below the RIEC. One of the LRLs for chrysene exceeded the selected RIEC. Based on the available characterization data, chrysene within this depth range is present, or may be present (at locations with elevated LRLs), at concentrations above the RIEC throughout a large portion of the Landfill Area; however, the maximum detected concentration (77 mg/kg) is not indicative of a hot spot.

Dibenz(a,h)anthracene was detected in 3 of 80 samples analyzed. This analyte was detected in one sample (IR01B024, 8.75 feet bgs, 1.5 mg/kg) at a concentration above the selected RIEC (0.33 mg/kg). As shown in Figure 4-26, the sample result exceeding the RIEC is surrounded by nearby samples within 325 feet with concentrations that are below the RIEC. Several of the LRLs for dibenz(a,h)anthracene exceeded the selected RIEC. Based on the available characterization data, dibenz(a,h)anthracene within this depth range is present, or may be present (at locations with elevated LRLs), at concentrations above the RIEC throughout a large portion of the Landfill Area; however, the maximum detected concentration (1.5 mg/kg) is not indicative of a hot spot.

Indeno(1,2,3-cd)pyrene was detected in 15 of 77 samples analyzed. This analyte was detected in three samples (IR01B024, 8.75 feet bgs, 4.9 mg/kg; IR01B021A, 5.75 feet bgs, 5.6 mg/kg; WE17E, 5 feet bgs, 4.5 mg/kg) at concentrations above the selected RIEC (1.3 mg/kg). As shown in Figure 4-27, the sample result exceeding the RIEC is surrounded by nearby samples within 300 feet with concentrations that are below the RIEC. In addition, 30 of the LRLs for indeno(1,2,3-cd)pyrene exceeded the selected RIEC. Based on the available characterization data, indeno(1,2,3-cd)pyrene within this depth range is present, or may be present (at locations with elevated LRLs), at concentrations above the RIEC throughout a large portion of the Landfill Area; however, the maximum detected concentration (5.6 mg/kg) is not indicative of a hot spot.

Naphthalene was detected in 26 of 77 samples above detection limits. This analyte was detected in one sample (IR01B021A, 5.75 feet bgs, 1,400 mg/kg) at a concentration above the selected RIEC (1.5 mg/kg). As shown in Figure 4-28, the sample result exceeding the RIEC is surrounded by nearby within 300 feet with concentrations that are below the RIEC. In addition, 30 of the LRLs for naphthalene exceeded the selected RIEC. Based on the available characterization data, napthalene within this depth range is present, or may be present (at locations with elevated LRLs), at concentrations above the RIEC throughout a large portion of the Landfill Area; however, the maximum detected concentration (1,400 mg/kg) is not indicative of a hot spot.

Volatile Organic Compounds

A total of 56 samples were analyzed for VOCs. As shown in Table 4-5, 11 analytes (1,1,2-trichloroethane, 2-butanone, 4-methyl-2-pentanone, acetone, benzene, carbon disulfide, chlorobenzene, ethylbenzene, styrene, trans-1,2-dichloroethene, total xylenes) were detected in at least one sample. Two analytes (1,1,2-trichloroethane and benzene) had with LRLs above the RIEC due to dilutions of samples. None of the analytes were above the RIEC (Table 4-6), and therefore are not shown on a figure.

Petroleum Hydrocarbons

Total TPH is the sum of the concentrations of TPH-g, TPH-d, TPH-mo, TPH as unknown purgeables, and TPH as unknown extractables (TtEMI, 2002f). Total TPH was calculated for 65 samples (Table 4-5). Forty-seven samples contained detectable concentrations of TPH. As described in Section 4.1.3.2, the total value will be mapped and the other analytes will be used as additional information. As shown in Figure 4-29, total TPH was detected above the selected RIEC (3,500 mg/kg) in five samples (Table 4-6). Thirteen samples contained concentrations of TOG above the selected RIEC (3,500 mg/kg), seven samples contained concentrations of diesel-range TPH above the selected RIEC (750 mg/kg). One sample contained a concentration of motor oil organics above the selected RIEC (4,600 mg/kg). Based on the available characterization data, the extent of total TPH in soil within this depth range is limited when compared to the overall Landfill Area and is not indicative of a hot spot.

4.2.4.3. Landfill Area Deep Soils (greater than 10 feet)

Table 4-7 shows all the analytes that had a detection in samples collected at depths greater than 10 feet and Table 4-8 list the analytes that exceeded the screening criteria at a depth greater than 10 feet.

Metals

A total of 92 samples were analyzed for one or more metals. As shown in Table 4-7, all analytes were detected in at least one sample. Sixteen analytes (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, mercury, molybdenum, nickel, silver, vanadium, and zinc) were detected at concentrations above HPALs. As shown in Table 4-8, five analytes (arsenic, cadmium, chromium, iron, and lead) were detected at concentrations above the RIEC.

Arsenic was detected in 80 of 92 samples analyzed. This analyte was detected in 21 samples (15 locations) at concentrations above the HPAL (11.1 mg/kg), which is the selected RIEC. As shown in Figure 4-30, all samples that exceeded the RIEC are within the area of the landfill and are surrounded by nearby samples with concentrations that are below the RIEC. None of the LRLs for arsenic exceeded the selected RIEC. Based on the available characterization data, the extent of arsenic in soil within this depth range is limited when compared to the overall Landfill Area and is not indicative of a hot spot.

Cadmium was detected in 47 of 92 samples analyzed. This analyte was detected in 17 samples at concentrations above the HPAL (3.14 mg/kg). Eight samples (five locations) contained concentrations of cadmium above the selected RIEC (7.4 mg/kg). As shown in Figure 4-31, all samples that exceeded the RIEC are within the area of the landfill and are surrounded by nearby samples with concentrations that are below the RIEC. None of the LRLs for cadmium exceeded the selected RIEC. Based on the available characterization data, the extent of cadmium in soil within this depth range is limited when compared to the overall Landfill Area and is not indicative of a hot spot.

Chromium was detected in 91 of 92 samples analyzed. This analyte was detected in twenty-three samples at concentrations above the location-specific HPALs. Seventeen samples (12 locations) contained concentrations of chromium above the selected RIEC which is based on the HPAL and the 2004 industrial PRG (450 mg/kg), whichever is the higher value. As shown in Figure 4-32, the sample results exceeding the RIEC are surrounded by samples with concentrations that are below the RIEC except for near the northern-most border. None of the LRLs for chromium exceeded the selected RIEC. Based on the available characterization data, the extent of chromium in soil within this depth range is limited when compared to the overall Landfill Area and is not indicative of a hot spot.

Iron was detected in all 92 samples analyzed. This analyte was detected in two samples (IR01B006, 11.27 feet bgs, 134,000 mg/kg; IR01MW26B, 21.25 feet bgs, 163,000 mg/kg) at concentrations above the selected RIEC (100,000 mg/kg). As shown in Figure 4-33, the sample results exceeding the RIEC is surrounded by nearby samples, with concentrations that are below the RIEC except for IR01B006 which is not bounded on the northern border. None of the LRLs for iron exceeded the selected RIEC. Based on the available characterization data, the extent of iron in soil within this depth range is limited when compared to the overall Landfill Area and is not indicative of a hot spot.

Lead was detected in 91 samples of 92 samples analyzed. This analyte was detected in 73 of the samples at concentrations above the HPAL (8.99 mg/kg). Seven samples (five locations) contained concentrations of lead above the selected RIEC (800 mg/kg). As shown in Figure 4-34, the sample results exceeding the RIEC are surrounded by nearby samples, with concentrations that are below the RIEC except for IR01B006 which is not bounded on the northern border. None of the LRLs for lead exceeded the selected RIEC. Based on the available characterization data, the extent of lead in soil within this depth range is limited when compared to the overall Landfill Area and is not indicative of a hot spot.

Pesticides and PCBs

A total of 87 samples were analyzed for pesticides and PCBs. As shown in Table 4-7, seven analytes (4,4-DDD, 4,4-dichlorodiphenyldichloroethene [DDE], Aroclor-1016, Aroclor-1242, Aroclor-1248, Aroclor-1254, Aroclor-1260) were detected in at least one sample. Because the value for the RIEC is for total PCBs only, the total value will be described in detail. Most analytes had with LRLs above the selected RIEC in some samples due to dilutions of samples and the limitations of analytical methods at the time. As shown in Table 4-8, only total PCBs is above the RIEC.

Total PCBs were detected in 43 of 87 samples analyzed. Twenty-four samples (17 locations) contained concentrations of total PCBs above the RIEC (0.74 mg/kg). As shown in Figure 4-35, sample results exceeding the RIEC are surrounded to the south by samples with concentrations below the RIEC. None of the LRLs for individual PCB compounds exceeded the selected RIEC. Based on the available characterization data, the extent of total PCBs in soil within this depth range is limited when compared to the overall Landfill Area; however, the magnitude of several PCB concentrations are indicative of potential hot spots. Concentrations detected in four samples (IR01MW17B, 11.25 feet bgs, 2,500 mg/kg; IR01B019, 16.25 feet bgs, 32,000 mg/kg; IR01MW16A, 11.25 feet bgs, 250 mg/kg; and IR01B012, 16.97 feet bgs, 104 mg/kg) can be considered as hot spot contamination within the landfill when compared to the concentrations that have been detected in the surrounding depths and area.

Semi-Volatile Organic Compounds

A total of 92 samples were analyzed for SVOCs. As shown in Table 4-7, 26 analytes were detected at least once at concentrations above the LRL. Eight analytes [1,4-dichlorobenzene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, naphthalene, and n-nitroso-di-n-propylamine] were detected at concentrations above the selected RIEC (Table 4-8). Several analytes had with LRLs above the screening criteria for some samples due to dilutions of samples and the limitations of analytical methods at the time.

1,4-Dichlorobenzene was detected in 10 of 72 samples analyzed. This analyte was detected in nine samples (six locations) at concentrations above the selected RIEC (0.13 mg/kg). As shown in Figure 4-36, the sample results exceeding the RIEC are surrounded by samples with concentrations that are below the RIEC. In addition, all of the LRLs for 1,4-dichlorobenzene exceeded the selected RIEC. Based on the available characterization data, 1,4-dichlorobenzene within this depth range is present, or may be present (at locations with elevated LRLs), at concentrations above the RIEC throughout a large portion of the Landfill Area; however, the maximum detected concentration (6.5 mg/kg) is not indicative of a hot spot.

Benzo(a)anthracene was detected in 12 of 92 samples analyzed. This sample was detected in three samples (IR01B011, 11.25 feet bgs, 3.8 mg/kg; IR01B024, 26.25 feet bgs, 2 mg/kg; WE17B, 18 feet bgs, 1.7 mg/kg) at concentrations above the selected RIEC (1.3 mg/kg). As shown in Figure 4-37, the sample results exceeding the RIEC are surrounded by samples with concentrations that are below the RIEC. In

addition, many of the LRLs for benzo(a)anthracene exceeded the selected RIEC. Based on the available characterization data, benzo(a)anthracene within this depth range is present, or may be present (at locations with elevated LRLs), at concentrations above the RIEC throughout a large portion of the Landfill Area; however, the maximum detected concentration (7.6 mg/kg) is not indicative of a hot spot.

Benzo(a)pyrene was detected in 7 of 92 samples analyzed. This analyte was detected in four samples at concentrations above the selected RIEC (0.33 mg/kg). As shown in Figure 4-38, the sample results exceeding the RIEC are surrounded by samples with concentrations that are below the RIEC. However, IR01MW2B and WE05 are not bounded on the north side due to the proximity of the parcel border. In addition, most of the LRLs for benzo(a)pyrene exceeded the selected RIEC. Based on the available characterization data, benzo(a)pyrene within this depth range is present, or may be present (at locations with elevated LRLs), at concentrations above the RIEC throughout a large portion of the Landfill Area; however, the maximum detected concentration (0.85 mg/kg) is not indicative of a hot spot.

Benzo(b)fluoranthene was detected in 8 of 92 samples analyzed. This analyte was detected in two samples (IR01B024, 16.25 feet bgs, 1.7 mg/kg; WE17B, 18 feet bgs, 1.8 mg/kg) at concentrations above the selected RIEC (1.3 mg/kg). As shown in Figure 4-39, the sample result exceeding the RIEC (WE17B) is surrounded by nearby samples with concentrations that are below the RIEC. However, IR01B024 is not bounded on the east or south side. In addition, many of the LRLs for benzo(b)fluoranthene exceeded the selected RIEC. Based on the available characterization data, benzo(b)fluoranthene within this depth range is present, or may be present (at locations with elevated LRLs), at concentrations above the RIEC throughout a large portion of the Landfill Area; however, the maximum detected concentration (1.8 mg/kg) is not indicative of a hot spot.

Benzo(k)fluoranthene was detected in 4 of 92 samples analyzed. This analyte was detected in one sample (WE17B, 18 feet bgs, 2.7 mg/kg) at a concentration above the selected RIEC (1.3 mg/kg). As shown in Figure 4-40, the sample result exceeding the RIEC is surrounded by nearby samples (within 50 feet) with concentrations that are below the RIEC. In addition, many of the LRLs for benzo(k)fluoranthene exceeded the selected RIEC. Based on the available characterization data, benzo(k)fluoranthene within this depth range is present, or may be present (at locations with elevated LRLs), at concentrations above the RIEC throughout a large portion of the Landfill Area; however, the maximum detected concentration (1.8 mg/kg) is not indicative of a hot spot.

Indeno(1,2,3-cd)pyrene was detected in 6 of 92 samples analyzed. This analyte was detected in one sample (WE17B, 18 feet bgs, 2 mg/kg) at a concentration above the selected RIEC (1.3 mg/kg). As shown in Figure 4-41, the sample result exceeding the RIEC is surrounded by nearby samples (within 50 feet) with concentrations that are below the RIEC. In addition, many of the LRLs for indeno(1,2,3-cd)pyrene exceeded the selected RIEC. Based on the available characterization data, indeno(1,2,3-cd)pyrene within this depth range is present, or may be present (at locations with elevated LRLs), at concentrations above the RIEC throughout a large portion of the Landfill Area; however, the maximum detected concentration (2 mg/kg) is not indicative of a hot spot.

Naphthalene was detected in 20 of 92 samples analyzed. This analyte was detected in 11 samples at concentrations above the selected RIEC (1.5 mg/kg). As shown in Figure 4-42, the sample results exceeding the RIEC are surrounded by samples with concentrations that are below the RIEC in all directions, except to the north near the UCSF property (near the border of the parcel) and the south near the PCB excavation. In addition, many of the LRLs for naphthalene exceeded the selected RIEC. Based on the available characterization data, naphthalene within this depth range is present, or may be present (at locations with elevated LRLs), at concentrations above the RIEC throughout a large portion of the Landfill Area; however, the maximum detected concentration (31 mg/kg) is not indicative of a hot spot.

n-Nitroso-di-n-propylamine was detected in 1 of 92 samples analyzed (IR01B275, 27.75 feet bgs, 0.43 mg/kg). This analyte was detected at a concentration above the selected RIEC (0.25 mg/kg). As shown in Figure 4-43, the sample result exceeding the RIEC is surrounded by nearby samples with 175 feet with concentrations that are below the RIEC, except for the south side near the PCB excavation. In addition, many of the LRLs for n-nitroso-di-n-propylamine exceeded the selected RIEC. Based on the available characterization data, n-nitroso-di-n-propylamine within this depth range is present, or may be present (at locations with elevated LRLs), at concentrations above the RIEC throughout a large portion of the Landfill Area; however, the maximum detected concentration (0.43 mg/kg) is not indicative of a hot spot.

Volatile Organic Compounds

A total of 74 samples were analyzed for VOCs. As shown in Table 4-7, 20 analytes were detected at least once at concentrations above the LRL. In addition, three analytes (carbon tetrachloride, tetrachloroethene, and total xylenes) were detected at concentrations above the selected RIEC (Table 4-8). Several analytes had with LRLs above the selected RIEC for some samples due to dilutions of samples and the limitations of analytical methods at the time.

Carbon tetrachloride was detected in 1 of the 74 samples analyzed (IR01B024, 16.25 feet bgs, 0.37 mg/kg). This analyte was detected at a concentration above the selected RIEC (0.034 mg/kg). As shown in Figure 4-44, the sample result exceeding the RIEC is surrounded to the north and west by samples with concentrations that are below the RIEC but not to the south or east. In addition, a few of the LRLs for carbon tetrachloride exceeded the selected RIEC. Based on the available characterization data, carbon tetrachloride within this depth range is present, or may be present (at locations with elevated LRLs), at concentrations above the RIEC throughout a large portion of the Landfill Area; however, the maximum detected concentration (0.37 mg/kg) is not indicative of a hot spot.

Tetrachloroethene was detected in 1 of the 74 samples analyzed. This analyte was detected at a concentration (IR01MW18A, 11.25 feet bgs, 0.29 mg/kg) above the selected RIEC (0.24 mg/kg). As shown in Figure 4-45, the sample result exceeding the RIEC is surrounded by nearby samples within 300 feet with concentrations that are below the RIEC. In addition, a few of the LRLs for tetrachloroethene exceeded the selected RIEC. Based on the available characterization data, tetrachloroethene within this depth range is present, or may be present (at locations with elevated LRLs), at concentrations above the

RIEC throughout a large portion of the Landfill Area; however, the maximum detected concentration (0.29 mg/kg) is not indicative of a hot spot.

Xylenes (Total) were detected in 30 of the 74 samples analyzed. This analyte was detected in one sample (IR01B011, 11.25 feet bgs, 520 mg/kg) at a concentration above the selected RIEC (420 mg/kg). As shown in Figure 4-46, the sample result exceeding the RIEC is surrounded by nearby samples within 335 feet with concentrations that are below the RIEC. None of the LRLs for xylenes (total) exceeded the selected RIEC. Based on the available characterization data, xylenes (total) within this depth range is present, or may be present (at locations with elevated LRLs), at concentrations above the RIEC throughout a large portion of the Landfill Area; however, the maximum detected concentration (520 mg/kg) is not indicative of a hot spot.

Petroleum Hydrocarbons

Total TPH is the sum of the concentrations of TPH-g, TPH-d, TPH-mo, TPH as unknown purgeables, and TPH as unknown extractables (TtEMI, 2002f). Total TPH was calculated for 74 analyses (Table 4-7). Forty-five samples were detected at concentrations above the LRLs. As shown in Figure 4-47, total TPH was detected at concentrations above the RIEC (3,500 mg/kg) in five samples (four locations) (Table 4-8). Eighteen samples had concentrations of TOG above the RIEC (3,500 mg/kg). Diesel-range TPH was detected in 12 samples at concentrations above the RIEC (750 mg/kg), gasoline-range TPH was detected in one sample at a concentration above the RIEC (750 mg/kg), and TPH as unknown purgeables was detected in one sample at a concentration above the RIEC (750 mg/kg). The diesel-range TPH, the gasoline-range TPH, and the TPH as unknown purgeables RIEC are based on the ESL 2005 direct exposure criteria. Based on the available characterization data, xylenes (total) within this depth range are present, or may be present (at locations with elevated LRLs), at concentrations above the RIEC throughout a large portion of the Landfill Area; however, the maximum detected concentration (9,740 mg/kg) is not indicative of a hot spot.

4.3. PANHANDLE AREA

The nature and extent of contamination at the Panhandle area was evaluated based on information from the previous investigations and TCRAs described in Section 3. Based on data from the 76 soil borings and five test pits extended within the Panhandle Area, fill material consists primarily of soil and rock fill, with lesser quantities of inert construction debris and isolated locations of putrescible construction debris (e.g., wood). Some of the industrial waste types reportedly disposed of in the Landfill Area may also be present within the Panhandle Area. The following information indicates the industrial wastes that may have been disposed of in or around the Panhandle Area:

- The HRA indicated that areas within IR-01/21, including areas outside of the landfill boundaries, were a disposal area for radioluminescent devices (primarily containing radium-226) and a potential disposal area for wastes from decontamination of ships used in atomic testing (NAVSEA, 2004).

- Previous shoreline investigations identified a Metal Slag Area within the Panhandle and Shoreline Areas. The metal slag is composed of discontinuous industrial debris and metal slag with radioactive anomalies. This area was excavated under an interim removal action (TtFW, 2005b).
- Triple A allegedly disposed of industrial debris, sandblast waste, oily industrial sand, and asphalt over an area of approximately 5 acres along the shoreline of Parcel E-2, which extends into the Panhandle Area (Figure 1-11) (San Francisco District Attorney, 1986).
- Waste fuel and waste oil containing PCBs were used at the Parcel E-2 Landfill as dust suppressants (TtEMI, LFR, and Uribe & Associates, 1997).

Soil concentrations that exceed the corresponding RIEC will be considered adequately delineated in a given direction if another sample exists within 150 feet in that direction and is below the RIEC. The 150-foot distance was selected to be consistent with the definition of the 0.5-acre exposure areas (approximately 150 feet by 150 feet) used in the HHRA.

The following subsections discuss the characteristics of the fill and isolated solid waste locations (Subsection 4.3.1), and the nature and extent of chemicals in soil (Subsection 4.3.2). The data presented in Subsection 4.3.2 excludes data within the Metal Slag Area, which was recently excavated. Subsection 4.3.3 discusses the post-excavation sampling approach and how the updated data will be evaluated in the Draft Final RI/FS.

4.3.1. Characteristics and Extent of Fill and Isolated Solid Waste Locations

The Panhandle Area includes isolated solid waste locations and soils within the Parcel E-2 boundary but outside the Landfill and Shoreline Area boundaries. The methodology for identifying these isolated solid waste locations was discussed in Subsection 4.1.1.2.

The evaluation revealed 45 locations in the Panhandle Area where solid waste was encountered. Of these 45 locations, 28 contained inert construction debris and 17 contained putrescible construction debris. The isolated waste locations are shown on Figure 4-1.

Construction debris encountered in the Panhandle Area include concrete, brick, wood, gravel, sand, soil, and asphalt, with limited amounts of ceramic, glass, and metals. With the exception of wood, the remaining types of construction debris are considered inert and are not expected to generate methane gas or leachate that would create potential risks to human health or the environment.

The industrial and municipal-type wastes encountered within the Metal Slag Removal Area include metal slag and debris containing low-level radiological material and radioluminescent devices (BRAC PMO West, 2005b through 2005f). None of the encountered industrial wastes are considered putrescible. All excavated soil and waste from the Metal Slag Area removal action was handled and screened as potential low-level radioactive waste based on the findings of the HRA (NAVSEA, 2004). As of May 2006, approximately 74 cubic yards of soil and sediment were segregated as radiologically impacted (out of a total excavated volume of 8,560 cubic yards). In addition, 32 radiological devices, 15 cubic yards of radiological debris, and 9 cubic yards of fire brick were identified within the removal area (BRAC PMO

West, 2006a; BRAC PMO West, 2006b). In addition to this radiologically impacted debris, five waste drums were recovered from the removal area (BRAC PMO West, 2006b). The waste characterization data for these drums are not available for this Draft RI/FS, but this data will be provided in the removal action completion report.

4.3.2. Analytes Detected in Panhandle Area Soils (Excluding Metal Slag Area)

Soil data within the panhandle Area is presented in a similar manner as for the Landfill Area and East Adjacent Area for consistency purposes. As discussed in Subsection 4.1.3, comprehensive data summary tables for the Panhandle Area are presented in Appendix J by chemical category (i.e., metals, pesticides, PCBs, dioxins, furans, SVOCs, VOCs, and petroleum hydrocarbons), and depth interval (0 to 2 feet, 2 to 10 feet, and greater than 10 feet). In addition, each table presents a series of summary statistics of the data for each compound, such as the number of samples collected; number of results that exceed the detection limit; minimum and maximum concentrations detected; and median, mean, and standard deviation of the detected results for each compound. Each table also lists all potential screening criteria and quantifies the number of results that exceed each criterion.

The following subsections describe the chemical characteristics of the soil fill within the Panhandle Area.

4.3.2.1. Panhandle Area Surface Soils (0 to 2 feet)

Table 4-9 shows all of the analytes that were detected in at least one sample collected at a depth of 2 feet or less; Table 4-10 lists the detected analytes that exceeded the screening criteria at the 0- to 2-foot depth.

Metals

A total of 73 samples were analyzed for one or more metals. As shown in Table 4-9, all analytes, except tin were detected in at least one sample at concentrations above the LRL. Sixteen analytes (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, mercury, molybdenum, silver, thallium, vanadium, and zinc) were detected at concentrations above HPALs. As shown in Table 4-10, only six analytes (antimony, arsenic, cadmium, iron, lead, and vanadium) have been found to be above the selected RIEC. Some of the LRLs for the analytes were above the selected RIEC due to dilutions of samples.

Antimony was detected in 18 of 66 samples analyzed. This analyte was detected in ten samples at concentrations above the HPAL (9.05 mg/kg). One sample (IR01B368, 1 foot bgs, 530 mg/kg) contained antimony at a concentration above the selected RIEC (380 mg/kg). As shown in Figure 4-48, the sample result exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. None of the LRLs for antimony exceeded the selected RIEC. Based on this information, the extent of antimony in soil within this depth range is adequately delineated by adjacent concentrations below the RIEC.

Arsenic was detected in 56 of 68 samples analyzed. This analyte was detected in seven samples (six locations) at concentrations above the RIEC (11.1 mg/kg). One location (IR01B368) had two samples

with concentrations above the RIEC; however, only one sample (the maximum concentration) is shown on the figure. As shown in Figure 4-49, the sample result exceeding the RIEC (IR01B374) is near samples within 150 feet to the north and west with concentrations that are below the RIEC. There are no samples to the east or south within 150 feet. Also, the other samples are surrounded to the south, east, and north. The west is not defined due to the border of the parcel. In addition, three of the LRLs for arsenic exceeded the selected RIEC. Based on this information, the extent of arsenic in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Cadmium was detected in 22 of 68 samples analyzed. This analyte was detected in seven samples at concentrations above the HPAL (3.14 mg/kg). Two samples (IR01B368, 1 foot bgs, 8.8 mg/kg; IR01B368, 2 feet bgs, 8.9 mg/kg) contained concentrations of cadmium above the selected RIEC (7.4 mg/kg). As shown in Figure 4-50, the sample result exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. None of the LRLs for cadmium exceeded the selected RIEC. Based on this information, the extent of cadmium in soil within this depth range is adequately delineated by adjacent concentrations below the RIEC.

Iron was detected in 67 of 68 samples analyzed. No comparison against ambient levels was made because an HPAL has not been established for iron. Three samples (IR01B368, 1 foot bgs, 190,000 mg/kg; IR01B368, 2 feet bgs, 160,000 mg/kg; IR01B369, 2 feet bgs, 120,000 mg/kg) contained concentrations of iron above the selected RIEC (100,000 mg/kg). One location (IR01B368) had two samples with concentrations above the RIEC; however, only one sample (the maximum concentration) is shown on the figure. As shown in Figure 4-51, the sample result exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. None of the LRLs for iron exceeded the selected RIEC. Based on this information, the extent of iron in soil within this depth range is adequately delineated by adjacent concentrations below the RIEC.

Lead was detected in 66 of 68 samples analyzed. This analyte was detected in 63 of the samples at concentrations above the HPAL (8.99 mg/kg). Seven samples (five locations) contained concentrations above the selected RIEC (800 mg/kg). Two locations (IR01B368 and IR01SW2) had two results above the RIEC; however, only one (the maximum concentration) is shown on the figure. As shown in Figure 4-52, the sample result (IR01SW2) exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. The sample results exceeding the RIEC in the other area are not bounded on the west side because of the parcel boundary. None of the LRLs for lead exceeded the selected RIEC. Based on this information, the extent of lead in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Vanadium was detected in 67 of 68 samples analyzed. This analyte was detected in five samples at concentrations above the HPAL (117.2 mg/kg). One sample (IR01B373, 2 feet bgs, 2,100 mg/kg) contained a concentration of vanadium above the selected RIEC (1,000 mg/kg). As shown in Figure 4-53, the sample result exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. None of the LRLs for vanadium exceeded the selected RIEC.

Based on this information, the extent of vanadium in soil within this depth range is adequately delineated by adjacent concentrations below the RIEC.

Pesticides and PCBs

A total of 68 samples were analyzed for pesticides and PCBs. As shown in Table 4-9, 40 analytes have at least one detection above the detection limit. As shown in Table 4-10, three analytes (total DDE, dieldrin, and total PCBs) were detected at concentrations above the selected RIEC. Because the RIEC is based on total DDE, the results for 2,4-DDE and 4,4-DDE were summed and the total DDE values were evaluated. Some of the LRLs for the analytes were above the selected RIEC due to dilutions of samples.

Total DDE was detected in 11 of 68 samples analyzed. This analyte was detected in one sample (IR01B394, 1 feet bgs, 7.7 mg/kg) at a concentration above the selected RIEC (6.3 mg/kg). As shown in Figure 4-54, the sample result exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. Based on this information, the extent of total DDE in soil within this depth range is adequately delineated by adjacent concentrations below the RIEC.

Dieldrin was detected in 6 of 68 samples analyzed. This analyte was detected in two samples (IR01B390, 2 feet bgs, 3.2 mg/kg and IR01B394, 1 feet bgs, 6.4 mg/kg) at concentrations above the selected RIEC (0.11 mg/kg). As shown in Figure 4-55, the sample result (IR01B390) exceeding the RIEC is near samples to the north, east and west within 150 feet with concentrations that are below the RIEC. The other sample, IR01B394, is near samples to the north and east within 150 feet with concentrations that are below the RIEC. There are no samples to the south of either sample and to the east for IR01B394 within the 150 feet delineation area. In addition, four of the LRLs for dieldrin exceeded the selected RIEC. Based on this information, the extent of dieldrin in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Total PCBs were detected in 39 of 68 samples analyzed. This analyte was detected in nine samples (eight locations) at concentrations above the selected RIEC (0.74 mg/kg). One location (IR01SW2) had two samples with concentrations of total PCBs above the RIEC; however, only one (the maximum concentration) is shown on the figure. As shown in Figure 4-56, the sample result exceeding the RIEC is surrounded by nearby samples outside 150 feet with concentrations that are below the RIEC. None of the LRLs for individual PCB compounds exceeded the selected RIEC. Based on this information, the extent of total PCBs in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC around most locations.

Semi-Volatile Organic Compounds

A total of 61 samples were analyzed for SVOCs. As shown in Table 4-9, 20 analytes were detected at least once at concentrations above the LRL. Nine analytes [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and naphthalene] were detected at concentrations above the selected RIEC in at

least one sample (Table 4-10). Several of the analytes had LRLs above the selected RIEC due to dilutions of samples and the limitations of analytical methods at the time.

Benzo(a)anthracene was detected in 24 of 61 samples analyzed. This analyte was detected in five samples at concentrations above the selected RIEC (1.3 mg/kg). One location (IR01B390) had two samples with concentrations of benzo(a)anthracene above the RIEC; however, only one (the maximum concentration) is shown on the figure. As shown in Figure 4-4, all sample results, but one sample (IR01B390), exceeding the RIEC is surrounded to the north, east, and west by nearby samples within 150 feet with concentrations that are below the RIEC. There is no sample to the south of IR01B390. None of the LRLs for benzo(a)anthracene exceeded the selected RIEC. Based on this information, the extent of benzo(a)anthracene in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Benzo(a)pyrene was detected in 25 of 61 samples analyzed. This analyte was detected in ten samples at concentrations (nine locations) above the selected RIEC (0.33 mg/kg). One location (IR01B390) had two samples with concentrations of benzo(a)pyrene above the RIEC; however, only one (the maximum concentration) is shown on the figure. As shown in Figure 4-5, the sample result exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. Two samples (IR01B390 and IR01B396) are not bounded on the south and east side respectively. In addition, many of the LRLs for benzo(a)pyrene exceeded the selected RIEC. Based on this information, the extent of benzo(a)pyrene in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Benzo(b)fluoranthene was detected in 39 of 61 samples analyzed. This analyte was detected in seven samples (six locations) at concentrations above the selected RIEC (1.3 mg/kg). One location (IR01B390) had two samples with concentrations of benzo(b)fluoranthene above the RIEC; however, only one (the maximum concentration) is shown on the figure. As shown in Figure 4-6, all sample results, but one sample (IR01B390), exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. In addition, one of the LRLs for benzo(b)fluoranthene exceeded the selected RIEC. Based on this information, the extent of benzo(b)fluoranthene in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Benzo(k)fluoranthene was detected in 30 of 61 samples above detection limits. This analyte was detected in nine samples (eight locations) at concentrations above the selected RIEC (1.3 mg/kg). One location (IR01B390) had two samples with concentrations of benzo(k)fluoranthene above the RIEC; however, only one, the maximum concentration, is shown on the figure. As shown in Figure 4-57, all sample results, but samples (IR01B383, IR01B378, and IR01B390), exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. The samples are not bounded to the west and IR01B390 is not bounded to the south. In addition, one of the LRLs for benzo(k)fluoranthene exceeded the selected RIEC. Based on this information, the extent of

benzo(k)fluoranthene in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Bis(2-ethylhexyl)phthalate was detected in 7 of 61 samples analyzed. This analyte was detected in one sample (IR01B390, 2 feet bgs, 740 mg/kg) at a concentration above the selected RIEC (120 mg/kg). As shown in Figure 4-58, the sample result exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. The sample is not bounded to the south. None of the LRLs for bis(2-ethylhexyl)phthalate exceeded the selected RIEC. Based on this information, the extent of bis(2-ethylhexyl)phthalate in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Chrysene was detected in 33 of 61 samples analyzed. This analyte was detected in one sample (IR01B390, 2 feet bgs, 57 mg/kg) at a concentration above the selected RIEC (13 mg/kg). As shown in Figure 4-59, the sample result exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. The sample is not bounded to the south. None of the LRLs for chrysene exceeded the selected RIEC. Based on this information, the extent of chrysene in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Dibenz(a,h)anthracene was detected in 5 of 61 samples analyzed. This analyte was detected in one sample (IR01B390, 2 feet bgs, 5.3 mg/kg) at a concentration above the selected RIEC (0.33 mg/kg). As shown in Figure 4-60, all sample results, but one sample (IR01B390), exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. The sample is not bounded to the south. In addition, many of the LRLs for dibenz(a,h)anthracene exceeded the selected RIEC. Based on this information, the extent of dibenz(a,h)anthracene in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Indeno(1,2,3-cd)pyrene was detected in 20 of 61 samples analyzed. This analyte was detected in four samples (three locations) at concentrations above the selected RIEC (1.3 mg/kg). One location (IR01B390) had two samples with concentrations of indeno(1,2,3-cd)pyrene above the RIEC; however, only one (the maximum concentration) is shown on the figure. As shown in Figure 4-7, all sample results, but one sample (IR01B390), exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. The sample is not bounded to the south. In addition, two of the LRLs for indeno(1,2,3-cd)pyrene exceeded the selected RIEC. Based on this information, the extent of indeno(1,2,3-cd)pyrene in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Naphthalene was detected in 10 of 61 samples analyzed. This analyte was detected in two samples (IR01B368, 2 feet bgs, 20 mg/kg; IR01B369, 2 feet bgs, 47 mg/kg) at concentrations above the selected RIEC (1.5 mg/kg). As shown in Figure 4-8, the sample result (IR01B368) exceeding the RIEC is near samples to the west within 150 feet with concentrations that are below the RIEC. The other sample, IR01B69, is near samples to the southwest and west within 150 feet with concentrations that are below

the RIEC. There are no samples to the east or north of either sample due to the border and south of IR01B368. None of the LRLs for naphthalene exceeded the selected RIEC. Based on this information, the extent of naphthalene in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Volatile Organic Compounds

A total of 14 samples were analyzed for VOCs. As shown in Table 4-9, three analytes were detected in at least one sample at concentrations above the LRL. None of the analytes were detected at concentrations above the selected RIEC (Table 4-10). Two analytes (1,2-dichloroethane and chloroform) had LRLs above the RIEC due to dilutions of samples. None of the analytes were above the screening criteria, and therefore will not be shown on a figure.

Petroleum Hydrocarbons

Total TPH is the sum of the concentrations of TPH-g, TPH-d, TPH-mo, TPH as unknown purgeables, and TPH as unknown extractables (TtEMI, 2002f). As shown in Figure 4-61, three samples (IR01B366, 2 feet bgs, 5600mg/kg; IR01B368, 2 feet bgs, 7000 mg/kg; IR01B369, 2 feet bgs, 3900 mg/kg) contained total TPH at concentrations above the RIEC (3,500 mg/kg) (Table 4-10). Diesel-range TPH was found in three samples at concentrations above the RIEC (750 mg/kg). Based on this information, the extent of total TPH in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

4.3.2.2. Panhandle Area Surface Soils (2 to 10 feet)

Table 4-11 shows all of the analytes that were detected in samples collected from 2 to 10 foot depths; Table 4-12 lists the analytes that exceeded the screening criteria at the 2- to 10-foot depth.

Metals

A total of 53 samples were analyzed for one or more metals. As shown in Table 4-11, all analytes were detected in at least one sample at concentrations above the LRL. Fifteen analytes (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, mercury, molybdenum, selenium, vanadium, and zinc) were detected at concentrations above HPALs. As shown in Table 4-12, five analytes (arsenic, cadmium, iron, lead, and zinc) were detected at concentrations above the selected RIEC.

Arsenic was detected in 38 of 40 samples analyzed. This analyte was detected in two samples (IR01MW58A, 6.25 feet bgs, 315 mg/kg; MS-14, 7.5 feet bgs, 25 mg/kg) at concentrations above the RIEC (11.1 mg/kg). As shown in Figure 4-10, neither sample result exceeding the RIEC (IR01B374) is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. Sample MS-14 was located adjacent to the Metal Slag Area that was recently excavated. None of the LRLs for arsenic exceeded the selected RIEC. Based on this information, the extent of arsenic in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Cadmium was detected in 20 of 40 samples analyzed. This analyte was detected in three samples at concentrations above the HPAL (3.14 mg/kg). One sample (IR01MW58A, 6.25 feet bgs, 78.4 mg/kg) contained cadmium at a concentration above the selected RIEC (7.4 mg/kg). As shown in Figure 4-11, the sample result exceeding the RIEC is not surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. None of the LRLs for cadmium exceeded the selected RIEC. Based on this information, the extent of cadmium in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Iron was detected in all 38 samples analyzed. Two samples (IR01MW53B, 8.75 feet bgs, 471,000 mg/kg; IR01MW58A, 6.25 feet bgs, 217,000 mg/kg) were above the selected RIEC (100,000 mg/kg). As shown in Figure 4-14, the sample results exceeding the RIEC are not surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. None of the LRLs for iron exceeded the selected RIEC. Based on this information, the extent of iron in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Lead was detected in all 40 samples analyzed. This analyte was detected in 39 of the samples at concentrations above the HPAL (8.99 mg/kg). Four samples contained lead at concentrations above the selected RIEC (800 mg/kg). As shown in Figure 4-15, the sample results exceeding the RIEC are not surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. Two of the samples with concentrations exceeding the RIEC were located adjacent to the Metal Slag Area that was recently excavated. None of the LRLs for lead exceeded the selected RIEC. Based on this information, the extent of lead in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Zinc was detected in all 40 samples analyzed. This analyte was detected in 20 samples at concentrations above the HPAL (109.9 mg/kg). One sample (IR01MW58A, 6.25 feet bgs, 116,000 mg/kg) contained zinc at a concentration above the selected RIEC (100,000 mg/kg). As shown in Figure 4-62, the sample result exceeding the RIEC is not surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. None of the LRLs for zinc exceeded the selected RIEC. Based on this information, the extent of zinc in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Pesticides and PCBs

A total of 40 samples were analyzed for pesticides and PCBs. As shown in Table 4-11, eight analytes were detected in at least one sample at concentrations above the LRL. As shown in Table 4-12, one analyte (total PCBs) was detected at concentrations above the selected RIEC. Some of the LRLs for the analytes were above the selected RIEC due to dilutions of samples.

Total PCBs were detected in 14 of 40 samples analyzed. This analyte was detected in two samples (WE20B, 10 feet bgs, 1.8 mg/kg and the duplicate at 1.8 mg/kg) at concentrations above the selected RIEC (0.74 mg/kg). As shown in Figure 4-17, the sample results exceeding the RIEC are not surrounded

by nearby samples within 150 feet with concentrations that are below the RIEC to the east but not to the west. None of the LRLs for individual PCB compounds exceeded the selected RIEC. Based on this information, the extent of total PCBs in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Dioxins and Furans

Two samples were analyzed for dioxins and furans. As shown in Table 4-11, all 17 analytes were detected in at least one sample at concentrations above the LRL. As shown in Table 4-12, one analyte of 2,3,4,7,8-pentachlorodibenzofuran (PeCDF) was detected at concentrations above the selected RIEC. No analytes have LRLs above the selected RIEC.

2,3,4,7,8-PeCDF was detected in both samples above detection limits. The samples (MS-14, 7.5 feet bgs, 0.000107 mg/kg; MS-15, 10 feet bgs, 0.000176 mg/kg) contained concentrations of this analyte above the selected RIEC (0.000055 mg/kg). As shown in Figure 4-63, the sample results exceeding the RIEC are not surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. Two of the samples with concentrations exceeding the RIEC were located adjacent to the Metal Slag Area that was recently excavated. None of the LRLs for 2,3,4,7,8-PeCDF exceeded the selected RIEC. Based on this information, the extent of 2,3,4,7,8-PeCDF in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Semi-Volatile Organic Compounds

A total of 40 samples were analyzed for SVOCs. As shown in Table 4-11, 24 analytes were detected in at least one sample at concentrations above the LRL. Two analytes [1,4-dichlorobenzene and naphthalene] were detected at concentrations above the selected RIEC (Table 4-12). Several of the analytes had LRLs above the selected RIEC for some samples due to dilutions of samples and the limitations of analytical methods at the time.

1,4-Dichlorobenzene was detected in one of 31 samples analyzed. This analyte was detected at a concentration above the selected RIEC (0.13 mg/kg). As shown in Figure 4-18, the sample result exceeding the RIEC is not surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. In addition, all of the LRLs for 1,4-dichlorobenzene exceeded the selected RIEC. Based on this information, the extent of 1,4-dichlorobenzene in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Naphthalene was analyzed as both a SVOC and a VOC. As a SVOC analyte, it was detected in seven of 40 samples at concentrations above the LRL. As a VOC analyte, it was detected in three of four samples at concentrations above the LRL. To help with the analysis, both the SVOC and VOC analysis are on one figure and are described together herein. This analyte was detected in six samples at concentrations above the selected RIEC (1.5 mg/kg). As shown in Figure 4-28, the sample results exceeding the RIEC are not surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. Several of the LRLs for naphthalene exceeded the selected RIEC. Based on this information, the extent

of naphthalene in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Volatile Organic Compounds

A total of 35 samples were analyzed for VOCs. As shown in Table 4-11, 16 analytes were detected in at least one sample at concentrations above the LRL. One analyte (naphthalene) was found to be above the selected RIEC (Table 4-12) and is discussed in detail in the SVOC section above. Several of the analytes had LRLs above the selected RIEC for some samples due to dilutions of samples and the limitations of analytical methods at the time.

Petroleum Hydrocarbons

Total TPH is the sum of the concentrations of TPH-g, TPH-d, TPH-mo, TPH as unknown purgeables, and TPH as unknown extractables (TtEMI, 2002f). A total of 29 samples were used to calculate total TPH values. None of the samples contained total TPH at concentrations above the source screening criteria (3,500 mg/kg). Diesel-range TPH was found in one sample at concentrations above the RIEC (750 mg/kg). Two samples (IR01MW58A at 3,900 mg/kg and IR01MW63A at 5,800 mg/kg) had concentrations of TOG above the source screening criteria. Based on this information, the extent of total TPH in soil within this depth range is adequately delineated by adjacent concentrations below the RIEC.

4.3.2.3. Panhandle Area Surface soils (greater than 10 feet)

Table 4-13 shows all of the analytes that were detected in samples collected at depths greater than 10 feet; Table 4-14 list the analytes that exceeded the screening criteria at the greater than 10-foot depth.

Metals

A total of 54 samples were analyzed for one or more metals. As shown in Table 4-13, all but two analytes (thallium and tin) were detected in at least one sample at concentrations above the LRL. As shown in Table 4-14, twelve analytes (antimony, arsenic, barium, beryllium, chromium, cobalt, copper, lead, manganese, molybdenum, selenium, and zinc) were detected at concentrations above HPALs. No analytes have LRLs above the selected RIEC. However, three analytes (arsenic, chromium, and lead) were detected at concentrations above the selected RIEC.

Arsenic was detected in 32 of 36 samples analyzed. This analyte was detected in four samples were detected above the HPAL (11.1 mg/kg) and the RIEC (11.1 mg/kg). As shown in Figure 4-30, none of the sample results exceeding the RIEC are surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. One sample (MS-15) was located adjacent to the Metal Slag Area that was recently excavated. None of the LRLs for arsenic exceeded the selected RIEC. Based on this information, the extent of arsenic in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Chromium was detected in all 36 samples analyzed. This analyte was detected in two samples (IR01B015, 16.25 feet bgs, 467 mg/kg and IR01MW58A, 22.75 feet bgs, 122 mg/kg) at concentrations

above the location-specific HPALs (171.6 mg/kg and 48.6 mg/kg, respectively). One sample (IR01B015) contained chromium at a concentration above the selected RIEC which is based on the HPAL and the 2004 Industrial PRG (450 mg/kg), whichever is the higher value. As shown in Figure 4-32, the sample result exceeding the RIEC is not surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. None of the LRLs for chromium exceeded the selected RIEC. Based on this information, the extent of chromium in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Lead was detected in 35 of 36 samples analyzed. This analyte was detected in 24 of the samples at concentrations above the HPAL (8.99 mg/kg). Two samples (IR01MW58A, 16.25 feet bgs, 991 mg/kg and IR01MW62A, 11.25 feet bgs, 1,150 mg/kg) contained concentrations of lead above the selected RIEC (800 mg/kg). As shown in Figure 4-34, the sample results exceeding the RIEC are not surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. One of the samples with concentrations exceeding the RIEC was located adjacent to the Metal Slag Area that was recently excavated. None of the LRLs for lead exceeded the selected RIEC. Based on this information, the extent of lead in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Pesticides and PCBs

A total of 34 samples were analyzed for pesticides and PCBs. As shown in Table 4-13, six analytes (4,4-DDE, dieldrin, heptachlor epoxide, methoxychlor, Aroclor-1254, and Aroclor-1260) were detected in at least one sample at concentrations above the LRL. Total PCBs was calculated from the detected concentrations of individual PCB compounds. One analyte (aldrin) had a LRL above the selected RIEC in one sample. As shown in Table 4-14, none of the analytes have been detected at concentrations above the selected RIEC.

Semi-Volatile Organic Compounds

A total of 36 samples were analyzed for SVOCs. As shown in Table 4-13, 18 analytes were detected in at least one sample at concentrations above the LRL. Five analytes [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene, and naphthalene] were detected at concentrations above the selected RIEC (Table 4-14). Several of the analytes had LRLs above the selected RIEC for some samples due to dilutions of samples and the limitations of analytical methods at the time.

Benzo(a)anthracene was detected in 3 of 36 samples analyzed. This analyte was detected in one sample (IR01MW58A, 16.25 feet bgs, 3.3 mg/kg) at a concentration above the selected RIEC (1.3 mg/kg). As shown in Figure 4-37, the sample result exceeding the RIEC is not surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. Because the sample is near the border of the parcel, it is not defined on the west side. In addition, several of the LRLs for benzo(a)anthracene exceeded the selected RIEC. Based on this information, the extent of benzo(a)anthracene in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Benzo(a)pyrene was detected in 4 of 36 samples above detection limits. This analyte was detected in one sample (IR01MW58A, 16.25 feet bgs, 1.4 mg/kg) at a concentration above the selected RIEC (0.33 mg/kg). As shown in Figure 4-38, the sample result exceeding the RIEC is not surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. Because the sample is near the border of the parcel, it is not defined on the west side. In addition, several of the LRLs for benzo(a)pyrene exceeded the selected RIEC. Based on this information, the extent of benzo(a)pyrene in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Benzo(b)fluoranthene was detected in 3 of 36 samples analyzed. This analyte was detected in one sample (IR01MW58A, 16.25 feet bgs, 3.6 mg/kg) at a concentration above the selected RIEC (1.3 mg/kg). As shown in Figure 4-39, the sample result exceeding the RIEC is not surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. Because the sample is near the border of the parcel, it is not defined on the west side. In addition, several of the LRLs for benzo(a)fluoranthene exceeded the selected RIEC. Based on this information, the extent of benzo(a)fluoranthene in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Indeno(1,2,3-cd)pyrene was detected in 1 of 36 samples analyzed. The sample (IR01MW58A, 16.25 feet bgs, 2.7 mg/kg) contained this analyte at a concentration above the selected RIEC (1.3 mg/kg). As shown in Figure 4-41, the sample result exceeding the RIEC is not surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. Because the sample is near the border of the parcel, it is not defined on the west side. In addition, several of the LRLs for indeno(1,2,3-cd)pyrene exceeded the selected RIEC. Based on this information, the extent of indeno(1,2,3-cd)pyrene in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Naphthalene was detected in 7 of 36 samples analyzed. This analyte was detected in two samples (IR01MW58A, 11.25 feet bgs, 23 mg/kg and IR01MW62A, 11.25 feet bgs, 110 mg/kg) at concentrations above the selected RIEC (1.5 mg/kg). As shown in Figure 4-42, the sample (IR01MW58A) result exceeding the RIEC is not surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. Because the sample is near the border of the parcel, it is not defined on the west side. Sample IR01MW62A was located adjacent to the Metal Slag Area that was recently excavated. In addition, many of the LRLs for naphthalene exceeded the selected RIEC. Based on this information, the extent of naphthalene in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Volatile Organic Compounds

A total of 34 samples were analyzed for VOCs. As shown in Table 4-13, four analytes were detected in at least one sample at concentrations above the LRL. None of the analytes were detected at concentrations above the selected RIEC. None of the analytes were above the screening criteria, and therefore will not be shown on a figure (Table 4-14).

Petroleum Hydrocarbons

Total TPH is the sum of the concentrations of TPH-g, TPH-d, TPH-mo, TPH as unknown purgeables, and TPH as unknown extractables (TtEMI, 2002f). Total TPH was calculated for 32 analyses. Fifteen samples were detected at concentrations above the LRLs. As shown in Figure 4-47, one sample (IR01MW63A, 11.25 feet bgs, 6,700 mg/kg) contained a total TPH concentration above the source screening criteria (3,500 mg/kg). Four samples contained concentrations of TOG above the RIEC (3,500 mg/kg). One diesel-range TPH was found above the RIEC (750 mg/kg), and one gasoline-range TPH was found above the RIEC (750 mg/kg). The TPH-d and TPH-g RIEC are based on the ESL 2005 direct exposure criteria. Based on this information, the extent of total TPH in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

4.3.3. Metal Slag Area

The Metal Slag Area is located within the Panhandle Area and extends into the boundary of the Shoreline Area. The initial boundaries of the removal area are shown on Figure 1-3. Previous analytical data within these initial boundaries (to a depth of 3 feet bgs) was slated for removal and therefore was not evaluated in this report. During removal activities in 2005 and 2006, the excavation boundaries were expanded based on site conditions and confirmation sampling results (see Figure 3-2). However, the confirmation sampling results were not available for publication in the Draft RI/FS. This information will be included in the Draft Final RI/FS.

4.4. EAST ADJACENT AREA

The nature and extent of contamination at the East Adjacent Area was evaluated based on information from the previous investigations and TCRAs described in Section 3. Based on data from the 65 soil borings and nine test pits extended within the East Adjacent Area, fill material consists primarily of soil and rock fill, with lesser quantities of inert construction debris and isolated locations putrescible construction debris (e.g., wood). Some of the industrial waste types reportedly disposed of in the Landfill Area may also be present within the East Adjacent Area. The following information indicates the industrial wastes that may have been disposed of in or around the East Adjacent Area:

- The HRA indicated that areas within IR-01/21, including areas outside of the landfill boundaries, were a disposal area for radioluminescent devices (primarily containing radium-226) and a potential disposal area for wastes from decontamination of ships used in atomic testing (NAVSEA, 2004).
- The SDGI identified a PCB Hot Spot within the East Adjacent and Landfill Areas. The area contains elevated concentrations of PCBs and petroleum hydrocarbons that are attributed to the disposal of waste oils. This area was excavated under an interim removal action (TtFW, 2005a).
- The presence of sandblast grit was encountered in the East Adjacent Area in several borings and test pits installed during the RI and SDGI. Figure 4-1 identifies these borings and test pits. The presence of sandblast grit within the East Adjacent Area has been confirmed during implementation of the PCB Hot Spot removal (BRAC PMO West, 2005b and 2005c). Sandblast

grit is of radiological concern because it contains naturally occurring radioactive materials and it was used in the decontamination of ships used in atomic testing.

- Numerous drums and assorted waste containers were recovered from the PCB Hot Spot removal area during excavation activities in 2005 and 2006 (BRAC PMO West, 2006c). The waste characterization data for these drums and containers are not available for this Draft RI/FS, but this data will be provided in the removal action completion report.
- Waste fuel and waste oil containing PCBs were used at the Parcel E-2 Landfill as dust suppressants (TtEMI, LFR, and Uribe & Associates, 1997).
- Triple A allegedly disposed of lead-based paints, asbestos-containing debris, paint chips, chlorinated solvents, and other waste liquids in a disposal trench area located adjacent to Parcel E-2 (San Francisco District Attorney, 1986; TtEMI, LFR, and Uribe & Associates, 1997). The area, known as Triple A Site 4 (Figure 1-11), was investigated by the Navy as part of IR Site 12 and will be discussed in the Parcel E RI report.

Soil concentrations that exceed the corresponding RIEC will be considered adequately delineated in a given direction if another sample exists within 150 feet in that direction and is below the RIEC. The 150-foot distance was selected to be consistent with the definition of the 0.5-acre exposure areas (approximately 150 feet by 150 feet) used in the HHRA.

The following subsections discuss the characteristics of the fill and isolated solid waste locations (Subsection 4.4.1), and the nature and extent of chemicals in soil (Subsection 4.4.2). The data presented in Subsection 4.4.2 excludes data within the PCB Hot Spot, which was recently excavated. Subsection 4.4.3 discusses the post-excavation sampling approach and how the updated data will be evaluated in the Draft Final RI/FS.

4.4.1. Characteristics and Extent of Fill and Isolated Solid Waste Locations

The East Adjacent Area includes isolated solid waste locations and soils within the Parcel E-2 boundary but outside the Landfill and Shoreline Area boundaries. The methodology for identifying these isolated solid waste locations was discussed in Subsection 4.1.1.2.

The evaluation revealed 42 locations in the East Adjacent Area where solid waste was encountered. Of these 42 locations, 10 contained inert construction debris and 23 contained putrescible construction debris. Sand blast waste was encountered in 12 locations. Locations of the isolated waste locations are shown on Figure 4-1.

Construction debris encountered in the East Adjacent Area include concrete, brick, wood, gravel, sand, soil, and asphalt, with limited amounts of ceramic, glass, and metals (primarily as wire or rebar in concrete). With the exception of wood, the remaining types of construction debris are considered inert and are not expected to generate methane gas or leachate that would create potential risks to human health or the environment.

The industrial wastes encountered within the PCB Hot Spot removal area included sandblast grit, radioluminescent devices, and oily wastes (BRAC PMO West, 2005b through 2005f). None of the

encountered industrial wastes are considered putrescible. All excavated soil and waste from the PCB Hot Spot removal action was handled and screened as potential low-level radioactive waste based on the findings of the HRA (NAVSEA, 2004). As of September 2006, approximately 324 cubic yards of soil and sediment were segregated as radiologically impacted (out of a total excavated volume of 44,500 cubic yards). Also, 41 radiological devices and 108 cubic yards of fire brick were identified within the removal area (BRAC PMO West, 2006c). In addition to this radiologically impacted debris, 110 drums and 537 assorted waste containers were recovered from the removal area (BRAC PMO West, 2006c). The waste characterization data for these drums and containers are not available for this Draft RI/FS, but this data will be provided in the removal action completion report.

4.4.2. Analytes Detected in East Adjacent Area Soils (Excluding PCB Hot Spot)

Soil data within the East Adjacent Area is presented in a similar manner as for the Landfill Area and Panhandle Area for consistency purposes. As discussed in Subsection 4.1.3, comprehensive data summary tables for the East Adjacent Area are presented in Appendix J by chemical category (i.e., metals, pesticides, PCBs, SVOCs, VOCs, and petroleum hydrocarbons), and depth interval (0 to 2 feet, 2 to 10 feet, and greater than 10 feet). In addition, each table presents a series of summary statistics of the data for each compound, such as the number of samples collected; the number of results that exceed the detection limit; minimum and maximum concentrations detected; and median, mean, and standard deviation of the detected results for each compound. Each table also lists all potential screening criteria and quantifies the number of results that exceed each criterion.

The following subsections describe the chemical characteristics of the soil fill within the East Adjacent Area.

4.4.2.1. East Adjacent Area Surface Soils (0 to 2 feet)

Table 4-15 shows all of the analytes that were detected in samples collected at less than 2 foot depth; Table 4-16 list the analytes that exceeded the screening criteria at a 0- to 2-foot depth.

Metals

A total of 39 samples were analyzed for one or more metals. As shown in Table 4-15, all but two analytes (cyanide[1] and tin) were detected in at least one sample at concentrations above the LRL. Fifteen analytes (antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, silver, thallium, vanadium, and zinc) were detected above HPALs. Some analytes had with LRLs above the selected RIEC for some samples due to dilutions of samples. As shown in

[1] Cyanides are salts or esters of hydrogen cyanide (hydrocyanic acid) formed by replacing the hydrogen with a metal (e.g., sodium or potassium) or a radical (e.g., ammonium or ethyl) and are discussed as metals within this section.

Table 4-16, six analytes (antimony, arsenic, cadmium, chromium, iron, and lead) have been found at concentrations above the selected RIEC.

Antimony was detected in 33 of 39 samples analyzed. This analyte was detected in ten samples at concentrations above the HPAL (9.05 mg/kg). One sample (IR04B030, 1 foot bgs, 409 mg/kg) contained antimony at a concentration above the selected RIEC (380 mg/kg). As shown in Figure 4-48, the sample result exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. None of the LRLs for antimony exceeded the selected RIEC. Based on this information, the extent of antimony in soil within this depth range is adequately delineated by adjacent concentrations below the RIEC.

Arsenic was detected in 36 of 39 samples analyzed. This analyte was detected in one sample (IR04B030, 1 feet bgs, 12.6 mg/kg) at a concentration above the RIEC (11.1 mg/kg). As shown in Figure 4-49, the sample result exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. None of the LRLs for arsenic exceeded the selected RIEC. Based on this information, the extent of arsenic in soil within this depth range is adequately delineated by adjacent concentrations below the RIEC.

Cadmium was detected in 10 of 39 samples analyzed. This analyte was detected in seven samples that were above the HPAL (3.14 mg/kg). Two samples (IR04B030, 1.25 feet bgs, 10.2 mg/kg; IR04B015, 1.25 feet bgs, 11.8 mg/kg) contained cadmium at concentrations above the selected RIEC (7.4 mg/kg). As shown in Figure 4-50, the sample results are surrounded by nearby samples within 150 feet with concentrations that are below the RIEC (including samples from adjacent Parcel E IR sites that will be discussed in the revised Parcel E RI). None of the LRLs for cadmium exceeded the selected RIEC. Based on this information, the extent of cadmium in soil within this depth range is adequately delineated by adjacent concentrations below the RIEC.

Chromium was detected in all of the 39 samples analyzed. This analyte was detected in four samples at concentrations above the location-specific HPALs. One sample (IR01B015, 1.25 feet bgs, 455 mg/kg) was contained chromium at a concentration above the selected RIEC which is based on the HPAL and the 2004 Industrial PRG (450 mg/kg), whichever is the higher value. As shown in Figure 4-64, the sample result exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC (including samples from adjacent Parcel E IR sites that will be discussed in the revised Parcel E RI). None of the LRLs for chromium exceeded the selected RIEC. Based on this information, the extent of chromium in soil within this depth range is adequately delineated by adjacent concentrations below the RIEC.

Iron was detected in all 39 samples. No comparison against ambient levels was made because an HPAL has not been established for iron. One sample (IR04B030, 1 feet bgs, 140,000 mg/kg) contained a concentration of iron above the selected RIEC (100,000 mg/kg). As shown in Figure 4-51, the sample result exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are

below the RIEC. None of the LRLs for iron exceeded the selected RIEC. Based on this information, the extent of iron in soil within this depth range is adequately delineated by adjacent concentrations below the RIEC.

Lead was detected in all 39 samples. This analyte was detected in 36 samples were detected above the HPAL (8.99 mg/kg). Nine samples were above the selected RIEC (800 mg/kg). As shown in Figure 4-52, the sample results exceeding the RIEC are surrounded by nearby samples within 150 feet with concentrations that are below the RIEC (including samples from adjacent Parcel E IR sites that will be discussed in the revised Parcel E RI). None of the LRLs for lead exceeded the selected RIEC. Based on this information, the extent of lead in soil within this depth range is adequately delineated by adjacent concentrations below the RIEC.

Pesticides and PCBs

A total of 36 samples were analyzed for pesticides and PCBs. As shown in Table 4-15, ten analytes were detected in at least one sample. As shown in Table 4-16, two analytes (dieldrin and total PCBs) were detected at concentrations above the selected RIEC. Some of the LRLs for the analytes were above the selected RIEC for some samples due to dilutions of samples.

Dieldrin was detected in 1 of 36 samples analyzed. The sample (IR12B041, 0 feet bgs, 0.25 mg/kg) contained dieldrin at a concentration above the selected RIEC (0.11 mg/kg). As shown in Figure 4-55, the sample result exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. Six of the LRLs for dieldrin exceeded the selected RIEC. Based on this information, the extent of dieldrin in soil within this depth range is adequately delineated by adjacent concentrations below the RIEC.

Total PCBs were detected in 21 of 36 samples analyzed. Total PCBs was detected in 14 samples at concentrations above the selected RIEC (0.74 mg/kg). As shown in Figure 4-56, the sample results exceeding the RIEC are surrounded by nearby samples within 150 feet with concentrations that are below the RIEC (including samples from adjacent Parcel E IR sites that will be discussed in the revised Parcel E RI). None of the LRLs for individual PCB compounds exceeded the selected RIEC. Based on this information, the extent of total PCBs in soil within this depth range is adequately delineated by adjacent concentrations below the RIEC.

Semi-Volatile Organic Compounds

A total of 35 samples were analyzed for SVOCs. As shown in Table 4-15, 22 analytes were detected in at least one sample at concentrations above the LRL. Four analytes [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and benzo(k)fluoranthene] were detected at concentrations above the selected RIEC (Table 4-16). Several of the analytes had LRLs above the selected RIEC for some samples due to dilutions of samples and the limitations of analytical methods at the time.

Benzo(a)anthracene was detected in 11 of 34 samples analyzed. This analyte was detected in one sample (IR01TA06B, 1 feet bgs, 2.3 mg/kg) at a concentration above the selected RIEC (1.3 mg/kg). As

shown in Figure 4-4, the sample result exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. Nine of the LRLs for benzo(a)anthracene exceeded the selected RIEC. Based on this information, the extent of benzo(a)anthracene in soil within this depth range is adequately delineated by adjacent concentrations below the RIEC.

Benzo(a)pyrene was detected in 11 of 33 samples analyzed. This analyte was detected in four samples at concentrations above the selected RIEC (0.33 mg/kg). As shown in Figure 4-5, the sample results exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC (including samples from adjacent Parcel E IR sites that will be discussed in the revised Parcel E RI). The LRLs for benzo(a)pyrene exceeded the selected RIEC for many samples. Based on this information, the extent of benzo(a)pyrene in soil within this depth range is adequately delineated by adjacent concentrations below the RIEC.

Benzo(b)fluoranthene was detected in 13 of 33 samples above detection limits. This analyte was detected in two samples (IR01TA06B, 0.55 feet bgs, 6.6 mg/kg; IR02TA11A, 1 feet bgs, 2.7 mg/kg) at concentrations above the selected RIEC (1.3 mg/kg). As shown in Figure 4-6, the sample result exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC (including samples from adjacent Parcel E IR sites that will be discussed in the revised Parcel E RI). The LRLs for benzo(b)fluoranthene exceeded the selected RIEC for several samples. Based on this information, the extent of benzo(b)fluoranthene in soil within this depth range is adequately delineated by adjacent concentrations below the RIEC.

Benzo(k)fluoranthene was detected in 5 of 33 samples above detection limits. This analyte was detected in one sample (IR01TA06B, 1 feet bgs, 2.1 mg/kg) was at a concentration above the selected RIEC (1.3 mg/kg). As shown in Figure 4-57, the sample result exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. The LRLs for benzo(k)fluoranthene exceeded the selected RIEC in nine samples. Based on this information, the extent of benzo(k)fluoranthene in soil within this depth range is adequately delineated by adjacent concentrations below the RIEC.

Volatile Organic Compounds

A total of 22 samples were analyzed for VOCs. As shown in Table 4-15, eight analytes were detected in at least one sample at concentrations above the LRL. None of the analytes were detected at concentrations above the selected RIEC. None of the analytes were above the screening criteria and therefore will not be shown on a figure (Table 4-16).

Petroleum Hydrocarbons

Total TPH is the sum of the concentrations of TPH-g, TPH-d, TPH-mo, TPH as unknown purgeables, and TPH as unknown extractables (TtEMI, 2002f). Total TPH was calculated for 34 analyses. As shown in Figure 4-61, four samples contained total TPH at concentrations above the source screening criteria (3,500 mg/kg). Twenty-seven samples contained concentrations of total TPH above the LRLs. Six

samples contained concentrations of TOG above the RIEC (3,500 mg/kg). Diesel-range organics were detected at concentrations above the RIEC (750 mg/kg) in three samples. Similarly, motor oil-range organics were detected above the RIEC (4,600 mg/kg) in three samples. Based on this information, the extent of total TPH in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

4.4.2.2. East Adjacent Area Subsurface Soils (2 to 10 feet)

Table 4-17 shows all of the analytes that were detected in samples collected between 2 and 10 feet bgs; Table 4-18 list the analytes that exceeded the screening criteria at a 2- to 10-foot depth.

Metals

A total of 63 samples were analyzed for metals. As shown in Table 4-17, all but one analyte (tin) was detected in at least one sample at concentrations above the LRL. Seventeen analytes (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, mercury, molybdenum, nickel, selenium, silver, thallium, and zinc) were detected above HPALs. No analytes had LRLs above the selected RIEC in any samples. As shown in Table 4-18, four analytes (antimony, arsenic, chromium, and lead) were detected at concentrations above the selected RIEC.

Antimony was detected in 35 of 57 samples analyzed. This analyte was detected in nine samples were detected above the HPAL (9.05 mg/kg). Two samples (IR04B020, 4.16 feet bgs, 762 mg/kg; IR04B025, 3.75 feet bgs, 976 mg/kg) contained antimony at concentrations above the selected RIEC (380 mg/kg). As shown in Figure 4-9, the sample results exceeding the RIEC are surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. None of the LRLs for antimony exceeded the selected RIEC. Based on this information, the extent of antimony in soil within this depth range is adequately delineated by adjacent concentrations below the RIEC.

Arsenic was detected above detection limits in 39 of 63 samples analyzed. This analyte was detected in eight samples (five locations) at concentrations above the RIEC (11.1 mg/kg). One location (IR01MW09B) had three samples with concentrations of arsenic above the RIEC; however, only one (the maximum concentration) is shown on the Figure 4-10. Another location (IR72B037) had two samples with concentrations of arsenic above the RIEC; however, only the maximum concentration is shown on the Figure 4-10. As shown in Figure 4-10, the sample results exceeding the RIEC are surrounded by nearby samples within 150 feet with concentrations that are below the RIEC (including samples from adjacent Parcel E IR sites that will be discussed in the revised Parcel E RI). None of the LRLs for arsenic exceeded the selected RIEC. Based on this information, the extent of arsenic in soil within this depth range is adequately delineated by adjacent concentrations below the RIEC.

Chromium was detected in all of the 63 samples analyzed. This analyte was detected in two samples (IR04B030, 2.75 feet bgs, 129 mg/kg; IR12MW11A, 3.75 feet bgs, 924 mg/kg) at concentrations above the location-specific HPALs (81.0 mg/kg and 913.7 mg/kg). One sample (IR12MW11A) contained chromium at a concentration above the selected, RIEC which is based on the HPAL and the 2004

Industrial PRG (450 mg/kg), whichever is the higher value. As shown in Figure 4-12, the sample result exceeding the RIEC is not surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. None of the LRLs for chromium exceeded the selected RIEC. Based on this information, the extent of chromium in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Lead was detected in 57 samples of 63 samples analyzed. This analyte was detected in 36 of the samples at concentrations above the HPAL (8.99 mg/kg). Eight samples contained lead at concentrations above the selected RIEC (800 mg/kg). One location (IR04B025) had two results above the RIEC; however, only one (the maximum concentration) is shown on the figure. As shown in Figure 4-15, sample results (except IR72B037) exceeding the RIEC are surrounded on the east and south by nearby samples within 150 feet with concentrations that are below the RIEC; however, these samples are not bound to the west near the Landfill Area or to the north. The sample result at IR72B037, located at the boundary between Parcels E and E-2, exceeds the RIEC but is located within 150 feet of several samples from adjacent Parcel E IR sites (that will be discussed in the revised Parcel E RI). None of the LRLs for lead exceeded the selected RIEC. Based on this information, the extent of lead in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Pesticides and PCBs

A total of 65 samples were analyzed for pesticides and PCBs. As shown in Table 4-17, five analytes were detected in at least one sample. As shown in Table 4-18, one analyte (total PCBs) was detected at concentrations above the selected RIEC. The LRLs for the analytes were above the selected RIEC in some samples due to dilutions of samples.

Total PCBs were detected in 15 of 65 samples analyzed. Total PCBs were detected in eight samples at concentrations above the selected RIEC (0.74 mg/kg). Two locations (IR04B019 and IR04B025) had two results above the RIEC; however, only one (the maximum concentration) is shown on the figure for each location. As shown in Figure 4-17, the sample result, IR01MW367A, exceeding the RIEC is bounded on the east side within 150 feet with a concentration that is below the RIEC. It is not bounded on the north, west, or south side. The sample result, IR04B016, exceeding the RIEC is bounded on the north, east, and south side within 150 feet with a concentration that is below the RIEC. It is not bounded on the west side within 150 feet. The sample result, IR04B025, exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. Sample result, IR01TA07A, exceeding the RIEC is bounded on the north and south side within 150 feet with a concentration that is below the RIEC. It is not bounded on the west or east side within 150 feet. Sample result, IR01TA07B, exceeding the RIEC is bounded on the west and south side within 150 feet with a concentration that is below the RIEC. It is not bounded on the north or east side within 150 feet. The sample result, IR04B019, exceeding the RIEC is bounded on the east and south side within 150 feet with a concentration that is below the RIEC. It is not bounded on the north or west side within 150 feet. None of the LRLs for individual PCB

compounds exceeded the selected RIEC. Based on this information, the extent of total PCBs in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Semi-Volatile Organic Compounds

Up to 65 samples were analyzed for SVOCs. As shown in Table 4-17, 16 analytes were detected in at least one sample at concentrations above the LRL. Six analytes [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene] were above the 2002 Parcel E industrial PRG; five analytes [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene] were detected at concentrations above the selected RIEC (Table 4-18). Several analytes had samples with LRLs above the screening criteria due to dilutions of samples and the limitations of analytical methods at the time.

Benzo(a)anthracene was detected in 6 of 64 samples above detection limits. This analyte was detected in one sample (IR72B038, 3.33 feet bgs, 7.3 mg/kg) at a concentration above the selected RIEC (1.3 mg/kg). As shown in Figure 4-21, the sample result exceeding the RIEC is not surrounded to the north or east by nearby samples within 150 feet with concentrations that are below the RIEC (including samples from adjacent Parcel E IR sites that will be discussed in the revised Parcel E RI). LRLs for benzo(a)anthracene exceeded the selected RIEC in six samples. Based on this information, the extent of benzo(a)anthracene in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Benzo(a)pyrene was detected in 6 of 63 samples above detection limits. This analyte was detected in one sample (IR72B038, 3.33 feet bgs, 7.3 mg/kg) was detected at a concentration above the selected RIEC (0.33 mg/kg). As shown in Figure 4-22, the sample result exceeding the RIEC is not surrounded to the north or east by nearby samples within 150 feet with concentrations that are below the RIEC (including samples from adjacent Parcel E IR sites that will be discussed in the revised Parcel E RI). LRLs for benzo(a)pyrene exceeded the selected RIEC in several samples. Based on this information, the extent of benzo(a)pyrene in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Benzo(b)fluoranthene was detected in 10 of 63 samples analyzed. This analyte was detected in two samples (IR72B038, 3.33 feet bgs, 17 mg/kg; IR04B030, 4.16 feet bgs, 1.4 mg/kg) at concentrations above the selected RIEC (1.3 mg/kg). As shown in Figure 4-23, the sample result, IR72B038, exceeding the RIEC is not surrounded to the north or east by nearby samples within 150 feet with concentrations that are below the RIEC (including samples from adjacent Parcel E IR sites that will be discussed in the revised Parcel E RI). The sample result, IR04B020, exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. LRLs for benzo(b)fluoranthene exceeded the selected RIEC in seven samples. Based on this information, the extent of benzo(b)fluoranthene in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Benzo(k)fluoranthene was detected in 5 of 63 samples analyzed. This analyte was detected in one sample (IR72B038, 3.33 feet bgs, 6.6 mg/kg) at a concentration above the selected RIEC (1.3 mg/kg). As shown in Figure 4-24, the sample result exceeding the RIEC is not surrounded to the north or east by nearby samples within 150 feet with concentrations that are below the RIEC. (including samples from adjacent Parcel E IR sites that will be discussed in the revised Parcel E RI). LRLs for benzo(k)fluoranthene exceeded the selected RIEC in seven samples. Based on this information, the extent of benzo(k)fluoranthene in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Dibenz(a,h)anthracene was detected in 1 of 63 samples analyzed. The sample (IR72B038, 3.33 feet bgs, 2 mg/kg) was detected at a concentration above the selected RIEC (0.33 mg/kg). As shown in Figure 4-26, the sample result exceeding the RIEC is not surrounded to the north or east by nearby samples within 150 feet with concentrations that are below the RIEC (including samples from adjacent Parcel E IR sites that will be discussed in the revised Parcel E RI). LRLs for dibenz(a,h)anthracene exceeded the selected RIEC in most samples. Based on this information, the extent of dibenz(a,h)anthracene in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Indeno(1,2,3-cd)pyrene was detected in 3 of 63 samples analyzed. This analyte was detected in one sample (IR72B038, 3.33 feet bgs, 4.2 mg/kg) at a concentration above the selected RIEC (1.3 mg/kg). As shown in Figure 4-27, the sample result exceeding the RIEC is not surrounded to the north or east by nearby samples within 150 feet with concentrations that are below the RIEC (including samples from adjacent Parcel E IR sites that will be discussed in the revised Parcel E RI). LRLs for indeno(1,2,3-cd)pyrene exceeded the selected RIEC in nine samples. Based on this information, the extent of indeno(1,2,3-cd)pyrene in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Volatile Organic Compounds

Up to 62 samples were analyzed for VOCs. As shown in Table 4-17, 10 analytes were detected at least once at concentrations above the LRL. Some of the analytes were detected at concentrations above the selected RIEC due to dilutions of samples. However, none of the analytes were above the screening criteria (Table 4-18), and therefore will not be shown on a figure.

Petroleum Hydrocarbons

Total TPH is the sum of the concentrations of TPH-g, TPH-d, TPH-mo, TPH as unknown purgeables, and TPH as unknown extractables (TtEMI, 2002f). Total TPH was calculated for 63 analyses. Fifty-six samples contained total TPH at concentrations above the LRLs. As shown in Figure 4-29, one sample (IR01TA07A, 4 feet bgs, 9,900 mg/kg) contained total TPH at a concentration above the source screening criteria (3,500 mg/kg). Six samples contained concentrations of TOG above the RIEC (3,500 mg/kg). TPH-d was found above the RIEC (750 mg/kg) in three samples. The diesel-range organics RIEC is

based on the ESL 2005 direct exposure criteria. Based on this information, the extent of total TPH in soil within this depth range is adequately delineated by adjacent concentrations below the RIEC.

4.4.2.3. East Adjacent Area Deep soils (greater than 10 feet)

Table 4-19 shows all of the analytes that were detected in samples collected at greater than 10 feet bgs Table 4-20 list the analytes that exceeded the screening criteria at greater than a 10-foot depth.

Metals

A total of 69 samples were analyzed for metals. As shown in Table 4-19, all but three analytes (chromium VI, thallium, and tin) were detected in at least one sample at concentrations above the LRL. Sixteen analytes were detected at concentrations above HPALs (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, mercury, molybdenum, nickel, silver, vanadium, and zinc). No analytes had with LRLs above the selected RIEC in any samples. As shown in Table 4-20, three analytes (arsenic, chromium, and lead) were detected at concentrations above the selected RIEC.

Arsenic was detected above detection limits in 35 of 47 samples analyzed. This analyte was detected in four samples at concentrations above the RIEC (11.1 mg/kg). One location (IR01MW09B) had two detections above the RIEC; however, only one (the maximum concentration) is shown on the figure. As shown in Figure 4-30, the sample result exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. LRLs for arsenic exceeded the selected RIEC in two samples. Based on this information, the extent of arsenic in soil within this depth range is not adequately delineated by adjacent concentrations below the RIEC.

Chromium was detected in all of the 47 samples analyzed. This analyte was detected in one sample (IR04B016, 12.89 feet bgs, 903 mg/kg) at a concentration above the location-specific HPALs (719.06 mg/kg). The sample (IR04B016) contained chromium at a concentration above the selected, RIEC which is based on the location-specific HPAL. As shown in Figure 4-32, the sample result exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. None of the LRLs for chromium exceeded the selected RIEC. Based on this information, the extent of chromium in soil within this depth range is adequately delineated by adjacent concentrations below the RIEC.

Lead was detected in 44 samples of 47 samples analyzed. This analyte was detected in 27 of the samples at concentrations above the HPAL (8.99 mg/kg). One sample (IR04B025, 11.25 feet bgs, 24,600 mg/kg) contained lead at a concentration above the selected RIEC (800 mg/kg). As shown in Figure 4-34, the sample result exceeding the RIEC is surrounded by nearby samples within 150 feet with concentrations that are below the RIEC. None of the LRLs for lead exceeded the selected RIEC. Based on this information, the extent of lead in soil within this depth range is adequately delineated by adjacent concentrations below the RIEC.

Pesticides and PCBs

A total of 22 samples were analyzed for pesticides and PCBs. As shown in Table 4-19, one analyte (Aroclor-1260) was detected in at least one sample at a concentration above the LRL. No analytes were detected at concentrations above the regulatory criteria and therefore where not above the selected RIEC. None of the analytes were above the screening criteria (Table 4-20), and therefore will not be shown on a figure.

Semi-volatile Organic Compounds

A total of 49 samples were analyzed for SVOCs. As shown in Table 4-19, 12 analytes were detected in at least one sample at concentrations above the LRL. Several analytes were detected at concentrations above the selected RIEC due to dilutions of samples and the limitations of analytical methods at the time. None of the analytes were detected at concentrations above the screening criteria (Table 4-20), and therefore will not be shown on a figure.

Volatile Organic Compounds

A total of 49 samples were analyzed for VOCs. As shown in Table 4-19, 10 analytes were detected in at least one sample at concentrations above the LRL. None of the analytes were detected at concentrations above the selected RIEC. None of the analytes were above the screening criteria (Table 4-20), and therefore will not be shown on a figure.

Petroleum Hydrocarbons

Total TPH is the sum of the concentrations of TPH-g, TPH-d, TPH-mo, TPH as unknown purgeables, and TPH as unknown extractables (TtEMI, 2002f). Total TPH was calculated for 22 analyses. None of the samples contained total TPH at concentrations above the source screening criteria (3,500 mg/kg) (Table 4-20), and will not be shown on a figure.

4.4.3. PCB Hot Spot

The PCB Hot Spot removal area is located within the East Adjacent Area and extends into the boundary of the Landfill Area. The initial boundaries of the removal area are shown on Figure 1-3. Soil within these initial boundaries (to a depth of 3 feet bgs), and the associated analytical data, was planned for removal and therefore was not evaluated in this report. During removal activities in 2005 and 2006, the excavation boundaries were expanded based on site conditions and confirmation sampling results (see Figure 3-2). However, the confirmation sampling results were not available for publication in the Draft RI/FS. This information will be included in the Draft Final RI/FS.

4.5. SUMMARY OF FINDINGS

The nature and extent evaluation presented in this section demonstrates that an adequate quantity of data, of sufficient quality, exist to support the human and ecological risk assessments, to provide the basis for the RAOs, and to evaluate a focused set of remedial alternatives for Parcel E-2. The following subsections summarize the nature and extent findings for solid waste (Subsection 4.5.1), landfill gas

(Subsection 4.5.2), and chemicals in soil (Subsection 4.5.3). Each subsection discusses the resolution of data quality objectives (DQOs) and outlines potential data gaps.

4.5.1. Nature and Extent of Solid Waste

Determination of the nature and extent of solid waste at the Parcel E-2 Landfill is based on the physical presence of contiguous industrial or municipal-type wastes. Based on data from the 26 soil borings, 12 monitoring wells, and 25 test pits extended within the Landfill Area, the solid waste is comprised primarily of municipal-type waste and construction debris. Solid waste includes wood, paper, plastic, metal, glass, asphalt, concrete, and bricks, that are mixed with sand, clay, and gravel fill. Historic information indicates that industrial wastes were also disposed of in or around the Landfill Area including sandblast waste, radioluminescent devices, asbestos-containing debris, paint sludge, solvents, and waste oils (NEESA, 1984; NAVSEA, 2004). The available characterization data suggests that the quantity of industrial waste within the Landfill Area is less than the quantity of municipal-type waste and construction debris.

The nature of hazardous substances within the Landfill Area, based on an evaluation of soil data, is summarized in Subsection 4.5.3. According to EPA guidance, characterization of a landfill's contents is not necessary or appropriate for selecting a response action for these sites, when applying the presumptive remedy methodology for remedial alternatives evaluation (EPA, 1993a) (Appendix H to this report). The evaluation summarized in Subsection 4.5.3 consists of identifying potential hot spots within the Landfill Area. EPA recommends that hot spots in municipal landfills be identified and evaluated in order to decide if more extensive characterization and development of remedial alternatives is appropriate (EPA, 1991). The evaluation decision whether or not these hot spots require more extensive characterization and development of remedial alternatives is summarized in Section 8.

The lateral and vertical extent of solid waste at the Parcel E-2 Landfill was delineated during field work performed under the RI and NDGI. All information regarding the extent of solid waste at the landfill in this section was derived from the Landfill Lateral Extent Evaluation report (TtEMI, 2004f) (Appendix B to this report). The lateral extent of waste at the Landfill Area is shown on Figure 3-1. Along the northern perimeter of the Parcel E-2 Landfill, the landfill lateral extent was determined to be along the fenceline separating Parcel E-2 from the UCSF compound. The eastern edge of the solid waste is located beneath the interim landfill cap (estimated to end approximately 10 feet before the eastern edge of the cap). The southeastern edge of solid waste is located adjacent to the shoreline and the southwestern edge is located adjacent to the freshwater wetlands within the Panhandle Area. The western edge of solid waste is located adjacent to the drainage channel along the western property boundary.

The waste is generally located between 21 feet above and 14 feet below msl. The thickness of the waste generally varies from 10 to 25 feet. In all areas of the Parcel E-2 Landfill, solid waste extends beneath the water table.

Isolated solid waste locations are present with the Panhandle and East Adjacent Areas (Figure 4-1). Waste at these locations is not contiguous with the Landfill Area and consists primarily of construction debris, with lesser quantities of non-putrescible industrial waste (including sandblast waste).

4.5.1.1. Resolution of Data Quality Objectives

DQOs were presented in the Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP) for the Parcel E NDGI (TtEMI, 2002a) to outline the decision questions to be answered by the landfill lateral extent evaluation. The nature and extent evaluation presented in this report is based primarily on the landfill lateral extent evaluation. Therefore, an assessment of how the data for landfill lateral extent compares with the DQOs will help verify whether or not the existing data are sufficient to support this RI/FS.

The DQOs focus on 1) delineating the edge of waste for the southwest, northwest, and northern portions of the Parcel E-2 Landfill and 2) determining the thickness of waste at the northern portion of the landfill to support future remedial designs (TtEMI, 2002a). DQO evaluations are summarized in Table 4-21. Based on an evaluation of the available data, the installation of primary and step-out test pits adequately delineated the landfill lateral extent. In addition, the installation of test pit borings provided additional data on the waste thickness at the edge of the landfill. This determination supports the nature and extent evaluation of solid waste as presented in this report.

4.5.1.2. Data Gaps

Upon completion of the NDGI, the extent of solid waste at the Parcel E-2 Landfill has been adequately delineated with no data gaps remaining. Overall, there is sufficient characterization data on the nature and extent of solid waste to support the focused remedy evaluation process that will accelerate the cleanup and transfer of Parcel E-2.

4.5.2. Nature and Extent of Landfill Gas

Upon completion of the landfill gas characterization study, the extent of landfill gas beyond the landfill perimeter was determined to be at the northern edge of the UCSF compound. To the east, west, and south, landfill gas had not migrated beyond the perimeter of the Parcel E-2 Landfill (TtEMI, 2003e) (Appendix A). The landfill gas TCRA was conducted to remove landfill gas that had migrated onto the UCSF compound and to control future migration north of the solid waste boundary. Ongoing landfill gas monitoring and gas control system operation is performed on a monthly basis to verify that hazardous levels of landfill gas are not migrating beyond the fence line of the landfill and onto the UCSF compound. The ongoing landfill gas control program, based on the Interim Landfill Gas Monitoring and Control Plan (TtEMI and ITSI, 2004c), includes notification and response procedures in the event that hazardous levels of landfill gas are detected beyond the fence line of the landfill and beneath the UCSF compound. The data collected as part of the landfill gas characterization study, the TCRA, and the ongoing landfill gas monitoring have adequately defined the nature and extent of landfill gas at Parcel E-2.

4.5.2.1. Resolution of Data Quality Objectives

The nature and extent evaluation presented in this report is supported by the data collected as part of the landfill gas characterization study, the landfill gas TCRA, and the ongoing landfill gas monitoring and control system operation. Two sets of DQOs were established to outline decision questions to be answered by the landfill gas characterization study (which identified landfill gas migration onto the UCSF compound) and the ongoing landfill gas monitoring and control system operation (which is effectively controlling landfill gas migration following implementation of the TCRA). An evaluation of how the data from both the landfill gas characterization study and the landfill gas and control system operation compares with the respective DQOs will help verify whether or not the existing data are sufficient to support this RI/FS.

DQOs were presented in the FSP/QAPP for the Parcel E NDGI (TtEMI, 2002a) to outline the decision questions to be answered by the landfill gas characterization study. These decision questions focused on defining the nature and extent of landfill gas in and around the Parcel E-2 Landfill. DQO evaluations for the landfill gas characterization study are summarized in Table 4-22. The data collected during the landfill gas characterization study determined that subsurface gas from the Parcel E-2 Landfill had not resulted in unacceptable levels of methane and NMOCs in outdoor or indoor air. In addition, the data defined the extent of subsurface methane and NMOCs surrounding the Parcel E-2 Landfill.

The findings of the landfill gas characterization study prompted the Navy to initiate a TCRA to: 1) remove landfill gas and reduce subsurface methane concentrations at the UCSF compound to below the LEL (5 percent by volume in air); and 2) control future landfill gas migration to off-site areas. DQOs were presented in the Interim Landfill Gas Monitoring and Control Plan (TtEMI and ITSI, 2004c) to outline the decision questions to be answered by the ongoing landfill gas monitoring and control system operation. The DQOs were developed using 27 CCR as guidance, and set limits for landfill gas concentrations at the various locations that make up the monitoring network. DQOs were developed for landfill gas monitoring at all GMPs, UCSF surface locations, the Building 830 crawl space, on-site utilities, and the landfill gas control system. The DQOs focus on the monitoring criteria to 1) ensure that hazardous levels of landfill gas are not migrating beyond the fence line of the Parcel E-2 Landfill and onto the UCSF compound; 2) demonstrate that landfill gas is not migrating under Crisp Avenue toward non-Navy property; and 3) monitor the performance of the landfill gas control system (TtEMI and ITSI, 2004c).

DQO evaluations are summarized in Table 4-23. Based on an evaluation of the available data from January 2004 through January 2006, the control system is functioning to control the migration of hazardous levels of landfill gas beyond the fence line of the Parcel E-2 Landfill. In January 2006, hazardous levels of landfill gas were detected at the fence line of the landfill. The Navy promptly performed active extraction at these locations to control the migration of hazardous levels of landfill gas beyond the fence line of the landfill. This determination supports the nature and extent of landfill gas as presented in this report.

4.5.2.2. Data Gaps

Sufficient landfill gas data exist to evaluate remedial alternatives for Parcel E-2. However, the potential presence of subsurface utilities within the eastern portion of the Landfill Area (Figure 1-4) should be verified. Such utilities may serve as preferential pathways for gas migration; however, previous soil gas measurements in the vicinity (Figure 4-3) have not detected methane above 25 percent of the LEL.

4.5.3. Nature and Extent of Soil Contamination

The following paragraphs summarize the nature and extent of hazardous substances in soil within Parcel E-2. Data from the 736 soil samples collected within Parcel E-2 are sufficient to support the human health and ecological risk assessments, to provide the basis for the RAOs, and to evaluate a focused set of remedial alternatives for Parcel E-2.

Metals, pesticides, PCBs, furans, SVOCs, VOCs, and petroleum hydrocarbons were detected at concentrations exceeding the RIEC in soil samples collected at Parcel E-2. As shown on Table 4-24, chemical concentrations above RIEC were found in all three study areas at Parcel E-2 and all depth ranges evaluated. The following list provides a general summary of the distribution of these compounds throughout Parcel E-2.

- Nine metals (antimony, arsenic, cadmium, chromium, copper, iron, lead, vanadium, and zinc) were detected at concentrations exceeding the RIEC in surface soils at Parcel E-2. No metals were detected above the RIEC from 0 to 2 feet bgs in the Landfill Area. Arsenic, chromium, and lead were the primary metals detected in samples collected at depths greater than 10 feet bgs. Most of the metals were detected in samples collected between 2 and 10 feet bgs, and the greatest number of RIEC exceedances was present in the Landfill Area.
- Two pesticides (total DDE and dieldrin) were detected at concentrations exceeding the RIEC in surface soils at the East Adjacent Area and Panhandle Area.
- Total PCBs were detected at concentrations exceeding the RIEC in soils between 0 and 10 feet bgs within the Panhandle and East Adjacent Areas. The Landfill Area had concentrations of total PCBs at depths greater than 2 feet bgs, including six samples containing concentrations greater than 100 mg/kg. These concentrations were greater than 100 times the RIEC (0.74 mg/kg) and, as defined in Subsection 4.2.4, may be considered potential hot spots within the landfill.
- One sample containing a detectable concentration of 2,3,4,7,8-PeCDF was found in the Panhandle Area at 10 feet bgs.
- SVOCs were detected in soil at concentrations exceeding the RIEC throughout Parcel E-2. The number of SVOC exceedances is highest in Landfill Area soil from 2 to 10 feet bgs and Panhandle Area soil from 0 to 2 feet bgs.
- VOCs were detected in soil at concentrations exceeding the RIEC in Landfill Area soil greater than 10 feet bgs. VOC concentrations were below the RIEC in all other areas.
- Petroleum hydrocarbons (including TPH-g, TPH-d, TPH-mo, and TOG) were detected in soil at concentrations exceeding the total TPH screening criteria in most Parcel E-2 areas. The number of total TPH exceedances is highest in Landfill Area soil deeper than 2 feet bgs and adjacent area soil from 0 to 2 feet bgs.

Based on the data presented in Table 4-24, soil contamination is less extensive within Landfill Area soil between 0 and 2 feet bgs and East Adjacent Area soils greater than 10 feet bgs. This finding is attributed to the fact that the majority of fill material in these areas was not associated with shipyard operations. Specifically, surface soil within the Landfill Area was placed during closure activities in 1974, and residual SVOC contamination in this interval can be attributed to surface releases after 1974. In addition, deep soil within the East Adjacent Area consists of either natural sediments or fill material placed during expansion of the shipyard in the early 1940s.

Soil contamination is more widely distributed in the Panhandle Area and the shallow zones (0 to 10 feet bgs) of the East Adjacent Area. The heterogeneous contaminant distribution in these areas indicates that fill material placed at Parcel E-2 during shipyard operations may contain unacceptable levels of contamination. The heterogeneous contaminant distribution makes delineation of potential areas of concern problematic. This is evidenced by the findings of the SDGI which, as discussed further in the subsection below, was only partially successful in delineating known and potential soil contamination in the Panhandle and East Adjacent Areas. RIEC exceedances in the Panhandle and East Adjacent Areas that are not completely delineated are shown in red text on Table 4-24. Despite the inherent difficulty in delineating potential point sources of soil contamination within heterogeneous fill material, the characterization efforts from the RI, NDGI, and SDGI have provided sufficient data to evaluate potential human health and ecological risk at Parcel E-2.

As discussed in Subsection 4.2.4, soil characterization data within the Landfill Area are used to determine whether the containment presumption, as outlined in EPA guidance (EPA, 1993a; EPA, 1993b; EPA, 1996) is appropriate. Specifically, the characterization data was used to assess the approximate lateral and vertical extent (relative to the landfill waste volume) of hazardous substances above the RIEC. Nearly all of the hazardous substances detected in Landfill Area soil were of a limited extent relative to the overall waste volume. Several compounds, such as SVOCs, were detected throughout the Landfill Area at concentrations above the RIEC but at concentrations that were not indicative of hot spots. The potential PCB hot spots within the Landfill Area were localized relative to the overall waste volume and were located at relatively deep depths (between 11 and 17 feet bgs). These findings demonstrate that lesser quantities of hazardous wastes are present in the landfill as compared with municipal-type waste and construction debris.

4.5.3.1. Resolution of Data Quality Objectives

DQOs were presented in the Sampling and Analysis Plan for the SDGI (TtEMI, 2002d) to focus the additional soil characterization efforts needed to complete the RI. The nature and extent evaluation presented in this report relies heavily on the SDGI characterization efforts. Therefore, an evaluation of how the soil and sediment characterization data compares with the DQOs will help verify whether or not the existing data are sufficient to support this RI/FS.

DQO evaluations are summarized in Table 4-25. The SDGI was successful in delineating several source areas in the Parcel E-2 onshore areas, most notably the PCB Hot Spot in the East Adjacent Area. However, based on the data presented in the SDGI Data Summary Report (TtEMI, 2005c), there are a number of locations that have not been completely delineated. As discussed in Subsection 4.5.3, this finding is consistent with the heterogeneous contaminant distribution in the Panhandle and East Adjacent Areas.

The shoreline component of the SDGI is also summarized on Table 4-25. The shoreline investigation found contaminated sediment within the intertidal Shoreline Area that may pose a risk to aquatic receptors. The findings of the shoreline investigation are discussed in more detail in Appendix G (SulTech, 2005).

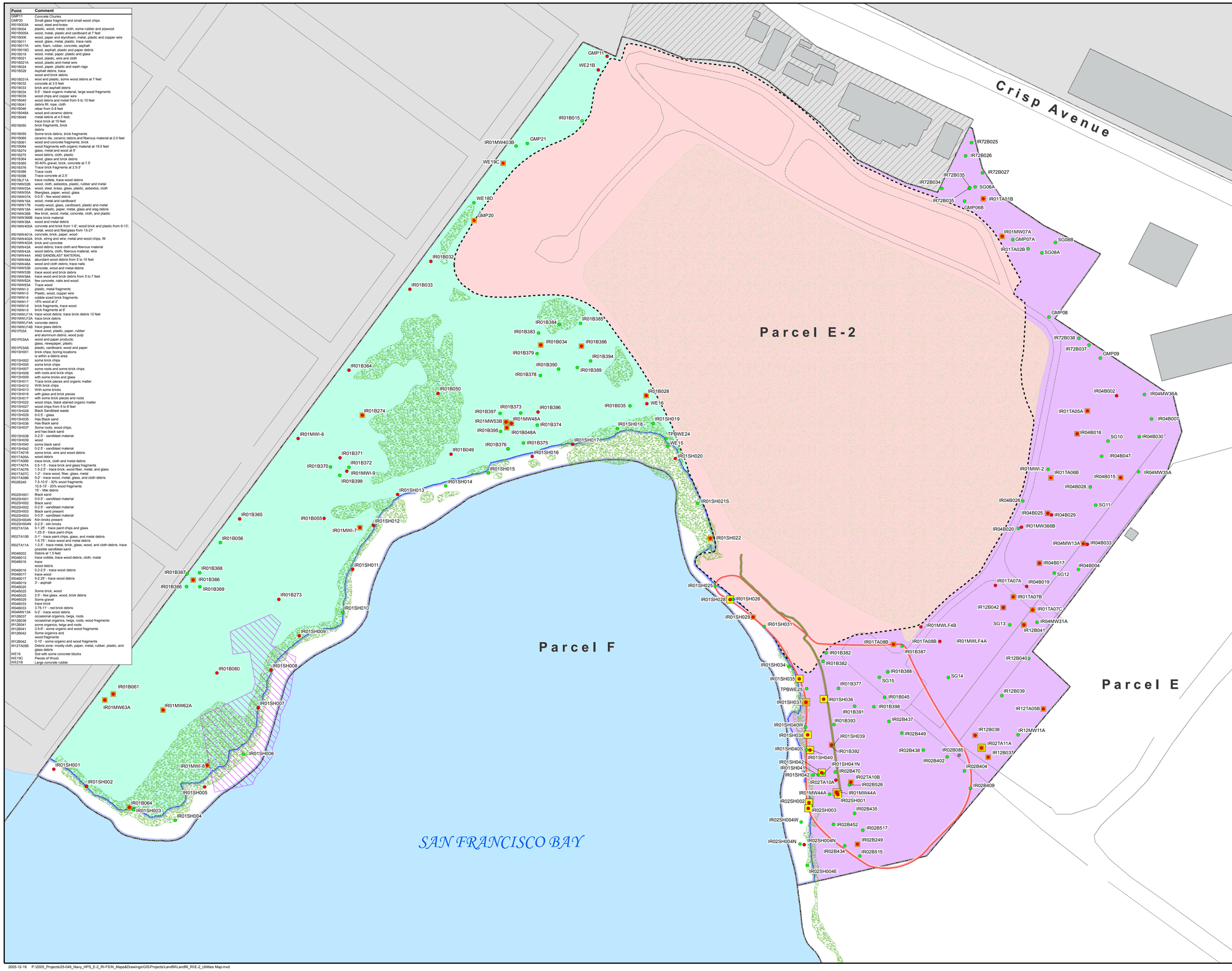
4.5.4. Data Gaps

Although the SDGI was only partially successful in delineating known and potential soil contamination in the Panhandle and East Adjacent Areas, it substantially increased the soil data set in the Panhandle Area and East Adjacent Area. The inability to delineate potential point sources of soil contamination within heterogeneous fill material does not necessarily constitute a data gap. Overall, the SDGI data did not affect the overall maximum concentrations of chemicals in soil relative to the original RI data set from 1997. For the majority of chemicals detected at Parcel E-2, the maximum detected concentration in the current RI/FS data set is within 10 percent of the maximum detected concentration in the original RI data set. This finding helps demonstrate that the heterogeneous site conditions at Parcel E-2 present severe challenges to completing a standard investigation and cleanup for a point source or sources.

As a result, the adequacy of the data set should be measured against the remediation decision to be made for Parcel E-2. Given the focused set of remedial alternatives envisioned for the FS component of this report, complete delineation of known and potential soil contamination in the Panhandle and East Adjacent Areas is not necessary. Overall, there is sufficient characterization data to support the risk assessment and a more focused remedy evaluation process that will accelerate the cleanup and transfer of Parcel E-2.

Figures

Point	Comment
GMP11	Concrete Chunks
GMP20	Small glass fragment and small wood chips
IR01B003A	wood, steel and brass
IR01B004	plastic, wood, metal, cloth, some rubber and plywood
IR01B005A	wood, metal, plastic and cardboard at 7 feet
IR01B006	wood, paper and styrofoam, metal, plastic and copper wire
IR01B011	wood, glass, metal, plastic, trace nails
IR01B017A	wire, foam, rubber, concrete, asphalt
IR01B018G	wood, asphalt, plastic and paper debris
IR01B019	wood, metal, paper, plastic and glass
IR01B021	wood, plastic, wire and cloth
IR01B021A	wood, plastic and metal wire
IR01B024	wood, paper, plastic and wash rags
IR01B028	Asphalt debris, trace
	wood and brick debris
IR01B031A	wood and plastic, some wood debris at 7 feet
IR01B032	concrete at 3.5 feet
IR01B033	brick and asphalt debris
IR01B034	9.5' - black organic material, large wood fragments
IR01B039	wood chips and copper wire
IR01B040	wood debris and metal from 5 to 10 feet
IR01B041	debris fill, rope, cloth
IR01B046	rebar from 0-8 feet
IR01B048A	wood and ceramic debris
IR01B049	metal debris at 4.5 feet;
	trace brick at 15 feet
IR01B050	brick fragments, brick
	debris
IR01B055	Some brick debris, brick fragments
IR01B060	ceramic tile, ceramic debris and fiberous material at 2.0 feet
IR01B061	wood and concrete fragments; brick
IR01B064	wood fragments with organic material at 19.5 feet
IR01B274	glass, metal and wood at 5'
IR01B275	wood debris, cloth, plastic
IR01B364	wood, glass and brick debris
IR01B365	30-40% gravel, brick, concrete at 7.5'
IR01B376	Trace brick fragments at 2.5-3'
IR01B386	Trace roots
IR01B396	Trace concrete at 2.5'
IR01BLF1A	trace rootlets, trace wood debris
IR01MW02B	wood, cloth, asbestos, plastic, rubber and metal
IR01MW03A	wood, steel, brass, glass, plastic, asbestos, cloth
IR01MW05A	fiberglass, paper, wood, glass
IR01MW07A	0-0.5' - few wood debris
IR01MW16A	wood, metal and cardboard
IR01MW17B	mostly wood, glass, cardboard, plastic and metal
IR01MW18A	wood, plastic, paper, metal, glass and slag debris
IR01MW26B	few brick, wood, metal, concrete, cloth, and plastic
IR01MW366B	trace brick material
IR01MW38A	wood and metal debris
IR01MW400A	concrete and brick from 1-6'; wood brick and plastic from 6-13';
	metal, wood and fiberglass from 13-21'
IR01MW401A	concrete, brick, paper, wood
IR01MW402A	brick, string and wire; metal and wood chips, fill
IR01MW403A	brick and concrete
IR01MW43A	wood debris; trace cloth and fiberous material
IR01MW45A	wood debris, cloth, fiberous material, wire
IR01MW44A	AND SANDBLAST MATERIAL
IR01MW46A	abundant wood debris from 5 to 10 feet
IR01MW46B	wood and cloth debris; trace nails
IR01MW53B	concrete, wood and metal debris
IR01MW53B	trace wood and brick debris
IR01MW55A	trace wood and brick debris from 5 to 7 feet
IR01MW62A	few concrete, nails and wood
IR01MW63A	Trace wood
IR01MW1-3	plastic, metal fragments
IR01MW1-5	Plastic, wood, copper wire
IR01MW1-6	cobble sized brick fragments
IR01MW1-7	<5% wood at 2'
IR01MW1-8	brick fragments, trace wood
IR01MW1-9	brick fragments at 6'
IR01MWLF1A	trace wood debris; trace brick debris 12 feet
IR01MWLF2A	trace brick debris
IR01MWLF4A	concrete debris
IR01MWLF4B	trace glass debris
IR01P03A	trace wood, plastic, paper, rubber
	and aluminum debris; wood pulp
IR01P03AA	wood and paper products;
	glass, newspaper, plastic
IR01P03AB	plastic, cardboard, wood and paper
IR01SH001	brick chips; boring locations
	is within a debris area
IR01SH002	some brick chips
IR01SH005	some brick chips
IR01SH007	some roots and some brick chips
IR01SH008	with roots and brick chips
IR01SH009	with some bricks and glass
IR01SH011	Trace brick pieces and organic matter
IR01SH012	With brick chips
IR01SH013	With some bricks
IR01SH016	with glass and brick pieces
IR01SH017	with some brick pieces and roots
IR01SH022	wood chips, black stained organic matter
IR01SH027	wood chips from 5 to 8 feet
IR01SH028	Black Sandblast waste
IR01SH029	0-0.5' - glass
IR01SH035	Has Black sand
IR01SH036	Has Black sand
IR01SH037	Some roots, wood chips;
	and has black sand
IR01SH038	0-2.5' - sandblast material
IR01SH039	wood
IR01SH040	some black sand
IR01SH042	0-2.5' - sandblast material
IR01TA05A	some brick, wire and wood debris
IR01TA06B	wood debris
IR01TA08A	trace brick, cloth and metal debris
IR01TA07A	0.5-1.5' - trace brick and glass fragments
IR01TA07B	1.5-3.5' - trace brick, wood fiber, metal, and glass
IR01TA07C	1-2' - trace wood, fiber, glass, metal
IR01TA08B	0-2' - trace wood, metal, glass, and cloth debris
IR02B249	7.5-10.5' - 30% wood fragments
	10.5-15' - 20% wood fragments
	15' - little debris
IR02SH001	Black sand
IR02SH001	0-0.5' - sandblast material
IR02SH002	Black sand
IR02SH002	0-2.5' - sandblast material
IR02SH003	Black sand present
IR02SH003	0-0.5' - sandblast material
IR02SH004N	Kiln bricks present
IR02SH004N	0-2.5' - kiln bricks
IR27TA10A	0-1.25' - trace paint chips and glass
	1.25-3' - trace paint chips
IR27A10B	0-1' - trace paint chips, glass, and metal debris
	1-5.75' - trace wood and metal debris
IR27TA11A	1-2.5' - trace metal, brick, glass, wood, and cloth debris, trace
	possible sandblast sand
IR48002	Debris at 1.5 feet
IR48015	trace cobble, trace wood debris, cloth, metal
IR48016	trace
	wood debris
IR48016	0.2-2.5' - trace wood debris
IR48017	trace wood
IR48017	0-2.25' - trace wood debris
IR48019	3' - asphalt
IR48020	
IR48025	Some brick, wood
IR48025	2.5' - few glass, wood, brick debris
IR48029	Some gravel
IR48033	trace brick
IR48033	3.75-11' - red brick debris
IR48MW13A	0-2' - trace wood debris
IR12B037	occasional organics, twigs, roots
IR12B038	occasional organics, twigs, roots; wood fragments
IR12B041	some organics, twigs and roots
IR12B041	3.5-9' - some organic and wood fragments
IR12B042	Some organics and
	wood fragments
IR12B042	0-10' - some organic and wood fragments
IR12TA05B	Debris zone: mostly cloth, paper, metal, rubber, plastic, and
	glass debris
WE16	Soil with some concrete blocks
WE19C	Pieces of Wood
WE21B	Large concrete rubble



Contains Waste
No Waste Found
No Data Available
Putrescible Construction Debris
Sandblast Waste
Estimate of Solid Waste Extent
PCB Hot Spot (proposed boundary)
Metal Slag Hot Spot (proposed boundary)
Wetland Area
Interim Landfill Cap Extent
Landfill Area
East Adjacent Area
Panhandle Area
Shoreline Area
Parcel Boundary
Building
UCSF Compound
Non-Navy Property
Sheet-Pile Wall
Road
Gravel Road

N

100 0 100 200 300
Scale in Feet

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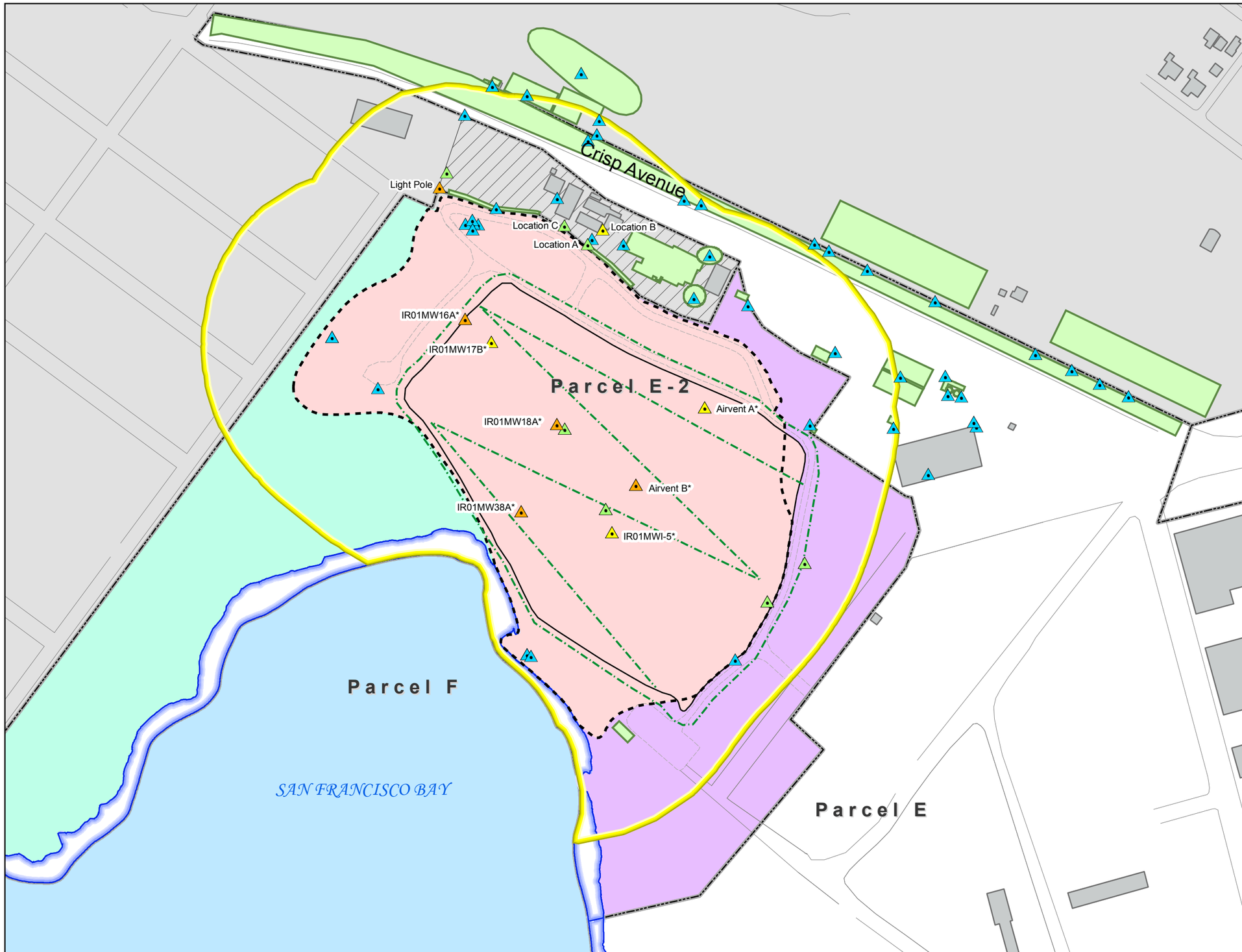
FIGURE 4-1

ISOLATED WASTE LOCATIONS IN ADJACENT AREAS

Remedial Investigation/Feasibility Study for Parcel E-2

2005-12-16 P:\2005_Projects\25-049_Navy_HPS_E-2_RI-FS\N_Maps&Drawings\GIS\Projects\Landfill\Landfill_RI\E-2_Utilities Map.mxd



Outdoor Air Survey Results (2002)

- >100% LEL
- 25-<100% LEL
- 1-<25% LEL
- <1% LEL
- Transect Location
- Building/Area Survey Location
- 300-Foot Landfill Buffer
- Parcel Boundary
- Landfill Area
- East Adjacent Area
- Panhandle Area
- Shoreline Area
- Estimate of Solid Waste Extent
- Interim Landfill Cap Extent
- Non-Navy Property
- UCSF Compound
- Building
- Road
- Gravel Road

Notes:
LEL readings measured by a gas indicator or a flame ionization detector. All LEL results associated with methane concentrations in ambient air.

LEL = lower explosive limit

Outdoor air survey was performed in 2002 (prior to landfill gas removal action); subsequent air monitoring at locations A, B, and C, and the light pole showed methane levels to be less than 1 percent.

* Air monitoring was performed at the top of the well casing with the well/vent open to the atmosphere; results are not considered representative of outdoor air within the landfill area.

N

250 0 250

Scale in Feet

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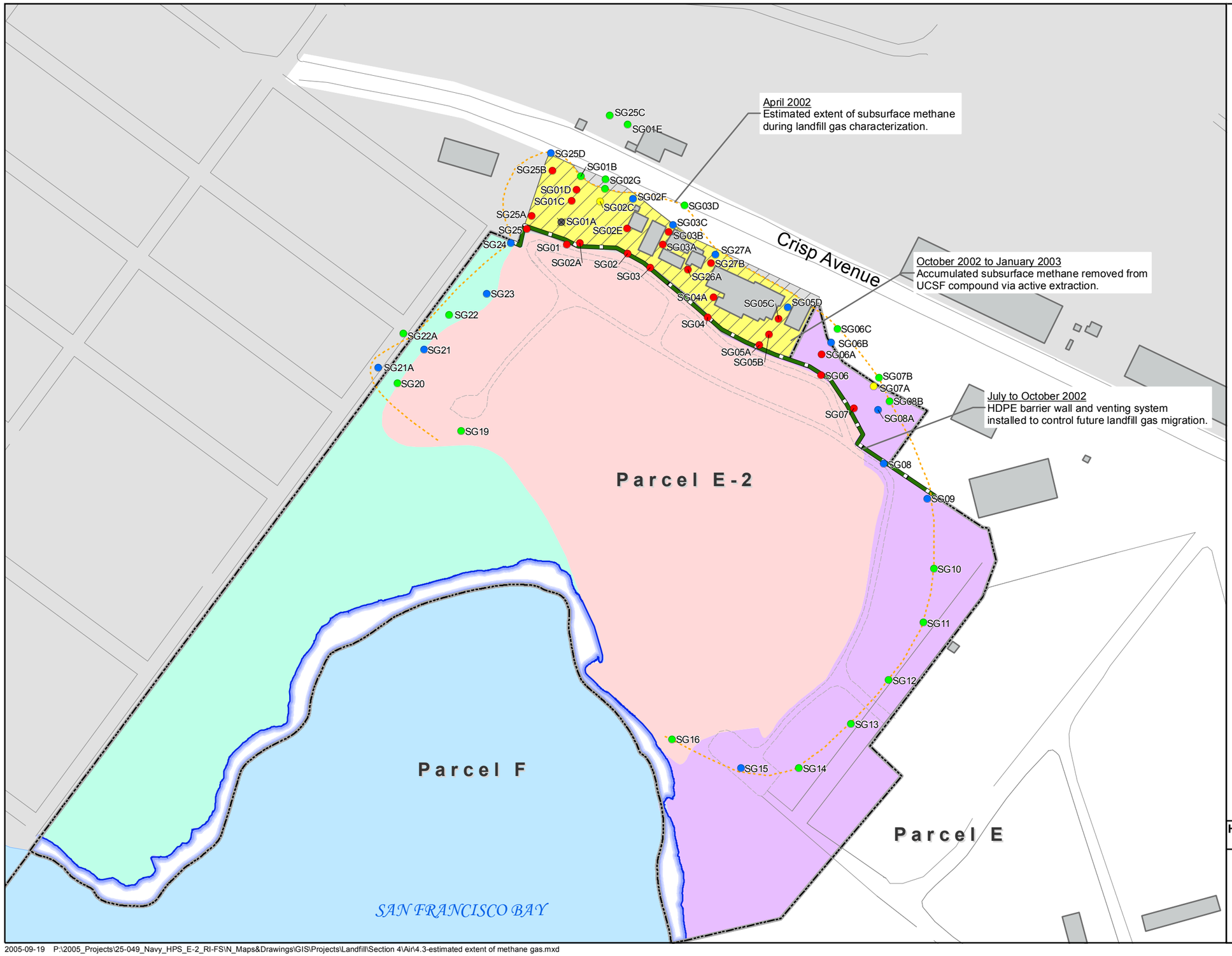
FIGURE 4-2

OUTDOOR AIR SURVEY RESULTS FOR METHANE

Remedial Investigation/Feasibility Study for Parcel E-2

2005-12-16 P:\2005_Projects\25-049_Navy_HPS_E-2_RI-FS\N_Maps&Drawings\GIS\Projects\Landfill\Section 4\Air\4.2-ambient air survey results.mxd



April 2002 Soil Gas Survey*

- No Survey Conducted
- Methane Not Detected
- Methane Less Than 25% LEL
- Methane Equal to or Greater than 25% LEL and Less than 100% LEL
- Methane Greater Than 100% LEL
- Estimated Extent of Methane Detected During April 2002 Field Survey
- HDPE Barrier Wall
- Area within UCSF Compound targeted for active gas extraction.
- Landfill Area
- Adjacent Area
- Panhandle Area
- Shoreline Area
- Parcel Boundary
- Non-Navy Property
- UCSF Compound
- Building
- Road
- Gravel Road

Notes:
EPA = U.S. Environmental Protection Agency
HDPE = high-density polyethylene
LEL = lower explosive limit
UCSF = University of California at San Francisco
LEL for methane is 5% by volume

* Soil gas survey performed using field instruments (with lower quanitation limit for methane at 0.5% of the LEL) and supplemented with laboratory data (analyzed for methane by EPA Method 3C).

N

250 0 250

Scale in Feet

ERRG ENGINEERING/REMEDIATION RESOURCES GROUP, INC.

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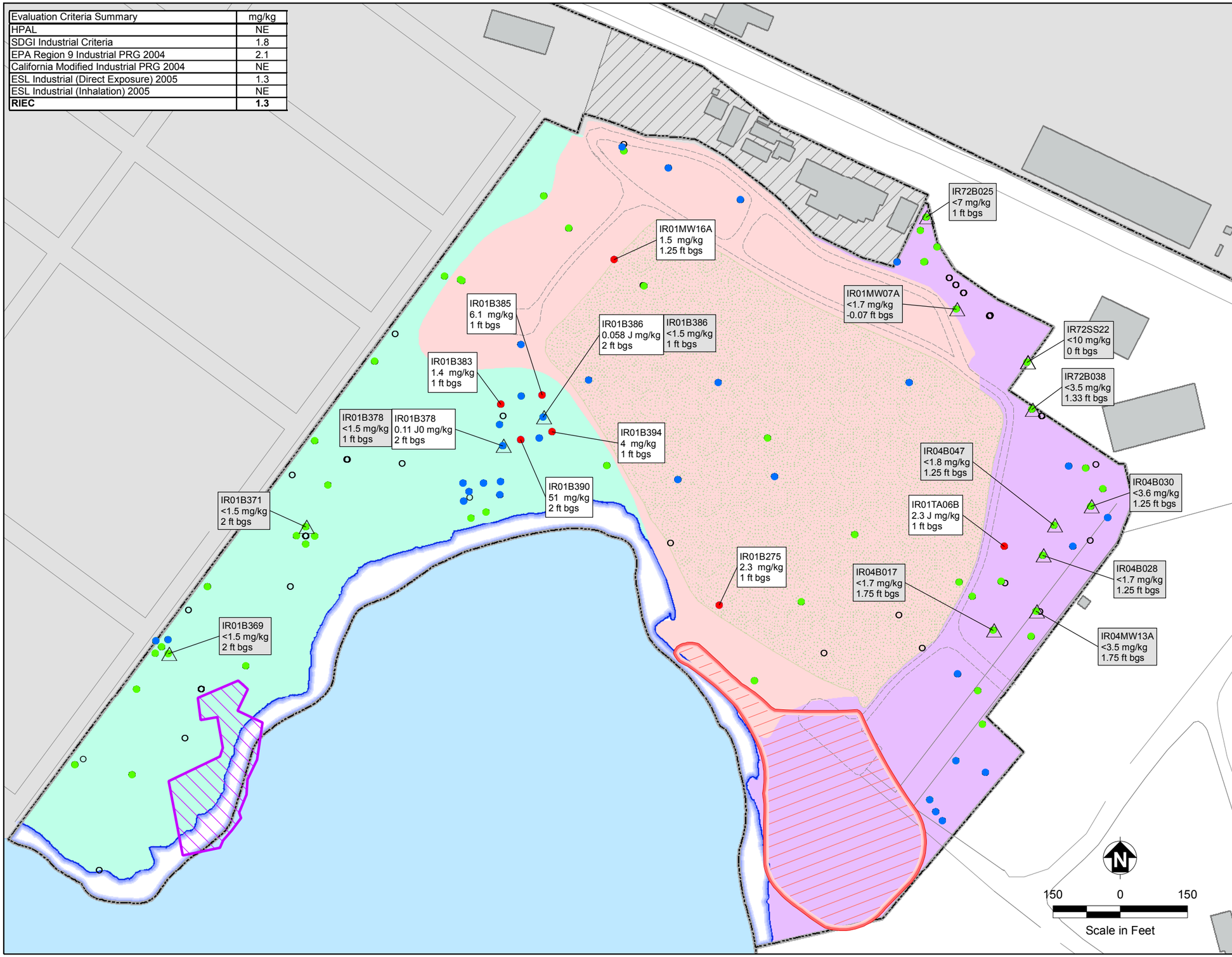
FIGURE 4-3

EXTENT OF SUBSURFACE METHANE PRIOR TO REMOVAL ACTION

Remedial Investigation/Feasibility Study for Parcel E-2

2005-09-19 P:\2005_Projects\25-049_Navy_HPS_E-2_RI-FS\N_Maps&Drawings\GIS\Projects\Landfill\Section 4\Air\4.3-estimated extent of methane gas.mxd

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	1.8
EPA Region 9 Industrial PRG 2004	2.1
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	1.3
ESL Industrial (Inhalation) 2005	NE
RIEC	**1.3**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

Results are shown for locations where data has exceeded the RIEC.
Where results are shown as non-detect (<), the reporting limit follows.
Results from the PCB Hot Spot and Metal Slag Area are not shown because both areas are undergoing remediation. Data within initial excavation boundaries (from 0 to 3 feet bgs) was removed from the data set. Post-excavation data from these areas will be presented in the draft final RI/FS.

EPA = Environmental Protection Agency
ESL = environmental screening level
HPAL = Hunters Point ambient level
NE = not established
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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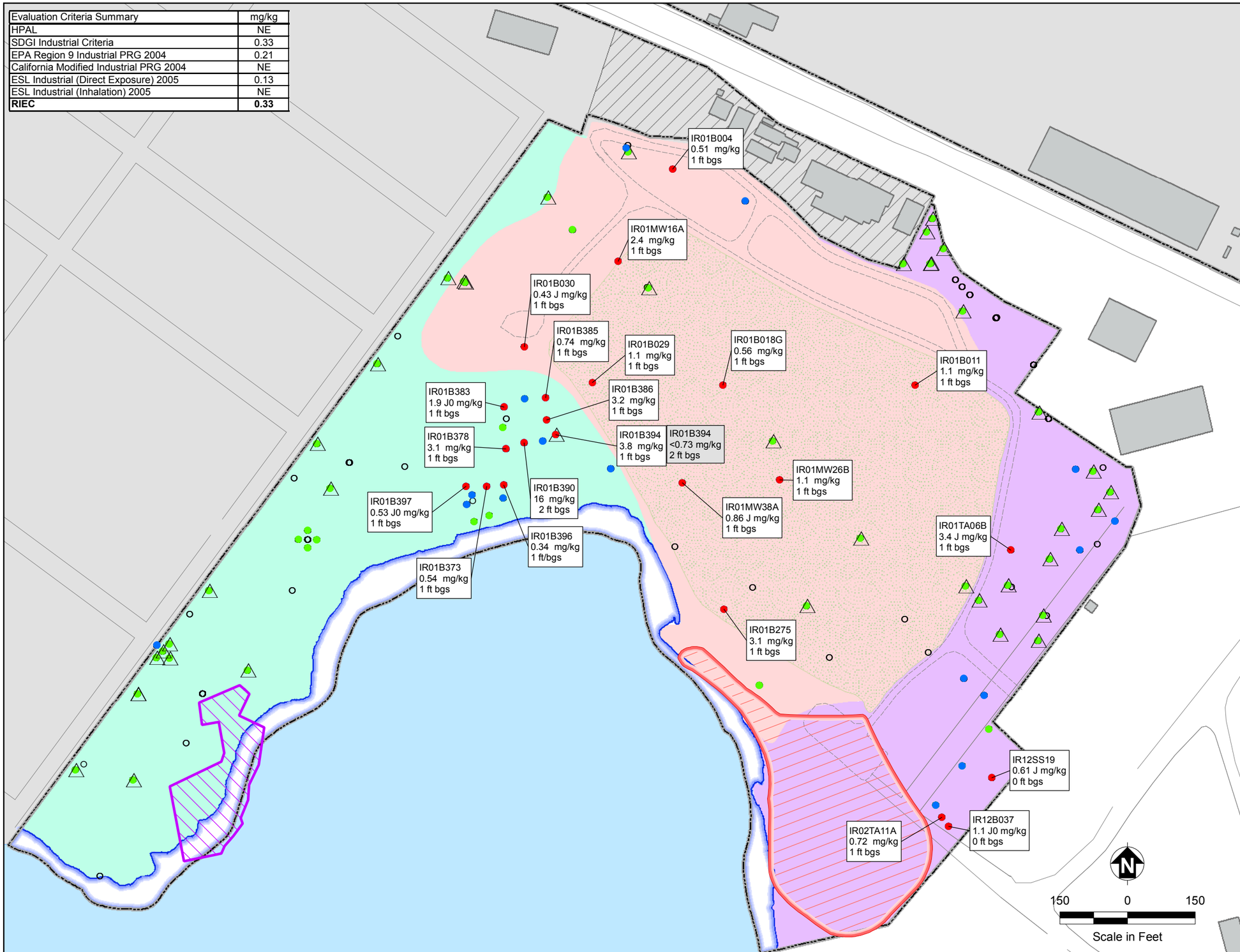
FIGURE 4-4

BENZO (A) ANTHRACENE IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	0.33
EPA Region 9 Industrial PRG 2004	0.21
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	0.13
ESL Industrial (Inhalation) 2005	NE
RIEC	**0.33**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

Results are shown for locations where data has exceeded the RIEC.
Where results are shown as non-detect (<), the reporting limit follows.
Results from the PCB Hot Spot and Metal Slag Area are not shown because both areas are undergoing remediation. Data within initial excavation boundaries (from 0 to 3 feet bgs) was removed from the data set. Post-excavation data from these areas will be presented in the draft final RI/FS.

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J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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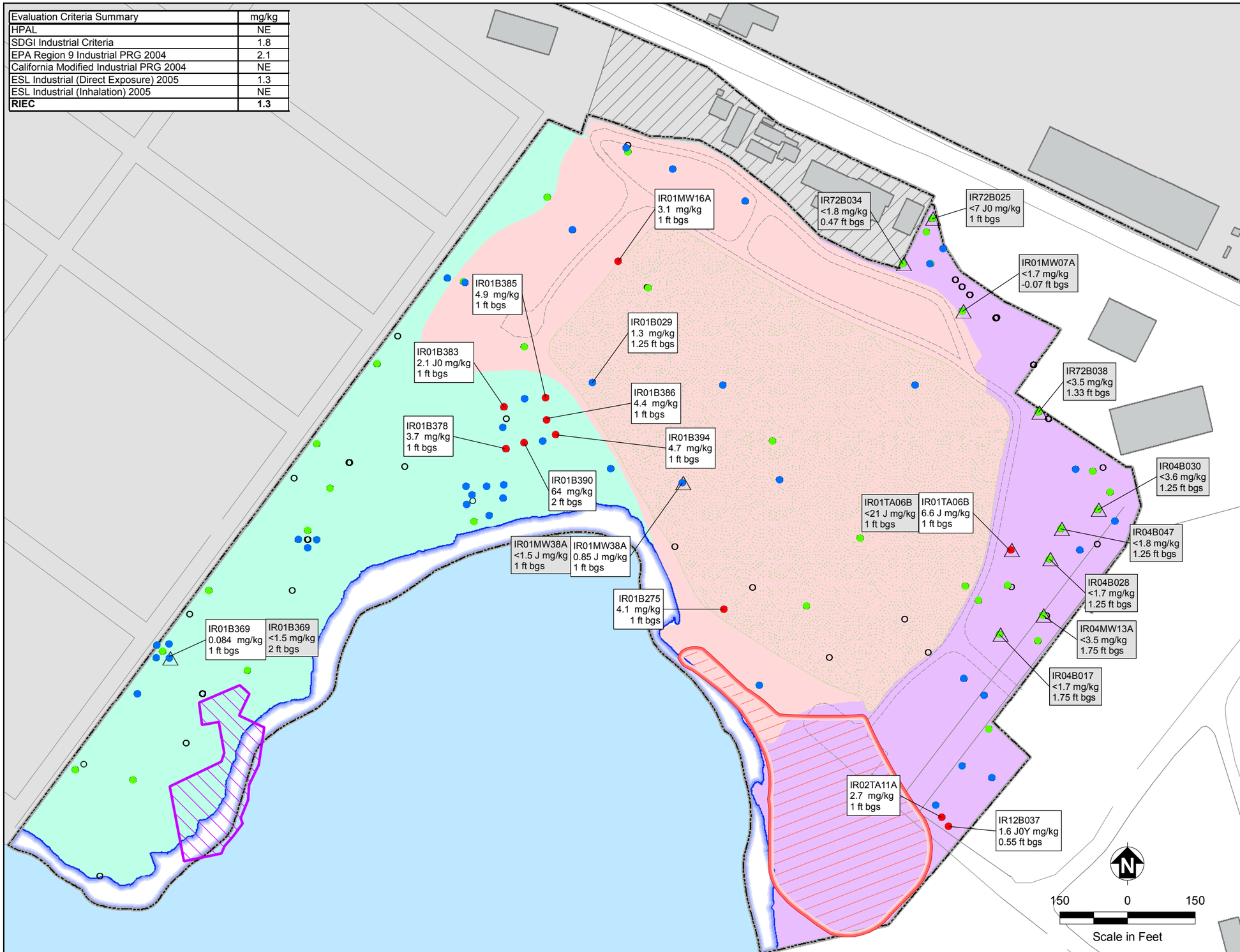
FIGURE 4-5

BENZO (A) PYRENE IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	1.8
EPA Region 9 Industrial PRG 2004	2.1
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	1.3
ESL Industrial (Inhalation) 2005	NE
RIEC	**1.3**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

Results are shown for locations where data has exceeded the RIEC.
Where results are shown as non-detect (<), the reporting limit follows.
Results from the PCB Hot Spot and Metal Slag Area are not shown because both areas are undergoing remediation. Data within initial excavation boundaries (from 0 to 3 feet bgs) was removed from the data set. Post-excavation data from these areas will be presented in the draft final RI/FS.

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NE = not established
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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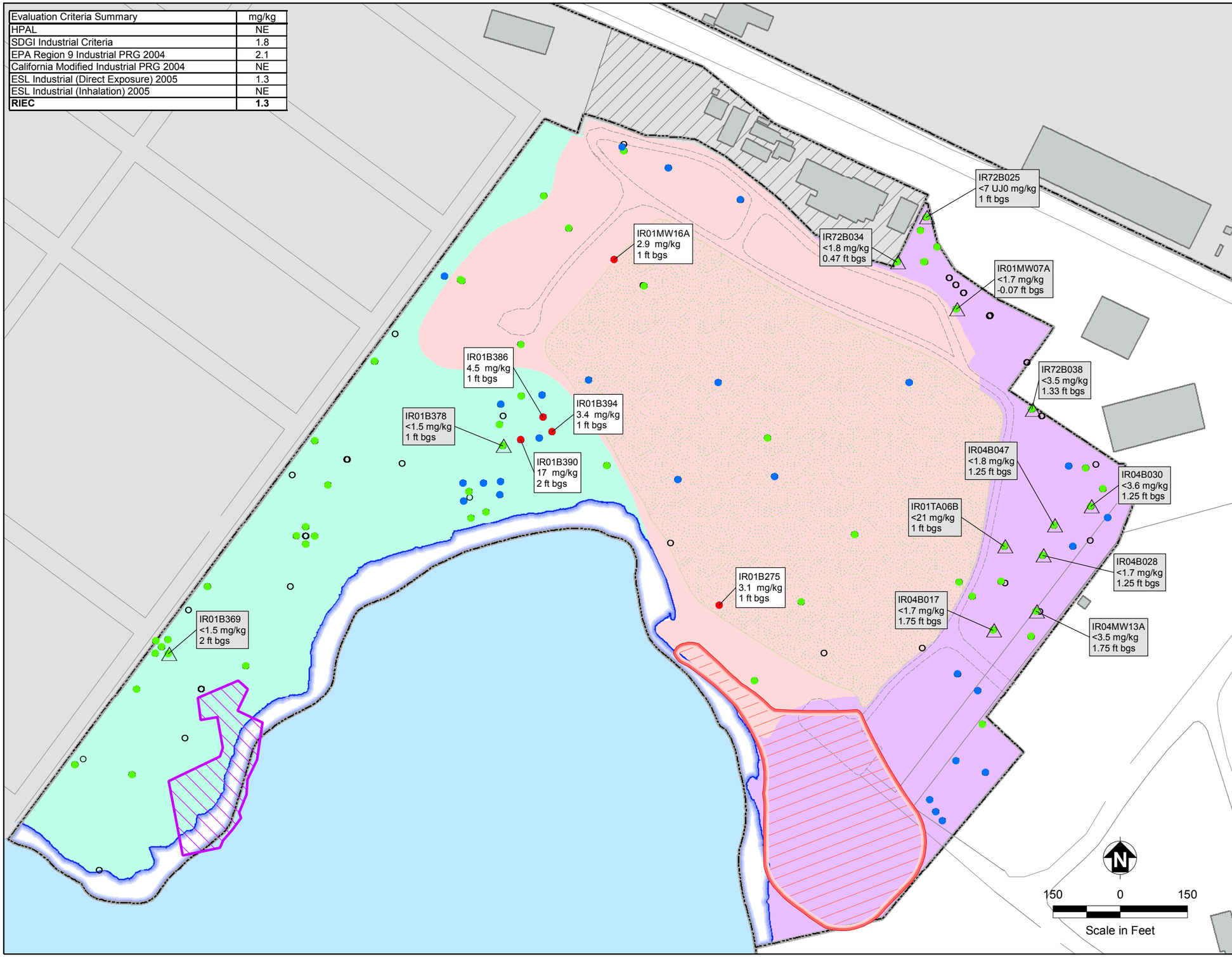
FIGURE 4-6

BENZO (B) FLUORANTHENE IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	1.8
EPA Region 9 Industrial PRG 2004	2.1
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	1.3
ESL Industrial (Inhalation) 2005	NE
RIEC	**1.3**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

Results are shown for locations where data has exceeded the RIEC.
Where results are shown as non-detect (<), the reporting limit follows.
Results from the PCB Hot Spot and Metal Slag Area are not shown because both areas are undergoing remediation. Data within initial excavation boundaries (from 0 to 3 feet bgs) was removed from the data set. Post-excavation data from these areas will be presented in the draft final RI/FS.

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HPAL = Hunters Point ambient level
NE = not established
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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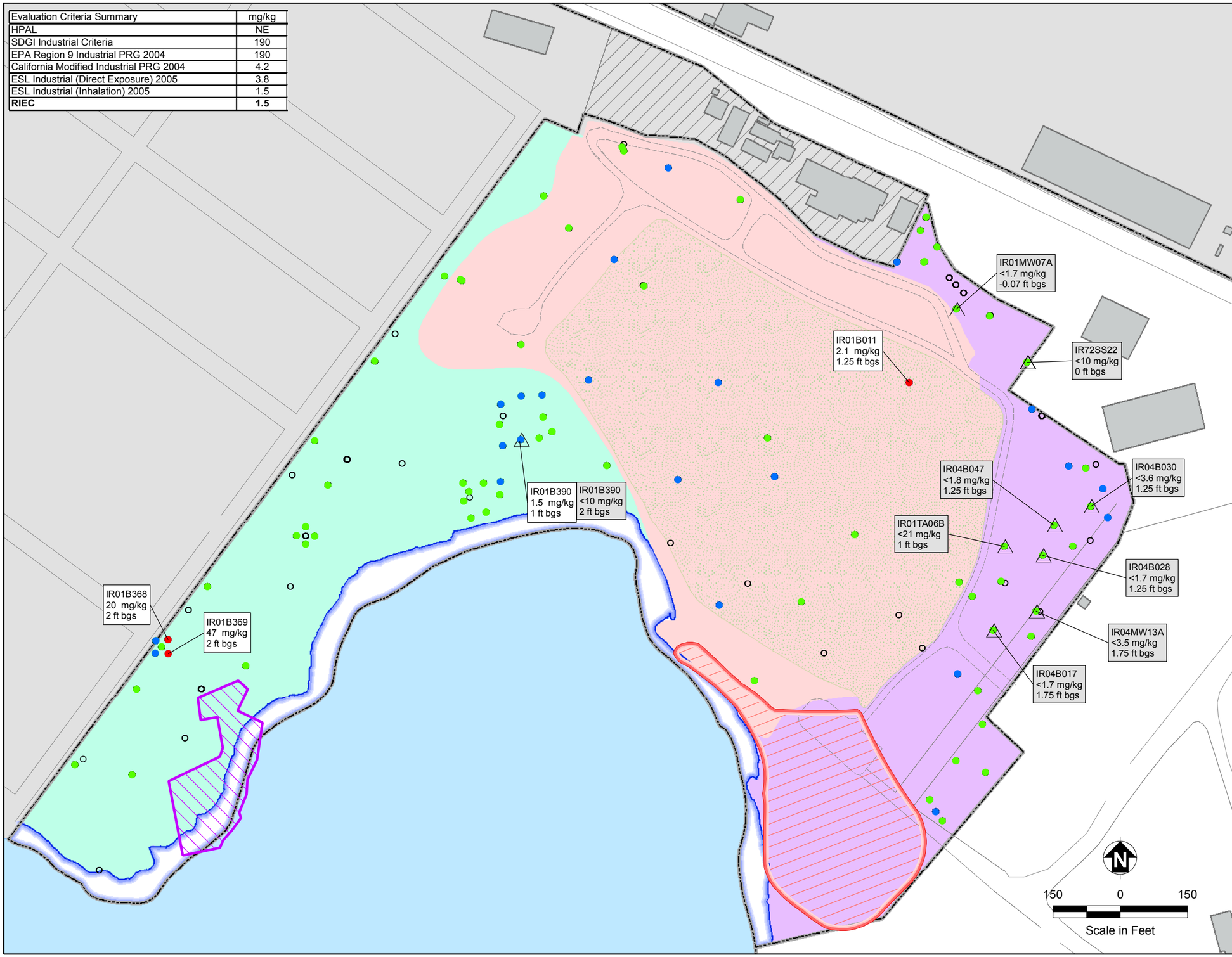
FIGURE 4-7

INDENO (1,2,3 - CD) PYRENE IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	190
EPA Region 9 Industrial PRG 2004	190
California Modified Industrial PRG 2004	4.2
ESL Industrial (Direct Exposure) 2005	3.8
ESL Industrial (Inhalation) 2005	1.5
RIEC	**1.5**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

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Results from the PCB Hot Spot and Metal Slag Area are not shown because both areas are undergoing remediation. Data within initial excavation boundaries (from 0 to 3 feet bgs) was removed from the data set. Post-excavation data from these areas will be presented in the draft final RI/FS.

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NE = not established
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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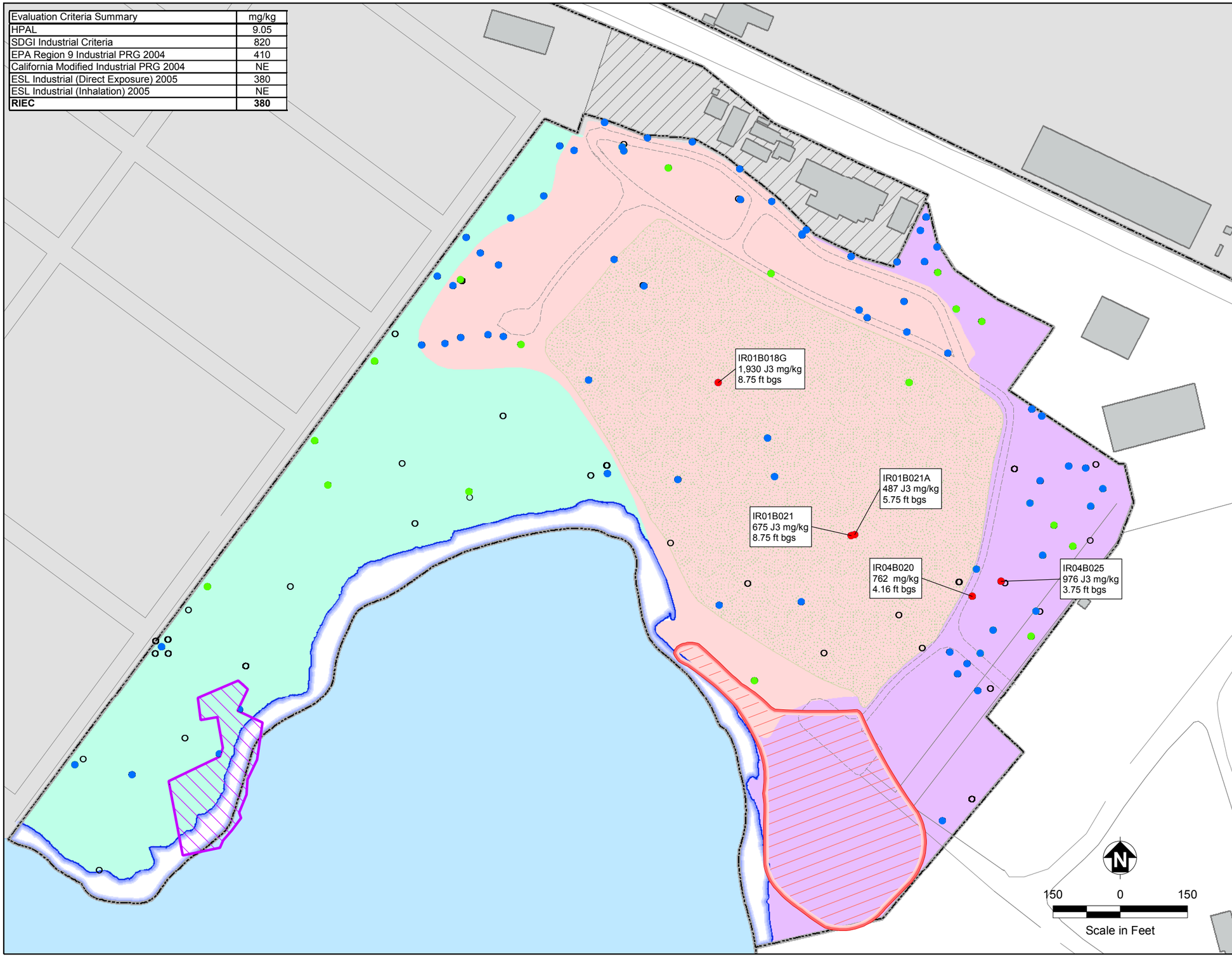
FIGURE 4-8

NAPHTHALENE IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	9.05
SDGI Industrial Criteria	820
EPA Region 9 Industrial PRG 2004	410
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	380
ESL Industrial (Inhalation) 2005	NE
RIEC	**380**



- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (proposed boundary)
- PCB Hot Spot (proposed boundary)
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

Notes:

Results are shown for locations where data has exceeded the RIEC.
Where results are shown as non-detect (<), the reporting limit follows.
Results from the PCB Hot Spot and Metal Slag Area are not shown because both areas are undergoing remediation. Data within initial excavation boundaries (from 0 to 3 feet bgs) was removed from the data set. Post-excavation data from these areas will be presented in the draft final RI/FS.

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ESL = environmental screening level
HPAL = Hunters Point ambient level
NE = not established
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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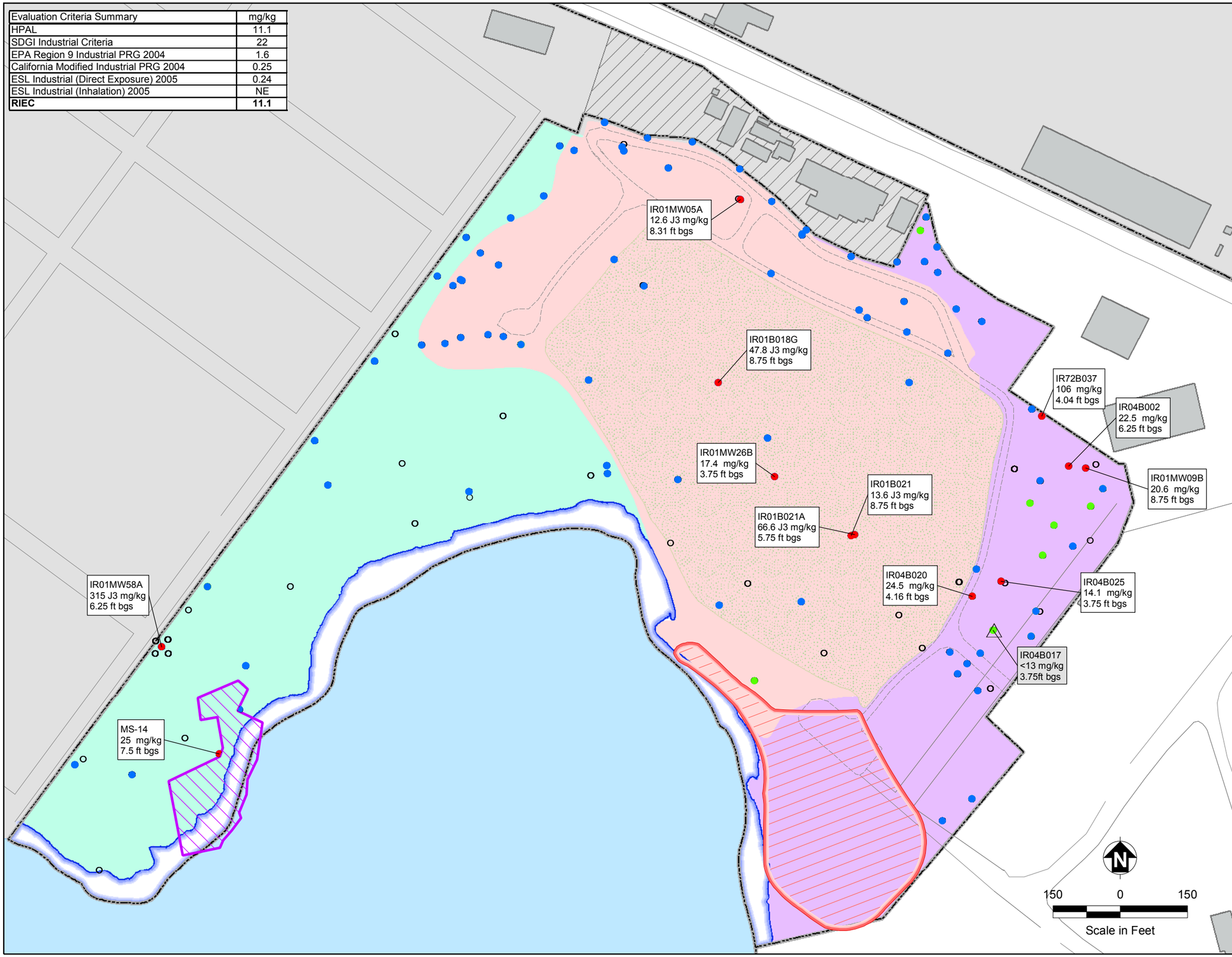
FIGURE 4-9

ANTIMONY IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	11.1
SDGI Industrial Criteria	22
EPA Region 9 Industrial PRG 2004	1.6
California Modified Industrial PRG 2004	0.25
ESL Industrial (Direct Exposure) 2005	0.24
ESL Industrial (Inhalation) 2005	NE
RIEC	**11.1**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

Results are shown for locations where data has exceeded the RIEC.
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Results from the PCB Hot Spot and Metal Slag Area are not shown because both areas are undergoing remediation. Data within initial excavation boundaries (from 0 to 3 feet bgs) was removed from the data set. Post-excavation data from these areas will be presented in the draft final RI/FS.

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ESL = environmental screening level
HPAL = Hunters Point ambient level
NE = not established
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275
150 J mg/kg
3.93 ft bgs
— Location ID
— Concentration and Qualifier
— Depth

IR04B025
<37 mg/kg
2.0 ft bgs
— Location ID
— Reporting Limit
— Depth

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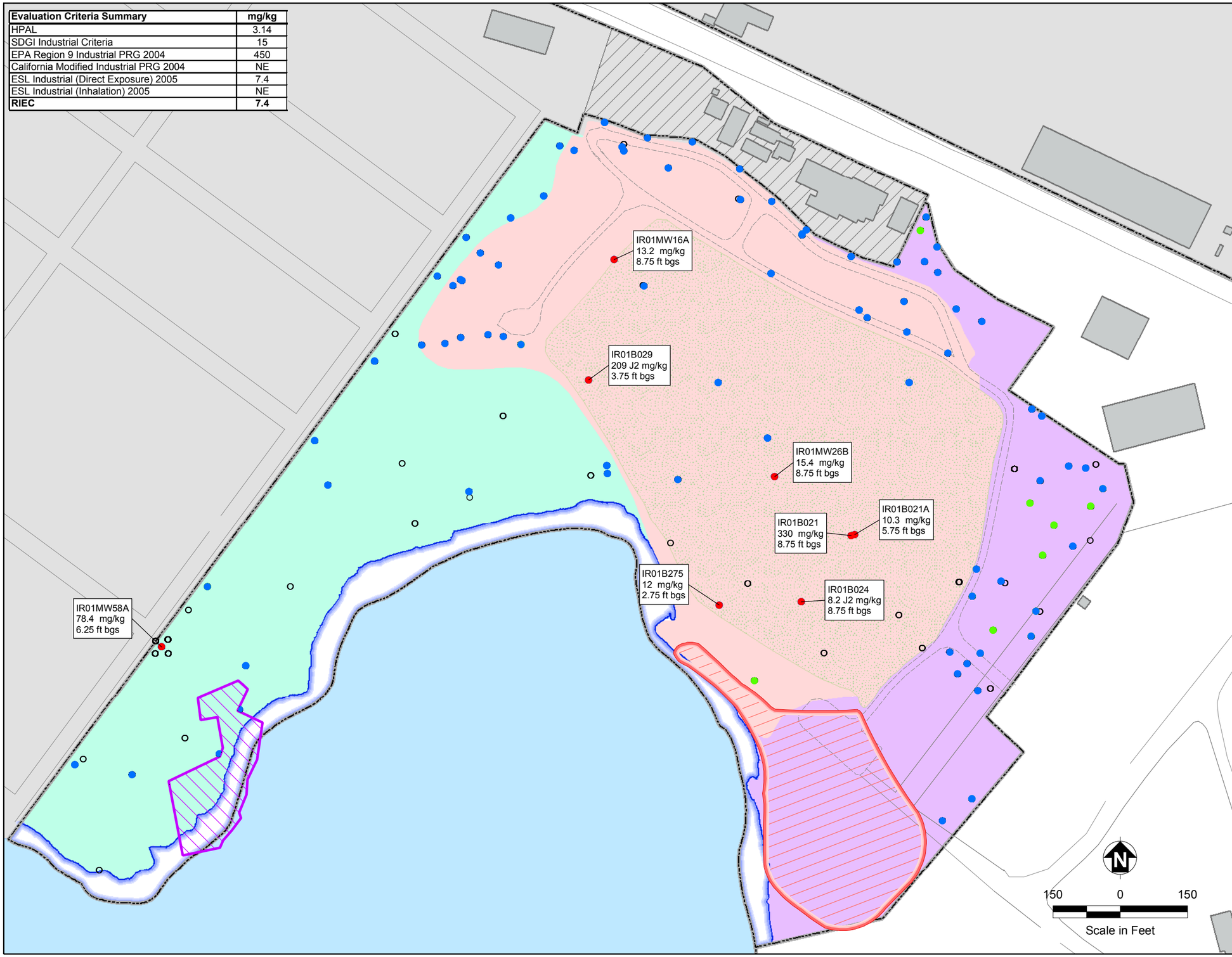
FIGURE 4-10

ARSENIC IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	3.14
SDGI Industrial Criteria	15
EPA Region 9 Industrial PRG 2004	450
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	7.4
ESL Industrial (Inhalation) 2005	NE
RIEC	**7.4**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

Results are shown for locations where data has exceeded the RIEC.
Where results are shown as non-detect (<), the reporting limit follows.
Results from the PCB Hot Spot and Metal Slag Area are not shown because both areas are undergoing remediation. Data within initial excavation boundaries (from 0 to 3 feet bgs) was removed from the data set. Post-excavation data from these areas will be presented in the draft final RI/FS.

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ESL = environmental screening level
HPAL = Hunters Point ambient level
NE = not established
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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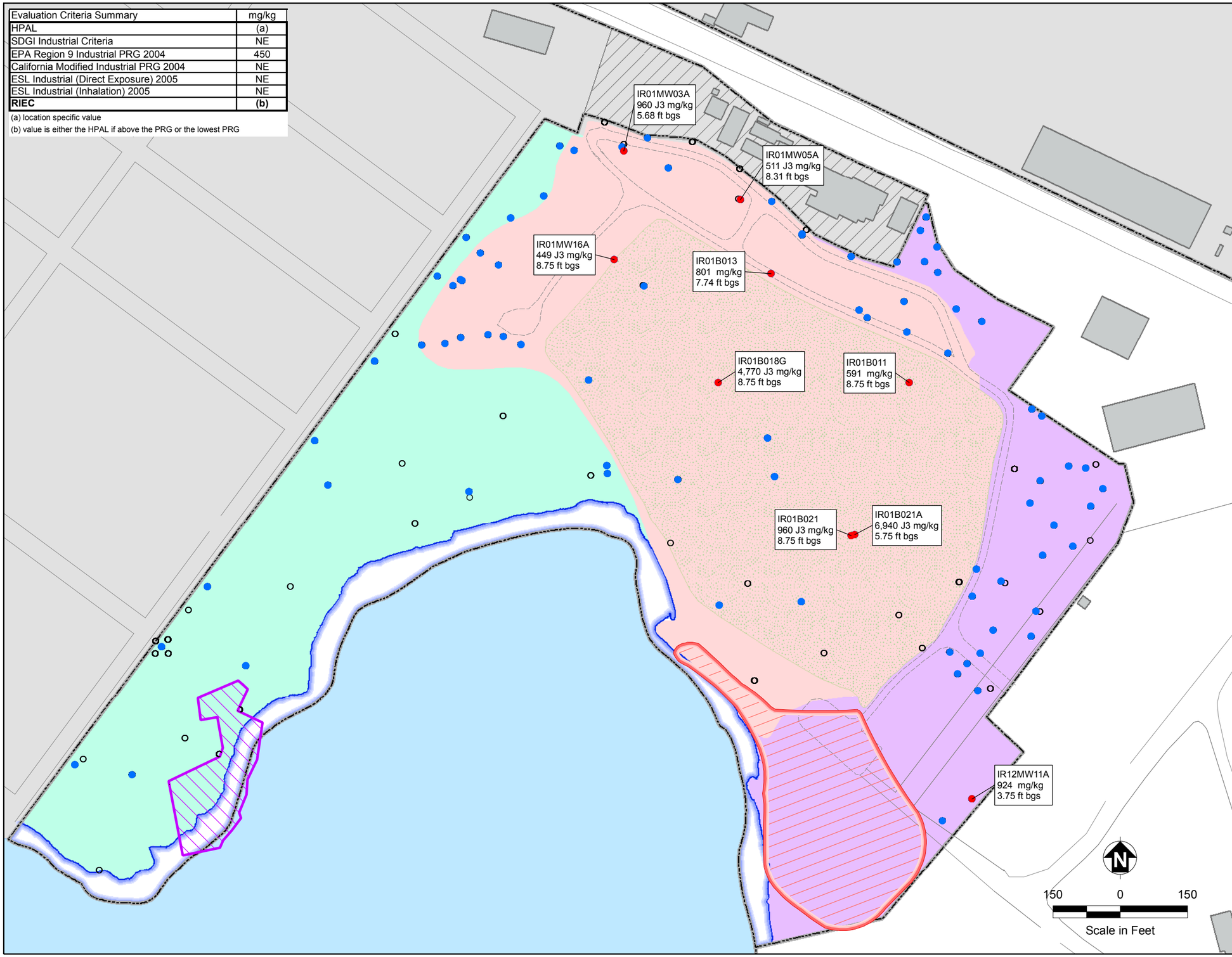
FIGURE 4-11

CADMIUM IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	(a)
SDGI Industrial Criteria	NE
EPA Region 9 Industrial PRG 2004	450
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**(b)**

(a) location specific value
(b) value is either the HPAL if above the PRG or the lowest PRG



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

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Results from the PCB Hot Spot and Metal Slag Area are not shown because both areas are undergoing remediation. Data within initial excavation boundaries (from 0 to 3 feet bgs) was removed from the data set. Post-excavation data from these areas will be presented in the draft final RI/FS.

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NE = not established
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RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

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150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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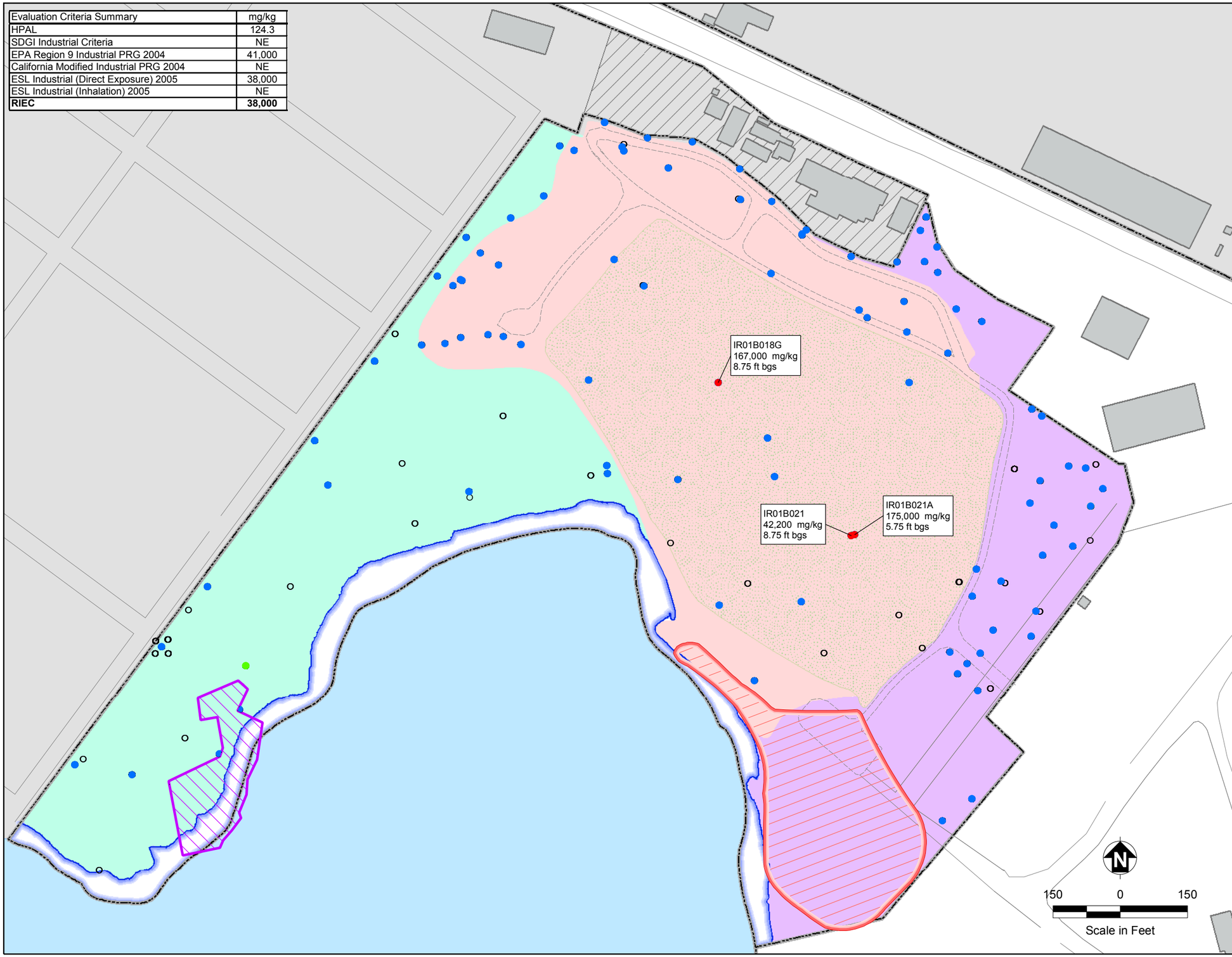
FIGURE 4-12

CHROMIUM (TOTAL IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	124.3
SDGI Industrial Criteria	NE
EPA Region 9 Industrial PRG 2004	41,000
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	38,000
ESL Industrial (Inhalation) 2005	NE
RIEC	**38,000**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

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Results from the PCB Hot Spot and Metal Slag Area are not shown because both areas are undergoing remediation. Data within initial excavation boundaries (from 0 to 3 feet bgs) was removed from the data set. Post-excavation data from these areas will be presented in the draft final RI/FS.

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HPAL = Hunters Point ambient level
NE = not established
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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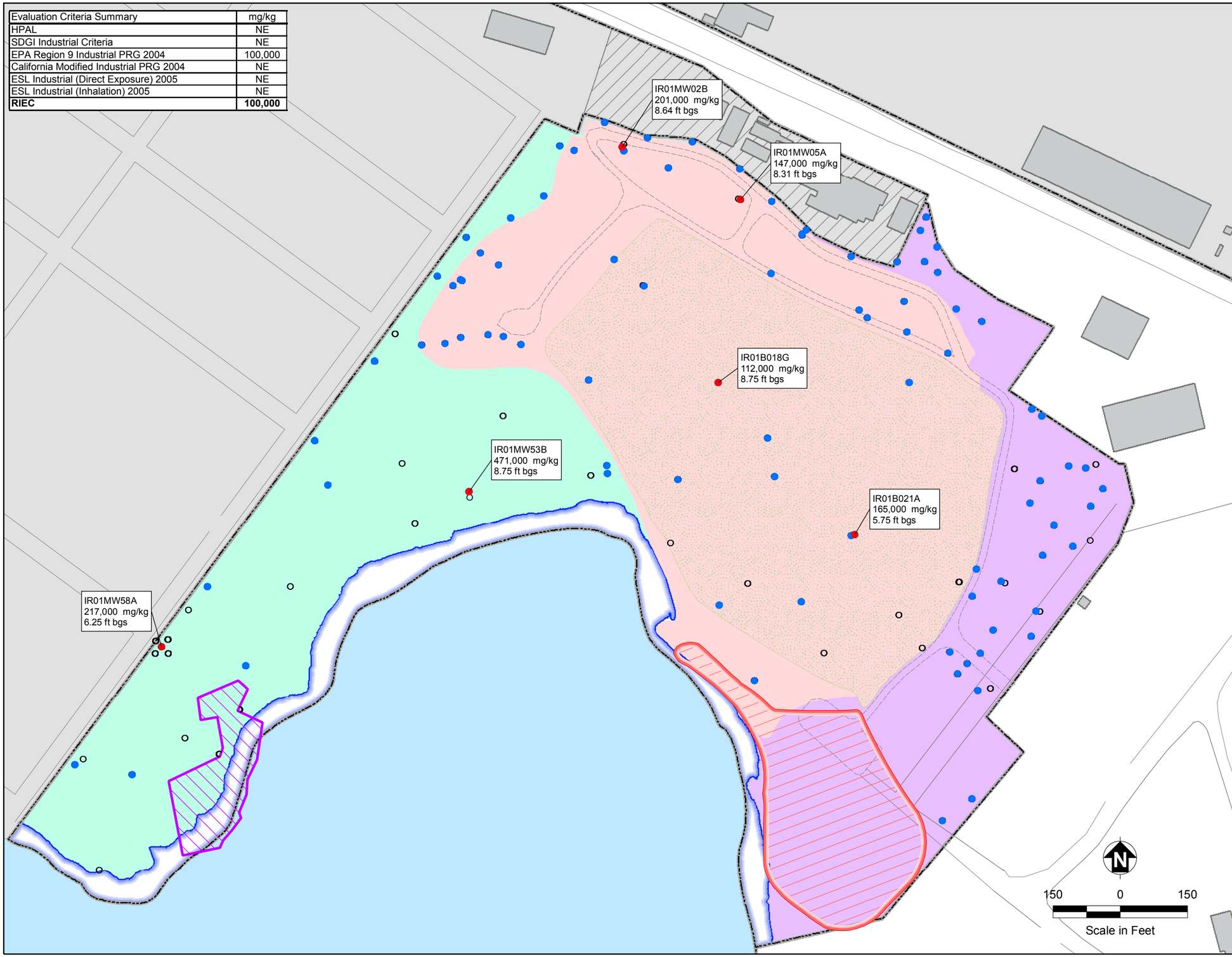
FIGURE 4-13

COPPER IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	NE
EPA Region 9 Industrial PRG 2004	100,000
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**100,000**



- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (proposed boundary)
- PCB Hot Spot (proposed boundary)
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

Notes:

Results are shown for locations where data has exceeded the RIEC.
Where results are shown as non-detect (<), the reporting limit follows.
Results from the PCB Hot Spot and Metal Slag Area are not shown because both areas are undergoing remediation. Data within initial excavation boundaries (from 0 to 3 feet bgs) was removed from the data set. Post-excavation data from these areas will be presented in the draft final RI/FS.

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HPAL = Hunters Point ambient level
NE = not established
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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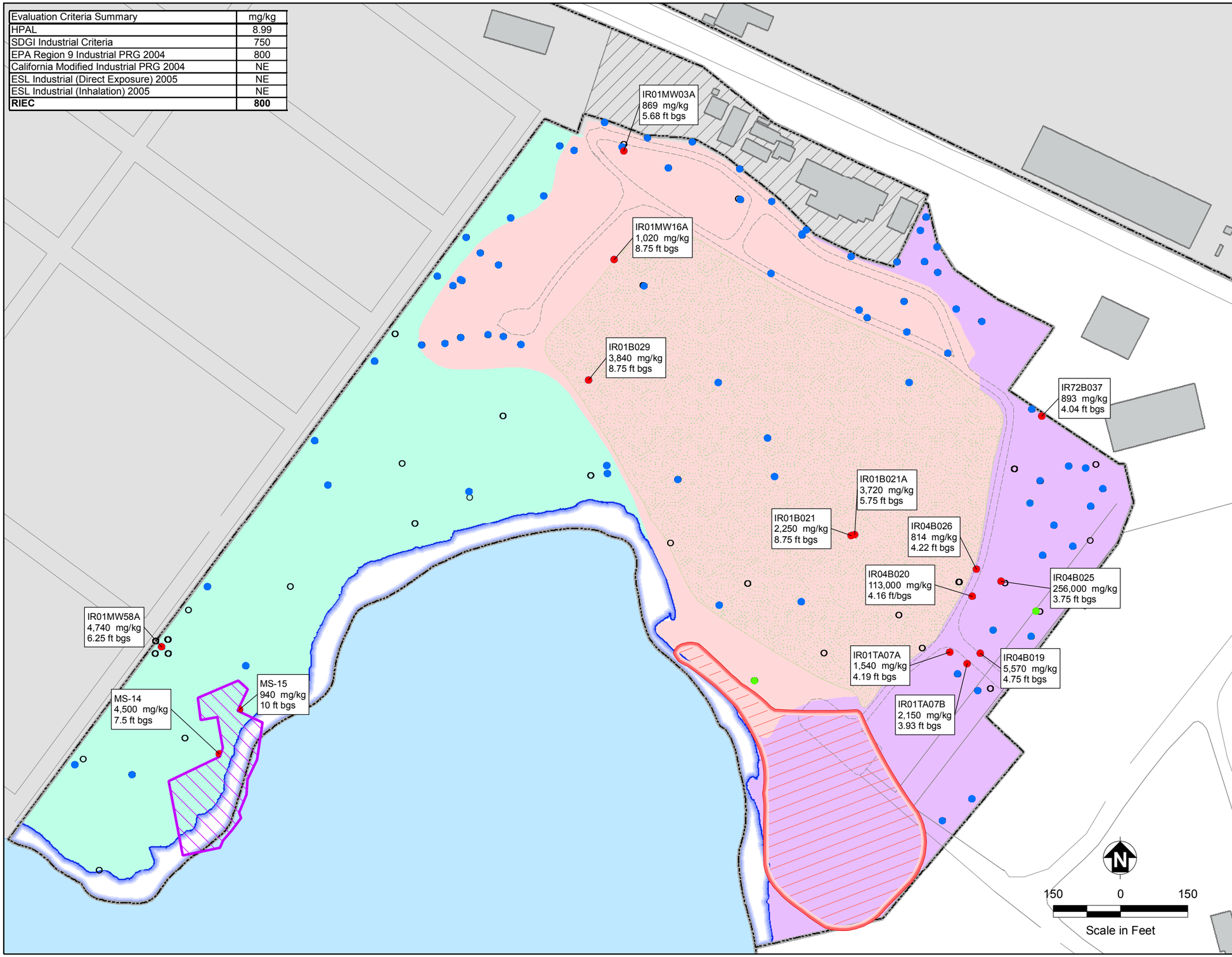
FIGURE 4-14

IRON IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	8.99
SDGI Industrial Criteria	750
EPA Region 9 Industrial PRG 2004	800
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**800**



- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (proposed boundary)
- PCB Hot Spot (proposed boundary)
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

Notes:

Results are shown for locations where data has exceeded the RIEC.
Where results are shown as non-detect (<), the reporting limit follows.
Results from the PCB Hot Spot and Metal Slag Area are not shown because both areas are undergoing remediation. Data within initial excavation boundaries (from 0 to 3 feet bgs) was removed from the data set. Post-excavation data from these areas will be presented in the draft final RI/FS.

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RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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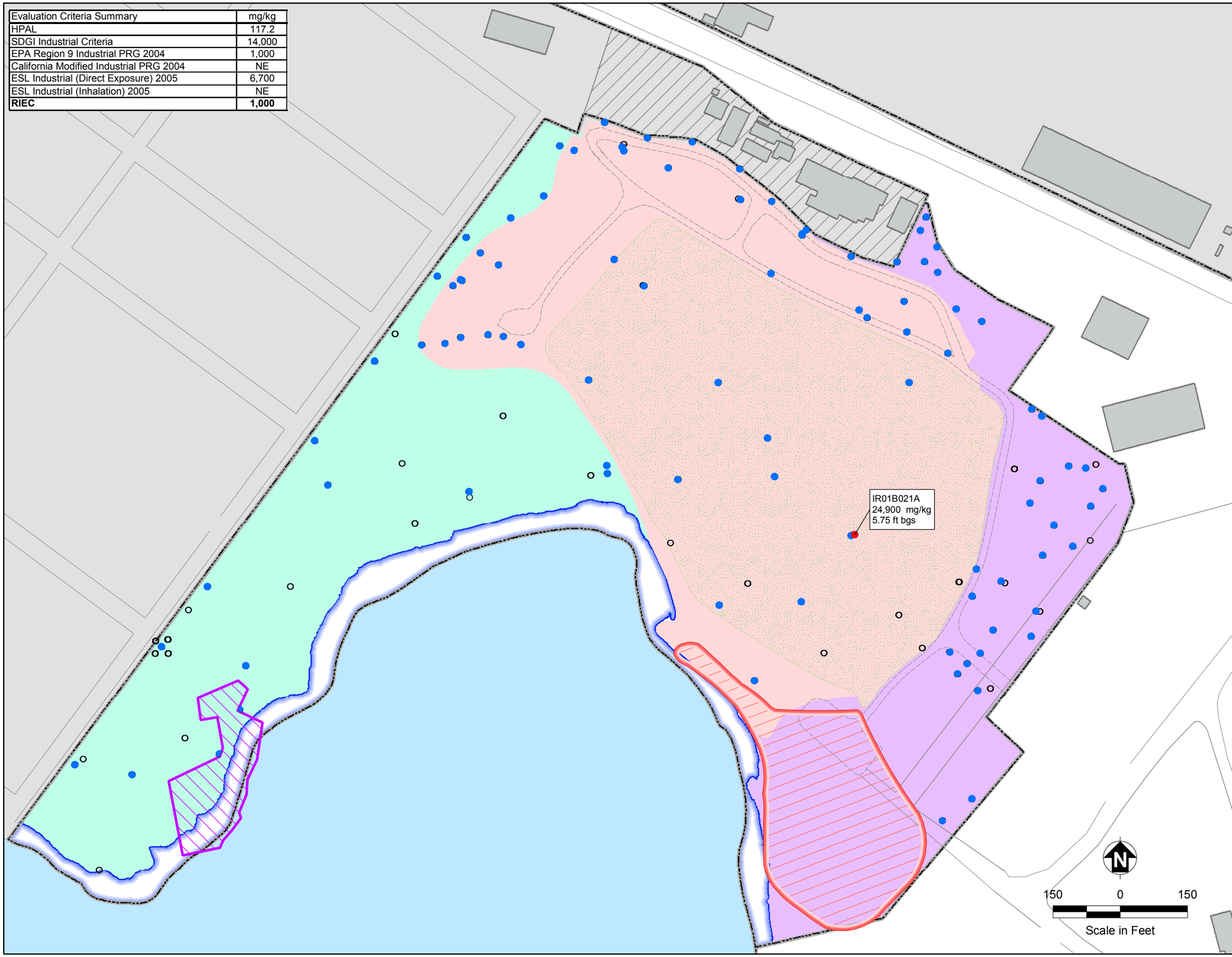
FIGURE 4-15

LEAD IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	117.2
SDGI Industrial Criteria	14,000
EPA Region 9 Industrial PRG 2004	1,000
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	6,700
ESL Industrial (Inhalation) 2005	NE
RIEC	**1,000**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

Results are shown for locations where data has exceeded the RIEC.
Where results are shown as non-detect (<), the reporting limit follows.
Results from the PCB Hot Spot and Metal Slag Area are not shown because both areas are undergoing remediation. Data within initial excavation boundaries (from 0 to 3 feet bgs) was removed from the data set. Post-excavation data from these areas will be presented in the draft final RI/FS.

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HPAL = Hunters Point ambient level
NE = not established
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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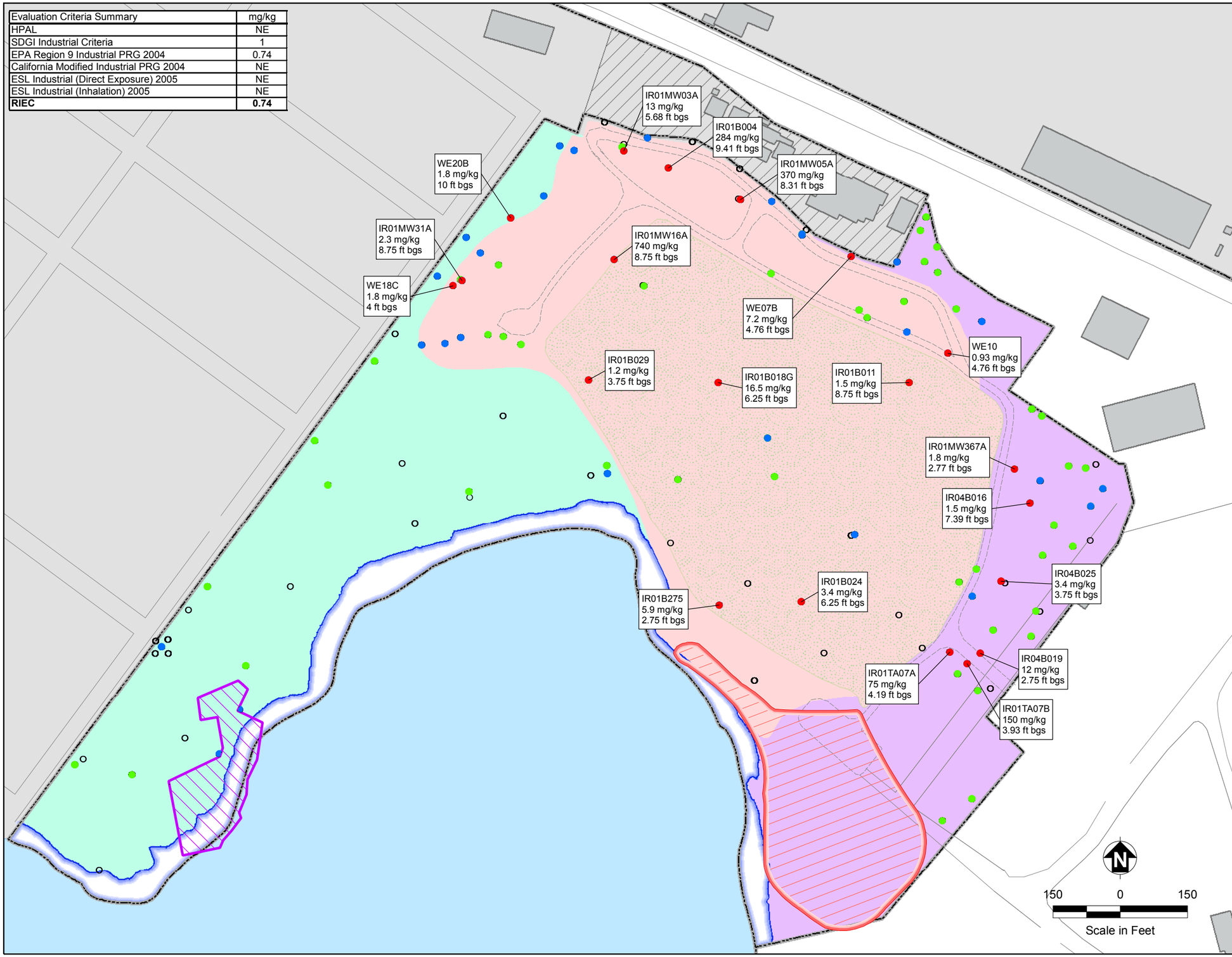
FIGURE 4-16

VANADIUM IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	1
EPA Region 9 Industrial PRG 2004	0.74
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**0.74**



- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (proposed boundary)
- PCB Hot Spot (proposed boundary)
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

Notes:

Results are shown for locations where data has exceeded the RIEC.
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HPAL = Hunters Point ambient level
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PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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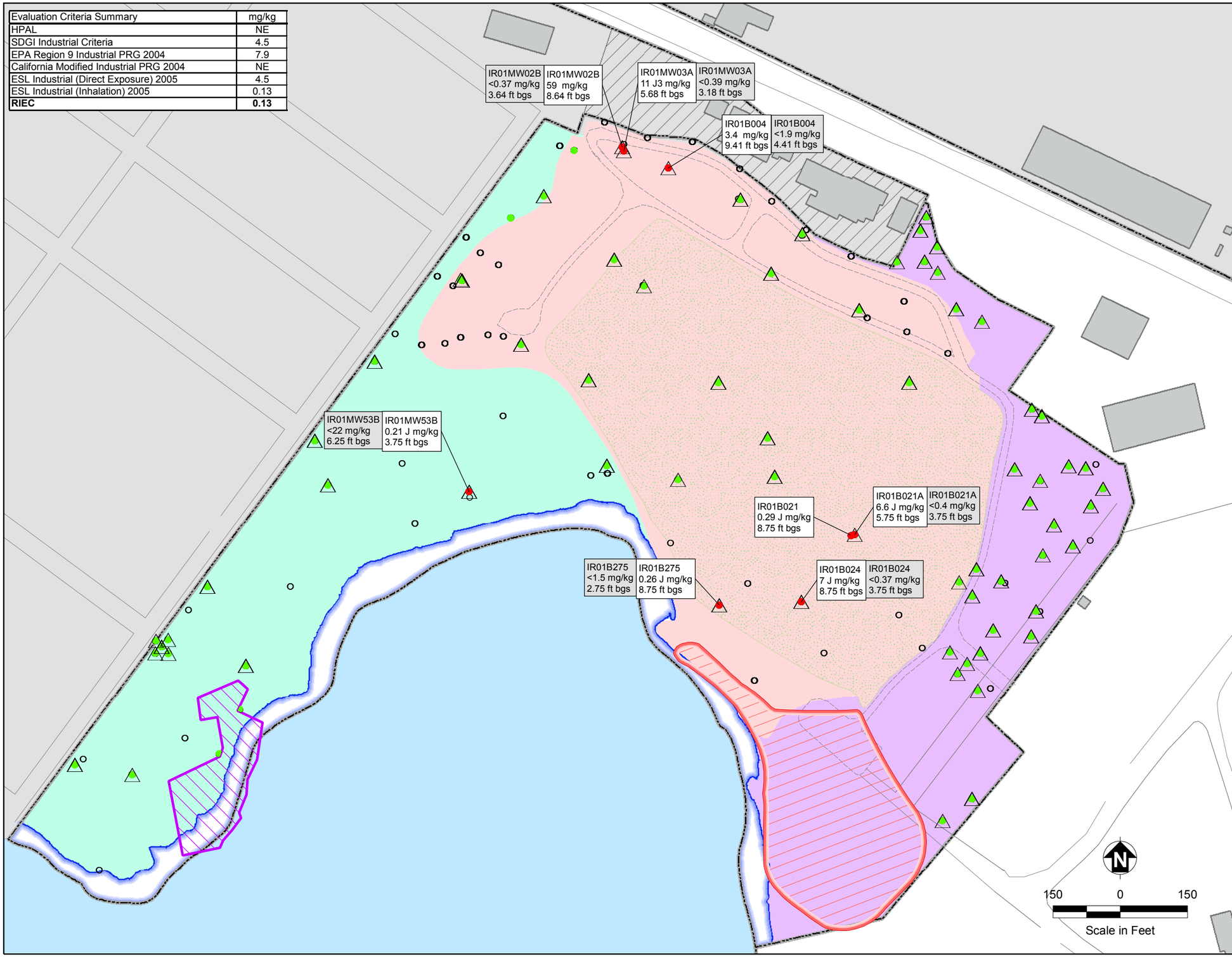
FIGURE 4-17

TOTAL PCBS IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	4.5
EPA Region 9 Industrial PRG 2004	7.9
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	4.5
ESL Industrial (Inhalation) 2005	0.13
RIEC	**0.13**



- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (proposed boundary)
- PCB Hot Spot (proposed boundary)
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
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mg/kg = milligram per kilogram
J = estimated value
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150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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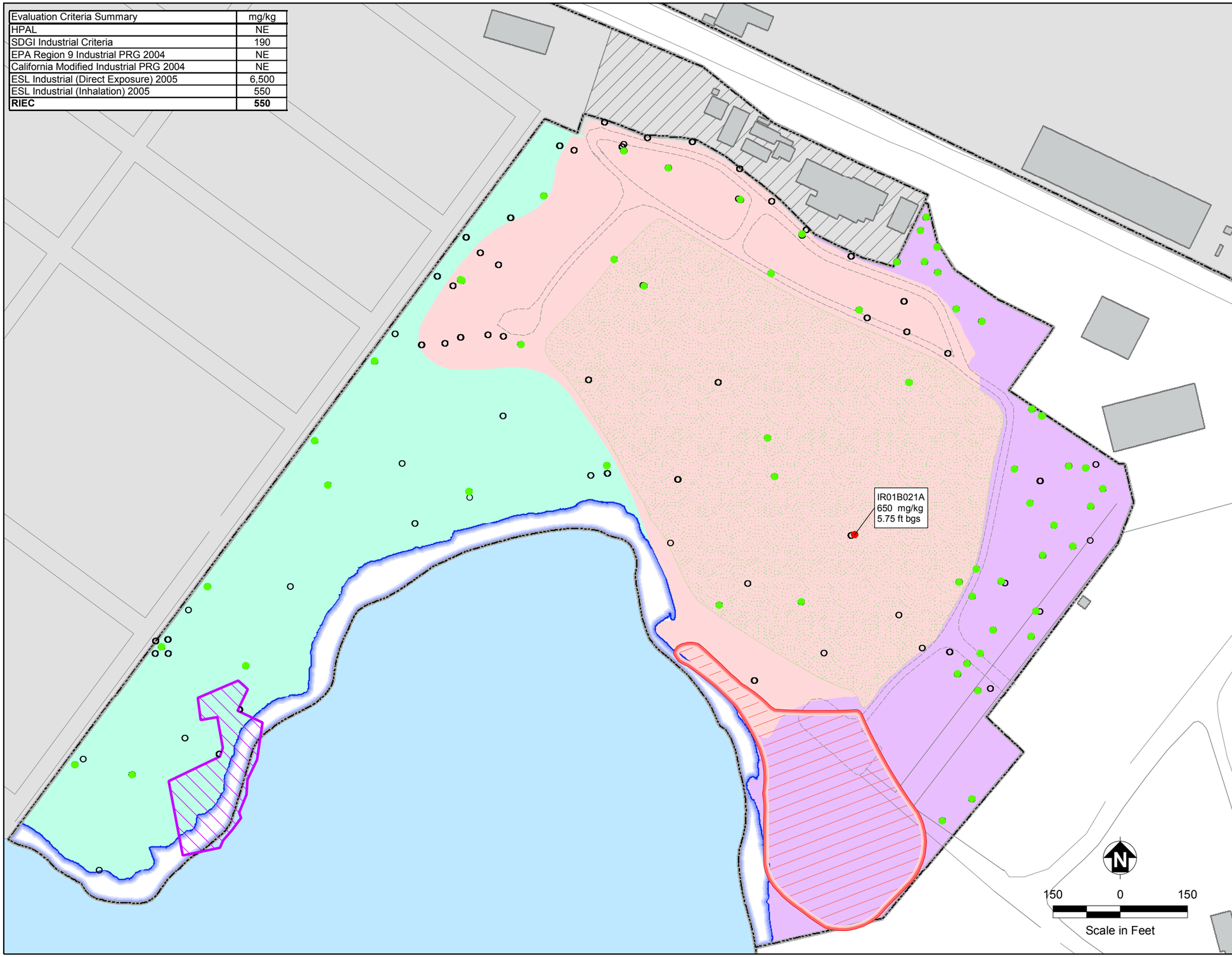
FIGURE 4-18

1,4 - DICHLOROBENZENE IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	190
EPA Region 9 Industrial PRG 2004	NE
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	6,500
ESL Industrial (Inhalation) 2005	550
RIEC	**550**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

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SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275
150 J mg/kg
3.93 ft bgs
— Location ID
— Concentration and Qualifier
— Depth

IR04B025
<37 mg/kg
2.0 ft bgs
— Location ID
— Reporting Limit
— Depth

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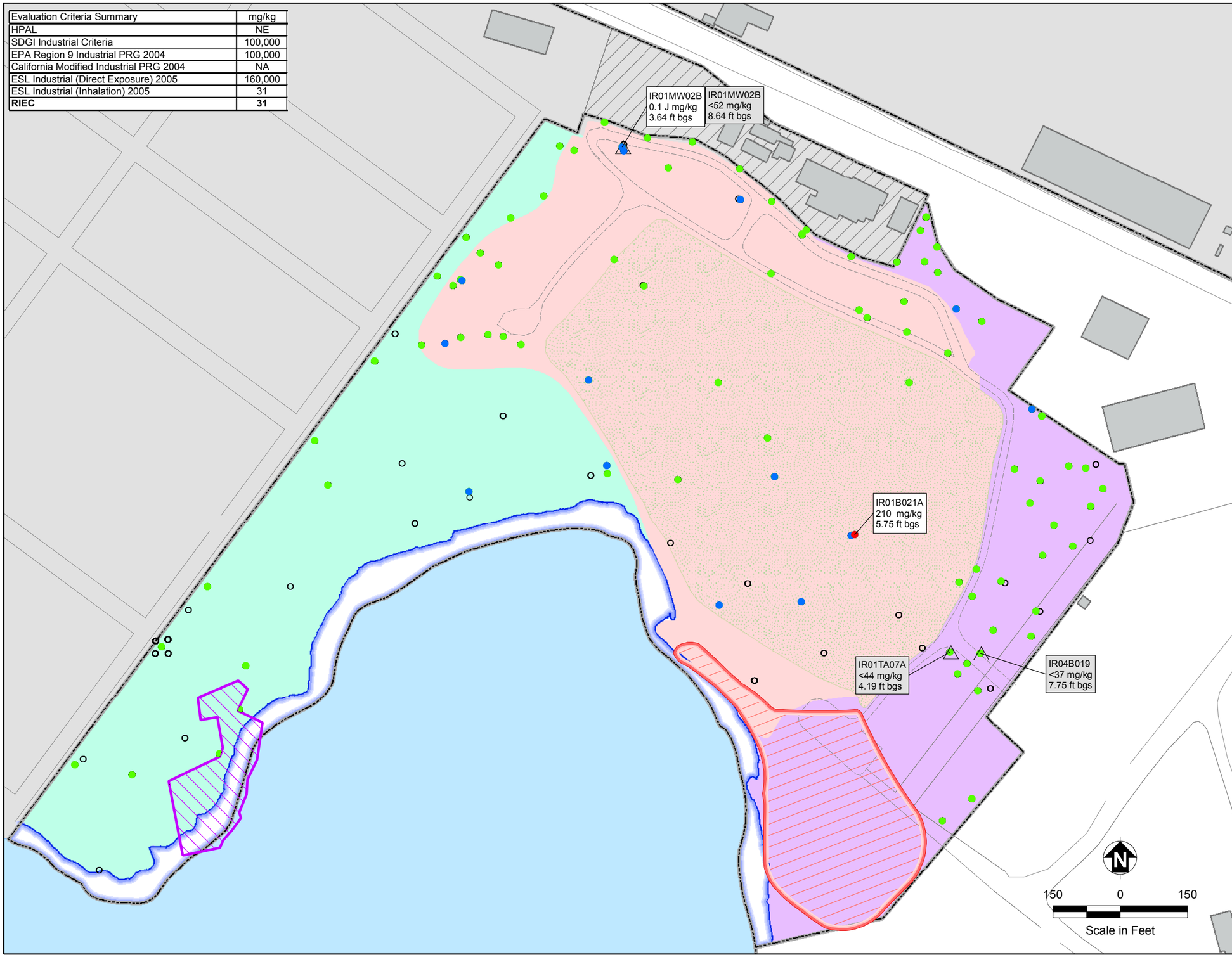
FIGURE 4-19

2 - METHYLNAPHTHALENE IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	100,000
EPA Region 9 Industrial PRG 2004	100,000
California Modified Industrial PRG 2004	NA
ESL Industrial (Direct Exposure) 2005	160,000
ESL Industrial (Inhalation) 2005	31
RIEC	**31**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

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150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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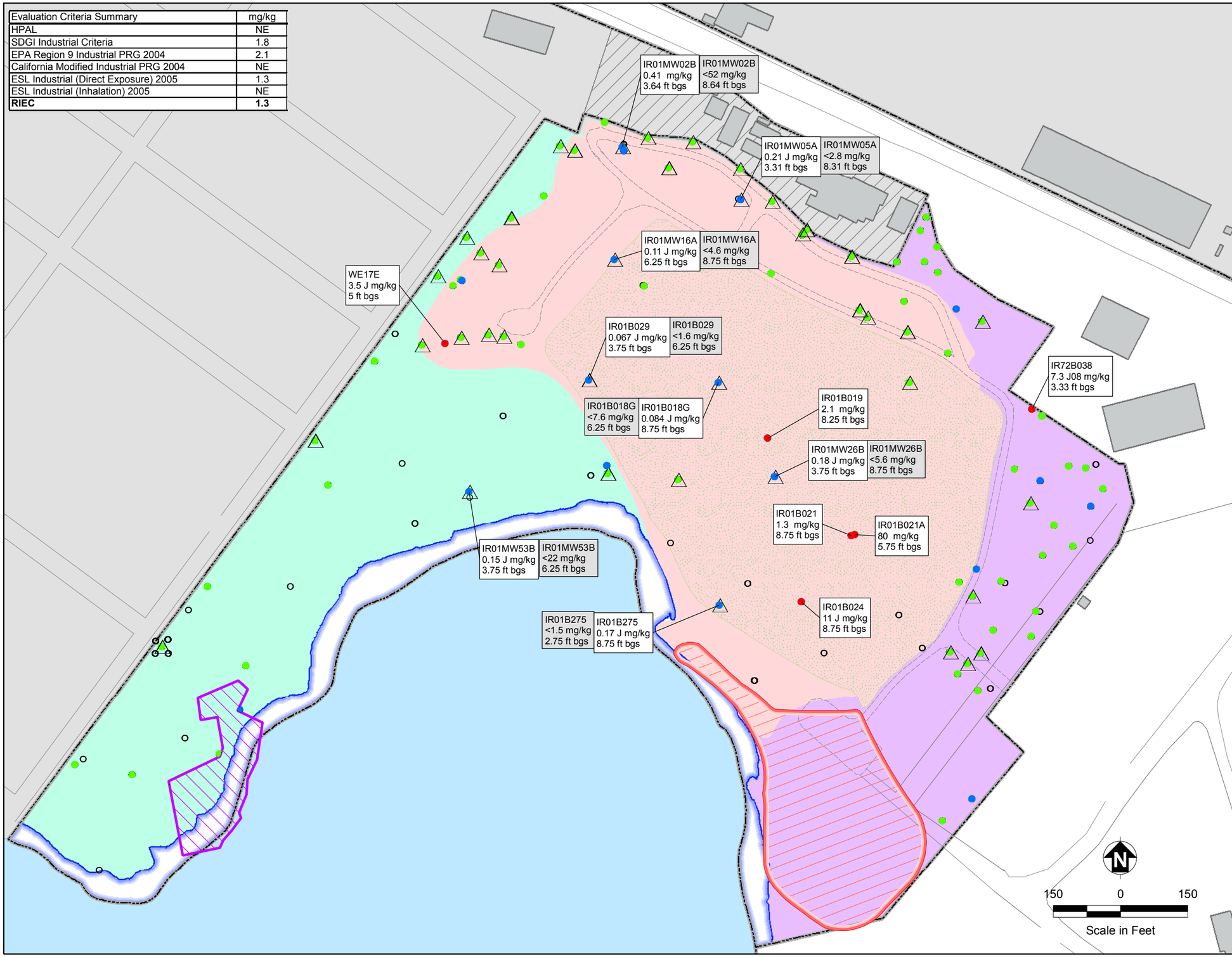
FIGURE 4-20

ANTHRACENE IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	1.8
EPA Region 9 Industrial PRG 2004	2.1
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	1.3
ESL Industrial (Inhalation) 2005	NE
RIEC	**1.3**



- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (proposed boundary)
- PCB Hot Spot (proposed boundary)
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

Notes:

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HPAL = Hunters Point ambient level
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RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
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J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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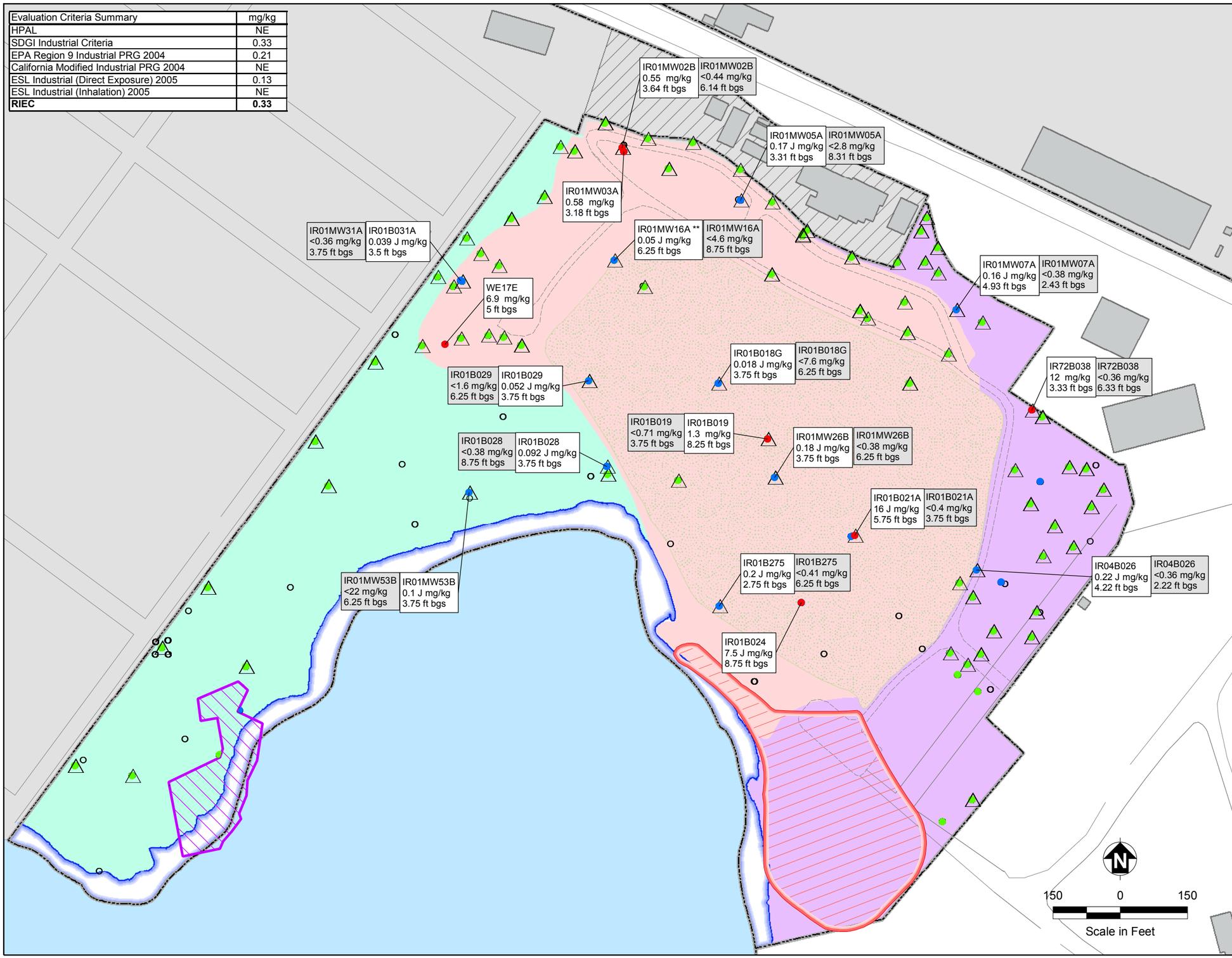
FIGURE 4-21

BENZO (A) ANTHRACENE IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	0.33
EPA Region 9 Industrial PRG 2004	0.21
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	0.13
ESL Industrial (Inhalation) 2005	NE
RIEC	**0.33**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

Results are shown for locations where data has exceeded the RIEC.
Where results are shown as non-detect (<), the reporting limit follows.
Results from the PCB Hot Spot and Metal Slag Area are not shown because both areas are undergoing remediation. Data within initial excavation boundaries (from 0 to 3 feet bgs) was removed from the data set. Post-excavation data from these areas will be presented in the draft final RI/FS.

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ESL = environmental screening level
HPAL = Hunters Point ambient level
NE = not established
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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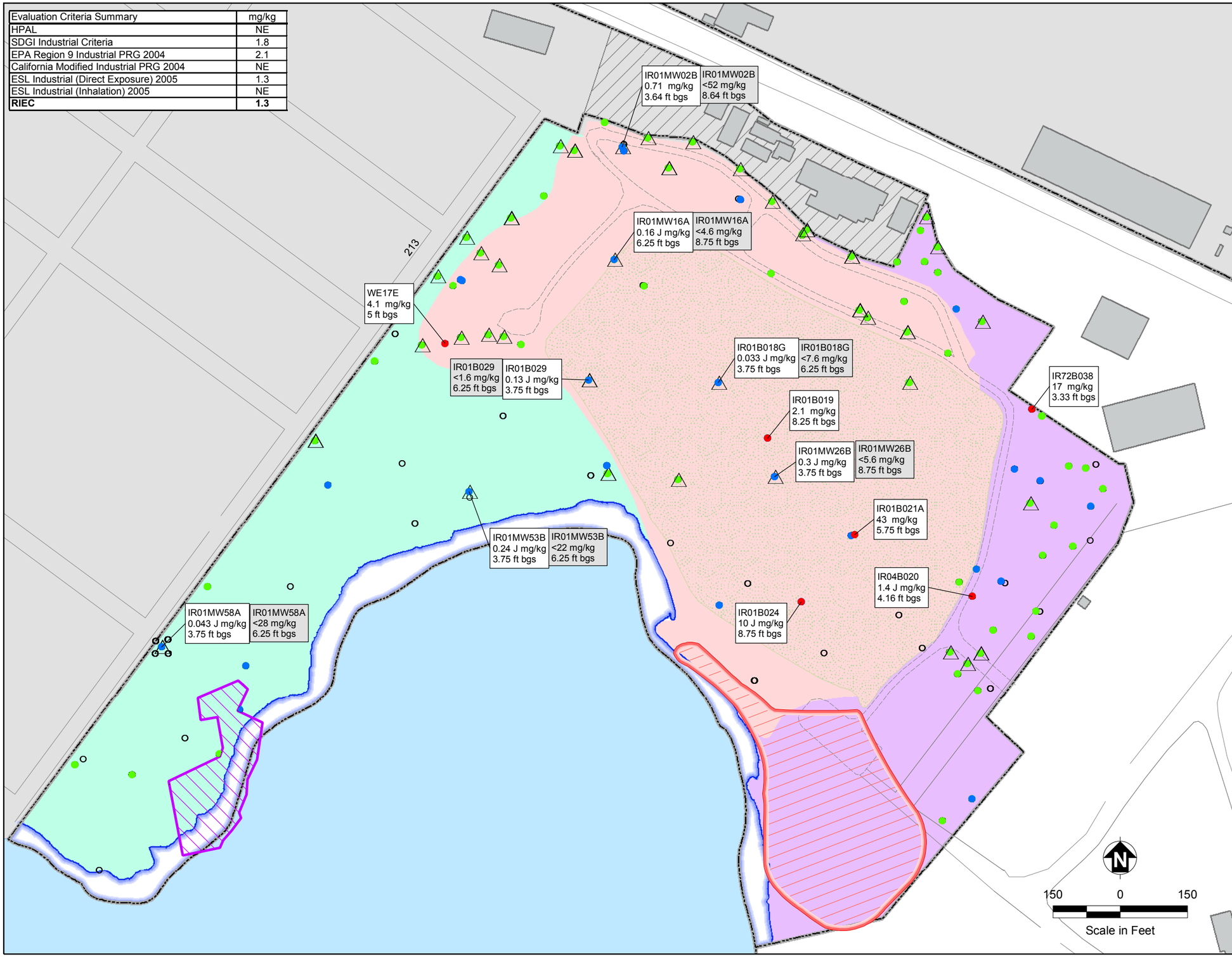
FIGURE 4-22

BENZO (A) PYRENE IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	1.8
EPA Region 9 Industrial PRG 2004	2.1
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	1.3
ESL Industrial (Inhalation) 2005	NE
RIEC	**1.3**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

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Results from the PCB Hot Spot and Metal Slag Area are not shown because both areas are undergoing remediation. Data within initial excavation boundaries (from 0 to 3 feet bgs) was removed from the data set. Post-excavation data from these areas will be presented in the draft final RI/FS.

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mg/kg = milligram per kilogram
J = estimated value
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150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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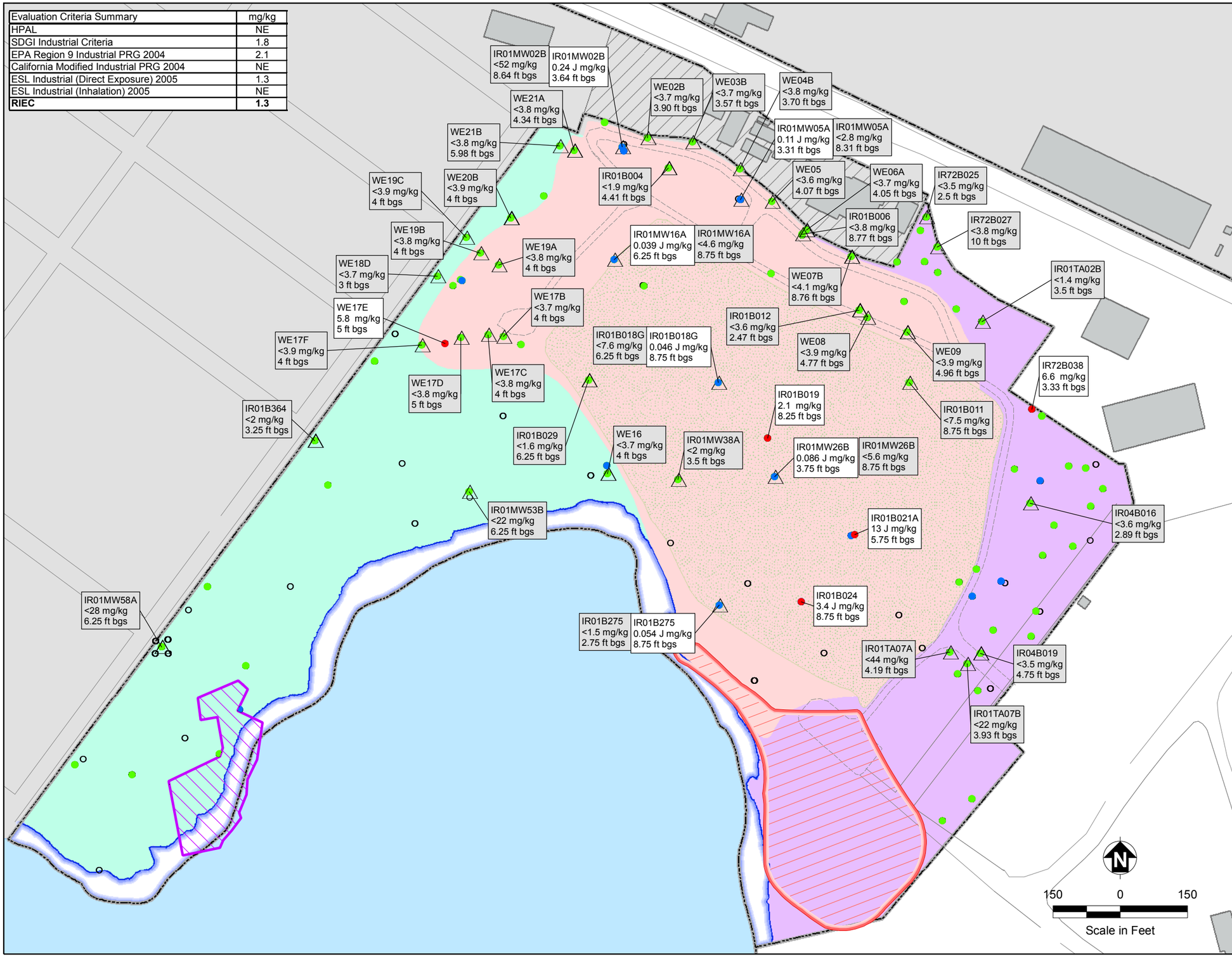
FIGURE 4-23

BENZO (B) FLUORANTHENE IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	1.8
EPA Region 9 Industrial PRG 2004	2.1
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	1.3
ESL Industrial (Inhalation) 2005	NE
RIEC	**1.3**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

Results are shown for locations where data has exceeded the RIEC.
Where results are shown as non-detect (<), the reporting limit follows.
Results from the PCB Hot Spot and Metal Slag Area are not shown because both areas are undergoing remediation. Data within initial excavation boundaries (from 0 to 3 feet bgs) was removed from the data set. Post-excavation data from these areas will be presented in the draft final RI/FS.

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NE = not established
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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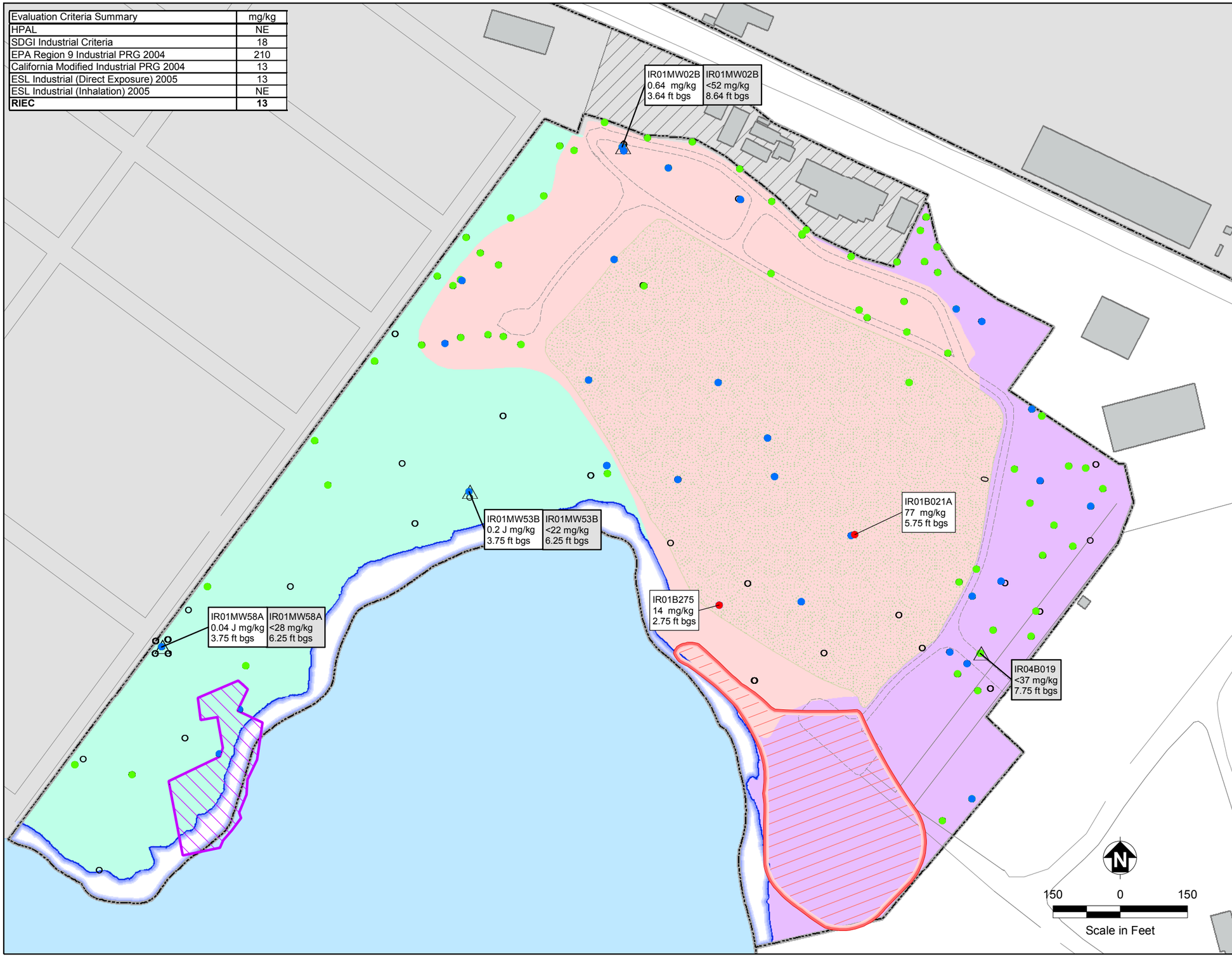
FIGURE 4-24

BENZO (K) FLUORANTHENE IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	18
EPA Region 9 Industrial PRG 2004	210
California Modified Industrial PRG 2004	13
ESL Industrial (Direct Exposure) 2005	13
ESL Industrial (Inhalation) 2005	NE
RIEC	**13**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

Results are shown for locations where data has exceeded the RIEC.
Where results are shown as non-detect (<), the reporting limit follows.
Results from the PCB Hot Spot and Metal Slag Area are not shown because both areas are undergoing remediation. Data within initial excavation boundaries (from 0 to 3 feet bgs) was removed from the data set. Post-excavation data from these areas will be presented in the draft final RI/FS.

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PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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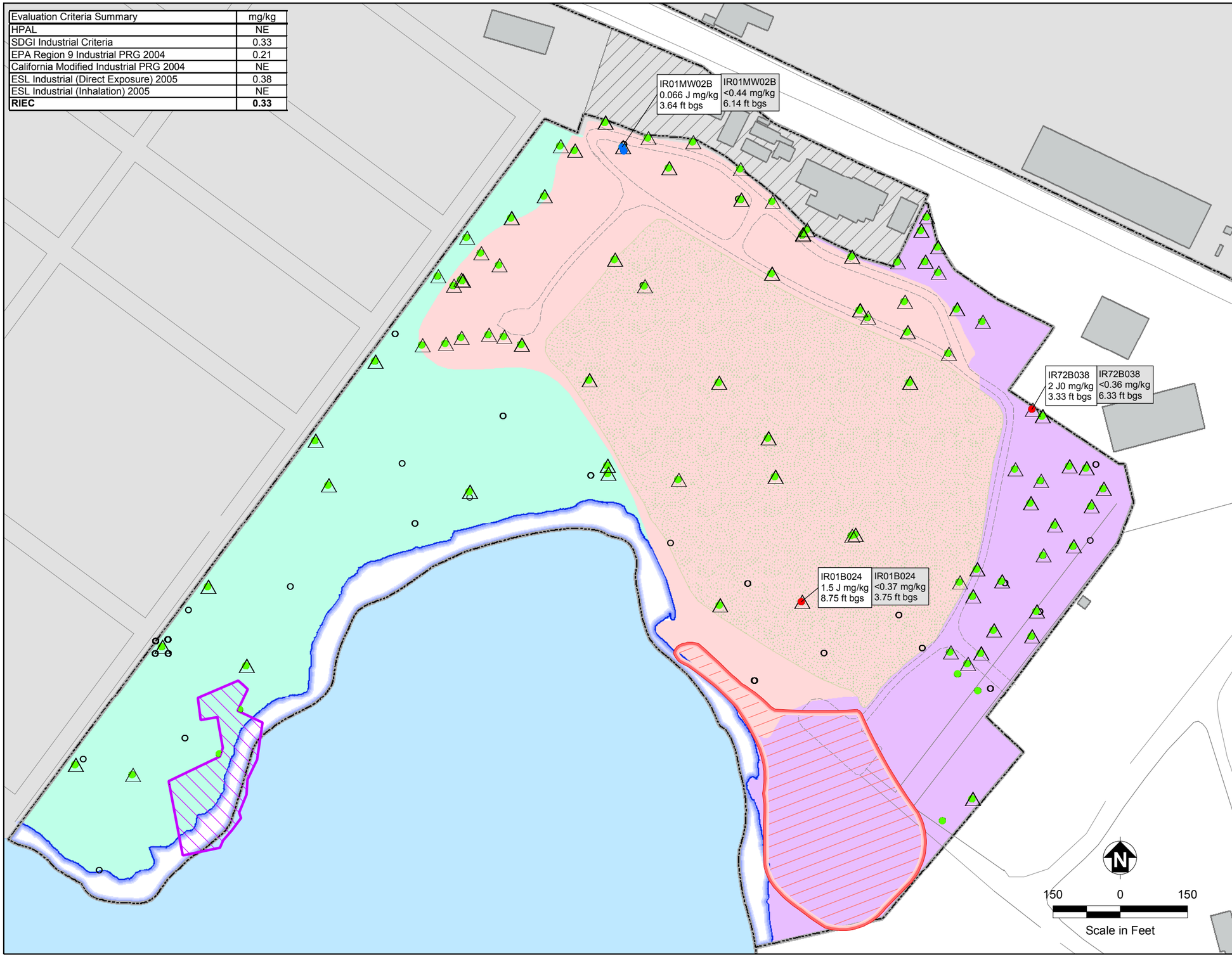
FIGURE 4-25

CHRYSENE IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	0.33
EPA Region 9 Industrial PRG 2004	0.21
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	0.38
ESL Industrial (Inhalation) 2005	NE
RIEC	**0.33**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

Results are shown for locations where data has exceeded the RIEC.
Where results are shown as non-detect (<), the reporting limit follows.
Results from the PCB Hot Spot and Metal Slag Area are not shown because both areas are undergoing remediation. Data within initial excavation boundaries (from 0 to 3 feet bgs) was removed from the data set. Post-excavation data from these areas will be presented in the draft final RI/FS.

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NE = not established
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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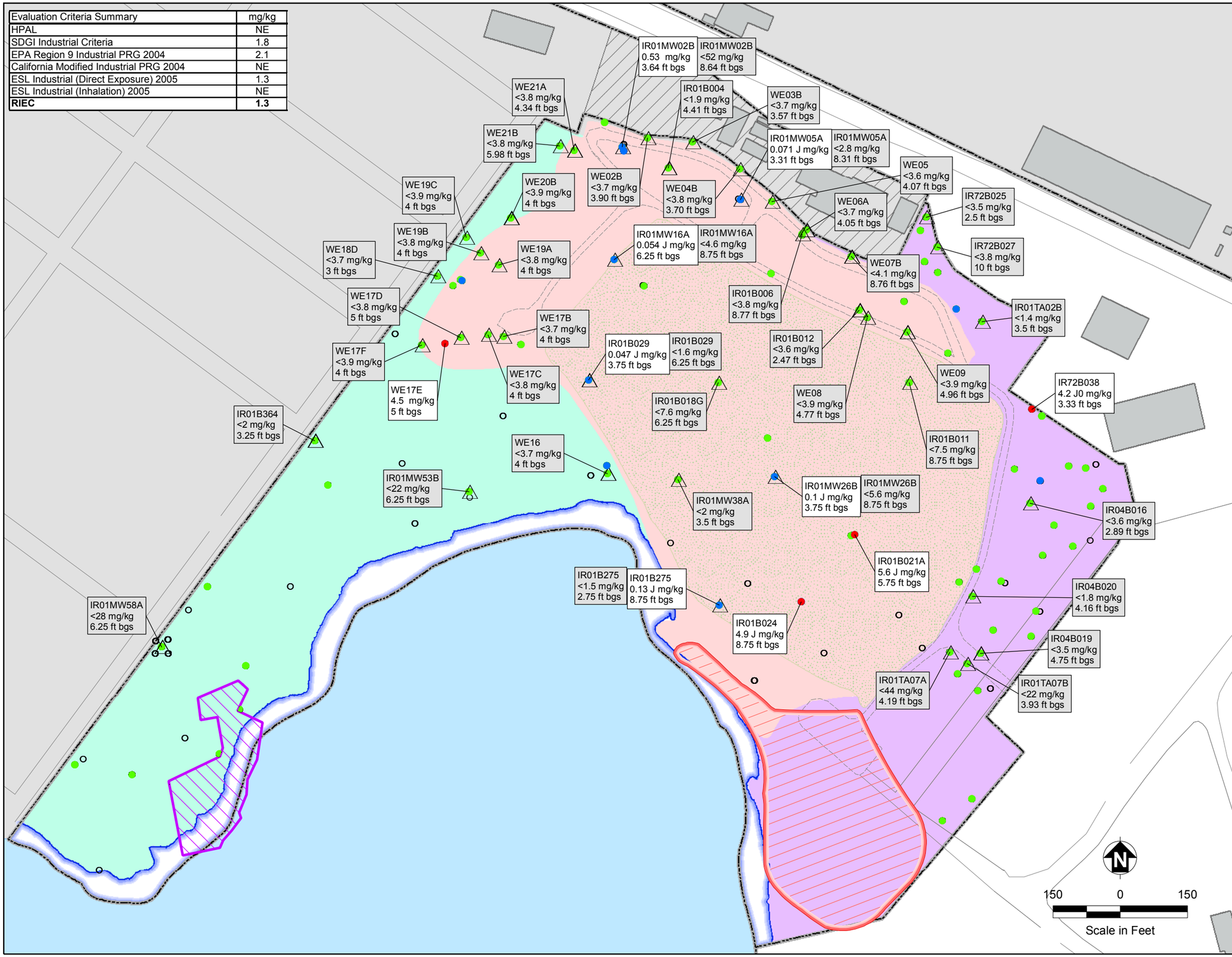
FIGURE 4-26

DIBENZ (A,H) ANTHRACENE IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	1.8
EPA Region 9 Industrial PRG 2004	2.1
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	1.3
ESL Industrial (Inhalation) 2005	NE
RIEC	**1.3**



- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (proposed boundary)
- PCB Hot Spot (proposed boundary)
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

Notes:

Results are shown for locations where data has exceeded the RIEC.
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Results from the PCB Hot Spot and Metal Slag Area are not shown because both areas are undergoing remediation. Data within initial excavation boundaries (from 0 to 3 feet bgs) was removed from the data set. Post-excavation data from these areas will be presented in the draft final RI/FS.

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J = estimated value
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IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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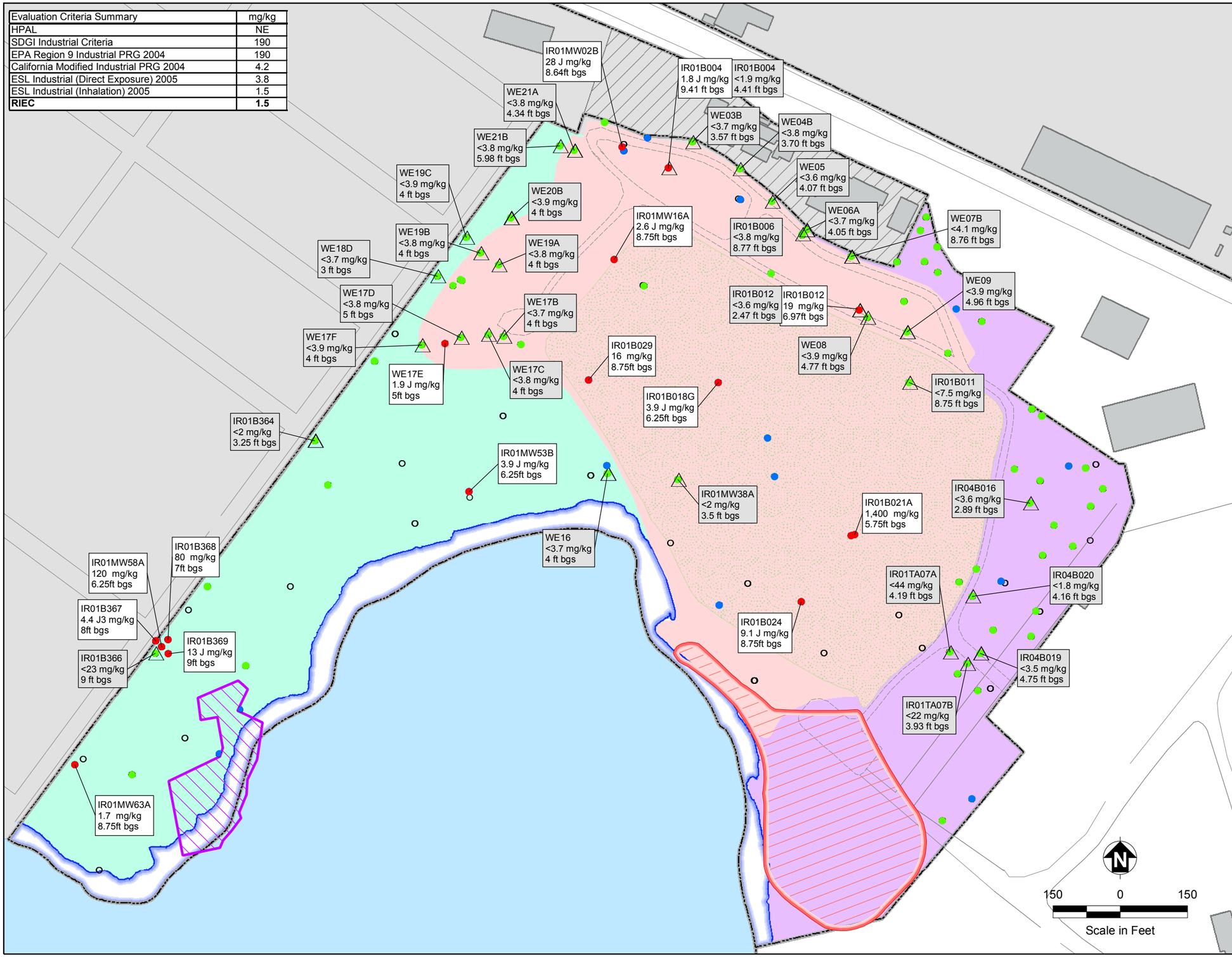
FIGURE 4-27

INDENO (1,2,3-CD) PYRENE IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	190
EPA Region 9 Industrial PRG 2004	190
California Modified Industrial PRG 2004	4.2
ESL Industrial (Direct Exposure) 2005	3.8
ESL Industrial (Inhalation) 2005	1.5
RIEC	**1.5**



- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (proposed boundary)
- PCB Hot Spot (proposed boundary)
- Limit of Landfill Cap
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- Building
- UCSF Compound
- Landfill Area
- Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

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RIEC = Remedial Investigation Evaluation Criterion
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ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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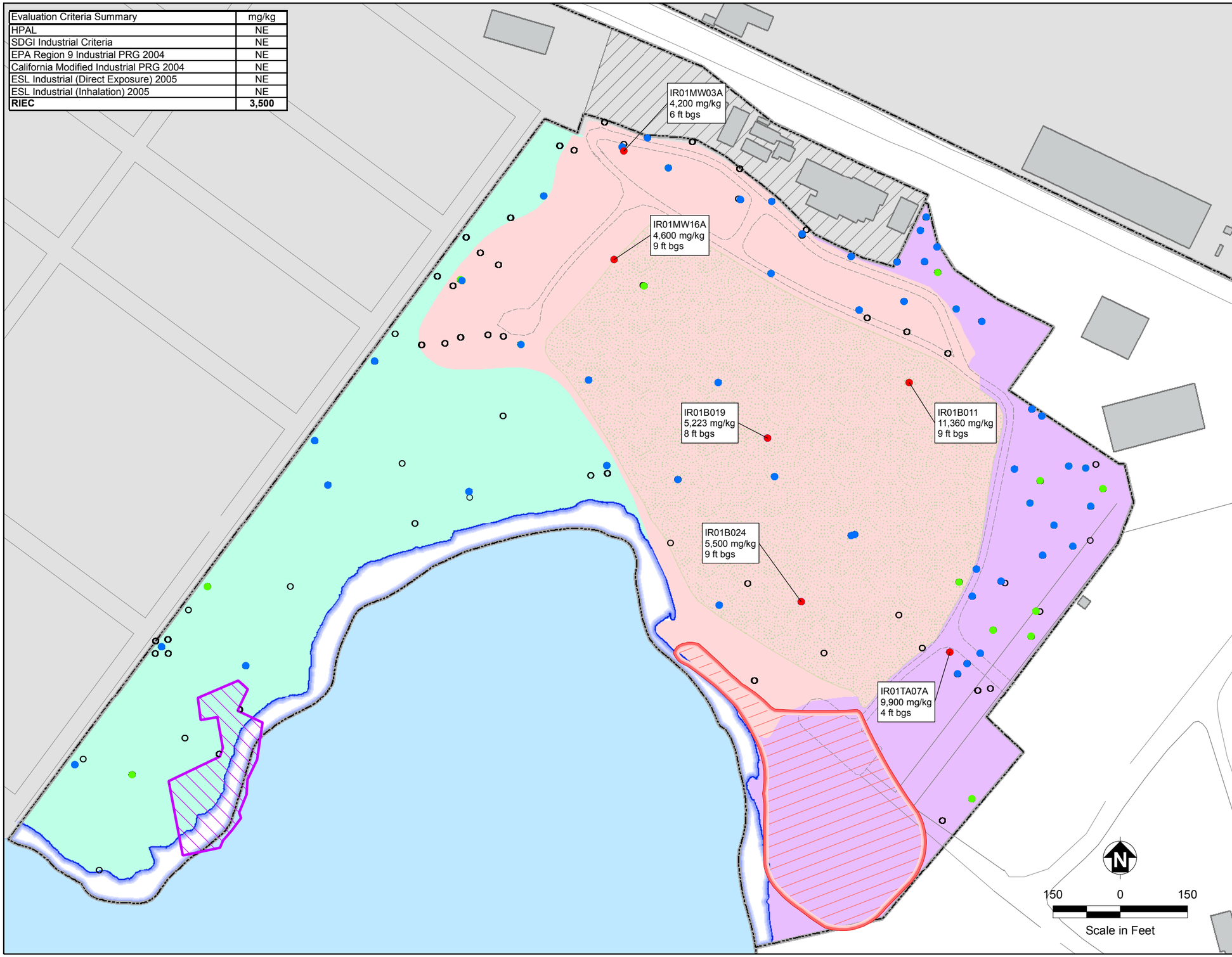
FIGURE 4-28

NAPHTHALENE IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	NE
EPA Region 9 Industrial PRG 2004	NE
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**3,500**



- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (proposed boundary)
- PCB Hot Spot (proposed boundary)
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

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J = estimated value
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150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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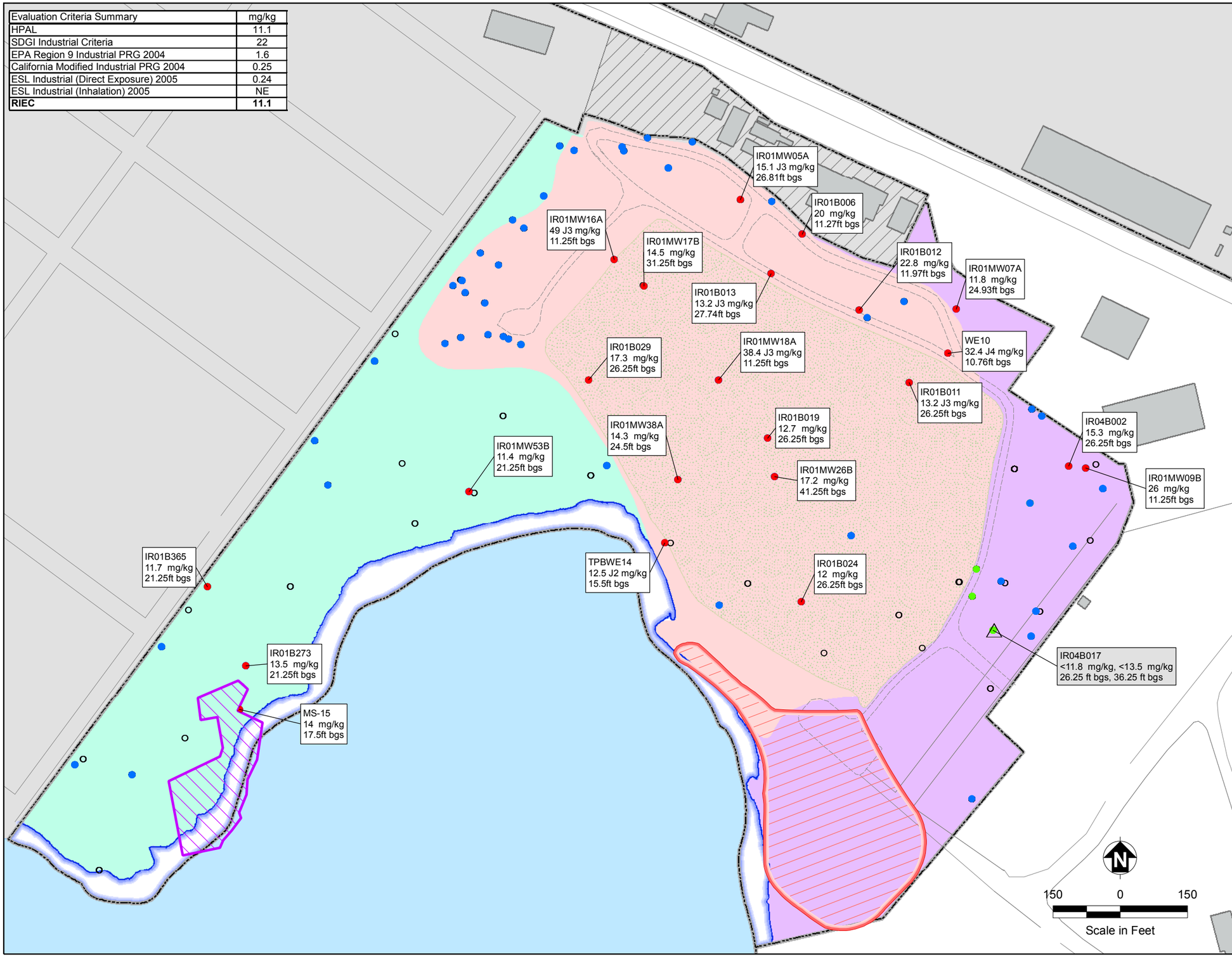
FIGURE 4-29

TOTAL TPH IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	11.1
SDGI Industrial Criteria	22
EPA Region 9 Industrial PRG 2004	1.6
California Modified Industrial PRG 2004	0.25
ESL Industrial (Direct Exposure) 2005	0.24
ESL Industrial (Inhalation) 2005	NE
RIEC	**11.1**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

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Numbers associated with qualifiers are further defined in Appendix J.

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3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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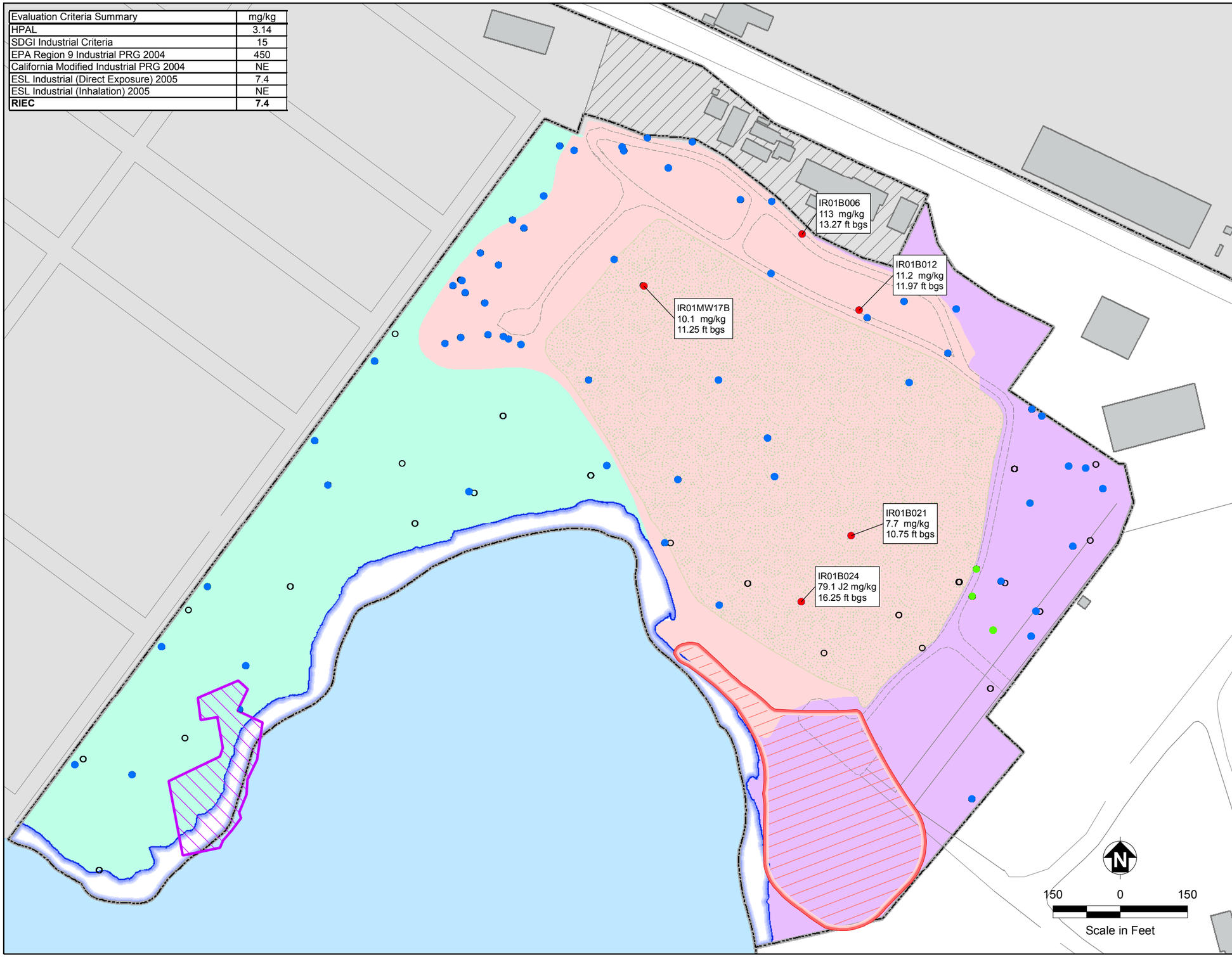
FIGURE 4-30

ARSENIC IN >10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	3.14
SDGI Industrial Criteria	15
EPA Region 9 Industrial PRG 2004	450
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	7.4
ESL Industrial (Inhalation) 2005	NE
RIEC	**7.4**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

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150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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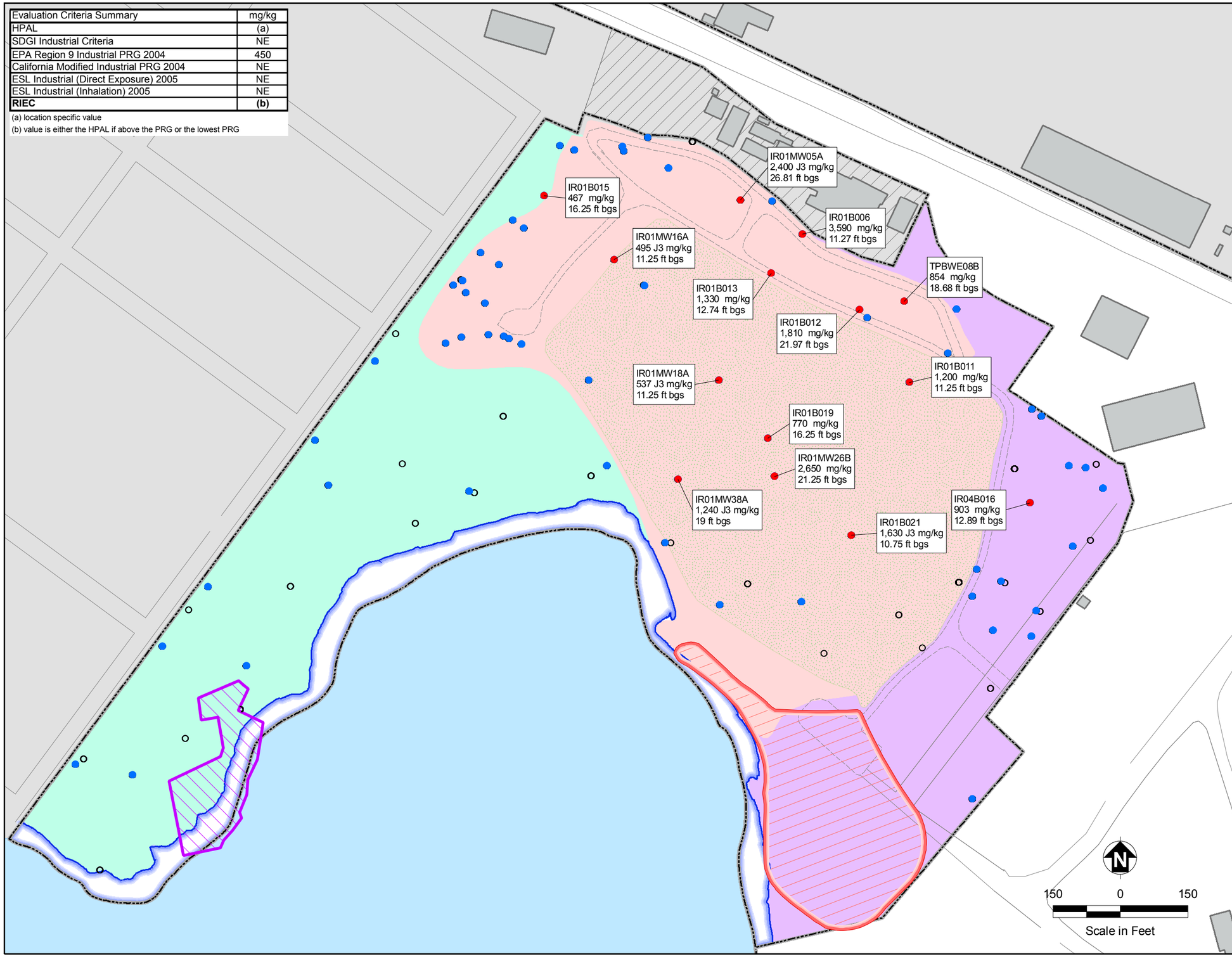
FIGURE 4-31

CADMIUM IN >10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	(a)
SDGI Industrial Criteria	NE
EPA Region 9 Industrial PRG 2004	450
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**(b)**

(a) location specific value
(b) value is either the HPAL if above the PRG or the lowest PRG



- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (proposed boundary)
- PCB Hot Spot (proposed boundary)
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
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Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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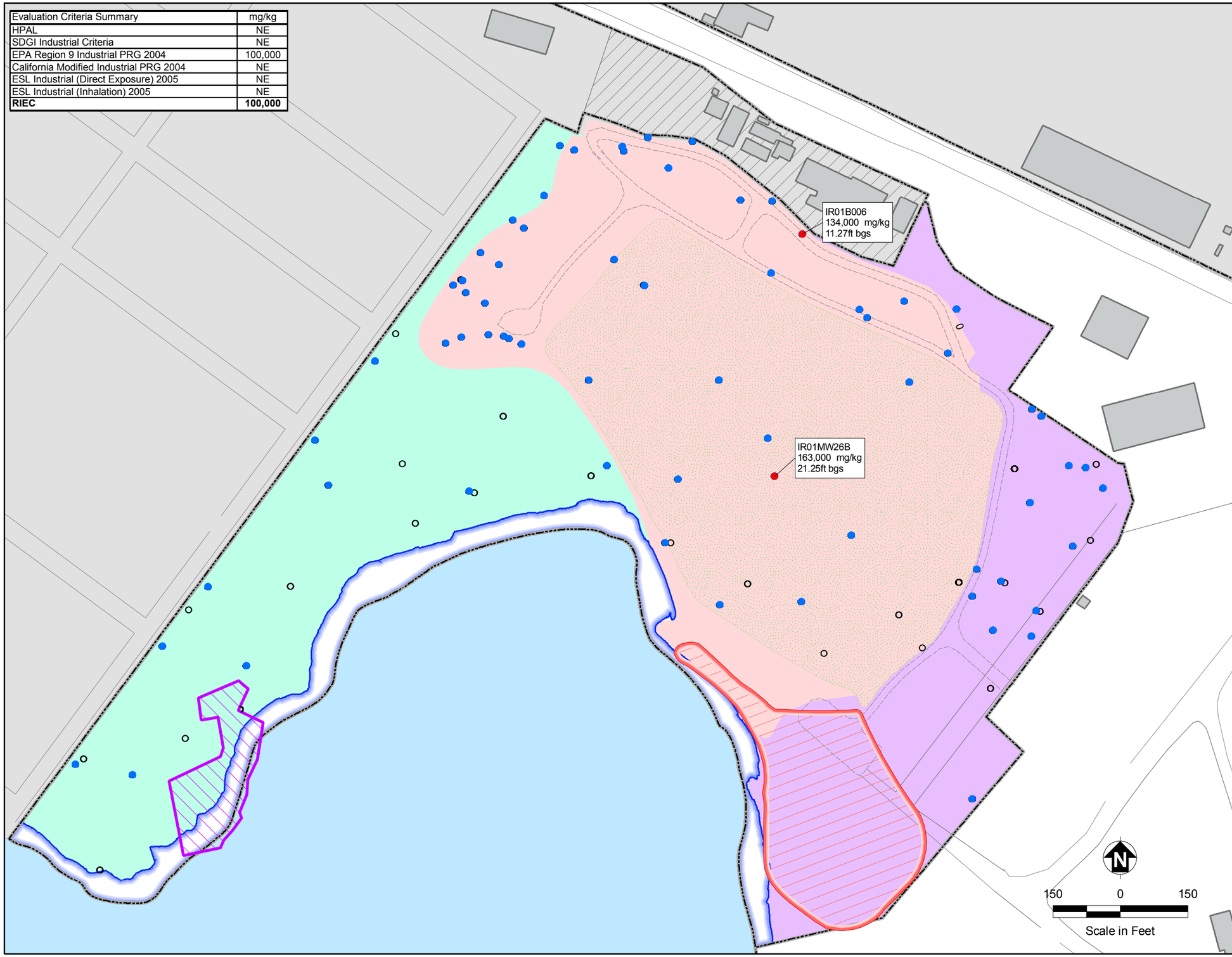
FIGURE 4-32

CHROMIUM (TOTAL) IN >10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	NE
EPA Region 9 Industrial PRG 2004	100,000
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**100,000**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

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HPAL = Hunters Point ambient level
NE = not established
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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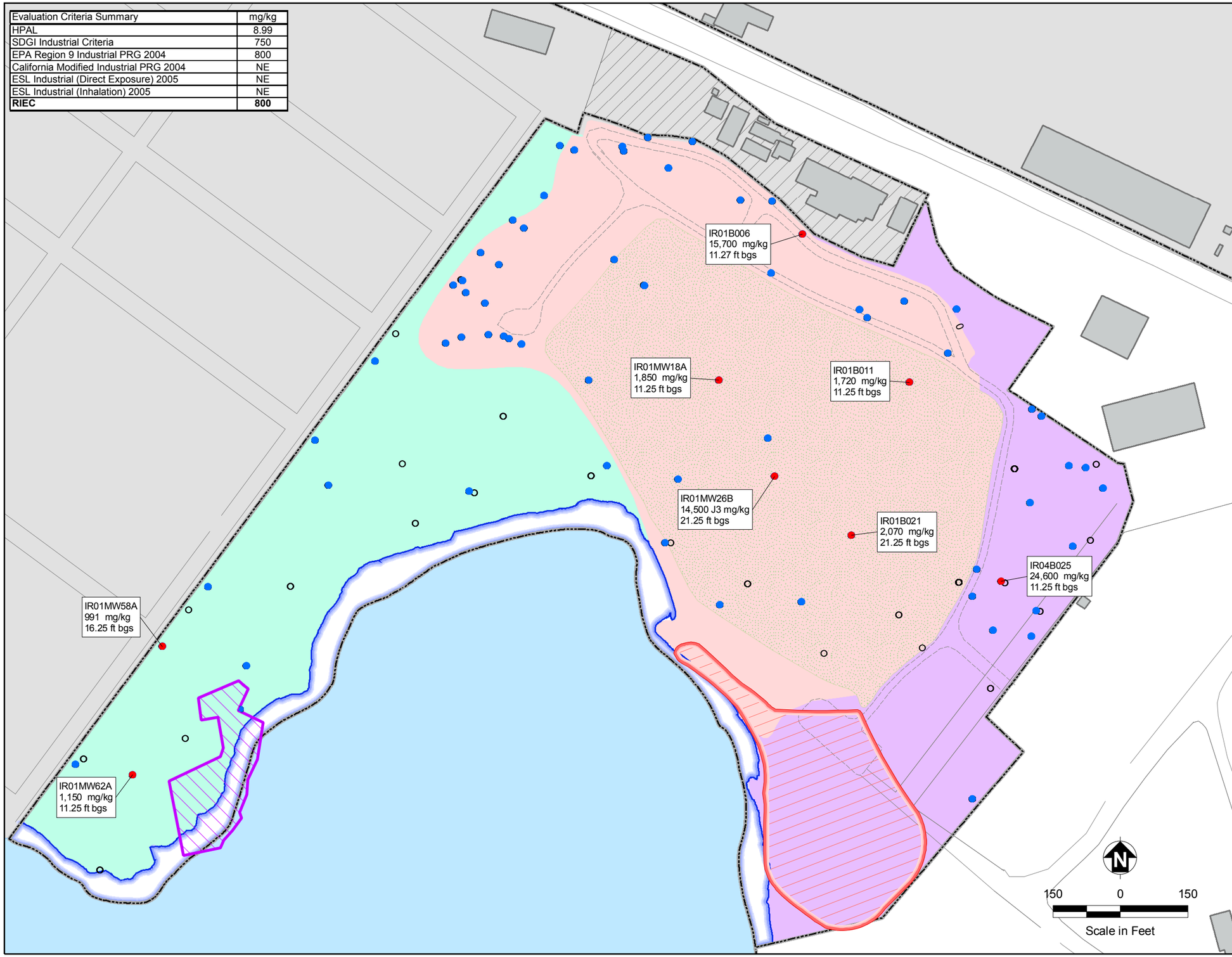
FIGURE 4-33

IRON IN >10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	8.99
SDGI Industrial Criteria	750
EPA Region 9 Industrial PRG 2004	800
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**800**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

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3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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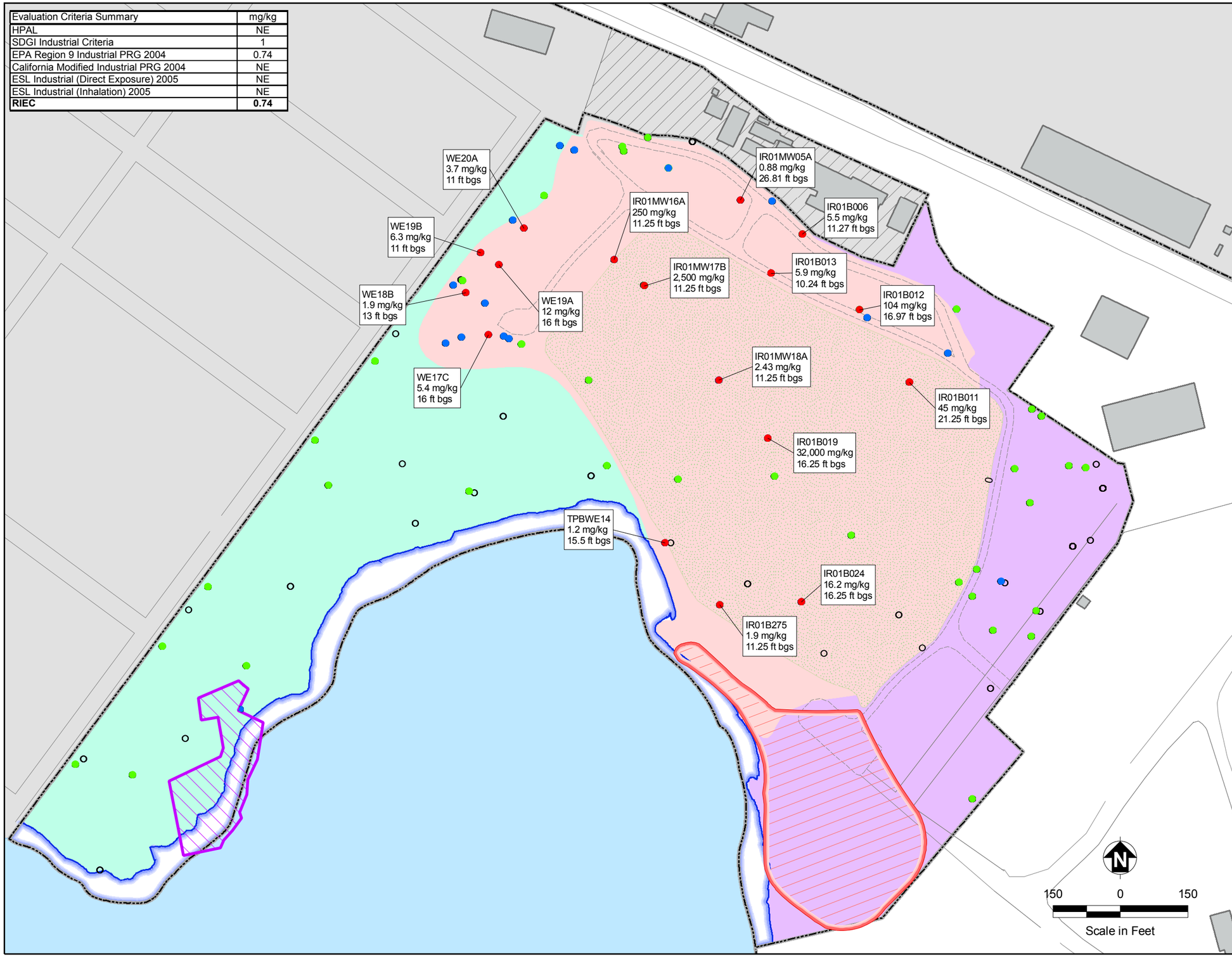
FIGURE 4-34

LEAD IN >10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	1
EPA Region 9 Industrial PRG 2004	0.74
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**0.74**



- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (proposed boundary)
- PCB Hot Spot (proposed boundary)
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

Notes:

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150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

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<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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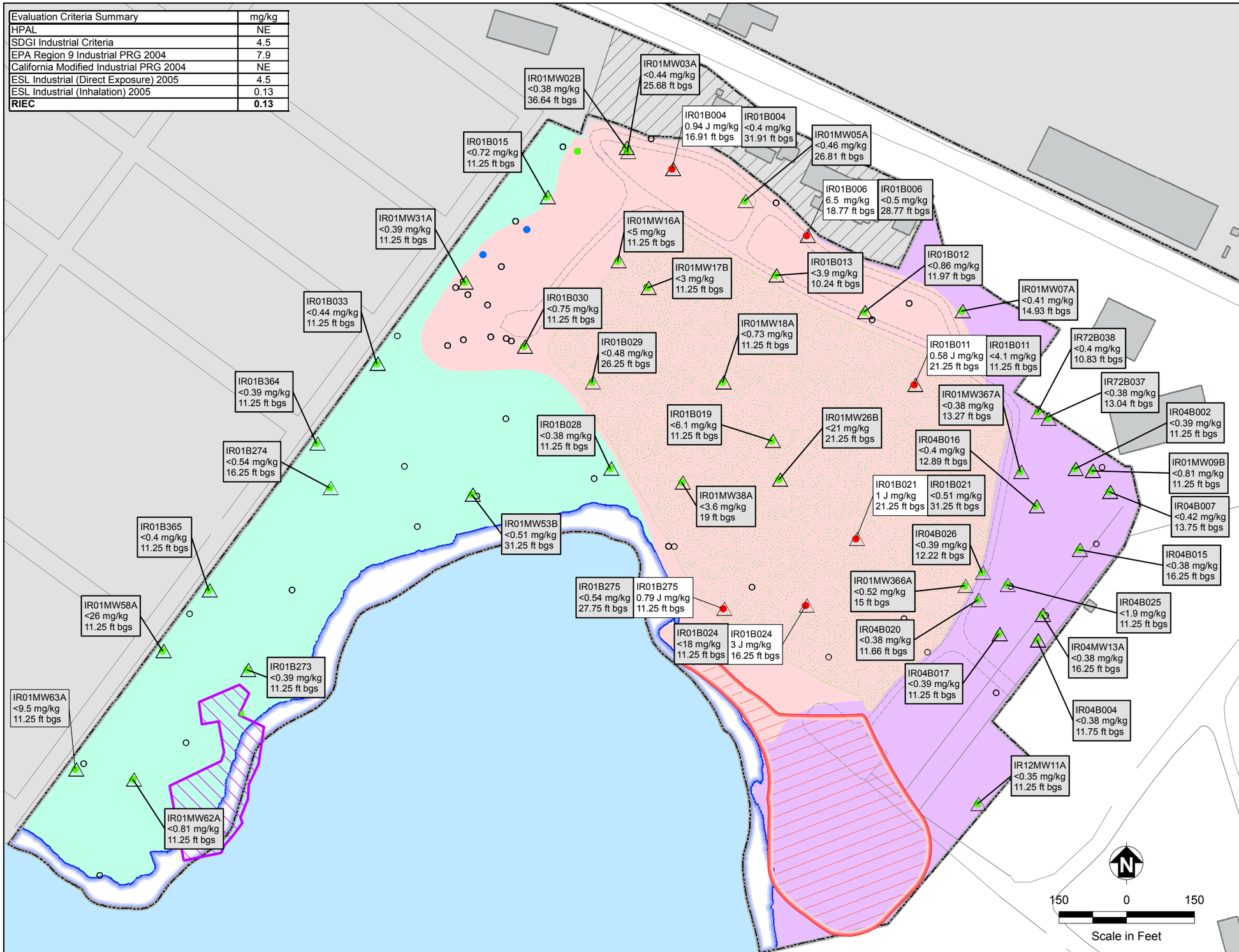
FIGURE 4-35

TOTAL PCBS IN >10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	4.5
EPA Region 9 Industrial PRG 2004	7.9
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	4.5
ESL Industrial (Inhalation) 2005	0.13
RIEC	**0.13**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

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mg/kg = milligram per kilogram
J = estimated value
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150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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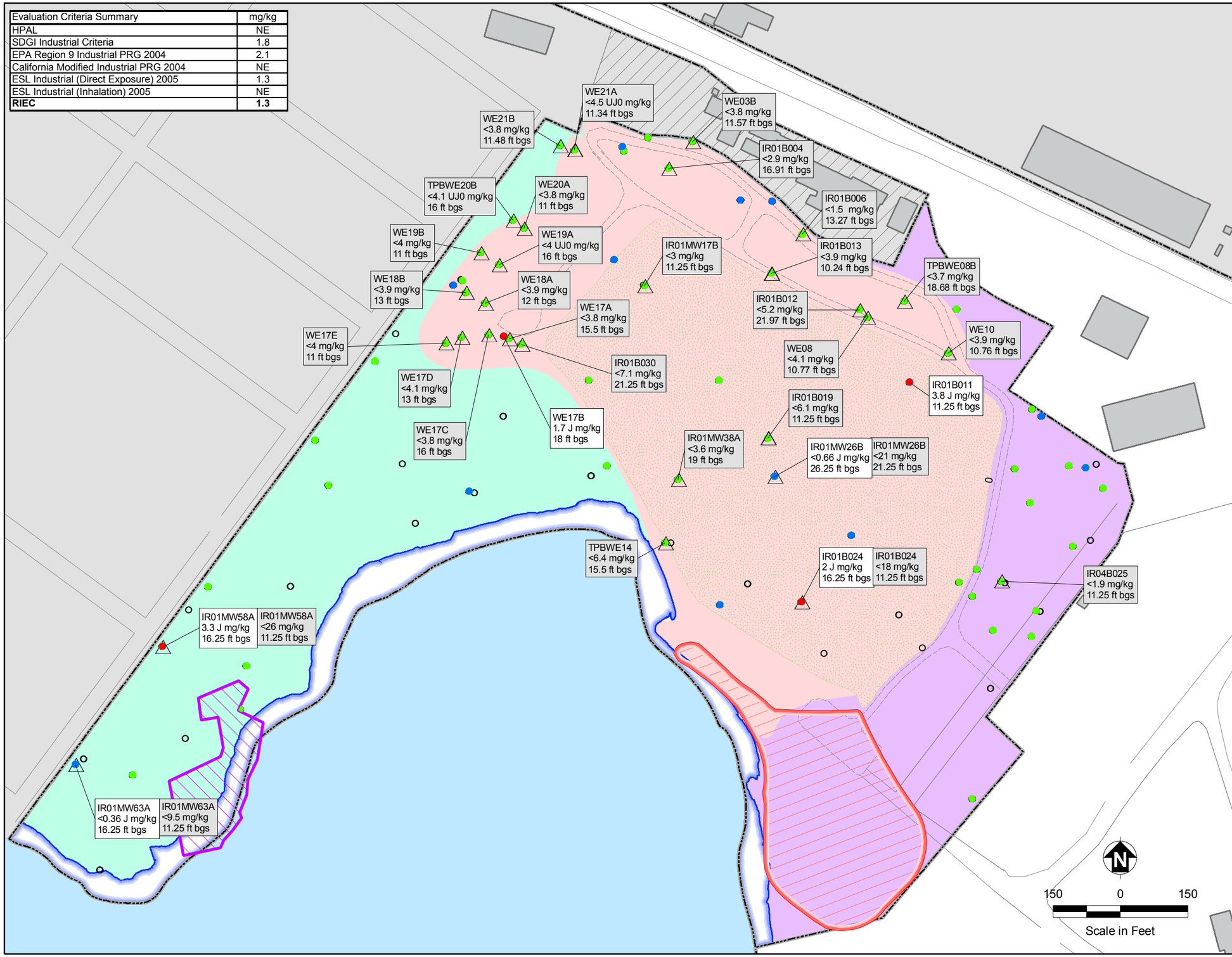
FIGURE 4-36

1,4 - DICHLOROBENZENE IN >10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	1.8
EPA Region 9 Industrial PRG 2004	2.1
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	1.3
ESL Industrial (Inhalation) 2005	NE
RIEC	**1.3**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

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mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

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3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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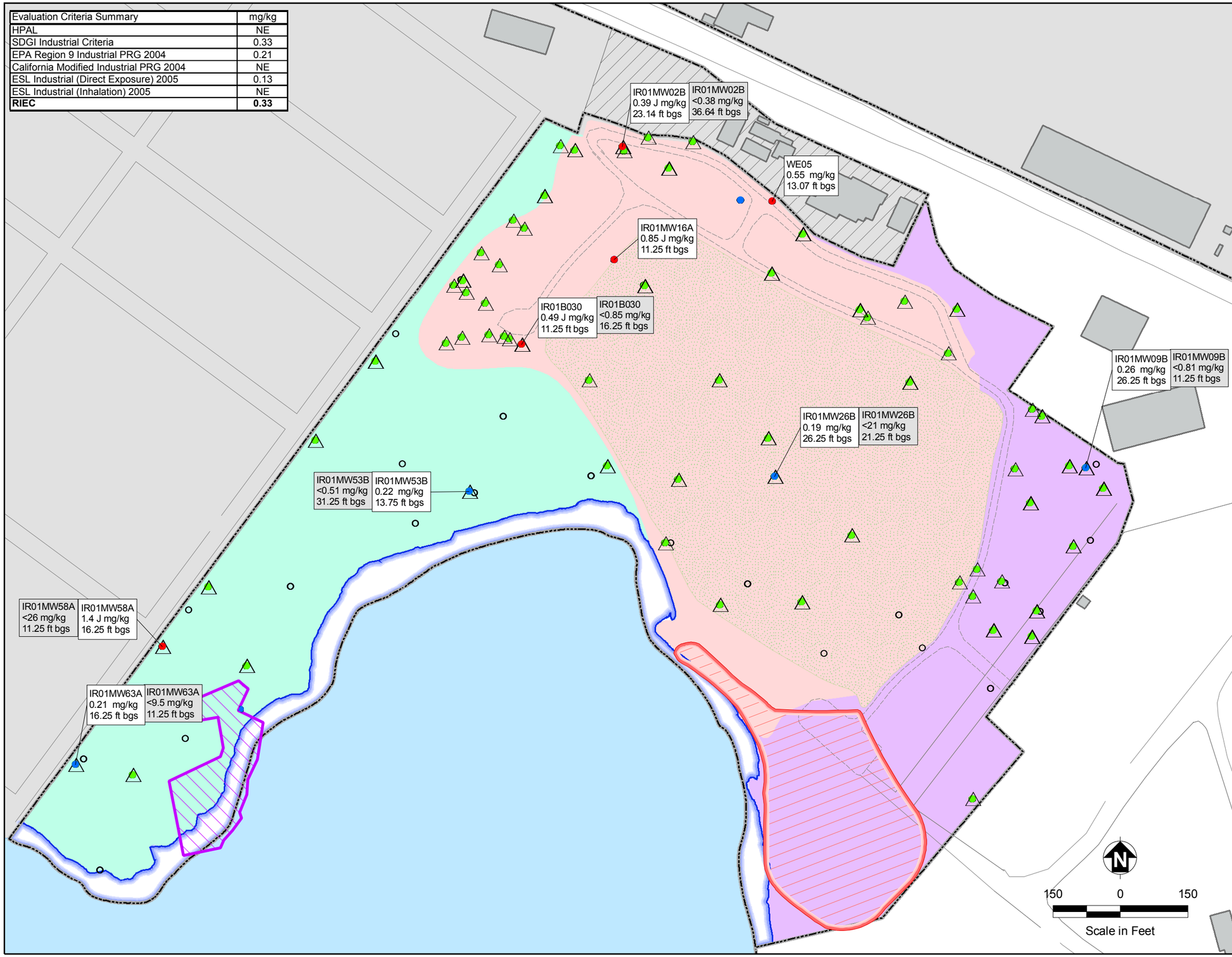
FIGURE 4-37

BENZO (A) ANTHRACENE IN >10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	0.33
EPA Region 9 Industrial PRG 2004	0.21
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	0.13
ESL Industrial (Inhalation) 2005	NE
RIEC	**0.33**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

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mg/kg = milligram per kilogram
J = estimated value
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150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

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<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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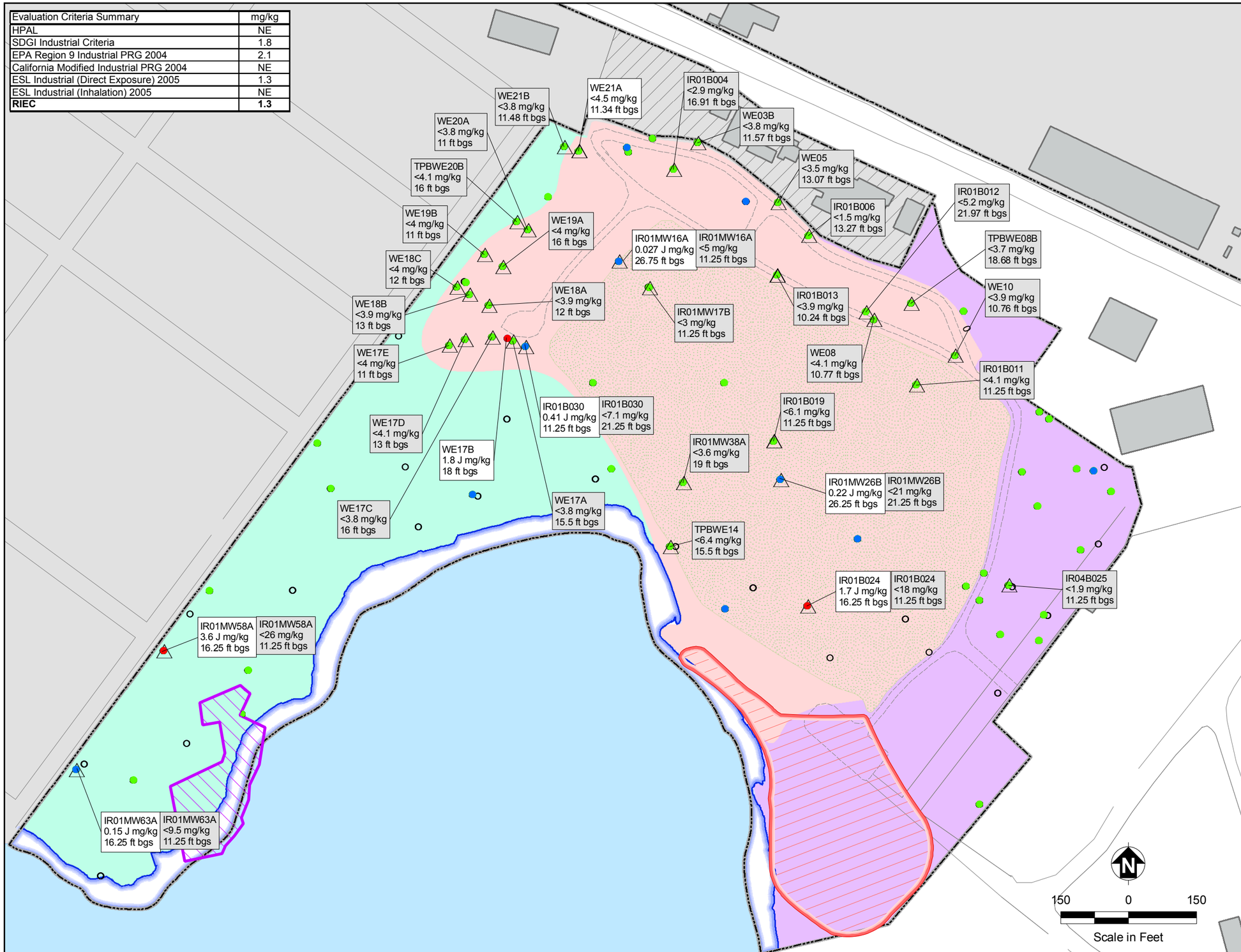
FIGURE 4-38

BENZO (A) PYRENE IN >10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	1.8
EPA Region 9 Industrial PRG 2004	2.1
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	1.3
ESL Industrial (Inhalation) 2005	NE
RIEC	**1.3**



- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (proposed boundary)
- PCB Hot Spot (proposed boundary)
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- Building
- UCSF Compound
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- Panhandle Area
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150 J mg/kg — Concentration and Qualifier
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IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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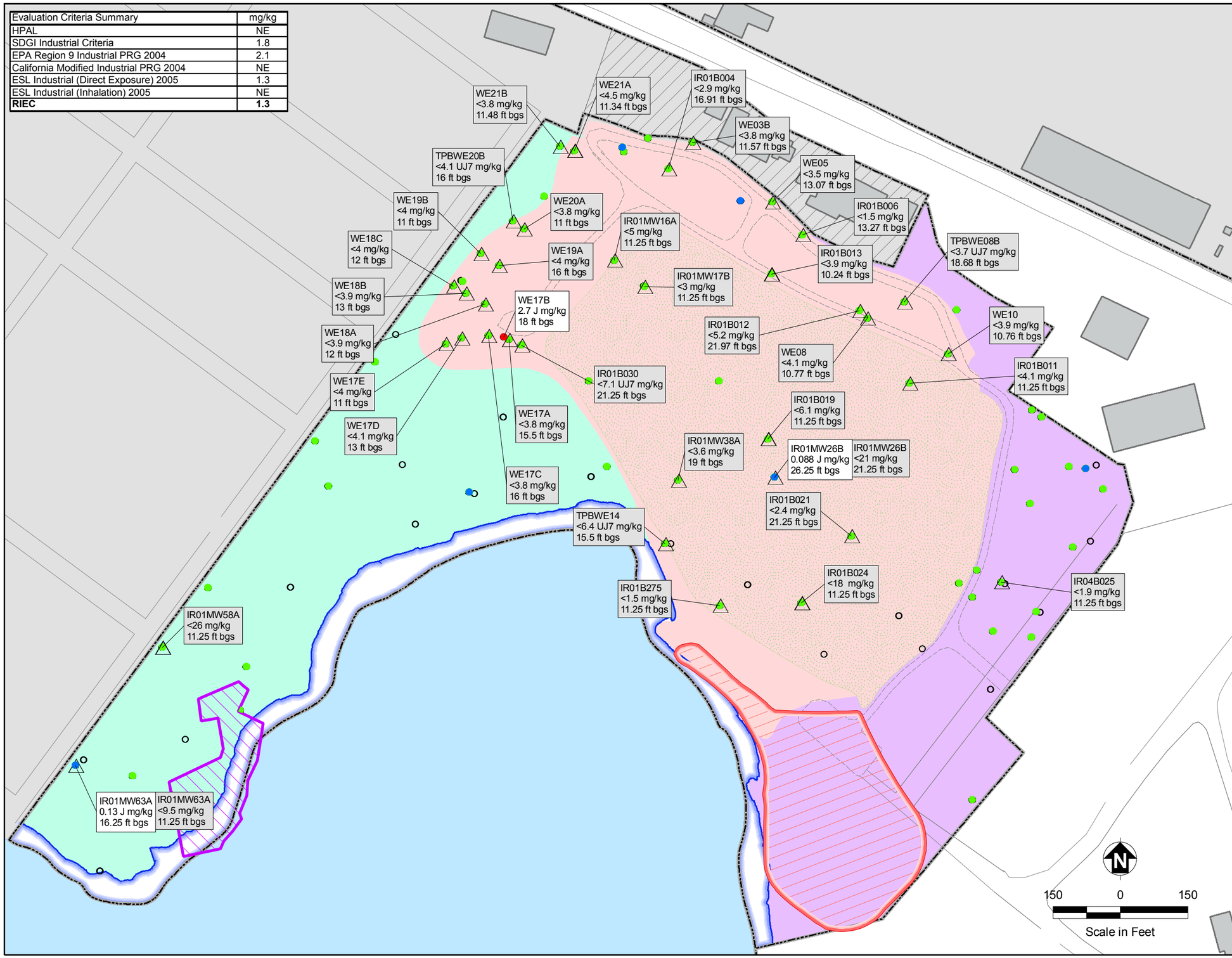
FIGURE 4-39

BENZO (B) FLUORANTHENE IN >10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	1.8
EPA Region 9 Industrial PRG 2004	2.1
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	1.3
ESL Industrial (Inhalation) 2005	NE
RIEC	**1.3**



- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (proposed boundary)
- PCB Hot Spot (proposed boundary)
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

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SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
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150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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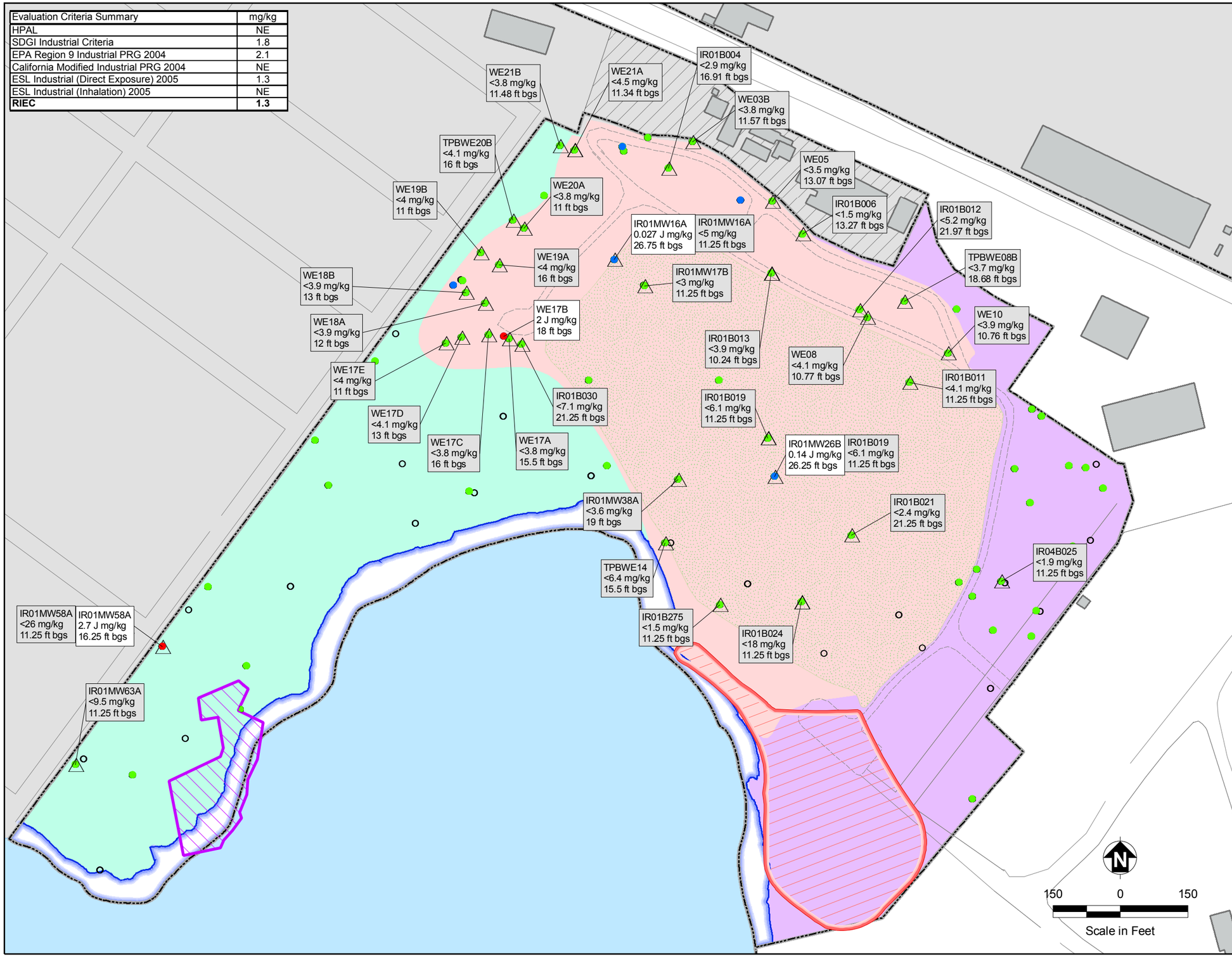
FIGURE 4-40

BENZO (K) FLUORANTHENE IN >10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	1.8
EPA Region 9 Industrial PRG 2004	2.1
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	1.3
ESL Industrial (Inhalation) 2005	NE
RIEC	**1.3**



- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (proposed boundary)
- PCB Hot Spot (proposed boundary)
- Limit of Landfill Cap
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- Building
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- Panhandle Area
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3.93 ft bgs — Depth

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<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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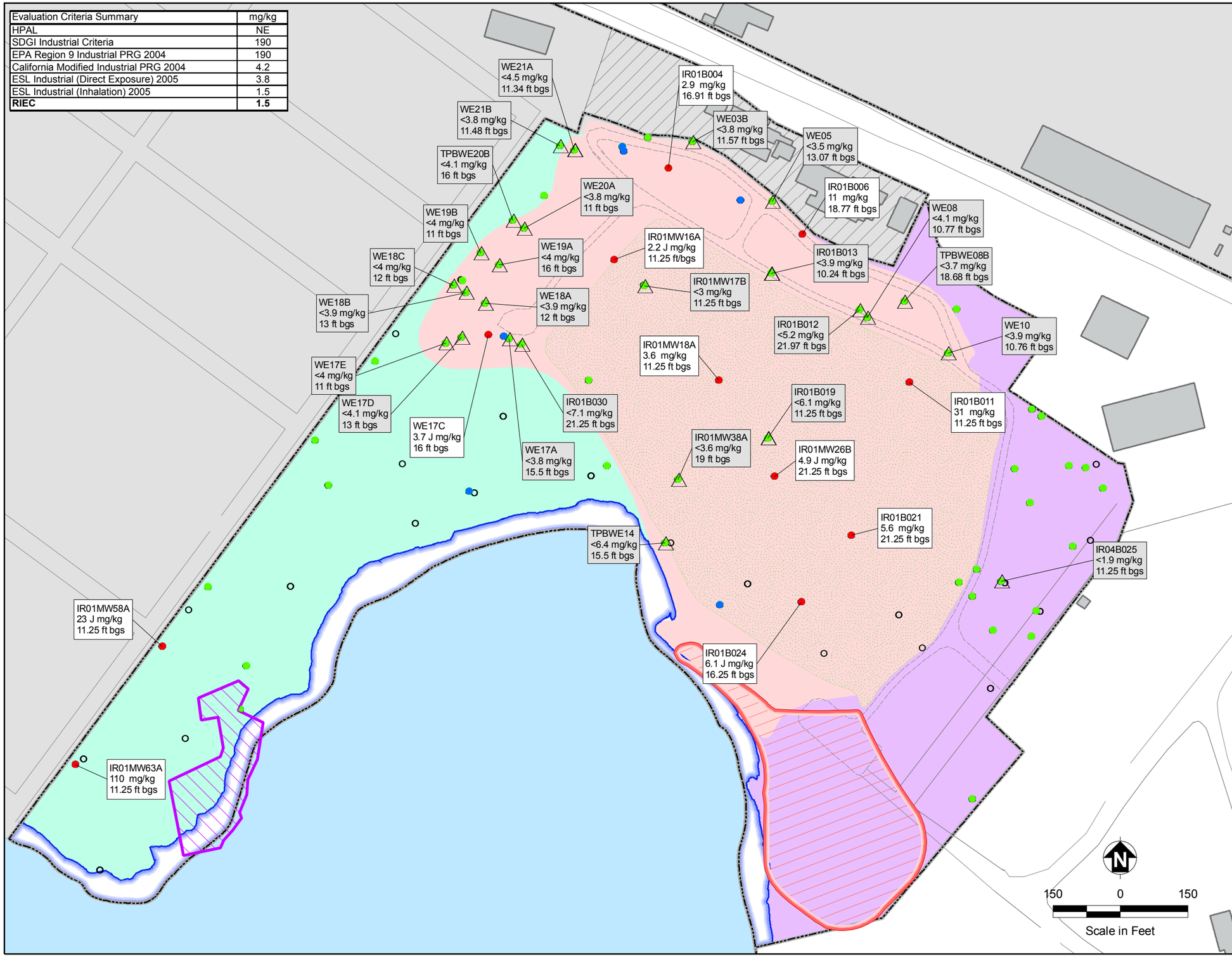
FIGURE 4-41

INDENO (1,2,3-CD) PYRENE IN >10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	190
EPA Region 9 Industrial PRG 2004	190
California Modified Industrial PRG 2004	4.2
ESL Industrial (Direct Exposure) 2005	3.8
ESL Industrial (Inhalation) 2005	1.5
RIEC	**1.5**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
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Parcel Boundary
Building
UCSF Compound
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Adjacent Area
Panhandle Area
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150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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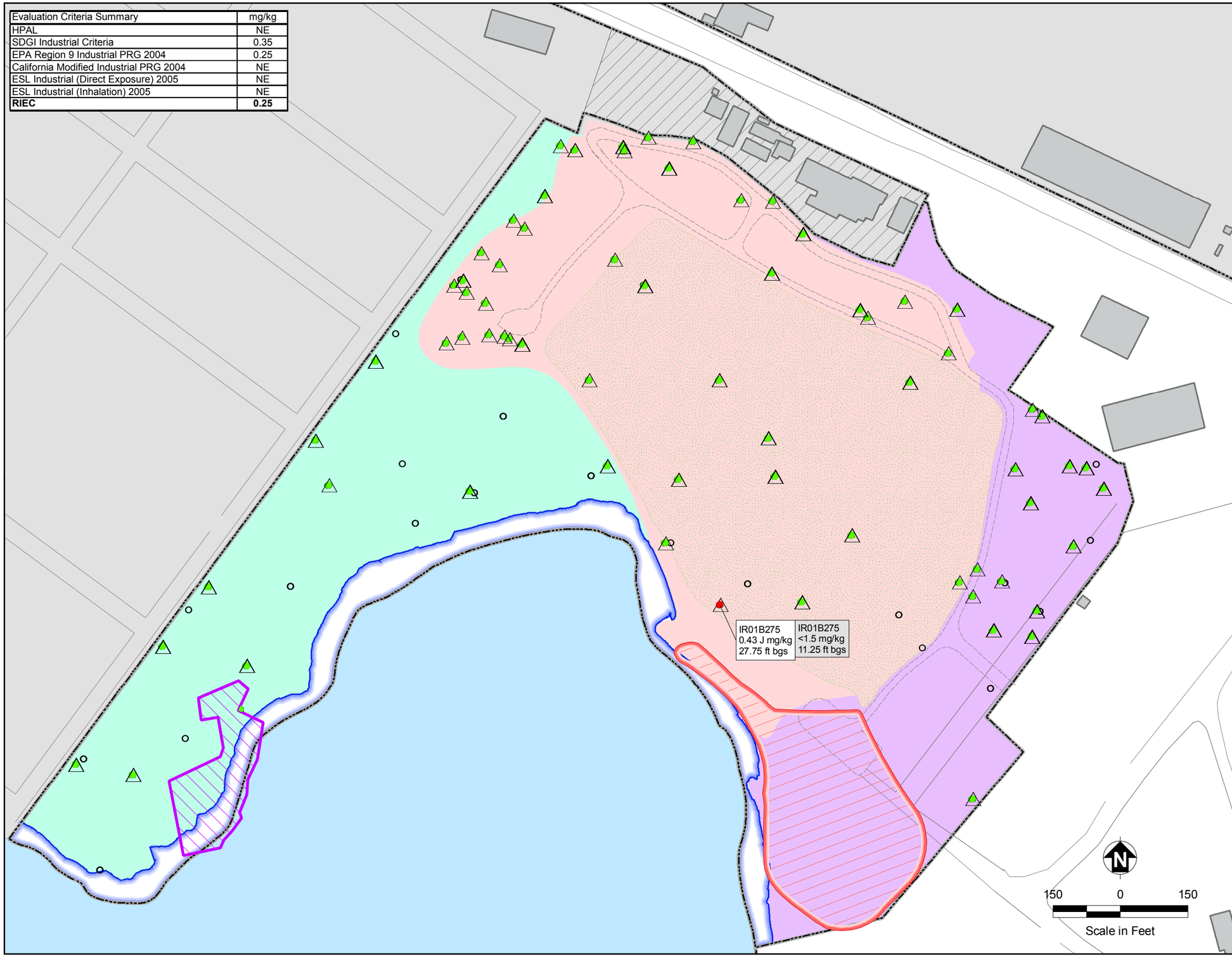
FIGURE 4-42

NAPHTHALENE IN >10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	0.35
EPA Region 9 Industrial PRG 2004	0.25
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**0.25**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
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<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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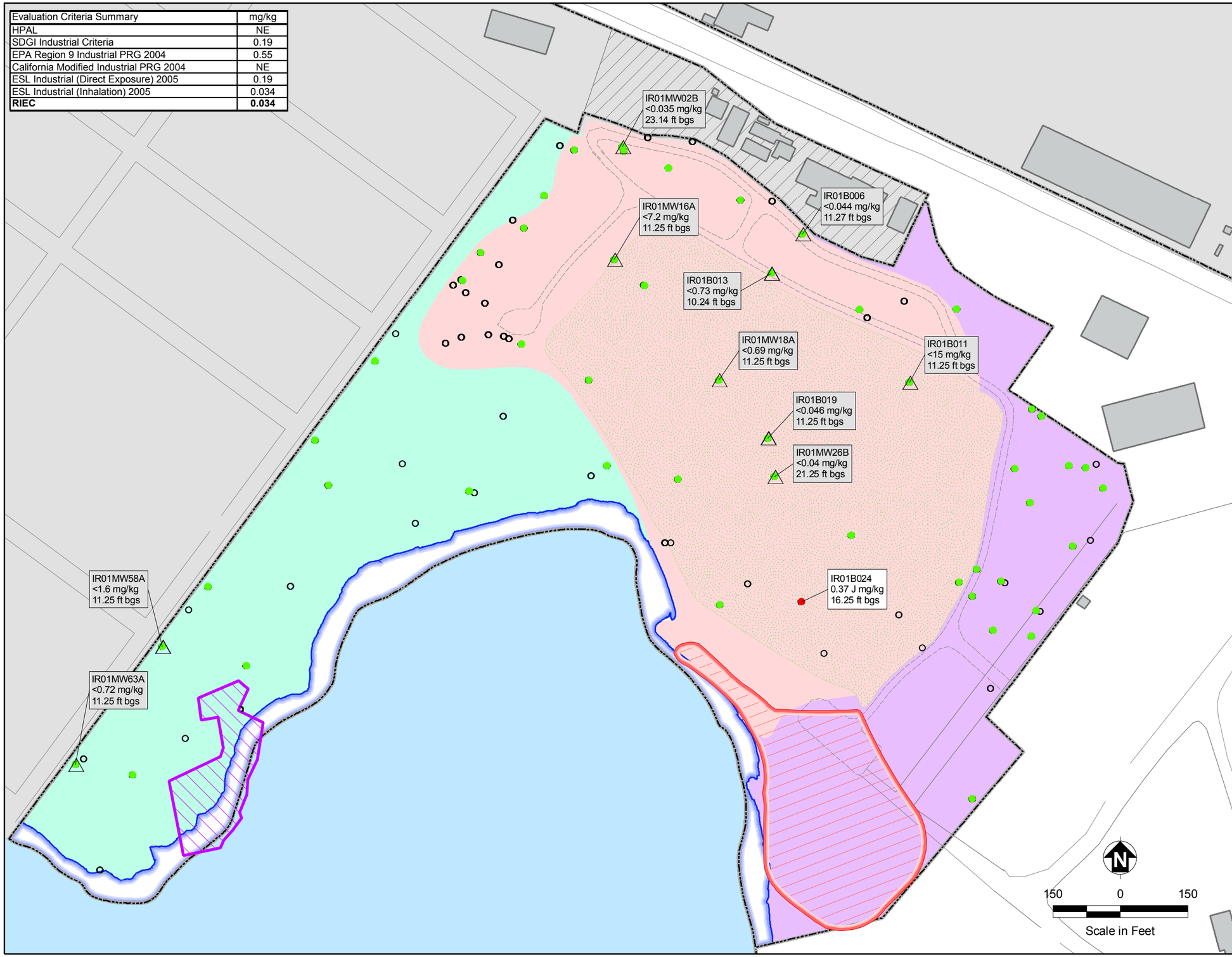
FIGURE 4-43

N-NITROSO-DI-N-PROPYLAMINE IN >10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	0.19
EPA Region 9 Industrial PRG 2004	0.55
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	0.19
ESL Industrial (Inhalation) 2005	0.034
RIEC	**0.034**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
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J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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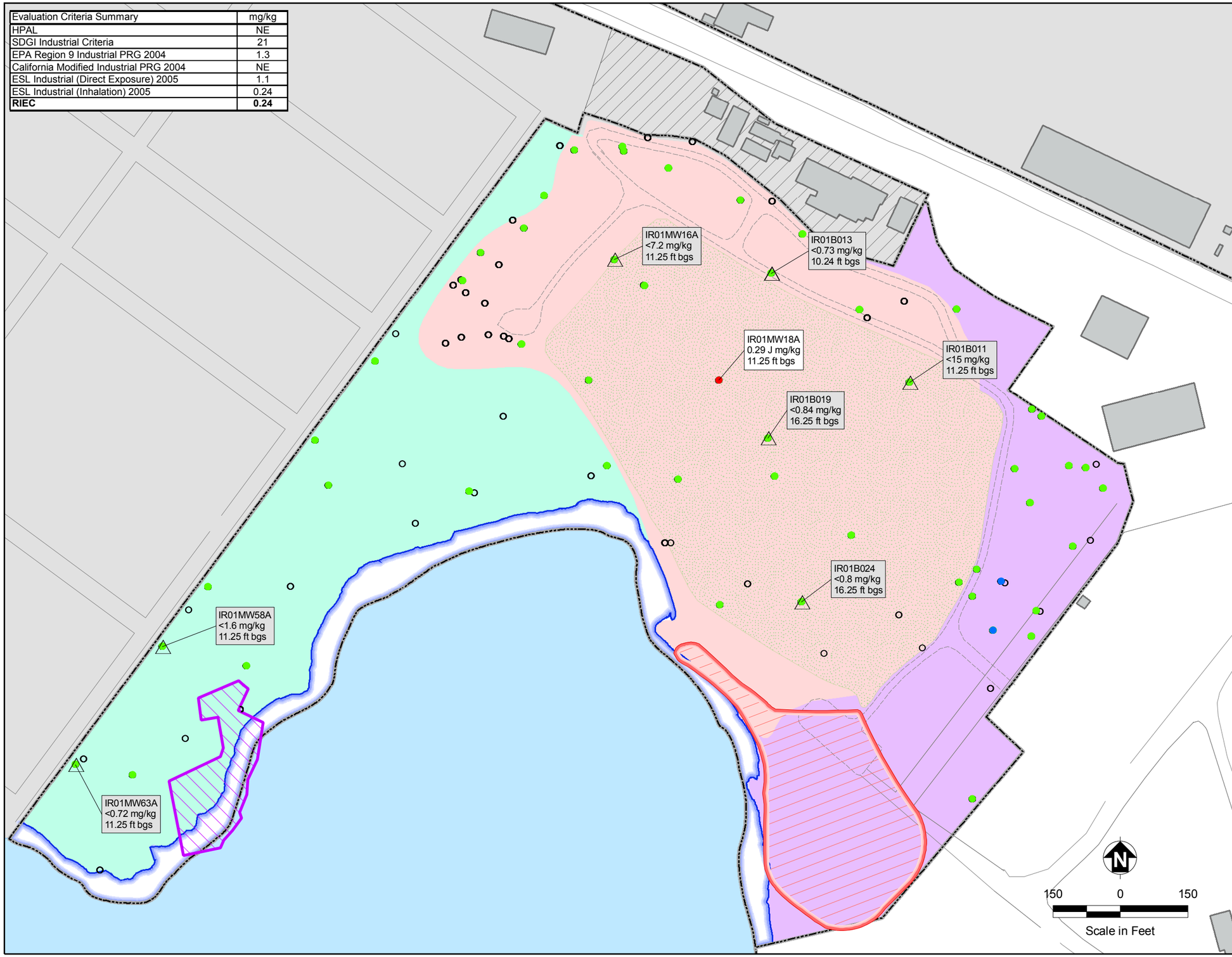
FIGURE 4-44

CARBON TETRACHLORIDE IN >10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	21
EPA Region 9 Industrial PRG 2004	1.3
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	1.1
ESL Industrial (Inhalation) 2005	0.24
RIEC	**0.24**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

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Results from the PCB Hot Spot and Metal Slag Area are not shown because both areas are undergoing remediation. Data within initial excavation boundaries (from 0 to 3 feet bgs) was removed from the data set. Post-excavation data from these areas will be presented in the draft final RI/FS.

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HPAL = Hunters Point ambient level
NE = not established
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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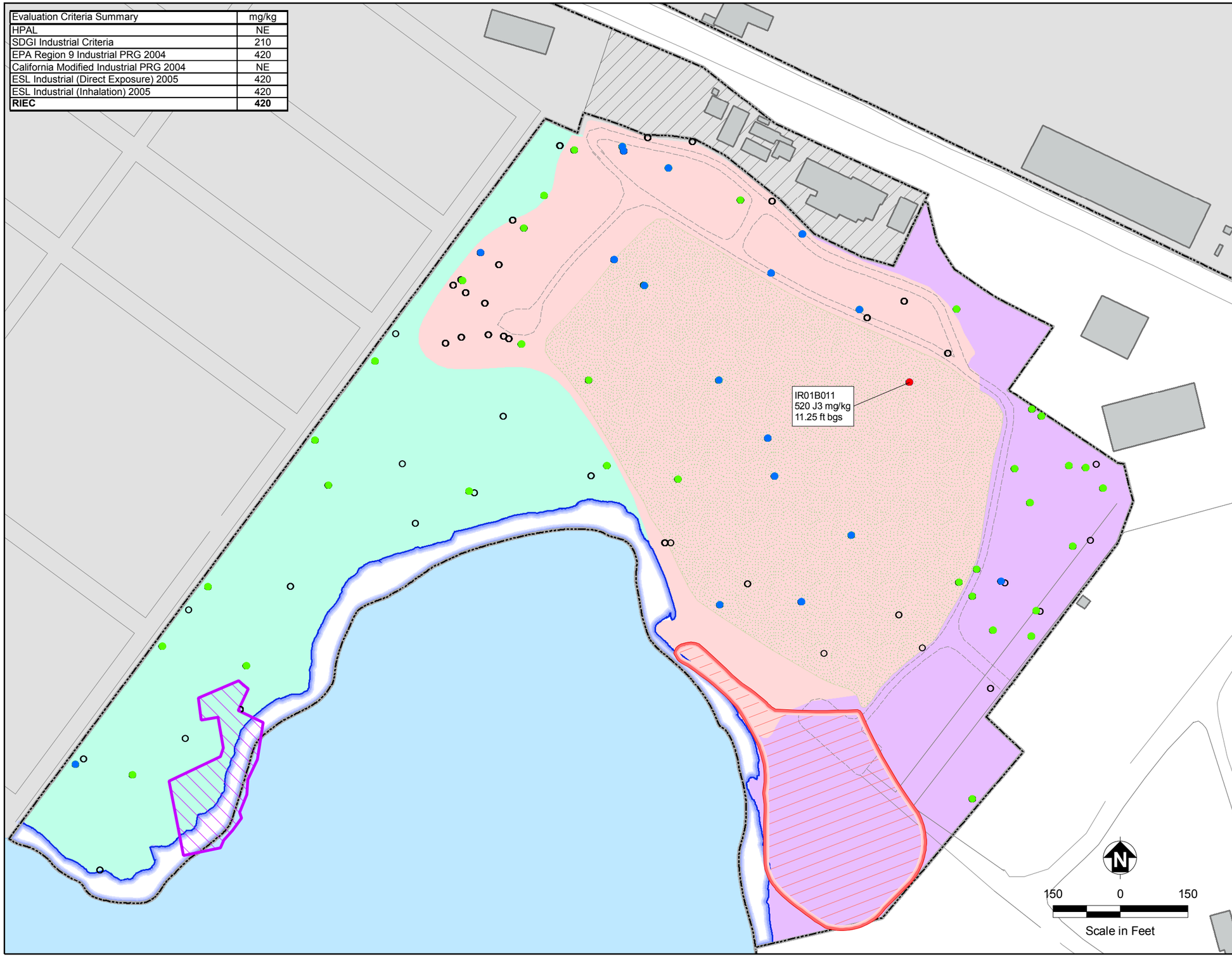
FIGURE 4-45

TETRACHLOROETHENE IN >10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	210
EPA Region 9 Industrial PRG 2004	420
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	420
ESL Industrial (Inhalation) 2005	420
RIEC	**420**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

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3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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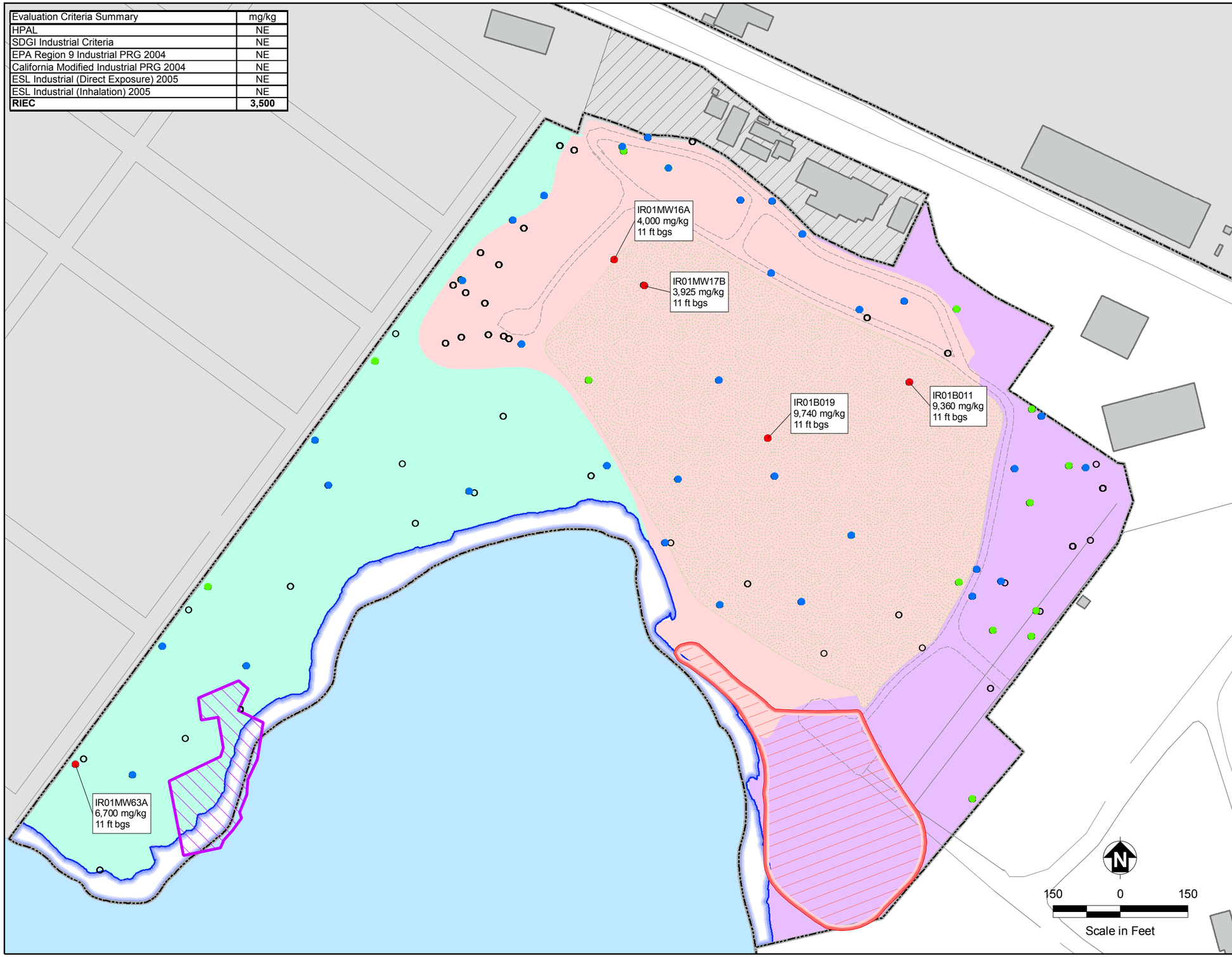
FIGURE 4-46

XYLENE (TOTAL) IN >10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	NE
EPA Region 9 Industrial PRG 2004	NE
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**3,500**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

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mg/kg = milligram per kilogram
J = estimated value
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150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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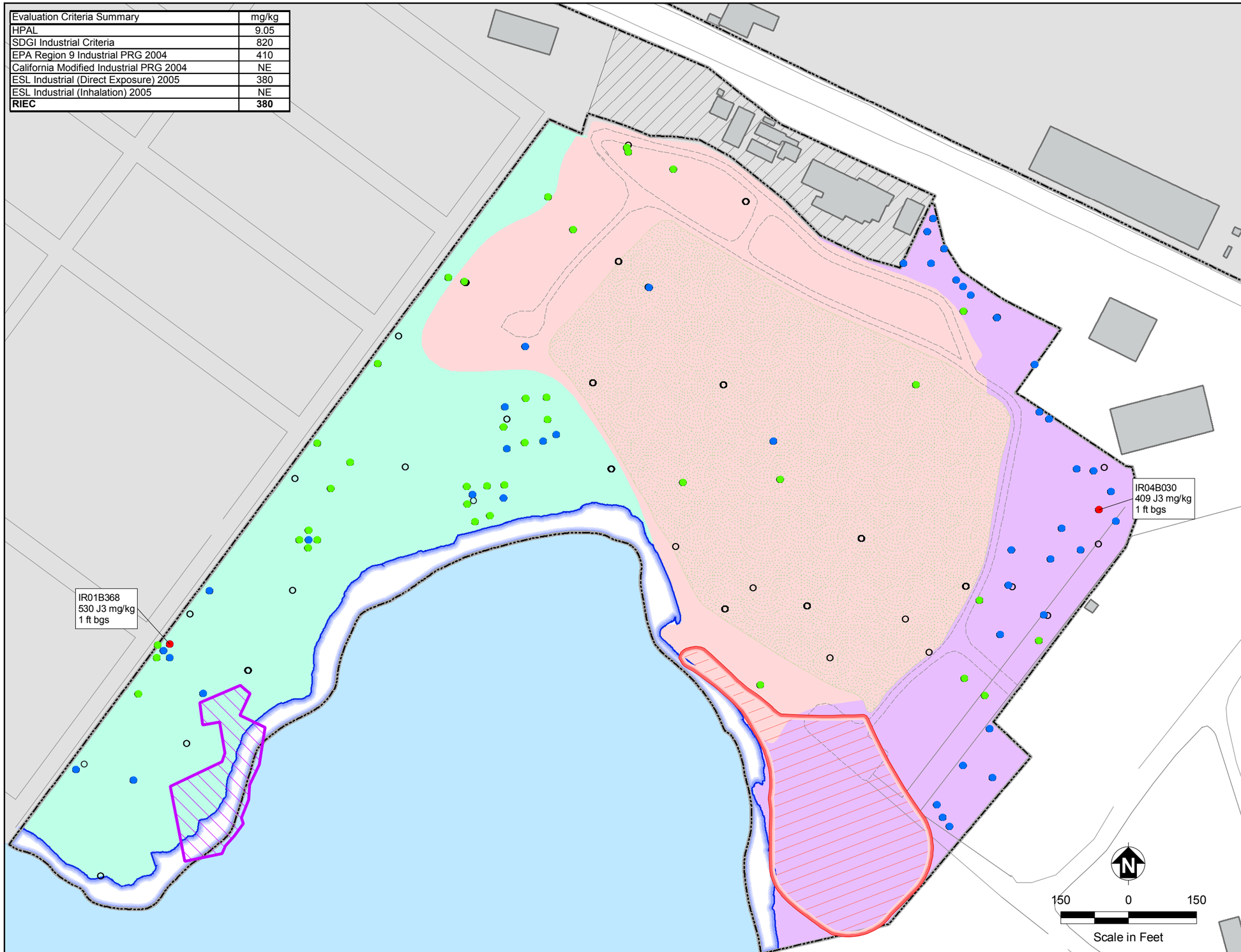
FIGURE 4-47

TOTAL TPH IN >10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	9.05
SDGI Industrial Criteria	820
EPA Region 9 Industrial PRG 2004	410
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	380
ESL Industrial (Inhalation) 2005	NE
RIEC	**380**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

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SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275	Location ID
150 J mg/kg	Concentration and Qualifier
3.93 ft bgs	Depth
IR04B025	Location ID
<37 mg/kg	Reporting Limit
2.0 ft bgs	Depth

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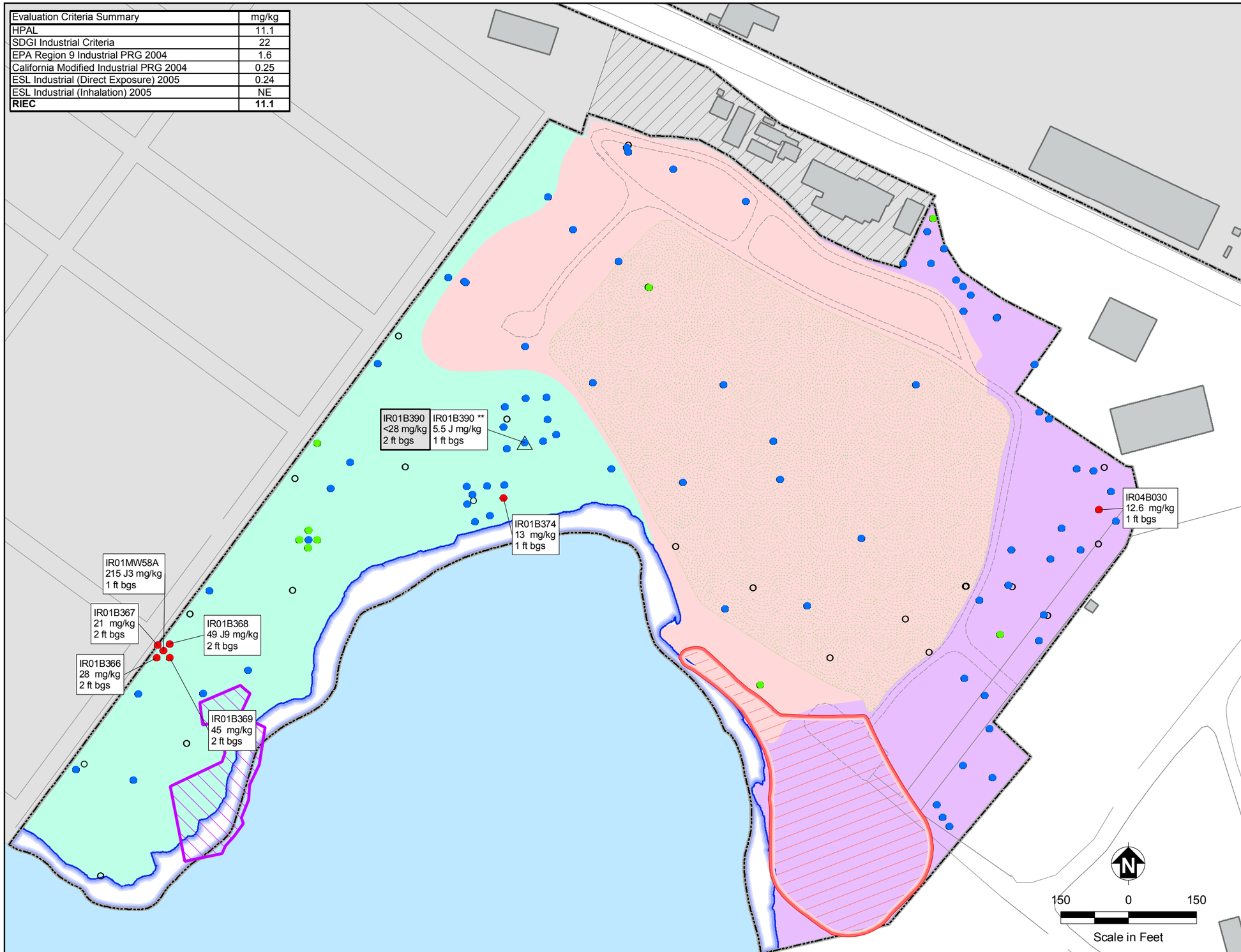
FIGURE 4-48

ANTIMONY IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	11.1
SDGI Industrial Criteria	22
EPA Region 9 Industrial PRG 2004	1.6
California Modified Industrial PRG 2004	0.25
ESL Industrial (Direct Exposure) 2005	0.24
ESL Industrial (Inhalation) 2005	NE
RIEC	**11.1**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

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ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
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IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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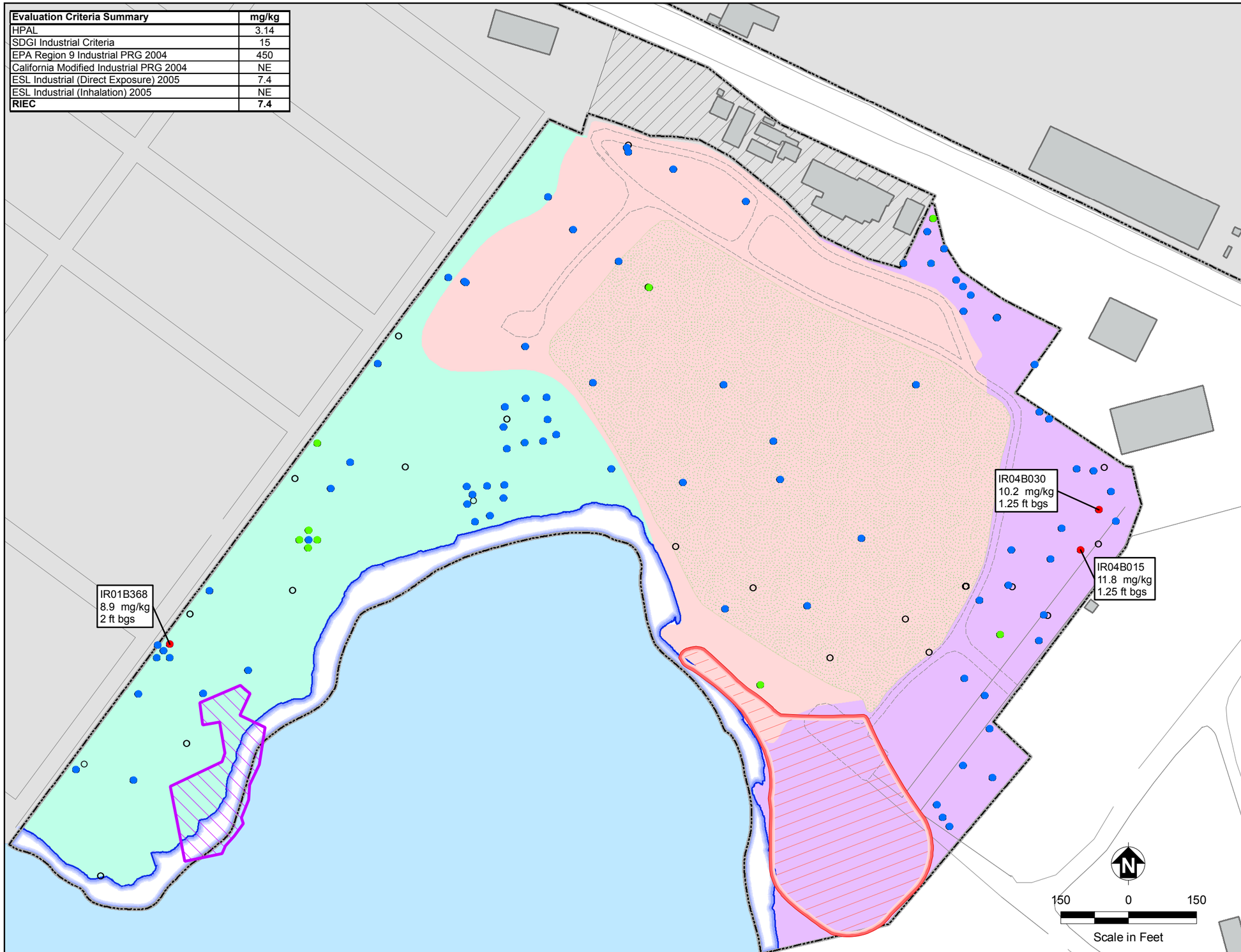
FIGURE 4-49

ARSENIC IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	3.14
SDGI Industrial Criteria	15
EPA Region 9 Industrial PRG 2004	450
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	7.4
ESL Industrial (Inhalation) 2005	NE
RIEC	**7.4**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
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Non-Navy Property

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ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

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150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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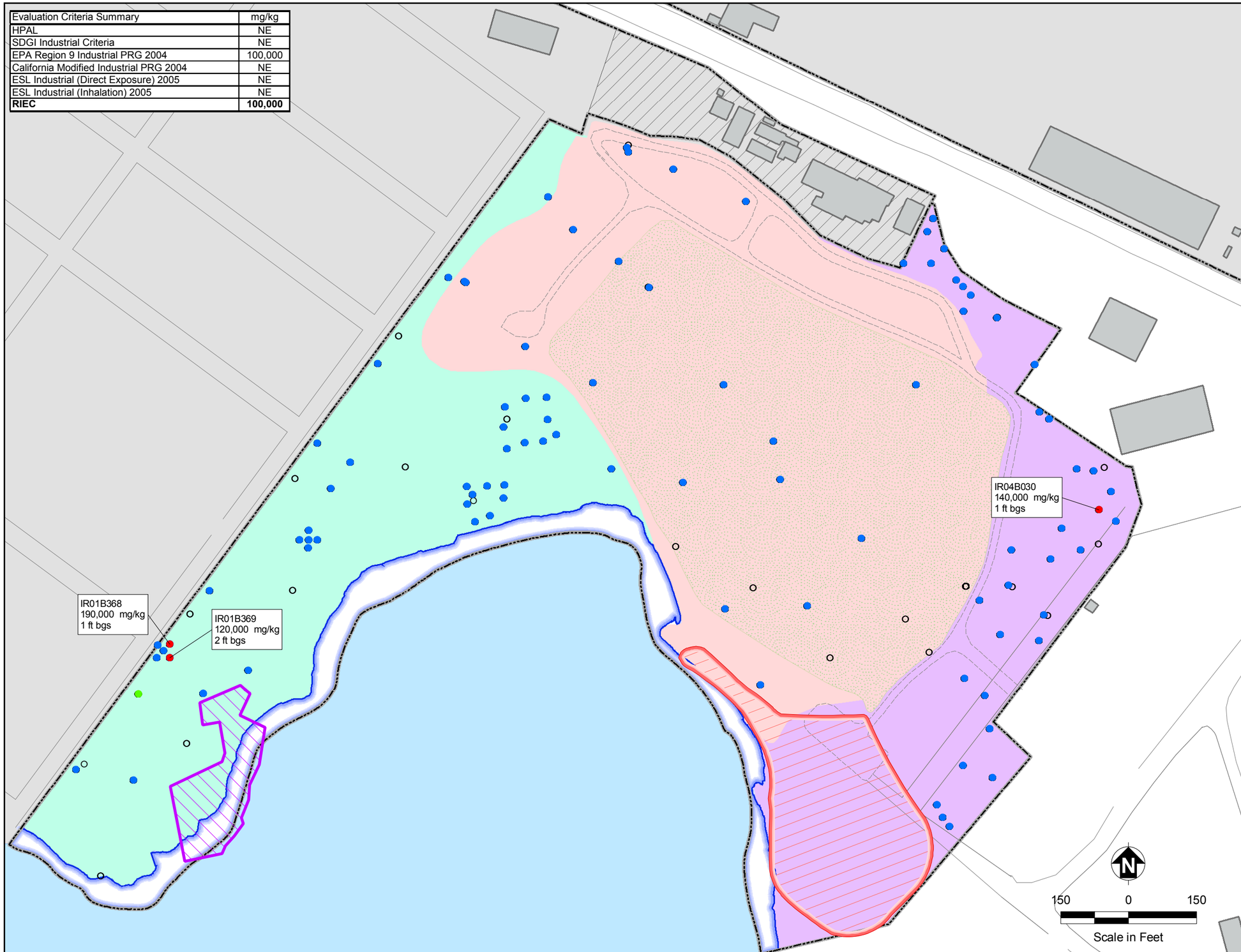
FIGURE 4-50

CADMIUM IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	NE
EPA Region 9 Industrial PRG 2004	100,000
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**100,000**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
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Non-Navy Property

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SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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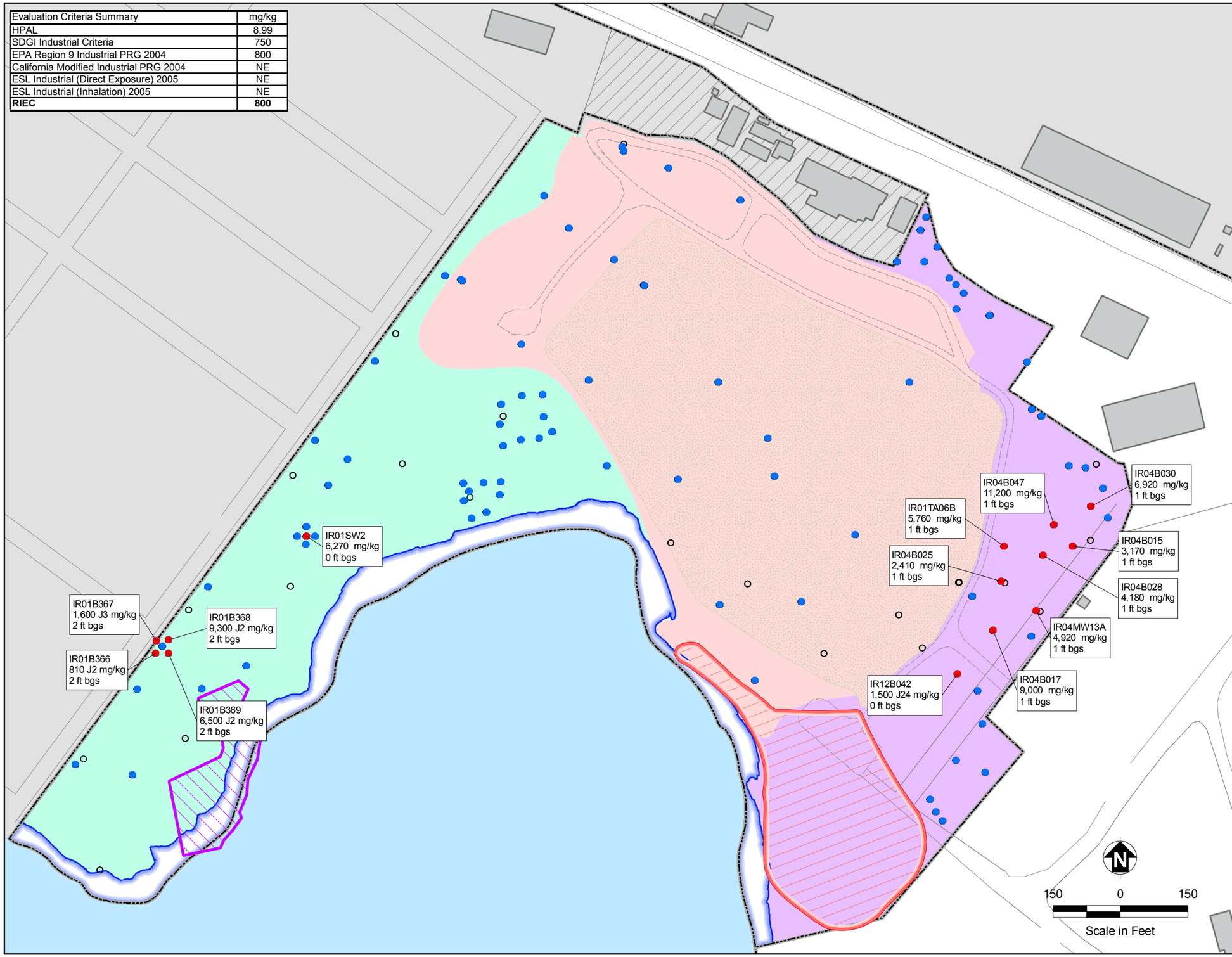
FIGURE 4-51

IRON IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	8.99
SDGI Industrial Criteria	750
EPA Region 9 Industrial PRG 2004	800
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**800**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

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150 J mg/kg — Concentration and Qualifier
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<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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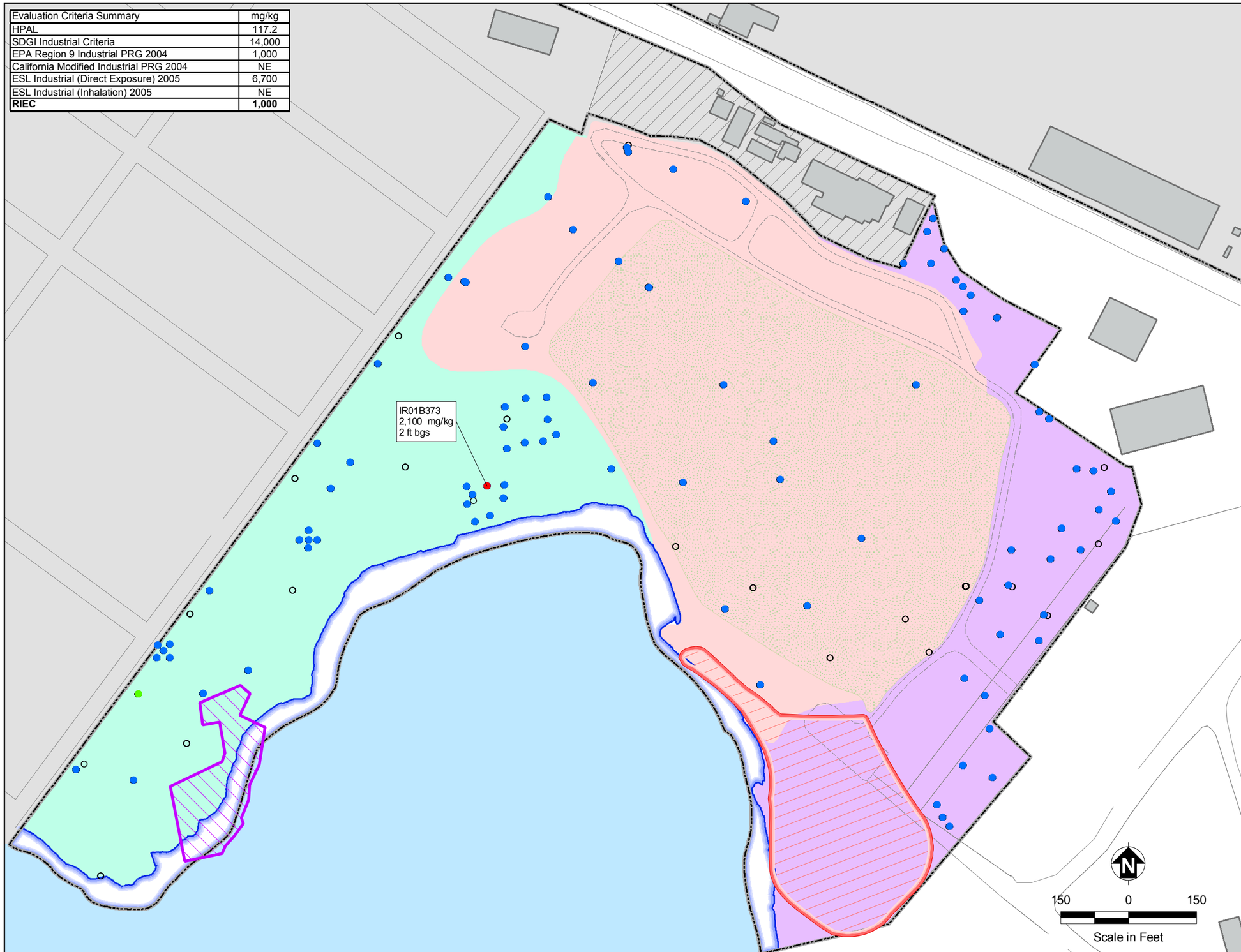
FIGURE 4-52

LEAD IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	117.2
SDGI Industrial Criteria	14,000
EPA Region 9 Industrial PRG 2004	1,000
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	6,700
ESL Industrial (Inhalation) 2005	NE
RIEC	**1,000**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

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3.93 ft bgs — Depth

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<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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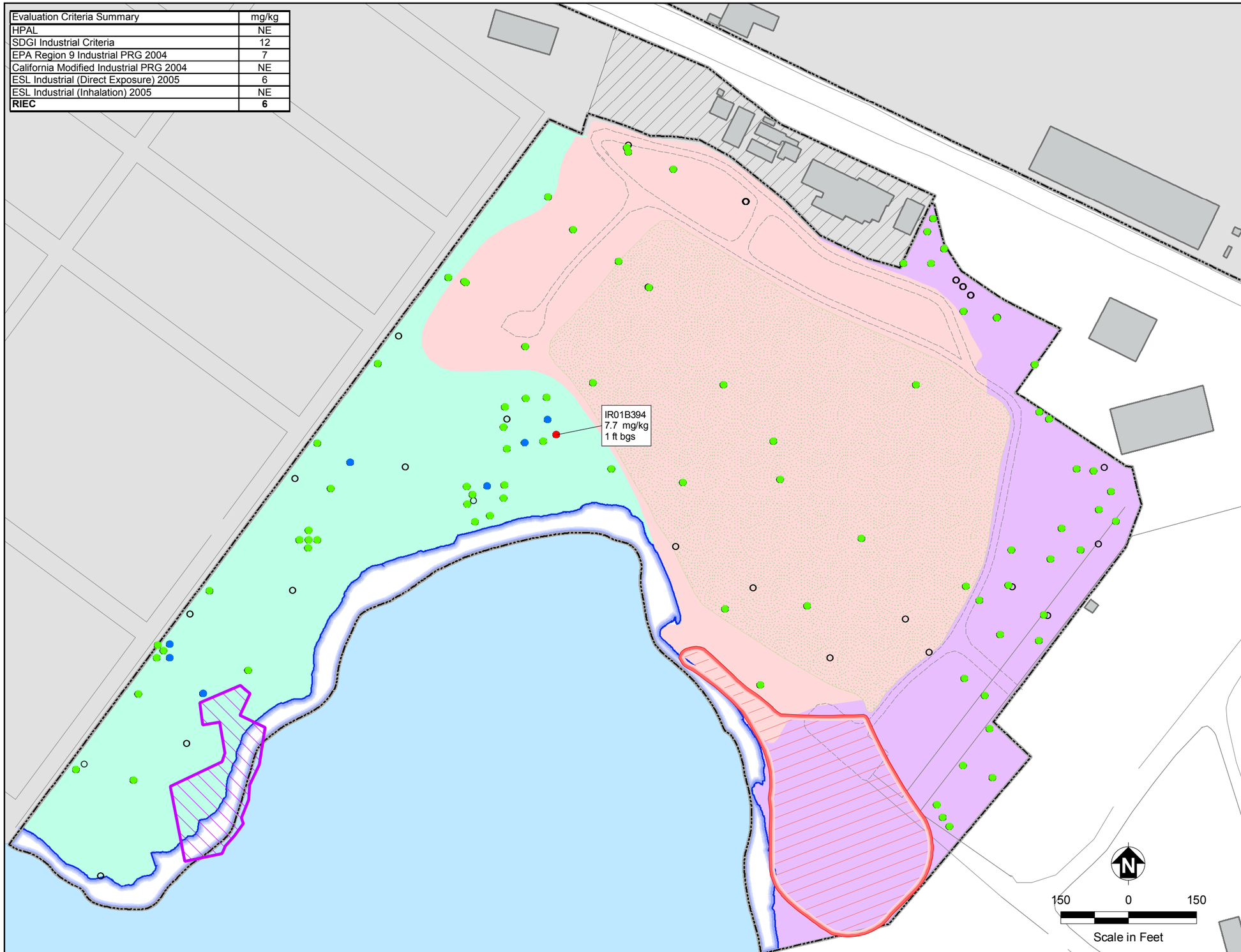
FIGURE 4-53

VANADIUM IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	12
EPA Region 9 Industrial PRG 2004	7
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	6
ESL Industrial (Inhalation) 2005	NE
RIEC	**6**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

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3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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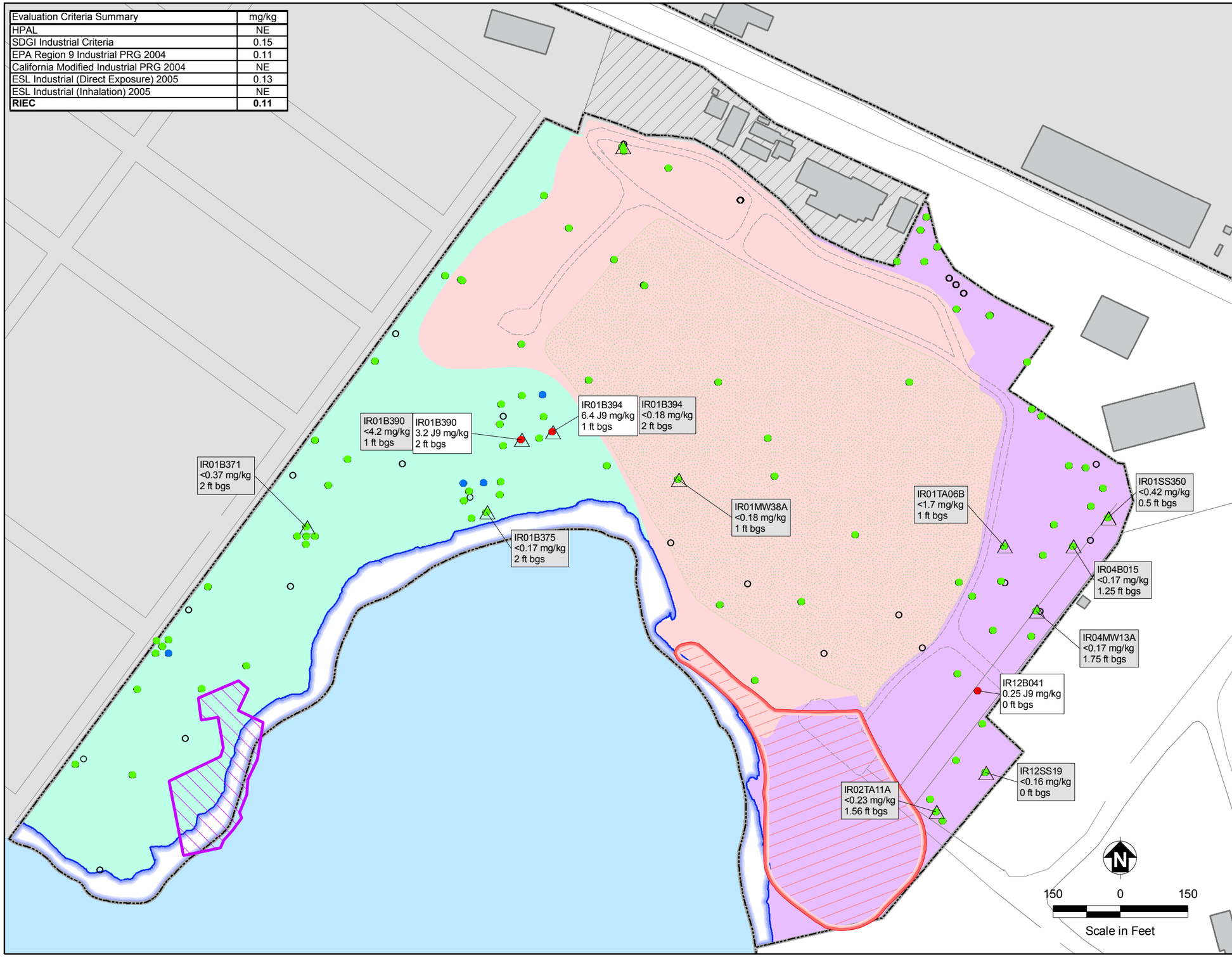
FIGURE 4-54

DDE
IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	0.15
EPA Region 9 Industrial PRG 2004	0.11
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	0.13
ESL Industrial (Inhalation) 2005	NE
RIEC	**0.11**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
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Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

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3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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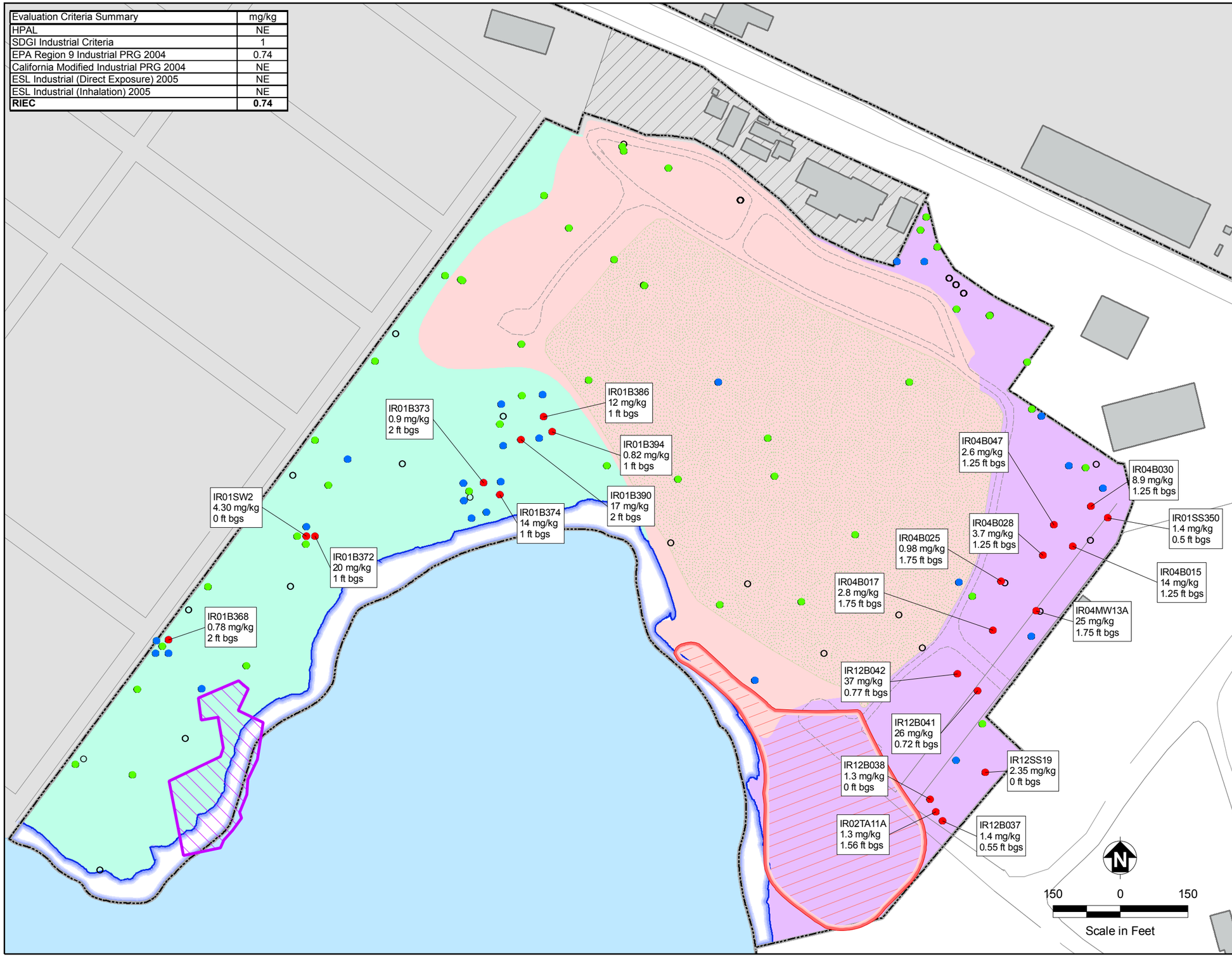
U.S. Department of the Navy, BRAC PMO West, San Diego, California

FIGURE 4-55

DIELDRIN IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	1
EPA Region 9 Industrial PRG 2004	0.74
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**0.74**



- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (proposed boundary)
- PCB Hot Spot (proposed boundary)
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

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ESL = environmental screening level
HPAL = Hunters Point ambient level
NE = not established
PRG = preliminary remediation goal
RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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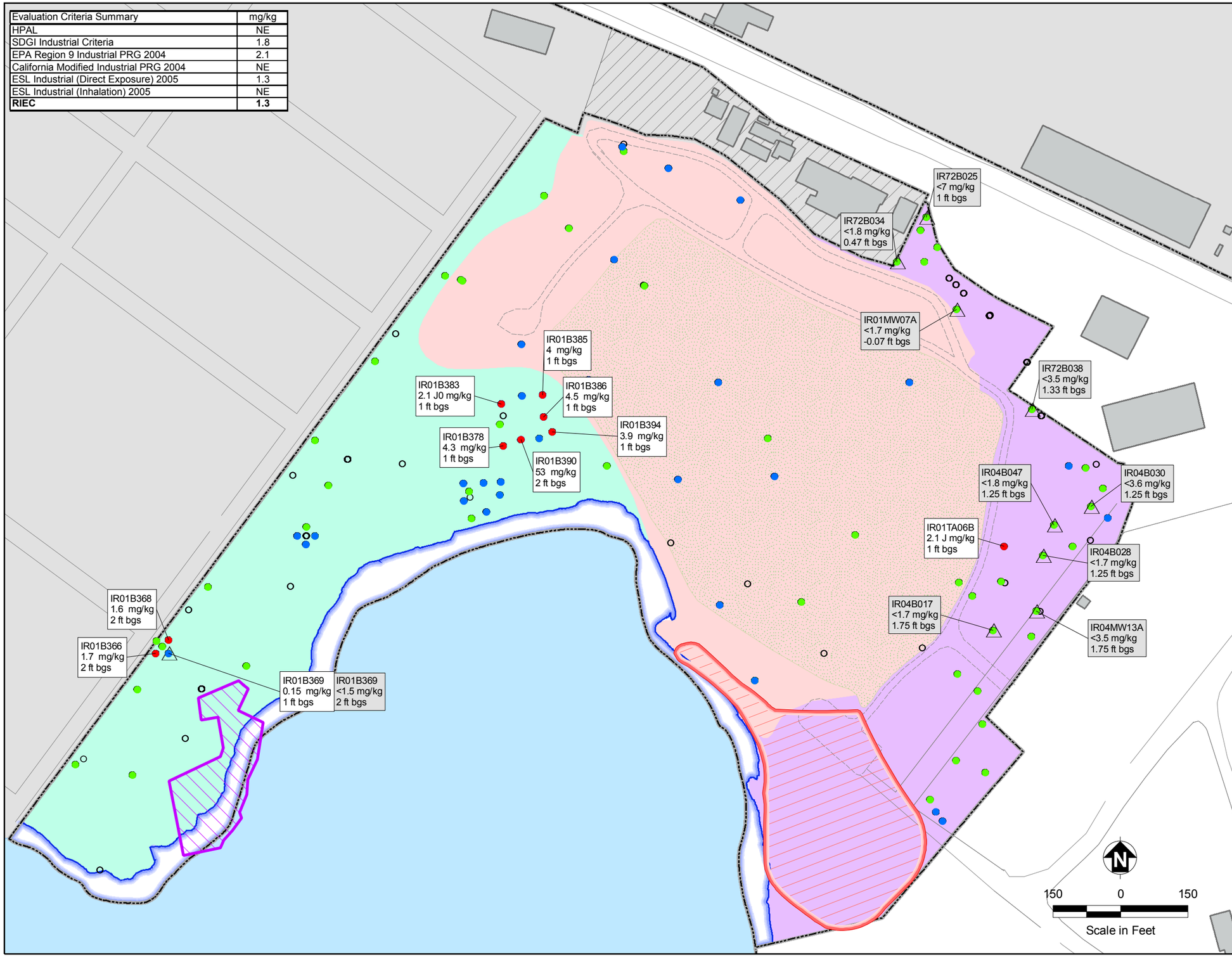
FIGURE 4-56

TOTAL PCBS IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	1.8
EPA Region 9 Industrial PRG 2004	2.1
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	1.3
ESL Industrial (Inhalation) 2005	NE
RIEC	**1.3**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

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3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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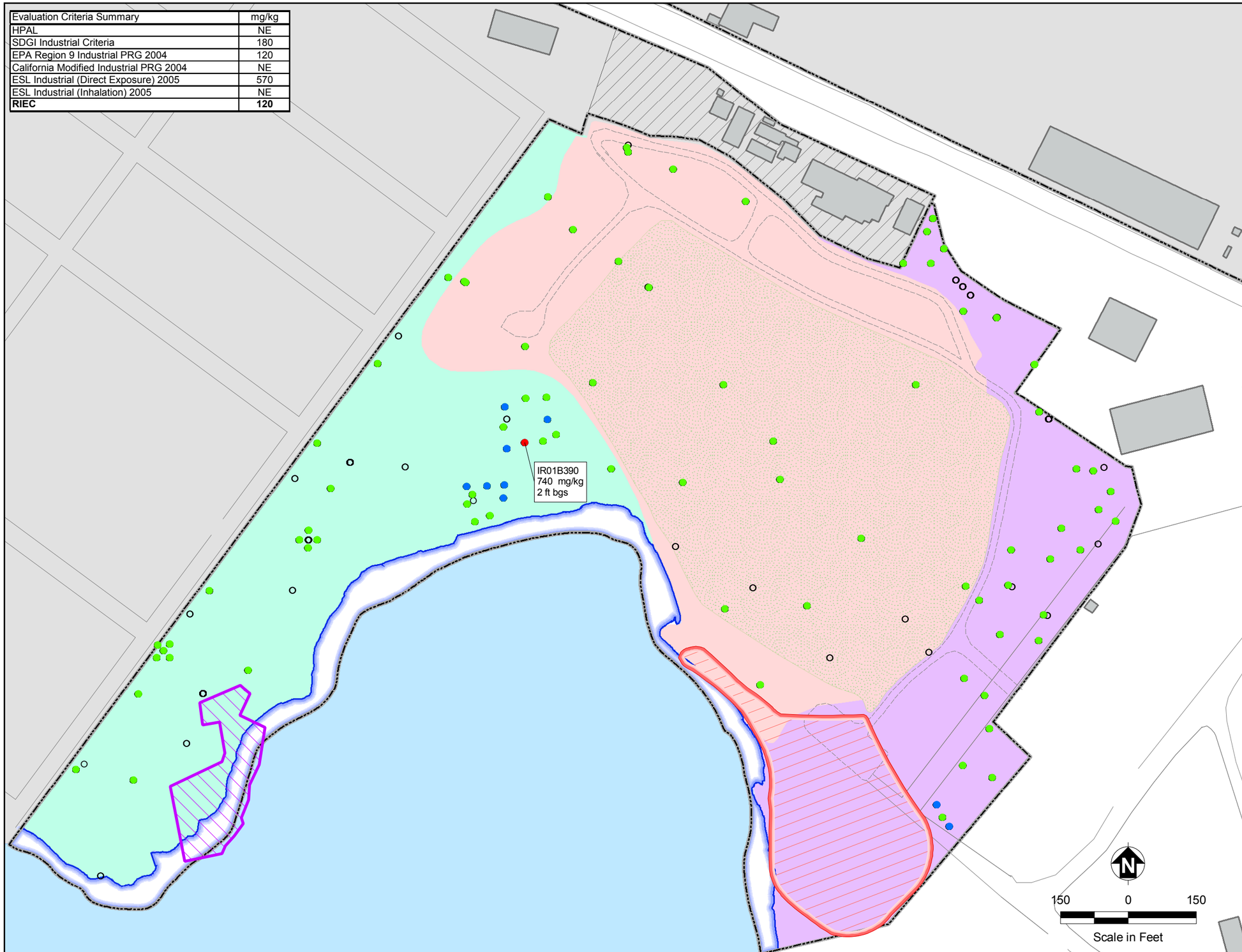
FIGURE 4-57

BENZO (K) FLUORANTHENE IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	180
EPA Region 9 Industrial PRG 2004	120
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	570
ESL Industrial (Inhalation) 2005	NE
RIEC	**120**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
Non-Navy Property

Notes:

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RIEC = Remedial Investigation Evaluation Criterion
SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275 — Location ID
150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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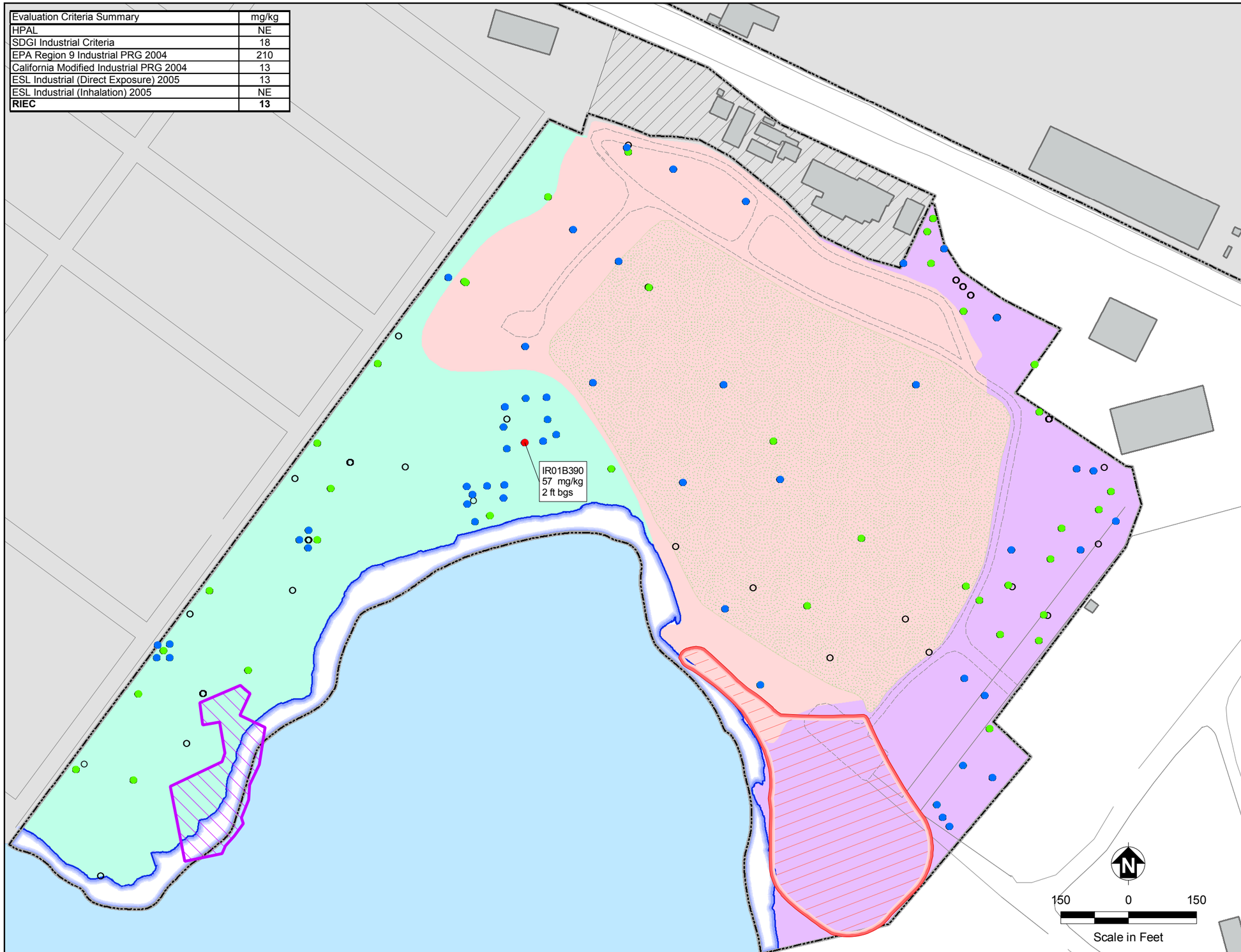
FIGURE 4-58

BIS (2-ETHYLHEXYL) PHTHALATE IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	18
EPA Region 9 Industrial PRG 2004	210
California Modified Industrial PRG 2004	13
ESL Industrial (Direct Exposure) 2005	13
ESL Industrial (Inhalation) 2005	NE
RIEC	**13**



- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (proposed boundary)
- PCB Hot Spot (proposed boundary)
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
- Adjacent Area
- Panhandle Area
- Shoreline Area
- San Francisco Bay
- Non-Navy Property

Notes:

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SDGI = Standard Data Gaps Investigation

ft bgs = feet below ground surface
mg/kg = milligram per kilogram
J = estimated value
Numbers associated with qualifiers are further defined in Appendix J.

IR01B275	Location ID
150 J mg/kg	Concentration and Qualifier
3.93 ft bgs	Depth

IR04B025	Location ID
<37 mg/kg	Reporting Limit
2.0 ft bgs	Depth

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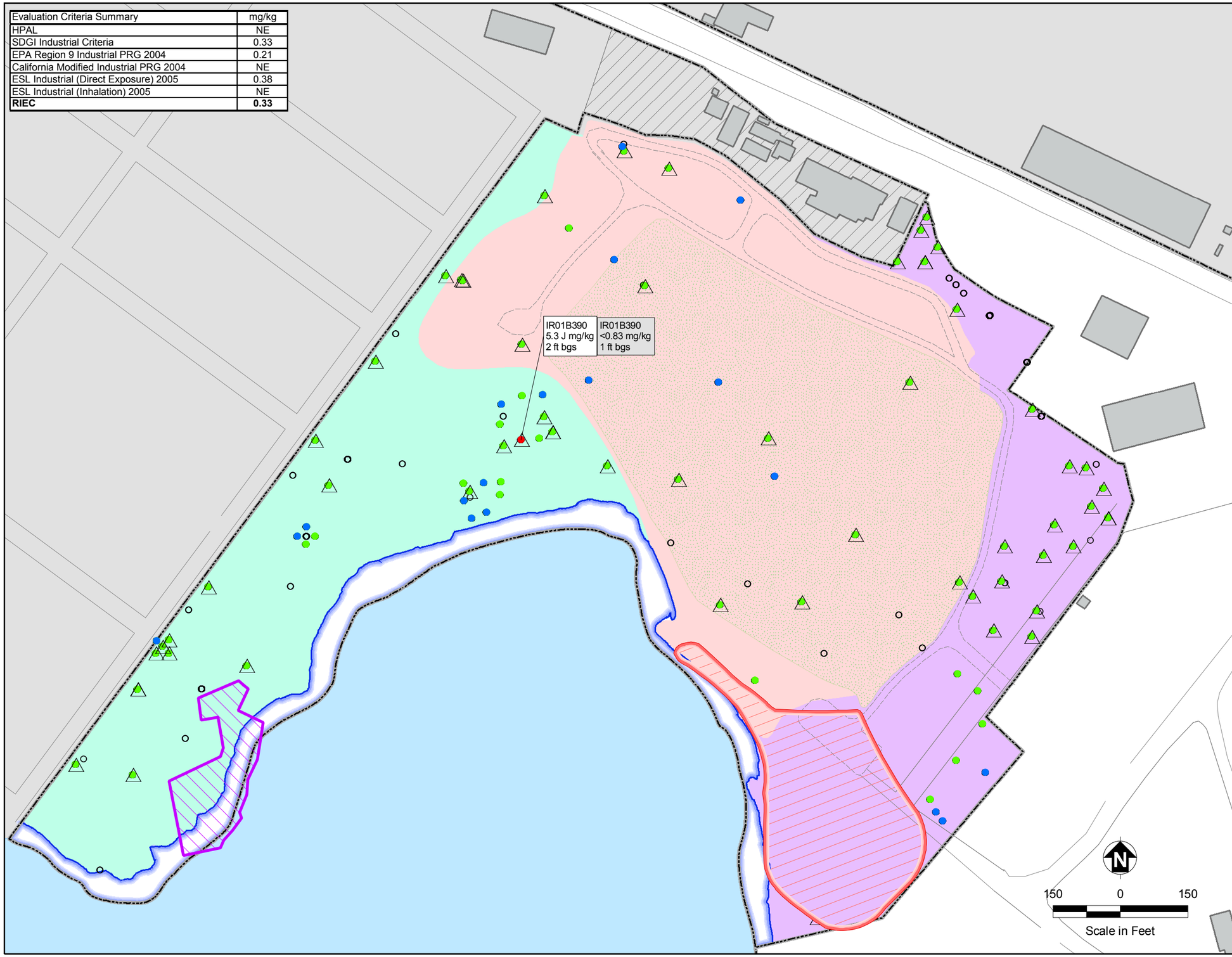
FIGURE 4-59

CHRYSENE IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	0.33
EPA Region 9 Industrial PRG 2004	0.21
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	0.38
ESL Industrial (Inhalation) 2005	NE
RIEC	**0.33**



- Reporting Limit Exceeds the RIEC (for at least one sample)
- Not Analyzed for Analyte
- Analyte Not Detected
- Analyte Exceeds Reporting Limit
- Analyte Exceeds RIEC
- Road
- Gravel Road
- Metal Slag Area (proposed boundary)
- PCB Hot Spot (proposed boundary)
- Limit of Landfill Cap
- Parcel Boundary
- Building
- UCSF Compound
- Landfill Area
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- Shoreline Area
- San Francisco Bay
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mg/kg = milligram per kilogram
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IR01B275	Location ID
150 J mg/kg	Concentration and Qualifier
3.93 ft bgs	Depth

IR04B025	Location ID
<37 mg/kg	Reporting Limit
2.0 ft bgs	Depth

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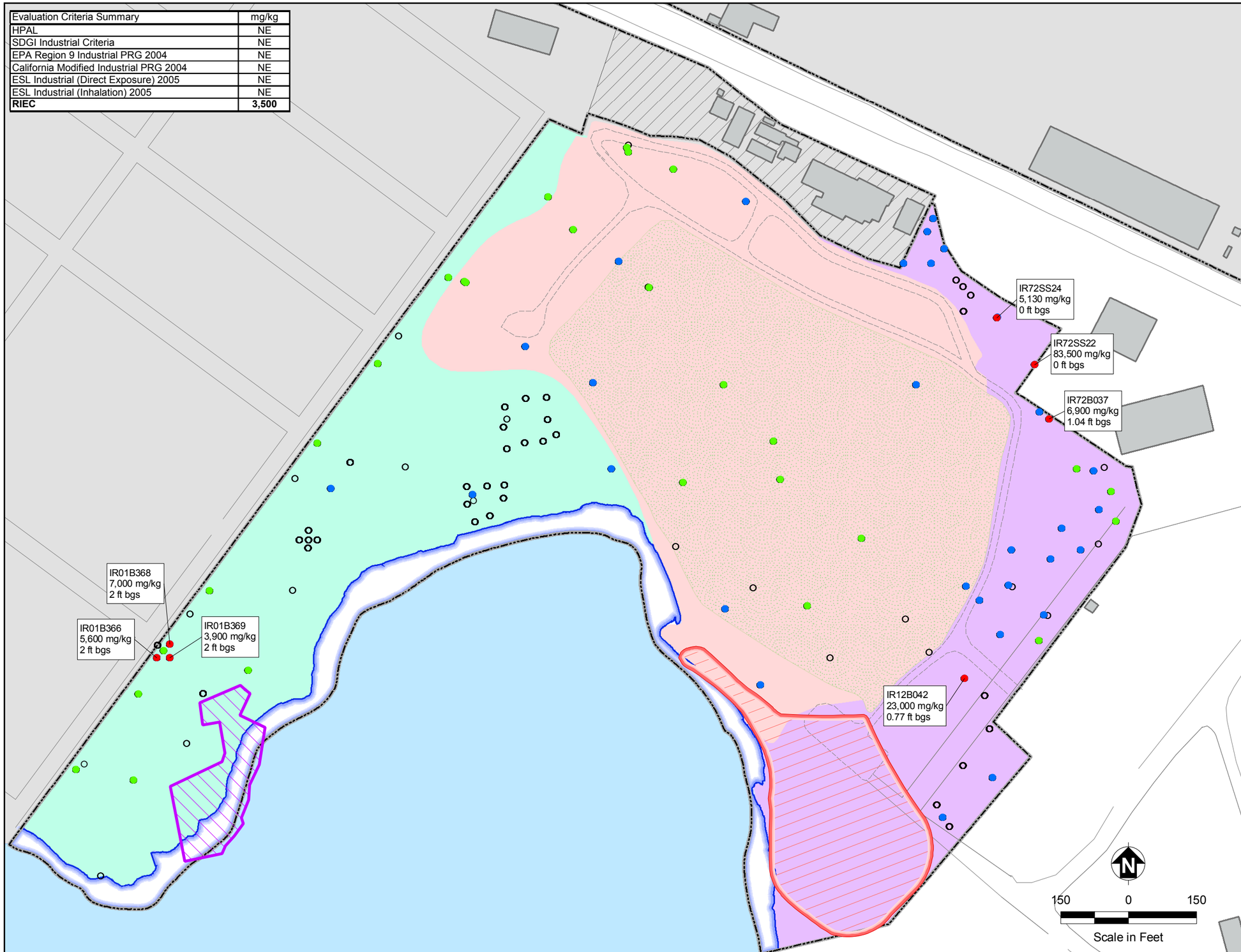
FIGURE 4-60

DIBENZ (A,H) ANTHRACENE IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	NE
EPA Region 9 Industrial PRG 2004	NE
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**3,500**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
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San Francisco Bay
Non-Navy Property

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mg/kg = milligram per kilogram
J = estimated value
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150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

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2.0 ft bgs — Depth

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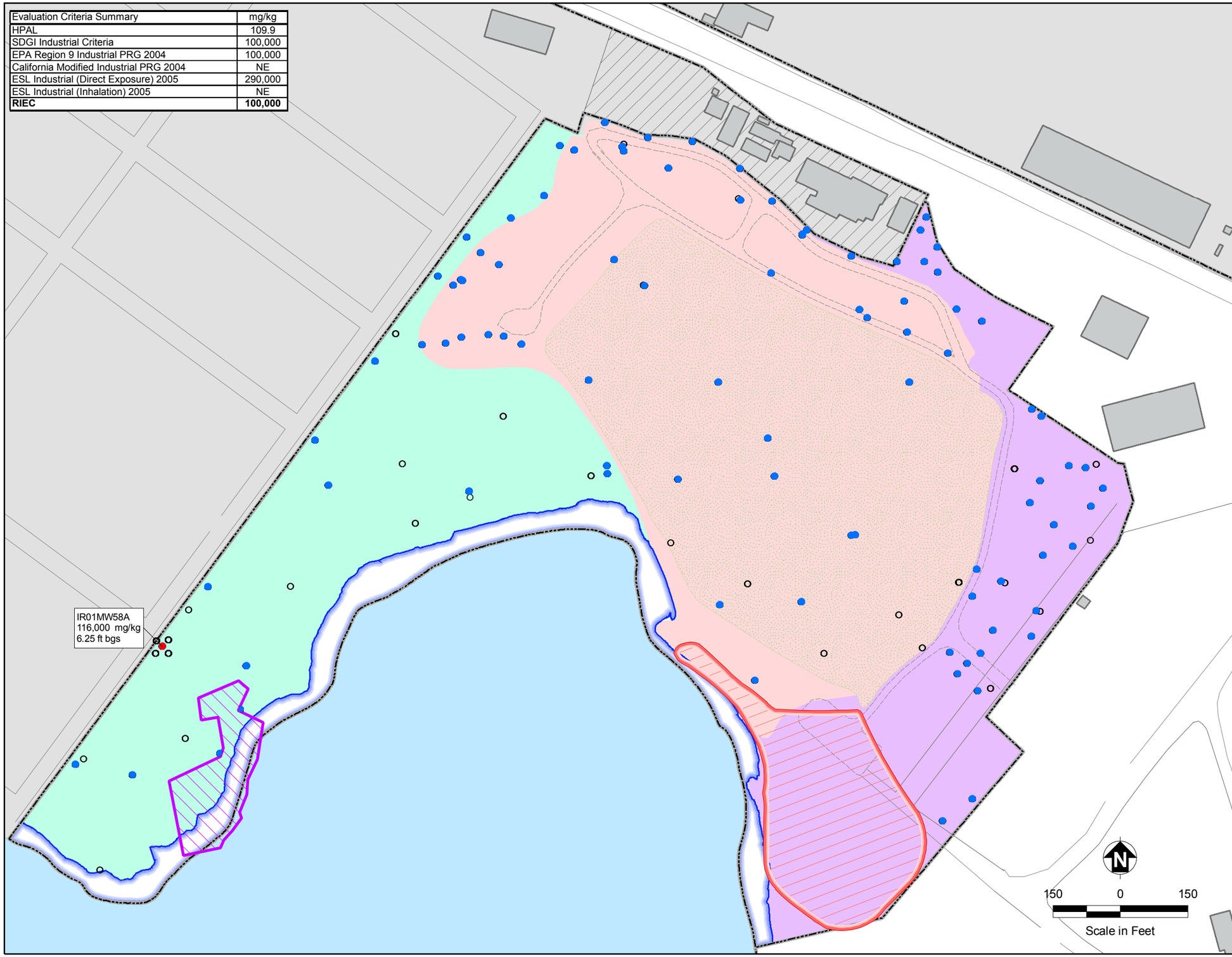
FIGURE 4-61

TOTAL TPH IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	109.9
SDGI Industrial Criteria	100,000
EPA Region 9 Industrial PRG 2004	100,000
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	290,000
ESL Industrial (Inhalation) 2005	NE
RIEC	**100,000**



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Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
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2.0 ft bgs — Depth

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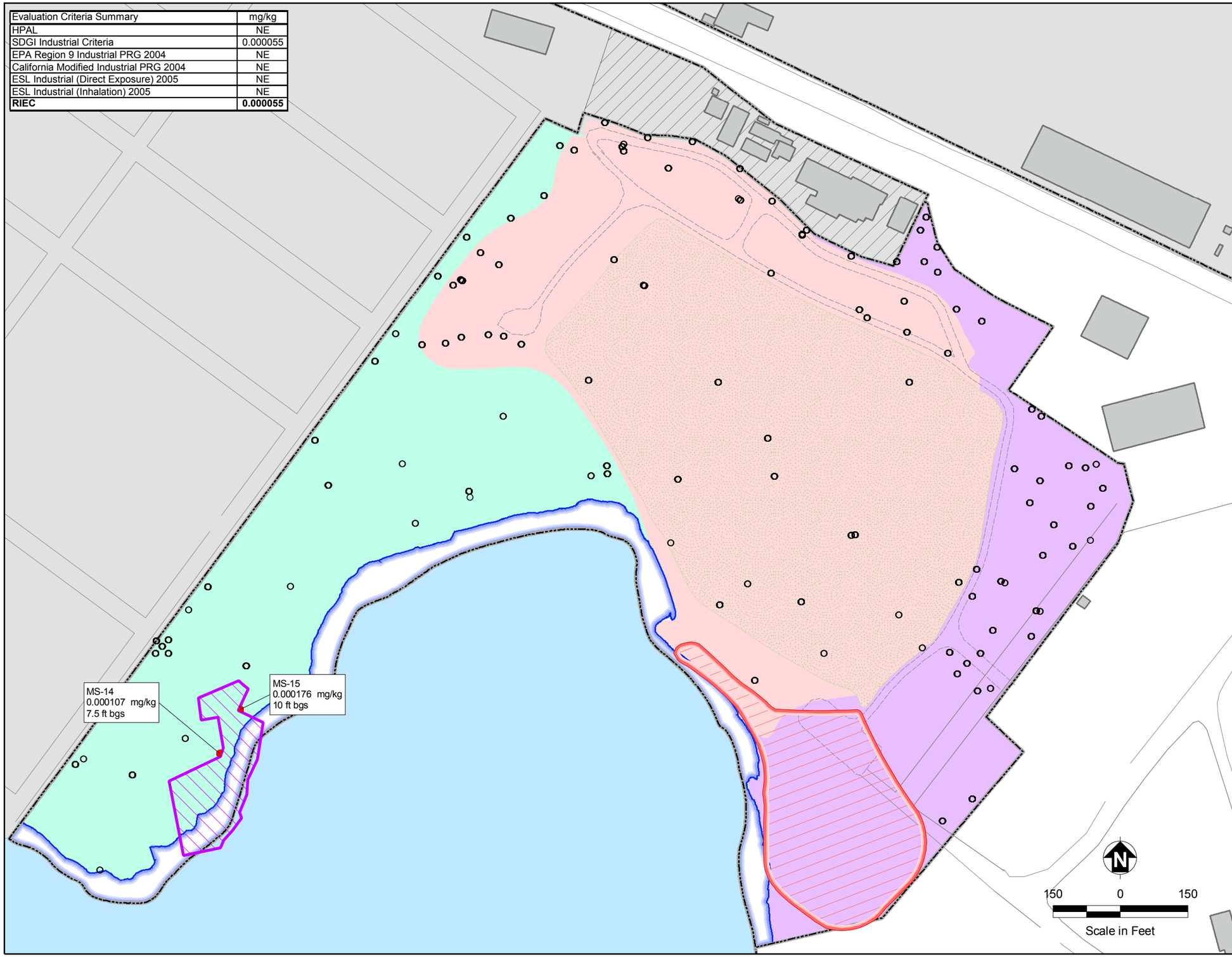
FIGURE 4-62

ZINC IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	NE
SDGI Industrial Criteria	0.000055
EPA Region 9 Industrial PRG 2004	NE
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**0.000055**



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
Limit of Landfill Cap
Parcel Boundary
Building
UCSF Compound
Landfill Area
Adjacent Area
Panhandle Area
Shoreline Area
San Francisco Bay
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150 J mg/kg — Concentration and Qualifier
3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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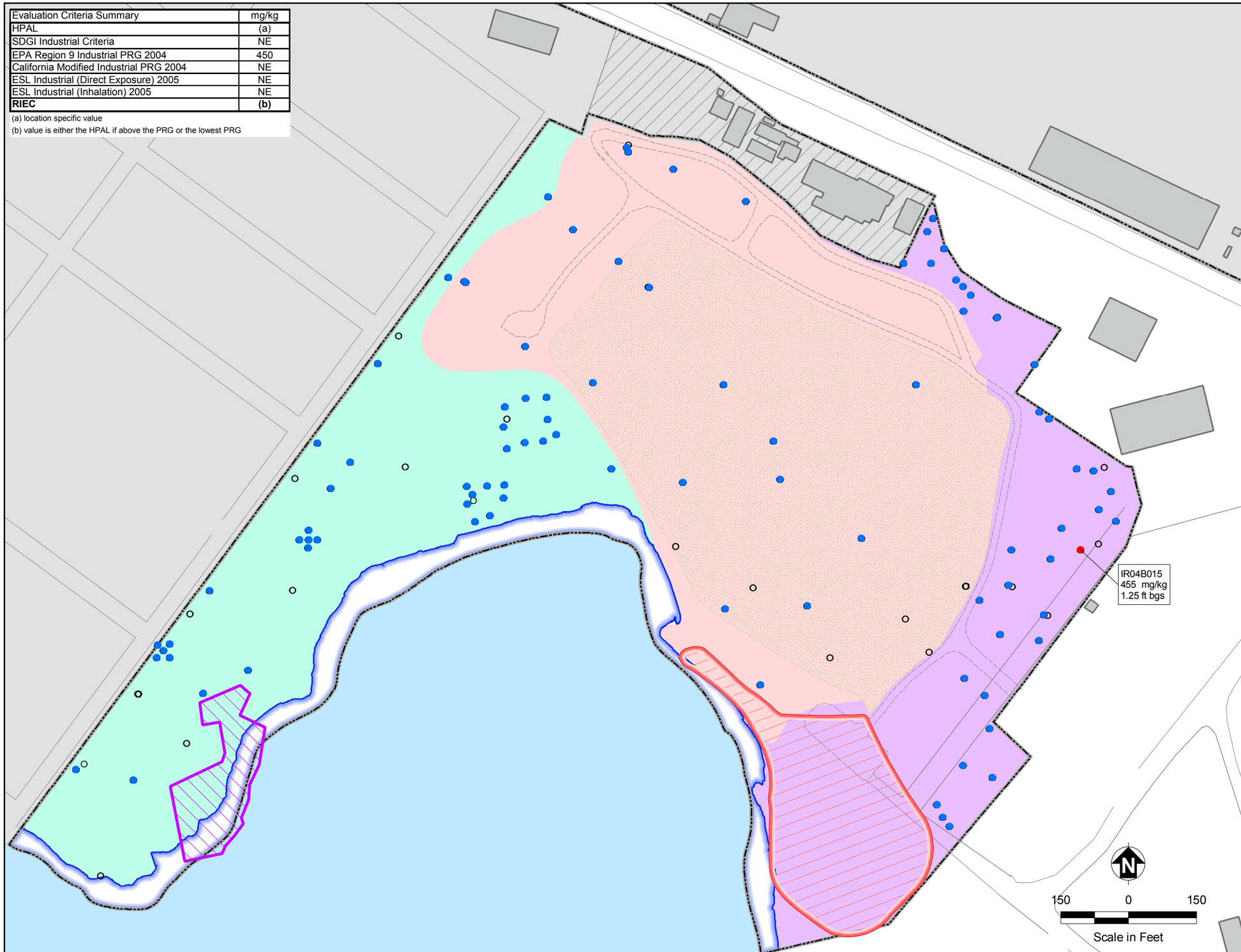
FIGURE 4-63

2,3,4,7,8 - PeCDF IN 2 - 10' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Evaluation Criteria Summary	mg/kg
HPAL	(a)
SDGI Industrial Criteria	NE
EPA Region 9 Industrial PRG 2004	450
California Modified Industrial PRG 2004	NE
ESL Industrial (Direct Exposure) 2005	NE
ESL Industrial (Inhalation) 2005	NE
RIEC	**(b)**

(a) location specific value
(b) value is either the HPAL if above the PRG or the lowest PRG



Reporting Limit Exceeds the RIEC (for at least one sample)
Not Analyzed for Analyte
Analyte Not Detected
Analyte Exceeds Reporting Limit
Analyte Exceeds RIEC
Road
Gravel Road
Metal Slag Area (proposed boundary)
PCB Hot Spot (proposed boundary)
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Parcel Boundary
Building
UCSF Compound
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3.93 ft bgs — Depth

IR04B025 — Location ID
<37 mg/kg — Reporting Limit
2.0 ft bgs — Depth

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FIGURE 4-64

CHROMIUM IN 0 - 2' SOIL

Remedial Investigation/Feasibility Study for Parcel E-2

Tables

Table 4-1 Summary of Human Health Evaluation Criteria for Soil
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	HPAL [a] Conc. (mg/kg)	Comments	PARCEL E PRG Industrial 2002 Conc. (mg/kg)	Comments	SDGI Industrial Screening Criteria [b] Conc. (mg/kg)	Comments	EPA PRG Industrial 2004 [c] Conc. (mg/kg)	Comments	ESL Industrial 2005 (direct exp) [d,e] Conc. (mg/kg)	Comments	ESL Industrial 2005 (inhalation) [e,f] Conc. (mg/kg)	Comments	RI Evaluation Criteria Conc. (mg/kg)	Comments
Metals														
Aluminum	NA		100000		100000		100000		-				100000	2004 PRG Industrial
Antimony	9.05		820		820		410		380	noncancer (HQ=1.0)			380	2005 ESL Industrial (direct exp)
Arsenic	11.1		2.7		22		1.6		0.24	cancer PRG			11.1	HPAL
Barium	314.4		100000		100000		67000		63000	noncancer (HQ=1.0)			63000	2005 ESL Industrial (direct exp)
Beryllium	0.71		2200		2200		1900		1700	noncancer (HQ=1.0)			1700	2005 ESL Industrial (direct exp)
Cadmium	3.14		1300		15		450		7.4	cancer PRG			7.4	2005 ESL Industrial (direct exp)
Calcium	NA		-		-		-		-				-	
Chromium (total)	a		100000		-	assume CrVI:CrIII at 1:6	450		-				a	See note
Chromium VI	NA		37		17		64		37	noncancer (HQ=1.0)			37	2005 ESL Industrial (direct exp)
Cobalt	a		1900		100000		1900		3200	noncancer (HQ=1.0)			a	See note
Copper	124.3		82000		-		41000		38000	noncancer (HQ=1.0)			38000	2005 ESL Industrial (direct exp)
Cyanide (free)	NA		18000		-		12000		12000	noncancer (HQ=1.0)			12000	2004 PRG Industrial
Iron	NA		-		-		100000		-				100000	2004 PRG Industrial
Lead	8.99		750		750		800		-				800	2004 PRG Industrial
Magnesium	NA		-		-		-		-				-	
Manganese	1431.2		32000		32000		19000		-				19000	2004 PRG Industrial
Mercury	2.28		100000		610		310		180	noncancer (HQ=1.0)			180	2005 ESL Industrial (direct exp)
Molybdenum	2.68		10000		10000		5100		4800	noncancer (HQ=1.0)			4800	2005 ESL Industrial (direct exp)
Nickel	a		21000		-		20000		20000	noncancer (HQ=1.0)			a	See note
Potassium	NA				-				-				-	
Selenium	1.95		10000		10000		5100		4800	noncancer (HQ=1.0)			4800	2005 ESL Industrial (direct exp)
Silver	1.43		10000		10000		5100		4800	noncancer (HQ=1.0)			4800	2005 ESL Industrial (direct exp)
Sodium	-		-		-		-		-				-	
Thallium	0.81		160		130		67		63	noncancer (HQ=1.0)			63	2005 ESL Industrial (direct exp)
Tin	NA		33227		-		100000		-				100000	2004 PRG Industrial
Vanadium	117.2		14000		14000		1000		6700	noncancer (HQ=1.0)			1000	2004 PRG Industrial
Zinc	109.9		100000		100000		100000		290000	noncancer (HQ=1.0)			100000	2004 PRG Industrial
Pesticides														
2,4'-DDD			17		17	4,4'-DDD criteria	10.0	Total DDD criteria	9	cancer PRG (Total DDD)			9	2005 ESL Industrial (direct exp)
2,4'-DDE			12		12	4,4'-DDE criteria	7.0	Total DDE criteria	6.3	cancer PRG (Total DDE)			6.3	2005 ESL Industrial (direct exp)
2,4'-DDT			12		12	4,4'-DDT criteria	7.0	Total DDT criteria	6.3	cancer PRG (Total DDT)			6.3	2005 ESL Industrial (direct exp)
4,4'-DDD			17		17		10.0	Total DDD criteria	9	cancer PRG (Total DDD)			9	2005 ESL Industrial (direct exp)
4,4'-DDE			12		12		7.0	Total DDE criteria	6.3	cancer PRG (Total DDE)			6.3	2005 ESL Industrial (direct exp)
4,4'-DDT			12		12		7.0	Total DDT criteria	6.3	cancer PRG (Total DDT)			6.3	2005 ESL Industrial (direct exp)
Aldrin			0.15		0.15		0.10		0.13	cancer PRG			0.1	2004 PRG Industrial
alpha-BHC			0.59		0.59		0.36		-				0.36	2004 PRG Industrial
Alpha-chlordane			2.9		2.9		-		-				2.9	SDGI Industrial Criteria
beta-BHC			2.1		2.1		1.3		-				1.3	2004 PRG Industrial
Chlordane			-		-		6.5		1.7	cancer PRG			1.7	2005 ESL Industrial (direct exp)
cis-Nonachlor			0.55		-		-		-				-	
delta-BHC			0.59		0.59		-		-				0.59	SDGI Industrial Criteria
Dieldrin			0.15		0.15		0.11		0.13	cancer PRG			0.11	2004 PRG Industrial
Endosulfan I			5300		5300		3700		3700	noncancer (HQ=1.0)			3700	2004 PRG Industrial
Endosulfan II			5300		5300		3700		3700	noncancer (HQ=1.0)			3700	2004 PRG Industrial
Endosulfan sulfate			5300		5300		-		-				5300	SDGI Industrial Criteria
Endrin			260		260		180		230	noncancer (HQ=1.0)			190	2004 PRG Industrial
Endrin aldehyde			260		260		-		-				260	SDGI Industrial Criteria
Endrin ketone			260		260		-		-				260	SDGI Industrial Criteria
Gamma-BHC (lindane)			2.9		2.9		1.7		2	cancer PRG			1.7	2004 PRG Industrial
Gamma-chlordane			2.9		2.9		-		-				2.9	SDGI Industrial Criteria
Heptachlor			0.55		0.55		0.38		0.52	cancer PRG			0.38	2004 PRG Industrial
Heptachlor epoxide			0.27		0.27		0.19		0.31	cancer PRG			0.19	2004 PRG Industrial
Heptachlor epoxide A			-		-		-		-				-	
Heptachlor epoxide B			-		-		-		-				-	
Hexachlorobenzene			1.4		1.4		1.1		0.96	cancer PRG			0.96	2005 ESL Industrial (direct exp)
Methoxychlor			4400		4400		3100		3800	noncancer (HQ=1.0)			3100	2004 PRG Industrial
Mirex			-		-		-		-				-	
Oxychlordane			2.9		-		-		-				-	
trans-Nonachlor			29		-		21		-				21	2004 PRG Industrial
Toxaphene			-		-		1.6		1.8	cancer PRG			1.6	2004 PRG Industrial

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Table 4-1 Summary of Human Health Evaluation Criteria for Soil
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	HPAL [a] Conc. (mg/kg)	Comments	PARCEL E PRG Industrial 2002 Conc. (mg/kg)	Comments	SDGI Industrial Screening Criteria [b] Conc. (mg/kg)	Comments	EPA PRG Industrial 2004 [c] Conc. (mg/kg)	Comments	ESL Industrial 2005 (direct exp) [d,e] Conc. (mg/kg)	Comments	ESL Industrial 2005 (inhalation) [e,f] Conc. (mg/kg)	Comments	RI Evaluation Criteria Conc. (mg/kg)	Comments
PCBs														
Aroclor-1016			29		1	Total PCB criteria	21	Total PCB criteria	-				21	2004 PRG Industrial
Aroclor-1221			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
Aroclor-1232			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
Aroclor-1242			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
Aroclor-1248			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
Aroclor-1254			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
Aroclor-1260			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-008			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-018			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-028			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-044			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-052			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-066			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-077			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-101			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-105			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-114			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-118			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-123			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-126			-		-	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-128			-		-	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-138			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-153			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-156			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-157			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-167			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-169			-		-	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-170			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-180			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-187			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-189			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-195			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-206			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
PCB-209			1		1	Total PCB criteria	0.74	Total PCB criteria	-				0.74	2004 PRG Industrial
Dioxins and Furans														
1,2,3,4,6,7,8,9-OCDD			0.027		0.027		-		-				0.027	SDGI Industrial Criteria
1,2,3,4,6,7,8,9-OCDF			0.027		0.027		-		-				0.027	SDGI Industrial Criteria
1,2,3,4,6,7,8-HpCDD			0.0027		0.0027		-		-				0.0027	SDGI Industrial Criteria
1,2,3,4,6,7,8-HpCDF			0.0027		0.0027		-		-				0.0027	SDGI Industrial Criteria
1,2,3,4,7,8,9-HpCDF			0.0027		0.0027		-		-				0.0027	SDGI Industrial Criteria
1,2,3,4,7,8-HxCDD			0.00027		0.00027		-		-				0.00027	SDGI Industrial Criteria
1,2,3,4,7,8-HxCDF			0.00027		0.00027		-		-				0.00027	SDGI Industrial Criteria
1,2,3,6,7,8-HxCDD			0.00027		0.00027		-		-				0.00027	SDGI Industrial Criteria
1,2,3,6,7,8-HxCDF			0.00027		0.00027		-		-				0.00027	SDGI Industrial Criteria
1,2,3,7,8,9-HxCDD			0.00027		0.00027		-		-				0.00027	SDGI Industrial Criteria
1,2,3,7,8,9-HxCDF			0.00027		0.00027		-		-				0.00027	SDGI Industrial Criteria
1,2,3,7,8-PeCDD			0.000055		0.000055		-		-				0.000055	SDGI Industrial Criteria
1,2,3,7,8-PeCDF			0.00055		0.00055		-		-				0.00055	SDGI Industrial Criteria
2,3,4,6,7,8-HxCDF			0.00027		0.00027		-		-				0.00027	SDGI Industrial Criteria
2,3,4,7,8-PeCDF			0.000055		0.000055		-		-				0.000055	SDGI Industrial Criteria
2,3,7,8-TCDD			0.000027		0.000027		0.000016		0.000019	cancer PRG			0.000016	2004 PRG Industrial
2,3,7,8-TCDF			0.00027		0.00027		-		-				0.00027	SDGI Industrial Criteria
SEMIVOLATILE ORGANIC COMPOUNDS														
1,2,4-Trichlorobenzene			1600		1600		220		210	noncancer (HQ=1.0)	5	noncancer (HQ=1.0)	5	2005 ESL Industrial (inhalation)
1,2,4-Trimethylbenzene			170		-		170		-				170	2004 PRG Industrial
1,2-Dichlorobenzene			4200		370		600		600	saturation limit	21		21	2005 ESL Industrial (inhalation)
1,3,5-Trimethylbenzene			70		-		70		-				70	2004 PRG Industrial
1,3-Dichlorobenzene			65		52		600		600	saturation limit			600	2004 PRG Industrial
1,4-Dichlorobenzene			4.5		4.5		7.9		4.5	cancer PRG	0.13		0.13	2005 ESL Industrial (inhalation)
2,2'-Oxybis(1-chloropropane)			-		-		7.4		-				7.4	2004 PRG Industrial
2,4,5-Trichlorophenol			-		-		62000		11000	noncancer (HQ=1.0)	305	noncancer (HQ=1.0)	310	2005 ESL Industrial (inhalation)
2,4,6-Trichlorophenol			-		-		62		25	cancer PRG			25	2005 ESL Industrial (direct exp)
2,4-Dichlorophenol			-		-		1800		1800	noncancer (HQ=1.0)			1800	2004 PRG Industrial
2,4-Dimethylphenol			18000		18000		12000		3600	noncancer (HQ=1.0)	1500	noncancer (HQ=1.0)	1500	2005 ESL Industrial (inhalation)
2,4-Dinitrophenol			-		-		1200		1200	noncancer (HQ=1.0)			1200	2004 PRG Industrial
2,4-Dinitrotoluene			-		-		1200		5.6	cancer PRG			5.6	2005 ESL Industrial (direct exp)
2,6-Dinitrotoluene			3.6		880		620		-				620	2004 PRG Industrial

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Table 4-1 Summary of Human Health Evaluation Criteria for Soil
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	HPAL [a] Conc. (mg/kg)	Comments	PARCEL E PRG Industrial 2002 Conc. (mg/kg)	Comments	SDGI Industrial Screening Criteria [b] Conc. (mg/kg)	Comments	EPA PRG Industrial 2004 [c] Conc. (mg/kg)	Comments	ESL Industrial 2005 (direct exp) [d,e] Conc. (mg/kg)	Comments	ESL Industrial 2005 (inhalation) [e,f] Conc. (mg/kg)	Comments	RI Evaluation Criteria Conc. (mg/kg)	Comments
SEMIVOLATILE ORGANIC COMPOUNDS (continued)														
2-Chloronaphthalene			27000		27000		23000		-				23000	2004 PRG Industrial
2-Chlorophenol			-		-		240		230	noncancer (HQ=1.0)	10	noncancer (HQ=1.0)	10	2005 ESL Industrial (inhalation)
2-Methylnaphthalene			190		190		-		6500	noncancer (HQ=1.0)	550	noncancer (HQ=1.0)	550	2005 ESL Industrial (inhalation)
2-Methylphenol			44000		44000		31000		-				31000	2004 PRG Industrial
2-Nitroaniline			25		50		1800		-				1800	2004 PRG Industrial
2-Nitrophenol			-		-		-		-				-	
3,3'-Dichlorobenzidine			2.1		2.1		3.8		1.4	cancer PRG			1.4	2005 ESL Industrial (direct exp)
3-Nitroaniline			-		-		82		-				82	2004 PRG Industrial
4,6-Dinitro-2-methylphenol			-		-		-		-				-	
4-Bromophenyl-phenylether			-		-		-		-				-	
4-Chloro-3-methylphenol			241		-		-		-				-	
4-Chloroaniline			-		-		2500		-				2500	2004 PRG Industrial
4-Chlorophenyl-phenylether			-		-		-		-				-	
4-Methylphenol			4400		4400		3100		-				3100	2004 PRG Industrial
4-Nitroaniline			-		-		82		-				82	2004 PRG Industrial
4-Nitrophenol			7047		7000		-		-				7000	SDGI Industrial Criteria
Acenaphthene			38000		38000		29000		22000	noncancer (HQ=1.0)	650	noncancer (HQ=1.0)	650	2005 ESL Industrial (inhalation)
Acenaphthylene			38000		-		-		18000	noncancer (HQ=1.0)			18000	2005 ESL Industrial (direct exp)
Aniline			-		-		300		-				300	2004 PRG Industrial
Anthracene			100000		100000		100000		160000	noncancer (HQ=1.0)	31	noncancer (HQ=1.0)	31	2005 ESL Industrial (inhalation)
Azobenzene			-		-		16		-				16	2004 PRG Industrial
Benzidine			-		-		-		-				-	
Benzo(a)anthracene			1.8		1.8		2.1		1.3	cancer PRG			1.3	2005 ESL Industrial (direct exp)
Benzo(a)pyrene			0.33		0.33	reporting limit	0.21		0.13	cancer PRG			0.33	SDGI Industrial Criteria
Benzo(b)fluoranthene			1.8		1.8		2.1		1.3	cancer PRG			1.3	2005 ESL Industrial (direct exp)
Benzo(e)pyrene			55000		-		-		-				-	
Benzo(g,h,i)perylene			55000		54000		-		22000	noncancer (HQ=1.0)			22000	2005 ESL Industrial (direct exp)
Benzo(k)fluoranthene			1.8		1.8		21		1.3	cancer PRG			1.3	2005 ESL Industrial (direct exp)
Benzoic acid			100000		-		100000		-				100000	2004 PRG Industrial
Benzyl alcohol			100000		-		100000		-				100000	2004 PRG Industrial
Biphenyl			30000		-		23000		18000	noncancer (HQ=1.0)			18000	2005 ESL Industrial (direct exp)
Bis(2-chloroethoxy)methane			-		-		-		-				-	
Bis(2-chloroethyl)ether			-		-		0.58		0.22	cancer PRG	0.012		0.012	2005 ESL Industrial (inhalation)
Bis(2-ethylhexyl)phthalate			180		180		120		570	cancer PRG			120	2004 PRG Industrial
Butylbenzylphthalate			100000		100000		100000		-				100000	2004 PRG Industrial
Carbazole			120		120		86		-				86	2004 PRG Industrial
Chrysene			17		18		210		13	cancer PRG			13	2005 ESL Industrial (direct exp)
Dibenz(a,h)anthracene			0.33		0.33	reporting limit	0.21		0.38	cancer PRG			0.33	SDGI Industrial Criteria
Dibenzofuran			5100		5100		1600		-				1600	2004 PRG Industrial
Diethylphthalate			100000		100000		100000		490000	noncancer (HQ=1.0)			100000	2004 PRG Industrial
Dimethylphthalate			-		-		100000		6200000	noncancer (HQ=1.0)			100000	2004 PRG Industrial
Di-n-butylphthalate			88000		88000		62000		-				62000	2004 PRG Industrial
Di-n-octylphthalate			35000		10000		25000		-				25000	2004 PRG Industrial
Fluoranthene			30000		30000		22000		22000	noncancer (HQ=1.0)			22000	2004 PRG Industrial
Fluorene			39000		33000		26000		18000	noncancer (HQ=1.0)	800	noncancer (HQ=1.0)	800	2005 ESL Industrial (inhalation)
Hexachlorobenzene			1.4		1.4		1.1		0.96	cancer PRG			0.96	2005 ESL Industrial (direct exp)
Hexachlorobutadiene			-		-		22		22	cancer PRG			22	2004 PRG Industrial
Hexachlorocyclopentadiene			-		-		3700		-				3700	2004 PRG Industrial
Hexachloroethane			-		-		120		44	cancer PRG			44	2005 ESL Industrial (direct exp)
Indeno(1,2,3-cd)pyrene			1.8		1.8		2.1		1.3	cancer PRG			1.3	2005 ESL Industrial (direct exp)
Isophorone			2600		2600		510		-				510	2004 PRG Industrial
Naphthalene			190		190		190		3.8	cancer PRG	1.5		1.5	2005 ESL Industrial (inhalation)
Nitrobenzene			NA		NA		100		-				100	2004 PRG Industrial
n-Nitrosodimethylamine			NA		NA		0.034		-				0.034	2004 PRG Industrial
n-Nitroso-di-n-propylamine			0.35		0.35		0.25		-				0.25	2004 PRG Industrial
n-Nitrosodiphenylamine			270		270		350		-				350	2004 PRG Industrial
Pentachlorophenol			11		11		9.0		13	cancer PRG			9	2004 PRG Industrial
Phenacetin			-		-		-						-	
Phenanthrene			100000		100000		-		18000	noncancer (HQ=1.0)			18000	2005 ESL Industrial (direct exp)
Phenol			100000		100000		100000		180000	noncancer (HQ=1.0)			100000	2004 PRG Industrial
Pyrene			55000		54000		29000		18000	noncancer (HQ=1.0)	425	noncancer (HQ=1.0)	430	2005 ESL Industrial (inhalation)

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Table 4-1 Summary of Human Health Evaluation Criteria for Soil
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	HPAL [a] Conc. (mg/kg)	Comments	PARCEL E PRG Industrial 2002 Conc. (mg/kg)	Comments	SDGI Industrial Screening Criteria [b] Conc. (mg/kg)	Comments	EPA PRG Industrial 2004 [c] Conc. (mg/kg)	Comments	ESL Industrial 2005 (direct exp) [d,e] Conc. (mg/kg)	Comments	ESL Industrial 2005 (inhalation) [e,f] Conc. (mg/kg)	Comments	RI Evaluation Criteria Conc. (mg/kg)	Comments
VOLATILE ORGANIC COMPOUNDS														
1,1,1,2-Tetrachloroethane			-		-		7.3		6.9	cancer PRG			6.9	2005 ESL Industrial (direct exp)
1,1,1-Trichloroethane			7000		1400		1200		1200	saturation limit	230		230	2005 ESL Industrial (inhalation)
1,1,2,2-Tetrachloroethane			0.95		0.89		0.93		0.86	cancer PRG	0.025		0.025	2005 ESL Industrial (inhalation)
1,1,2-Trichloro-1,2,2-trifluoroethane			-		-		-		-				-	
1,1,2-Trichloroethane			1.6		1.9		1.6		1.5	cancer PRG	0.089		0.089	2005 ESL Industrial (inhalation)
1,1-Dichloroethane			6		7.1		1700		5.9	cancer PRG	0.89		0.89	2005 ESL Industrial (inhalation)
1,1-Dichloroethene			420		0.12		410		410	noncancer (HQ=1.0)	105	noncancer (HQ=1.0)	105	2005 ESL Industrial (inhalation)
1,1-Dichloropropene			-		-		-		-				-	
1,2,3-Trichlorobenzene			240		-		-		-				-	
1,2,3-Trichloropropane			-		-		-		-				-	
1,2,4-Trichlorobenzene			1600		-		220		210	noncancer (HQ=1.0)	5	noncancer (HQ=1.0)	5	2005 ESL Industrial (inhalation)
1,2,4-Trimethylbenzene			170		-		170		-				170	2004 PRG Industrial
1,2-Dibromo-3-chloropropane			-		-		2		0.067	cancer PRG			0.067	2005 ESL Industrial (direct exp)
1,2-Dibromoethane			-		-		-		0.25	cancer PRG	0.02		0.02	2005 ESL Industrial (inhalation)
1,2-Dichlorobenzene			4200		370		600		600	saturation limit	21		21	2005 ESL Industrial (inhalation)
1,2-Dichloroethane			0.61		0.76		0.60		0.74	cancer PRG	0.07		0.07	2005 ESL Industrial (inhalation)
1,2-Dichloroethene (Total)			130		150		-		-				150	SDGI Industrial Criteria
1,2-Dichloropropane			-		-		0.74		1.4	cancer PRG	0.14		0.14	2005 ESL Industrial (inhalation)
1,3,5-Trimethylbenzene			70		-		70		-				70	2004 PRG Industrial
1,3-Dichlorobenzene			65		52		600		600	saturation limit			600	2004 PRG Industrial
1,3-Dichloropropane			-		-		-		-				-	
1,4-Dichlorobenzene			4.5		4.5		7.9		4.5	cancer PRG	0.13		0.13	2005 ESL Industrial (inhalation)
2,2-Dichloropropane			-		-		-		-				-	
2-Butanone			28000		28000		110000		26000	noncancer (HQ=1.0)	6500	noncancer (HQ=1.0)	6500	2005 ESL Industrial (inhalation)
2-Chloroethyl vinyl ether			-		-		-		-				-	
2-Chlorotoluene			-		-		-		-				-	
2-Hexanone			22312		-		-		-				-	
4-Chlorotoluene			-		-		-		-				-	
4-Methyl-2-pentanone			2900		2900		47000		2800	noncancer (HQ=1.0)	1550	noncancer (HQ=1.0)	1550	2005 ESL Industrial (inhalation)
Acetone			6200		6200		54000		52000	noncancer (HQ=1.0)	16500	noncancer (HQ=1.0)	16500	2005 ESL Industrial (inhalation)
Benzene			0.39		0.4		1.4		0.38	cancer PRG	0.51		0.38	2005 ESL Industrial (direct exp)
Bromobenzene			-		-		-		-				-	
Bromochloromethane			-		-		-		-				-	
Bromodichloromethane			-		-		1.8		0.84	cancer PRG	0.039		0.039	2005 ESL Industrial (inhalation)
Bromoform			310		310		220		220	cancer PRG			220	2004 PRG Industrial
Bromomethane			13		13		13		13	noncancer (HQ=1.0)	2.6	noncancer (HQ=1.0)	2.6	2005 ESL Industrial (inhalation)
Carbon disulfide			1200		720		720		-				720	2004 PRG Industrial
Carbon tetrachloride			0.2		0.19		0.55		0.19	cancer PRG	0.034		0.034	2005 ESL Industrial (inhalation)
Chlorobenzene			540		540		530		520	noncancer (HQ=1.0)	31	noncancer (HQ=1.0)	31	2005 ESL Industrial (inhalation)
Chloroethane			6.5		6.5		6.5		6.4	cancer PRG	1.8		1.8	2005 ESL Industrial (inhalation)
Chloroform			0.47		0.52		0.47		1.9	cancer PRG	330		0.47	2004 PRG Industrial
Chloromethane			2.7		2.7		160		0.63	cancer PRG	0.2		0.2	2005 ESL Industrial (inhalation)
cis-1,2-Dichloroethene			150		-		150		140	noncancer (HQ=1.0)	18	noncancer (HQ=1.0)	18	2005 ESL Industrial (inhalation)
cis-1,3-Dichloropropene			-		-		1.8		0.46	cancer PRG	0.093		0.093	2005 ESL Industrial (inhalation)
Dibromochloromethane			-		-		2.6		2.2	cancer PRG	0.054		0.054	2005 ESL Industrial (inhalation)
Dibromomethane			-		-		-		-				-	
Dichlorodifluoromethane			-		-		310		-				310	2004 PRG Industrial
Ethylbenzene			230		230		400		400	saturation limit	390		390	2005 ESL Industrial (inhalation)
Hexachlorobutadiene			-		-		22		22	cancer PRG			22	2004 PRG Industrial
Isopropylbenzene			1997		-		2000		-				2000	2004 PRG Industrial
Methylene chloride			9.9		9.7		21		9.2	cancer PRG	1.5		1.5	2005 ESL Industrial (inhalation)
Naphthalene			190		190		190		3.8	cancer PRG	1.5		1.5	2005 ESL Industrial (inhalation)
n-Butylbenzene			2255		-		240		-				240	2004 PRG Industrial
o-Xylene			900		210		-		-				210	SDGI Industrial Criteria
para-Isopropyl toluene			-		-		-		-				-	
Propylbenzene			2255		-		240		-				240	2004 PRG Industrial
sec-Butylbenzene			1663		-		220		-				220	2004 PRG Industrial
Styrene			19000		1700		1700		1500	saturation limit	1100		1100	2005 ESL Industrial (inhalation)
tert-Butyl methyl ether			71		-		70		68	cancer PRG	5.6		5.6	2005 ESL Industrial (inhalation)
tert-Butylbenzene			2014		-		390		-				390	2004 PRG Industrial
Tetrachloroethene			1.5		2.1		1.3		1.1	cancer PRG	0.24		0.24	2005 ESL Industrial (inhalation)
Toluene			2200		520		520		650	saturation limit	1550	noncancer (HQ=1.0)	520	2004 PRG Industrial
trans-1,2-Dichloroethene			240		-		230		230	noncancer (HQ=1.0)	37	noncancer (HQ=1.0)	37	2005 ESL Industrial (inhalation)
trans-1,3-Dichloropropene			-		-		1.8		0.46	cancer PRG	0.093		0.093	2005 ESL Industrial (inhalation)
Trichloroethene			0.053		3.7		0.11		6.3	cancer PRG	0.73		0.11	2004 PRG Industrial
Trichlorofluoromethane			1279		-		2000		-				2000	2004 PRG Industrial
Vinyl acetate			1400		-		1400		-				1400	2004 PRG Industrial

Table 4-1 Summary of Human Health Evaluation Criteria for Soil
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	HPAL [a]		PARCEL E PRG Industrial 2002		SDGI Industrial Screening Criteria [b]		EPA PRG Industrial 2004 [c]		ESL Industrial 2005 (direct exp) [d,e]		ESL Industrial 2005 (inhalation) [e,f]		RI Evaluation Criteria	
	Conc. (mg/kg)	Comments	Conc. (mg/kg)	Comments	Conc. (mg/kg)	Comments	Conc. (mg/kg)	Comments	Conc. (mg/kg)	Comments	Conc. (mg/kg)	Comments	Conc. (mg/kg)	Comments
VOLATILE ORGANIC COMPOUNDS (continued)														
Vinyl chloride			0.055		0.054		0.75		0.054	cancer PRG	0.019		0.019	2005 ESL Industrial (inhalation)
Xylene (Total)			900		210		420		420	saturation limit	420		420	2004 PRG Industrial
PETROLEUM HYDROCARBONS														
Gasoline range organics			-		-		-		750	noncancer (HQ=0.5)			750	2005 ESL Industrial (direct exp)
Diesel range organics			-		-		-		750	noncancer (HQ=0.5)			750	2005 ESL Industrial (direct exp)
Motor oil range organics			-		-		-		4600	noncancer (HQ=0.5)			4600	2005 ESL Industrial (direct exp)
TPH-extractable unknown hydrocarbon			-		-		-		4600	noncancer (HQ=0.5)			4600	2005 ESL Industrial (direct exp)
TPH-purgeable unknown hydrocarbon			-		-		-		750	noncancer (HQ=0.5)			750	2005 ESL Industrial (direct exp)
Total TPH			3500		-		-		-				3500	HPS TPH source criterion
Total oil & grease			-		-		-		-				3500	HPS TPH source criterion

Notes:

a PRC Environmental Management, Inc. 1995. "Draft Calculation of Hunters Point Ambient Levels." April 11. Chromium, cobalt, and nickel are concentrations-specific values that vary by concentrations detecte dint he sample.
b Tetra Tech Environmental Management, Inc. 2002. "Revised Draft Final Sampling and Analysis Plan (Field Sampling Plan/Quality Assurance Project Plan) for Parcel E Standard Data Gaps Investigation, Hunters Point Shipyard, San Francisco, California." A
c U.S. Environmental Protection Agency, Region IX. 2004. "Preliminary Remediation Goals, Region 9." October. Available Online at: http://www.epa.gov/Region9/waste/sfund/prg/index.htm
d Table K-2 from Regional Water Quality Control Board, San Francisco Bay Region. 2005. "Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater." Interim Final. February.
e Noncancer screening levels, with the exception of TPH compounds, adjusted by a factor of five to be comparable with EPA PRGs (i.e., equivalent to a hazard quotient of 1.0)
f Table E-1b from Regional Water Quality Control Board, San Francisco Bay Region. 2005. "Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater." Interim Final. February.

-- No criteria available for this analyte
BHC - benzene hexachloride
DDD - dichlorodiphenyldichloroethane
DDE - dichlorodiphenyldichloroethene
DDT - dichlorodiphenyltrichloroethane
EPA - U.S. Environmental Protection Agency, Region IX
ESL - environmental screening level
HPAL - Hunters Point ambient level
HpCDD - heptachlorodibenzo[b,e][1,4]dioxin
HpCDF - heptachlorodibenzo[b,e][1,4]furan
HQ - hazard quotient
HxCDD - hexachlorodibenzo[b,e][1,4]dioxin
HxCDF - hexachlorodibenzo[b,e][1,4]furan
mg/kg - milligrams per kilogram
OCDD - octachlorodibenzo-p-dioxin
OCDF - octachlorodibenzofuran
PCB - polychlorinated biphenyl
PeCDD - pentachlorodibenzo[b,e][1,4]dioxin
PeCDF - pentachlorodibenzo[b,e][1,4]furan
PRG - preliminary remediation goal
TCDD - tetrachlorodibenzo-p-dioxin
TCDF - tetrachlorodibenzo-p-furan
TPH - total petroleum hydrocarbon

Table 4-2 Landfill Gas Characterization Monitoring Probes Result Summary
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits	Range of Results
Gas		%	%
Carbon dioxide	55/55	0.1 - 0.29	0.12 - 30
Carbon monoxide	0/55	0.1 - 0.29	0
Methane	47/55	0.1 - 0.29	0.57 - 71
Nitrogen	55/55	0.1 - 0.29	5.8 - 94
Oxygen	53/55	0.1 - 0.29	0.3 - 20
Methane (ppmv)	15/23	0.13 - 0.22	424 - 733,813
Non-methane organic carbon compounds (ppmv)	47/55	0.13 - 0.22	2.4 - 330
VOLATILE ORGANIC COMPOUNDS		ppmv	ppmv
1,1,1-Trichloroethane	11/57	4.5346 - 77.42	13.272 - 51.982
1,1,2,2-Tetrachloroethane	1/57	5.7236 - 97.72	69.8 - 69.8
1,1,2-Trichloro-1,2,2-trifluoroethane	2/57	6.3714 - 108.78	29.526 - 31.857
1,1,2-Trichloroethane	1/57	4.5346 - 77.42	21.567 - 21.567
1,1-Dichloroethane	37/57	3.3784 - 57.68	6.592 - 412
1,1-Dichloroethene	11/57	3.3046 - 56.42	4.03 - 44.33
1,2,4-Trichlorobenzene	7/57	6.1664 - 105.28	7.144 - 48.5792
1,2,4-Trimethylbenzene	39/57	4.0918 - 69.86	3.8922 - 16,966
1,2-Dibromoethane	10/57	6.4124 - 109.48	13.294 - 50.83
1,2-Dichloro-1,1,2,2-tetrafluoroethane	49/57	5.8302 - 99.54	16.353 - 1673.267
1,2-Dichlorobenzene	21/57	5.0102 - 85.54	4.4603 - 59.878
1,2-Dichloroethane	15/57	3.3784 - 57.68	4.0376 - 61.8
1,2-Dichloropropane	2/57	3.854 - 65.8	11.75 - 18.8
1,3,5-Trimethylbenzene	36/57	4.0918 - 69.86	4.3413 - 8,982
1,3-Butadiene	1/57	1.8368 - 31.36	10.752 - 10.752
1,3-Dichlorobenzene	14/57	5.0102 - 85.54	7.943 - 53.768
1,4-Dichlorobenzene	29/57	5.0102 - 85.54	5.9878 - 916.5
1,4-Dioxane	1/57	3.0012 - 51.24	10.98 - 10.98
2-Butanone	5/57	2.4518 - 41.86	101.66 - 478.4
2-Hexanone	0/57	3.4112 - 58.24	ND
4-Ethyltoluene	28/57	3.6162 - 61.74	3.1752 - 2513.7
4-Methyl-2-pentanone	1/57	3.4112 - 58.24	220.48 - 220.48
Acetone	6/57	1.9762 - 33.74	11.086 - 5061
Benzene	50/57	2.665 - 45.5	2.8925 - 552.5
Benzyl chloride	0/57	4.3296 - 73.92	ND
Bromodichloromethane	4/57	5.5596 - 94.92	8.136 - 33.9
Bromoform	3/57	8.61 - 147	33.6 - 80.85
Bromomethane	10/57	3.239 - 55.3	6.715 - 43.45
Carbon disulfide	31/57	2.5912 - 44.24	6.8572 - 1042.8
Carbon tetrachloride	12/57	5.248 - 89.6	5.952 - 45.44
Chlorobenzene	23/57	3.854 - 65.8	122.2 - 2256
Chloroethane	45/57	2.1976 - 37.52	5.762 - 7236
Chloroform	14/57	4.059 - 69.3	5.445 - 54.45
Chloromethane	8/57	1.722 - 29.4	14.7 - 798
cis-1,2-Dichloroethene	38/57	3.2718 - 55.86	3.7506 - 67.83
cis-1,3-Dichloropropene	8/57	3.7802 - 64.54	12.447 - 27.66
Cyclohexane	48/57	2.8618 - 48.86	4.886 - 3839
Dibromochloromethane	8/57	7.093 - 121.1	11.245 - 53.63
Dichlorodifluoromethane	48/57	4.1246 - 70.42	4.7785 - 4174.9
Ethanol	7/57	1.5662 - 26.74	80.6402 - 9932
Ethylbenzene	39/57	3.608 - 61.6	4.4 - 880
Heptane	49/57	3.4112 - 58.24	8.736 - 3260.691
Hexachlorobutadiene	14/57	8.897 -151.9	20.615 - 97.65
Hexane	49/57	2.9274 - 49.98	35.7 - 14,994
Isopropyl alcohol	12/57	2.0418 - 34.86	6.225 - 473.8221
Methylene chloride	8/57	2.8946 - 49.42	45.89 - 165.91
o-Xylene	44/57	3.608 - 61.6	6.6 - 756.028
Propylene	42/57	1.435 - 24.5	36.75 - 26,250
Styrene	6/57	3.5424 - 60.48	5.184 - 56.16
t-Butyl mercaptan	3/3	18.75 - 37.5	56.25 - 1500
tert-Butyl methyl ether	0/57	3.0012 - 51.24	ND
Tetrachloroethene	31/57	2.829 - 96.6	5.658 - 65.55
Tetrahydrofuran	5/57	2.4518 - 41.86	3.289 - 23.7705
Tetrahydrothiophene	0/3	18.35 - 36.7	ND
Toluene	12/57	3.1406 - 53.62	18.001 - 472.5837
trans-1,2-Dichloroethene	25/57	3.2718 - 55.86	6.384 - 79.8
trans-1,3-Dichloropropene	7/57	3.7802 - 64.54	10.142 - 23.511

ERRG

Table 4-2 Landfill Gas Characterization Monitoring Probes Result Summary
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits	Range of Results
VOLATILE ORGANIC COMPOUNDS (continued)		**ppmv**	**ppmv**
Trichloroethene	35/57	4.5346 - 77.42	6.636 - 199.08
Trichlorofluoromethane	19/57	4.674 - 79.8	5.016 - 96.9
Vinyl acetate	0/57	2.9274 - 49.98	ND
Vinyl chloride	42/57	2.132 - 36.4	3.9 - 218.842

Notes:
% Percent
ND Non-detected
ppmv parts per million by volume

Table 4-3 Summary of Analyses and Detections in the Landfill Area (0-2 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
Anions					
Aluminum	20/20	1.4 - 13	968J - 18000J	NA	-
Antimony	2/12	0.073 - 1.5	4.6J - 4.8J	9.05	0
Arsenic	18/20	0.1 - 3	1.5J - 7.6J	11.1	0
Barium	20/20	0.026 - 0.89	11.3 - 601	314.4	3
Beryllium	17/20	0.017 - 0.57	0.26 - 1.4	0.71	7
Cadmium	0/20	0.22 - 0.63	-	3.14	0
Calcium	20/20	2.7 - 13	570 - 20000	NA	-
Chromium	20/20	0.1 - 0.87	6.8J - 340	(b)	0
Chromium VI	0/24	0.05 - 0.06	-	NA	-
Cobalt	19/20	0.15 - 1.8	7.2 - 79.7	(b)	0
Copper	20/20	0.23 - 1.2	24.7J - 381	124.3	1
Cyanide	6/17	0.1 - 2	0.28 - 6.6	NA	-
Iron	20/20	0.39 - 11	3840 - 45400	NA	-
Lead	20/20	0.17 - 7.5	4.3 - 115J	8.99	17
Magnesium	20/20	2.8 - 13	473 - 106000	NA	-
Manganese	20/20	0.08 - 0.16	35.6 - 1550	1431.2	2
Mercury	14/20	0.00093 - 0.47	0.095 - 1	2.28	0
Molybdenum	1/19	0.51 - 1.3	1.6	2.68	0
Nickel	20/20	0.86 - 6.3	4J - 982	(b)	0
Potassium	20/20	30 - 193	227 - 3000	NA	-
Selenium	1/18	0.27 - 2.5	0.63	1.95	0
Silver	10/20	0.086 - 0.54	0.32 - 0.94	1.43	0
Sodium	20/20	2.2 - 14.1	32.2 - 1340	NA	-
Thallium	2/20	0.15 - 0.58	0.25 - 0.54	0.81	0
Tin	3/7	2.9 - 3	3.8 - 8.2	33227	-
Vanadium	20/20	0.16 - 0.85	3.5 - 116	117.2	0
Zinc	20/20	0.29 - 3.3	46.2J - 349	109.9	2
PESTICIDES					
4,4'-DDD	1/21	0.0037 - 3.7	0.02J	NA	-
4,4'-DDE	0/20	0.0037 - 3.7	-	NA	-
4,4'-DDT	1/21	0.0037 - 3.7	0.036J	NA	-
Aldrin	0/20	0.0019 - 0.18	-	NA	-
Alpha-BHC	0/20	0.0019 - 0.18	-	NA	-
Alpha-chlordane	1/21	0.0019 - 1.8	0.014J	NA	-
Beta-BHC	0/20	0.0019 - 0.18	-	NA	-
Delta-BHC	0/20	0.0019 - 0.18	-	NA	-
Dieldrin	0/20	0.0037 - 3.7	-	NA	-
Endosulfan I	0/20	0.0019 - 0.18	-	NA	-
Endosulfan II	0/20	0.0037 - 3.7	-	NA	-
Endosulfan sulfate	0/20	0.0037 - 0.37	-	NA	-
Endrin	0/20	0.0019 - 3.7	-	NA	-
Endrin aldehyde	0/2	0.0037 - 0.017	-	NA	-
Endrin ketone	0/20	0.0037 - 0.37	-	NA	-
Gamma-BHC (lindane)	0/20	0.0019 - 0.18	-	NA	-
Gamma-chlordane	1/21	0.0019 - 1.8	0.013J	NA	-
Heptachlor	0/20	0.0019 - 0.18	-	NA	-
Heptachlor epoxide	0/20	0.0019 - 0.18	-	NA	-
Methoxychlor	0/20	0.0075 - 18	-	NA	-
Toxaphene	0/19	0.16 - 3.7	-	NA	-
PCBs					
Aroclor-1016	0/20	0.035 - 1.8	-	NA	-
Aroclor-1221	0/20	0.035 - 1.8	-	NA	-
Aroclor-1232	0/20	0.035 - 1.8	-	NA	-
Aroclor-1242	1/20	0.035 - 1.8	0.024J	NA	-
Aroclor-1248	0/20	0.035 - 1.8	-	NA	-
Aroclor-1254	0/20	0.035 - 3.7	-	NA	-
Aroclor-1260	2/20	0.037 - 37	0.1 - 20J	NA	-
Total PCBs	3/20	-	0.024 - 0.23	NA	-

Table 4-3 Summary of Analyses and Detections in the Landfill Area (0-2 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
SEMIVOLATILE ORGANIC COMPOUNDS					
1,2,4-Trichlorobenzene	0/21	0.18 - 7	-	NA	-
1,2-Dichlorobenzene	0/21	0.18 - 7	-	NA	-
1,3-Dichlorobenzene	0/21	0.18 - 7	-	NA	-
1,4-Dichlorobenzene	0/21	0.18 - 7	-	NA	-
2,2'-Oxybis(1-chloropropane)	0/20	0.18 - 7	-	NA	-
2,4,5-Trichlorophenol	0/20	0.37 - 7	-	NA	-
2,4,6-Trichlorophenol	0/20	0.18 - 7	-	NA	-
2,4-Dichlorophenol	0/20	0.18 - 7	-	NA	-
2,4-Dimethylphenol	0/21	0.18 - 7	-	NA	-
2,4-Dinitrophenol	0/20	0.87 - 35	-	NA	-
2,4-Dinitrotoluene	0/21	0.18 - 7	-	NA	-
2,6-Dinitrotoluene	0/21	0.18 - 7	-	NA	-
2-Chloronaphthalene	0/21	0.18 - 7	-	NA	-
2-Chlorophenol	0/21	0.18 - 7	-	NA	-
2-Methylnaphthalene	3/21	0.073 - 1.5	0.056J - 0.076J	NA	-
2-Methylphenol	0/21	0.18 - 7	-	NA	-
2-Nitroaniline	0/21	0.73 - 14	-	NA	-
2-Nitrophenol	0/20	0.18 - 14	-	NA	-
3,3'-Dichlorobenzidine	0/21	0.36 - 14	-	NA	-
3-Nitroaniline	0/20	0.73 - 14	-	NA	-
4,6-Dinitro-2-methylphenol	0/20	0.87 - 35	-	NA	-
4-Bromophenyl-phenylether	0/20	0.18 - 7	-	NA	-
4-Chloro-3-methylphenol	0/21	0.18 - 7	-	NA	-
4-Chloroaniline	0/20	0.18 - 7	-	NA	-
4-Chlorophenyl-phenylether	0/20	0.18 - 7	-	NA	-
4-Methylphenol	0/21	0.18 - 7	-	NA	-
4-Nitroaniline	0/20	0.73 - 14	-	NA	-
4-Nitrophenol	0/21	0.73 - 14	-	NA	-
Acenaphthene	2/21	0.073 - 1.5	0.13J - 0.32J	NA	-
Acenaphthylene	8/21	0.073 - 1.5	0.04 - 1.1	NA	-
Anthracene	9/21	0.073 - 1.5	0.044J - 0.66	NA	-
Benzo(a)anthracene	11/21	0.073 - 1.5	0.089J - 2.3	NA	-
Benzo(a)pyrene	11/21	0.073 - 1.5	0.26J - 3.1	NA	-
Benzo(b)fluoranthene	12/21	0.073 - 1.5	0.043J - 4.1	NA	-
Benzo(g,h,i)perylene	10/21	0.073 - 1.5	0.15J - 3.4	NA	-
Benzo(k)fluoranthene	10/21	0.073 - 1.5	0.0097J - 1.1	NA	-
Benzoic acid	0/19	0.87 - 35	-	NA	-
Benzyl alcohol	0/19	0.18 - 7	-	NA	-
Bis(2-chloroethoxy)methane	0/20	0.18 - 7	-	NA	-
Bis(2-chloroethyl)ether	0/20	0.18 - 7	-	NA	-
Bis(2-ethylhexyl)phthalate	0/21	0.045 - 7	-	NA	-
Butylbenzylphthalate	0/21	0.18 - 7	-	NA	-
Carbazole	0/2	0.37 - 1.7	-	NA	-
Chrysene	12/21	0.073 - 1.5	0.023J - 2.3	NA	-
Dibenz(a,h)anthracene	6/21	0.073 - 1.5	0.043J - 0.25J	NA	-
Dibenzofuran	1/21	0.18 - 7	0.043J	NA	-
Diethylphthalate	0/21	0.047 - 7	-	NA	-
Dimethylphthalate	0/20	0.18 - 7	-	NA	-
Di-n-butylphthalate	0/21	0.035 - 7	74	NA	-
Di-n-octylphthalate	0/21	0.18 - 7	-	NA	-
Fluoranthene	14/21	0.073 - 1.5	0.022J - 6	NA	-
Fluorene	8/21	0.073 - 1.5	0.04J - 0.54	NA	-
Hexachlorobenzene	0/21	0.18 - 7	-	NA	-
Hexachlorobutadiene	0/20	0.18 - 7	-	NA	-
Hexachlorocyclopentadiene	0/20	0.18 - 35	-	NA	-
Hexachloroethane	0/20	0.18 - 7	-	NA	-
Indeno(1,2,3-cd)pyrene	10/21	0.073 - 1.5	0.15J - 3.1	NA	-
Isophorone	0/21	0.18 - 7	-	NA	-
Naphthalene	8/21	0.073 - 1.5	0.084J - 2.1	NA	-
Nitrobenzene	0/20	0.18 - 7	-	NA	-

Table 4-3 Summary of Analyses and Detections in the Landfill Area (0-2 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[(a)] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
SEMIVOLATILE ORGANIC COMPOUNDS (Continued)					
n-Nitrosodimethylamine	0/0	0.37 - 7	-	NA	-
n-Nitroso-di-n-propylamine	0/21	0.18 - 7	-	NA	-
n-Nitrosodiphenylamine	0/21	0.18 - 7	-	NA	-
Pentachlorophenol	1/21	0.73 - 14	0.059J	NA	-
Phenanthrene	12/21	0.073 - 1.5	0.044J - 5	NA	-
Phenol	1/21	0.18 - 7	0.036J - 0.036J	NA	-
Pyrene	14/21	0.073 - 1.5	0.023J - 7.1	NA	-
VOLATILE ORGANIC COMPOUNDS					
1,1,1-Trichloroethane	1/20	0.005 - 0.011	0.002J	NA	-
1,1,2,2-Tetrachloroethane	0/20	0.005 - 0.011	-	NA	-
1,1,2-Trichloroethane	0/20	0.005 - 0.011	-	NA	-
1,1-Dichloroethane	0/20	0.005 - 0.011	-	NA	-
1,1-Dichloroethene	0/20	0.005 - 0.011	-	NA	-
1,2-Dichloroethane	0/20	0.005 - 0.011	-	NA	-
1,2-Dichloroethene (Total)	0/20	0.005 - 0.011	-	NA	-
1,2-Dichloropropane	0/20	0.005 - 0.011	-	NA	-
2-Butanone	0/20	0.006 - 0.012	-	NA	-
2-Hexanone	0/20	0.01 - 0.012	-	NA	-
4-Methyl-2-pentanone	0/20	0.004 - 0.012	-	NA	-
Acetone	0/20	0.001 - 0.053	-	NA	-
Benzene	0/20	0.005 - 0.011	-	NA	-
Bromodichloromethane	0/20	0.005 - 0.011	-	NA	-
Bromoform	0/20	0.005 - 0.011	-	NA	-
Bromomethane	0/20	0.01 - 0.012	-	NA	-
Carbon disulfide	1/20	0.005 - 0.011	0.001J	NA	-
Carbon tetrachloride	0/20	0.005 - 0.011	-	NA	-
Chlorobenzene	0/20	0.005 - 0.011	-	NA	-
Chloroethane	0/20	0.01 - 0.012	-	NA	-
Chloroform	0/20	0.005 - 0.011	-	NA	-
Chloromethane	0/20	0.01 - 0.012	-	NA	-
cis-1,3-dichloropropene	0/20	0.005 - 0.011	-	NA	-
Dibromochloromethane	0/20	0.005 - 0.011	-	NA	-
Ethylbenzene	0/20	0.005 - 0.011	-	NA	-
Methylene chloride	0/20	0.002 - 0.019	-	NA	-
Styrene	0/20	0.005 - 0.011	-	NA	-
Tetrachloroethene	0/20	0.005 - 0.011	-	NA	-
Toluene	3/20	0.005 - 0.011	0.002J - 0.019	NA	-
trans-1,3-Dichloropropene	0/20	0.005 - 0.011	-	NA	-
Trichloroethene	0/20	0.005 - 0.011	-	NA	-
Vinyl acetate	1/19	0.01 - 0.012	0.001J	NA	-
Vinyl chloride	0/20	0.01 - 0.012	-	NA	-
Xylene (Total)	0/20	0.005 - 0.011	-	NA	-
PETROLEUM HYDROCARBONS					
Gasoline range organics	0/21	0.55 - 6	-	NA	-
Diesel range organics	4/21	5.7 - 52	7.7J - 35	NA	-
Motor oil range organics	2/2	11 - 100	55J - 63	NA	-
TPH-extractable unknown hydrocarbon	4/8	10 - 11	18 - 170	NA	-
TPH-purgeable unknown hydrocarbon	0/7	1 - 1	-	NA	-
Total TPH	6/21	-	18 - 170	NA	-
Total oil & grease	14/18	26 - 100	57 - 5000J	NA	-

Notes
(a) - Detection limits are reported as the laboratory reporting limits
(b) - Hunters Point ambient levels is determined on a location specific basis
-- No criteria available for this analyte
BHC - benzene hexachloride
DDD - dichlorodiphenyldichloroethane
DDE - dichlorodiphenyldichloroethene
DDT - dichlorodiphenyltrichloroethane
J - Estimated value
mg/kg - milligrams per kilogram
NA - not available
PCB - polychlorinated biphenyl
TPH - total petroleum hydrocarbon

Table 4-4 Summary of Detected Exceedances of Evaluation Criteria in the Landfill Area (0-2 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
Metals			
Aluminum	100000	2004 PRG Industrial	0
Antimony	380	2005 ESL Industrial (direct exp)	0
Arsenic	11.1	HPAL	0
Barium	63000	2005 ESL Industrial (direct exp)	0
Beryllium	1700	2005 ESL Industrial (direct exp)	0
Cadmium	7.4	2005 ESL Industrial (direct exp)	0
Calcium	-		-
Chromium (total)	a	See note	0
Chromium VI	37	2005 ESL Industrial (direct exp)	0
Cobalt	a	See note	0
Copper	38000	2005 ESL Industrial (direct exp)	0
Cyanide (free)	12000	2004 PRG Industrial	0
Iron	100000	2004 PRG Industrial	0
Lead	800	2004 PRG Industrial	0
Magnesium	-		-
Manganese	19000	2004 PRG Industrial	0
Mercury	180	2005 ESL Industrial (direct exp)	0
Molybdenum	4800	2005 ESL Industrial (direct exp)	0
Nickel	a	See note	0
Potassium	-		-
Selenium	4800	2005 ESL Industrial (direct exp)	0
Silver	4800	2005 ESL Industrial (direct exp)	0
Sodium	-		0
Thallium	63	2005 ESL Industrial (direct exp)	0
Tin	100000	2004 PRG Industrial	0
Vanadium	1000	2004 PRG Industrial	0
Zinc	100000	2004 PRG Industrial	0
PESTICIDES			
2,4'-DDD	9	2005 ESL Industrial (direct exp)	0
2,4'-DDE	6.3	2005 ESL Industrial (direct exp)	0
2,4'-DDT	6.3	2005 ESL Industrial (direct exp)	0
4,4'-DDD	9	2005 ESL Industrial (direct exp)	0
4,4'-DDE	6.3	2005 ESL Industrial (direct exp)	0
4,4'-DDT	6.3	2005 ESL Industrial (direct exp)	0
Aldrin	0.1	2004 PRG Industrial	0
alpha-BHC	0.36	2004 PRG Industrial	0
Alpha-chlordane	2.9	SDGI Industrial Criteria	0
beta-BHC	1.3	2004 PRG Industrial	0
Chlordane	1.7	2005 ESL Industrial (direct exp)	0
cis-Nonachlor	-		-
delta-BHC	0.59	SDGI Industrial Criteria	0
Dieldrin	0.11	2004 PRG Industrial	0
Endosulfan I	3700	2004 PRG Industrial	0
Endosulfan II	3700	2004 PRG Industrial	0
Endosulfan sulfate	5300	SDGI Industrial Criteria	0
Endrin	190	2004 PRG Industrial	0
Endrin aldehyde	260	SDGI Industrial Criteria	0
Endrin ketone	260	SDGI Industrial Criteria	0
Gamma-BHC (lindane)	1.7	2004 PRG Industrial	0
Gamma-chlordane	2.9	SDGI Industrial Criteria	0
Heptachlor	0.38	2004 PRG Industrial	0
Heptachlor epoxide	0.19	2004 PRG Industrial	0
Heptachlor epoxide A	-		-
Heptachlor epoxide B	-		-
Hexachlorobenzene	0.96	2005 ESL Industrial (direct exp)	0
Methoxychlor	3100	2004 PRG Industrial	0
Mirex	-		-
Oxychlordane	-		-
trans-Nonachlor	21	2004 PRG Industrial	0
Toxaphene	1.6	2004 PRG Industrial	0

Table 4-4 Summary of Detected Exceedances of Evaluation Criteria in the Landfill Area (0-2 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
PCBs			
Aroclor-1016	21	2004 PRG Industrial	0
Aroclor-1221	0.74	2004 PRG Industrial	0
Aroclor-1232	0.74	2004 PRG Industrial	0
Aroclor-1242	0.74	2004 PRG Industrial	0
Aroclor-1248	0.74	2004 PRG Industrial	0
Aroclor-1254	0.74	2004 PRG Industrial	0
Aroclor-1260	0.74	2004 PRG Industrial	0
Total PCBs	0.74	2004 PRG Industrial	0
SEMIVOLATILE ORGANIC COMPOUNDS			
1,2,4-Trichlorobenzene	5	2005 ESL Industrial (inhalation)	0
1,2,4-Trimethylbenzene	170	2004 PRG Industrial	0
1,2-Dichlorobenzene	21	2005 ESL Industrial (inhalation)	0
1,3,5-Trimethylbenzene	70	2004 PRG Industrial	0
1,3-Dichlorobenzene	600	2004 PRG Industrial	0
1,4-Dichlorobenzene	0.13	2005 ESL Industrial (inhalation)	0
2,2'-Oxybis(1-chloropropane)	7.4	2004 PRG Industrial	0
2,4,5-Trichlorophenol	310	2005 ESL Industrial (inhalation)	0
2,4,6-Trichlorophenol	25	2005 ESL Industrial (direct exp)	0
2,4-Dichlorophenol	1800	2004 PRG Industrial	0
2,4-Dimethylphenol	1500	2005 ESL Industrial (inhalation)	0
2,4-Dinitrophenol	1200	2004 PRG Industrial	0
2,4-Dinitrotoluene	5.6	2005 ESL Industrial (direct exp)	0
2,6-Dinitrotoluene	620	2004 PRG Industrial	0
2-Chloronaphthalene	23000	2004 PRG Industrial	0
2-Chlorophenol	10	2005 ESL Industrial (inhalation)	0
2-Methylnaphthalene	550	2005 ESL Industrial (inhalation)	0
2-Methylphenol	31000	2004 PRG Industrial	0
2-Nitroaniline	1800	2004 PRG Industrial	0
2-Nitrophenol	-		-
3,3'-Dichlorobenzidine	1.4	2005 ESL Industrial (direct exp)	0
3-Nitroaniline	82	2004 PRG Industrial	0
4,6-Dinitro-2-methylphenol	-		-
4-Bromophenyl-phenylether	-		-
4-Chloro-3-methylphenol	-		-
4-Chloroaniline	2500	2004 PRG Industrial	0
4-Chlorophenyl-phenylether	-		-
4-Methylphenol	3100	2004 PRG Industrial	0
4-Nitroaniline	82	2004 PRG Industrial	0
4-Nitrophenol	7000	SDGI Industrial Criteria	0
Acenaphthene	650	2005 ESL Industrial (inhalation)	0
Acenaphthylene	18000	2005 ESL Industrial (direct exp)	0
Aniline	300	2004 PRG Industrial	0
Anthracene	31	2005 ESL Industrial (inhalation)	0
Azobenzene	16	2004 PRG Industrial	0
Benzidine	-		-
Benzo(a)anthracene	1.3	2005 ESL Industrial (direct exp)	2
Benzo(a)pyrene	0.33	SDGI Industrial Criteria	9
Benzo(b)fluoranthene	1.3	2005 ESL Industrial (direct exp)	2
Benzo(e)pyrene	-		-
Benzo(g,h,i)perylene	22000	2005 ESL Industrial (direct exp)	0
Benzo(k)fluoranthene	1.3	2005 ESL Industrial (direct exp)	0
Benzoic acid	100000	2004 PRG Industrial	0
Benzyl alcohol	100000	2004 PRG Industrial	0
Biphenyl	18000	2005 ESL Industrial (direct exp)	0
Bis(2-chloroethoxy)methane	-		-
Bis(2-chloroethyl)ether	0.012	2005 ESL Industrial (inhalation)	0
Bis(2-ethylhexyl)phthalate	120	2004 PRG Industrial	0
Butylbenzylphthalate	100000	2004 PRG Industrial	0
Carbazole	86	2004 PRG Industrial	0
Chrysene	13	2005 ESL Industrial (direct exp)	0
Dibenz(a,h)anthracene	0.33	SDGI Industrial Criteria	0
Dibenzofuran	1600	2004 PRG Industrial	0
Diethylphthalate	100000	2004 PRG Industrial	0
Dimethylphthalate	100000	2004 PRG Industrial	0
Di-n-butylphthalate	62000	2004 PRG Industrial	0
Di-n-octylphthalate	25000	2004 PRG Industrial	0
Fluoranthene	22000	2004 PRG Industrial	0
Fluorene	800	2005 ESL Industrial (inhalation)	0

Table 4-4 Summary of Detected Exceedances of Evaluation Criteria in the Landfill Area (0-2 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
SEMIVOLATILE ORGANIC COMPOUNDS (continued)			
Hexachlorobenzene	0.96	2005 ESL Industrial (direct exp)	0
Hexachlorobutadiene	22	2004 PRG Industrial	0
Hexachlorocyclopentadiene	3700	2004 PRG Industrial	0
Hexachloroethane	44	2005 ESL Industrial (direct exp)	0
Indeno(1,2,3-cd)pyrene	1.3	2005 ESL Industrial (direct exp)	2
Isophorone	510	2004 PRG Industrial	0
Napthalene	1.5	2005 ESL Industrial (inhalation)	1
Nitrobenzene	100	2004 PRG Industrial	0
n-Nitrosodimethylamine	0.034	2004 PRG Industrial	0
n-Nitroso-di-n-propylamine	0.25	2004 PRG Industrial	0
n-Nitrosodiphenylamine	350	2004 PRG Industrial	0
Pentachlorophenol	9	2004 PRG Industrial	0
Phenacetin	-		-
Phenanthrene	18000	2005 ESL Industrial (direct exp)	0
Phenol	100000	2004 PRG Industrial	0
Pyrene	430	2005 ESL Industrial (inhalation)	0
VOLATILE ORGANIC COMPOUNDS			
1,1,1,2-Tetrachloroethane	6.9	2005 ESL Industrial (direct exp)	0
1,1,1-Trichloroethane	230	2005 ESL Industrial (inhalation)	0
1,1,2,2-Tetrachloroethane	0.025	2005 ESL Industrial (inhalation)	0
1,1,2-Trichloro-1,2,2-trifluoroethane	-		-
1,1,2-Trichloroethane	0.089	2005 ESL Industrial (inhalation)	0
1,1-Dichloroethane	0.89	2005 ESL Industrial (inhalation)	0
1,1-Dichloroethene	105	2005 ESL Industrial (inhalation)	0
1,1-Dichloropropene	-		-
1,2,3-Trichlorobenzene	-		-
1,2,3-Trichloropropane	-		-
1,2,4-Trichlorobenzene	5	2005 ESL Industrial (inhalation)	0
1,2,4-Trimethylbenzene	170	2004 PRG Industrial	0
1,2-Dibromo-3-chloropropane	0.067	2005 ESL Industrial (direct exp)	0
1,2-Dibromoethane	0.02	2005 ESL Industrial (inhalation)	0
1,2-Dichlorobenzene	21	2005 ESL Industrial (inhalation)	0
1,2-Dichloroethane	0.07	2005 ESL Industrial (inhalation)	0
1,2-Dichloroethene (Total)	150	SDGI Industrial Criteria	0
1,2-Dichloropropane	0.14	2005 ESL Industrial (inhalation)	0
1,3,5-Trimethylbenzene	70	2004 PRG Industrial	0
1,3-Dichlorobenzene	600	2004 PRG Industrial	0
1,3-Dichloropropane	-		-
1,4-Dichlorobenzene	0.13	2005 ESL Industrial (inhalation)	0
2,2-Dichloropropane	-		0
2-Butanone	6500	2005 ESL Industrial (inhalation)	0
2-Chloroethyl vinyl ether	-		-
2-Chlorotoluene	-		-
2-Hexanone	-		-
4-Chlorotoluene	-		-
4-Methyl-2-pentanone	1550	2005 ESL Industrial (inhalation)	0
Acetone	16500	2005 ESL Industrial (inhalation)	0
Benzene	0.38	2005 ESL Industrial (direct exp)	0
Bromobenzene	-		-
Bromochloromethane	-		-
Bromodichloromethane	0.039	2005 ESL Industrial (inhalation)	0
Bromoform	220	2004 PRG Industrial	0
Bromomethane	2.6	2005 ESL Industrial (inhalation)	0
Carbon disulfide	720	2004 PRG Industrial	0
Carbon tetrachloride	0.034	2005 ESL Industrial (inhalation)	0
Chlorobenzene	31	2005 ESL Industrial (inhalation)	0
Chloroethane	1.8	2005 ESL Industrial (inhalation)	0
Chloroform	0.47	2004 PRG Industrial	0
Chloromethane	0.2	2005 ESL Industrial (inhalation)	0
cis-1,2-Dichloroethene	18	2005 ESL Industrial (inhalation)	0
cis-1,3-Dichloropropene	0.093	2005 ESL Industrial (inhalation)	0
Dibromochloromethane	0.054	2005 ESL Industrial (inhalation)	0
Dibromomethane	-		-
Dichlorodifluoromethane	310	2004 PRG Industrial	0
Ethylbenzene	390	2005 ESL Industrial (inhalation)	0
Hexachlorobutadiene	22	2004 PRG Industrial	0
Isopropylbenzene	2000	2004 PRG Industrial	0
Methylene chloride	1.5	2005 ESL Industrial (inhalation)	0

Table 4-4 Summary of Detected Exceedances of Evaluation Criteria in the Landfill Area (0-2 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
VOLATILE ORGANIC COMPOUNDS (continued)			
Naphthalene	1.5	2005 ESL Industrial (inhalation)	0
n-Butylbenzene	240	2004 PRG Industrial	0
o-Xylene	210	SDGI Industrial Criteria	0
para-Isopropyl toluene	-		-
Propylbenzene	240	2004 PRG Industrial	0
sec-Butylbenzene	220	2004 PRG Industrial	0
Styrene	1100	2005 ESL Industrial (inhalation)	0
tert-Butyl methyl ether	5.6	2005 ESL Industrial (inhalation)	0
tert-Butylbenzene	390	2004 PRG Industrial	0
Tetrachloroethene	0.24	2005 ESL Industrial (inhalation)	0
Toluene	520	2004 PRG Industrial	0
trans-1,2-Dichloroethene	37	2005 ESL Industrial (inhalation)	0
trans-1,3-Dichloropropene	0.093	2005 ESL Industrial (inhalation)	0
Trichloroethene	0.11	2004 PRG Industrial	0
Trichlorofluoromethane	2000	2004 PRG Industrial	0
Vinyl acetate	1400	2004 PRG Industrial	0
Vinyl chloride	0.019	2005 ESL Industrial (inhalation)	0
Xylene (Total)	420	2004 PRG Industrial	0
PETROLEUM HYDROCARBONS			
Gasoline range organics	750	2005 ESL Industrial (direct exp)	0
Diesel range organics	750	2005 ESL Industrial (direct exp)	0
Motor oil range organics	4600	2005 ESL Industrial (direct exp)	0
TPH-extractable unknown hydrocarbon	4600	2005 ESL Industrial (direct exp)	0
TPH-purgeable unknown hydrocarbon	750	2005 ESL Industrial (direct exp)	0
Total TPH	3500	HPS TPH source criterion	0
Total oil & grease	3500	HPS TPH source criterion	1

(a) PRC Environmental Management, Inc. 1995. "Draft Calculation of Hunters Point Ambient Levels." April 11.

-- No criteria available for this analyte

BHC - benzene hexachloride

DDD - dichlorodiphenyldichloroethane

DDE - dichlorodiphenyldichloroethene

DDT - dichlorodiphenyltrichloroethane

ESL - environmental screening level

HPAL - Hunters Point ambient level

mg/kg - milligrams per kilogram

PCB - polychlorinated biphenyl

PRG - preliminary remediation goal

SDGI - standard data gap investigation

TPH - total petroleum hydrocarbon

Table 4-5 Summary of Analyses and Detections in the Landfill Area (2-10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
Anions					
Aluminum	77/77	0.18 - 13	1620 - 26400	NA	-
Antimony	44/64	0.011 - 19	0.069J - 1930J	9.05	16
Arsenic	73/77	0.054 - 2.9	1 - 66.6J	11.1	5
Barium	77/77	0.029 - 1	11 - 956	314.4	9
Beryllium	66/77	0.011 - 0.57	0.12 - 12.1	0.71	12
Cadmium	43/77	0.011 - 0.91	0.062J - 330	3.14	9
Calcium	77/77	0.91 - 13	1310 - 91400	NA	-
Chromium	77/77	0.051 - 1	36 - 6940J	(b)	14
Chromium VI	8/91	0.05 - 0.062	0.016J - 0.3	NA	-
Cobalt	77/77	0.011 - 2.6	6 - 170	(b)	4
Copper	77/77	0.012 - 5.1	7.5 - 175000	124.3	29
Cyanide	22/67	0.11 - 1.2	0.09J - 11	NA	-
Iron	77/77	0.42 - 13.6	10700J - 201000	NA	-
Lead	77/77	0.011 - 99.2	5 - 3840	8.99	73
Magnesium	77/77	0.12 - 12	2940 - 150000	NA	-
Manganese	77/77	0.011 - 0.24	171J - 2080	1431.2	4
Mercury	67/77	0.0049 - 2.2	0.016J - 8.7	2.28	7
Molybdenum	35/76	0.011 - 6.1	0.15 - 306J	2.68	9
Nickel	77/77	0.011 - 9.4	27.3 - 8440	(b)	7
Potassium	75/77	0.54 - 667	194 - 3030	NA	-
Selenium	21/68	0.027 - 4.5	0.23 - 1.7J	1.95	0
Silver	53/77	0.011 - 0.69	0.06J - 245	1.43	11
Sodium	77/77	0.74 - 16.2	81.5J - 2950	NA	-
Thallium	10/77	0.039 - 5.9	0.043J - 0.13	0.81	0
Tin	17/21	2.9 - 4.5	3.4 - 31600	33227	-
Vanadium	77/77	0.18 - 0.98	8.8 - 24900	117.2	4
Zinc	77/77	0.11 - 9.4	21 - 15800	109.9	40
PCBs and PESTICIDES					
4,4'-DDE	3/75	0.0037 - 92	0.023J - 0.4	NA	-
4,4'-DDT	3/75	0.0037 - 92	0.018J - 0.39J	NA	-
Aldrin	1/75	0.0019 - 46	0.011	NA	-
Alpha-chlordane	0/75	0.0019 - 460	-	NA	-
Beta-BHC	0/75	0.34 - 3.7	-	NA	-
Alpha-BHC	0/75	0.0019 - 46	-	NA	-
Chlordane	0/20	0.019 - 3.8	-	NA	-
Delta-BHC	1/75	0.0019 - 46	0.0021	NA	-
Dieldrin	0/75	0.0037 - 92	-	NA	-
Endosulfan I	0/75	0.0019 - 46	-	NA	-
Endosulfan II	0/75	0.0037 - 92	-	NA	-
Endosulfan sulfate	0/75	0.0037 - 92	-	NA	-
Endrin	0/75	0.0019 - 92	-	NA	-
Endrin aldehyde	0/22	0.0037 - 1.5	-	NA	-
Endrin ketone	0/75	0.0037 - 92	-	NA	-
Gamma-BHC (lindane)	0/75	0.0019 - 46	-	NA	-
Gamma-chlordane	0/75	0.0019 - 460	-	NA	-
Heptachlor	0/75	0.0019 - 46	-	NA	-
Heptachlor epoxide	0/75	0.0019 - 46	-	NA	-
Methoxychlor	0/75	0.0073 - 460	-	NA	-
Mirex	0/20	0.0019 - 0.38	-	NA	
Toxaphene	0/74	0.076 - 920	-	NA	-
Aroclor-1016	4/75	0.003 - 460	0.22 - 740	NA	-
Aroclor-1221	0/75	0.017 - 460	-	NA	-
Aroclor-1232	0/75	0.017 - 460	-	NA	-
Aroclor-1242	3/75	0.017 - 460	0.039J - 7.2	NA	-
Aroclor-1248	2/75	0.017 - 460	0.075 - 0.15	NA	-
Aroclor-1254	5/75	0.017 - 920	0.038 - 7.1J	NA	-
Aroclor-1260	32/75	0.006 - 920	0.0032J - 370J	NA	-
Total PCBs	38/75	-	0.0032 - 740	NA	-

Table 4-5 Summary of Analyses and Detections in the Landfill Area (2-10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
SEMIVOLATILE ORGANIC COMPOUNDS					
1,2,4-Trichlorobenzene	4/57	0.018 - 52	0.049J - 4.8	NA	-
1,2-Dichlorobenzene	2/57	0.018 - 52	0.19J - 4J	NA	-
1,3-Dichlorobenzene	2/57	0.018 - 52	0.73J	NA	-
1,4-Dichlorobenzene	9/58	0.018 - 52	0.26J - 59	NA	-
2,2'-Oxybis(1-chloropropane)	0/57	0.18 - 52	-	NA	-
2,4,5-Trichlorophenol	0/57	0.87 - 260	-	NA	-
2,4,6-Trichlorophenol	0/57	0.18 - 52	-	NA	-
2,4-Dichlorophenol	0/57	0.18 - 52	-	NA	-
2,4-Dimethylphenol	6/57	0.18 - 52	0.15J - 30J	NA	-
2,4-Dinitrophenol	0/57	0.87 - 260	-	NA	-
2,4-Dinitrotoluene	0/57	0.18 - 52	-	NA	-
2,6-Dinitrotoluene	0/57	0.18 - 52	-	NA	-
2-Chloronaphthalene	0/57	0.18 - 52	-	NA	-
2-Chlorophenol	0/57	0.18 - 52	-	NA	-
2-Methylnaphthalene	25/57	0.18 - 52	0.019J - 650	NA	-
2-Methylphenol	4/57	0.18 - 52	0.12J - 6.8J	NA	-
2-Nitroaniline	0/57	0.87 - 260	-	NA	-
2-Nitrophenol	0/57	0.18 - 52	-	NA	-
3,3'-Dichlorobenzidine	0/57	0.36 - 100	-	NA	-
3-Nitroaniline	0/57	0.87 - 260	-	NA	-
4,6-Dinitro-2-methylphenol	0/57	0.87 - 260	-	NA	-
4-Bromophenyl-phenylether	0/57	0.18 - 52	-	NA	-
4-Chloro-3-methylphenol	0/57	0.18 - 52	-	NA	-
4-Chloroaniline	0/57	0.18 - 52	-	NA	-
4-Chlorophenyl-phenylether	0/57	0.18 - 52	-	NA	-
4-Methylphenol	8/57	0.18 - 52	0.31J - 30	NA	-
4-Nitroaniline	0/57	0.87 - 260	-	NA	-
4-Nitrophenol	0/57	0.87 - 260	-	NA	-
Acenaphthene	10/57	0.18 - 52	0.039J - 530	NA	-
Acenaphthylene	7/77	0.18 - 52	0.044J - 14J	NA	-
Anthracene	14/77	0.18 - 52	0.055J - 210	NA	-
Azobenzene	0/1	0.36			
Benzo(a)anthracene	20/77	0.18 - 52	0.037J - 80	NA	-
Benzo(a)pyrene	20/77	0.18 - 52	0.018J - 16J	NA	-
Benzo(b)fluoranthene	25/77	0.18 - 52	0.033J - 43	NA	-
Benzo(e)pyrene	1/20	0.38 - 4.1	2.8J	NA	-
Benzo(g,h,i)perylene	16/77	0.18 - 52	0.052J - 5.6	NA	-
Benzo(k)fluoranthene	17/77	0.18 - 52	0.039J - 13J	NA	-
Benzoic acid	0/56	0.87 - 260	-	NA	-
Benzyl alcohol	0/56	0.18 - 52	-	NA	-
Biphenyl	0/20	0.34 - 3.7	-	NA	
Bis(2-chloroethoxy)methane	0/57	0.18 - 52	-	NA	-
Bis(2-chloroethyl)ether	0/57	0.18 - 52	-	NA	-
Bis(2-ethylhexyl)phthalate	0/78	0.042 - 53	-	NA	-
Butylbenzylphthalate	0/58	0.046 - 33	-	NA	-
Carbazole	0/21	0.38 - 4.1	-	NA	-
Chrysene	29/77	0.18 - 52	0.024J - 77	NA	-
Dibenz(a,h)anthracene	3/77	0.18 - 52	0.051J - 1.5J	NA	-
Dibenzofuran	9/77	0.18 - 52	0.039J - 390	NA	-
Diethylphthalate	0/77	0.048 - 52	-	NA	-
Dimethylphthalate	0/57	0.18 - 52	-	NA	-
Di-n-butylphthalate	0/58	0.038 - 33	-	NA	-
Di-n-octylphthalate	0/57	0.14 - 52	-	NA	-
Fluoranthene	24/78	0.1 - 52	0.045J - 570	NA	-
Fluorene	13/77	0.18 - 52	0.043J - 550	NA	-
Hexachlorobenzene	0/57	0.18 - 52	-	NA	-
Hexachlorobutadiene	0/57	0.18 - 52	-	NA	-
Hexachlorocyclopentadiene	0/57	0.18 - 52	-	NA	-
Hexachloroethane	0/57	0.18 - 52	-	NA	-
Indeno(1,2,3-cd)pyrene	15/77	0.18 - 52	0.037J - 5.6J	NA	-
Isophorone	0/57	0.18 - 52	-	NA	-
Naphthalene	26/77	0.11 - 52	0.019J - 1400	NA	-
Nitrobenzene	0/57	0.18 - 52	-	NA	-
n-Nitrosodimethylamine	0/1	0.36	-	NA	-
n-Nitroso-di-n-propylamine	0/77	0.18 - 52	-	NA	-
n-Nitrosodiphenylamine	2/77	0.18 - 52	0.099J - 0.65J	NA	-
Pentachlorophenol	1/77	0.87 - 260	7.7J	NA	-
Phenacetin	0/20	0.76 - 8.2			

Table 4-5 Summary of Analyses and Detections in the Landfill Area (2-10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[(a)] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
SEMIVOLATILE ORGANIC COMPOUNDS (continued)					
Phenanthrene	28/78	0.09 - 52	0.042J - 1200	NA	-
Phenol	7/77	0.18 - 52	0.074J - 9.1J	NA	-
Pyrene	26/78	0.14 - 52	0.047J - 340	NA	-
VOLATILE ORGANIC COMPOUNDS					
1,1,1-Trichloroethane	0/56	0.005 - 7.5	-	NA	-
1,1,2,2-Tetrachloroethane	0/56	0.005 - 7.5	-	NA	-
1,1,2-Trichloro-1,2,2-trifluoroethane	0/1	0.037 - 0.037	-	NA	-
1,1,2-Trichloroethane	1/56	0.005 - 7.5	0.001J	NA	-
1,1-Dichloroethane	0/56	0.005 - 7.5	-	NA	-
1,1-Dichloroethene	0/56	0.005 - 7.5	-	NA	-
1,2,3-Trichlorobenzene	0/1	0.018 - 0.018	-	NA	-
1,2,4-Trichlorobenzene	0/1	0.018 - 52	-	NA	-
1,2-Dibromo-3-chloropropane	0/1	0.037 - 0.037	-	NA	-
1,2-Dibromoethane	0/1	0.018 - 0.018	-	NA	-
1,2-Dichlorobenzene	0/1	0.018 - 52	-	NA	-
1,2-Dichloroethane	0/56	0.005 - 7.5	-	NA	-
1,2-Dichloroethene (Total)	0/56	0.005 - 7.5	-	NA	-
1,2-Dichloropropane	0/56	0.005 - 7.5	-	NA	-
1,3-Dichlorobenzene	0/1	0.018 - 52	-	NA	-
1,4-Dichlorobenzene	0/1	0.018 - 52	-	NA	-
2-Butanone	1/56	0.003 - 15	0.047	NA	-
2-Hexanone	0/56	0.011 - 15	-	NA	-
4-Methyl-2-pentanone	1/56	0.011 - 15	10J	NA	-
Acetone	1/56	0.006 - 15	0.13	NA	-
Benzene	6/56	0.005 - 7.5	0.001J - 0.02J	NA	-
Bromochloromethane	0/1	0.018 - 0.018	-	NA	-
Bromodichloromethane	0/56	0.005 - 7.5	-	NA	-
Bromoform	0/56	0.005 - 7.5	-	NA	-
Bromomethane	0/56	0.011 - 14	-	NA	-
Carbon disulfide	6/56	0.005 - 7.5	0.002 - 0.017	NA	-
Carbon tetrachloride	0/56	0.005 - 7.5	-	NA	-
Chlorobenzene	8/56	0.005 - 7.5	0.002J - 1.7J	NA	-
Chloroethane	0/56	0.011 - 15	-	NA	-
Chloroform	0/56	0.005 - 7.5	-	NA	-
Chloromethane	0/56	0.011 - 15	-	NA	-
cis-1,2-Dichloroethene	0/1	0.018 - 0.018	-	NA	-
cis-1,3-Dichloropropene	0/56	0.005 - 7.5	-	NA	-
Dibromochloromethane	0/56	0.005 - 7.5	-	NA	-
Dichlorodifluoromethane	0/1	0.018 - 0.018	-	NA	-
Ethylbenzene	18/56	0.005 - 7.5	0.001J - 40J	NA	-
Isopropylbenzene	0/1	0.018 - 0.018	-	NA	-
Methylene chloride	0/56	0.001 - 23	-	NA	-
Styrene	1/56	0.005 - 7.5	0.005J	NA	-
tert-Butyl methyl ether	0/56	0.037 - 0.037	-	NA	-
Tetrachloroethene	0/1	0.005 - 7.5	-	NA	-
Toluene	0/1	0.001 - 7.5	0.001J - 10	NA	-
trans-1,2-Dichloroethene	16/56	0.018 - 0.018	-	NA	-
trans-1,3-Dichloropropene	0/1	0.005 - 7.5	-	NA	-
Trichloroethene	0/56	0.005 - 7.5	-	NA	-
Trichlorofluoromethane	0/56	0.018 - 0.018	-	NA	-
Vinyl acetate	0/54	0.011 - 15	-	NA	-
Vinyl chloride	0/56	0.011 - 15	-	NA	-
Xylene (Total)	24/56	0.005 - 7.5	0.001J - 320	NA	-
PETROLEUM HYDROCARBONS					
Gasoline range organics	10/56	0.6 - 650	7 - 360	NA	-
Diesel range organics	23/62	5.5 - 1800	14 - 11000	NA	-
Motor oil range organics	6/7	11 - 560	11J - 9200	NA	-
TPH-extractable unknown hydrocarbon	18/23	11 - 790	21 - 2800	NA	-
TPH-purgeable unknown hydrocarbon	9/19	1 - 59	2 - 3000	NA	-
Total TPH	47/65	-	7 - 18264	NA	-
Total oil & grease	49/54	27 - 100	99J - 300000	NA	-

Notes
(a) - Detection limits are reported as the laboratory reporting limits
(b) - Hunters Point ambient levels is determined on a location specific basis
-- No criteria available for this analyte
BHC - benzene hexachloride
DDE - dichlorodiphenyldichloroethene
DDT - dichlorodiphenyltrichloroethane
J - Estimated value
NA - not available
PCB - polychlorinated biphenyl
TPH - total petroleum hydrocarbon

ERRG

Table 4-6 Summary of Detected Exceedances of Evaluation Criteria in the Landfill Area (2-10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
Metals			
Aluminum	100000	2004 PRG Industrial	0
Antimony	380	2005 ESL Industrial (direct exp)	3
Arsenic	11.1	HPAL	5
Barium	63000	2005 ESL Industrial (direct exp)	0
Beryllium	1700	2005 ESL Industrial (direct exp)	0
Cadmium	7.4	2005 ESL Industrial (direct exp)	7
Calcium	-		-
Chromium (total)	a	See note	8
Chromium VI	37	2005 ESL Industrial (direct exp)	0
Cobalt	a	See note	0
Copper	38000	2005 ESL Industrial (direct exp)	3
Cyanide (free)	12000	2004 PRG Industrial	0
Iron	100000	2004 PRG Industrial	4
Lead	800	2004 PRG Industrial	6
Magnesium	-		-
Manganese	19000	2004 PRG Industrial	0
Mercury	180	2005 ESL Industrial (direct exp)	0
Molybdenum	4800	2005 ESL Industrial (direct exp)	0
Nickel	a	See note	0
Potassium	-		-
Selenium	4800	2005 ESL Industrial (direct exp)	0
Silver	4800	2005 ESL Industrial (direct exp)	0
Sodium	-		0
Thallium	63	2005 ESL Industrial (direct exp)	0
Tin	100000	2004 PRG Industrial	0
Vanadium	1000	2004 PRG Industrial	1
Zinc	100000	2004 PRG Industrial	0
PESTICIDES			
2,4'-DDD	9	2005 ESL Industrial (direct exp)	0
2,4'-DDE	6.3	2005 ESL Industrial (direct exp)	0
2,4'-DDT	6.3	2005 ESL Industrial (direct exp)	0
4,4'-DDD	9	2005 ESL Industrial (direct exp)	0
4,4'-DDE	6.3	2005 ESL Industrial (direct exp)	0
4,4'-DDT	6.3	2005 ESL Industrial (direct exp)	0
Aldrin	0.1	2004 PRG Industrial	0
alpha-BHC	0.36	2004 PRG Industrial	0
Alpha-chlordane	2.9	SDGI Industrial Criteria	0
beta-BHC	1.3	2004 PRG Industrial	0
Chlordane	1.7	2005 ESL Industrial (direct exp)	0
cis-Nonachlor	-		-
delta-BHC	0.59	SDGI Industrial Criteria	0
Dieldrin	0.11	2004 PRG Industrial	0
Endosulfan I	3700	2004 PRG Industrial	0
Endosulfan II	3700	2004 PRG Industrial	0
Endosulfan sulfate	5300	SDGI Industrial Criteria	0
Endrin	190	2004 PRG Industrial	0
Endrin aldehyde	260	SDGI Industrial Criteria	0
Endrin ketone	260	SDGI Industrial Criteria	0
Gamma-BHC (lindane)	1.7	2004 PRG Industrial	0
Gamma-chlordane	2.9	SDGI Industrial Criteria	0
Heptachlor	0.38	2004 PRG Industrial	0
Heptachlor epoxide	0.19	2004 PRG Industrial	0
Heptachlor epoxide A	-		-
Heptachlor epoxide B	-		-
Hexachlorobenzene	0.96	2005 ESL Industrial (direct exp)	0
Methoxychlor	3100	2004 PRG Industrial	0
Mirex	-		-
Oxychlordane	-		-
trans-Nonachlor	21	2004 PRG Industrial	0
Toxaphene	1.6	2004 PRG Industrial	0

Table 4-6 Summary of Detected Exceedances of Evaluation Criteria in the Landfill Area (2-10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
PCBs			
Aroclor-1016	21	2004 PRG Industrial	0
Aroclor-1221	0.74	2004 PRG Industrial	0
Aroclor-1232	0.74	2004 PRG Industrial	0
Aroclor-1242	0.74	2004 PRG Industrial	0
Aroclor-1248	0.74	2004 PRG Industrial	0
Aroclor-1254	0.74	2004 PRG Industrial	0
Aroclor-1260	0.74	2004 PRG Industrial	0
Total PCBs	0.74	2004 PRG Industrial	18
SEMIVOLATILE ORGANIC COMPOUNDS			
1,2,4-Trichlorobenzene	5	2005 ESL Industrial (inhalation)	0
1,2,4-Trimethylbenzene	170	2004 PRG Industrial	0
1,2-Dichlorobenzene	21	2005 ESL Industrial (inhalation)	0
1,3,5-Trimethylbenzene	70	2004 PRG Industrial	0
1,3-Dichlorobenzene	600	2004 PRG Industrial	0
1,4-Dichlorobenzene	0.13	2005 ESL Industrial (inhalation)	9
2,2'-Oxybis(1-chloropropane)	7.4	2004 PRG Industrial	0
2,4,5-Trichlorophenol	310	2005 ESL Industrial (inhalation)	0
2,4,6-Trichlorophenol	25	2005 ESL Industrial (direct exp)	0
2,4-Dichlorophenol	1800	2004 PRG Industrial	0
2,4-Dimethylphenol	1500	2005 ESL Industrial (inhalation)	0
2,4-Dinitrophenol	1200	2004 PRG Industrial	0
2,4-Dinitrotoluene	5.6	2005 ESL Industrial (direct exp)	0
2,6-Dinitrotoluene	620	2004 PRG Industrial	0
2-Chloronaphthalene	23000	2004 PRG Industrial	0
2-Chlorophenol	10	2005 ESL Industrial (inhalation)	0
2-Methylnaphthalene	550	2005 ESL Industrial (inhalation)	1
2-Methylphenol	31000	2004 PRG Industrial	0
2-Nitroaniline	1800	2004 PRG Industrial	0
2-Nitrophenol	-		-
3,3'-Dichlorobenzidine	1.4	2005 ESL Industrial (direct exp)	0
3-Nitroaniline	82	2004 PRG Industrial	0
4,6-Dinitro-2-methylphenol	-		-
4-Bromophenyl-phenylether	-		-
4-Chloro-3-methylphenol	-		-
4-Chloroaniline	2500	2004 PRG Industrial	0
4-Chlorophenyl-phenylether	-		-
4-Methylphenol	3100	2004 PRG Industrial	0
4-Nitroaniline	82	2004 PRG Industrial	0
4-Nitrophenol	7000	SDGI Industrial Criteria	0
Acenaphthene	650	2005 ESL Industrial (inhalation)	0
Acenaphthylene	18000	2005 ESL Industrial (direct exp)	0
Aniline	300	2004 PRG Industrial	0
Anthracene	31	2005 ESL Industrial (inhalation)	1
Azobenzene	16	2004 PRG Industrial	0
Benzidine	-		-
Benzo(a)anthracene	1.3	2005 ESL Industrial (direct exp)	4
Benzo(a)pyrene	0.33	SDGI Industrial Criteria	6
Benzo(b)fluoranthene	1.3	2005 ESL Industrial (direct exp)	4
Benzo(e)pyrene	-		-
Benzo(g,h,i)perylene	22000	2005 ESL Industrial (direct exp)	0
Benzo(k)fluoranthene	1.3	2005 ESL Industrial (direct exp)	4
Benzoic acid	100000	2004 PRG Industrial	0
Benzyl alcohol	100000	2004 PRG Industrial	0
Biphenyl	18000	2005 ESL Industrial (direct exp)	0
Bis(2-chloroethoxy)methane	-		-
Bis(2-chloroethyl)ether	0.012	2005 ESL Industrial (inhalation)	0
Bis(2-ethylhexyl)phthalate	120	2004 PRG Industrial	0
Butylbenzylphthalate	100000	2004 PRG Industrial	0
Carbazole	86	2004 PRG Industrial	0
Chrysene	13	2005 ESL Industrial (direct exp)	2
Dibenz(a,h)anthracene	0.33	SDGI Industrial Criteria	1
Dibenzofuran	1600	2004 PRG Industrial	0
Diethylphthalate	100000	2004 PRG Industrial	0
Dimethylphthalate	100000	2004 PRG Industrial	0
Di-n-butylphthalate	62000	2004 PRG Industrial	0
Di-n-octylphthalate	25000	2004 PRG Industrial	0
Fluoranthene	22000	2004 PRG Industrial	0
Fluorene	800	2005 ESL Industrial (inhalation)	0

Table 4-6 Summary of Detected Exceedances of Evaluation Criteria in the Landfill Area (2-10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
SEMIVOLATILE ORGANIC COMPOUNDS (continued)			
Hexachlorobenzene	0.96	2005 ESL Industrial (direct exp)	0
Hexachlorobutadiene	22	2004 PRG Industrial	0
Hexachlorocyclopentadiene	3700	2004 PRG Industrial	0
Hexachloroethane	44	2005 ESL Industrial (direct exp)	0
Indeno(1,2,3-cd)pyrene	1.3	2005 ESL Industrial (direct exp)	3
Isophorone	510	2004 PRG Industrial	0
Napthalene	1.5	2005 ESL Industrial (inhalation)	11
Nitrobenzene	100	2004 PRG Industrial	0
n-Nitrosodimethylamine	0.034	2004 PRG Industrial	0
n-Nitroso-di-n-propylamine	0.25	2004 PRG Industrial	0
n-Nitrosodiphenylamine	350	2004 PRG Industrial	0
Pentachlorophenol	9	2004 PRG Industrial	0
Phenacetin	-		-
Phenanthrene	18000	2005 ESL Industrial (direct exp)	0
Phenol	100000	2004 PRG Industrial	0
Pyrene	430	2005 ESL Industrial (inhalation)	0
VOLATILE ORGANIC COMPOUNDS			
1,1,1,2-Tetrachloroethane	6.9	2005 ESL Industrial (direct exp)	0
1,1,1-Trichloroethane	230	2005 ESL Industrial (inhalation)	0
1,1,2,2-Tetrachloroethane	0.025	2005 ESL Industrial (inhalation)	0
1,1,2-Trichloro-1,2,2-trifluoroethane	-		-
1,1,2-Trichloroethane	0.089	2005 ESL Industrial (inhalation)	0
1,1-Dichloroethane	0.89	2005 ESL Industrial (inhalation)	0
1,1-Dichloroethene	105	2005 ESL Industrial (inhalation)	0
1,1-Dichloropropene	-		-
1,2,3-Trichlorobenzene	-		-
1,2,3-Trichloropropane	-		-
1,2,4-Trichlorobenzene	5	2005 ESL Industrial (inhalation)	0
1,2,4-Trimethylbenzene	170	2004 PRG Industrial	0
1,2-Dibromo-3-chloropropane	0.067	2005 ESL Industrial (direct exp)	0
1,2-Dibromoethane	0.02	2005 ESL Industrial (inhalation)	0
1,2-Dichlorobenzene	21	2005 ESL Industrial (inhalation)	0
1,2-Dichloroethane	0.07	2005 ESL Industrial (inhalation)	0
1,2-Dichloroethene (Total)	150	SDGI Industrial Criteria	0
1,2-Dichloropropane	0.14	2005 ESL Industrial (inhalation)	0
1,3,5-Trimethylbenzene	70	2004 PRG Industrial	0
1,3-Dichlorobenzene	600	2004 PRG Industrial	0
1,3-Dichloropropane	-		-
1,4-Dichlorobenzene	0.13	2005 ESL Industrial (inhalation)	0
2,2-Dichloropropane	-		0
2-Butanone	6500	2005 ESL Industrial (inhalation)	0
2-Chloroethyl vinyl ether	-		-
2-Chlorotoluene	-		-
2-Hexanone	-		-
4-Chlorotoluene	-		-
4-Methyl-2-pentanone	1550	2005 ESL Industrial (inhalation)	0
Acetone	16500	2005 ESL Industrial (inhalation)	0
Benzene	0.38	2005 ESL Industrial (direct exp)	0
Bromobenzene	-		-
Bromochloromethane	-		-
Bromodichloromethane	0.039	2005 ESL Industrial (inhalation)	0
Bromoform	220	2004 PRG Industrial	0
Bromomethane	2.6	2005 ESL Industrial (inhalation)	0
Carbon disulfide	720	2004 PRG Industrial	0
Carbon tetrachloride	0.034	2005 ESL Industrial (inhalation)	0
Chlorobenzene	31	2005 ESL Industrial (inhalation)	0
Chloroethane	1.8	2005 ESL Industrial (inhalation)	0
Chloroform	0.47	2004 PRG Industrial	0
Chloromethane	0.2	2005 ESL Industrial (inhalation)	0
cis-1,2-Dichloroethene	18	2005 ESL Industrial (inhalation)	0
cis-1,3-Dichloropropene	0.093	2005 ESL Industrial (inhalation)	0
Dibromochloromethane	0.054	2005 ESL Industrial (inhalation)	0
Dibromomethane	-		-
Dichlorodifluoromethane	310	2004 PRG Industrial	0
Ethylbenzene	390	2005 ESL Industrial (inhalation)	0
Hexachlorobutadiene	22	2004 PRG Industrial	0
Isopropylbenzene	2000	2004 PRG Industrial	0
Methylene chloride	1.5	2005 ESL Industrial (inhalation)	0

Table 4-6 Summary of Detected Exceedances of Evaluation Criteria in the Landfill Area (2-10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
VOLATILE ORGANIC COMPOUNDS (continued)			
Naphthalene	1.5	2005 ESL Industrial (inhalation)	0
n-Butylbenzene	240	2004 PRG Industrial	0
o-Xylene	210	SDGI Industrial Criteria	0
para-Isopropyl toluene	-		-
Propylbenzene	240	2004 PRG Industrial	0
sec-Butylbenzene	220	2004 PRG Industrial	0
Styrene	1100	2005 ESL Industrial (inhalation)	0
tert-Butyl methyl ether	5.6	2005 ESL Industrial (inhalation)	0
tert-Butylbenzene	390	2004 PRG Industrial	0
Tetrachloroethene	0.24	2005 ESL Industrial (inhalation)	0
Toluene	520	2004 PRG Industrial	0
trans-1,2-Dichloroethene	37	2005 ESL Industrial (inhalation)	0
trans-1,3-Dichloropropene	0.093	2005 ESL Industrial (inhalation)	0
Trichloroethene	0.11	2004 PRG Industrial	0
Trichlorofluoromethane	2000	2004 PRG Industrial	0
Vinyl acetate	1400	2004 PRG Industrial	0
Vinyl chloride	0.019	2005 ESL Industrial (inhalation)	0
Xylene (Total)	420	2004 PRG Industrial	0
PETROLEUM HYDROCARBONS			
Gasoline range organics	750	2005 ESL Industrial (direct exp)	0
Diesel range organics	750	2005 ESL Industrial (direct exp)	7
Motor oil range organics	4600	2005 ESL Industrial (direct exp)	1
TPH-extractable unknown hydrocarbon	4600	2005 ESL Industrial (direct exp)	0
TPH-purgeable unknown hydrocarbon	750	2005 ESL Industrial (direct exp)	0
Total TPH	3500	HPS TPH source criterion	6
Total oil & grease	3500	HPS TPH source criterion	13

(a) PRC Environmental Management, Inc. 1995. "Draft Calculation of Hunters Point Ambient Levels." April 11.

-- No criteria available for this analyte

BHC - benzene hexachloride

DDD - dichlorodiphenyldichloroethane

DDE - dichlorodiphenyldichloroethene

DDT - dichlorodiphenyltrichloroethane

ESL - environmental screening level

HPAL - Hunters Point ambient level

mg/kg - milligrams per kilogram

NE - not established

PCB - polychlorinated biphenyl

PRG - preliminary remediation goal

TPH - total petroleum hydrocarbon

Table 4-7 Summary of Analyses and Detections in the Landfill Area (greater than 10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
Anions					
Aluminum	92/92	0.18 - 7.1	921 - 41000	NA	-
Antimony	47/81	0.011 - 80.8	0.084J - 278J	9.05	23
Arsenic	80/92	0.053 - 6.3	0.64J - 49J	11.1	21
Barium	92/92	0.042 - 1.8	6.2 - 588	314.4	7
Beryllium	66/92	0.011 - 0.71	0.059J - 1.8	0.71	15
Cadmium	47/92	0.011 - 1.2	0.067J - 113	3.14	17
Calcium	92/92	0.89 - 11.5	1020 - 55000	NA	-
Chromium	91/92	0.05 - 18.7	23 - 3590	(b)	26
Chromium VI	7/97	0.05 - 0.48	0.014J - 0.15J	NA	-
Cobalt	92/92	0.011 - 2.8	2.9 - 106J	(b)	3
Copper	92/92	0.012 - 0.6	4.4 - 13400J	124.3	36
Cyanide	31/81	0.1 - 1.9	0.07J - 1.6	NA	-
Iron	92/92	0.47 - 21.2	6810 - 163000	NA	-
Lead	91/92	0.011 - 45.2	1.5 - 15700	8.99	73
Magnesium	92/92	0.12 - 19.3	978 - 158000	NA	-
Manganese	92/92	0.011 - 0.26	69.9 - 2120	1431.2	3
Mercury	55/92	0.0057 - 10	0.026J - 22.4	2.28	19
Molybdenum	48/92	0.011 - 10.8	0.17 - 641	2.68	22
Nickel	92/92	0.011 - 10.3	20.2J - 1560	(b)	7
Potassium	87/92	0.53 - 675	236 - 6150	NA	-
Selenium	19/78	0.027 - 6.7	0.19J - 1.8J	1.95	0
Silver	50/92	0.011 - 1.1	0.086J - 13.7	1.43	14
Sodium	92/92	0.72 - 28.9	99.7 - 10300J	NA	-
Thallium	10/92	0.038 - 2.9	0.049J - 0.29	0.81	0
Tin	10/17	3 - 5	5.2 - 591	33227	-
Vanadium	91/92	0.3 - 1.7	5.7 - 221	117.2	2
Zinc	92/92	0.11 - 0.87	10.9J - 14800	109.9	39
PCBs and PESTICIDES					
4,4'-DDD	1/87	0.0038 - 43	0.17	NA	-
4,4'-DDE	1/87	0.0039 - 43	0.15	NA	-
4,4'-DDT	0/87	0.0039 - 43	-	NA	-
Aldrin	0/87	0.002 - 22	-	NA	-
Alpha-BHC	0/87	0.0019 - 22	-	NA	-
Alpha-chlordane	0/87	0.0019 - 220	-	NA	-
beta-BHC	0/87	0.0019 - 22	-	NA	-
Chlordane	0/20	0.019 - 1	-	NA	-
delta-BHC	0/87	0.0019 - 22	-	NA	-
Dieldrin	0/87	0.0039 - 43	-	NA	-
Endosulfan I	0/87	0.0019 - 22	-	NA	-
Endosulfan II	0/87	0.0038 - 43	-	NA	-
Endosulfan sulfate	0/87	0.0039 - 43	-	NA	-
Endrin	0/87	0.0038 - 43	-	NA	-
Endrin aldehyde	0/22	0.0039 - 0.99	-	NA	-
Endrin ketone	0/87	0.0039 - 43	-	NA	-
Gamma-BHC (lindane)	0/87	0.0019 - 22	-	NA	-
Gamma-chlordane	0/87	0.002 - 220	-	NA	-
Heptachlor	0/87	0.0019 - 22	-	NA	-
Heptachlor epoxide	0/87	0.0019 - 22	-	NA	-
Methoxychlor	0/87	0.018 - 220	-	NA	-
Mirex	0/20	0.0019 - 0.1	-	NA	
Toxaphene	0/87	0.076 - 430	-	NA	-
Aroclor-1016	2/87	0.017 - 220	0.21 - 250	NA	-
Aroclor-1221	0/87	0.017 - 220	-	NA	-
Aroclor-1232	0/87	0.017 - 220	-	NA	-
Aroclor-1242	13/87	0.017 - 220	0.036J - 32000	NA	-
Aroclor-1248	1/87	0.017 - 220	0.089J	NA	-
Aroclor-1254	4/87	0.017 - 430	0.034J - 1.2	NA	-
Aroclor-1260	34/87	0.006 - 430	0.0041 - 26	NA	-
Total PCBs	43/87	0.006 - 430	0.0041 - 26	NA	-
SEMIVOLATILE ORGANIC COMPOUNDS					
1,2,4-Trichlorobenzene	0/72	0.0097 - 46	-	NA	-
1,2-Dichlorobenzene	2/72	0.0097 - 46	0.057J - 1.8J	NA	-
1,3-Dichlorobenzene	0/72	0.0097 - 46	-	NA	-

Table 4-7 Summary of Analyses and Detections in the Landfill Area (greater than 10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
SEMIVOLATILE ORGANIC COMPOUNDS (Continued)					
1,4-Dichlorobenzene	10/72	0.0097 - 46	0.12J - 6.5	NA	-
2,2'-Oxybis(1-chloropropane)	0/72	0.2 - 46	-	NA	-
2,4,5-Trichlorophenol	0/72	0.97 - 230	-	NA	-
2,4,6-Trichlorophenol	0/72	0.2 - 46	-	NA	-
2,4-Dichlorophenol	0/72	0.2 - 46	-	NA	-
2,4-Dimethylphenol	3/72	0.2 - 46	0.69 - 11	NA	-
2,4-Dinitrophenol	0/72	0.97 - 230	-	NA	-
2,4-Dinitrotoluene	0/72	0.2 - 46	-	NA	-
2,6-Dinitrotoluene	0/72	0.2 - 46	-	NA	-
2-Chloronaphthalene	0/72	0.2 - 46	-	NA	-
2-Chlorophenol	0/72	0.2 - 46	-	NA	-
2-Methylnaphthalene	17/72	0.2 - 46	0.066J - 21	NA	-
2-Methylphenol	0/72	0.2 - 46	-	NA	-
2-Nitroaniline	0/72	0.97 - 230	-	NA	-
2-Nitrophenol	0/72	0.2 - 46	-	NA	-
3,3'-Dichlorobenzidine	0/72	0.4 - 91	-	NA	-
3-Nitroaniline	0/72	0.97 - 230	-	NA	-
4,6-Dinitro-2-methylphenol	0/72	0.97 - 230	-	NA	-
4-Bromophenyl-phenylether	0/72	0.2 - 46	-	NA	-
4-Chloro-3-methylphenol	0/72	0.2 - 46	-	NA	-
4-Chloroaniline	0/72	0.2 - 46	-	NA	-
4-Chlorophenyl-phenylether	0/72	0.2 - 46	-	NA	-
4-Methylphenol	5/72	0.2 - 46	0.19J - 8.9J	NA	-
4-Nitroaniline	0/72	0.97 - 230	-	NA	-
4-Nitrophenol	0/72	0.97 - 230	-	NA	-
Acenaphthene	9/72	0.2 - 46	0.14J - 7	NA	-
Acenaphthylene	0/92	0.2 - 46	-	NA	-
Anthracene	7/92	0.2 - 46	0.083J - 2.3J	NA	-
Benzo(a)anthracene	12/92	0.2 - 46	0.086J - 7.6J	NA	-
Benzo(a)pyrene	7/92	0.2 - 46	0.028J - 0.85J	NA	-
Benzo(b)fluoranthene	8/92	0.2 - 46	0.027J - 1.8J	NA	-
Benzo(e)pyrene	0/20	0.4 - 6.4	-	NA	-
Benzo(g,h,i)perylene	7/92	0.2 - 46	0.026J - 2.8J	NA	-
Benzo(k)fluoranthene	4/92	0.2 - 46	0.088J - 2.7J	NA	-
Benzoic acid	0/71	0.97 - 230	-	NA	-
Benzyl alcohol	1/71	0.2 - 46	0.038J	NA	-
Biphenyl	0/20	0.36 - 5.8	-	NA	-
Bis(2-chloroethoxy)methane	0/72	0.2 - 46	-	NA	-
Bis(2-chloroethyl)ether	0/72	0.2 - 46	-	NA	-
Bis(2-ethylhexyl)phthalate	3/92	0.041 - 170	13 - 68	NA	-
Butylbenzylphthalate	0/72	0.074 - 46	-	NA	-
Carbazole	0/21	0.4 - 6.4	-	NA	-
Chrysene	14/92	0.2 - 46	0.041J - 5	NA	-
Dibenz(a,h)anthracene	0/92	0.2 - 46	-	NA	-
Dibenzofuran	9/92	0.2 - 46	0.08J - 5	NA	-
Diethylphthalate	0/92	0.2 - 46	-	NA	-
Dimethylphthalate	0/72	0.2 - 46	-	NA	-
Di-n-butylphthalate	0/72	0.047 - 46	-	NA	-
Di-n-octylphthalate	1/72	0.091 - 46	98	NA	-
Fluoranthene	21/92	0.2 - 46	0.031J - 12	NA	-
Fluorene	13/92	0.2 - 46	0.048J - 7.4	NA	-
Hexachlorobenzene	0/72	0.2 - 46	-	NA	-
Hexachlorobutadiene	0/72	0.2 - 46	-	NA	-
Hexachlorocyclopentadiene	0/72	0.2 - 46	-	NA	-
Hexachloroethane	0/72	0.2 - 46	-	NA	-
Indeno(1,2,3-cd)pyrene	6/92	0.2 - 46	0.027J - 2J	NA	-
Isophorone	0/72	0.2 - 46	-	NA	-
Naphthalene	20/92	0.13 - 46	0.074J - 31	NA	-
Nitrobenzene	0/72	0.2 - 46	-	NA	-
n-Nitroso-di-n-propylamine	1/92	0.2 - 46	0.43J	NA	-
n-Nitrosodiphenylamine	2/92	0.2 - 46	0.2J - 1.5	NA	-
Pentachlorophenol	0/20	0.97 - 230	-	NA	-
Phenacetin	0/92	0.79 - 13	-	NA	-
Phenanthrene	24/92	0.2 - 46	0.066J - 21	NA	-
Phenol	3/92	0.2 - 46	0.2J - 3.6J	NA	-
Pyrene	22/92	0.16 - 46	0.036J - 10	NA	-

Table 4-7 Summary of Analyses and Detections in the Landfill Area (greater than 10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[(a)] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
VOLATILE ORGANIC COMPOUNDS					
1,1,1-Trichloroethane	0/74	0.005 - 15	-	NA	-
1,1,2,2-Tetrachloroethane	0/74	0.005 - 15	-	NA	-
1,1,2-Trichloro-1,2,2-trifluoroethane	0/3	0.019 - 0.039	-	NA	-
1,1,2-Trichloroethane	1/74	0.005 - 15	0.002J	NA	-
1,1-Dichloroethane	0/74	0.005 - 15	-	NA	-
1,1-Dichloroethene	0/74	0.005 - 15	-	NA	-
1,2,3-Trichlorobenzene	1/3	0.0097 - 0.02	0.0028J	NA	-
1,2,4-Trichlorobenzene	1/3	0.0097 - 46	0.0093J	NA	-
1,2-Dibromo-3-chloropropane	0/3	0.019 - 0.039	-	NA	-
1,2-Dibromoethane	0/3	0.0097 - 0.02	-	NA	-
1,2-Dichlorobenzene	2/3	0.0097 - 46	0.0048J - 0.017J	NA	-
1,2-Dichloroethane	0/74	0.005 - 15	-	NA	-
1,2-Dichloroethene (Total)	0/74	0.005 - 15	-	NA	-
1,2-Dichloropropane	0/74	0.005 - 15	-	NA	-
1,3-Dichlorobenzene	2/3	0.0097 - 46	0.003 - 0.03	NA	-
1,4-Dichlorobenzene	2/3	0.0097 - 46	0.0048 - 0.048	NA	-
2-Butanone	3/74	0.004 - 31	0.026 - 0.045	NA	-
2-Hexanone	0/74	0.011 - 31	-	NA	-
4-Methyl-2-pentanone	3/73	0 - 31	0.083 - 1.7	NA	-
Acetone	4/74	0.009 - 31	0.16J - 0.3	NA	-
Benzene	11/74	0.005 - 15	0.0015J - 0.051J	NA	-
Bromochloromethane	0/3	0.0097 - 0.02	-	NA	-
Bromodichloromethane	0/74	0.005 - 15	-	NA	-
Bromoform	0/74	0.005 - 15	-	NA	-
Bromomethane	0/74	0.0097 - 31	-	NA	-
Carbon disulfide	18/74	0.005 - 15	0.002J - 0.021	NA	-
Carbon tetrachloride	1/74	0.005 - 15	0.37J	NA	-
Chlorobenzene	16/74	0.005 - 15	0.002J - 6.3	NA	-
Chloroethane	0/74	0.0097 - 31	-	NA	-
Chloroform	2/74	0.005 - 15	0.002J - 0.003J	NA	-
Chloromethane	0/74	0.0097 - 31	-	NA	-
cis-1,2-Dichloroethene	0/3	0.0097 - 0.02	-	NA	-
cis-1,3-Dichloropropene	0/74	0.005 - 15	-	NA	-
Dibromochloromethane	0/74	0.005 - 15	-	NA	-
Dichlorodifluoromethane	0/3	0.0097 - 0.02	-	NA	-
Ethylbenzene	23/74	0.005 - 15	0.004J - 56J	NA	-
Isopropylbenzene	1/3	0.0097 - 0.02	0.0058J	NA	-
Methylene chloride	1/74	0.002 - 13	0.47	NA	-
Styrene	0/74	0.005 - 15	-	NA	-
tert-Butyl methyl ether	0/3	0.019 - 0.039	-	NA	-
Tetrachloroethene	1/74	0.005 - 15	0.29J	NA	-
Toluene	16/74	0.005 - 15	0.001J - 2.2	NA	-
trans-1,2-Dichloroethene	0/3	0.0097 - 0.02	-	NA	-
trans-1,3-Dichloropropene	0/74	0.005 - 15	-	NA	-
Trichloroethene	0/74	0.005 - 15	-	NA	-
Trichlorofluoromethane	0/3	0.0097 - 0.02	-	NA	-
Vinyl acetate	0/70	0.011 - 31	-	NA	-
Vinyl chloride	0/74	0.0097 - 31	-	NA	-
Xylene (Total)	30/74	0.005 - 15	0.002J - 520J	NA	-
PETROLEUM HYDROCARBONS					
Gasoline range organics	21/67	0.55 - 620	8 - 9200	NA	-
Diesel range organics	35/74	11 - 690	7.4 - 9400	NA	-
Motor oil range organics	5/7	11 - 210	14 - 2000	NA	-
TPH-extractable unknown hydrocarbon	8/18	12 - 540	45 - 2300	NA	-
TPH-purgeable unknown hydrocarbon	5/15	1 - 62	2 - 1900	NA	-
Total TPH	45/74	-	15 - 9740	NA	-
Total oil & grease	49/65	26 - 110	32 - 100000J	NA	-

Notes
(a) - Detection limits are reported as the laboratory reporting limits
(b) - Hunters Point ambient levels is determined on a location specific basis
-- No criteria available for this analyte
BHC - benzene hexachloride
DDD - dichlorodiphenyldichloroethane
DDE - dichlorodiphenyldichloroethene
DDT - dichlorodiphenyltrichloroethane
J - Estimated value
mg/kg - milligrams per kilogram
NA - not available
PCB - polychlorinated biphenyl
TPH - total petroleum hydrocarbon

Table 4-8 Summary of Detected Exceedances of Evaluation Criteria in the Landfill Area (greater than 10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
Metals			
Aluminum	100000	2004 PRG Industrial	0
Antimony	380	2005 ESL Industrial (direct exp)	0
Arsenic	11.1	HPAL	19
Barium	63000	2005 ESL Industrial (direct exp)	0
Beryllium	1700	2005 ESL Industrial (direct exp)	0
Cadmium	7.4	2005 ESL Industrial (direct exp)	8
Calcium	-		-
Chromium (total)	a	See note	4
Chromium VI	37	2005 ESL Industrial (direct exp)	0
Cobalt	a	See note	0
Copper	38000	2005 ESL Industrial (direct exp)	0
Cyanide (free)	12000	2004 PRG Industrial	0
Iron	100000	2004 PRG Industrial	2
Lead	800	2004 PRG Industrial	7
Magnesium	-		-
Manganese	19000	2004 PRG Industrial	0
Mercury	180	2005 ESL Industrial (direct exp)	0
Molybdenum	4800	2005 ESL Industrial (direct exp)	0
Nickel	a	See note	0
Potassium	-		-
Selenium	4800	2005 ESL Industrial (direct exp)	0
Silver	4800	2005 ESL Industrial (direct exp)	0
Sodium	-		0
Thallium	63	2005 ESL Industrial (direct exp)	0
Tin	100000	2004 PRG Industrial	0
Vanadium	1000	2004 PRG Industrial	0
Zinc	100000	2004 PRG Industrial	0
PESTICIDES			
2,4'-DDD	9	2005 ESL Industrial (direct exp)	0
2,4'-DDE	6.3	2005 ESL Industrial (direct exp)	0
2,4'-DDT	6.3	2005 ESL Industrial (direct exp)	0
4,4'-DDD	9	2005 ESL Industrial (direct exp)	0
4,4'-DDE	6.3	2005 ESL Industrial (direct exp)	0
4,4'-DDT	6.3	2005 ESL Industrial (direct exp)	0
Aldrin	0.1	2004 PRG Industrial	0
alpha-BHC	0.36	2004 PRG Industrial	0
Alpha-chlordane	2.9	SDGI Industrial Criteria	0
beta-BHC	1.3	2004 PRG Industrial	0
Chlordane	1.7	2005 ESL Industrial (direct exp)	0
cis-Nonachlor	-		-
delta-BHC	0.59	SDGI Industrial Criteria	0
Dieldrin	0.11	2004 PRG Industrial	0
Endosulfan I	3700	2004 PRG Industrial	0
Endosulfan II	3700	2004 PRG Industrial	0
Endosulfan sulfate	5300	SDGI Industrial Criteria	0
Endrin	190	2004 PRG Industrial	0
Endrin aldehyde	260	SDGI Industrial Criteria	0
Endrin ketone	260	SDGI Industrial Criteria	0
Gamma-BHC (lindane)	1.7	2004 PRG Industrial	0
Gamma-chlordane	2.9	SDGI Industrial Criteria	0
Heptachlor	0.38	2004 PRG Industrial	0
Heptachlor epoxide	0.19	2004 PRG Industrial	0
Heptachlor epoxide A	-		-
Heptachlor epoxide B	-		-
Hexachlorobenzene	0.96	2005 ESL Industrial (direct exp)	0
Methoxychlor	3100	2004 PRG Industrial	0
Mirex	-		-
Oxychlordane	-		-
trans-Nonachlor	21	2004 PRG Industrial	0
Toxaphene	1.6	2004 PRG Industrial	0

Table 4-8 Summary of Detected Exceedances of Evaluation Criteria in the Landfill Area (greater than 10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
PCBs			
Aroclor-1016	21	2004 PRG Industrial	0
Aroclor-1221	0.74	2004 PRG Industrial	0
Aroclor-1232	0.74	2004 PRG Industrial	0
Aroclor-1242	0.74	2004 PRG Industrial	0
Aroclor-1248	0.74	2004 PRG Industrial	0
Aroclor-1254	0.74	2004 PRG Industrial	0
Aroclor-1260	0.74	2004 PRG Industrial	0
Total PCBs	0.74	2004 PRG Industrial	24
SEMIVOLATILE ORGANIC COMPOUNDS			
1,2,4-Trichlorobenzene	5	2005 ESL Industrial (inhalation)	0
1,2,4-Trimethylbenzene	170	2004 PRG Industrial	0
1,2-Dichlorobenzene	21	2005 ESL Industrial (inhalation)	0
1,3,5-Trimethylbenzene	70	2004 PRG Industrial	0
1,3-Dichlorobenzene	600	2004 PRG Industrial	0
1,4-Dichlorobenzene	0.13	2005 ESL Industrial (inhalation)	9
2,2'-Oxybis(1-chloropropane)	7.4	2004 PRG Industrial	0
2,4,5-Trichlorophenol	310	2005 ESL Industrial (inhalation)	0
2,4,6-Trichlorophenol	25	2005 ESL Industrial (direct exp)	0
2,4-Dichlorophenol	1800	2004 PRG Industrial	0
2,4-Dimethylphenol	1500	2005 ESL Industrial (inhalation)	0
2,4-Dinitrophenol	1200	2004 PRG Industrial	0
2,4-Dinitrotoluene	5.6	2005 ESL Industrial (direct exp)	0
2,6-Dinitrotoluene	620	2004 PRG Industrial	0
2-Chloronaphthalene	23000	2004 PRG Industrial	0
2-Chlorophenol	10	2005 ESL Industrial (inhalation)	0
2-Methylnaphthalene	550	2005 ESL Industrial (inhalation)	0
2-Methylphenol	31000	2004 PRG Industrial	0
2-Nitroaniline	1800	2004 PRG Industrial	0
2-Nitrophenol	-		-
3,3'-Dichlorobenzidine	1.4	2005 ESL Industrial (direct exp)	0
3-Nitroaniline	82	2004 PRG Industrial	0
4,6-Dinitro-2-methylphenol	-		-
4-Bromophenyl-phenylether	-		-
4-Chloro-3-methylphenol	-		-
4-Chloroaniline	2500	2004 PRG Industrial	0
4-Chlorophenyl-phenylether	-		-
4-Methylphenol	3100	2004 PRG Industrial	0
4-Nitroaniline	82	2004 PRG Industrial	0
4-Nitrophenol	7000	SDGI Industrial Criteria	0
Acenaphthene	650	2005 ESL Industrial (inhalation)	0
Acenaphthylene	18000	2005 ESL Industrial (direct exp)	0
Aniline	300	2004 PRG Industrial	0
Anthracene	31	2005 ESL Industrial (inhalation)	0
Azobenzene	16	2004 PRG Industrial	0
Benzidine	-		-
Benzo(a)anthracene	1.3	2005 ESL Industrial (direct exp)	3
Benzo(a)pyrene	0.33	SDGI Industrial Criteria	4
Benzo(b)fluoranthene	1.3	2005 ESL Industrial (direct exp)	2
Benzo(e)pyrene	-		-
Benzo(g,h,i)perylene	22000	2005 ESL Industrial (direct exp)	0
Benzo(k)fluoranthene	1.3	2005 ESL Industrial (direct exp)	1
Benzoic acid	100000	2004 PRG Industrial	0
Benzyl alcohol	100000	2004 PRG Industrial	0
Biphenyl	18000	2005 ESL Industrial (direct exp)	0
Bis(2-chloroethoxy)methane	-		-
Bis(2-chloroethyl)ether	0.012	2005 ESL Industrial (inhalation)	0
Bis(2-ethylhexyl)phthalate	120	2004 PRG Industrial	0
Butylbenzylphthalate	100000	2004 PRG Industrial	0
Carbazole	86	2004 PRG Industrial	0
Chrysene	13	2005 ESL Industrial (direct exp)	0
Dibenz(a,h)anthracene	0.33	SDGI Industrial Criteria	0
Dibenzofuran	1600	2004 PRG Industrial	0
Diethylphthalate	100000	2004 PRG Industrial	0
Dimethylphthalate	100000	2004 PRG Industrial	0
Di-n-butylphthalate	62000	2004 PRG Industrial	0
Di-n-octylphthalate	25000	2004 PRG Industrial	0
Fluoranthene	22000	2004 PRG Industrial	0
Fluorene	800	2005 ESL Industrial (inhalation)	0

Table 4-8 Summary of Detected Exceedances of Evaluation Criteria in the Landfill Area (greater than 10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	Comments	Detections Exceeding RI Evaluation Criteria
SEMIVOLATILE ORGANIC COMPOUNDS (continued)			
Hexachlorobenzene	0.96	2005 ESL Industrial (direct exp)	0
Hexachlorobutadiene	22	2004 PRG Industrial	0
Hexachlorocyclopentadiene	3700	2004 PRG Industrial	0
Hexachloroethane	44	2005 ESL Industrial (direct exp)	0
Indeno(1,2,3-cd)pyrene	1.3	2005 ESL Industrial (direct exp)	1
Isophorone	510	2004 PRG Industrial	0
Napthalene	1.5	2005 ESL Industrial (inhalation)	11
Nitrobenzene	100	2004 PRG Industrial	0
n-Nitrosodimethylamine	0.034	2004 PRG Industrial	0
n-Nitroso-di-n-propylamine	0.25	2004 PRG Industrial	1
n-Nitrosodiphenylamine	350	2004 PRG Industrial	0
Pentachlorophenol	9	2004 PRG Industrial	0
Phenacetin	-		-
Phenanthrene	18000	2005 ESL Industrial (direct exp)	0
Phenol	100000	2004 PRG Industrial	0
Pyrene	430	2005 ESL Industrial (inhalation)	0
VOLATILE ORGANIC COMPOUNDS			
1,1,1,2-Tetrachloroethane	6.9	2005 ESL Industrial (direct exp)	0
1,1,1-Trichloroethane	230	2005 ESL Industrial (inhalation)	0
1,1,2,2-Tetrachloroethane	0.025	2005 ESL Industrial (inhalation)	0
1,1,2-Trichloro-1,2,2-trifluoroethane	-		-
1,1,2-Trichloroethane	0.089	2005 ESL Industrial (inhalation)	0
1,1-Dichloroethane	0.89	2005 ESL Industrial (inhalation)	0
1,1-Dichloroethene	105	2005 ESL Industrial (inhalation)	0
1,1-Dichloropropene	-		-
1,2,3-Trichlorobenzene	-		-
1,2,3-Trichloropropane	-		-
1,2,4-Trichlorobenzene	5	2005 ESL Industrial (inhalation)	0
1,2,4-Trimethylbenzene	170	2004 PRG Industrial	0
1,2-Dibromo-3-chloropropane	0.067	2005 ESL Industrial (direct exp)	0
1,2-Dibromoethane	0.02	2005 ESL Industrial (inhalation)	0
1,2-Dichlorobenzene	21	2005 ESL Industrial (inhalation)	0
1,2-Dichloroethane	0.07	2005 ESL Industrial (inhalation)	0
1,2-Dichloroethene (Total)	150	SDGI Industrial Criteria	0
1,2-Dichloropropane	0.14	2005 ESL Industrial (inhalation)	0
1,3,5-Trimethylbenzene	70	2004 PRG Industrial	0
1,3-Dichlorobenzene	600	2004 PRG Industrial	0
1,3-Dichloropropane	-		-
1,4-Dichlorobenzene	0.13	2005 ESL Industrial (inhalation)	0
2,2-Dichloropropane	-		0
2-Butanone	6500	2005 ESL Industrial (inhalation)	0
2-Chloroethyl vinyl ether	-		-
2-Chlorotoluene	-		-
2-Hexanone	-		-
4-Chlorotoluene	-		-
4-Methyl-2-pentanone	1550	2005 ESL Industrial (inhalation)	0
Acetone	16500	2005 ESL Industrial (inhalation)	0
Benzene	0.38	2005 ESL Industrial (direct exp)	0
Bromobenzene	-		-
Bromochloromethane	-		-
Bromodichloromethane	0.039	2005 ESL Industrial (inhalation)	0
Bromoform	220	2004 PRG Industrial	0
Bromomethane	2.6	2005 ESL Industrial (inhalation)	0
Carbon disulfide	720	2004 PRG Industrial	0
Carbon tetrachloride	0.034	2005 ESL Industrial (inhalation)	1
Chlorobenzene	31	2005 ESL Industrial (inhalation)	0
Chloroethane	1.8	2005 ESL Industrial (inhalation)	0
Chloroform	0.47	2004 PRG Industrial	0
Chloromethane	0.2	2005 ESL Industrial (inhalation)	0
cis-1,2-Dichloroethene	18	2005 ESL Industrial (inhalation)	0
cis-1,3-Dichloropropene	0.093	2005 ESL Industrial (inhalation)	0
Dibromochloromethane	0.054	2005 ESL Industrial (inhalation)	0
Dibromomethane	-		-
Dichlorodifluoromethane	310	2004 PRG Industrial	0
Ethylbenzene	390	2005 ESL Industrial (inhalation)	0
Hexachlorobutadiene	22	2004 PRG Industrial	0
Isopropylbenzene	2000	2004 PRG Industrial	0
Methylene chloride	1.5	2005 ESL Industrial (inhalation)	0

Table 4-8 Summary of Detected Exceedances of Evaluation Criteria in the Landfill Area (greater than 10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	Comments	Detections Exceeding RI Evaluation Criteria
VOLATILE ORGANIC COMPOUNDS (continued)			
Naphthalene	1.5	2005 ESL Industrial (inhalation)	0
n-Butylbenzene	240	2004 PRG Industrial	0
o-Xylene	210	SDGI Industrial Criteria	0
para-Isopropyl toluene	-		-
Propylbenzene	240	2004 PRG Industrial	0
sec-Butylbenzene	220	2004 PRG Industrial	0
Styrene	1100	2005 ESL Industrial (inhalation)	0
tert-Butyl methyl ether	5.6	2005 ESL Industrial (inhalation)	0
tert-Butylbenzene	390	2004 PRG Industrial	0
Tetrachloroethene	0.24	2005 ESL Industrial (inhalation)	1
Toluene	520	2004 PRG Industrial	0
trans-1,2-Dichloroethene	37	2005 ESL Industrial (inhalation)	0
trans-1,3-Dichloropropene	0.093	2005 ESL Industrial (inhalation)	0
Trichloroethene	0.11	2004 PRG Industrial	0
Trichlorofluoromethane	2000	2004 PRG Industrial	0
Vinyl acetate	1400	2004 PRG Industrial	0
Vinyl chloride	0.019	2005 ESL Industrial (inhalation)	0
Xylene (Total)	420	2004 PRG Industrial	1
PETROLEUM HYDROCARBONS			
Gasoline range organics	750	2005 ESL Industrial (direct exp)	1
Diesel range organics	750	2005 ESL Industrial (direct exp)	12
Motor oil range organics	4600	2005 ESL Industrial (direct exp)	0
TPH-extractable unknown hydrocarbon	4600	2005 ESL Industrial (direct exp)	0
TPH-purgeable unknown hydrocarbon	750	2005 ESL Industrial (direct exp)	1
Total TPH	3500	HPS TPH source criterion	5
Total oil & grease	3500	HPS TPH source criterion	18

(a) PRC Environmental Management, Inc. 1995. "Draft Calculation of Hunters Point Ambient Levels." April 11.

-- No criteria available for this analyte

BHC - benzene hexachloride

DDD - dichlorodiphenyldichloroethane

DDE - dichlorodiphenyldichloroethene

DDT - dichlorodiphenyltrichloroethane

ESL - environmental screening level

HPAL - Hunters Point ambient level

mg/kg - milligrams per kilogram

PCB - polychlorinated biphenyl

PRG - preliminary remediation goal

TPH - total petroleum hydrocarbon

Table 4-9 Summary of Analyses and Detections in the Panhandle Area (0-2 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
Metals					
Aluminum	67/68	1.3 - 260	1800 - 30000	NA	-
Antimony	18/66	0.77 - 7.4	2.1 - 530	9.05	10
Arsenic	56/68	0.088 - 28	1.8 - 215	11.1	7
Barium	60/68	0.03 - 2	26.4 - 2400	314.4	8
Beryllium	39/68	0.015 - 1	0.05 - 1.2	0.71	2
Cadmium	22/68	0.054 - 2.9	0.22 - 8.9	3.14	7
Calcium	67/68	0.89 - 270	2110 - 81000	NA	-
Chromium	67/68	0.1 - 9	24 - 860	(b)	5
Chromium VI	6/73	0.05 - 0.71	0.06 - 10	NA	-
Cobalt	62/68	0.16 - 9	4.1 - 100	(b)	4
Copper	65/68	0.23 - 25	11.2 - 5300	124.3	25
Cyanide	5/13	0.07 - 0.6	0.06 - 0.51	NA	-
Iron	67/68	0.37 - 230	6500 - 190000	NA	-
Lead	66/68	0.22 - 33	2.4 - 9300	8.99	63
Magnesium	67/68	2.6 - 250	1400 - 180000	NA	-
Manganese	68/68	0.068 - 2.5	0.15 - 2800	1431.2	5
Mercury	57/68	0.00094 - 0.2	0.033 - 50	2.28	3
Molybdenum	28/66	0.16 - 6.5	0.21 - 55	2.68	10
Nickel	67/68	0.26 - 22	21 - 1600	(b)	-
Potassium	66/68	16.7 - 848	190 - 2160	NA	-
Selenium	6/67	0.088 - 25	0.38 - 0.76	1.95	0
Silver	3/68	0.085 - 37.3	1.3 - 4.2	1.43	2
Sodium	49/68	2.1 - 180	11.9 - 1600	NA	-
Thallium	1/67	0.14 - 0.64	4.3	0.81	1
Tin	0/1	3	-	33227	-
Vanadium	67/68	0.14 - 8	3.8 - 2100	117.2	5
Zinc	67/68	0.28 - 20	36 - 6900	109.9	36
PCBs and PESTICIDES					
2,4'-DDD	0/7	0.0001 - 0.011	-	NA	-
2,4'-DDE	0/7	0.0001 - 0.011	-	NA	-
2,4'-DDT	1/7	0.0001 - 0.011	0.0002J	NA	-
4,4'-DDD	5/68	0.0001 - 4.2	0.0004J - 0.24J	NA	-
4,4'-DDE	11/68	0.0001 - 4.2	0.0004 - 7.7	NA	-
4,4'-DDT	13/68	0.0002 - 4.2	0.001J - 0.087J	NA	-
Total DDE	11/68	-	0.0004 - 7.7	NA	-
Total DDD	5/68	-	0.0004 - 0.24	NA	-
Total DDT	13/68	-	0.001 - 0.087	NA	-
Aldrin	0/68	0.0001 - 2.1	-	NA	-
alpha-BHC	2/68	0.0004 - 2.1	0.017J - 0.083	NA	-
alpha-Chlordane	6/68	0.0001 - 2.1	0.0003 - 0.34J	NA	-
beta-BHC	5/68	0.0001 - 2.1	0.0002 - 0.41	NA	-
cis-Nonachlor	1/7	0.0001 - 0.011	0.0005J	NA	-
delta-BHC	0/68	0.0001 - 2.1	-	NA	-
Dieldrin	6/68	0.0001 - 4.2	0.029 - 6.4J	NA	-
Endosulfan I	1/68	0.0001 - 2.1	0.0004J	NA	-
Endosulfan II	0/68	0.0001 - 4.2	-	NA	-
Endosulfan sulfate	2/68	0.0001 - 4.2	0.0029J - 0.028J	NA	-
Endrin	1/68	0.0001 - 4.2	0.013J	NA	-
Endrin aldehyde	0/55	0.0001 - 4.2	-	NA	-
Endrin ketone	0/22	0.0001 - 0.09	-	NA	-
gamma-BHC (lindane)	0/68	0.0001 - 2.1	-	NA	-
gamma-Chlordane	2/68	0.0001 - 2.1	0.0002 - 0.0026J	NA	-
Heptachlor	1/68	0.0001 - 2.1	0.03	NA	-
Heptachlor epoxide	0/22	0.0001 - 0.045	-	NA	-
Heptachlor epoxide A	0/46	0.0019 - 2.1	-	NA	-
Heptachlor epoxide B	1/46	0.0019 - 2.1	0.015J	NA	-
Hexachlorobenzene	2/7	0.0002 - 52	0.0001J	NA	-
Methoxychlor	1/68	0.0003 - 21	4.2	NA	-
Mirex	0/7	0.0001 - 0.011	-	NA	-
Oxychlordane	0/7	0.0001 - 0.011	-	NA	-
Toxaphene	0/66	0.05 - 75	-	NA	-
trans-Nonachlor	5/7	0.0001 - 0.011	0.0003J - 0.0008J	NA	-
Aroclor-1016	0/61	0.034 - 0.45	-	NA	-
Aroclor-1221	0/61	0.034 - 0.45	-	NA	-
Aroclor-1232	0/61	0.034 - 0.45	-	NA	-
Aroclor-1242	0/61	0.034 - 0.45	-	NA	-
Aroclor-1248	5/61	0.034 - 0.72	0.12 - 12	NA	-
Aroclor-1254	9/61	0.034 - 0.9	0.055 - 17	NA	-
Aroclor-1260	25/61	0.034 - 1.7	0.018J - 20	NA	-

Table 4-9 Summary of Analyses and Detections in the Panhandle Area (0-2 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
PCBs and PESTICIDES					
PCB-008	0/7	0.0008 - 0.081	-	NA	-
PCB-018	0/7	0.0002 - 0.019	-	NA	-
PCB-028	1/7	0.0001 - 0.011	0.0002J	NA	-
PCB-044	5/7	0.0001 - 0.011	0.0002 - 0.018	NA	-
PCB-052	5/7	0.0001 - 0.011	0.0002 - 0.047	NA	-
PCB-066	0/7	0.0001 - 0.011	-	NA	-
PCB-077	0/7	0.0001 - 0.011	-	NA	-
PCB-101	7/7	0.0001 - 0.011	0.0002 - 0.34	NA	-
PCB-105	1/7	0.0001 - 0.011	0.0004	NA	-
PCB-114	2/7	0.0001 - 0.011	0.0002J - 0.0003J	NA	-
PCB-118	7/7	0.0001 - 0.011	0.0003J - 0.086J	NA	-
PCB-123	0/7	0.0001 - 0.011	-	NA	-
PCB-126	0/7	0.0001 - 0.011	-	NA	-
PCB-128	4/7	0.0001 - 0.011	0.0005J - 0.064	NA	-
PCB-138	7/7	0.0001 - 0.011	0.001 - 1	NA	-
PCB-153	7/7	0.0001 - 0.011	0.001 - 1	NA	-
PCB-156	6/7	0.0001 - 0.011	0.0002J - 0.056	NA	-
PCB-157	0/7	0.0001 - 0.011	-	NA	-
PCB-167	3/7	0.0001 - 0.011	0.0003 - 0.026	NA	-
PCB-169	0/7	0.0001 - 0.011	-	NA	-
PCB-170	7/7	0.0001 - 0.011	0.0004J - 0.54J	NA	-
PCB-180	7/7	0.0001 - 0.011	0.0004J - 0.52J	NA	-
PCB-187	7/7	0.0001 - 0.011	0.0005 - 0.46	NA	-
PCB-189	2/7	0.0001 - 0.011	0.015J - 0.016	NA	-
PCB-195	2/7	0.0001 - 0.011	0.072J - 0.087J	NA	-
PCB-206	3/7	0.0001 - 0.011	0.0003J - 0.031J	NA	-
PCB-209	3/7	0.0001 - 0.011	0.0002J - 0.065J	NA	-
Total PCBs	39/68	-	0.004 - 20	NA	-
SEMIVOLATILE ORGANIC COMPOUNDS					
1,2,4-Trichlorobenzene	0/61	0.0046 - 52	-	NA	-
1,2-Dichlorobenzene	0/61	0.0046 - 52	-	NA	-
1,3-Dichlorobenzene	0/61	0.0046 - 52	-	NA	-
1,4-Dichlorobenzene	0/61	0.0046 - 52	-	NA	-
2,2'-Oxybis(1-chloropropane)	0/59	0.34 - 52	-	NA	-
2,4,5-Trichlorophenol	0/59	0.34 - 52	-	NA	-
2,4,6-Trichlorophenol	0/59	0.34 - 52	-	NA	-
2,4-Dichlorophenol	0/59	0.34 - 52	-	NA	-
2,4-Dimethylphenol	0/61	0.34 - 52	-	NA	-
2,4-Dinitrophenol	0/59	1.6 - 260	-	NA	-
2,4-Dinitrotoluene	0/61	0.34 - 52	-	NA	-
2,6-Dinitrotoluene	0/61	0.34 - 52	-	NA	-
2-Chloronaphthalene	0/61	0.34 - 52	-	NA	-
2-Chlorophenol	0/61	0.34 - 52	-	NA	-
2-Methylnaphthalene	8/61	0.067 - 10	0.038J - 3.1	NA	-
2-Methylphenol	0/61	0.34 - 52	-	NA	-
2-Nitroaniline	0/61	0.68 - 100	-	NA	-
2-Nitrophenol	0/59	0.34 - 100	-	NA	-
3,3'-Dichlorobenzidine	0/61	0.39 - 100	-	NA	-
3-Nitroaniline	0/59	0.68 - 100	-	NA	-
4,6-Dinitro-2-methylphenol	0/59	1.6 - 260	-	NA	-
4-Bromophenyl-phenylether	0/59	0.34 - 52	-	NA	-
4-Chloro-3-methylphenol	0/61	0.34 - 52	-	NA	-
4-Chloroaniline	0/59	0.34 - 52	-	NA	-
4-Chlorophenyl-phenylether	0/59	0.34 - 52	-	NA	-
4-Methylphenol	0/61	0.34 - 52	-	NA	-
4-Nitroaniline	0/59	0.68 - 100	-	NA	-
4-Nitrophenol	0/61	0.68 - 100	-	NA	-
Acenaphthene	4/61	0.067 - 10	0.048J - 1.2	NA	-
Acenaphthylene	2/61	0.067 - 10	0.052J - 0.88	NA	-
Anthracene	16/61	0.067 - 10	0.038 - 7.6J	NA	-
Azobenzene	0/46	0.34 - 52	-	NA	-
Benzo(a)anthracene	24/61	0.067 - 10	0.045J - 51	NA	-
Benzo(a)pyrene	25/61	0.067 - 10	0.038J - 16	NA	-
Benzo(b)fluoranthene	39/61	0.067 - 10	0.045J - 64	NA	-
Benzo(g,h,i)perylene	4/61	0.067 - 10	0.036J - 0.37	NA	-
Benzo(k)fluoranthene	30/61	0.067 - 10	0.058J - 53	NA	-
Benzoic acid	1/59	1.6 - 260	1.5J - 1.5	NA	-
Benzyl alcohol	0/59	0.34 - 52	-	NA	-
Bis(2-chloroethoxy)methane	0/59	0.34 - 52	-	NA	-
Bis(2-chloroethyl)ether	0/59	0.34 - 52	-	NA	-
Bis(2-ethylhexyl)phthalate	7/61	0.042 - 52	2.6 - 740	NA	-

Table 4-9 Summary of Analyses and Detections in the Panhandle Area (0-2 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
SEMIVOLATILE ORGANIC COMPOUNDS					
Butylbenzylphthalate	0/61	0.19 - 52	-	NA	-
Carbazole	0/2	0.39 - 0.7	-	NA	-
Chrysene	33/61	0.067 - 10	0.039J - 57	NA	-
Dibenz(a,h)anthracene	5/61	0.067 - 10	0.073J - 5.3J	NA	-
Dibenzofuran	1/61	0.34 - 52	0.88J - 0.88	NA	-
Diethylphthalate	0/61	0.34 - 52	-	NA	-
Dimethylphthalate	0/59	0.34 - 52	-	NA	-
Di-n-butylphthalate	0/61	0.34 - 52	-	NA	-
Di-n-octylphthalate	0/61	0.34 - 52	-	NA	-
Fluoranthene	35/61	0.067 - 10	0.039J - 84	NA	-
Fluorene	4/61	0.067 - 10	0.044J - 1.7	NA	-
Hexachlorobenzene	0/61	0.0002 - 52	-	NA	-
Hexachlorobutadiene	0/59	0.0046 - 52	-	NA	-
Hexachlorocyclopentadiene	0/59	0.34 - 260	-	NA	-
Hexachloroethane	0/59	0.34 - 52	-	NA	-
Indeno(1,2,3-cd)pyrene	20/61	0.067 - 10	0.037J - 17	NA	-
Isophorone	0/61	0.34 - 52	-	NA	-
Naphthalene	10/61	0.0046 - 10	0.055J - 47	NA	-
Nitrobenzene	0/59	0.34 - 52	-	NA	-
n-Nitrosodimethylamine	0/46	0.34 - 52	-	NA	-
n-Nitroso-di-n-propylamine	0/61	0.34 - 52	-	NA	-
n-Nitrosodiphenylamine	0/61	0.34 - 52	-	NA	-
Pentachlorophenol	0/61	0.68 - 100	-	NA	-
Phenanthrene	28/61	0.067 - 10	0.039J - 43	NA	-
Phenol	0/61	0.34 - 52	-	NA	-
Pyrene	35/61	0.067 - 10	0.04J - 35	NA	-
VOLATILE ORGANIC COMPOUNDS					
1,1,1-Trichloroethane	0/1	0.0046 - 0.69	-	NA	-
1,1,1,2-Tetrachloroethane	0/14	0.0046 - 0.69	-	NA	-
1,1,2,2-Tetrachloroethane	0/14	0.0046 - 0.69	-	NA	-
1,1,2-Trichloro-1,2,2-trifluoroethane	0/1	0.0046	-	NA	-
1,1,2-Trichloroethane	0/14	0.0046 - 0.69	-	NA	-
1,1-Dichloroethane	0/14	0.0046 - 0.69	-	NA	-
1,1-Dichloroethene	0/14	0.0046 - 0.69	-	NA	-
1,1-Dichloropropene	0/1	0.0046	-	NA	-
1,2,3-Trichlorobenzene	0/1	0.0046	-	NA	-
1,2,3-Trichloropropane	0/1	0.0046	-	NA	-
1,2,4-Trichlorobenzene	0/1	0.0046 - 52	-	NA	-
1,2,4-Trimethylbenzene	0/1	0.0046	-	NA	-
1,2-Dibromo-3-chloropropane	0/1	0.0046	-	NA	-
1,2-Dibromoethane	0/1	0.0046	-	NA	-
1,2-Dichlorobenzene	0/1	0.0046 - 52	-	NA	-
1,2-Dichloroethane	0/14	0.0046 - 0.69	-	NA	-
1,2-Dichloroethene (Total)	0/13	0.005 - 0.69	-	NA	-
1,2-Dichloropropane	0/14	0.0046 - 0.69	-	NA	-
1,3,5-Trimethylbenzene	0/1	0.0046	-	NA	-
1,3-Dichlorobenzene	0/1	0.0046 - 52	-	NA	-
1,3-Dichloropropane	0/1	0.0046	-	NA	-
1,4-Dichlorobenzene	0/1	0.0046 - 52	-	NA	-
2,2-Dichloropropane	0/1	0.0046	-	NA	-
2-Butanone	2/14	0.001 - 1.4	0.001J - 0.017	NA	-
2-Chloroethyl vinyl ether	0/1	0.0046	-	NA	-
2-Chlorotoluene	0/1	0.0046	-	NA	-
2-Hexanone	0/14	0.0093 - 1.4	-	NA	-
4-Chlorotoluene	0/1	0.0046	-	NA	-
4-Methyl-2-pentanone	0/13	0.0093 - 1.4	-	NA	-
Acetone	0/13	0.004 - 1.4	-	NA	-
Benzene	0/14	0.0046 - 0.69	-	NA	-
Bromobenzene	0/1	0.0046	-	NA	-
Bromochloromethane	0/14	0.0046	-	NA	-
Bromodichloromethane	0/1	0.0046 - 0.69	-	NA	-
Bromoform	0/14	0.0046 - 0.69	-	NA	-
Bromomethane	0/14	0.0046 - 1.4	-	NA	-
Carbon disulfide	0/14	0.005 - 0.69	-	NA	-
Carbon tetrachloride	0/14	0.0046 - 0.69	-	NA	-
Chlorobenzene	0/14	0.0046 - 0.69	-	NA	-
Chloroethane	0/14	0.0046 - 1.4	-	NA	-
Chloroform	0/14	0.0046 - 0.69	-	NA	-
Chloromethane	0/14	0.0046 - 1.4	-	NA	-
cis-1,2-Dichloroethene	0/1	0.0046	-	NA	-
cis-1,3-Dichloropropene	0/14	0.0046 - 0.69	-	NA	-

Table 4-9 Summary of Analyses and Detections in the Panhandle Area (0-2 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[(a)] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
VOLATILE ORGANIC COMPOUNDS (continued)					
Dibromochloromethane	0/14	0.0046 - 0.69	-	NA	-
Dibromomethane	0/1	0.0046	-	NA	-
Dichlorodifluoromethane	0/1	0.0046	-	NA	-
Ethylbenzene	0/14	0.0046 - 0.69	-	NA	-
Hexachlorobutadiene	0/1	0.0046 - 52	-	NA	-
Isopropylbenzene	0/1	0.0046	-	NA	-
Methylene chloride	0/14	0.003 - 0.69	-	NA	-
Naphthalene	0/1	0.0046 - 10	-	NA	-
n-Butylbenzene	0/1	0.0046	-	NA	-
o-Xylene	0/1	0.0046	-	NA	-
para-Isopropyl toluene	1/1	0.0046	0.0068	NA	-
Propylbenzene	0/1	0.0046	-	NA	-
sec-Butylbenzene	0/1	0.0046	-	NA	-
Styrene	0/14	0.0046 - 0.69	-	NA	-
tert-Butyl methyl ether	0/1	0.0046	-	NA	-
tert-Butylbenzene	0/1	0.0046	-	NA	-
Tetrachloroethene	0/14	0.0046 - 0.69	-	NA	-
Toluene	1/14	0.0046 - 0.69	0.019	NA	-
trans-1,2-Dichloroethene	0/1	0.0046	-	NA	-
trans-1,3-Dichloropropene	0/14	0.0046 - 0.69	-	NA	-
Trichloroethene	0/14	0.0046 - 0.69	-	NA	-
Trichlorofluoromethane	0/1	0.0046	-	NA	-
Vinyl acetate	0/14	0.0093 - 1.4	-	NA	-
Vinyl chloride	0/14	0.0046 - 1.4	-	NA	-
Xylene (Total)	0/13	0.005 - 0.69	-	NA	-
PETROLEUM HYDROCARBONS					
Gasoline range organics	0/13	1 - 6	-	NA	-
Diesel range organics	4/16	10 - 160	17 - 3400J	NA	-
Motor oil range organics	3/3	120 - 320	1400J - 3600J	NA	-
TPH-extractable unknown hydrocarbon	2/3	10 - 12	2J - 15	NA	-
TPH-purgeable unknown hydrocarbon	0/1	1 - 1	-	NA	-
Total TPH	6/16	-	2 - 7000	NA	-
Total oil & grease	10/13	26 - 60	100 - 1600	NA	-

Notes
(a) - Detection limits are reported as the laboratory reporting limits
(b) - Hunters Point ambient levels is determined on a location specific basis
-- No criteria available for this analyte
BHC - benzene hexachloride
DDD - dichlorodiphenyldichloroethane
DDE - dichlorodiphenyldichloroethene
DDT - dichlorodiphenyltrichloroethane
J - Estimated value
mg/kg - milligrams per kilogram
NA - not available
PCB - polychlorinated biphenyl
TPH - total petroleum hydrocarbon

Table 4-10 Summary of Detected Exceedances of Evaluation Criteria in the Panhandle Area (0-2 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
Metals			
Aluminum	100000	2004 PRG Industrial	0
Antimony	380	2005 ESL Industrial (direct exp)	1
Arsenic	11.1	HPAL	7
Barium	63000	2005 ESL Industrial (direct exp)	0
Beryllium	1700	2005 ESL Industrial (direct exp)	0
Cadmium	7.4	2005 ESL Industrial (direct exp)	2
Calcium	-		-
Chromium (total)	a	See note	0
Chromium VI	37	2005 ESL Industrial (direct exp)	0
Cobalt	a	See note	0
Copper	38000	2005 ESL Industrial (direct exp)	0
Cyanide (free)	12000	2004 PRG Industrial	0
Iron	100000	2004 PRG Industrial	3
Lead	800	2004 PRG Industrial	7
Magnesium	-		-
Manganese	19000	2004 PRG Industrial	0
Mercury	180	2005 ESL Industrial (direct exp)	0
Molybdenum	4800	2005 ESL Industrial (direct exp)	0
Nickel	a	See note	0
Potassium	-		-
Selenium	4800	2005 ESL Industrial (direct exp)	0
Silver	4800	2005 ESL Industrial (direct exp)	0
Sodium	-		0
Thallium	63	2005 ESL Industrial (direct exp)	0
Tin	100000	2004 PRG Industrial	0
Vanadium	1000	2004 PRG Industrial	1
Zinc	100000	2004 PRG Industrial	0
PESTICIDES			
2,4-DDD	9	2005 ESL Industrial (direct exp)	0
2,4-DDE	6.3	2005 ESL Industrial (direct exp)	0
2,4-DDT	6.3	2005 ESL Industrial (direct exp)	0
4,4-DDD	9	2005 ESL Industrial (direct exp)	0
4,4-DDE	6.3	2005 ESL Industrial (direct exp)	0
4,4-DDT	6.3	2005 ESL Industrial (direct exp)	0
Total DDD	9	2005 ESL Industrial (direct exp)	0
Total DDE	6.3	2005 ESL Industrial (direct exp)	1
Total DDT	6.3	2005 ESL Industrial (direct exp)	0
Aldrin	0.1	2004 PRG Industrial	0
alpha-BHC	0.36	2004 PRG Industrial	0
Alpha-chlordane	2.9	SDGI Industrial Criteria	0
beta-BHC	1.3	2004 PRG Industrial	0
Chlordane	1.7	2005 ESL Industrial (direct exp)	0
cis-Nonachlor	-		-
delta-BHC	0.59	SDGI Industrial Criteria	0
Dieldrin	0.11	2004 PRG Industrial	2
Endosulfan I	3700	2004 PRG Industrial	0
Endosulfan II	3700	2004 PRG Industrial	0
Endosulfan sulfate	5300	SDGI Industrial Criteria	0
Endrin	190	2004 PRG Industrial	0
Endrin aldehyde	260	SDGI Industrial Criteria	0
Endrin ketone	260	SDGI Industrial Criteria	0
Gamma-BHC (lindane)	1.7	2004 PRG Industrial	0
Gamma-chlordane	2.9	SDGI Industrial Criteria	0
Heptachlor	0.38	2004 PRG Industrial	0
Heptachlor epoxide	0.19	2004 PRG Industrial	0
Heptachlor epoxide A	-		-
Heptachlor epoxide B	-		-
Hexachlorobenzene	0.96	2005 ESL Industrial (direct exp)	0
Methoxychlor	3100	2004 PRG Industrial	0
Mirex	-		-
Oxychlordane	-		-
trans-Nonachlor	21	2004 PRG Industrial	0
Toxaphene	1.6	2004 PRG Industrial	0

Table 4-10 Summary of Detected Exceedances of Evaluation Criteria in the Panhandle Area (0-2 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
PCBs			
Aroclor-1016	21	2004 PRG Industrial	0
Aroclor-1221	0.74	2004 PRG Industrial	0
Aroclor-1232	0.74	2004 PRG Industrial	0
Aroclor-1242	0.74	2004 PRG Industrial	0
Aroclor-1248	0.74	2004 PRG Industrial	0
Aroclor-1254	0.74	2004 PRG Industrial	0
Aroclor-1260	0.74	2004 PRG Industrial	0
PCB-008	0.74	2004 PRG Industrial	0
PCB-018	0.74	2004 PRG Industrial	0
PCB-028	0.74	2004 PRG Industrial	0
PCB-044	0.74	2004 PRG Industrial	0
PCB-052	0.74	2004 PRG Industrial	0
PCB-066	0.74	2004 PRG Industrial	0
PCB-077	0.74	2004 PRG Industrial	0
PCB-101	0.74	2004 PRG Industrial	0
PCB-105	0.74	2004 PRG Industrial	0
PCB-114	0.74	2004 PRG Industrial	0
PCB-118	0.74	2004 PRG Industrial	0
PCB-123	0.74	2004 PRG Industrial	0
PCB-126	0.74	2004 PRG Industrial	0
PCB-128	0.74	2004 PRG Industrial	0
PCB-138	0.74	2004 PRG Industrial	0
PCB-153	0.74	2004 PRG Industrial	0
PCB-156	0.74	2004 PRG Industrial	0
PCB-157	0.74	2004 PRG Industrial	0
PCB-167	0.74	2004 PRG Industrial	0
PCB-169	0.74	2004 PRG Industrial	0
PCB-170	0.74	2004 PRG Industrial	0
PCB-180	0.74	2004 PRG Industrial	0
PCB-187	0.74	2004 PRG Industrial	0
PCB-189	0.74	2004 PRG Industrial	0
PCB-195	0.74	2004 PRG Industrial	0
PCB-206	0.74	2004 PRG Industrial	0
PCB-209	0.74	2004 PRG Industrial	0
Total PCBs	0.74	2004 PRG Industrial	9
SEMIVOLATILE ORGANIC COMPOUNDS			
1,2,4-Trichlorobenzene	5	2005 ESL Industrial (inhalation)	0
1,2,4-Trimethylbenzene	170	2004 PRG Industrial	0
1,2-Dichlorobenzene	21	2005 ESL Industrial (inhalation)	0
1,3,5-Trimethylbenzene	70	2004 PRG Industrial	0
1,3-Dichlorobenzene	600	2004 PRG Industrial	0
1,4-Dichlorobenzene	0.13	2005 ESL Industrial (inhalation)	0
2,2'-Oxybis(1-chloropropane)	7.4	2004 PRG Industrial	0
2,4,5-Trichlorophenol	310	2005 ESL Industrial (inhalation)	0
2,4,6-Trichlorophenol	25	2005 ESL Industrial (direct exp)	0
2,4-Dichlorophenol	1800	2004 PRG Industrial	0
2,4-Dimethylphenol	1500	2005 ESL Industrial (inhalation)	0
2,4-Dinitrophenol	1200	2004 PRG Industrial	0
2,4-Dinitrotoluene	5.6	2005 ESL Industrial (direct exp)	0
2,6-Dinitrotoluene	620	2004 PRG Industrial	0
2-Chloronaphthalene	23000	2004 PRG Industrial	0
2-Chlorophenol	10	2005 ESL Industrial (inhalation)	0
2-Methylnaphthalene	550	2005 ESL Industrial (inhalation)	0
2-Methylphenol	31000	2004 PRG Industrial	0
2-Nitroaniline	1800	2004 PRG Industrial	0
2-Nitrophenol	-		-
3,3'-Dichlorobenzidine	1.4	2005 ESL Industrial (direct exp)	0
3-Nitroaniline	82	2004 PRG Industrial	0
4,6-Dinitro-2-methylphenol	-		-
4-Bromophenyl-phenylether	-		-
4-Chloro-3-methylphenol	-		-
4-Chloroaniline	2500	2004 PRG Industrial	0
4-Chlorophenyl-phenylether	-		-
4-Methylphenol	3100	2004 PRG Industrial	0
4-Nitroaniline	82	2004 PRG Industrial	0
4-Nitrophenol	7000	SDGI Industrial Criteria	0
Acenaphthene	650	2005 ESL Industrial (inhalation)	0
Acenaphthylene	18000	2005 ESL Industrial (direct exp)	0

Table 4-10 Summary of Detected Exceedances of Evaluation Criteria in the Panhandle Area (0-2 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
SEMIVOLATILE ORGANIC COMPOUNDS (continued)			
Aniline	300	2004 PRG Industrial	0
Anthracene	31	2005 ESL Industrial (inhalation)	0
Azobenzene	16	2004 PRG Industrial	0
Benzidine	-		-
Benzo(a)anthracene	1.3	2005 ESL Industrial (direct exp)	5
Benzo(a)pyrene	0.33	SDGI Industrial Criteria	10
Benzo(b)fluoranthene	1.3	2005 ESL Industrial (direct exp)	7
Benzo(e)pyrene	-		-
Benzo(g,h,i)perylene	22000	2005 ESL Industrial (direct exp)	0
Benzo(k)fluoranthene	1.3	2005 ESL Industrial (direct exp)	9
Benzoic acid	100000	2004 PRG Industrial	0
Benzyl alcohol	100000	2004 PRG Industrial	0
Biphenyl	18000	2005 ESL Industrial (direct exp)	0
Bis(2-chloroethoxy)methane	-		-
Bis(2-chloroethyl)ether	0.012	2005 ESL Industrial (inhalation)	0
Bis(2-ethylhexyl)phthalate	120	2004 PRG Industrial	1
Butylbenzylphthalate	100000	2004 PRG Industrial	0
Carbazole	86	2004 PRG Industrial	0
Chrysene	13	2005 ESL Industrial (direct exp)	1
Dibenz(a,h)anthracene	0.33	SDGI Industrial Criteria	1
Dibenzofuran	1600	2004 PRG Industrial	0
Diethylphthalate	100000	2004 PRG Industrial	0
Dimethylphthalate	100000	2004 PRG Industrial	0
Di-n-butylphthalate	62000	2004 PRG Industrial	0
Di-n-octylphthalate	25000	2004 PRG Industrial	0
Fluoranthene	22000	2004 PRG Industrial	0
Fluorene	800	2005 ESL Industrial (inhalation)	0
Hexachlorobenzene	0.96	2005 ESL Industrial (direct exp)	0
Hexachlorobutadiene	22	2004 PRG Industrial	0
Hexachlorocyclopentadiene	3700	2004 PRG Industrial	0
Hexachloroethane	44	2005 ESL Industrial (direct exp)	0
Indeno(1,2,3-cd)pyrene	1.3	2005 ESL Industrial (direct exp)	4
Isophorone	510	2004 PRG Industrial	0
Napthalene	1.5	2005 ESL Industrial (inhalation)	2
Nitrobenzene	100	2004 PRG Industrial	0
n-Nitrosodimethylamine	0.034	2004 PRG Industrial	0
n-Nitroso-di-n-propylamine	0.25	2004 PRG Industrial	0
n-Nitrosodiphenylamine	350	2004 PRG Industrial	0
Pentachlorophenol	9	2004 PRG Industrial	0
Phenacetin	-		-
Phenanthrene	18000	2005 ESL Industrial (direct exp)	0
Phenol	100000	2004 PRG Industrial	0
Pyrene	430	2005 ESL Industrial (inhalation)	0
VOLATILE ORGANIC COMPOUNDS			
1,1,1,2-Tetrachloroethane	6.9	2005 ESL Industrial (direct exp)	0
1,1,1-Trichloroethane	230	2005 ESL Industrial (inhalation)	0
1,1,2,2-Tetrachloroethane	0.025	2005 ESL Industrial (inhalation)	0
1,1,2-Trichloro-1,2,2-trifluoroethane	-		-
1,1,2-Trichloroethane	0.089	2005 ESL Industrial (inhalation)	0
1,1-Dichloroethane	0.89	2005 ESL Industrial (inhalation)	0
1,1-Dichloroethene	105	2005 ESL Industrial (inhalation)	0
1,1-Dichloropropene	-		-
1,2,3-Trichlorobenzene	-		-
1,2,3-Trichloropropane	-		-
1,2,4-Trichlorobenzene	5	2005 ESL Industrial (inhalation)	0
1,2,4-Trimethylbenzene	170	2004 PRG Industrial	0
1,2-Dibromo-3-chloropropane	0.067	2005 ESL Industrial (direct exp)	0
1,2-Dibromoethane	0.02	2005 ESL Industrial (inhalation)	0
1,2-Dichlorobenzene	21	2005 ESL Industrial (inhalation)	0
1,2-Dichloroethane	0.07	2005 ESL Industrial (inhalation)	0
1,2-Dichloroethene (Total)	150	SDGI Industrial Criteria	0
1,2-Dichloropropane	0.14	2005 ESL Industrial (inhalation)	0
1,3,5-Trimethylbenzene	70	2004 PRG Industrial	0
1,3-Dichlorobenzene	600	2004 PRG Industrial	0
1,3-Dichloropropane	-		-
1,4-Dichlorobenzene	0.13	2005 ESL Industrial (inhalation)	0
2,2-Dichloropropane	-		0
2-Butanone	6500	2005 ESL Industrial (inhalation)	0

Table 4-10 Summary of Detected Exceedances of Evaluation Criteria in the Panhandle Area (0-2 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
VOLATILE ORGANIC COMPOUNDS (continued)			
2-Chloroethyl vinyl ether	-		-
2-Chlorotoluene	-		-
2-Hexanone	-		-
4-Chlorotoluene	-		-
4-Methyl-2-pentanone	1550	2005 ESL Industrial (inhalation)	0
Acetone	16500	2005 ESL Industrial (inhalation)	0
Benzene	0.38	2005 ESL Industrial (direct exp)	0
Bromobenzene	-		-
Bromochloromethane	-		-
Bromodichloromethane	0.039	2005 ESL Industrial (inhalation)	0
Bromoform	220	2004 PRG Industrial	0
Bromomethane	2.6	2005 ESL Industrial (inhalation)	0
Carbon disulfide	720	2004 PRG Industrial	0
Carbon tetrachloride	0.034	2005 ESL Industrial (inhalation)	0
Chlorobenzene	31	2005 ESL Industrial (inhalation)	0
Chloroethane	1.8	2005 ESL Industrial (inhalation)	0
Chloroform	0.47	2004 PRG Industrial	0
Chloromethane	0.2	2005 ESL Industrial (inhalation)	0
cis-1,2-Dichloroethene	18	2005 ESL Industrial (inhalation)	0
cis-1,3-Dichloropropene	0.093	2005 ESL Industrial (inhalation)	0
Dibromochloromethane	0.054	2005 ESL Industrial (inhalation)	0
Dibromomethane	-		-
Dichlorodifluoromethane	310	2004 PRG Industrial	0
Ethylbenzene	390	2005 ESL Industrial (inhalation)	0
Hexachlorobutadiene	22	2004 PRG Industrial	0
Isopropylbenzene	2000	2004 PRG Industrial	0
Methylene chloride	1.5	2005 ESL Industrial (inhalation)	0
Naphthalene	1.5	2005 ESL Industrial (inhalation)	0
n-Butylbenzene	240	2004 PRG Industrial	0
o-Xylene	210	SDGI Industrial Criteria	0
para-Isopropyl toluene	-		-
Propylbenzene	240	2004 PRG Industrial	0
sec-Butylbenzene	220	2004 PRG Industrial	0
Styrene	1100	2005 ESL Industrial (inhalation)	0
tert-Butyl methyl ether	5.6	2005 ESL Industrial (inhalation)	0
tert-Butylbenzene	390	2004 PRG Industrial	0
Tetrachloroethene	0.24	2005 ESL Industrial (inhalation)	0
Toluene	520	2004 PRG Industrial	0
trans-1,2-Dichloroethene	37	2005 ESL Industrial (inhalation)	0
trans-1,3-Dichloropropene	0.093	2005 ESL Industrial (inhalation)	0
Trichloroethene	0.11	2004 PRG Industrial	0
Trichlorofluoromethane	2000	2004 PRG Industrial	0
Vinyl acetate	1400	2004 PRG Industrial	0
Vinyl chloride	0.019	2005 ESL Industrial (inhalation)	0
Xylene (Total)	420	2004 PRG Industrial	0
PETROLEUM HYDROCARBONS			
Gasoline range organics	750	2005 ESL Industrial (direct exp)	0
Diesel range organics	750	2005 ESL Industrial (direct exp)	3
Motor oil range organics	4600	2005 ESL Industrial (direct exp)	0
TPH-extractable unknown hydrocarbon	4600	2005 ESL Industrial (direct exp)	0
TPH-purgeable unknown hydrocarbon	750	2005 ESL Industrial (direct exp)	0
Total TPH	3500	HPS TPH source criterion	3
Total oil & grease	3500	HPS TPH source criterion	0

(a) PRC Environmental Management, Inc. 1995. "Draft Calculation of Hunters Point Ambient Levels." April 11.

-- No criteria available for this analyte

BHC - benzene hexachloride

DDD - dichlorodiphenyldichloroethane

DDE - dichlorodiphenyldichloroethene

DDT - dichlorodiphenyltrichloroethane

ESL - environmental screening level

HPAL - Hunters Point ambient level

HPS - Hunters Point Shipyard

mg/kg - milligrams per kilogram

NE - not established

PCB - polychlorinated biphenyl

PRG - preliminary remediation goal

SDGI - standard data gap investigation

TPH - total petroleum hydrocarbon

Table 4-11 Summary of Analyses and Detections in the Panhandle Area (2-10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
Metals					
Aluminum	38/38	0.18 - 14	1990 - 22800	NA	-
Antimony	16/34	0.011 - 14.1	0.21J - 55.6J	9.05	5
Arsenic	38/40	0.056 - 8.1	0.2J - 315J	11.1	2
Barium	39/40	0.045 - 25.2	7.8J - 880	314.4	7
Beryllium	26/40	0.011 - 1.4	0.063J - 0.93	0.71	2
Cadmium	20/40	0.011 - 5	0.12 - 78.4	3.14	3
Calcium	37/38	0.95 - 4530	805 - 53300	NA	-
Chromium	40/40	0.053 - 9	26.3J - 607	(b)	3
Chromium VI	4/53	0.05 - 0.125	0.031J - 0.59J	NA	-
Cobalt	40/40	0.011 - 9	4.9J - 96.3	(b)	4
Copper	37/40	0.012 - 17.2	3.9 - 1700	124.3	11
Cyanide	10/34	0.07 - 1.3	0.07J - 0.69J	NA	-
Iron	38/38	0.38 - 14.6	8210 - 471000	NA	-
Lead	40/40	0.011 - 33	3.4 - 4740	8.99	39
Magnesium	38/38	0.12 - 29	2080 - 157000	NA	-
Manganese	40/40	0.011 - 1	125 - 1910	1431.2	2
Mercury	29/40	0.0056 - 1	0.11J - 3.2	2.28	4
Molybdenum	16/35	0.011 - 1.8	0.34 - 19.4	2.68	3
Nickel	40/40	0.011 - 16	19.9 - 1450	(b)	0
Potassium	36/38	0.56 - 848	133J - 2250	NA	-
Selenium	13/37	0.028 - 1	0.14J - 8.3	1.95	3
Silver	15/40	0.011 - 0.99	0.11J - 1	1.43	0
Sodium	37/38	0.77 - 161	87.6 - 2200	NA	-
Thallium	3/37	0.041 - 1	0.061J - 0.069J	0.81	0
Tin	2/3	3.2 - 3.3	11.4 - 39.8	33227	-
Vanadium	40/40	0.33 - 8	15.1 - 508	117.2	4
Zinc	40/40	0.11 - 3	15.5 - 116000	109.9	20
PCBs and PESTICIDES					
4,4'-DDD	4/40	0.017 - 0.16	0.0035J - 0.029	NA	-
4,4'-DDE	3/40	0.017 - 0.16	0.0063 - 0.05	NA	-
4,4'-DDT	1/40	0.017 - 0.45	0.0038J	NA	-
Aldrin	0/40	0.008 - 0.082	-	NA	-
alpha-BHC	0/40	0.008 - 0.082	-	NA	-
alpha-Chlordane	0/38	0.0099 - 0.82	-	NA	-
beta-BHC	0/40	0.008 - 0.082	-	NA	-
Chlordane	0/9	0.099 - 0.48	-	NA	-
delta-BHC	0/40	0.008 - 0.082	-	NA	-
Dieldrin	2/40	0.017 - 0.16	0.0013J - 0.037J	NA	-
Endosulfan I	0/40	0.008 - 0.082	-	NA	-
Endosulfan II	0/40	0.017 - 0.16	-	NA	-
Endosulfan sulfate	0/40	0.017 - 0.16	-	NA	-
Endrin	0/40	0.017 - 0.45	-	NA	-
Endrin aldehyde	0/11	0.02 - 0.21	-	NA	-
Endrin ketone	0/40	0.017 - 0.16	-	NA	-
gamma-BHC (lindane)	0/40	0.008 - 0.082	-	NA	-
gamma-Chlordane	0/38	0.0099 - 1.1	-	NA	-
Heptachlor	0/40	0.008 - 0.082	-	NA	-
Heptachlor epoxide	2/40	0.008 - 0.082	0.0014J - 0.013J	NA	-
Methoxychlor	0/9	0.084 - 0.82	0.0041J - 0.035	NA	-
Mirex	2/40	0.0099 - 0.048	-	NA	-
Aroclor-1016	0/40	0.018 - 0.82	-	NA	-
Aroclor-1221	0/40	0.018 - 0.82	-	NA	-
Aroclor-1232	0/40	0.018 - 0.82	-	NA	-
Aroclor-1242	0/40	0.018 - 0.82	-	NA	-
Aroclor-1248	0/40	0.018 - 0.82	-	NA	-
Aroclor-1254	2/40	0.018 - 1.6	0.035J - 0.44	NA	-
Aroclor-1260	14/40	0.018 - 1.6	0.018J - 1.8	NA	-
Total PCBs	14/40	-	0.018 - 1.8	NA	-

Table 4-11 Summary of Analyses and Detections in the Panhandle Area (2-10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
Dioxins and Furans					
1,2,3,4,6,7,8,9-OCDD	2/2	-	0.00143 - 0.00339	NA	-
1,2,3,4,6,7,8,9-OCDF	2/2	-	0.0000839 - 0.000453	NA	-
1,2,3,4,6,7,8-HpCDD	2/2	-	0.000427 - 0.000714	NA	-
1,2,3,4,6,7,8-HpCDF	2/2	-	0.000305 - 0.00077	NA	-
1,2,3,4,7,8,9-HpCDF	2/2	-	0.0000191 - 0.0000539	NA	-
1,2,3,4,7,8-HxCDD	2/2	-	0.0000125 - 0.0000253	NA	-
1,2,3,4,7,8-HxCDF	2/2	-	0.0000823 - 0.000171	NA	-
1,2,3,6,7,8-HxCDD	2/2	-	0.0000321 - 0.0000607	NA	-
1,2,3,6,7,8-HxCDF	2/2	-	0.00008 - 0.00015	NA	-
1,2,3,7,8,9-HxCDD	2/2	-	0.0000256 - 0.0000482	NA	-
1,2,3,7,8,9-HxCDF	2/2	-	0.0000197 - 0.0000386	NA	-
1,2,3,7,8-PeCDD	2/2	-	0.0000164 - 0.0000274	NA	-
1,2,3,7,8-PeCDF	2/2	-	0.0000585 - 0.0000852	NA	-
2,3,4,6,7,8-HxCDF	2/2	-	0.000114 - 0.000197	NA	-
2,3,4,7,8-PeCDF	2/2	-	0.000107 - 0.000176	NA	-
2,3,7,8-TCDD	2/2	-	0.00000518 - 0.0000074	NA	-
2,3,7,8-TCDF	2/2	-	0.0000652 - 0.0000697	NA	-
SEMIVOLATILE ORGANIC COMPOUNDS					
1,2,4-Trichlorobenzene	0/31	0.017 - 50	-	NA	-
1,2,4-Trimethylbenzene	1/1	-	1.6	NA	-
1,2-Dichlorobenzene	0/31	0.017 - 50	-	NA	-
1,3,5-Trimethylbenzene	1/1	-	1.4	NA	-
1,3-Dichlorobenzene	0/31	0.017 - 50	-	NA	-
1,4-Dichlorobenzene	1/31	0.017 - 50	0.21J	NA	-
2,2'-Oxybis(1-chloropropane)	0/31	0.35 - 28	-	NA	-
2,4,5-Trichlorophenol	0/31	1.7 - 140	-	NA	-
2,4,6-Trichlorophenol	0/31	0.35 - 28	-	NA	-
2,4-Dichlorophenol	0/31	0.35 - 28	-	NA	-
2,4-Dimethylphenol	0/31	0.35 - 28	-	NA	-
2,4-Dinitrophenol	0/31	1.7 - 140	-	NA	-
2,4-Dinitrotoluene	0/31	0.35 - 28	-	NA	-
2,6-Dinitrotoluene	0/31	0.35 - 28	-	NA	-
2-Chloronaphthalene	0/31	0.35 - 28	-	NA	-
2-Chlorophenol	0/31	0.35 - 28	-	NA	-
2-Methylnaphthalene	1/29	0.35 - 28	9J	NA	-
2-Methylphenol	0/31	0.35 - 28	-	NA	-
2-Nitroaniline	0/31	1.7 - 140	-	NA	-
2-Nitrophenol	0/31	0.35 - 28	-	NA	-
3,3'-Dichlorobenzidine	0/31	0.69 - 55	-	NA	-
3-Nitroaniline	0/31	1.7 - 140	-	NA	-
4,6-Dinitro-2-methylphenol	0/31	1.7 - 140	-	NA	-
4-Bromophenyl-phenylether	0/31	0.35 - 28	-	NA	-
4-Chloro-3-methylphenol	0/31	0.35 - 28	-	NA	-
4-Chloroaniline	0/31	0.35 - 28	-	NA	-
4-Chlorophenyl-phenylether	0/31	0.35 - 28	-	NA	-
4-Methylphenol	0/31	0.35 - 28	-	NA	-
4-Nitroaniline	0/31	1.7 - 140	-	NA	-
4-Nitrophenol	0/31	1.7 - 140	-	NA	-
Acenaphthene	4/31	0.35 - 28	0.053J - 2.3J	NA	-
Acenaphthylene	1/40	0.35 - 28	0.014J	NA	-
Anthracene	3/40	0.35 - 28	0.038J - 0.078J	NA	-
Benzo(a)anthracene	4/40	0.35 - 28	0.089J - 0.15J	NA	-
Benzo(a)pyrene	4/40	0.35 - 28	0.076J - 0.13J	NA	-
Benzo(b)fluoranthene	7/40	0.35 - 28	0.039J - 0.26J	NA	-
Benzo(e)pyrene	0/9	3.7 - 4.4	-	NA	-
Benzo(g,h,i)perylene	2/40	0.35 - 28	0.045J - 0.072J	NA	-
Benzo(k)fluoranthene	2/40	0.35 - 28	0.047J - 0.078J	NA	-
Benzoic acid	0/29	1.7 - 140	-	NA	-
Benzyl alcohol	0/29	0.35 - 28	-	NA	-
Biphenyl	0/9	3.4 - 4	-	NA	-
Bis(2-chloroethoxy)methane	0/31	0.35 - 28	-	NA	-
Bis(2-chloroethyl)ether	0/31	0.35 - 28	-	NA	-
Bis(2-ethylhexyl)phthalate	2/40	0.043 - 28	0.16J - 0.24J	NA	-
Butylbenzylphthalate	0/31	0.35 - 28	-	NA	-
Carbazole	0/9	3.7 - 4.4	-	NA	-
Chrysene	7/40	0.35 - 28	0.036J - 0.2J	NA	-
Dibenz(a,h)anthracene	0/40	0.35 - 28	-	NA	-

Table 4-11 Summary of Analyses and Detections in the Panhandle Area (2-10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
SEMIVOLATILE ORGANIC COMPOUNDS					
Dibenzofuran	1/40	0.35 - 28	0.17J	NA	-
Diethylphthalate	0/40	0.12 - 28	-	NA	-
Dimethylphthalate	1/31	0.35 - 28	2	NA	-
Di-n-butylphthalate	2/31	0.35 - 28	0.075J - 3.7	NA	-
Di-n-octylphthalate	0/31	0.35 - 28	-	NA	-
Fluoranthene	7/40	0.074 - 28	0.036J - 0.99J	NA	-
Fluorene	2/40	0.35 - 28	0.044J - 0.1J	NA	-
Hexachlorobenzene	0/31	0.35 - 28	-	NA	-
Hexachlorobutadiene	0/31	0.35 - 50	-	NA	-
Hexachlorocyclopentadiene	0/31	0.35 - 28	-	NA	-
Hexachloroethane	0/31	0.35 - 28	-	NA	-
Indeno(1,2,3-cd)pyrene	1/40	0.35 - 28	0.042J	NA	-
Isophorone	0/29	0.35 - 28	-	NA	-
Naphthalene	7/40	0.1 - 50	0.039J - 120	NA	-
Nitrobenzene	0/31	0.35 - 28	-	NA	-
n-Nitroso-di-n-propylamine	0/40	0.35 - 28	-	NA	-
n-Nitrosodiphenylamine	0/40	0.35 - 28	-	NA	-
Pentachlorophenol	0/40	1.7 - 140	-	NA	-
Phenacetin	0/9	7.4 - 8.7	-	NA	-
Phenanthrene	8/40	0.082 - 28	0.072J - 2.3J	NA	-
Phenol	2/40	0.35 - 28	0.043J - 0.048J	NA	-
Pyrene	8/40	0.075 - 28	0.037J - 0.86J	NA	-
VOLATILE ORGANIC COMPOUNDS					
1,1,1,2-Tetrachloroethane	0/4	11 - 50	-	NA	-
1,1,1-Trichloroethane	0/35	0.005 - 50	-	NA	-
1,1,2,2-Tetrachloroethane	0/35	0.005 - 50	-	NA	-
1,1,2-Trichloro-1,2,2-trifluoroethane	0/6	0.034 - 50	-	NA	-
1,1,2-Trichloroethane	0/35	0.005 - 50	-	NA	-
1,1-Dichloroethane	0/35	0.005 - 50	-	NA	-
1,1-Dichloroethene	0/35	0.005 - 50	-	NA	-
1,1-Dichloropropene	0/4	11 - 50	-	NA	-
1,2,3-Trichlorobenzene	0/6	0.017 - 50	-	NA	-
1,2,3-Trichloropropane	0/4	11 - 50	-	NA	-
1,2,4-Trichlorobenzene	0/6	0.017 - 50	-	NA	-
1,2,4-Trimethylbenzene	1/4	0.33 - 50	48	NA	-
1,2-Dibromo-3-chloropropane	0/6	0.034 - 50	-	NA	-
1,2-Dibromoethane	0/6	0.017 - 50	-	NA	-
1,2-Dichlorobenzene	0/6	0.017 - 50	-	NA	-
1,2-Dichloroethane	0/35	0.005 - 50	-	NA	-
1,2-Dichloroethene (Total)	0/31	0.005 - 3.5	-	NA	-
1,2-Dichloropropane	0/35	0.005 - 50	-	NA	-
1,3,5-Trimethylbenzene	1/4	0 - 50	12J	NA	-
1,3-Dichlorobenzene	0/6	0.017 - 50	-	NA	-
1,3-Dichloropropane	0/4	11 - 50	-	NA	-
1,4-Dichlorobenzene	0/6	0.017 - 50	-	NA	-
2,2-Dichloropropane	0/4	11 - 50	-	NA	-
2-Butanone	4/35	0.002 - 100	0.001J - 0.026	NA	-
2-Chloroethyl vinyl ether	0/3	11 - 50	-	NA	-
2-Chlorotoluene	0/4	11 - 50	-	NA	-
2-Hexanone	1/35	0.01 - 100	0.011J	NA	-
4-Chlorotoluene	0/4	11 - 50	-	NA	-
4-Methyl-2-pentanone	0/35	0.01 - 100	-	NA	-
Acetone	0/33	0.006 - 100	-	NA	-
Benzene	0/35	0.005 - 50	-	NA	-
Bromobenzene	0/4	11 - 50	-	NA	-
Bromochloromethane	0/6	0.017 - 50	-	NA	-
Bromodichloromethane	0/35	0.005 - 50	-	NA	-
Bromoform	0/35	0.005 - 50	-	NA	-
Bromomethane	0/35	0.01 - 50	-	NA	-
Carbon disulfide	3/35	0.005 - 100	0.002J - 0.01	NA	-
Carbon tetrachloride	0/35	0.005 - 50	-	NA	-
Chlorobenzene	0/35	0.005 - 50	-	NA	-
Chloroethane	0/35	0.01 - 50	-	NA	-
Chloroform	1/35	0.005 - 50	0.002J	NA	-
Chloromethane	0/35	0.01 - 50	-	NA	-
cis-1,2-Dichloroethene	0/6	0.017 - 50	-	NA	-
cis-1,3-Dichloropropene	0/35	0.005 - 50	-	NA	-

Table 4-11 Summary of Analyses and Detections in the Panhandle Area (2-10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[(a)] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
VOLATILE ORGANIC COMPOUNDS					
Dibromochloromethane	0/35	0.005 - 50	-	NA	-
Dibromomethane	0/4	11 - 50	-	NA	-
Dichlorodifluoromethane	0/6	0.017 - 50	-	NA	-
Ethylbenzene	3/35	0.005 - 50	0.012 - 6.7J	NA	-
Hexachlorobutadiene	0/4	0.35 - 50	-	NA	-
Isopropylbenzene	4/6	0.017 - 50	2.9J - 16J	NA	-
Methylene chloride	0/35	0.002 - 50	-	NA	-
Naphthalene	3/4	0.1 - 50	4.4J - 80	NA	-
n-Butylbenzene	2/4	11 - 50	3.8J - 27J	NA	-
o-Xylene	1/4	11 - 50	4.9J	NA	-
para-Isopropyl toluene	0/4	11 - 50	-	NA	-
Propylbenzene	3/4	11 - 50	4.3J - 37J	NA	-
sec-Butylbenzene	3/4	11 - 50	11J - 33J	NA	-
Styrene	0/35	0.005 - 50	-	NA	-
tert-Butyl methyl ether	0/6	0.034 - 50	-	NA	-
tert-Butylbenzene	1/4	11 - 50	1.8J	NA	-
Tetrachloroethene	0/35	0.005 - 50	-	NA	-
Toluene	6/35	0.005 - 50	0.001J - 2.1J	NA	-
trans-1,2-Dichloroethene	0/6	0.017 - 50	-	NA	-
trans-1,3-Dichloropropene	0/35	0.005 - 50	-	NA	-
Trichloroethene	0/35	0.005 - 50	-	NA	-
Trichlorofluoromethane	0/6	0.017 - 50	-	NA	-
Vinyl acetate	0/33	0.01 - 100	-	NA	-
Vinyl chloride	0/35	0.01 - 50	-	NA	-
Xylene (Total)	2/31	0.005 - 3.5	0.007 - 0.029	NA	-
PETROLEUM HYDROCARBONS					
Gasoline range organics	5/28	1 - 69	0.2J - 79	NA	-
Diesel range organics	16/29	11 - 380	4J - 830	NA	-
Motor oil range organics	0/0	-	-	NA	-
TPH-extractable unknown hydrocarbon	4/8	11 - 88	9J - 220	NA	-
TPH-purgeable unknown hydrocarbon	0/3	1 - 1	-	NA	-
Total TPH	20/29	-	4.2 - 887	NA	-
Total oil & grease	26/29	27 - 120	56 - 5800	NA	-

Notes
(a) - Detection limits are reported as the laboratory reporting limits
(b) - Hunters Point ambient levels is determined on a location specific basis
-- No criteria available for this analyte
NA - not available
J - Estimated value
BHC - benzene hexachloride
DDD - dichlorodiphenyldichloroethane
DDE - dichlorodiphenyldichloroethene
DDT - dichlorodiphenyltrichloroethane
HpCDD - heptachlorodibenzo[b,e][1,4]dioxin
HpCDF - heptachlorodibenzo[b,e][1,4]furan
HxCDD - hexachlorodibenzo[b,e][1,4]dioxin
HxCDF - hexachlorodibenzo[b,e][1,4]furan
mg/kg - milligrams per kilogram
OCDD - octachlorodibenzo-p-dioxin
OCDF - octachlorodibenzofuran
PCB - polychlorinated biphenyl
PeCDD - pentachlorodibenzo[b,e][1,4]dioxin
PeCDF - pentachlorodibenzo[b,e][1,4]furan
TCDD - tetrachlorodibenzo-p-dioxin
TCDF - tetrachlorodibenzo-p-furan
TPH - total petroleum hydrocarbon

Table 4-12 Summary of Detected Exceedances of Evaluation Criteria in the Panhandle Area (2-10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
Metals			
Aluminum	100000	2004 PRG Industrial	0
Antimony	380	2005 ESL Industrial (direct exp)	0
Arsenic	11.1	HPAL	2
Barium	63000	2005 ESL Industrial (direct exp)	0
Beryllium	1700	2005 ESL Industrial (direct exp)	0
Cadmium	7.4	2005 ESL Industrial (direct exp)	1
Calcium	-		-
Chromium (total)	a	See note	0
Chromium VI	37	2005 ESL Industrial (direct exp)	0
Cobalt	a	See note	0
Copper	38000	2005 ESL Industrial (direct exp)	0
Cyanide (free)	12000	2004 PRG Industrial	0
Iron	100000	2004 PRG Industrial	2
Lead	800	2004 PRG Industrial	4
Magnesium	-		-
Manganese	19000	2004 PRG Industrial	0
Mercury	180	2005 ESL Industrial (direct exp)	0
Molybdenum	4800	2005 ESL Industrial (direct exp)	0
Nickel	a	See note	0
Potassium	-		-
Selenium	4800	2005 ESL Industrial (direct exp)	0
Silver	4800	2005 ESL Industrial (direct exp)	0
Sodium	-		0
Thallium	63	2005 ESL Industrial (direct exp)	0
Tin	100000	2004 PRG Industrial	0
Vanadium	1000	2004 PRG Industrial	0
Zinc	100000	2004 PRG Industrial	1
PESTICIDES			
2,4'-DDD	9	2005 ESL Industrial (direct exp)	0
2,4'-DDE	6.3	2005 ESL Industrial (direct exp)	0
2,4'-DDT	6.3	2005 ESL Industrial (direct exp)	0
4,4'-DDD	9	2005 ESL Industrial (direct exp)	0
4,4'-DDE	6.3	2005 ESL Industrial (direct exp)	0
4,4'-DDT	6.3	2005 ESL Industrial (direct exp)	0
Aldrin	0.1	2004 PRG Industrial	0
alpha-BHC	0.36	2004 PRG Industrial	0
Alpha-chlordane	2.9	SDGI Industrial Criteria	0
beta-BHC	1.3	2004 PRG Industrial	0
Chlordane	1.7	2005 ESL Industrial (direct exp)	0
cis-Nonachlor	-		-
delta-BHC	0.59	SDGI Industrial Criteria	0
Dieldrin	0.11	2004 PRG Industrial	0
Endosulfan I	3700	2004 PRG Industrial	0
Endosulfan II	3700	2004 PRG Industrial	0
Endosulfan sulfate	5300	SDGI Industrial Criteria	0
Endrin	190	2004 PRG Industrial	0
Endrin aldehyde	260	SDGI Industrial Criteria	0
Endrin ketone	260	SDGI Industrial Criteria	0
Gamma-BHC (lindane)	1.7	2004 PRG Industrial	0
Gamma-chlordane	2.9	SDGI Industrial Criteria	0
Heptachlor	0.38	2004 PRG Industrial	0
Heptachlor epoxide	0.19	2004 PRG Industrial	0
Heptachlor epoxide A	-		-
Heptachlor epoxide B	-		-
Hexachlorobenzene	0.96	2005 ESL Industrial (direct exp)	0
Methoxychlor	3100	2004 PRG Industrial	0
Mirex	-		-
Oxychlordane	-		-
trans-Nonachlor	21	2004 PRG Industrial	0
Toxaphene	1.6	2004 PRG Industrial	0

Table 4-12 Summary of Detected Exceedances of Evaluation Criteria in the Panhandle Area (2-10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
PCBs			
Aroclor-1016	21	2004 PRG Industrial	0
Aroclor-1221	0.74	2004 PRG Industrial	0
Aroclor-1232	0.74	2004 PRG Industrial	0
Aroclor-1242	0.74	2004 PRG Industrial	0
Aroclor-1248	0.74	2004 PRG Industrial	0
Aroclor-1254	0.74	2004 PRG Industrial	0
Aroclor-1260	0.74	2004 PRG Industrial	0
Total PCBs	0.74	2004 PRG Industrial	2
Dioxins and Furans			
1,2,3,4,6,7,8,9-OCDD	0.027	SDGI Industrial Criteria	0
1,2,3,4,6,7,8,9-OCDF	0.027	SDGI Industrial Criteria	0
1,2,3,4,6,7,8-HpCDD	0.0027	SDGI Industrial Criteria	0
1,2,3,4,6,7,8-HpCDF	0.0027	SDGI Industrial Criteria	0
1,2,3,4,7,8,9-HpCDF	0.0027	SDGI Industrial Criteria	0
1,2,3,4,7,8-HxCDD	0.00027	SDGI Industrial Criteria	0
1,2,3,4,7,8-HxCDF	0.00027	SDGI Industrial Criteria	0
1,2,3,6,7,8-HxCDD	0.00027	SDGI Industrial Criteria	0
1,2,3,6,7,8-HxCDF	0.00027	SDGI Industrial Criteria	0
1,2,3,7,8,9-HxCDD	0.00027	SDGI Industrial Criteria	0
1,2,3,7,8,9-HxCDF	0.00027	SDGI Industrial Criteria	0
1,2,3,7,8-PeCDD	0.000055	SDGI Industrial Criteria	0
1,2,3,7,8-PeCDF	0.00055	SDGI Industrial Criteria	0
2,3,4,6,7,8-HxCDF	0.00027	SDGI Industrial Criteria	0
2,3,4,7,8-PeCDF	0.000055	SDGI Industrial Criteria	1
2,3,7,8-TCDD	0.000016	2004 PRG Industrial	0
2,3,7,8-TCDF	0.00027	SDGI Industrial Criteria	0
SEMIVOLATILE ORGANIC COMPOUNDS			
1,2,4-Trichlorobenzene	5	2005 ESL Industrial (inhalation)	0
1,2,4-Trimethylbenzene	170	2004 PRG Industrial	0
1,2-Dichlorobenzene	21	2005 ESL Industrial (inhalation)	0
1,3,5-Trimethylbenzene	70	2004 PRG Industrial	0
1,3-Dichlorobenzene	600	2004 PRG Industrial	0
1,4-Dichlorobenzene	0.13	2005 ESL Industrial (inhalation)	1
2,2'-Oxybis(1-chloropropane)	7.4	2004 PRG Industrial	0
2,4,5-Trichlorophenol	310	2005 ESL Industrial (inhalation)	0
2,4,6-Trichlorophenol	25	2005 ESL Industrial (direct exp)	0
2,4-Dichlorophenol	1800	2004 PRG Industrial	0
2,4-Dimethylphenol	1500	2005 ESL Industrial (inhalation)	0
2,4-Dinitrophenol	1200	2004 PRG Industrial	0
2,4-Dinitrotoluene	5.6	2005 ESL Industrial (direct exp)	0
2,6-Dinitrotoluene	620	2004 PRG Industrial	0
2-Chloronaphthalene	23000	2004 PRG Industrial	0
2-Chlorophenol	10	2005 ESL Industrial (inhalation)	0
2-Methylnaphthalene	550	2005 ESL Industrial (inhalation)	0
2-Methylphenol	31000	2004 PRG Industrial	0
2-Nitroaniline	1800	2004 PRG Industrial	0
2-Nitrophenol	-		-
3,3'-Dichlorobenzidine	1.4	2005 ESL Industrial (direct exp)	0
3-Nitroaniline	82	2004 PRG Industrial	0
4,6-Dinitro-2-methylphenol	-		-
4-Bromophenyl-phenylether	-		-
4-Chloro-3-methylphenol	-		-
4-Chloroaniline	2500	2004 PRG Industrial	0
4-Chlorophenyl-phenylether	-		-
4-Methylphenol	3100	2004 PRG Industrial	0
4-Nitroaniline	82	2004 PRG Industrial	0
4-Nitrophenol	7000	SDGI Industrial Criteria	0
Acenaphthene	650	2005 ESL Industrial (inhalation)	0
Acenaphthylene	18000	2005 ESL Industrial (direct exp)	0
Aniline	300	2004 PRG Industrial	0
Anthracene	31	2005 ESL Industrial (inhalation)	0
Azobenzene	16	2004 PRG Industrial	0
Benzidine	-		-
Benzo(a)anthracene	1.3	2005 ESL Industrial (direct exp)	0
Benzo(a)pyrene	0.33	SDGI Industrial Criteria	0
Benzo(b)fluoranthene	1.3	2005 ESL Industrial (direct exp)	0
Benzo(e)pyrene	-		-
Benzo(g,h,i)perylene	22000	2005 ESL Industrial (direct exp)	0

Table 4-12 Summary of Detected Exceedances of Evaluation Criteria in the Panhandle Area (2-10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
SEMIVOLATILE ORGANIC COMPOUNDS (continued)			
Benzo(k)fluoranthene	1.3	2005 ESL Industrial (direct exp)	0
Benzoic acid	100000	2004 PRG Industrial	0
Benzyl alcohol	100000	2004 PRG Industrial	0
Biphenyl	18000	2005 ESL Industrial (direct exp)	0
Bis(2-chloroethoxy)methane	-		-
Bis(2-chloroethyl)ether	0.012	2005 ESL Industrial (inhalation)	0
Bis(2-ethylhexyl)phthalate	120	2004 PRG Industrial	0
Butylbenzylphthalate	100000	2004 PRG Industrial	0
Carbazole	86	2004 PRG Industrial	0
Chrysene	13	2005 ESL Industrial (direct exp)	0
Dibenz(a,h)anthracene	0.33	SDGI Industrial Criteria	0
Dibenzofuran	1600	2004 PRG Industrial	0
Diethylphthalate	100000	2004 PRG Industrial	0
Dimethylphthalate	100000	2004 PRG Industrial	0
Di-n-butylphthalate	62000	2004 PRG Industrial	0
Di-n-octylphthalate	25000	2004 PRG Industrial	0
Fluoranthene	22000	2004 PRG Industrial	0
Fluorene	800	2005 ESL Industrial (inhalation)	0
Hexachlorobenzene	0.96	2005 ESL Industrial (direct exp)	0
Hexachlorobutadiene	22	2004 PRG Industrial	0
Hexachlorocyclopentadiene	3700	2004 PRG Industrial	0
Hexachloroethane	44	2005 ESL Industrial (direct exp)	0
Indeno(1,2,3-cd)pyrene	1.3	2005 ESL Industrial (direct exp)	0
Isophorone	510	2004 PRG Industrial	0
Napthalene	1.5	2005 ESL Industrial (inhalation)	3
Nitrobenzene	100	2004 PRG Industrial	0
n-Nitrosodimethylamine	0.034	2004 PRG Industrial	0
n-Nitroso-di-n-propylamine	0.25	2004 PRG Industrial	0
n-Nitrosodiphenylamine	350	2004 PRG Industrial	0
Pentachlorophenol	9	2004 PRG Industrial	0
Phenacetin	-		-
Phenanthrene	18000	2005 ESL Industrial (direct exp)	0
Phenol	100000	2004 PRG Industrial	0
Pyrene	430	2005 ESL Industrial (inhalation)	0
VOLATILE ORGANIC COMPOUNDS			
1,1,1,2-Tetrachloroethane	6.9	2005 ESL Industrial (direct exp)	0
1,1,1-Trichloroethane	230	2005 ESL Industrial (inhalation)	0
1,1,2,2-Tetrachloroethane	0.025	2005 ESL Industrial (inhalation)	0
1,1,2-Trichloro-1,2,2-trifluoroethane	-		-
1,1,2-Trichloroethane	0.089	2005 ESL Industrial (inhalation)	0
1,1-Dichloroethane	0.89	2005 ESL Industrial (inhalation)	0
1,1-Dichloroethene	105	2005 ESL Industrial (inhalation)	0
1,1-Dichloropropene	-		-
1,2,3-Trichlorobenzene	-		-
1,2,3-Trichloropropane	-		-
1,2,4-Trichlorobenzene	5	2005 ESL Industrial (inhalation)	0
1,2,4-Trimethylbenzene	170	2004 PRG Industrial	0
1,2-Dibromo-3-chloropropane	0.067	2005 ESL Industrial (direct exp)	0
1,2-Dibromoethane	0.02	2005 ESL Industrial (inhalation)	0
1,2-Dichlorobenzene	21	2005 ESL Industrial (inhalation)	0
1,2-Dichloroethane	0.07	2005 ESL Industrial (inhalation)	0
1,2-Dichloroethene (Total)	150	SDGI Industrial Criteria	0
1,2-Dichloropropane	0.14	2005 ESL Industrial (inhalation)	0
1,3,5-Trimethylbenzene	70	2004 PRG Industrial	0
1,3-Dichlorobenzene	600	2004 PRG Industrial	0
1,3-Dichloropropane	-		-
1,4-Dichlorobenzene	0.13	2005 ESL Industrial (inhalation)	0
2,2-Dichloropropane	-		0
2-Butanone	6500	2005 ESL Industrial (inhalation)	0
2-Chloroethyl vinyl ether	-		-
2-Chlorotoluene	-		-
2-Hexanone	-		-
4-Chlorotoluene	-		-
4-Methyl-2-pentanone	1550	2005 ESL Industrial (inhalation)	0
Acetone	16500	2005 ESL Industrial (inhalation)	0
Benzene	0.38	2005 ESL Industrial (direct exp)	0
Bromobenzene	-		-
Bromochloromethane	-		-

Table 4-12 Summary of Detected Exceedances of Evaluation Criteria in the Panhandle Area (2-10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
VOLATILE ORGANIC COMPOUNDS (continued)			
Bromodichloromethane	0.039	2005 ESL Industrial (inhalation)	0
Bromoform	220	2004 PRG Industrial	0
Bromomethane	2.6	2005 ESL Industrial (inhalation)	0
Carbon disulfide	720	2004 PRG Industrial	0
Carbon tetrachloride	0.034	2005 ESL Industrial (inhalation)	0
Chlorobenzene	31	2005 ESL Industrial (inhalation)	0
Chloroethane	1.8	2005 ESL Industrial (inhalation)	0
Chloroform	0.47	2004 PRG Industrial	0
Chloromethane	0.2	2005 ESL Industrial (inhalation)	0
cis-1,2-Dichloroethene	18	2005 ESL Industrial (inhalation)	0
cis-1,3-Dichloropropene	0.093	2005 ESL Industrial (inhalation)	0
Dibromochloromethane	0.054	2005 ESL Industrial (inhalation)	0
Dibromomethane	-		-
Dichlorodifluoromethane	310	2004 PRG Industrial	0
Ethylbenzene	390	2005 ESL Industrial (inhalation)	0
Hexachlorobutadiene	22	2004 PRG Industrial	0
Isopropylbenzene	2000	2004 PRG Industrial	0
Methylene chloride	1.5	2005 ESL Industrial (inhalation)	0
Naphthalene	1.5	2005 ESL Industrial (inhalation)	3
n-Butylbenzene	240	2004 PRG Industrial	0
o-Xylene	210	SDGI Industrial Criteria	0
para-Isopropyl toluene	-		-
Propylbenzene	240	2004 PRG Industrial	0
sec-Butylbenzene	220	2004 PRG Industrial	0
Styrene	1100	2005 ESL Industrial (inhalation)	0
tert-Butyl methyl ether	5.6	2005 ESL Industrial (inhalation)	0
tert-Butylbenzene	390	2004 PRG Industrial	0
Tetrachloroethene	0.24	2005 ESL Industrial (inhalation)	0
Toluene	520	2004 PRG Industrial	0
trans-1,2-Dichloroethene	37	2005 ESL Industrial (inhalation)	0
trans-1,3-Dichloropropene	0.093	2005 ESL Industrial (inhalation)	0
Trichloroethene	0.11	2004 PRG Industrial	0
Trichlorofluoromethane	2000	2004 PRG Industrial	0
Vinyl acetate	1400	2004 PRG Industrial	0
Vinyl chloride	0.019	2005 ESL Industrial (inhalation)	0
Xylene (Total)	420	2004 PRG Industrial	0
PETROLEUM HYDROCARBONS			
Gasoline range organics	750	2005 ESL Industrial (direct exp)	0
Diesel range organics	750	2005 ESL Industrial (direct exp)	1
Motor oil range organics	4600	2005 ESL Industrial (direct exp)	0
TPH-extractable unknown hydrocarbon	4600	2005 ESL Industrial (direct exp)	0
TPH-purgeable unknown hydrocarbon	750	2005 ESL Industrial (direct exp)	0
Total TPH	3500	HPS TPH source criterion	0
Total oil & grease	3500	HPS TPH source criterion	2

(a) PRC Environmental Management, Inc. 1995. "Draft Calculation of Hunters Point Ambient Levels." April 11.

-- No criteria available for this analyte

BHC - benzene hexachloride
DDD - dichlorodiphenyldichloroethane
DDE - dichlorodiphenyldichloroethene
DDT - dichlorodiphenyltrichloroethane
ESL - environmental screening level
HPAL - Hunters Point ambient level
HpCDD - heptachlorodibenzo[b,e][1,4]dioxin
HpCDF - heptachlorodibenzo[b,e][1,4]furan
HxCDD - hexachlorodibenzo[b,e][1,4]dioxin
HxCDF - hexachlorodibenzo[b,e][1,4]furan
mg/kg - milligrams per kilogram
OCDD - octachlorodibenzo-p-dioxin
OCDF - octachlorodibenzofuran
PCB - polychlorinated biphenyl
PeCDD - pentachlorodibenzo[b,e][1,4]dioxin
PeCDF - pentachlorodibenzo[b,e][1,4]furan
PRG - preliminary remediation goal
SDGI - standard data gap investigation
TCDD - tetrachlorodibenzo-p-dioxin
TCDF - tetrachlorodibenzo-p-furan
TPH - total petroleum hydrocarbon

Table 4-13 Summary of Analyses and Detections in the Panhandle Area (greater than 10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
Metals					
Aluminum	35/35	1.4 - 15	2090 - 25300	NA	-
Antimony	7/31	0.012 - 8.8	0.5J - 18.8J	9.05	3
Arsenic	32/36	0.057 - 8	1.3J - 14	11.1	4
Barium	34/36	0.046 - 435	11.7 - 896	314.4	3
Beryllium	21/36	0.012 - 1.5	0.12 - 0.91	0.71	4
Cadmium	9/36	0.012 - 1.5	0.35 - 2.2	3.14	0
Calcium	35/35	0.93 - 59	1320 - 73800	NA	-
Chromium	36/36	0.054 - 43	16.8 - 700	(b)	2
Chromium VI	1/54	0.05 - 0.058	0.58J - 0.58	NA	-
Cobalt	35/36	0.012 - 108	3.7 - 115	(b)	1
Copper	32/36	0.013 - 54	1.7 - 4190	124.3	6
Cyanide	14/30	0.07 - 1.2	0.08J - 2.6J	NA	-
Iron	35/35	0.4 - 12.7	7140 - 55900	NA	-
Lead	35/36	0.012 - 33	1.2 - 1150	8.99	24
Magnesium	35/35	1.3 - 59	1340J - 137000	NA	-
Manganese	36/36	0.012 - 108	46.8 - 2370	1431.2	2
Mercury	12/36	0.0058 - 1.3	0.12 - 0.82J	2.28	0
Molybdenum	6/30	0.012 - 3.3	0.68 - 12.7	2.68	3
Nickel	36/36	0.012 - 108	15.8 - 2560	(b)	0
Potassium	31/35	0.58 - 848	428 - 4390	NA	-
Selenium	4/33	0.029 - 1	0.41J - 2.6	1.95	1
Silver	6/36	0.012 - 4	0.15 - 1.4J	1.43	0
Sodium	35/35	0.78 - 59	147 - 6790	NA	-
Thallium	0/36	0.041 - 3.8	-	0.81	0
Tin	0/3	3.2 - 3.6	-	33227	-
Vanadium	36/36	0.32 - 108	5.4 - 94.6	117.2	0
Zinc	36/36	0.12 - 108	12.8 - 1430	109.9	10
PCBs and PESTICIDES					
4,4'-DDD	0/34	0.017 - 0.093	-	NA	-
4,4'-DDE	1/34	0.017 - 0.093	0.0038J	NA	-
4,4'-DDT	0/34	0.017 - 0.093	-	NA	-
Aldrin	0/34	0.009 - 0.17	-	NA	-
alpha-BHC	0/34	0.009 - 0.17	-	NA	-
alpha-Chlordane	0/33	0.0098 - 0.46	-	NA	-
beta-BHC	0/34	0.009 - 0.17	-	NA	-
Chlordane	0/1	0.098	-	NA	-
delta-BHC	0/34	0.009 - 0.17	-	NA	-
Dieldrin	1/34	0.017 - 0.093	0.0029J	NA	-
Endosulfan I	0/34	0.009 - 0.046	-	NA	-
Endosulfan II	0/34	0.017 - 0.093	-	NA	-
Endosulfan sulfate	0/34	0.017 - 0.093	-	NA	-
Endrin	0/34	0.017 - 0.093	-	NA	-
Endrin aldehyde	0/2	0.02 - 0.02	-	NA	-
Endrin ketone	0/34	0.017 - 0.093	-	NA	-
gamma-BHC (lindane)	0/34	0.009 - 0.17	-	NA	-
gamma-Chlordane	0/33	0.0098 - 0.46	-	NA	-
Heptachlor	0/34	0.009 - 0.17	-	NA	-
Heptachlor epoxide	1/34	0.009 - 0.046	0.0021J	NA	-
Methoxychlor	0/1	0.087 - 0.46	0.013J	NA	-
Mirex	1/34	0.0098	-	NA	-
Aroclor-1016	0/34	0.018 - 1	-	NA	-
Aroclor-1221	0/34	0.018 - 1	-	NA	-
Aroclor-1232	0/34	0.018 - 1	-	NA	-
Aroclor-1242	0/34	0.018 - 1	-	NA	-
Aroclor-1248	0/34	0.018 - 0.46	-	NA	-
Aroclor-1254	1/34	0.018 - 0.93	0.052J	NA	-
Aroclor-1260	2/34	0.018 - 0.93	0.065 - 0.12	NA	-
Total PCBs	2/34	-	0.117 - 0.12	NA	-

Table 4-13 Summary of Analyses and Detections in the Panhandle Area (greater than 10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
SEMIVOLATILE ORGANIC COMPOUNDS					
1,2,4-Trichlorobenzene	0/35	0.36 - 26	-	NA	-
1,2-Dichlorobenzene	0/35	0.36 - 26	-	NA	-
1,3-Dichlorobenzene	0/35	0.36 - 26	-	NA	-
1,4-Dichlorobenzene	0/35	0.36 - 26	-	NA	-
2,2'-Oxybis(1-chloropropane)	0/35	0.36 - 26	-	NA	-
2,4,5-Trichlorophenol	0/35	1.7 - 130	-	NA	-
2,4,6-Trichlorophenol	0/35	0.36 - 26	-	NA	-
2,4-Dichlorophenol	0/35	0.36 - 26	-	NA	-
2,4-Dimethylphenol	0/35	0.36 - 26	-	NA	-
2,4-Dinitrophenol	0/35	1.7 - 130	-	NA	-
2,4-Dinitrotoluene	0/35	0.36 - 26	-	NA	-
2,6-Dinitrotoluene	0/35	0.36 - 26	-	NA	-
2-Chloronaphthalene	0/35	0.36 - 26	-	NA	-
2-Chlorophenol	0/35	0.36 - 26	-	NA	-
2-Methylnaphthalene	3/34	0.015 - 26	0.041J - 7.4	NA	-
2-Methylphenol	0/35	0.36 - 26	-	NA	-
2-Nitroaniline	0/35	1.7 - 130	-	NA	-
2-Nitrophenol	0/35	0.36 - 26	-	NA	-
3,3'-Dichlorobenzidine	0/35	0.72 - 52	-	NA	-
3-Nitroaniline	0/35	1.7 - 130	-	NA	-
4,6-Dinitro-2-methylphenol	0/35	1.7 - 130	-	NA	-
4-Bromophenyl-phenylether	0/35	0.36 - 26	-	NA	-
4-Chloro-3-methylphenol	0/35	0.36 - 26	-	NA	-
4-Chloroaniline	0/35	0.36 - 26	-	NA	-
4-Chlorophenyl-phenylether	0/35	0.36 - 26	-	NA	-
4-Methylphenol	0/35	0.36 - 26	-	NA	-
4-Nitroaniline	0/35	1.7 - 130	-	NA	-
4-Nitrophenol	0/35	1.7 - 130	-	NA	-
Acenaphthene	1/35	0.36 - 26	0.078J	NA	-
Acenaphthylene	0/36	0.36 - 26	-	NA	-
Anthracene	3/36	0.36 - 26	0.07J - 1.6J	NA	-
Benzo(a)anthracene	3/36	0.36 - 26	0.21J - 3.3J	NA	-
Benzo(a)pyrene	4/36	0.36 - 26	0.21J - 1.4J	NA	-
Benzo(b)fluoranthene	3/36	0.36 - 26	0.15J - 3.6J	NA	-
Benzo(e)pyrene	0/1	3.8 - 3.8	-	NA	-
Benzo(g,h,i)perylene	2/36	0.36 - 26	0.11J - 1.9J	NA	-
Benzo(k)fluoranthene	2/36	0.36 - 26	0.13J - 0.22J	NA	-
Benzoic acid	2/34	1.7 - 130	0.15J - 0.34J	NA	-
Benzyl alcohol	0/34	0.36 - 26	-	NA	-
Biphenyl	0/1	3.5 - 3.5	-	NA	-
Bis(2-chloroethoxy)methane	0/35	0.36 - 26	-	NA	-
Bis(2-chloroethyl)ether	0/35	0.36 - 26	-	NA	-
Bis(2-ethylhexyl)phthalate	1/36	0.069 - 26	0.24J	NA	-
Butylbenzylphthalate	0/35	0.36 - 26	-	NA	-
Carbazole	0/1	3.8	-	NA	-
Chrysene	3/36	0.36 - 26	0.22J - 3.7J	NA	-
Dibenz(a,h)anthracene	1/36	0.36 - 26	0.11J	NA	-
Dibenzofuran	0/36	0.36 - 26	-	NA	-
Diethylphthalate	0/36	0.047 - 26	-	NA	-
Dimethylphthalate	0/35	0.36 - 26	-	NA	-
Di-n-butylphthalate	0/35	0.36 - 26	-	NA	-
Di-n-octylphthalate	0/35	0.36 - 26	-	NA	-
Fluoranthene	3/36	0.36 - 26	0.24J - 5.3J	NA	-
Fluorene	2/36	0.36 - 26	0.067J - 0.086J	NA	-
Hexachlorobenzene	0/35	0.36 - 26	-	NA	-
Hexachlorobutadiene	0/35	0.36 - 26	-	NA	-
Hexachlorocyclopentadiene	0/35	0.36 - 26	-	NA	-
Hexachloroethane	0/35	0.36 - 26	-	NA	-
Indeno(1,2,3-cd)pyrene	1/36	0.36 - 26	2.7J	NA	-
Isophorone	0/34	0.36 - 26	-	NA	-
Naphthalene	7/36	0.015 - 26	0.073J - 110	NA	-
Nitrobenzene	0/35	0.36 - 26	-	NA	-
n-Nitroso-di-n-propylamine	0/36	0.36 - 26	-	NA	-
n-Nitrosodiphenylamine	0/36	0.36 - 26	-	NA	-
Pentachlorophenol	0/36	1.7 - 130	-	NA	-
Phenacetin	0/1	7.6 - 7.6	-	NA	-
Phenanthrene	3/36	0.041 - 26	0.32J - 6.3J	NA	-
Phenol	0/36	0.36 - 26	-	NA	-

Table 4-13 Summary of Analyses and Detections in the Panhandle Area (greater than 10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
SEMIVOLATILE ORGANIC COMPOUNDS					
Pyrene	4/36	0.36 - 26	0.096J - 5J	NA	-
VOLATILE ORGANIC COMPOUNDS					
1,1,1-Trichloroethane	0/34	0.005 - 1.6	-	NA	-
1,1,2,2-Tetrachloroethane	0/34	0.005 - 1.6	-	NA	-
1,1,2-Trichloroethane	0/34	0.005 - 1.6	-	NA	-
1,1-Dichloroethane	0/34	0.005 - 1.6	-	NA	-
1,1-Dichloroethene	0/34	0.005 - 1.6	-	NA	-
1,2-Dichloroethane	0/34	0.005 - 1.6	-	NA	-
1,2-Dichloroethene (Total)	0/34	0.005 - 1.6	-	NA	-
1,2-Dichloropropane	0/34	0.005 - 1.6	-	NA	-
2-Butanone	3/34	0.002 - 3.2	0.002J - 0.014	NA	-
2-Hexanone	0/34	0.011 - 3.2	-	NA	-
4-Methyl-2-pentanone	0/34	0.011 - 3.2	-	NA	-
Acetone	0/34	0.009 - 26	-	NA	-
Benzene	0/34	0.005 - 1.6	-	NA	-
Bromodichloromethane	0/34	0.005 - 1.6	-	NA	-
Bromoform	0/34	0.005 - 1.6	-	NA	-
Bromomethane	0/34	0.011 - 3.2	-	NA	-
Carbon disulfide	7/34	0.005 - 1.6	0.002J - 0.052	NA	-
Carbon tetrachloride	0/34	0.005 - 1.6	-	NA	-
Chlorobenzene	0/34	0.005 - 1.6	-	NA	-
Chloroethane	0/34	0.011 - 3.2	-	NA	-
Chloroform	0/34	0.005 - 1.6	-	NA	-
Chloromethane	0/34	0.011 - 3.2	-	NA	-
cis-1,3-Dichloropropene	0/34	0.005 - 1.6	-	NA	-
Dibromochloromethane	0/34	0.005 - 1.6	-	NA	-
Ethylbenzene	0/34	0.005 - 1.6	-	NA	-
Methylene chloride	0/34	0.002 - 1.6	-	NA	-
Styrene	0/34	0.005 - 1.6	-	NA	-
Tetrachloroethene	0/34	0.005 - 1.6	-	NA	-
Toluene	6/34	0.005 - 1.6	0.003J - 0.77J	NA	-
trans-1,3-Dichloropropene	0/34	0.005 - 1.6	-	NA	-
Trichloroethene	0/34	0.005 - 1.6	-	NA	-
Vinyl acetate	0/34	0.011 - 3.2	-	NA	-
Vinyl chloride	0/34	0.011 - 3.2	-	NA	-
Xylene (Total)	1/34	0.005 - 1.6	0.001J	NA	-
PETROLEUM HYDROCARBONS					
Gasoline range organics	3/32	1 - 200	3J - 3900	NA	-
Diesel range organics	12/32	1 - 430	5 - 2800	NA	-
Motor oil range organics	0/0	-	-	NA	-
TPH-extractable unknown hydrocarbon	3/7	11 - 14	8J - 22	NA	-
TPH-purgeable unknown hydrocarbon	0/3	1	-	NA	-
Total TPH	15/32	-	7 - 6700	NA	-
Total oil & grease	27/32	27 - 130	32J - 12000	NA	-

Notes
(a) - Detection limits are reported as the laboratory reporting limits
(b) - Hunters Point ambient levels is determined on a location specific basis
-- No criteria available for this analyte
BHC - benzene hexachloride
DDD - dichlorodiphenyldichloroethane
DDE - dichlorodiphenyldichloroethene
DDT - dichlorodiphenyltrichloroethane
J - Estimated value
mg/kg - milligrams per kilogram
NA - not available
PCB - polychlorinated biphenyl
TPH - total petroleum hydrocarbon

Table 4-14 Summary of Detected Exceedances of Evaluation Criteria in the Panhandle Area (greater than 10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
Metals			
Aluminum	100000	2004 PRG Industrial	0
Antimony	380	2005 ESL Industrial (direct exp)	0
Arsenic	11.1	HPAL	4
Barium	63000	2005 ESL Industrial (direct exp)	0
Beryllium	1700	2005 ESL Industrial (direct exp)	0
Cadmium	7.4	2005 ESL Industrial (direct exp)	0
Calcium	-		-
Chromium (total)	a	See note	1
Chromium VI	37	2005 ESL Industrial (direct exp)	0
Cobalt	a	See note	0
Copper	38000	2005 ESL Industrial (direct exp)	0
Cyanide (free)	12000	2004 PRG Industrial	0
Iron	100000	2004 PRG Industrial	0
Lead	800	2004 PRG Industrial	2
Magnesium	-		-
Manganese	19000	2004 PRG Industrial	0
Mercury	180	2005 ESL Industrial (direct exp)	0
Molybdenum	4800	2005 ESL Industrial (direct exp)	0
Nickel	a	See note	0
Potassium	-		-
Selenium	4800	2005 ESL Industrial (direct exp)	0
Silver	4800	2005 ESL Industrial (direct exp)	0
Sodium	-		0
Thallium	63	2005 ESL Industrial (direct exp)	0
Tin	100000	2004 PRG Industrial	0
Vanadium	1000	2004 PRG Industrial	0
Zinc	100000	2004 PRG Industrial	0
PESTICIDES			
2,4'-DDD	9	2005 ESL Industrial (direct exp)	0
2,4'-DDE	6.3	2005 ESL Industrial (direct exp)	0
2,4'-DDT	6.3	2005 ESL Industrial (direct exp)	0
4,4'-DDD	9	2005 ESL Industrial (direct exp)	0
4,4'-DDE	6.3	2005 ESL Industrial (direct exp)	0
4,4'-DDT	6.3	2005 ESL Industrial (direct exp)	0
Aldrin	0.1	2004 PRG Industrial	0
alpha-BHC	0.36	2004 PRG Industrial	0
Alpha-chlordane	2.9	SDGI Industrial Criteria	0
beta-BHC	1.3	2004 PRG Industrial	0
Chlordane	1.7	2005 ESL Industrial (direct exp)	0
cis-Nonachlor	-		-
delta-BHC	0.59	SDGI Industrial Criteria	0
Dieldrin	0.11	2004 PRG Industrial	0
Endosulfan I	3700	2004 PRG Industrial	0
Endosulfan II	3700	2004 PRG Industrial	0
Endosulfan sulfate	5300	SDGI Industrial Criteria	0
Endrin	190	2004 PRG Industrial	0
Endrin aldehyde	260	SDGI Industrial Criteria	0
Endrin ketone	260	SDGI Industrial Criteria	0
Gamma-BHC (lindane)	1.7	2004 PRG Industrial	0
Gamma-chlordane	2.9	SDGI Industrial Criteria	0
Heptachlor	0.38	2004 PRG Industrial	0
Heptachlor epoxide	0.19	2004 PRG Industrial	0
Heptachlor epoxide A	-		-
Heptachlor epoxide B	-		-
Hexachlorobenzene	0.96	2005 ESL Industrial (direct exp)	0
Methoxychlor	3100	2004 PRG Industrial	0
Mirex	-		-
Oxychlordane	-		-
trans-Nonachlor	21	2004 PRG Industrial	0
Toxaphene	1.6	2004 PRG Industrial	0

Table 4-14 Summary of Detected Exceedances of Evaluation Criteria in the Panhandle Area (greater than 10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
PCBs			
Aroclor-1016	21	2004 PRG Industrial	0
Aroclor-1221	0.74	2004 PRG Industrial	0
Aroclor-1232	0.74	2004 PRG Industrial	0
Aroclor-1242	0.74	2004 PRG Industrial	0
Aroclor-1248	0.74	2004 PRG Industrial	0
Aroclor-1254	0.74	2004 PRG Industrial	0
Aroclor-1260	0.74	2004 PRG Industrial	0
Total PCBs	0.74	2004 PRG Industrial	0
SEMIVOLATILE ORGANIC COMPOUNDS			
1,2,4-Trichlorobenzene	5	2005 ESL Industrial (inhalation)	0
1,2,4-Trimethylbenzene	170	2004 PRG Industrial	0
1,2-Dichlorobenzene	21	2005 ESL Industrial (inhalation)	0
1,3,5-Trimethylbenzene	70	2004 PRG Industrial	0
1,3-Dichlorobenzene	600	2004 PRG Industrial	0
1,4-Dichlorobenzene	0.13	2005 ESL Industrial (inhalation)	0
2,2'-Oxybis(1-chloropropane)	7.4	2004 PRG Industrial	0
2,4,5-Trichlorophenol	310	2005 ESL Industrial (inhalation)	0
2,4,6-Trichlorophenol	25	2005 ESL Industrial (direct exp)	0
2,4-Dichlorophenol	1800	2004 PRG Industrial	0
2,4-Dimethylphenol	1500	2005 ESL Industrial (inhalation)	0
2,4-Dinitrophenol	1200	2004 PRG Industrial	0
2,4-Dinitrotoluene	5.6	2005 ESL Industrial (direct exp)	0
2,6-Dinitrotoluene	620	2004 PRG Industrial	0
2-Chloronaphthalene	23000	2004 PRG Industrial	0
2-Chlorophenol	10	2005 ESL Industrial (inhalation)	0
2-Methylnaphthalene	550	2005 ESL Industrial (inhalation)	0
2-Methylphenol	31000	2004 PRG Industrial	0
2-Nitroaniline	1800	2004 PRG Industrial	0
2-Nitrophenol	-		-
3,3'-Dichlorobenzidine	1.4	2005 ESL Industrial (direct exp)	0
3-Nitroaniline	82	2004 PRG Industrial	0
4,6-Dinitro-2-methylphenol	-		-
4-Bromophenyl-phenylether	-		-
4-Chloro-3-methylphenol	-		-
4-Chloroaniline	2500	2004 PRG Industrial	0
4-Chlorophenyl-phenylether	-		-
4-Methylphenol	3100	2004 PRG Industrial	0
4-Nitroaniline	82	2004 PRG Industrial	0
4-Nitrophenol	7000	SDGI Industrial Criteria	0
Acenaphthene	650	2005 ESL Industrial (inhalation)	0
Acenaphthylene	18000	2005 ESL Industrial (direct exp)	0
Aniline	300	2004 PRG Industrial	0
Anthracene	31	2005 ESL Industrial (inhalation)	0
Azobenzene	16	2004 PRG Industrial	0
Benzidine	-		-
Benzo(a)anthracene	1.3	2005 ESL Industrial (direct exp)	1
Benzo(a)pyrene	0.33	SDGI Industrial Criteria	1
Benzo(b)fluoranthene	1.3	2005 ESL Industrial (direct exp)	1
Benzo(e)pyrene	-		-
Benzo(g,h,i)perylene	22000	2005 ESL Industrial (direct exp)	0
Benzo(k)fluoranthene	1.3	2005 ESL Industrial (direct exp)	0
Benzoic acid	100000	2004 PRG Industrial	0
Benzyl alcohol	100000	2004 PRG Industrial	0
Biphenyl	18000	2005 ESL Industrial (direct exp)	0
Bis(2-chloroethoxy)methane	-		-
Bis(2-chloroethyl)ether	0.012	2005 ESL Industrial (inhalation)	0
Bis(2-ethylhexyl)phthalate	120	2004 PRG Industrial	0
Butylbenzylphthalate	100000	2004 PRG Industrial	0
Carbazole	86	2004 PRG Industrial	0
Chrysene	13	2005 ESL Industrial (direct exp)	0
Dibenz(a,h)anthracene	0.33	SDGI Industrial Criteria	0
Dibenzofuran	1600	2004 PRG Industrial	0
Diethylphthalate	100000	2004 PRG Industrial	0
Dimethylphthalate	100000	2004 PRG Industrial	0
Di-n-butylphthalate	62000	2004 PRG Industrial	0
Di-n-octylphthalate	25000	2004 PRG Industrial	0
Fluoranthene	22000	2004 PRG Industrial	0
Fluorene	800	2005 ESL Industrial (inhalation)	0

Table 4-14 Summary of Detected Exceedances of Evaluation Criteria in the Panhandle Area (greater than 10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
SEMIVOLATILE ORGANIC COMPOUNDS (continued)			
Hexachlorobenzene	0.96	2005 ESL Industrial (direct exp)	0
Hexachlorobutadiene	22	2004 PRG Industrial	0
Hexachlorocyclopentadiene	3700	2004 PRG Industrial	0
Hexachloroethane	44	2005 ESL Industrial (direct exp)	0
Indeno(1,2,3-cd)pyrene	1.3	2005 ESL Industrial (direct exp)	1
Isophorone	510	2004 PRG Industrial	0
Napthalene	1.5	2005 ESL Industrial (inhalation)	3
Nitrobenzene	100	2004 PRG Industrial	0
n-Nitrosodimethylamine	0.034	2004 PRG Industrial	0
n-Nitroso-di-n-propylamine	0.25	2004 PRG Industrial	0
n-Nitrosodiphenylamine	350	2004 PRG Industrial	0
Pentachlorophenol	9	2004 PRG Industrial	0
Phenacetin	-		-
Phenanthrene	18000	2005 ESL Industrial (direct exp)	0
Phenol	100000	2004 PRG Industrial	0
Pyrene	430	2005 ESL Industrial (inhalation)	0
VOLATILE ORGANIC COMPOUNDS			
1,1,1,2-Tetrachloroethane	6.9	2005 ESL Industrial (direct exp)	0
1,1,1-Trichloroethane	230	2005 ESL Industrial (inhalation)	0
1,1,2,2-Tetrachloroethane	0.025	2005 ESL Industrial (inhalation)	0
1,1,2-Trichloro-1,2,2-trifluoroethane	-		-
1,1,2-Trichloroethane	0.089	2005 ESL Industrial (inhalation)	0
1,1-Dichloroethane	0.89	2005 ESL Industrial (inhalation)	0
1,1-Dichloroethene	105	2005 ESL Industrial (inhalation)	0
1,1-Dichloropropene	-		-
1,2,3-Trichlorobenzene	-		-
1,2,3-Trichloropropane	-		-
1,2,4-Trichlorobenzene	5	2005 ESL Industrial (inhalation)	0
1,2,4-Trimethylbenzene	170	2004 PRG Industrial	0
1,2-Dibromo-3-chloropropane	0.067	2005 ESL Industrial (direct exp)	0
1,2-Dibromoethane	0.02	2005 ESL Industrial (inhalation)	0
1,2-Dichlorobenzene	21	2005 ESL Industrial (inhalation)	0
1,2-Dichloroethane	0.07	2005 ESL Industrial (inhalation)	0
1,2-Dichloroethene (Total)	150	SDGI Industrial Criteria	0
1,2-Dichloropropane	0.14	2005 ESL Industrial (inhalation)	0
1,3,5-Trimethylbenzene	70	2004 PRG Industrial	0
1,3-Dichlorobenzene	600	2004 PRG Industrial	0
1,3-Dichloropropane	-		-
1,4-Dichlorobenzene	0.13	2005 ESL Industrial (inhalation)	0
2,2-Dichloropropane	-		0
2-Butanone	6500	2005 ESL Industrial (inhalation)	0
2-Chloroethyl vinyl ether	-		-
2-Chlorotoluene	-		-
2-Hexanone	-		-
4-Chlorotoluene	-		-
4-Methyl-2-pentanone	1550	2005 ESL Industrial (inhalation)	0
Acetone	16500	2005 ESL Industrial (inhalation)	0
Benzene	0.38	2005 ESL Industrial (direct exp)	0
Bromobenzene	-		-
Bromochloromethane	-		-
Bromodichloromethane	0.039	2005 ESL Industrial (inhalation)	0
Bromoform	220	2004 PRG Industrial	0
Bromomethane	2.6	2005 ESL Industrial (inhalation)	0
Carbon disulfide	720	2004 PRG Industrial	0
Carbon tetrachloride	0.034	2005 ESL Industrial (inhalation)	0
Chlorobenzene	31	2005 ESL Industrial (inhalation)	0
Chloroethane	1.8	2005 ESL Industrial (inhalation)	0
Chloroform	0.47	2004 PRG Industrial	0
Chloromethane	0.2	2005 ESL Industrial (inhalation)	0
cis-1,2-Dichloroethene	18	2005 ESL Industrial (inhalation)	0
cis-1,3-Dichloropropene	0.093	2005 ESL Industrial (inhalation)	0
Dibromochloromethane	0.054	2005 ESL Industrial (inhalation)	0
Dibromomethane	-		-
Dichlorodifluoromethane	310	2004 PRG Industrial	0
Ethylbenzene	390	2005 ESL Industrial (inhalation)	0
Hexachlorobutadiene	22	2004 PRG Industrial	0
Isopropylbenzene	2000	2004 PRG Industrial	0
Methylene chloride	1.5	2005 ESL Industrial (inhalation)	0

Table 4-14 Summary of Detected Exceedances of Evaluation Criteria in the Panhandle Area (greater than 10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
VOLATILE ORGANIC COMPOUNDS (continued)			
Naphthalene	1.5	2005 ESL Industrial (inhalation)	0
n-Butylbenzene	240	2004 PRG Industrial	0
o-Xylene	210	SDGI Industrial Criteria	0
para-Isopropyl toluene	-		-
Propylbenzene	240	2004 PRG Industrial	0
sec-Butylbenzene	220	2004 PRG Industrial	0
Styrene	1100	2005 ESL Industrial (inhalation)	0
tert-Butyl methyl ether	5.6	2005 ESL Industrial (inhalation)	0
tert-Butylbenzene	390	2004 PRG Industrial	0
Tetrachloroethene	0.24	2005 ESL Industrial (inhalation)	0
Toluene	520	2004 PRG Industrial	0
trans-1,2-Dichloroethene	37	2005 ESL Industrial (inhalation)	0
trans-1,3-Dichloropropene	0.093	2005 ESL Industrial (inhalation)	0
Trichloroethene	0.11	2004 PRG Industrial	0
Trichlorofluoromethane	2000	2004 PRG Industrial	0
Vinyl acetate	1400	2004 PRG Industrial	0
Vinyl chloride	0.019	2005 ESL Industrial (inhalation)	0
Xylene (Total)	420	2004 PRG Industrial	0
PETROLEUM HYDROCARBONS			
Gasoline range organics	750	2005 ESL Industrial (direct exp)	1
Diesel range organics	750	2005 ESL Industrial (direct exp)	1
Motor oil range organics	4600	2005 ESL Industrial (direct exp)	0
TPH-extractable unknown hydrocarbon	4600	2005 ESL Industrial (direct exp)	0
TPH-purgeable unknown hydrocarbon	750	2005 ESL Industrial (direct exp)	0
Total TPH	3500	HPS TPH source criterion	1
Total oil & grease	3500	HPS TPH source criterion	4

(a) PRC Environmental Management, Inc. 1995. "Draft Calculation of Hunters Point Ambient Levels." April 11.

-- No criteria available for this analyte

BHC - benzene hexachloride

DDD - dichlorodiphenyldichloroethane

DDE - dichlorodiphenyldichloroethene

DDT - dichlorodiphenyltrichloroethane

ESL - environmental screening level

HPAL - Hunters Point ambient level

HPS - Hunters Point Shipyard

mg/kg - milligrams per kilogram

NE - not established

PCB - polychlorinated biphenyl

PRG - preliminary remediation goal

SDGI - standard data gap investigation

TPH - total petroleum hydrocarbon

Table 4-15 Summary of Analyses and Detections in the East Adjacent Area (0-2 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
Anions					
Aluminum	39/39	1.4 - 21.5	2060 - 32900	NA	-
Antimony	33/39	0.34 - 6.6	0.42R - 409J	9.05	10
Arsenic	36/39	0.3 - 6.2	1.3 - 12.6	11.1	1
Barium	39/39	0.06 - 21.5	12 - 621	314.4	3
Beryllium	8/39	0.02 - 0.99	0.08 - 1.1	0.71	3
Cadmium	10/39	0.04 - 0.76	0.13 - 11.8	3.14	7
Calcium	39/39	1.4 - 11.7	1790 - 89500	NA	-
Chromium	39/39	0.09 - 1.1	15.3 - 586J	(b)	4
Chromium VI	2/31	0.05 - 0.06	1.01J3 - 1.5	NA	-
Cobalt	39/39	0.09 - 5.4	4.3 - 102	(b)	0
Copper	39/39	0.11 - 2.7	5.1J - 3320	124.3	17
Cyanide	0/5	0.51 - 0.55	-	NA	-
Iron	39/39	0.73 - 3.2	8850 - 140000	NA	-
Lead	39/39	0.17 - 21.7	2.6J - 11200	8.99	36
Magnesium	39/39	0.78 - 14.5	3570J - 175000	NA	-
Manganese	39/39	0.01 - 1.6	233 - 1290	1431.2	0
Mercury	24/39	0.02 - 0.5	0.06 - 46.7	2.28	6
Molybdenum	11/38	0.13 - 4.7	2.3 - 46.8	2.68	10
Nickel	37/37	0.15 - 4.3	30.5 - 1500	(b)	1
Potassium	37/39	1.4 - 411	182J - 5300J	NA	-
Selenium	4/39	0.39 - 1.1	0.34J - 0.97J	1.95	0
Silver	9/39	0.11 - 2.6	0.42 - 1.5	1.43	1
Sodium	23/39	4.7 - 349	106 - 4510	NA	-
Thallium	6/39	0.31 - 3.1	4.1J - 6.9	0.81	6
Tin	0/0	-	-	NA	-
Vanadium	39/39	0.09 - 5.4	18.8 - 209	117.2	1
Zinc	39/39	0.21 - 3.5	40J - 4100	109.9	23
PCBs and PESTICIDES					
4,4'-DDD	1/36	0.004 - 1.7	0.3	NA	-
4,4'-DDE	0/36	0.004 - 1.7	-	NA	-
4,4'-DDT	2/36	0.004 - 2.3	0.27 - 0.66J	NA	-
Aldrin	0/36	0.002 - 0.21	-	NA	-
Alpha-BHC	0/36	0.002 - 0.21	-	NA	-
Alpha-chlordane	1/36	0.002 - 11	0.01	NA	-
Beta-BHC	0/36	0.002 - 0.21	-	NA	-
Delta-BHC	0/36	0.002 - 0.21	-	NA	-
Dieldrin	1/36	0.004 - 1.7	0.25J	NA	-
Endosulfan I	0/36	0.002 - 0.85	-	NA	-
Endosulfan II	1/36	0.004 - 1.7	0.025	NA	-
Endosulfan sulfate	0/36	0.004 - 2.3	-	NA	-
Endrin	0/36	0.004 - 1.7	-	NA	-
Endrin aldehyde	0/19	0.004 - 0.034	-	NA	-
Endrin ketone	2/36	0.004 - 2.3	0.49J - 0.99J	NA	-
Gamma-BHC (lindane)	0/36	0.002 - 0.21	-	NA	-
Gamma-chlordane	1/35	0.002 - 11	0.013	NA	-
Heptachlor	0/36	0.002 - 0.21	-	NA	-
Heptachlor epoxide	0/36	0.002 - 0.21	-	NA	-
Methoxychlor	3/36	0.018 - 11	0.15J - 1.3J	NA	-
Toxaphene	0/35	0.17 - 23	-	NA	-
Aroclor-1016	0/36	0.035 - 2.1	-	NA	-
Aroclor-1221	0/36	0.071 - 2.1	-	NA	-
Aroclor-1232	0/36	0.035 - 2.1	-	NA	-
Aroclor-1242	0/36	0.035 - 11	-	NA	-
Aroclor-1248	0/36	0.035 - 11	-	NA	-
Aroclor-1254	1/36	0.035 - 23	0.45J	NA	-
Aroclor-1260	21/36	0.035 - 23	0.035J - 37	NA	-
Total PCBs	21/36	-	0.035 - 37	NA	-

Table 4-15 Summary of Analyses and Detections in the East Adjacent Area (0-2 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
SEMIVOLATILE ORGANIC COMPOUNDS					
1,2,4-Trichlorobenzene	1/35	0.14 - 21	0.12	NA	-
1,2-Dichlorobenzene	0/35	0.14 - 21	-	NA	-
1,3-Dichlorobenzene	0/35	0.14 - 21	-	NA	-
1,4-Dichlorobenzene	0/35	0.14 - 21	-	NA	-
2,2'-Oxybis(1-chloropropane)	0/26	0.34 - 21	-	NA	-
2,4,5-Trichlorophenol	0/26	0.85 - 110	-	NA	-
2,4,6-Trichlorophenol	0/26	0.34 - 21	-	NA	-
2,4-Dichlorophenol	0/26	0.34 - 21	-	NA	-
2,4-Dimethylphenol	0/35	0.14 - 21	-	NA	-
2,4-Dinitrophenol	0/26	0.85 - 110	-	NA	-
2,4-Dinitrotoluene	0/26	0.34 - 21	-	NA	-
2,6-Dinitrotoluene	0/35	0.14 - 21	-	NA	-
2-Chloronaphthalene	0/35	0.14 - 21	-	NA	-
2-Chlorophenol	0/26	0.34 - 21	-	NA	-
2-Methylnaphthalene	3/35	0.14 - 21	0.075J - 3.5	NA	-
2-Methylphenol	0/35	0.14 - 21	-	NA	-
2-Nitroaniline	0/35	0.14 - 110	-	NA	-
2-Nitrophenol	0/26	0.34 - 21	-	NA	-
3,3'-Dichlorobenzidine	0/34	0.14 - 42	-	NA	-
3-Nitroaniline	0/26	0.85 - 110	-	NA	-
4,6-Dinitro-2-methylphenol	0/26	0.85 - 110	-	NA	-
4-Bromophenyl-phenylether	0/26	0.34 - 21	-	NA	-
4-Chloro-3-methylphenol	0/26	0.34 - 21	-	NA	-
4-Chloroaniline	0/26	0.34 - 21	-	NA	-
4-Chlorophenyl-phenylether	0/26	0.34 - 21	-	NA	-
4-Methylphenol	0/35	0.14 - 21	-	NA	-
4-Nitroaniline	0/26	0.85 - 110	-	NA	-
4-Nitrophenol	0/35	0.35 - 110	-	NA	-
Acenaphthene	3/35	0.14 - 21	0.069J - 0.3	NA	-
Acenaphthylene	4/26	0.34 - 21	0.038J - 0.16J	NA	-
Aniline	0/3	0.35 - 3.5	-	NA	-
Anthracene	8/35	0.14 - 21	0.05J - 0.29	NA	-
Benzidine	0/3	0.35 - 3.5	-	NA	-
Benzo(a)anthracene	11/34	0.14 - 21	0.13J - 2.3J	NA	-
Benzo(a)pyrene	11/33	0.14 - 21	0.091J - 3.4J	NA	-
Benzo(b)fluoranthene	13/33	0.14 - 21	0.085J - 6.6J	NA	-
Benzo(g,h,i)perylene	10/33	0.14 - 21	0.17J - 2.2J	NA	-
Benzo(k)fluoranthene	5/33	0.14 - 21	0.048J - 2.1J	NA	-
Benzoic acid	0/17	1.6 - 110	-	NA	-
Benzyl alcohol	0/17	0.34 - 21	-	NA	-
Bis(2-chloroethoxy)methane	0/26	0.34 - 21	-	NA	-
Bis(2-chloroethyl)ether	0/26	0.34 - 21	-	NA	-
Bis(2-ethylhexyl)phthalate	2/35	0.14 - 28	1.2 - 4.1	NA	-
Butylbenzylphthalate	0/34	0.084 - 21	-	NA	-
Carbazole	0/18	0.14 - 10	-	NA	-
Chrysene	15/35	0.14 - 21	0.082J - 5.8J	NA	-
Dibenz(a,h)anthracene	3/33	0.14 - 21	0.083J - 0.22J	NA	-
Dibenzofuran	2/35	0.14 - 21	0.068J - 0.11J	NA	-
Diethylphthalate	0/35	0.061 - 21	-	NA	-
Dimethylphthalate	0/26	0.34 - 21	-	NA	-
Di-n-butylphthalate	1/35	0.045 - 21	0.63	NA	-
Di-n-octylphthalate	0/33	0.14 - 21	-	NA	-
Fluoranthene	16/35	0.14 - 21	0.11J - 2.4J	NA	-
Fluorene	3/35	0.14 - 21	0.072J - 0.43	NA	-
Hexachlorobenzene	0/35	0.14 - 21	-	NA	-
Hexachlorobutadiene	0/26	0.34 - 21	-	NA	-
Hexachlorocyclopentadiene	0/26	0.34 - 21	-	NA	-
Hexachloroethane	0/26	0.34 - 21	-	NA	-
Indeno(1,2,3-cd)pyrene	10/33	0.14 - 21	0.11J - 0.81J	NA	-
Isophorone	0/35	0.14 - 21	-	NA	-
Naphthalene	7/35	0.14 - 21	0.067J - 0.61	NA	-
Nitrobenzene	0/26	0.34 - 21	-	NA	-
n-Nitrosodimethylamine	0/3	0.35 - 3.5	-	NA	-
n-Nitroso-di-n-propylamine	0/35	0.14 - 21	-	NA	-
n-Nitrosodiphenylamine	0/35	0.14 - 21	-	NA	-
Pentachlorophenol	0/35	0.35 - 110	-	NA	-
Phenanthrene	10/35	0.14 - 21	0.067J - 1.3	NA	-

Table 4-15 Summary of Analyses and Detections in the East Adjacent Area (0-2 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
SEMIVOLATILE ORGANIC COMPOUNDS					
Phenol	3/35	0.14 - 21	0.074J - 0.13J	NA	-
Pyrene	20/35	0.14 - 21	0.2J - 6.9J	NA	-
VOLATILE ORGANIC COMPOUNDS					
1,1,1-Trichloroethane	0/20	0.005 - 0.011	-	NA	-
1,1,2,2-Tetrachloroethane	0/20	0.005 - 0.59	-	NA	-
1,1,2-Trichloroethane	0/20	0.005 - 0.011	-	NA	-
1,1-Dichloroethane	1/20	0.005 - 0.011	0.003J	NA	-
1,1-Dichloroethene	0/20	0.005 - 0.011	-	NA	-
1,2-Dichloroethane	0/20	0.005 - 0.011	-	NA	-
1,2-Dichloroethene (Total)	1/20	0.005 - 0.011	0.006	NA	-
1,2-Dichloropropane	0/20	0.005 - 0.011	-	NA	-
2-Butanone	2/20	0.01 - 0.017	0.003J - 0.008J	NA	-
2-Hexanone	0/20	0.01 - 0.014	-	NA	-
4-Methyl-2-pentanone	1/20	0.01 - 0.014	0.021	NA	-
Acetone	0/20	0.005 - 0.12	-	NA	-
Benzene	0/22	0.0048 - 0.011	-	NA	-
Bromodichloromethane	0/20	0.005 - 0.011	-	NA	-
Bromoform	0/20	0.005 - 0.011	-	NA	-
Bromomethane	0/20	0.01 - 0.014	-	NA	-
Carbon disulfide	0/20	0.005 - 0.011	-	NA	-
Carbon tetrachloride	0/20	0.005 - 0.011	-	NA	-
Chlorobenzene	0/20	0.005 - 0.011	-	NA	-
Chloroethane	0/20	0.01 - 0.014	-	NA	-
Chloroform	0/20	0.005 - 0.011	-	NA	-
Chloromethane	0/20	0.01 - 0.014	-	NA	-
Cis-1,3-dichloropropene	0/20	0.005 - 0.011	-	NA	-
Dibromochloromethane	0/20	0.005 - 0.011	-	NA	-
Ethylbenzene	2/22	0.0048 - 0.011	0.004J - 0.012	NA	-
Methylene chloride	0/20	0.004 - 0.011	-	NA	-
o-Xylene	0/2	0.0048 - 0.0065	-	NA	-
Styrene	0/20	0.005 - 0.011	-	NA	-
Tert-butyl methyl ether	0/2	0.0048 - 0.0065	-	NA	-
Tetrachloroethene	2/20	0.005 - 0.011	0.001J - 0.007	NA	-
Toluene	7/22	0.0048 - 0.011	0.00054J - 0.12	NA	-
trans-1,3-Dichloropropene	0/20	0.005 - 0.011	-	NA	-
Trichloroethene	3/20	0.005 - 0.011	0.001J - 0.013	NA	-
Vinyl acetate	0/17	0.01 - 0.014	-	NA	-
Vinyl chloride	0/20	0.01 - 0.014	-	NA	-
Xylene (Total)	3/20	0.005 - 0.011	0.004J - 0.056	NA	-
PETROLEUM HYDROCARBONS					
Gasoline range organics	3/31	0.24 - 7	0.54J - 6	NA	-
Diesel range organics	22/34	1.1 - 5100	6.1J - 11000D	NA	-
Motor oil range organics	15/17	5.4 - 5300	8.5J - 77000Y	NA	-
TPH-extractable unknown hydrocarbon	1/4	10 - 11	46	NA	-
TPH-purgeable unknown hydrocarbon	0/3	1 - 1	-	NA	-
Total TPH	27/34	-	14.6 - 83500.54	NA	-
Total oil & grease	17/17	26 - 92	78J - 8100J	NA	-

Notes
(a) - Detection limits are reported as the laboratory reporting limits
(b) - Hunters Point ambient levels is determined on a location specific basis
-- No criteria available for this analyte
BHC - benzene hexachloride
DDD - dichlorodiphenyldichloroethane
DDE - dichlorodiphenyldichloroethene
DDT - dichlorodiphenyltrichloroethane
J - Estimated value
NA - not available
PCB - polychlorinated biphenyl
R - Rejected
TPH - total petroleum hydrocarbon
Y - Chromatogram indicates the presence of petroleum fuel

Table 4-16 Summary of Detected Exceedances of Evaluation Criteria in the East Adjacent Area (0-2 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
Metals			
Aluminum	100000	2004 PRG Industrial	0
Antimony	380	2005 ESL Industrial (direct exp)	1
Arsenic	11.1	HPAL	1
Barium	63000	2005 ESL Industrial (direct exp)	0
Beryllium	1700	2005 ESL Industrial (direct exp)	0
Cadmium	7.4	2005 ESL Industrial (direct exp)	2
Calcium	-		-
Chromium (total)	a	See note	1
Chromium VI	37	2005 ESL Industrial (direct exp)	0
Cobalt	a	See note	0
Copper	38000	2005 ESL Industrial (direct exp)	0
Cyanide (free)	12000	2004 PRG Industrial	0
Iron	100000	2004 PRG Industrial	1
Lead	800	2004 PRG Industrial	9
Magnesium	-		-
Manganese	19000	2004 PRG Industrial	0
Mercury	180	2005 ESL Industrial (direct exp)	0
Molybdenum	4800	2005 ESL Industrial (direct exp)	0
Nickel	a	See note	0
Potassium	-		-
Selenium	4800	2005 ESL Industrial (direct exp)	0
Silver	4800	2005 ESL Industrial (direct exp)	0
Sodium	-		0
Thallium	63	2005 ESL Industrial (direct exp)	0
Tin	100000	2004 PRG Industrial	0
Vanadium	1000	2004 PRG Industrial	0
Zinc	100000	2004 PRG Industrial	0
PESTICIDES			
2,4'-DDD	9	2005 ESL Industrial (direct exp)	0
2,4'-DDE	6.3	2005 ESL Industrial (direct exp)	0
2,4'-DDT	6.3	2005 ESL Industrial (direct exp)	0
4,4'-DDD	9	2005 ESL Industrial (direct exp)	0
4,4'-DDE	6.3	2005 ESL Industrial (direct exp)	0
4,4'-DDT	6.3	2005 ESL Industrial (direct exp)	0
Aldrin	0.1	2004 PRG Industrial	0
alpha-BHC	0.36	2004 PRG Industrial	0
Alpha-chlordane	2.9	SDGI Industrial Criteria	0
beta-BHC	1.3	2004 PRG Industrial	0
Chlordane	1.7	2005 ESL Industrial (direct exp)	0
cis-Nonachlor	-		-
delta-BHC	0.59	SDGI Industrial Criteria	0
Dieldrin	0.11	2004 PRG Industrial	1
Endosulfan I	3700	2004 PRG Industrial	0
Endosulfan II	3700	2004 PRG Industrial	0
Endosulfan sulfate	5300	SDGI Industrial Criteria	0
Endrin	190	2004 PRG Industrial	0
Endrin aldehyde	260	SDGI Industrial Criteria	0
Endrin ketone	260	SDGI Industrial Criteria	0
Gamma-BHC (lindane)	1.7	2004 PRG Industrial	0
Gamma-chlordane	2.9	SDGI Industrial Criteria	0
Heptachlor	0.38	2004 PRG Industrial	0
Heptachlor epoxide	0.19	2004 PRG Industrial	0
Heptachlor epoxide A	-		-
Heptachlor epoxide B	-		-
Hexachlorobenzene	0.96	2005 ESL Industrial (direct exp)	0
Methoxychlor	3100	2004 PRG Industrial	0
Mirex	-		-
Oxychlordane	-		-
trans-Nonachlor	21	2004 PRG Industrial	0
Toxaphene	1.6	2004 PRG Industrial	0

Table 4-16 Summary of Detected Exceedances of Evaluation Criteria in the East Adjacent Area (0-2 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
PCBs			
Aroclor-1016	21	2004 PRG Industrial	0
Aroclor-1221	0.74	2004 PRG Industrial	0
Aroclor-1232	0.74	2004 PRG Industrial	0
Aroclor-1242	0.74	2004 PRG Industrial	0
Aroclor-1248	0.74	2004 PRG Industrial	0
Aroclor-1254	0.74	2004 PRG Industrial	0
Aroclor-1260	0.74	2004 PRG Industrial	0
Total PCBs	0.74	2004 PRG Industrial	14
SEMIVOLATILE ORGANIC COMPOUNDS			
1,2,4-Trichlorobenzene	5	2005 ESL Industrial (inhalation)	0
1,2,4-Trimethylbenzene	170	2004 PRG Industrial	0
1,2-Dichlorobenzene	21	2005 ESL Industrial (inhalation)	0
1,3,5-Trimethylbenzene	70	2004 PRG Industrial	0
1,3-Dichlorobenzene	600	2004 PRG Industrial	0
1,4-Dichlorobenzene	0.13	2005 ESL Industrial (inhalation)	0
2,2'-Oxybis(1-chloropropane)	7.4	2004 PRG Industrial	0
2,4,5-Trichlorophenol	310	2005 ESL Industrial (inhalation)	0
2,4,6-Trichlorophenol	25	2005 ESL Industrial (direct exp)	0
2,4-Dichlorophenol	1800	2004 PRG Industrial	0
2,4-Dimethylphenol	1500	2005 ESL Industrial (inhalation)	0
2,4-Dinitrophenol	1200	2004 PRG Industrial	0
2,4-Dinitrotoluene	5.6	2005 ESL Industrial (direct exp)	0
2,6-Dinitrotoluene	620	2004 PRG Industrial	0
2-Chloronaphthalene	23000	2004 PRG Industrial	0
2-Chlorophenol	10	2005 ESL Industrial (inhalation)	0
2-Methylnaphthalene	550	2005 ESL Industrial (inhalation)	0
2-Methylphenol	31000	2004 PRG Industrial	0
2-Nitroaniline	1800	2004 PRG Industrial	0
2-Nitrophenol	-		-
3,3'-Dichlorobenzidine	1.4	2005 ESL Industrial (direct exp)	0
3-Nitroaniline	82	2004 PRG Industrial	0
4,6-Dinitro-2-methylphenol	-		-
4-Bromophenyl-phenylether	-		-
4-Chloro-3-methylphenol	-		-
4-Chloroaniline	2500	2004 PRG Industrial	0
4-Chlorophenyl-phenylether	-		-
4-Methylphenol	3100	2004 PRG Industrial	0
4-Nitroaniline	82	2004 PRG Industrial	0
4-Nitrophenol	7000	SDGI Industrial Criteria	0
Acenaphthene	650	2005 ESL Industrial (inhalation)	0
Acenaphthylene	18000	2005 ESL Industrial (direct exp)	0
Aniline	300	2004 PRG Industrial	0
Anthracene	31	2005 ESL Industrial (inhalation)	0
Azobenzene	16	2004 PRG Industrial	0
Benzidine	-		-
Benzo(a)anthracene	1.3	2005 ESL Industrial (direct exp)	1
Benzo(a)pyrene	0.33	SDGI Industrial Criteria	4
Benzo(b)fluoranthene	1.3	2005 ESL Industrial (direct exp)	3
Benzo(e)pyrene	-		-
Benzo(g,h,i)perylene	22000	2005 ESL Industrial (direct exp)	0
Benzo(k)fluoranthene	1.3	2005 ESL Industrial (direct exp)	1
Benzoic acid	100000	2004 PRG Industrial	0
Benzyl alcohol	100000	2004 PRG Industrial	0
Biphenyl	18000	2005 ESL Industrial (direct exp)	0
Bis(2-chloroethoxy)methane	-		-
Bis(2-chloroethyl)ether	0.012	2005 ESL Industrial (inhalation)	0
Bis(2-ethylhexyl)phthalate	120	2004 PRG Industrial	0
Butylbenzylphthalate	100000	2004 PRG Industrial	0
Carbazole	86	2004 PRG Industrial	0
Chrysene	13	2005 ESL Industrial (direct exp)	0
Dibenz(a,h)anthracene	0.33	SDGI Industrial Criteria	0
Dibenzofuran	1600	2004 PRG Industrial	0
Diethylphthalate	100000	2004 PRG Industrial	0
Dimethylphthalate	100000	2004 PRG Industrial	0
Di-n-butylphthalate	62000	2004 PRG Industrial	0
Di-n-octylphthalate	25000	2004 PRG Industrial	0
Fluoranthene	22000	2004 PRG Industrial	0
Fluorene	800	2005 ESL Industrial (inhalation)	0

Table 4-16 Summary of Detected Exceedances of Evaluation Criteria in the East Adjacent Area (0-2 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
SEMIVOLATILE ORGANIC COMPOUNDS (continued)			
Hexachlorobenzene	0.96	2005 ESL Industrial (direct exp)	0
Hexachlorobutadiene	22	2004 PRG Industrial	0
Hexachlorocyclopentadiene	3700	2004 PRG Industrial	0
Hexachloroethane	44	2005 ESL Industrial (direct exp)	0
Indeno(1,2,3-cd)pyrene	1.3	2005 ESL Industrial (direct exp)	0
Isophorone	510	2004 PRG Industrial	0
Napthalene	1.5	2005 ESL Industrial (inhalation)	0
Nitrobenzene	100	2004 PRG Industrial	0
n-Nitrosodimethylamine	0.034	2004 PRG Industrial	0
n-Nitroso-di-n-propylamine	0.25	2004 PRG Industrial	0
n-Nitrosodiphenylamine	350	2004 PRG Industrial	0
Pentachlorophenol	9	2004 PRG Industrial	0
Phenacetin	-		-
Phenanthrene	18000	2005 ESL Industrial (direct exp)	0
Phenol	100000	2004 PRG Industrial	0
Pyrene	430	2005 ESL Industrial (inhalation)	0
VOLATILE ORGANIC COMPOUNDS			
1,1,1,2-Tetrachloroethane	6.9	2005 ESL Industrial (direct exp)	0
1,1,1-Trichloroethane	230	2005 ESL Industrial (inhalation)	0
1,1,2,2-Tetrachloroethane	0.025	2005 ESL Industrial (inhalation)	0
1,1,2-Trichloro-1,2,2-trifluoroethane	-		-
1,1,2-Trichloroethane	0.089	2005 ESL Industrial (inhalation)	0
1,1-Dichloroethane	0.89	2005 ESL Industrial (inhalation)	0
1,1-Dichloroethene	105	2005 ESL Industrial (inhalation)	0
1,1-Dichloropropene	-		-
1,2,3-Trichlorobenzene	-		-
1,2,3-Trichloropropane	-		-
1,2,4-Trichlorobenzene	5	2005 ESL Industrial (inhalation)	0
1,2,4-Trimethylbenzene	170	2004 PRG Industrial	0
1,2-Dibromo-3-chloropropane	0.067	2005 ESL Industrial (direct exp)	0
1,2-Dibromoethane	0.02	2005 ESL Industrial (inhalation)	0
1,2-Dichlorobenzene	21	2005 ESL Industrial (inhalation)	0
1,2-Dichloroethane	0.07	2005 ESL Industrial (inhalation)	0
1,2-Dichloroethene (Total)	150	SDGI Industrial Criteria	0
1,2-Dichloropropane	0.14	2005 ESL Industrial (inhalation)	0
1,3,5-Trimethylbenzene	70	2004 PRG Industrial	0
1,3-Dichlorobenzene	600	2004 PRG Industrial	0
1,3-Dichloropropane	-		-
1,4-Dichlorobenzene	0.13	2005 ESL Industrial (inhalation)	0
2,2-Dichloropropane	-		0
2-Butanone	6500	2005 ESL Industrial (inhalation)	0
2-Chloroethyl vinyl ether	-		-
2-Chlorotoluene	-		-
2-Hexanone	-		-
4-Chlorotoluene	-		-
4-Methyl-2-pentanone	1550	2005 ESL Industrial (inhalation)	0
Acetone	16500	2005 ESL Industrial (inhalation)	0
Benzene	0.38	2005 ESL Industrial (direct exp)	0
Bromobenzene	-		-
Bromochloromethane	-		-
Bromodichloromethane	0.039	2005 ESL Industrial (inhalation)	0
Bromoform	220	2004 PRG Industrial	0
Bromomethane	2.6	2005 ESL Industrial (inhalation)	0
Carbon disulfide	720	2004 PRG Industrial	0
Carbon tetrachloride	0.034	2005 ESL Industrial (inhalation)	0
Chlorobenzene	31	2005 ESL Industrial (inhalation)	0
Chloroethane	1.8	2005 ESL Industrial (inhalation)	0
Chloroform	0.47	2004 PRG Industrial	0
Chloromethane	0.2	2005 ESL Industrial (inhalation)	0
cis-1,2-Dichloroethene	18	2005 ESL Industrial (inhalation)	0
cis-1,3-Dichloropropene	0.093	2005 ESL Industrial (inhalation)	0
Dibromochloromethane	0.054	2005 ESL Industrial (inhalation)	0
Dibromomethane	-		-
Dichlorodifluoromethane	310	2004 PRG Industrial	0
Ethylbenzene	390	2005 ESL Industrial (inhalation)	0
Hexachlorobutadiene	22	2004 PRG Industrial	0
Isopropylbenzene	2000	2004 PRG Industrial	0
Methylene chloride	1.5	2005 ESL Industrial (inhalation)	0

Table 4-16 Summary of Detected Exceedances of Evaluation Criteria in the East Adjacent Area (0-2 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
VOLATILE ORGANIC COMPOUNDS (continued)			
Naphthalene	1.5	2005 ESL Industrial (inhalation)	0
n-Butylbenzene	240	2004 PRG Industrial	0
o-Xylene	210	SDGI Industrial Criteria	0
para-Isopropyl toluene	-		-
Propylbenzene	240	2004 PRG Industrial	0
sec-Butylbenzene	220	2004 PRG Industrial	0
Styrene	1100	2005 ESL Industrial (inhalation)	0
tert-Butyl methyl ether	5.6	2005 ESL Industrial (inhalation)	0
tert-Butylbenzene	390	2004 PRG Industrial	0
Tetrachloroethene	0.24	2005 ESL Industrial (inhalation)	0
Toluene	520	2004 PRG Industrial	0
trans-1,2-Dichloroethene	37	2005 ESL Industrial (inhalation)	0
trans-1,3-Dichloropropene	0.093	2005 ESL Industrial (inhalation)	0
Trichloroethene	0.11	2004 PRG Industrial	0
Trichlorofluoromethane	2000	2004 PRG Industrial	0
Vinyl acetate	1400	2004 PRG Industrial	0
Vinyl chloride	0.019	2005 ESL Industrial (inhalation)	0
Xylene (Total)	420	2004 PRG Industrial	0
PETROLEUM HYDROCARBONS			
Gasoline range organics	750	2005 ESL Industrial (direct exp)	0
Diesel range organics	750	2005 ESL Industrial (direct exp)	3
Motor oil range organics	4600	2005 ESL Industrial (direct exp)	3
TPH-extractable unknown hydrocarbon	4600	2005 ESL Industrial (direct exp)	0
TPH-purgeable unknown hydrocarbon	750	2005 ESL Industrial (direct exp)	0
Total TPH	3500	HPS TPH source criterion	4
Total oil & grease	3500	HPS TPH source criterion	6

(a) PRC Environmental Management, Inc. 1995. "Draft Calculation of Hunters Point Ambient Levels." April 11.

-- No criteria available for this analyte

BHC - benzene hexachloride

DDD - dichlorodiphenyldichloroethane

DDE - dichlorodiphenyldichloroethene

DDT - dichlorodiphenyltrichloroethane

ESL - environmental screening level

HPAL - Hunters Point ambient level

mg/kg - milligrams per kilogram

NE - not established

PCB - polychlorinated biphenyl

PRG - preliminary remediation goal

SDGI - standard data gap investigation

TPH - total petroleum hydrocarbon

Table 4-17 Summary of Analyses and Detections in the East Adjacent Area (2-10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
Anions					
Aluminum	63/63	1.4 - 20.6	871 - 42700	NA	-
Antimony	35/57	0.36 - 6.3	0.42R - 976J	9.05	9
Arsenic	39/63	0.32 - 13	0.6 - 106	11.1	8
Barium	63/63	0.066 - 20.6	5.7 - 985	314.4	6
Beryllium	13/63	0.02 - 1.2	0.09 - 1.2	0.71	5
Cadmium	10/63	0.04 - 2.4	0.35 - 7.2	3.14	3
Calcium	63/63	1.5 - 46	278 - 64100	NA	-
Chromium	63/63	0.09 - 2.3	33.2 - 924	(b)	2
Chromium VI	2/58	0.05 - 0.06	0.3 - 0.97	NA	-
Cobalt	63/63	0.09 - 5.2	2 - 225	(b)	2
Copper	62/63	0.11 - 11.8	5.5 - 3160	124.3	14
Cyanide	3/14	0.53 - 1	1.1 - 1.2	NA	-
Iron	63/63	0.72 - 3.2	4010 - 80300	NA	-
Lead	57/63	0.18 - 7	1.6 - 256000	8.99	36
Magnesium	63/63	0.79 - 46	1900 - 212000	NA	-
Manganese	63/63	0.01 - 3.4	43.2 - 2550	1431.2	2
Mercury	36/60	0.021 - 0.59	0.061J - 11J	2.28	7
Molybdenum	8/60	0.14 - 3.2	1.1 - 14.6	2.68	6
Nickel	59/59	0.16 - 4.1	24.4 - 2970	(b)	1
Potassium	47/63	1.4 - 413	107 - 2900J	NA	-
Selenium	3/63	0.39 - 4.3	0.39J - 4.5	1.95	1
Silver	15/63	0.11 - 10.4	0.38 - 17.8	1.43	4
Sodium	46/63	4.8 - 285	72.4 - 2840	NA	-
Thallium	2/63	0.31 - 7.7	4.9 - 5.6	0.81	2
Tin	0/0		-	NA	-
Vanadium	63/63	0.09 - 5.2	5.7 - 109	117.2	0
Zinc	63/63	0.23 - 2.3	20.4 - 1650	109.9	21
PCBs and PESTICIDES					
4,4'-DDD	0/65	0.004 - 17	-	NA	-
4,4'-DDE	0/65	0.004 - 17	-	NA	-
4,4'-DDT	1/65	0.004 - 17	0.007J	NA	-
Aldrin	0/65	0.002 - 8.7	-	NA	-
Alpha-BHC	0/65	0.002 - 8.7	-	NA	-
Alpha-chlordane	0/65	0.002 - 87	-	NA	-
Beta-BHC	0/65	0.002 - 8.7	-	NA	-
Delta-BHC	0/65	0.002 - 8.7	-	NA	-
Dieldrin	1/65	0.004 - 17	0.019	NA	-
Endosulfan I	0/65	0.002 - 8.7	-	NA	-
Endosulfan II	1/65	0.004 - 18	0.018	NA	-
Endosulfan sulfate	0/65	0.004 - 17	-	NA	-
Endrin	0/65	0.004 - 17	-	NA	-
Endrin aldehyde	0/20	0.004 - 0.037	-	NA	-
Endrin ketone	0/65	0.004 - 17	-	NA	-
Gamma-BHC (lindane)	0/65	0.002 - 8.7	-	NA	-
Gamma-chlordane	0/65	0.002 - 87	-	NA	-
Heptachlor	0/65	0.002 - 8.7	-	NA	-
Heptachlor epoxide	1/65	0.002 - 8.7	0.004J	NA	-
Methoxychlor	0/65	0.018 - 87	-	NA	-
Toxaphene	0/65	0.16 - 170	-	NA	-
Aroclor-1016	0/65	0.036 - 87	-	NA	-
Aroclor-1221	0/65	0.072 - 87	-	NA	-
Aroclor-1232	0/65	0.036 - 87	-	NA	-
Aroclor-1242	0/65	0.036 - 87	-	NA	-
Aroclor-1248	0/65	0.036 - 87	-	NA	-
Aroclor-1254	0/65	0.036 - 170	-	NA	-
Aroclor-1260	15/65	0.036 - 180	0.05J - 150J	NA	-
Total PCBs	15/65	-	0.05J - 150J	NA	-

Table 4-17 Summary of Analyses and Detections in the East Adjacent Area (2-10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
SEMIVOLATILE ORGANIC COMPOUNDS					
1,2,4-Trichlorobenzene	1/64	0.15 - 44	4.4J	NA	-
1,2-Dichlorobenzene	0/64	0.15 - 44	-	NA	-
1,3-Dichlorobenzene	0/64	0.15 - 44	-	NA	-
1,4-Dichlorobenzene	0/64	0.15 - 44	-	NA	-
2,2'-Oxybis(1-chloropropane)	0/61	0.34 - 44	-	NA	-
2,4,5-Trichlorophenol	0/60	0.84 - 220	-	NA	-
2,4,6-Trichlorophenol	0/60	0.34 - 44	-	NA	-
2,4-Dichlorophenol	0/60	0.34 - 44	-	NA	-
2,4-Dimethylphenol	0/63	0.15 - 44	-	NA	-
2,4-Dinitrophenol	0/59	0.84 - 220	-	NA	-
2,4-Dinitrotoluene	0/61	0.34 - 44	-	NA	-
2,6-Dinitrotoluene	0/64	0.15 - 44	-	NA	-
2-Chloronaphthalene	0/64	0.15 - 44	-	NA	-
2-Chlorophenol	0/60	0.34 - 44	-	NA	-
2-Methylnaphthalene	6/64	0.15 - 44	0.046J - 25J	NA	-
2-Methylphenol	0/63	0.15 - 44	-	NA	-
2-Nitroaniline	0/63	0.15 - 220	-	NA	-
2-Nitrophenol	0/61	0.34 - 44	-	NA	-
3,3'-Dichlorobenzidine	0/63	0.15 - 190	-	NA	-
3-Nitroaniline	0/61	0.84 - 220	-	NA	-
4,6-Dinitro-2-methylphenol	0/60	0.84 - 220	-	NA	-
4-Bromophenyl-phenylether	0/61	0.34 - 44	-	NA	-
4-Chloro-3-methylphenol	0/60	0.34 - 44	-	NA	-
4-Chloroaniline	0/61	0.34 - 44	-	NA	-
4-Chlorophenyl-phenylether	0/61	0.34 - 44	-	NA	-
4-Methylphenol	0/63	0.15 - 44	-	NA	-
4-Nitroaniline	0/61	0.84 - 220	-	NA	-
4-Nitrophenol	0/63	0.37 - 220	-	NA	-
Acenaphthene	0/64	0.15 - 44	-	NA	-
Acenaphthylene	1/61	0.34 - 44	0.035J	NA	-
Aniline	0/9	0.35 - 3.6	-	NA	-
Anthracene	2/64	0.15 - 44	0.072J - 0.23J	NA	-
Benzidine	0/9	0.35 - 3.6	-	NA	-
Benzo(a)anthracene	6/64	0.15 - 44	0.051J - 7.3J	NA	-
Benzo(a)pyrene	6/63	0.15 - 44	0.05J - 12	NA	-
Benzo(b)fluoranthene	10/63	0.15 - 44	0.047J - 17	NA	-
Benzo(g,h,i)perylene	3/63	0.15 - 44	0.067J - 4.3J	NA	-
Benzo(k)fluoranthene	5/63	0.15 - 44	0.048J - 6.6	NA	-
Benzoic acid	0/44	1.6 - 220	-	NA	-
Benzyl alcohol	0/44	0.34 - 44	-	NA	-
Bis(2-chloroethoxy)methane	0/61	0.34 - 44	-	NA	-
Bis(2-chloroethyl)ether	0/61	0.34 - 44	-	NA	-
Bis(2-ethylhexyl)phthalate	0/65	0.045 - 44	-	NA	-
Butylbenzylphthalate	0/64	0.15 - 44	-	NA	-
Carbazole	0/20	0.15 - 0.64	-	NA	-
Chrysene	11/64	0.15 - 44	0.054J - 7.1	NA	-
Dibenz(a,h)anthracene	1/63	0.15 - 44	2J	NA	-
Dibenzofuran	2/64	0.15 - 44	0.075J - 0.083J	NA	-
Diethylphthalate	0/64	0.15 - 44	-	NA	-
Dimethylphthalate	0/61	0.34 - 44	-	NA	-
Di-n-butylphthalate	0/64	0.15 - 44	-	NA	-
Di-n-octylphthalate	0/63	0.15 - 44	-	NA	-
Fluoranthene	9/64	0.15 - 44	0.074J - 3.6	NA	-
Fluorene	0/64	0.15 - 44	-	NA	-
Hexachlorobenzene	0/64	0.15 - 44	-	NA	-
Hexachlorobutadiene	0/61	0.34 - 44	-	NA	-
Hexachlorocyclopentadiene	0/61	0.34 - 44	-	NA	-
Hexachloroethane	0/61	0.34 - 44	-	NA	-
Indeno(1,2,3-cd)pyrene	3/63	0.15 - 44	0.053J - 4.2J	NA	-
Isophorone	0/64	0.15 - 44	-	NA	-
Naphthalene	4/64	0.15 - 44	0.039J - 0.13J	NA	-
Nitrobenzene	0/61	0.34 - 44	-	NA	-
n-Nitrosodimethylamine	0/9	0.35 - 3.6	-	NA	-
n-Nitroso-di-n-propylamine	0/64	0.15 - 44	-	NA	-
n-Nitrosodiphenylamine	0/64	0.15 - 44	-	NA	-
Pentachlorophenol	0/63	0.37 - 220	-	NA	-
Phenanthrene	12/64	0.15 - 44	0.071J - 10J	NA	-

Table 4-17 Summary of Analyses and Detections in the East Adjacent Area (2-10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
SEMIVOLATILE ORGANIC COMPOUNDS (continued)					
Phenol	0/63	0.15 - 44	-	NA	-
Pyrene	13/64	0.15 - 44	0.11J - 5.4J	NA	-
VOLATILE ORGANIC COMPOUNDS					
1,1,1-Trichloroethane	4/62	0.005 - 1.1	0.004J - 0.03	NA	-
1,1,2,2-Tetrachloroethane	0/62	0.005 - 1.1	-	NA	-
1,1,2-Trichloroethane	0/62	0.005 - 1.1	-	NA	-
1,1-Dichloroethane	2/62	0.005 - 1.1	0.059 - 0.15	NA	-
1,1-Dichloroethene	0/62	0.005 - 1.1	-	NA	-
1,2-Dichloroethane	0/62	0.005 - 1.1	-	NA	-
1,2-Dichloroethene (Total)	0/62	0.005 - 1.1	-	NA	-
1,2-Dichloropropane	0/62	0.005 - 1.1	-	NA	-
2-Butanone	3/62	0.006 - 2.2	0.003J - 0.014	NA	-
2-Hexanone	0/62	0.01 - 2.2	-	NA	-
4-Methyl-2-pentanone	0/62	0.01 - 2.2	-	NA	-
Acetone	0/62	0.003 - 0.73	-	NA	-
Benzene	0/62	0.005 - 1.1	-	NA	-
Bromodichloromethane	0/62	0.005 - 1.1	-	NA	-
Bromoform	0/62	0.005 - 1.1	-	NA	-
Bromomethane	0/62	0.01 - 2.2	-	NA	-
Carbon disulfide	1/62	0.005 - 1.1	0.006J - 0.006J	NA	-
Carbon tetrachloride	0/62	0.005 - 1.1	-	NA	-
Chlorobenzene	0/62	0.005 - 1.1	-	NA	-
Chloroethane	1/62	0.01 - 2.2	0.008J - 0.008J	NA	-
Chloroform	0/62	0.005 - 1.1	-	NA	-
Chloromethane	0/62	0.01 - 2.2	-	NA	-
cis-1,3-Dichloropropene	0/62	0.005 - 1.1	-	NA	-
Dibromochloromethane	0/62	0.005 - 1.1	-	NA	-
Ethylbenzene	1/62	0.005 - 1.1	0.007J - 0.007J	NA	-
Methylene chloride	0/62	0.002 - 1.1	-	NA	-
Styrene	0/62	0.005 - 1.1	-	NA	-
Tetrachloroethene	3/62	0.005 - 1.1	0.023 - 0.2	NA	-
Toluene	6/62	0.005 - 1.1	0.001J - 0.064	NA	-
trans-1,3-Dichloropropene	0/62	0.005 - 1.1	-	NA	-
Trichloroethene	6/62	0.005 - 1.1	0.002J - 0.024	NA	-
Vinyl acetate	0/45	0.01 - 2.2	-	NA	-
Vinyl chloride	0/62	0.01 - 2.2	-	NA	-
Xylene (Total)	5/62	0.005 - 1.1	0.004J - 0.65J	NA	-
PETROLEUM HYDROCARBONS					
Gasoline range organics	28/62	0.52 - 110	0.35J - 670H	NA	-
Diesel range organics	10/63	10 - 990	8.2J - 9900	NA	-
Motor oil range organics	15/17	11 - 110	9.7J - 1300	NA	-
TPH-extractable unknown hydrocarbon	1/6	10 - 12	110	NA	-
TPH-purgeable unknown hydrocarbon	0/6	1 - 1	-	NA	-
Total TPH	38/63	-	9.7 - 9900	NA	-
Total oil & grease	39/45	26 - 94	29 - 9700J	NA	-

Notes
(a) - Detection limits are reported as the laboratory reporting limits
(b) - Hunters Point ambient levels is determined on a location specific basis
-- No criteria available for this analyte
BHC - benzene hexachloride
DDD - dichlorodiphenyldichloroethane
DDE - dichlorodiphenyldichloroethene
DDT - dichlorodiphenyltrichloroethane
H - Pattern is heavier hydrocarbon end of the analyte's range in the standard
J - Estimated value
mg/kg - milligrams per kilogram
NA - not available
PCB - polychlorinated biphenyl
R - Rejected
TPH - total petroleum hydrocarbon

Table 4-18 Summary of Detected Exceedances of Evaluation Criteria in the East Adjacent Area (2-10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
Metals			
Aluminum	100000	2004 PRG Industrial	0
Antimony	380	2005 ESL Industrial (direct exp)	2
Arsenic	11.1	HPAL	8
Barium	63000	2005 ESL Industrial (direct exp)	0
Beryllium	1700	2005 ESL Industrial (direct exp)	0
Cadmium	7.4	2005 ESL Industrial (direct exp)	0
Calcium	-		-
Chromium (total)	a	See note	1
Chromium VI	37	2005 ESL Industrial (direct exp)	0
Cobalt	a	See note	0
Copper	38000	2005 ESL Industrial (direct exp)	0
Cyanide (free)	12000	2004 PRG Industrial	0
Iron	100000	2004 PRG Industrial	0
Lead	800	2004 PRG Industrial	8
Magnesium	-		-
Manganese	19000	2004 PRG Industrial	0
Mercury	180	2005 ESL Industrial (direct exp)	0
Molybdenum	4800	2005 ESL Industrial (direct exp)	0
Nickel	a	See note	0
Potassium	-		-
Selenium	4800	2005 ESL Industrial (direct exp)	0
Silver	4800	2005 ESL Industrial (direct exp)	0
Sodium	-		0
Thallium	63	2005 ESL Industrial (direct exp)	0
Tin	100000	2004 PRG Industrial	0
Vanadium	1000	2004 PRG Industrial	0
Zinc	100000	2004 PRG Industrial	0
PESTICIDES			
2,4'-DDD	9	2005 ESL Industrial (direct exp)	0
2,4'-DDE	6.3	2005 ESL Industrial (direct exp)	0
2,4'-DDT	6.3	2005 ESL Industrial (direct exp)	0
4,4'-DDD	9	2005 ESL Industrial (direct exp)	0
4,4'-DDE	6.3	2005 ESL Industrial (direct exp)	0
4,4'-DDT	6.3	2005 ESL Industrial (direct exp)	0
Aldrin	0.1	2004 PRG Industrial	0
alpha-BHC	0.36	2004 PRG Industrial	0
Alpha-chlordane	2.9	SDGI Industrial Criteria	0
beta-BHC	1.3	2004 PRG Industrial	0
Chlordane	1.7	2005 ESL Industrial (direct exp)	0
cis-Nonachlor	-		-
delta-BHC	0.59	SDGI Industrial Criteria	0
Dieldrin	0.11	2004 PRG Industrial	0
Endosulfan I	3700	2004 PRG Industrial	0
Endosulfan II	3700	2004 PRG Industrial	0
Endosulfan sulfate	5300	SDGI Industrial Criteria	0
Endrin	190	2004 PRG Industrial	0
Endrin aldehyde	260	SDGI Industrial Criteria	0
Endrin ketone	260	SDGI Industrial Criteria	0
Gamma-BHC (lindane)	1.7	2004 PRG Industrial	0
Gamma-chlordane	2.9	SDGI Industrial Criteria	0
Heptachlor	0.38	2004 PRG Industrial	0
Heptachlor epoxide	0.19	2004 PRG Industrial	0
Heptachlor epoxide A	-		-
Heptachlor epoxide B	-		-
Hexachlorobenzene	0.96	2005 ESL Industrial (direct exp)	0
Methoxychlor	3100	2004 PRG Industrial	0
Mirex	-		-
Oxychlordane	-		-
trans-Nonachlor	21	2004 PRG Industrial	0
Toxaphene	1.6	2004 PRG Industrial	0

Table 4-18 Summary of Detected Exceedances of Evaluation Criteria in the East Adjacent Area (2-10 feet
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
PCBs			
Aroclor-1016	21	2004 PRG Industrial	0
Aroclor-1221	0.74	2004 PRG Industrial	0
Aroclor-1232	0.74	2004 PRG Industrial	0
Aroclor-1242	0.74	2004 PRG Industrial	0
Aroclor-1248	0.74	2004 PRG Industrial	0
Aroclor-1254	0.74	2004 PRG Industrial	0
Aroclor-1260	0.74	2004 PRG Industrial	0
Total PCBs	0.74	2004 PRG Industrial	8
SEMIVOLATILE ORGANIC COMPOUNDS			
1,2,4-Trichlorobenzene	5	2005 ESL Industrial (inhalation)	0
1,2,4-Trimethylbenzene	170	2004 PRG Industrial	0
1,2-Dichlorobenzene	21	2005 ESL Industrial (inhalation)	0
1,3,5-Trimethylbenzene	70	2004 PRG Industrial	0
1,3-Dichlorobenzene	600	2004 PRG Industrial	0
1,4-Dichlorobenzene	0.13	2005 ESL Industrial (inhalation)	0
2,2'-Oxybis(1-chloropropane)	7.4	2004 PRG Industrial	0
2,4,5-Trichlorophenol	310	2005 ESL Industrial (inhalation)	0
2,4,6-Trichlorophenol	25	2005 ESL Industrial (direct exp)	0
2,4-Dichlorophenol	1800	2004 PRG Industrial	0
2,4-Dimethylphenol	1500	2005 ESL Industrial (inhalation)	0
2,4-Dinitrophenol	1200	2004 PRG Industrial	0
2,4-Dinitrotoluene	5.6	2005 ESL Industrial (direct exp)	0
2,6-Dinitrotoluene	620	2004 PRG Industrial	0
2-Chloronaphthalene	23000	2004 PRG Industrial	0
2-Chlorophenol	10	2005 ESL Industrial (inhalation)	0
2-Methylnaphthalene	550	2005 ESL Industrial (inhalation)	0
2-Methylphenol	31000	2004 PRG Industrial	0
2-Nitroaniline	1800	2004 PRG Industrial	0
2-Nitrophenol	-		-
3,3'-Dichlorobenzidine	1.4	2005 ESL Industrial (direct exp)	0
3-Nitroaniline	82	2004 PRG Industrial	0
4,6-Dinitro-2-methylphenol	-		-
4-Bromophenyl-phenylether	-		-
4-Chloro-3-methylphenol	-		-
4-Chloroaniline	2500	2004 PRG Industrial	0
4-Chlorophenyl-phenylether	-		-
4-Methylphenol	3100	2004 PRG Industrial	0
4-Nitroaniline	82	2004 PRG Industrial	0
4-Nitrophenol	7000	SDGI Industrial Criteria	0
Acenaphthene	650	2005 ESL Industrial (inhalation)	0
Acenaphthylene	18000	2005 ESL Industrial (direct exp)	0
Aniline	300	2004 PRG Industrial	0
Anthracene	31	2005 ESL Industrial (inhalation)	0
Azobenzene	16	2004 PRG Industrial	0
Benzidine	-		-
Benzo(a)anthracene	1.3	2005 ESL Industrial (direct exp)	1
Benzo(a)pyrene	0.33	SDGI Industrial Criteria	1
Benzo(b)fluoranthene	1.3	2005 ESL Industrial (direct exp)	2
Benzo(e)pyrene	-		-
Benzo(g,h,i)perylene	22000	2005 ESL Industrial (direct exp)	0
Benzo(k)fluoranthene	1.3	2005 ESL Industrial (direct exp)	1
Benzoic acid	100000	2004 PRG Industrial	0
Benzyl alcohol	100000	2004 PRG Industrial	0
Biphenyl	18000	2005 ESL Industrial (direct exp)	0
Bis(2-chloroethoxy)methane	-		-
Bis(2-chloroethyl)ether	0.012	2005 ESL Industrial (inhalation)	0
Bis(2-ethylhexyl)phthalate	120	2004 PRG Industrial	0
Butylbenzylphthalate	100000	2004 PRG Industrial	0
Carbazole	86	2004 PRG Industrial	0
Chrysene	13	2005 ESL Industrial (direct exp)	0
Dibenz(a,h)anthracene	0.33	SDGI Industrial Criteria	1
Dibenzofuran	1600	2004 PRG Industrial	0
Diethylphthalate	100000	2004 PRG Industrial	0
Dimethylphthalate	100000	2004 PRG Industrial	0
Di-n-butylphthalate	62000	2004 PRG Industrial	0

Table 4-18 Summary of Detected Exceedances of Evaluation Criteria in the East Adjacent Area (2-10 feet
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	Comments	Detections Exceeding RI Evaluation Criteria
SEMIVOLATILE ORGANIC COMPOUNDS (Continued)			
Di-n-octylphthalate	25000	2004 PRG Industrial	0
Fluoranthene	22000	2004 PRG Industrial	0
Fluorene	800	2005 ESL Industrial (inhalation)	0
Hexachlorobenzene	0.96	2005 ESL Industrial (direct exp)	0
Hexachlorobutadiene	22	2004 PRG Industrial	0
Hexachlorocyclopentadiene	3700	2004 PRG Industrial	0
Hexachloroethane	44	2005 ESL Industrial (direct exp)	0
Indeno(1,2,3-cd)pyrene	1.3	2005 ESL Industrial (direct exp)	1
Isophorone	510	2004 PRG Industrial	0
Napthalene	1.5	2005 ESL Industrial (inhalation)	0
Nitrobenzene	100	2004 PRG Industrial	0
n-Nitrosodimethylamine	0.034	2004 PRG Industrial	0
n-Nitroso-di-n-propylamine	0.25	2004 PRG Industrial	0
n-Nitrosodiphenylamine	350	2004 PRG Industrial	0
Pentachlorophenol	9	2004 PRG Industrial	0
Phenacetin	-		-
Phenanthrene	18000	2005 ESL Industrial (direct exp)	0
Phenol	100000	2004 PRG Industrial	0
Pyrene	430	2005 ESL Industrial (inhalation)	0
VOLATILE ORGANIC COMPOUNDS			
1,1,1,2-Tetrachloroethane	6.9	2005 ESL Industrial (direct exp)	0
1,1,1-Trichloroethane	230	2005 ESL Industrial (inhalation)	0
1,1,2,2-Tetrachloroethane	0.025	2005 ESL Industrial (inhalation)	0
1,1,2-Trichloro-1,2,2-trifluoroethane	-		-
1,1,2-Trichloroethane	0.089	2005 ESL Industrial (inhalation)	0
1,1-Dichloroethane	0.89	2005 ESL Industrial (inhalation)	0
1,1-Dichloroethene	105	2005 ESL Industrial (inhalation)	0
1,1-Dichloropropene	-		-
1,2,3-Trichlorobenzene	-		-
1,2,3-Trichloropropane	-		-
1,2,4-Trichlorobenzene	5	2005 ESL Industrial (inhalation)	0
1,2,4-Trimethylbenzene	170	2004 PRG Industrial	0
1,2-Dibromo-3-chloropropane	0.067	2005 ESL Industrial (direct exp)	0
1,2-Dibromoethane	0.02	2005 ESL Industrial (inhalation)	0
1,2-Dichlorobenzene	21	2005 ESL Industrial (inhalation)	0
1,2-Dichloroethane	0.07	2005 ESL Industrial (inhalation)	0
1,2-Dichloroethene (Total)	150	SDGI Industrial Criteria	0
1,2-Dichloropropane	0.14	2005 ESL Industrial (inhalation)	0
1,3,5-Trimethylbenzene	70	2004 PRG Industrial	0
1,3-Dichlorobenzene	600	2004 PRG Industrial	0
1,3-Dichloropropane	-		-
1,4-Dichlorobenzene	0.13	2005 ESL Industrial (inhalation)	0
2,2-Dichloropropane	-		0
2-Butanone	6500	2005 ESL Industrial (inhalation)	0
2-Chloroethyl vinyl ether	-		-
2-Chlorotoluene	-		-
2-Hexanone	-		-
4-Chlorotoluene	-		-
4-Methyl-2-pentanone	1550	2005 ESL Industrial (inhalation)	0
Acetone	16500	2005 ESL Industrial (inhalation)	0
Benzene	0.38	2005 ESL Industrial (direct exp)	0
Bromobenzene	-		-
Bromochloromethane	-		-
Bromodichloromethane	0.039	2005 ESL Industrial (inhalation)	0
Bromoform	220	2004 PRG Industrial	0
Bromomethane	2.6	2005 ESL Industrial (inhalation)	0
Carbon disulfide	720	2004 PRG Industrial	0
Carbon tetrachloride	0.034	2005 ESL Industrial (inhalation)	0
Chlorobenzene	31	2005 ESL Industrial (inhalation)	0
Chloroethane	1.8	2005 ESL Industrial (inhalation)	0
Chloroform	0.47	2004 PRG Industrial	0
Chloromethane	0.2	2005 ESL Industrial (inhalation)	0
cis-1,2-Dichloroethene	18	2005 ESL Industrial (inhalation)	0
cis-1,3-Dichloropropene	0.093	2005 ESL Industrial (inhalation)	0
Dibromochloromethane	0.054	2005 ESL Industrial (inhalation)	0

Table 4-18 Summary of Detected Exceedances of Evaluation Criteria in the East Adjacent Area (2-10 feet
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
VOLATILE ORGANIC COMPOUNDS (Continued)			
Dibromomethane	-		-
Dichlorodifluoromethane	310	2004 PRG Industrial	0
Ethylbenzene	390	2005 ESL Industrial (inhalation)	0
Hexachlorobutadiene	22	2004 PRG Industrial	0
Isopropylbenzene	2000	2004 PRG Industrial	0
Methylene chloride	1.5	2005 ESL Industrial (inhalation)	0
Naphthalene	1.5	2005 ESL Industrial (inhalation)	0
n-Butylbenzene	240	2004 PRG Industrial	0
o-Xylene	210	SDGI Industrial Criteria	0
para-Isopropyl toluene	-		-
Propylbenzene	240	2004 PRG Industrial	0
sec-Butylbenzene	220	2004 PRG Industrial	0
Styrene	1100	2005 ESL Industrial (inhalation)	0
tert-Butyl methyl ether	5.6	2005 ESL Industrial (inhalation)	0
tert-Butylbenzene	390	2004 PRG Industrial	0
Tetrachloroethene	0.24	2005 ESL Industrial (inhalation)	0
Toluene	520	2004 PRG Industrial	0
trans-1,2-Dichloroethene	37	2005 ESL Industrial (inhalation)	0
trans-1,3-Dichloropropene	0.093	2005 ESL Industrial (inhalation)	0
Trichloroethene	0.11	2004 PRG Industrial	0
Trichlorofluoromethane	2000	2004 PRG Industrial	0
Vinyl acetate	1400	2004 PRG Industrial	0
Vinyl chloride	0.019	2005 ESL Industrial (inhalation)	0
Xylene (Total)	420	2004 PRG Industrial	0
PETROLEUM HYDROCARBONS			
Gasoline range organics	750	2005 ESL Industrial (direct exp)	0
Diesel range organics	750	2005 ESL Industrial (direct exp)	3
Motor oil range organics	4600	2005 ESL Industrial (direct exp)	0
TPH-extractable unknown hydrocarbon	4600	2005 ESL Industrial (direct exp)	0
TPH-purgeable unknown hydrocarbon	750	2005 ESL Industrial (direct exp)	0
Total TPH	3500	HPS TPH source criterion	1
Total oil & grease	3500	HPS TPH source criterion	6

(a) PRC Environmental Management, Inc. 1995. "Draft Calculation of Hunters Point Ambient Levels." April 11.

-- No criteria available for this analyte

BHC - benzene hexachloride

DDD - dichlorodiphenyldichloroethane

DDE - dichlorodiphenyldichloroethene

DDT - dichlorodiphenyltrichloroethane

ESL - environmental screening level

HPAL - Hunters Point ambient level

HPS - Hunters Point Shipyard

mg/kg - milligrams per kilogram

NE - not established

PCB - polychlorinated biphenyl

PRG - preliminary remediation goal

TPH - total petroleum hydrocarbon

Table 4-19 Summary of Analyses and Detections in the East Adjacent Area (greater than 10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
Anions					
Aluminum	47/47	1.6 - 11.4	2680 - 59200	NA	-
Antimony	18/43	0.7 - 7	1.4J - 14.7J	9.05	4
Arsenic	35/47	0.32 - 13.5	0.68 - 26	11.1	4
Barium	47/47	0.076 - 2.1	11.3 - 512	314.4	1
Beryllium	11/47	0.02 - 1.5	0.35 - 0.83	0.71	3
Cadmium	3/47	0.05 - 1.5	0.5 - 2.6	3.14	0
Calcium	47/47	1.6 - 43	525J - 30700	NA	-
Chromium	47/47	0.12 - 2.1	40.9 - 984	(b)	1
Chromium VI	0/69	0.05 - 0.05	-	NA	-
Cobalt	47/47	0.12 - 2.6	9.3 - 150	(b)	1
Copper	47/47	0.19 - 4.3	7.9 - 378	124.3	5
Cyanide	1/9	0.59 - 1	1.1 - 1.1	NA	-
Iron	47/47	0.79 - 5.3	10900 - 65100	NA	-
Lead	44/47	0.22 - 5.4	0.45 - 24600	8.99	27
Magnesium	47/47	0.88 - 43	2850 - 245000	NA	-
Manganese	47/47	0.012 - 3.2	198 - 2110	1431.2	3
Mercury	11/46	0.06 - 0.22	0.11J - 8.8	2.28	3
Molybdenum	5/44	0.28 - 3.5	0.84 - 2.8	2.68	1
Nickel	47/47	0.3 - 6.8	60.2 - 2250	(b)	0
Potassium	39/47	11.7 - 195	114 - 6150	NA	-
Selenium	0/47	0.42 - 4.3	-	1.95	0
Silver	8/47	0.16 - 2.1	0.53 - 1.1	1.43	0
Sodium	45/47	5.9 - 264	115 - 5930	NA	-
Thallium	0/47	0.35 - 3.5	-	0.81	0
Tin	0/0	-	-	NA	-
Vanadium	47/47	0.19 - 2.8	18.4 - 117	117.2	0
Zinc	47/47	0.28 - 2.1	12.9 - 727	109.9	4
PCBs and PESTICIDES					
4,4'-DDD	0/22	0.004 - 0.048	-	NA	-
4,4'-DDE	0/22	0.004 - 0.048	-	NA	-
4,4'-DDT	0/22	0.004 - 0.048	-	NA	-
Aldrin	0/22	0.002 - 0.024	-	NA	-
Alpha-BHC	0/22	0.002 - 0.024	-	NA	-
Alpha-chlordane	0/22	0.002 - 0.24	-	NA	-
Beta-BHC	0/22	0.002 - 0.024	-	NA	-
Delta-BHC	0/22	0.002 - 0.024	-	NA	-
Dieldrin	0/22	0.004 - 0.048	-	NA	-
Endosulfan I	0/22	0.002 - 0.024	-	NA	-
Endosulfan II	0/22	0.004 - 0.048	-	NA	-
Endosulfan sulfate	0/22	0.004 - 0.048	-	NA	-
Endrin	0/22	0.004 - 0.048	-	NA	-
Endrin aldehyde	0/4	0.004 - 0.019	-	NA	-
Endrin ketone	0/22	0.004 - 0.048	-	NA	-
Gamma-BHC (lindane)	0/22	0.002 - 0.024	-	NA	-
Gamma-chlordane	0/22	0.002 - 0.24	-	NA	-
Heptachlor	0/22	0.002 - 0.024	-	NA	-
Heptachlor epoxide	0/22	0.002 - 0.024	-	NA	-
Methoxychlor	0/22	0.019 - 0.24	-	NA	-
Toxaphene	0/22	0.17 - 0.97	-	NA	-
Aroclor-1016	0/22	0.039 - 0.24	-	NA	-
Aroclor-1221	0/22	0.078 - 0.39	-	NA	-
Aroclor-1232	0/22	0.039 - 0.24	-	NA	-
Aroclor-1242	0/22	0.039 - 0.24	-	NA	-
Aroclor-1248	0/22	0.039 - 0.24	-	NA	-
Aroclor-1254	0/22	0.039 - 0.49	-	NA	-
Aroclor-1260	1/22	0.039 - 0.49	0.36	NA	-
Total PCBs	1/22	-	0.36	NA	-

Table 4-19 Summary of Analyses and Detections in the East Adjacent Area (greater than 10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
SEMIVOLATILE ORGANIC COMPOUNDS					
1,2,4-Trichlorobenzene	1/49	0.35 - 1.9	0.044J	NA	-
1,2-Dichlorobenzene	0/49	0.35 - 1.9	-	NA	-
1,3-Dichlorobenzene	0/49	0.35 - 1.9	-	NA	-
1,4-Dichlorobenzene	0/49	0.35 - 1.9	-	NA	-
2,2'-Oxybis(1-chloropropane)	0/49	0.35 - 1.9	-	NA	-
2,4,5-Trichlorophenol	0/49	0.93 - 9.4	-	NA	-
2,4,6-Trichlorophenol	0/49	0.35 - 1.9	-	NA	-
2,4-Dichlorophenol	0/49	0.35 - 1.9	-	NA	-
2,4-Dimethylphenol	0/49	0.35 - 1.9	-	NA	-
2,4-Dinitrophenol	0/49	0.93 - 9.4	-	NA	-
2,4-Dinitrotoluene	0/49	0.35 - 1.9	-	NA	-
2,6-Dinitrotoluene	0/49	0.35 - 1.9	-	NA	-
2-Chloronaphthalene	0/49	0.35 - 1.9	-	NA	-
2-Chlorophenol	0/49	0.35 - 1.9	-	NA	-
2-Methylnaphthalene	1/49	0.35 - 1.9	0.085J	NA	-
2-Methylphenol	0/49	0.35 - 1.9	-	NA	-
2-Nitroaniline	0/49	0.93 - 9.4	-	NA	-
2-Nitrophenol	0/49	0.35 - 1.9	-	NA	-
3,3'-Dichlorobenzidine	0/48	0.38 - 3.8	-	NA	-
3-Nitroaniline	0/49	0.93 - 9.4	-	NA	-
4,6-Dinitro-2-methylphenol	0/49	0.93 - 9.4	-	NA	-
4-Bromophenyl-phenylether	0/49	0.35 - 1.9	-	NA	-
4-Chloro-3-methylphenol	0/49	0.35 - 1.9	-	NA	-
4-Chloroaniline	0/49	0.35 - 1.9	-	NA	-
4-Chlorophenyl-phenylether	0/49	0.35 - 1.9	-	NA	-
4-Methylphenol	0/49	0.35 - 1.9	-	NA	-
4-Nitroaniline	0/49	0.93 - 9.4	-	NA	-
4-Nitrophenol	0/49	0.93 - 9.4	-	NA	-
Acenaphthene	0/49	0.35 - 1.9	-	NA	-
Acenaphthylene	0/49	0.35 - 1.9	-	NA	-
Aniline	0/16	0.38 - 0.57	-	NA	-
Benzidine	0/16	0.38 - 0.57	-	NA	-
Benzo(a)anthracene	2/48	0.35 - 1.9	0.14J - 0.34J	NA	-
Benzo(a)pyrene	1/48	0.35 - 1.9	0.26J	NA	-
Benzo(b)fluoranthene	1/48	0.35 - 1.9	0.34J	NA	-
Benzo(g,h,i)perylene	0/48	0.35 - 1.9	-	NA	-
Benzo(k)fluoranthene	1/48	0.35 - 1.9	0.26J	NA	-
Benzoic acid	0/45	1.7 - 9.4	-	NA	-
Benzyl alcohol	0/45	0.35 - 1.9	-	NA	-
Bis(2-chloroethoxy)methane	0/49	0.35 - 1.9	-	NA	-
Bis(2-chloroethyl)ether	0/49	0.35 - 1.9	-	NA	-
Bis(2-ethylhexyl)phthalate	0/48	0.04 - 1.9	-	NA	-
Butylbenzylphthalate	0/48	0.35 - 1.9	-	NA	-
Carbazole	0/4	0.38 - 0.52	-	NA	-
Chrysene	2/48	0.35 - 1.9	0.2J - 0.41	NA	-
Dibenz(a,h)anthracene	0/48	0.35 - 1.9	-	NA	-
Dibenzofuran	2/49	0.35 - 1.9	0.089J - 0.21J	NA	-
Diethylphthalate	0/49	0.35 - 1.9	-	NA	-
Dimethylphthalate	0/49	0.35 - 1.9	-	NA	-
Di-n-butylphthalate	0/49	0.35 - 1.9	-	NA	-
Di-n-octylphthalate	0/48	0.35 - 1.9	-	NA	-
Fluoranthene	3/49	0.35 - 1.9	0.19J - 0.83	NA	-
Fluorene	2/49	0.35 - 1.9	0.16J - 0.74	NA	-
Hexachlorobenzene	0/49	0.35 - 1.9	-	NA	-
Hexachlorobutadiene	0/49	0.35 - 1.9	-	NA	-
Hexachlorocyclopentadiene	0/49	0.35 - 1.9	-	NA	-
Hexachloroethane	0/49	0.35 - 1.9	-	NA	-
Indeno(1,2,3-cd)pyrene	0/48	0.35 - 1.9	-	NA	-
Isophorone	0/49	0.35 - 1.9	-	NA	-
Naphthalene	0/49	0.35 - 1.9	-	NA	-
Nitrobenzene	0/49	0.35 - 1.9	-	NA	-
n-Nitrosodimethylamine	0/16	0.38 - 0.57	-	NA	-
n-Nitroso-di-n-propylamine	0/49	0.35 - 1.9	-	NA	-
n-Nitrosodiphenylamine	0/49	0.35 - 1.9	-	NA	-

Table 4-19 Summary of Analyses and Detections in the East Adjacent Area (greater than 10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	Detection Frequency	Range of Detection Limits[a] (mg/kg)	Range of Results (mg/kg)	Ambient Level (mg/kg)	Detections Exceeding Ambient Level
SEMIVOLATILE ORGANIC COMPOUNDS (Continued)					
Pentachlorophenol	0/49	0.93 - 9.4	-	NA	-
Phenanthrene	3/49	0.35 - 1.9	0.46 - 1.5	NA	-
Phenol	0/49	0.35 - 1.9	-	NA	-
Pyrene	2/48	0.35 - 1.9	0.41 - 0.63	NA	-
VOLATILE ORGANIC COMPOUNDS					
1,1,1-Trichloroethane	2/49	0.005 - 0.028	0.05 - 0.36	NA	-
1,1,2,2-Tetrachloroethane	0/49	0.005 - 0.028	-	NA	-
1,1,2-Trichloroethane	0/49	0.005 - 0.028	-	NA	-
1,1-Dichloroethane	1/49	0.005 - 0.028	0.4	NA	-
1,1-Dichloroethene	2/49	0.005 - 0.028	0.01 - 0.15	NA	-
1,2-Dichloroethane	1/49	0.005 - 0.028	0.034	NA	-
1,2-Dichloroethene (Total)	0/49	0.005 - 0.028	-	NA	-
1,2-Dichloropropane	0/49	0.005 - 0.028	-	NA	-
2-Butanone	1/49	0.006 - 0.056	0.004J	NA	-
2-Hexanone	0/49	0.011 - 0.056	-	NA	-
4-Methyl-2-pentanone	0/49	0.011 - 0.056	-	NA	-
Acetone	0/49	0.002 - 0.11	-	NA	-
Benzene	0/49	0.005 - 0.028	-	NA	-
Bromodichloromethane	0/49	0.005 - 0.028	-	NA	-
Bromoform	0/49	0.005 - 0.028	-	NA	-
Bromomethane	0/49	0.011 - 0.056	-	NA	-
Carbon disulfide	4/49	0.005 - 0.028	0.002J - 0.031	NA	-
Carbon tetrachloride	0/49	0.005 - 0.028	-	NA	-
Chlorobenzene	0/49	0.005 - 0.028	-	NA	-
Chloroethane	0/49	0.011 - 0.056	-	NA	-
Chloroform	0/49	0.005 - 0.028	-	NA	-
Chloromethane	0/49	0.011 - 0.056	-	NA	-
Cis-1,3-dichloropropene	0/49	0.005 - 0.028	-	NA	-
Dibromochloromethane	0/49	0.005 - 0.028	-	NA	-
Ethylbenzene	0/49	0.005 - 0.028	-	NA	-
Methylene chloride	0/49	0.002 - 0.028	-	NA	-
Styrene	0/49	0.005 - 0.028	-	NA	-
Tert-butyl methyl ether	2/49	0.005 - 0.028	0.1 - 0.16	NA	-
Tetrachloroethene	1/49	0.005 - 0.028	0.001J	NA	-
Toluene	0/49	0.005 - 0.028	-	NA	-
trans-1,3-Dichloropropene	3/49	0.005 - 0.028	0.002J - 0.053	NA	-
Trichloroethene	0/45	0.011 - 0.056	-	NA	-
Vinyl acetate	0/49	0.011 - 0.056	-	NA	-
Vinyl chloride	1/49	0.005 - 0.028	0.059	NA	-
PETROLEUM HYDROCARBONS					
Gasoline range organics	4/22	0.58 - 8	0.51J - 33J	NA	-
Diesel range organics	7/22	10 - 58	21 - 240	NA	-
Motor oil range organics	3/4	12 - 58	12J - 400	NA	-
TPH-extractable unknown hydrocarbon	0/2	11 - 12	-	NA	-
TPH-purgeable unknown hydrocarbon	0/2	1 - 1	-	NA	-
Total TPH	8/22	-	12 - 520.51	NA	-
Total oil & grease	16/18	28 - 74	37 - 1000J	NA	-

Notes
(a) - Detection limits are reported as the laboratory reporting limits
(b) - Hunters Point ambient levels is determined on a location specific basis
-- No criteria available for this analyte
BHC - benzene hexachloride
DDD - dichlorodiphenyldichloroethane
DDE - dichlorodiphenyldichloroethene
DDT - dichlorodiphenyltrichloroethane
J - Estimated value
mg/kg - milligrams per kilogram
NA - not available
PCB - polychlorinated biphenyl
TPH - total petroleum hydrocarbon

Table 4-20 Summary of Detected Exceedances of Evaluation Criteria in the East Adjacent Area (greater than 10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria		Detections Exceeding
	Conc. (mg/kg)	Comments	RI Evaluation Criteria
Metals			
Aluminum	100000	2004 PRG Industrial	0
Antimony	380	2005 ESL Industrial (direct exp)	0
Arsenic	11.1	HPAL	4
Barium	63000	2005 ESL Industrial (direct exp)	0
Beryllium	1700	2005 ESL Industrial (direct exp)	0
Cadmium	7.4	2005 ESL Industrial (direct exp)	0
Calcium	-		-
Chromium (total)	a	See note	1
Chromium VI	37	2005 ESL Industrial (direct exp)	0
Cobalt	a	See note	0
Copper	38000	2005 ESL Industrial (direct exp)	0
Cyanide (free)	12000	2004 PRG Industrial	0
Iron	100000	2004 PRG Industrial	0
Lead	800	2004 PRG Industrial	1
Magnesium	-		-
Manganese	19000	2004 PRG Industrial	0
Mercury	180	2005 ESL Industrial (direct exp)	0
Molybdenum	4800	2005 ESL Industrial (direct exp)	0
Nickel	a	See note	0
Potassium	-		-
Selenium	4800	2005 ESL Industrial (direct exp)	0
Silver	4800	2005 ESL Industrial (direct exp)	0
Sodium	-		0
Thallium	63	2005 ESL Industrial (direct exp)	0
Tin	100000	2004 PRG Industrial	0
Vanadium	1000	2004 PRG Industrial	0
Zinc	100000	2004 PRG Industrial	0
PESTICIDES			
2,4'-DDD	9	2005 ESL Industrial (direct exp)	0
2,4'-DDE	6.3	2005 ESL Industrial (direct exp)	0
2,4'-DDT	6.3	2005 ESL Industrial (direct exp)	0
4,4'-DDD	9	2005 ESL Industrial (direct exp)	0
4,4'-DDE	6.3	2005 ESL Industrial (direct exp)	0
4,4'-DDT	6.3	2005 ESL Industrial (direct exp)	0
Aldrin	0.1	2004 PRG Industrial	0
alpha-BHC	0.36	2004 PRG Industrial	0
Alpha-chlordane	2.9	SDGI Industrial Criteria	0
beta-BHC	1.3	2004 PRG Industrial	0
Chlordane	1.7	2005 ESL Industrial (direct exp)	0
cis-Nonachlor	-		-
delta-BHC	0.59	SDGI Industrial Criteria	0
Dieldrin	0.11	2004 PRG Industrial	0
Endosulfan I	3700	2004 PRG Industrial	0
Endosulfan II	3700	2004 PRG Industrial	0
Endosulfan sulfate	5300	SDGI Industrial Criteria	0
Endrin	190	2004 PRG Industrial	0
Endrin aldehyde	260	SDGI Industrial Criteria	0
Endrin ketone	260	SDGI Industrial Criteria	0
Gamma-BHC (lindane)	1.7	2004 PRG Industrial	0
Gamma-chlordane	2.9	SDGI Industrial Criteria	0
Heptachlor	0.38	2004 PRG Industrial	0
Heptachlor epoxide	0.19	2004 PRG Industrial	0
Heptachlor epoxide A	-		-
Heptachlor epoxide B	-		-
Hexachlorobenzene	0.96	2005 ESL Industrial (direct exp)	0
Methoxychlor	3100	2004 PRG Industrial	0
Mirex	-		-
Oxychlordane	-		-
trans-Nonachlor	21	2004 PRG Industrial	0
Toxaphene	1.6	2004 PRG Industrial	0

Table 4-20 Summary of Detected Exceedances of Evaluation Criteria in the East Adjacent Area (greater than 10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
PCBs			
Aroclor-1016	21	2004 PRG Industrial	0
Aroclor-1221	0.74	2004 PRG Industrial	0
Aroclor-1232	0.74	2004 PRG Industrial	0
Aroclor-1242	0.74	2004 PRG Industrial	0
Aroclor-1248	0.74	2004 PRG Industrial	0
Aroclor-1254	0.74	2004 PRG Industrial	0
Aroclor-1260	0.74	2004 PRG Industrial	0
Total PCBs	0.74	2004 PRG Industrial	0
SEMIVOLATILE ORGANIC COMPOUNDS			
1,2,4-Trichlorobenzene	5	2005 ESL Industrial (inhalation)	0
1,2,4-Trimethylbenzene	170	2004 PRG Industrial	0
1,2-Dichlorobenzene	21	2005 ESL Industrial (inhalation)	0
1,3,5-Trimethylbenzene	70	2004 PRG Industrial	0
1,3-Dichlorobenzene	600	2004 PRG Industrial	0
1,4-Dichlorobenzene	0.13	2005 ESL Industrial (inhalation)	0
2,2'-Oxybis(1-chloropropane)	7.4	2004 PRG Industrial	0
2,4,5-Trichlorophenol	310	2005 ESL Industrial (inhalation)	0
2,4,6-Trichlorophenol	25	2005 ESL Industrial (direct exp)	0
2,4-Dichlorophenol	1800	2004 PRG Industrial	0
2,4-Dimethylphenol	1500	2005 ESL Industrial (inhalation)	0
2,4-Dinitrophenol	1200	2004 PRG Industrial	0
2,4-Dinitrotoluene	5.6	2005 ESL Industrial (direct exp)	0
2,6-Dinitrotoluene	620	2004 PRG Industrial	0
2-Chloronaphthalene	23000	2004 PRG Industrial	0
2-Chlorophenol	10	2005 ESL Industrial (inhalation)	0
2-Methylnaphthalene	550	2005 ESL Industrial (inhalation)	0
2-Methylphenol	31000	2004 PRG Industrial	0
2-Nitroaniline	1800	2004 PRG Industrial	0
2-Nitrophenol	-		-
3,3'-Dichlorobenzidine	1.4	2005 ESL Industrial (direct exp)	0
3-Nitroaniline	82	2004 PRG Industrial	0
4,6-Dinitro-2-methylphenol	-		-
4-Bromophenyl-phenylether	-		-
4-Chloro-3-methylphenol	-		-
4-Chloroaniline	2500	2004 PRG Industrial	0
4-Chlorophenyl-phenylether	-		-
4-Methylphenol	3100	2004 PRG Industrial	0
4-Nitroaniline	82	2004 PRG Industrial	0
4-Nitrophenol	7000	SDGI Industrial Criteria	0
Acenaphthene	650	2005 ESL Industrial (inhalation)	0
Acenaphthylene	18000	2005 ESL Industrial (direct exp)	0
Aniline	300	2004 PRG Industrial	0
Anthracene	31	2005 ESL Industrial (inhalation)	0
Azobenzene	16	2004 PRG Industrial	0
Benzidine	-		-
Benzo(a)anthracene	1.3	2005 ESL Industrial (direct exp)	0
Benzo(a)pyrene	0.33	SDGI Industrial Criteria	0
Benzo(b)fluoranthene	1.3	2005 ESL Industrial (direct exp)	0
Benzo(e)pyrene	-		-
Benzo(g,h,i)perylene	22000	2005 ESL Industrial (direct exp)	0
Benzo(k)fluoranthene	1.3	2005 ESL Industrial (direct exp)	0
Benzoic acid	100000	2004 PRG Industrial	0
Benzyl alcohol	100000	2004 PRG Industrial	0
Biphenyl	18000	2005 ESL Industrial (direct exp)	0
Bis(2-chloroethoxy)methane	-		-
Bis(2-chloroethyl)ether	0.012	2005 ESL Industrial (inhalation)	0
Bis(2-ethylhexyl)phthalate	120	2004 PRG Industrial	0
Butylbenzylphthalate	100000	2004 PRG Industrial	0
Carbazole	86	2004 PRG Industrial	0
Chrysene	13	2005 ESL Industrial (direct exp)	0
Dibenz(a,h)anthracene	0.33	SDGI Industrial Criteria	0
Dibenzofuran	1600	2004 PRG Industrial	0
Diethylphthalate	100000	2004 PRG Industrial	0
Dimethylphthalate	100000	2004 PRG Industrial	0
Di-n-butylphthalate	62000	2004 PRG Industrial	0
Di-n-octylphthalate	25000	2004 PRG Industrial	0

Table 4-20 Summary of Detected Exceedances of Evaluation Criteria in the East Adjacent Area (greater than 10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
SEMIVOLATILE ORGANIC COMPOUNDS (continued)			
Fluoranthene	22000	2004 PRG Industrial	0
Fluorene	800	2005 ESL Industrial (inhalation)	0
Hexachlorobenzene	0.96	2005 ESL Industrial (direct exp)	0
Hexachlorobutadiene	22	2004 PRG Industrial	0
Hexachlorocyclopentadiene	3700	2004 PRG Industrial	0
Hexachloroethane	44	2005 ESL Industrial (direct exp)	0
Indeno(1,2,3-cd)pyrene	1.3	2005 ESL Industrial (direct exp)	0
Isophorone	510	2004 PRG Industrial	0
Napthalene	1.5	2005 ESL Industrial (inhalation)	0
Nitrobenzene	100	2004 PRG Industrial	0
n-Nitrosodimethylamine	0.034	2004 PRG Industrial	0
n-Nitroso-di-n-propylamine	0.25	2004 PRG Industrial	0
n-Nitrosodiphenylamine	350	2004 PRG Industrial	0
Pentachlorophenol	9	2004 PRG Industrial	0
Phenacetin	-		-
Phenanthrene	18000	2005 ESL Industrial (direct exp)	0
Phenol	100000	2004 PRG Industrial	0
Pyrene	430	2005 ESL Industrial (inhalation)	0
VOLATILE ORGANIC COMPOUNDS			
1,1,1,2-Tetrachloroethane	6.9	2005 ESL Industrial (direct exp)	0
1,1,1-Trichloroethane	230	2005 ESL Industrial (inhalation)	0
1,1,2,2-Tetrachloroethane	0.025	2005 ESL Industrial (inhalation)	0
1,1,2-Trichloro-1,2,2-trifluoroethane	-		-
1,1,2-Trichloroethane	0.089	2005 ESL Industrial (inhalation)	0
1,1-Dichloroethane	0.89	2005 ESL Industrial (inhalation)	0
1,1-Dichloroethene	105	2005 ESL Industrial (inhalation)	0
1,1-Dichloropropene	-		-
1,2,3-Trichlorobenzene	-		-
1,2,3-Trichloropropane	-		-
1,2,4-Trichlorobenzene	5	2005 ESL Industrial (inhalation)	0
1,2,4-Trimethylbenzene	170	2004 PRG Industrial	0
1,2-Dibromo-3-chloropropane	0.067	2005 ESL Industrial (direct exp)	0
1,2-Dibromoethane	0.02	2005 ESL Industrial (inhalation)	0
1,2-Dichlorobenzene	21	2005 ESL Industrial (inhalation)	0
1,2-Dichloroethane	0.07	2005 ESL Industrial (inhalation)	0
1,2-Dichloroethene (Total)	150	SDGI Industrial Criteria	0
1,2-Dichloropropane	0.14	2005 ESL Industrial (inhalation)	0
1,3,5-Trimethylbenzene	70	2004 PRG Industrial	0
1,3-Dichlorobenzene	600	2004 PRG Industrial	0
1,3-Dichloropropane	-		-
1,4-Dichlorobenzene	0.13	2005 ESL Industrial (inhalation)	0
2,2-Dichloropropane	-		0
2-Butanone	6500	2005 ESL Industrial (inhalation)	0
2-Chloroethyl vinyl ether	-		-
2-Chlorotoluene	-		-
2-Hexanone	-		-
4-Chlorotoluene	-		-
4-Methyl-2-pentanone	1550	2005 ESL Industrial (inhalation)	0
Acetone	16500	2005 ESL Industrial (inhalation)	0
Benzene	0.38	2005 ESL Industrial (direct exp)	0
Bromobenzene	-		-
Bromochloromethane	-		-
Bromodichloromethane	0.039	2005 ESL Industrial (inhalation)	0
Bromoform	220	2004 PRG Industrial	0
Bromomethane	2.6	2005 ESL Industrial (inhalation)	0
Carbon disulfide	720	2004 PRG Industrial	0
Carbon tetrachloride	0.034	2005 ESL Industrial (inhalation)	0
Chlorobenzene	31	2005 ESL Industrial (inhalation)	0
Chloroethane	1.8	2005 ESL Industrial (inhalation)	0
Chloroform	0.47	2004 PRG Industrial	0
Chloromethane	0.2	2005 ESL Industrial (inhalation)	0
cis-1,2-Dichloroethene	18	2005 ESL Industrial (inhalation)	0
cis-1,3-Dichloropropene	0.093	2005 ESL Industrial (inhalation)	0
Dibromochloromethane	0.054	2005 ESL Industrial (inhalation)	0
Dibromomethane	-		-
Dichlorodifluoromethane	310	2004 PRG Industrial	0

Table 4-20 Summary of Detected Exceedances of Evaluation Criteria in the East Adjacent Area (greater than 10 feet)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Analyte	RI Evaluation Criteria Conc. (mg/kg)	RI Evaluation Criteria Comments	Detections Exceeding RI Evaluation Criteria
VOLATILE ORGANIC COMPOUNDS (continued)			
Ethylbenzene	390	2005 ESL Industrial (inhalation)	0
Hexachlorobutadiene	22	2004 PRG Industrial	0
Isopropylbenzene	2000	2004 PRG Industrial	0
Methylene chloride	1.5	2005 ESL Industrial (inhalation)	0
Naphthalene	1.5	2005 ESL Industrial (inhalation)	0
n-Butylbenzene	240	2004 PRG Industrial	0
o-Xylene	210	SDGI Industrial Criteria	0
para-Isopropyl toluene	-		-
Propylbenzene	240	2004 PRG Industrial	0
sec-Butylbenzene	220	2004 PRG Industrial	0
Styrene	1100	2005 ESL Industrial (inhalation)	0
tert-Butyl methyl ether	5.6	2005 ESL Industrial (inhalation)	0
tert-Butylbenzene	390	2004 PRG Industrial	0
Tetrachloroethene	0.24	2005 ESL Industrial (inhalation)	0
Toluene	520	2004 PRG Industrial	0
trans-1,2-Dichloroethene	37	2005 ESL Industrial (inhalation)	0
trans-1,3-Dichloropropene	0.093	2005 ESL Industrial (inhalation)	0
Trichloroethene	0.11	2004 PRG Industrial	0
Trichlorofluoromethane	2000	2004 PRG Industrial	0
Vinyl acetate	1400	2004 PRG Industrial	0
Vinyl chloride	0.019	2005 ESL Industrial (inhalation)	0
Xylene (Total)	420	2004 PRG Industrial	0
PETROLEUM HYDROCARBONS			
Gasoline range organics	750	2005 ESL Industrial (direct exp)	0
Diesel range organics	750	2005 ESL Industrial (direct exp)	0
Motor oil range organics	4600	2005 ESL Industrial (direct exp)	0
TPH-extractable unknown hydrocarbon	4600	2005 ESL Industrial (direct exp)	0
TPH-purgeable unknown hydrocarbon	750	2005 ESL Industrial (direct exp)	0
Total TPH	3500	HPS TPH source criterion	0
Total oil & grease	3500	HPS TPH source criterion	0

(a) PRC Environmental Management, Inc. 1995. "Draft Calculation of Hunters Point Ambient Levels." April 11.

-- No criteria available for this analyte

BHC - benzene hexachloride

DDD - dichlorodiphenyldichloroethane

DDE - dichlorodiphenyldichloroethene

DDT - dichlorodiphenyltrichloroethane

ESL - environmental screening level

HPAL - Hunters Point ambient level

HPS - Hunters Point Shipyard

mg/kg - milligrams per kilogram

PCB - polychlorinated biphenyl

PRG - preliminary remediation goal

SDGI - standard data gap investigation

TPH - total petroleum hydrocarbon

Table 4-21. Resolution of Data Quality Objectives, Lateral Extent of Landfill Waste
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Decision Questions	Decision Inputs	Resolution of Decision Questions
Investigation of Lateral Extent of Landfill Waste		
The following decision questions associated with the lateral extent of landfill waste were initially presented in the Parcel E NDGI FSP/QAPP: 1. Are there areas where the lateral extent of the Industrial Landfill located in IR-01/21 are not adequately delineated? 2. Are there areas along the northern border where waste thickness will be required for possible future remedial actions?	▪ Results from previous investigations at the Parcel E-2 Landfill. data inputs are to include existing and available boring and test pit logs, geophysical surveys, scintillation surveys, and data from the soil gas survey. ▪ Maps that depict the spatial locations of previous soil borings, they known locations for the lateral extent of the Landfill, and the limits of the multilayer cover. ▪ Results of test pits and borings.	Based on the results of previous investigations conducted at the Landfill, the answer to the decision questions are as follows: 1. The lateral extent of waste at the Landfill has been adequately defined, and is shown on Figure 3-1. The presence of solid waste was defined as a 6-inch (minimum) thickness of solid waste in a test pit (TtEMI, 2004f). The first test pit where no waste was encountered was considered to be the limit of the solid waste. The Panhandle and East Adjacent Areas both contain isolated solid waste locations where a continuous 6-inch layer of waste was encountered. These isolated locations are outside the Landfill footprint, are non-contiguous and contain predominantly inert construction debris or sandblast waste. 2. The vertical extent of waste along the northern boundary has been adequately defined through test pits and borings drilled during the NDGI. The vertical extent of waste is shown on Figures 2-3 through 2-8. There is adequate data to answer the decision questions, and to support the RI/FS.

Notes:

Reference: TtEMI. 2002a. "Draft Final Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP) for Parcel E Nonstandard Data Gaps Investigation (Industrial Landfill And Wetlands Delineation), Hunters Point Shipyard, San Francisco, California. January 8.

FS Feasibility Study
FSP Field Sampling Plan
IR Installation Restoration Site
NDGI nonstandard data gaps investigation
QAPP Quality Assurance Project Plan
RI Remedial Investigation
TtEMI Tetra Tech EM, Inc.

Table 4-22. Resolution of Data Quality Objectives, Landfill Gas Characterization
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Decision Questions	Decision Inputs	Resolution of Decision Questions
Investigation of Nature and Extent of Landfill Gas		
The following decision questions associated with the nature and extent of landfill gas were initially presented in the Parcel E NDGI FSP/QAPP: 1. Is methane gas present outside the landfill boundary (the outer limit of the industrial landfill in IR-01/21) in ambient air of buildings or subterranean structures at concentrations greater than 1.25 percent by volume in air (25 percent of the LEL.)? 2. Are landfill gases other than methane present outside the landfill boundary (the outer limit of the industrial landfill in IR-01/21) in ambient air of buildings or subterranean structures at concentrations greater than 5 ppm above background? (Note: the basis of comparison for NMOC concentrations in buildings and subterranean structures was subsequently changed, in the Landfill Gas Characterization Study Report, to the 2004 EPA Region IX PRGs for ambient air) 3. Are there locations on the periphery of the industrial landfill in IR-01/21 where concentrations of methane in soil-gas are greater than the lower quantitation limit of the instrument (0.5 percent LEL)? 4. Are there areas of local topographic highs, cap penetrations, or visually stressed vegetation on the interim landfill cap where concentrations of methane and other landfill gas surface emissions in ambient air immediately above the interim landfill cap exceed 25 percent of the LEL and 5 ppm above background, respectively? 5. Is landfill gas present in areas located outside the defined lateral extent of landfill waste and further from the landfill than the 300-foot zone of monitoring?	▪ Analytical results from previous investigations at Parcel E. ▪ Information on historical use from previous studies for Parcel E. ▪ Readings obtained from a methane monitor calibrated according to manufacturer's instructions taken during a soil gas survey performed around the periphery of the landfill in IR-01/21. ▪ Readings obtained from a CGI and a PID calibrated according to manufacturer's instructions taken during a building and subterranean ambient air survey conducted in the area within 300 feet of the limit of waste fill. ▪ Readings obtained from a CGI and a PID calibrated according to manufacturer's instructions taken during a surface ambient air survey conducted at areas of local topographic high points, cap penetrations, or areas of visually distressed vegetation on the interim landfill cap. ▪ Laboratory analytical results from the gaseous organic analysis (samples collected in Summa Canisters) performed during soil gas sampling at five locations at the landfill in IR-01/21.	Based on the results of landfill gas investigation, the answer to the decision questions are as follows: 1. During the April 2002 survey, methane gas was not detected in ambient air of buildings or subterranean structures at concentrations greater than 1.25 percent. Methane gas was detected at concentrations greater than 1.25 percent at two outdoor locations (light pole and Location B) shown on Figure 4-2; however, methane was not detected at these locations during subsequent air monitoring in May 2002. As an additional precaution, surface monitoring was continued at these locations under the Landfill Gas Monitoring and Control Plan (TtEMI and ITSI, 2004c). The results of the ongoing monitoring are summarized in Table 4-23. 2. During the April 2002 survey, NMOCs were not detected in ambient air of buildings at concentrations greater than the Region IX PRGs. Several NMOCs were detected in the crawlspace of Building 830 at concentrations greater than the Region IX PRGs; however, no NMOCs were detected at concentrations greater than PRGs in samples collected at these locations in November 2002 (after active landfill gas extraction was initiated in the area). 3. The extent of methane in soil gas was delineated through a series of probes installed in April 2002. As shown on Figure 4-3, methane concentrations within (and due east of) the UCSF compound ranged from 25 percent of the LEL to greater than 100 percent of the LEL. As a result of this delineation, the Navy initiated a TCRA to: a) remove landfill gas and reduce subsurface methane concentrations at the UCSF compound to below the LEL (5 percent by volume in air); and b) control future landfill gas migration to off-site areas. The TCRA activities are described in the Landfill Gas TCRA Closeout Report (TtEMI, 2004a) (Appendix G). The performance of the gas control system is currently being monitored under the Landfill Gas Monitoring and Control Plan (TtEMI and ITSI, 2004c). The results of the ongoing monitoring are summarized in Table 4-23. 4. Outdoor air monitoring performed on the landfill surface (consisting of breathing zone measurements at cap penetrations and a surface transect over and around the cap surface) did not detect methane at concentrations exceeding 25 percent of the LEL. Methane was detected at the top of several well casings within the Landfill Area at concentrations exceeding 25 percent of LEL (Figure 4-2); however, these concentrations were not representative of outdoor air within the Landfill Area. As an additional precaution, surface monitoring was continued at several of these locations under the Landfill Gas Monitoring and Control Plan (TtEMI and ITSI, 2004c). The results of the ongoing monitoring are summarized in Table 4-23. 5. Subsurface landfill gas (specifically methane greater than the LEL) was detected within (and due east of) the UCSF compound. This finding prompted the Navy to initiate a TCRA (as described in item 3 above) that is effectively controlling landfill gas migration. The performance of the gas control system is summarized in Table 4-23. Methane was not detected at concentrations exceeding 25 percent of the LEL along the east, south, and west sides of the landfill (Figure 4-3). There is adequate data to answer the decision questions, and to support the RI/FS.

Notes:

Reference: TtEMI. 2002a. "Draft Final Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP) for Parcel E Nonstandard Data Gaps Investigation (Industrial Landfill And Wetlands Delineation), Hunters Point Shipyard, San Francisco, California. January 8.

CGI combustible gas indicator
EPA US Environmental Protection Agency
FS Feasibility Study
FSP Field Sampling Plan
IR Installation Restoration Site
LEL lower explosive limit (for methane = 5 percent by volume)
NDGI nonstandard data gaps investigation
NMOC non methane organic compounds
PID photo ionization detector
PRG preliminary remediation goal
QAPP Quality Assurance Project Plan
RI Remedial Investigation
TCRA time-critical removal action
TtEMI Tetra Tech EM, Inc.
UCSF University of California, San Francisco

Table 4-23. Resolution of Data Quality Objectives, Landfill Gas Monitoring and Control System Operation Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Decision Questions	Decision Inputs	Resolution of Decision Questions
Landfill Gas Monitoring of the Fence Line and UCSF Compound, Building 830 Crawlspace, UCSF Surface Locations, and On-Site Utilities		
To ensure consistency with Title 27 CCR and the adequacy of the gas control system, the Navy has developed the following decisions for the fence line GMPs, the UCSF GMPs, the Building 830 crawlspace, UCSF surface locations, and on-site utilities: 1. Is the migration of methane from the landfill controlled below explosive levels (5 percent by volume) at the site boundary (northern fence line) and the UCSF compound? Is the migration of NMOCs from the landfill controlled below levels that pose a potential health threat (500 ppmv)? 2. Are the concentrations of methane in the Building 830 crawlspace greater than 1.25 percent by volume? Are concentrations of NMOCs in the Building 830 crawlspace a potential health threat (5 ppmv above background)? 3. Are concentrations of methane at the UCSF surface locations greater than 1.25 percent by volume? Are concentrations of NMOCs in the breathing zone above the UCSF surface locations posing a potential health threat (5 ppmv above background)? Do the UCSF surface locations warrant continued monitoring? 4. Are concentrations of methane in on-site utilities greater than 1.25 percent by volume? Are concentrations of NMOCs in the breathing zone at on-site utilities posing a potential health threat (5 ppmv above background)? The Navy has established action levels shown in the Interim Monitoring and Control Plan (TtEMI and ITSI, 2004c) to inhibit exceedances of the regulatory limits.	▪ The landfill gas control system is operated passively and actively on an intermittent basis. ▪ Percent methane and NMOC readings will be taken at the GMPs along the fence line and on the UCSF compound using a methane monitor and PID calibrated according to manufacturer's instructions. ▪ Percent methane and NMOC readings will be taken from the Building 830 crawlspace using a methane monitor and PID calibrated according to manufacturer's instructions. ▪ Percent methane and NMOC readings will be taken from the UCSF surface locations and the breathing zone, respectively, using a methane monitor and PID calibrated according to manufacturer's instructions. ▪ Percent methane and NMOC readings will be taken within the on-site utilities and in the breathing zone of the on-site utilities, respectively, using a methane monitor and PID calibrated according to manufacturer's instructions.	Based on the data collected from January 2004 through January 2006, the answer to the decision questions are: 1. Yes, the migration of methane from the Landfill is being controlled below explosive levels and the migration of NMOCs from the landfill is being controlled below levels that pose a potential health threat (ITSI, 2004 and ITSI, 2005). 2. No, the concentrations of methane in the Building 830 crawlspace are not greater than 1.25 percent by volume, and the concentrations of NMOCs in the Building 830 crawl space are not a potential health threat (ITSI, 2004 and ITSI, 2005). 3. No, the concentrations of methane at the UCSF surface locations are not greater than 1.25 percent by volume, and NMOCs have not been detected in the breathing zone, and therefore do not pose a potential health threat. Methane has not been detected above 1 percent and NMOCs have not been detected above 5 ppmv for more than 18 consecutive months (ITSI, 2004 and ITSI, 2005), therefore, the UCSF surface locations can be removed from the monitoring program. 4. No, concentrations of methane in the on-site utilities are not greater than 1.25 percent by volume, and concentrations of NMOCs in the breathing zone at these locations do not pose a potential health threat (ITSI, 2004 and ITSI, 2005). There is adequate data to answer the decision questions, and to support the RI/FS.
Landfill Gas Monitoring at GMPs along Crisp Avenue		
To ensure that landfill gas is not migrating north from the Landfill into Parcel A, the Navy has developed the following decisions for GMPs along Crisp Avenue: 1. Is methane migrating across Crisp Avenue toward Parcel A at concentrations greater than 5 percent by volume? 2. Are concentrations of NMOCs exceeding levels that would pose a potential health threat to future residents on the former Parcel A? The Navy has established action levels shown in the Interim Monitoring and Control Plan (TtEMI and ITSI, 2004c) to inhibit landfill gas from affecting the former Parcel A.	The landfill gas control system operated passively and actively on an intermittent basis. Percent methane and NMOC readings will be taken at GMPs along Crisp Avenue using a methane monitor and PID calibrated according to manufacturer's instructions.	Based on the data collected through January 2006, the answer to the decision questions are: 1. No, methane is not migrating across Crisp Avenue towards adjacent non-Navy property. Methane has not been detected in the Crisp Avenue GMPs. 2. No, NMOC concentrations do not pose a health threat to residents of the adjacent non-Navy property. There is adequate data to answer the decision questions, and to support the RI/FS.

Table 4-23 Resolution of Data Quality Objectives, Landfill Gas Monitoring and Control System Operation (continued)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Decision Questions	Decision Inputs	Resolution of Decision Questions
Landfill Gas Control System		
The following decisions were identified to determine when to initiate and terminate extraction: 1. Is extraction from the gas control system effectively controlling gas migration? 2. Do monitoring data indicate the potential for a landfill fire? 3. Is the HDPE barrier sufficiently submerged in groundwater to prevent migration of gas under the barrier? 4. Do monitoring data results indicate that extraction is no longer needed? 5. Is the system operating correctly? Is extraction occurring from the correct location? The Navy developed the following decision to ensure the gas control system is maintained appropriately: Does data indicate that treatment units need to be replaced?	The landfill gas control system operated passively and actively on an intermittent basis. Percent methane and NMOC readings will be taken from the sample ports located on the extraction unit using a methane monitor and PID calibrated according to manufacturer's instructions. Water levels will be recorded at monitoring wells and GMPs upgradient and downgradient of the gas control system using a water-level meter in accordance with manufacturer's instructions. Pressure readings will be taken at the vents while actively extracting gas from the gas control system to check for flow restrictions. Pressure readings will be taken at the outlet sample port of the last canister (three treatment canisters in series) while applying a vacuum at the first canister to check for flow restrictions within the NMOCs treatment units. Temperature readings for landfill gas will be taken during monitoring before and after the NMOC treatment units vent locations. Treatment units installed at the vents of the interceptor trench will be visually inspected for moisture. Meteorological data will be collected from the monitoring station.	Based on the data collected through January 2006, the answer to the decision questions are: 1a. Yes, extraction from the gas control system is effectively controlling gas migration. Data indicate that Landfill gas is currently being collected in the passive vents located along the barrier wall, and is not migrating past the gas control system into the perimeter GMPs. Methane concentrations have been below explosive levels in all GMPs. 1b. Monitoring data do not indicate the potential for a landfill fire. Elevated temperatures of above 55°C (131°F) within the gas collection trench indicate a potential fire risk (Appendix G). Temperature measurements from locations within the gas collection trench have been below 55°C (131°F) (ITSI, 2005j). 1c. According to monthly water level measurements collected around the barrier wall, yes, the HDPE barrier is sufficiently submerged in groundwater, thus preventing migration of gas under the barrier (ITSI, 2004 and ITSI, 2005). 1d. Monitoring data indicate that gas extraction is needed to continue to prevent the migration of methane onto non-Navy property. When operated only passively, landfill gas will build up in the gas collection trench and will eventually migrate north across the barrier wall. Because of this, the control system is operated both passively and actively, on an intermittent basis. 2. Passive extraction occurs throughout the perforated pipe along the barrier wall and is vented through treatment units at the five passive vent locations (Figure 3-9). Active extraction occurs intermittently from PV-02, which is located near the center of the barrier wall. Data have shown that active extraction from this location sufficiently controls landfill gas migration. 3. Current data indicate the treatment units do not need to be replaced. However, constant operation of the gas control system can possibly cause NMOC concentrations to exceed 100 ppmv (project action level for treatment units) at the outlet of a treatment unit. When this occurs for two consecutive days, the treatment unit is replaced with a new unit (ITSI, 2005j). There is adequate data to answer the decision questions, and to support the RI/FS.

Notes:

Reference: TtEMI and ITSI, 2004. *Final Interim Landfill Gas Monitoring and Control Plan, Parcel E Industrial Landfill, Hunters Point Shipyard, San Francisco, California. August 13.*

§	Section		
BCT	Base Realignment and Closure Cleanup Team	CCR	*California Code of Regulations*
CIWMB	California Integrated Waste Management Board	GMP	Gas monitoring probe
HDPE	high-density polyethylene	ITSI	Innovative Technical Solutions, Inc.
Navy	U.S. Department of the Navy	NMOC	Nonmethane organic compound
PID	Photoionization detector	ppmv	Parts per million by volume
TtEMI	Tetra Tech EM, Inc.	UCSF	University of California, San Francisco
VOC	Volatile organic compound		

Table 4-24 Summary of Soil Exceedances of Evaluation Criteria
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

	Landfill Area			Panhandle Area			East Adjacent Area		
Analyte	**0-2**	**2-10**	**10+**	**0-2**	**2-10**	**10+**	**0-2**	**2-10**	**10+**
Maximum depth (feet bgs)	1.91	9.41	41.25	2	10	21.25	1.75	8.75	31.25
METALS									
Antimony		3		1			1	2	
Arsenic		5	19	**7**	**2**	**4**	1	8	**4**
Cadmium		7	8	2	**1**		2		
Chromium		8	4			**1**	1	**1**	1
Copper		3							
Iron		4	2	3	**2**		1		
Lead		6	7	**7**	**4**	**2**	9	**8**	1
Vanadium		1		1					
Zinc					**1**				
PESTICIDES									
DDE				1					
Dieldrin				**2**			1		
PCBs									
Total PCBs		18	24	**9**	**2**		14	**8**	
DIOXINS AND FURANS									
2,3,4,7,8-PeCDF					**1**				
SEMI-VOLATILE ORGANIC COMPOUNDS									
1,4-Dichlorobenzene		9	9		**1**				
2-Methylnapthalene		1							
Anthracene		1							
Benzo(a)anthracene	2	4	3	**5**		**1**	1	**1**	
Benzo(a)pyrene	9	6	4	**10**		**1**	4	**1**	
Benzo(b)fluoranthene	2	4	2	**7**		**1**	3	**2**	
Benzo(k)fluoranthene		4	1	**9**			1	**1**	
Bis(2-ethylhexyl)phthalate				**1**					
Chrysene		2		**1**					
Dibenz(a,h)anthracene		1		**1**				**1**	
Indeno(1,2,3-cd)pyrene	2	3	1	**4**		**1**		**1**	
Naphthalene	1	11	11	**2**	**3**	**3**			
n-Nitroso-di-n-propylamine			1						
VOLATILE ORGANIC COMPOUNDS									
Carbon tetrachloride			1						
Tetrachloroethene			1						
Total xylenes			1						
PETROLEUM HYDROCARBONS									
Total TPH		6	5	**3**		**1**	**4**	1	

Notes:

Plain text denotes the number of samples above the RIEC

Bold text (in shaded cells) denotes the number of samples above the RIEC and that the analyte is not fully delineated

DDE - dichlorodiphenyldichloroethene

PCB - polychlorinated biphenyl

PeCDF - pentachlorodibenzo[b,e][1,4]furan

RIEC - Remedial Investigation Evalutation Criteria

TPH - total petroleum hydrocarbon

ERRG

Table 4-25 Resolution of Data Quality Objectives, Parcel E-2 Soil and Sediment
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Decision Questions	Decision Inputs	Resolution of Decision Questions
Nature and Extent of Contamination in Onshore Soil		
The primary decision questions associated with the onshore soil within Parcel E-2 are 1. Do potential source areas identified by additional review of site-related documents, aerial photographs, and other historical information have analyte concentrations that exceed criteria? 2. Have all identified source areas been sufficiently characterized to estimate the approximate spatial extent of contamination? 3. Does contamination extend beyond the boundaries of single-point sampling locations? 4. Do actual concentrations of PAHs or PCBs exceed screening criteria at locations where existing samples yielded nondetect results but where detection limits were above the screening criteria? 5. Do potential source areas, known source areas, and single-point locations suspected of being within TPH plumes or locations where PCBs have been detected in groundwater have soil concentrations of TPH that exceed criteria?	▪ Historical use information from previous Parcels E and E-2 studies ▪ Aerial photographs of HPS ▪ GIS maps that depict the locations of previous sampling locations and their analytical results ▪ Existing data from the NDGI ▪ Validated analytical results for data collected during the SDGI ▪ SDGI screening criteria (updated with RIEC for RI/FS) ▪ HPALs for metal analytes of potential concern	Based on the data presented in the Parcels E and E-2 Standard Data Gaps Investigation, Data Summary Report (Revision 01) (TtEMI, 2005c), the answer to the decision questions are: 1. Yes. Source areas have analyte concentrations that exceed criteria, such as PCBs within the southeast portion of Parcel E-2 (which are currently being addressed by an interim removal action). 2. No. Some but not all identified source areas have been sufficiently characterized to estimate the spatial extent of contamination. This finding is attributed to the heterogeneous nature of the Parcel E-2 soil contamination. Additional delineation is not effective in defining the nature and extent of such heterogeneous soil contamination. There is enough data to support the HHRA/SLERA and the focused set of remedial alternatives. 3. Yes. Some (but not all) single-point sampling locations, at which further delineation was attempted during the SDGI, were found to have contamination that extends beyond the boundaries of single point locations. Similar to the resolution of question 2 above, this finding is attributed to the heterogeneous nature of the Parcel E-2 soil contamination. There is enough data to support the HHRA/SLERA and the focused set of remedial alternatives 4. Yes. Concentrations of PAHs or PCBs detected during the SDGI exceed screening criteria at locations where previous samples yielded nondetect results (but where detection limits were above the screening criteria). Results with elevated detection limits are shown as triangles on the Section 4 figures. 5. No. Source areas and single-point locations suspected of being within TPH plumes or locations where PCBs have been detected in groundwater do not have soil concentrations of TPH that exceed criteria. There is adequate data to answer the decision questions, and to support the RI/FS.
Nature and Extent of Contamination in Parcel E-2 Shoreline Sediment		
The primary decision questions associated with shoreline sediment within Parcel E-2 are: 1. Are copper, lead, and PCBs present in shoreline sediment at concentrations sufficient to pose a threat to offshore areas, and does the proposed offshore Parcel F FS footprint (identified in the Parcel F validation study) have corresponding source areas in the Parcel E-2 shoreline area? 2. Are metals, hexavalent chromium, pesticides, PCBs, and SVOCs present at identified or potential source areas along the Parcel E-2 shoreline at concentrations sufficient to pose a threat to ecological receptors?	▪ Historical use information from previous Parcels E and E-2 studies ▪ Aerial photographs of HPS ▪ Observations from the March 3, 2001, and April 9, 2002, site walkthroughs and reconnaissance studies ▪ GIS maps that depict the locations of previous sampling locations and their analytical results ▪ Validated analytical results for data collected during this SDGI ▪ Information on analyte concentrations that exceed screening criteria within the Parcel F validation study area ▪ Parcel E shoreline ecological screening criteria (SulTech, 2005)	Based on the data presented in the Shoreline Characterization Technical Memorandum (Appendix A) (SulTech, 2005), the answer to the decision questions are: 1. Concentrations of copper and lead in sediments along the Parcels E and E-2 shoreline are a potential source of contamination to Parcel F in all areas except the Panhandle and IR-02 southeast. The evaluation of PCB data showed that a definitive connection between onshore sources and offshore sediments could not be established (SulTech, 2005). A regression analysis indicated that copper, lead and PCBs showed a strong correlation in samples collected in source area IR-02 northwest shoreline and its corresponding to offshore concentrations in Area X (south basin study area within Parcel F) (SulTech, 2005). 2. Benthic invertebrates, birds, and mammals are at risk from exposure to PCBs in surface and subsurface sediment along the Parcels E and E-2 shoreline. Benthic invertebrates in surface and subsurface sediment may be adversely affected by exposure to copper, lead, zinc, and DDTs. In subsurface sediment, mercury may pose an additional risk to benthic invertebrates. Ingestion of sediment and prey that contain cadmium, copper, molybdenum, zinc, and PCBs may pose a risk to the house mouse (SulTech, 2005). There is adequate data to answer the decision questions, and to support the RI/FS.

Table 4-25 Resolution of Data Quality Objectives, Parcel E-2 Soil and Sediment (Continued)
Hunters Point Shipyard Parcel E-2 Remedial Investigation/Feasibility Study

Notes:

Reference: TtEMI. 2002d. "Revised Draft Final Sampling and Analysis Plan (Field Sampling Plan/Quality Assurance Project Plan) for Parcel E Standard Data Gaps Investigation, Hunters Point Shipyard, San Francisco, California." August 22.

DDT	dichlorodiphenyl trichloroethane
FS	Feasibility Study
GIS	Geographic Information System
HPALs	Hunters Point Ambient Levels
HPS	Hunters Point Shipyard
IR	Installation restoration site
NDGI	Nonstandard Data Gaps Investigation
PAH	Polyaromatic hydrocarbons
PCB	Polychlorinated biphenyl
SDGI	Standard Data Gaps Investigation
SFRA	San Francisco Redevelopment Agency
SVOC	semi-volatile organic compound
TPH	Total Petroleum Hydrocarbons